

AC Servo Motor & Driver MINAS A6 family MINAS E series

2016/1

Catalog





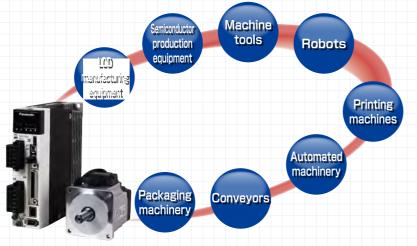
MINAS 40

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

1 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

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



Robots

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

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

Processing machinery

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

surfacing without generating lines or streaks.

Component mounting machines

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







INDEX A6 family

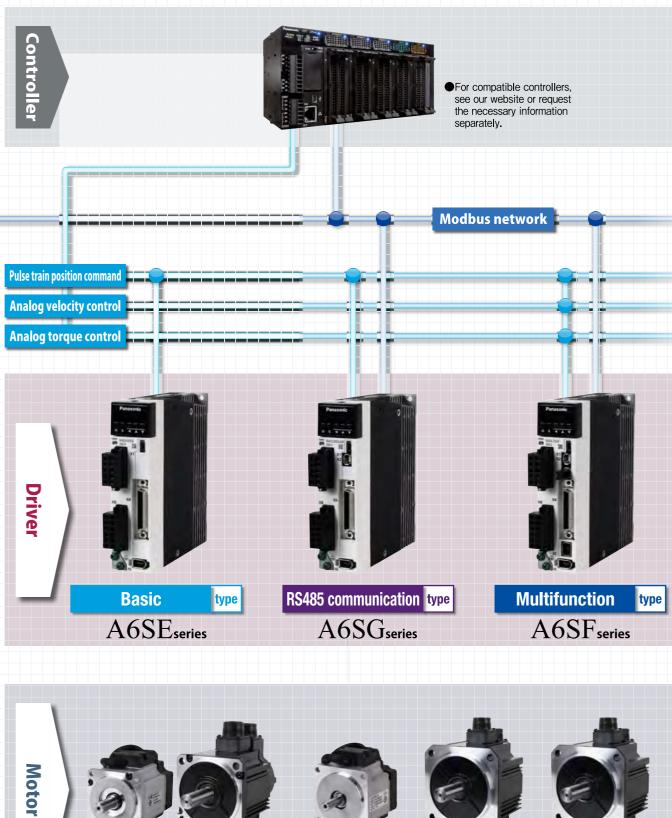
A6 Family Line-up ······3
Motor Features ·····7
Driver Features ······9
Protective Features ······ 11
Other Driver Functions · · · · · · · · 12
Setup Support Software ······ 13
Compliance with International Standards · · · · 15
A6N series Features······16
Motor Line-up ····· 17
Model Designation · · · · · · · · · · · · 18
Overall Wiring ····· 19
Applicable Peripheral Equipments ···· 21
Table of Part Numbers and Options $ \cdot \cdot $ 23

	Driver Specifications · · · · · · · · 33
	A6SF series······33
	A6SG series and A6SE series $\cdot \cdot 35$
	Wiring Diagram ······37
	Wiring to the connector
Ъ	XA, XB, XC, and Terminal Block. ··· 37
Driver	Safety Function ······41
	Wiring to the Connector X3 ···41
	Control Circuit Diagram · · · · · · 42
	Wiring to the Connector X4 ··42
	Wiring to the Connector X5 $\cdot \cdot$ 44
	Wiring to the Connector X6 $\cdot\cdot$ 45
	Dimensions of Driver ······47
	· · · · · · · · · · · · · · · · · · ·
Ъ	Motor Specifications ······50
lotor	Special Order Product · · · · · 115
2	Motor Specifications Description 165
	· · · · · · · · · · · · · · · · · · ·
	Cable part No. Designation · · · 168
	Specifications of Motor connector 169
	Encoder Cable · · · · · · · · · · · 171
	Motor Cable · · · · · · · · · · · · 175
	Brake Cable ····· 181
S	Interface Cable · · · · · · · · · 182
ions	
Options	Interface Cable · · · · · · · · · 182
Options	Interface Cable
Options	Interface Cable
Options	Interface Cable
Options	Interface Cable182Connector Kit183Battery for Absolute Encoder194Mounting Bracket195Reactor196
Options	Interface Cable182Connector Kit183Battery for Absolute Encoder194Mounting Bracket195Reactor196External Regenerative Resistor197
Options	Interface Cable

E series 201

Informat	tion····			• • • • •	232
Index					272
Sales	Office	of C	verse	as ··	284

Servomotors that flexibly and effectively fit into



MSMF Low inertia

MQMF Middle inertia/ Flat type

MDMF Middle inertia



MGMF Middle inertia/ Low speed high torque

various system configurations



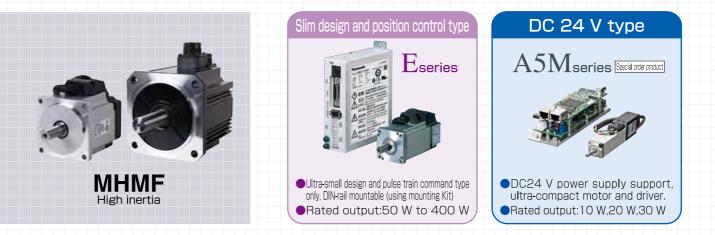


•For compatible controllers, see our website or request the necessary information separately.



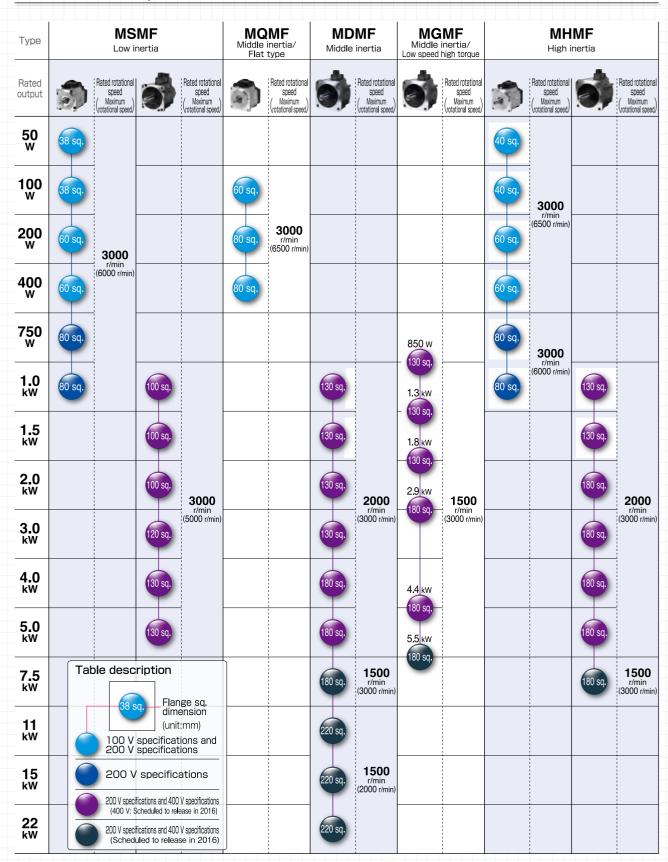






It is MINAS A6 Family lineup that meets the

Motor line-up



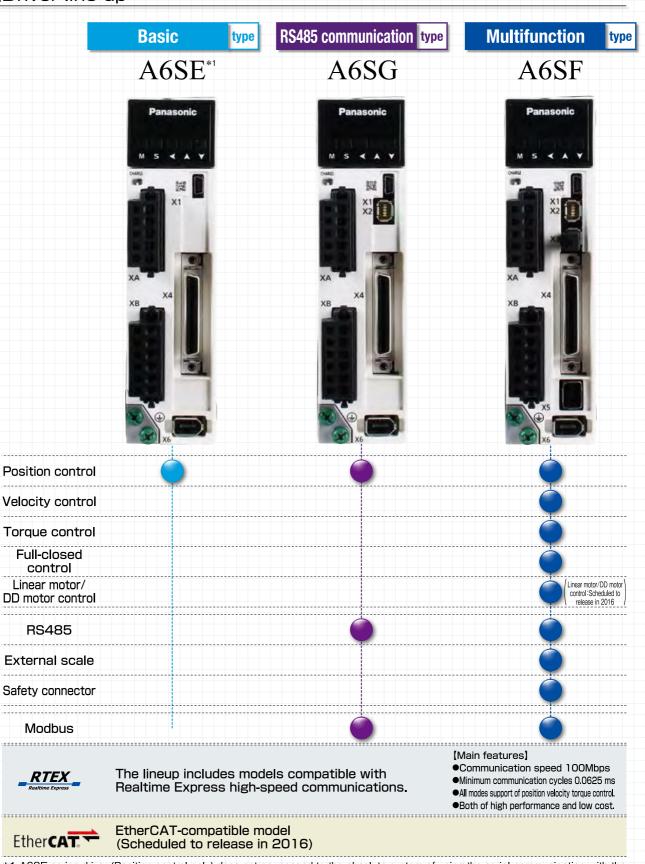
manufacturing industry needs.

Driver line-up

Control method

Connection terminal

Network



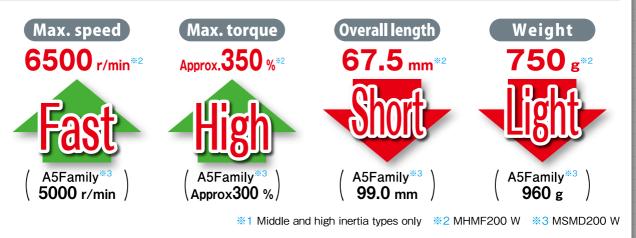
*1 A6SE series driver (Position control only) does not correspond to the absolute system of using the serial communication with the host device. It supports incremental system only.

E Series

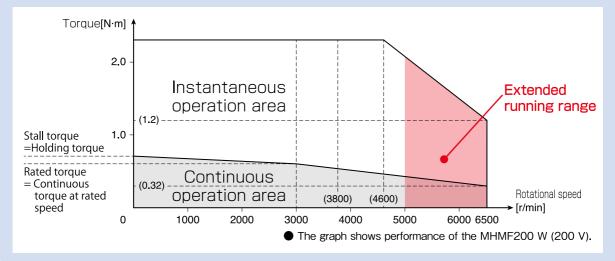
Small, light, powerful^{**} and speedy



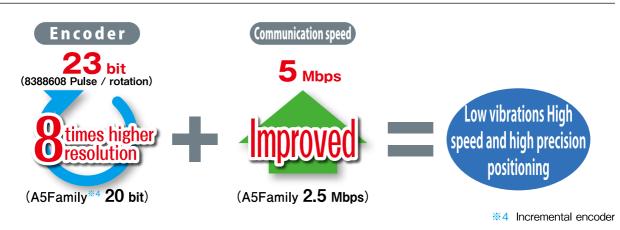
Highest speed in the industry and high torque in a compact lightweight body *



Significantly extended running range by the highest speed and high torque in the industry's highest class.



Enhanced position detecting resolution enables smoother and more precise positioning.



GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

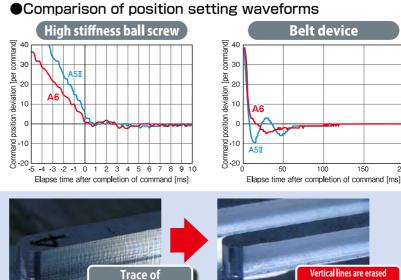
Swifter, smarter and easier to use

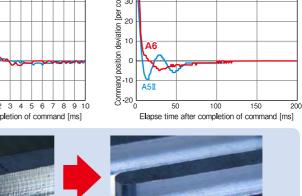


High-speed response, high-precision positioning for quick and accurate movement

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

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





A6 Family

Ball screw Settling

time

ms

Increased surface glossines

t device ttling

ms

ime

A5I Family

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

Settling time

A5II Family

ms

vertical lines

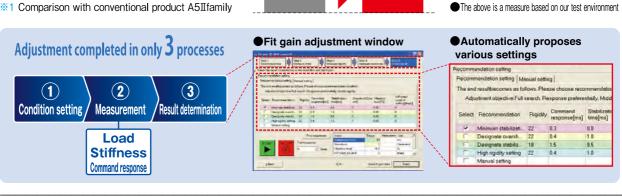
(Measured on low stiffness resonant mechanism)

A6 Family

0

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

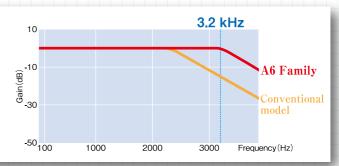
%1 Comparison with conventional product A5II family



Realized 3.2 kHz frequency response to improve productivity

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

%1 Comparison with conventional product A5II family



GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

A6 Family

Reduced maintenance work and trouble.

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

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

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

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

Applicable oil seals

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

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

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

- IP67-compatible motors with flange size of 80 mm or smaller are order-made products.
- For environmental conditions of applications, refer to P. 165.



Adoption of direct-mount connector

Some products are provided with "protective lip" that

prevents dust and oil penetration.

What is IP?

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

Pr	Protection level against dust						
1	Protected against solid objects over 50 mm in diameter.						
2	Protected against solid objects over 12.5 mm in diameter.						
3	Protected against solid objects over 2.5 mm in diameter.						
4	Protected against solid objects over 1.0 mm in diameter.						
5	Dust-proof type: Protected against dust penetration. Continues normal operation even if penetrated by a small quantity of dust.						
6	Dust-tight type: Totally protected against dust penetration.						

IP- 6 7

	Protection level against water penetration						
1	Protected against vertically falling drops of water or condensation.						
2	Protected against falling drops of water, if the case is inclined no more than 15° off vertical.						
3	Protected against sprays of water from any direction, even if the case is inclined no more than 60° off vertical.						
4	Protected against water splashed from any direction.						
5	Protected against direct low pressure water jets from any direction. Limited penetration permitted.						
6	Protected against direct high pressure water jets from any direction. Limited penetration permitted.						
7	Protected against water penetration when immersed in water for the specified period of time and under the specified pressure.						
8	Protected against water penetration when immersed in water for long, continuous periods of time.						

Dynamic braking

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

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

Inrush current preventive function

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

Parameter initialization

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

Other MINA driver functions

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

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

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

Manual/Auto notch filter

Equipped with auto-setting notch filters for greater convenience. Now there is no need to measure troublesome vibration frequencies. Our notch filters automatically detect vibration and provide simple auto-setting.

These notch filters greatly reduce noise and vibration caused by equipment resonance and respond quickly.

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

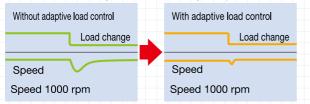
Manual/Auto damping filter

Equipped with a damping filter that is automatically set through the setup support software. This filter removes the natural vibration frequency component from the command input, greatly reducing vibration of the axis when stopping. The number of filters for simultaneous use has been increased to three from the conventional two filters. (Two from one in the

two-degree-of-freedom-control mode.) The adaptive frequency has also been significantly expanded from 0.5 Hz to 300 Hz.

Adaptive load control

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



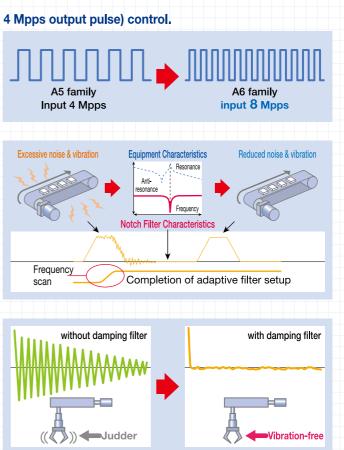
Regenerative energy discharge

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

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

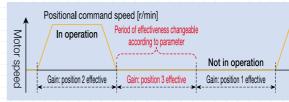
Friction torque compensation

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



3-step gain

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



Inertia ratio conversion

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

Input/output signal assignment

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

Torque limiter switching

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

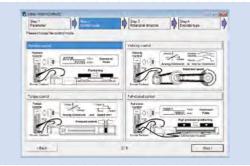
Multifunctional software for quick adjustment support

PNATERM set-up support software

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

Setup wizard

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



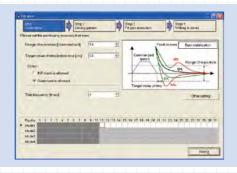
The fit gain function for setting Two-degree-of-freedom control. 1) Select the adjustment method 2) Load measurement

3) Confirming results Adjust gain to meet your needs



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.



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.

Neme	Value	Unit	Status
Power supply on integrated time	3.0	h	
Driver temperature	34	degrees	
Number of times of imptive resistance	0	times	
Number of times ob DB relay changing	0	finies.	
Fan operation time	0.0	h	
Fan life time integrated value.	0.0	%	
Condenser life time integrated value	00	. %	
Makeruses	0		

Encoder temperature monitor

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

Other New Function

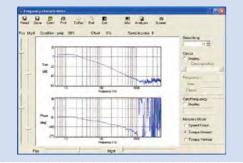
The software offers a wide range of convenient features including motor and driver data such as load factor, voltage, and driver temperature. Moreover, the logging function records the interface history. As well, a non-rotating contributing factor display function.





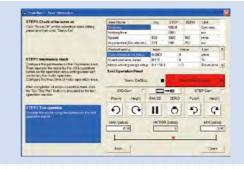
Please download from our web site and use after install to the PC. http://industrial.panasonic.com/ww/products/motors-compressors/fa-motors

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.



Trial run

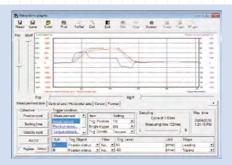
This function supports positioning with the Z-phase search and software limit.



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



Significant increase of measuring objects Multi-functional waveform graphic



• Hardware configuration

•		
Personal	CPU	800 MHz or more
computer	Memory	System memory 512MB or more Graphics memory 32MB or more
	Hard disk capacity	Vacancy of 512MB or more recommended
	OS	Windows [®] Vista SP1(32 bit), Windows [®] 7(32 bit,64 bit),
		Windows $^{m{ extsf{8}}}$ 8(32 bit , 64 bit) Japanese, English, Chinese (Simplified) ver ,
	Serial communication	USB port, COM port (Communication speeds: 24000115200 bps)
	function	* A COM port is required to use RS232 communications. A 9600 bps or higher baud rate is recommended.
Display	Resolution	1024 × 768 pix or more
	Number of colors	24bit colors (TrueColor) or more

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

Compliance with MINAS A6 international standards

TUY TUY <u>τυν</u>

		Driver	Motor	
	EMC Directives	EN55011		
		EN61000-6-2		
		EN61000-6-4	-	
		EN61800-3		
		EN61800-5-1	EN60034-1	
EU Directives	Low-Voltage Directives	EN50178	EN60034-5	
		ISO13849-1(PL e , Cat.3)		
		EN61508(SIL3)		
	Machinery Directives	EN62061(SILCL 3)		
	Functional safety *1	EN61800-5-2(SIL3、STO)		
		IEC61326-3-1		
		IEC60240-1		
UL Standards		UL508C	UL1004-1 , UL 1004-6	
		(E164620)	(E327868)	
CSA Standards		C22.2 No.14	C22.2 No.100 -04	
Radio Waves Act		KN11	_	
(South Korea) (KC)*2		KN61000-4-2,3,4,5,6,8,11		
	rotechnical Commissio			
N : Europaischen Norr		Panasonic Testing Centre		
MC : Electromagnetic		Panasonic Service Europe, a division of		
L : Underwriters Labo		Panasonic Marketing Europe GmbH		
SA : Canadian Standa	rds Association	Winsbergring 15, 22525 Hamburg, F.R. Germany		
		ions of the destination country		
		o the functional safety standard.		
	o the Korea Radio Law	adcasting radio wave generator not designe	d for home use	
	should be aware of this f			
A 급 기기 (업무용 방				
	ㅎ ㅎ 근기가까까 급) 전자파적합기기로서 관	ት መ		
	을 주의하시기 바라며, 가			
	을 무의하지가 하다며, //· 벗을 목적으로 합니다.	8-1-1		

(대상기종 : Servo Driver)

Low noise, compliant with EMC directives

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

Compliance with EU safety standards.

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

SEMI-F47

certification (CCC).

Includes a function in compliance with the SEMI F47 standard for voltage sag immunity under no load or light load. Ideal for the semiconductor and LCD industries. • Excluding the single-phase 100-V type.

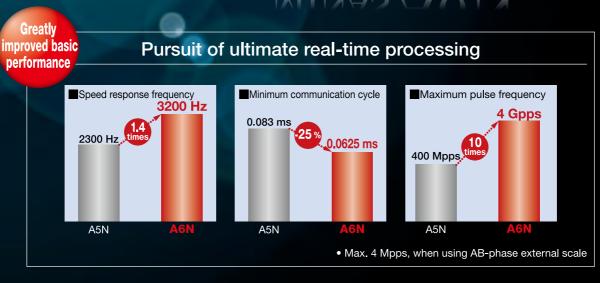
R

• Please verify the actual compliance with your machine checking the F47 standard for voltage sag immunity.

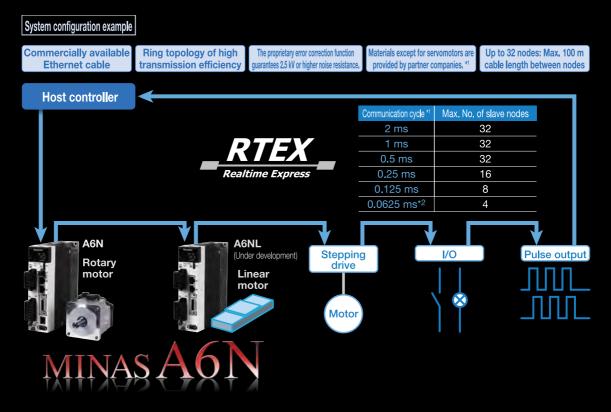
Ultra-high-speed network driver Realtime Express (RTEX)

RTEX

Realtime Express



Multifunctional capabilities to match various needs	Simple network
Supports all positions, speeds and torque modes (w/ built-in positioning function).	Satisfies both high performance and low cost requirements.
◎High-precision position latch and comparison	igodotSynchronization established by communication IC
$\ensuremath{}$ Communication cycle can be set to any time between 2 ms and 62.5 $\mbox{$\mu$s}$.	◎Easier development of compatible equipment



• Realtime Express and RTEX are registered trademarks of Panasonic Corporation. Realtime Express is a high-speed synchronous motion network we developed.*1 Communication cycle and connections to slave devices other than servomotors should be made according to controller specifications.*2 Commands are updated every 0.125 ms when the communication cycle is 0.0625 ms.



Motor Line-up

	Motor		Rated output (kW)	Rated rotational speed (Max. speed) (r/min)	Rotary encoder 23-bit absolute	Enclosure	Motor lead-out configuration	Features	Applications
		80 mm sq. or less	0.05 0.1 0.2 0.4 0.75 1.0	3000 (6000)	0	IP65	Leadwire	 Small capacity Suitable for high speed application 	Bonder Semicon- ductor production
Low inertia	MSMF	80 mm sq. or less	0.050.10.20.40.751.0	3000 (6000)	0	IP67	Connector	Suitable for all applications	equipment · Packing machines etc
			1.0 1.5 2.0 3.0	3000 (5000) 3000	0	IP67	Connector	 Middle capacity Suitable for the machines directly coupled with ball screw and high 	 SMT machines Food machines LCD production
		100 mm sq. or more	4.0 5.0	(4500)				stiffness and high repetitive application	equipment etc
	MQMF	80 mm sq. or less	0.1 0.2 0.4	3000 (6500)	0	IP65	Leadwire	Small capacity Flat type and suit-	 SMT machines Inserter machines
м	(Flat type)	80 mm sq. or less	0.1 0.2	3000 (6500)	0	IP67	Connector	able for low stiffness machines with belt driven	 Belt drive machines unloading robot
iddle inertia	Middle inertia	130 mm sg. or more	1.01.52.03.04.05.0	2000 (3000)	0	IP67	Connector	 Middle capacity Suitable for low stiffness machines with belt driven 	 Conveyors Robots Machine tool etc
	MGME (Low speed/ High torque type	130 mm sq. or more	0.85 1.3 1.8 2.9 4.4	1500 (3000)	0	IP67	Connector	 Middle capacity Suitable for low speed and high torque application 	 Conveyors Robots Textile machines etc
		S	0.05 0.1 0.2 0.4 0.75 1.0	3000 (6500) 3000	0	IP65	Leadwire	 Small capacity 	Comment
		80 mm sq. or less		(6000)				 Suitable for low stiff- ness machines with 	 Conveyors Robots etc
High			0.05 0.1 0.2 0.4	3000 (6500)	0	IP67	belt driven	belt driven	0.0
High inertia	MHMF	80 mm sq. or less	0.75 1.0	3000 (6000)	0				
		130 mm sq. or more	1.01.52.03.04.05.0	2000 (3000)	0	IP67	Connector	 Middle capacity Suitable for low stiffness machines with belt driven, and large load moment of inertia 	Conveyors Robots LCD man- ufacturing equipment etc
	-	tput shaft, and conn		When using	a rotary	encoder a	as an absolu	te system (using multi	-turn data)
	r possible o vers, see P	notors and	connect a b	attery to t	he absolu	te encoder.	ental system (not usin		

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

MINAS A6 Family

Model Designation

S

1

Μ

(2)

(2) Series

Series name

A6 series

Symbol

F

Μ

* For combination of elements of model number, refer to Index P.272.

⑦ Motor specifications: 80 mm sq. or less MSMF 50 W to 1000 W

Servo Motor

5 A	Ζ	L	1	A 1	*	
3	4	(5)	6	\bigcirc		

1) Туре Symbol Туре MSM Low inertia (50 W to 5.0 kW) MQM Middle inertia (100 W to 400 W) MDM Middle inertia (1.0 kW to 5.0 kW) MGM Middle inertia (0.85 kW to 4.4 kW) MHM High inertia (50 W to 5.0 kW)

③ Motor rated output

Symbol	Rated output	Symbol	Rated output
5A	50 W	15	1.5 kW
01	100 W	18	1.8 kW
02	200 W	20	2.0 kW
04	400 W	29	2.9 kW
08	750 W	30	3.0 kW
00	0.85 kW, 1000 W	40	4.0 kW
09	(130 mm sq.) (80 mm sq.)	44	4.4 kW
10	1.0 kW	50	5.0 kW
13	1.3 kW		-

④ Voltage specifications

<u> </u>	3
Symbol	Specifications
1	100 V
2	200 V
z	100 V/ 200 V common (50 W only)

© 200.g. 0. 00.								
Symbol	Specifications							
1	Standard							

(6) Design order

<Note>

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

(5) Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
L	Absolute	23-bit	8388608	7

⑦ Motor specifications: 100 mm sq. or more MSMF, MHMF, MDMF, MGMF

	Shaft				g brake	Oil	seal	Encorde	r terminal					
Syn	nbol	Round	Key- way	without	with	with	With protective lip	Connector JN2 (Small size)	Connector JL10 (Large size) ^{*2}					
С	5	۲		•		•		•						
С	6	٠		•		•			•					
С	7	۲		•			•	•						
С	8	•		•			•		•					
D	5	۲			•	•		•						
D	6	٠			•	•			•					
D	7	۲			•		•	•						
D	8	•			•		•		•					
G	5		•	•		٠		•						
G	6		•			•			•					
G	7		•	•			•	•						
G	8		•	•			•		•					
Н	5		•		•	•		•						
Н	6		•		•	•			•					
Н	7		•		•		•	•						
Н	8		•		•		•		•					

Servo Driver

Μ Α D S Ε * * * Ν 5 (2) **(4)** (3) (5) (6) $\overline{\mathbf{7}}$ (1)

6

(1) Frame symbol										
Symbol	ymbol Frame Symbol Frame									
MAD	A-Frame		MDD	D-Frame						
MBD	B-Frame		MED	E-Frame						
MCD	C-Frame		MFD	F-Frame						
2 Ser	ies									
Symbol	Series	r	name							
L	A6 se	e	ries							
3 Saf	ety Func	:t	tion							
Symbol	Symbol Specifications									
Ν	without the safety function									
Т	with the	s	afety fu	nction						

(4) Max. current rating											
Symbol	Symbol Current rating Symbol Current										
0	6 A	6A 5 40									
1	8 A	8	6	DА							
2	12 A	Α	10	D A C							
3	22 A	В	12	D A C							
4	24 A										
(5) Sup	oply voltage	speci	ficatio	ns							
Symbol	Specit	ications									
1	Single pha	se 100 V	/								
3	3 3-phase 200 V										
5	5 Single/3-phase 200 V										
	<u>-</u>										

Motor encorder terminal ^{*1} Shaft Holding brake Oil seal Symbol Key-way, center tap Connector Lead Round without with without with JN wire А . . . • А 2 . ۲ ٠ ۲ В 1 . . • • В 2 • • • • С 1 С 2 . • • ۲ D 1 D 2 • • • • S 1 . . . • S 2 . . . ٠ т 1 Т 2 . • • ٠ U 1 • • . • U 2 . . • • V 1 ٧ 2 • • •

O Motor specifications: 80 mm sq. or less $\,$ MHMF 50 W to 1000 W $\,$ MQMF 100 W to 400 W

Sha			aft	Holding brake			Oil sea	Motor encorder terminal *1		
Syn	nbol	Round	Key-way, center tap	without with		without with		With protective lip	Connector JN	Lead wire
А	1	•		٠		•			۲	
А	2	•		•		•				•
В	1	•			•	•			٠	
В	2					•				•
С	1	•		•			•		•	
С	2	•		•			•			•
С	3	•		•				•	•	
С	4			•						
D	1	•			•		•		•	
D	2	•			•		•			•
D	3	•			•			•	•	
D	4	•			•			•		•
S	1		•	•		•			•	
S	2		•	•		•				•
Т	1		•		•	•			۲	
Т	2		•		•	•				•
U	1		•	•			•		•	
U	2		•	•			•			•
U	3		•	•					•	
U	4		•	•				•		•
V	1				•		•		•	
V	2		•		•		•			•
V	3		•		•			•	•	
V	4		•		•			•		•

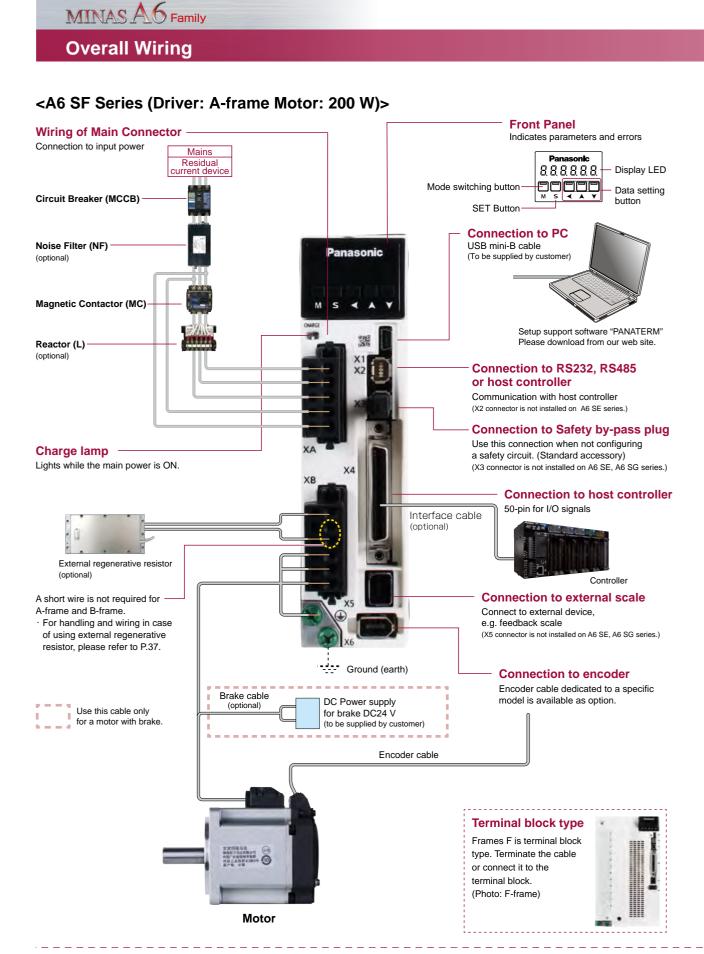
*1 Connector type: IP67, Lead wire type: IP65

*2 Connector on the motor side encoder. (Also applicable to screwed type.)

Special specifications

I/f specifications	⑦ Classification of type
--------------------	--------------------------

Symbol (specification)	Symbol	Specification				
	E	Basic type (Pulse train only)				
S (Analog/Pulse)	F	Multi fanction type (Pulse, analog, full-closed)				
	G	RS485 communication type (Pulse train only)				
N	E	without the safety function				
(RTEX)	F	with the safety function				
B (EtherCAT)	(Scheduled to release in 2016)					

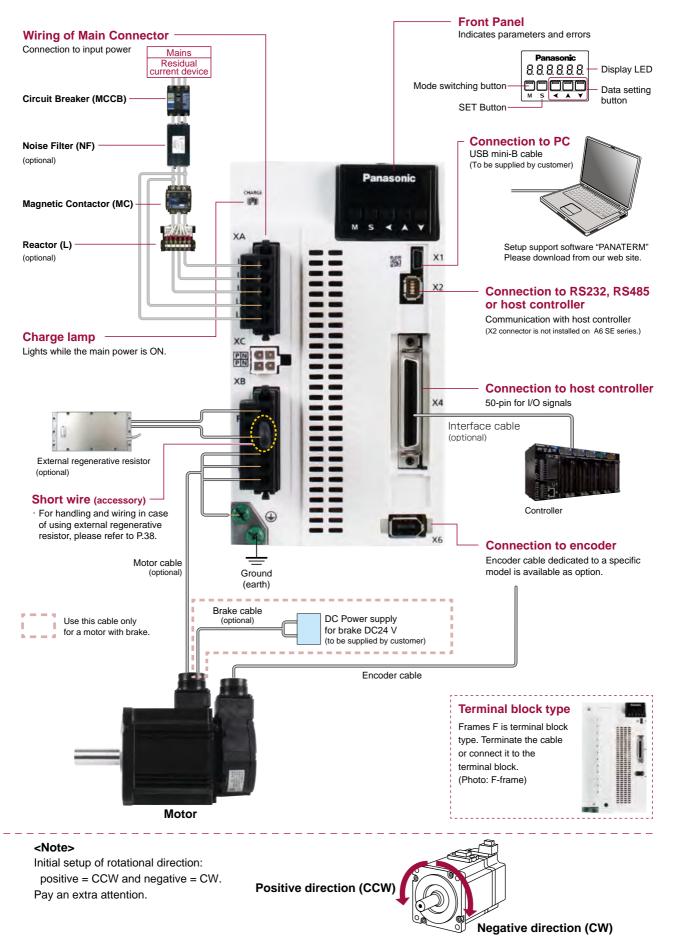


<Caution>

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.





MINAS A6 Family

Driver and List of Applicable Peripheral Equipments

Driver	Applicable motor	Voltage (V) *1	Rated output (kW)	Required Power (at the (rated load) (kVA)	Circuit breaker (^{rated} (current) (A)	Noise filter (Single phase 3-phase	Surge absorber (Single phase 3-phase	Ferite core	Rated operating current of magnetic contactor contact configuration	Diameter and withstand voltage of main circuit cable	Crimp terminal for main circuit terminal block *2	Diameter and withstand voltage of control power supply cable	Crimp terminal for control power supply terminal block	Diameter and withstand voltage of motor cable *3	Diameter and withstand voltage of brake cable
	MSMF MHMF	Single	0.05												
	MSMF MQMF MHMF	phase, 100	0.1	approx. 0.4		DV0P4170	DV0P4190							0.75 mm²/ AWG18 600 VAC or more	
MADL	MSMF MHMF	Single/	0.05			DV0P4170	DV0P4190								
	MSMF MQMF MHMF	3-phase 200	0.1, 0.2	approx. 0.5	10	DV0PM20042	DV0P1450			0.75 mm²/					0.28 mm ² to 0.75 mm ² /
	MSMF	Single phase, 100	0.2			DV0P4170	DV0P4190		20 A (3P+1a)	AWG18 600 VAC or more					AWG22 to AWG18
MBDL	MQMF MHMF	Single/ 3-phase 200	0.4	approx. 0.9		DV0P4170 DV0PM20042	DV0P4190 DV0P1450				ç		Connection to exclusive connector		100 VAC or more
	MSMF MQMF MHMF	Single phase, 100	0.4	approx. 0.9			DV0P4190	DV0P1460			Connection to exclusive connector				
MCDL	MSMF MHMF	Single/ 3-phase 200	0.75	approx. 1.3	15	DV0PM20042	DV0P4190 DV0P1450				o exclusiv		o exclusiv		
	MGMF		0.85								e con	0.75 mm²/ AWG18 600 VAC or more	e con		
	MSMF	-	1.0 (80 mm sq.)	approx. 1.8		DV0P4220	DV0P4190 DV0P1450				rector		nector	2.0 mm²/ AWG14 600 VAC or more	
	MDMF MHMF		1.0		20					2.0 mm²/ AWG14 600 VAC or more					
MDDL	MHMF	Single/ 3-phase 200	1.0 (80 mm sq.)						30 A (3P+1a)						
	MSMF		1.0	approx.											
	MGMF		1.3	2.3											
	MSMF MDMF MHMF		1.5												
	MGMF		1.8												0.75 mm ² / AWG18
MEDL	MSMF MDMF MHMF	3-phase 200	2.0	approx. 3.8	30	DV0PM20043	DV0P1450		60 A (3P+1a)						100 VAC or more
	MSMF MDMF MHMF		3.0 approx. 4.5			DV0P1460	(5. 114)		44						
	MGMF		2.9					RJ8035			11 mm or smaller		11 mm or smaller		
MFDL	MSMF MDMF MHMF	3-phase 200	4.0	000000	50	DV0P3410	DV0P1450	(Recommended) component *4		3.5 mm²/ AWG12 600 VAC	φ <u>5.3</u>		φ <u>5.3</u>	3.5 mm ² / AWG12 600 VAC	
	MGMF		4.4	approx. 7.5					100 A (3P+1a)	or more	Terminal block		Terminal block	or more	
	MSMF MDMF MHMF		5.0								M5		M5		

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

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

 $^{\ast}3$ The diameter of the ground cable must be equal to, or larger than that of the motor cable.

*4 Use thses products to suit an international standard.

Imformation

Related page

About circuit breaker and magnetic contactor

To comply to EC Directives, install a circuit breaker between the power and the noise filter without fail, and the circuit breaker should conform to IEC Standards and UL recognized (Listed and (1) marked).

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

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

<Caution>

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

Terminal block and protective earth terminals

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

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

	Driver	Termina	I block screw	Terminal cover fastening screw		
Frame	Terminal name	Nominal size	Fastening torque (N⋅m) _{Note)1}	Nominal size	Fastening torque (N·m) Note)1	
F	L1, L2, L3, L1C, L2C, P, RB, B, N, U, V, W	M5	1.0 to 1.7	М3	0.19 to 0.21	

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

	Grou	und screw		nnector to ontroller (X4)
Driver frame	Nominal size	Fastening torque (N·m) Note)1	Nominal size	Fastening torque (N⋅m) ^{Note)1}
A to E	M4	0.7 to 0.8	Male	0.2 to 0.25
F	M5	1.4 to 1.6	M2.6	0.3 to 0.35

Note)1 <Caution>

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

<Remarks>

 $\cdot\,$ To check for looseness, conduct periodic inspection of fastening torque once a year.

A6 Family Table of Part Numbers

and Options

80 mm sq. or less 50 W to 1000 W MSMF, MQMF, MHMF: Leadwire type IP65

Driver Motor Encoder Cable Note)3 A6 SF series A6 SG series Power RS485 Multi fanction capacity 23-bit Absolute Rating/ communication type at Power Output Part No. Spec. Pulse, analog, rated Motor series Frame A6 SE series Use in the Use in the Dimensions supply (W) Note)1 load full-closed Basic absolute Incremental (page) (kVA) system system (Pulse signal input) (with battery box) (without battery box) Note)2, Note)4 MSMF5AZL1 2 MADLT01SF MADLN01S 50 51 Approx A-frame 0.4 Single 100 MSMF011L1 2 53 MADLT11SF MADLN11S phase Approx 100 V 200 MSMF021L1 2 55 MBDLT21SF MBDLN21S B-frame 0.5 Approx 400 MSMF041L1 2 57 MCDLT31SF MCDLN31S C-frame 0.9 MSMF 50 MSMF5AZL1 2 52 MADLT05SF MADLN05S -0W (Leadwire) MFECA MFECA type 0 * * 0EAD 0 * * 0 E A E inertia Approx MSMF012L1 2 MADLN05S 🔿 100 54 MADLT05SF A-frame 0.5 (For fixed) (For fixed) 3000 r/min IP65 Single 200 MSMF022L1 2 MADLT15SF MADLN15S 56 phase/ Approx 3-phase 400 MSMF042L1 2 58 MBDLT25SF MBDLN25S B-frame 0.9 200 V Approx C-frame 750 MSMF082L1 2 59 MCDLT35SF MCDLN35S 1.3 Approx 1000 MSMF092L1 2 60 MDDLT45SF MDDLN45S D-frame 1.8 MQMF011L1 2 Approx. 100 67 MADLT11SF MADLN11S A-frame 0.4 MQMF011L1 2 4 Single MQMF021L1 2 Approx MBDLT21SF B-frame phase 200 69 MBDLN21S Middle 0.5 MQMF021L1 2 4 100 V MQMF MOME041L1 2 Approx 400 71 MCDLT31SF MCDLN31S◇ C-frame inertia MQMF041L1 | 4 0.9 (Leadwire) MFECA MFECA type 0 * * 0EAE 0 * * 0EAD MQMF012L1 2 100 68 MADLT05SF MADLN05S (For fixed) (For fixed) 3000 r/min Flat MQMF012L1 2 4 Approx. Single A-frame IP65 0.5 MQMF022L1 2 type phase/ 200 70 MADLT15SF MADLN15S MQMF022L1 2 4 3-phase 200 V MQMF042L1 2 Approx 400 72 MBDLT25SF MBDLN25S B-frame 0.9 MQMF042L1 2 4 MHMF5AZL1 2 50 73 MADLT01SF MADLN01S MHMF5AZL1 🗌 4 Approx A-frame 0.4 MHMF011L1 2 100 75 MADLT11SF MADLN11S 🔿 Single MHMF011L1 | 4 phase MHMF021L1 🗌 2 Approx 100 V 200 77 MBDLT21SF MBDLN21S B-frame MHMF021L1 🗌 4 0.5 MHMF041L1 🗌 2 Approx 79 MCDLT31SF MCDLN31S 400 C-frame 0.9 MHMF041L1 2 4 MHMF MHMF5AZL1 2 High inertia 50 74 MADLT05SF MADLN05S MHMF5AZL1 🗌 4 MFFCA (Leadwire) MFECA type 0 * * 0EAE 0 * * 0EAD MHMF012L1 2 Approx. 100 76 MADLT05SF MADLN05S A-frame 0.5 (For fixed) (For fixed) MHMF012L1 2 4 3000 r/min MHMF022L1 🗌 2 IP65 Single 200 78 MADLT15SF MADLN15S MHMF022L1 1 4 phase/ MHMF042L1 2 Approx 3-phase 400 80 MBDLT25SF MBDLN25S B-frame 0.9 MHMF042L1 4 200 V MHMF082L1 2 Approx 750 MCDLT35SF MCDLN35S 81 C-frame 1.3 MHMF082L1 2 4 MHMF092L1 2 Approx 1000 82 MDDLT55SF MDDLN55S 🔿 D-frame 2.3 MHMF092L1 4

Note)2 \diamond : Represents the driver specifications. (refer to "Model designation" P.18.)

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

Optional pa	arts					Options			
	ole Note)3						Title	Part No.	Page
 WOLDI Cal		_				Interface Cable	e	DV0P4360	182
		Brake Cable	External Regenerative	Reactor	Noise Filter			DV0P4120	182
without Brake	with Brake	Note)3	Resistor	Single phase 3-phase	Single phase 3-phase			DV0P4121	182
				. ,		Interface Conv	ersion Cable	DV0P4130	182
								DV0P4131	182
			DV0P4280	DV0P227		O and a star Kit		DV0P4132	182
					DV0P4170	Connector Kit for Power	A-frame Single row type	DV0PM20032	185
			DV0P4283	DV0P228		Supply Input Connection	to D-frame Double row type	DV0PM20033	185
			DV0P4282	DVUF220	DV0PM20042	Connector Kit for Motor Connection	A-frame to D-frame	DV0PM20034	186
	ИСА	MFMCB	DV0P4281	DV0P227		Connector Kit Motor/Encoder		DV0P4290	186
0**	0EED	0 * * 0GET		DV0P220	DV0P4170		RS485, RS232	DV0PM20024	183
					DV0PM20042		Safety	DV0PM20025	183
			DV0P4283			Connector Kit	Interface	DV0P4350	184
				DV0P228 DV0P220	DV0PM20042		External Scale	DV0PM20026	184
					2 * 0* ***200 **2		Encoder	DV0PM20010	184
			DV0P4284	DV0P228 DV0P222	DV0P4220	Battery for Abs		DV0P2990	194
						Battery Box for	Absolute Encoder	DV0P4430	194
			DV0P4280	DV0P227	DV0P4170	Mounting	For A-frame, B-frame	DV0PM20100	195
			DV0P4283	DV0P228		Bracket	For C-frame, D-frame	DV0PM20101	195
	ИСА	MFMCB	DV0P4282	0 001 220	DV0PM20042	Encoder Cable	with Battery Box without	MFECA0 * * 0EAE	171
	0EED	0 * * 0GET	DV0P4281	DV0P227			Battery Box	MFECA0 * * 0EAD	171
				DV0P220	DV0P4170	Motor Cable	without Brake	MFMCA0 * * 0EED	175
			DV0P4283		DV0PM20042	Brake Cable	50.0.05.14	MFMCB0 * * 0GET	
			0 101 4200	DV0P228			50 Ω 25 W	DV0P4280	197
				DV0P220		External	100 Ω 25 W	DV0P4281	197
			DV0P4280	DV0P227		regenerative resistor	25 Ω 50 W	DV0P4282	197
			2.01 1200		DV0P4170		50 Ω 50 W	DV0P4283	197
			DV0P4283				30 Ω 100 W	DV0P4284	197
				DV0P228				DV0P220	196
			DV0P4282		DV0PM20042	Reactor		DV0P222	196
		MFMCB						DV0P227	196
0**	MCA 0EED	0 * * 0GET	DV0P4281	DV0P227	DV0P4170			DV0P228	196
				DV0P220	DV0PM20042			DV0P4170	236
			DV0P4283			Noise Filter		DV0PM20042	236
			01014203	DV0P228				DV0P4220	236
				DV0P220	DV0PM20042	Surge Absorbe	er	DV0P4190	237
			DV0P4284	DV0P228	DV0P4220			DV0P1450	237
			2.01 1204	DV0P222	2.31 1220	Ferite Core		DV0P1460	238

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

A6 Family

E Series

Imformation

Table of Part Numbers and Options

80 mm sq. or less 50 W to 1000 W

MSMF, MQMF: Connector type IP67

			Moto	or			Driver					
						A6 SF series Multi fanction	A6 SG series RS485		Power		able Note)3	
		Deview	0	Dart Na	Rating/	type	communication		capacity / at \	23-bit A	bsolute	
N	lotor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(Pulse, analog, full-closed	A6 SE series Basic (Pulse signal input) Note)2, Note)5	Frame	(rated load (kVA)	Use in the absolute system (with battery box)	Use in the Incremental system (without battery box)	
			50	MSMF5AZL1 🗌 1	51 100	MADLT01SF	MADLN01S	Δ.	Approx.			
		Single	100	MSMF011L1 🗌 1	53 100	MADLT11SF	MADLN11S	A-frame	0.4			
		phase 100 V	200	MSMF021L1 🗌 1	55 100	MBDLT21SF	MBDLN21S	B-frame	Approx. 0.5	MFECA 0 * * 0MJE (For movable,)	MFECA 0 * * 0MJD	
			400	MSMF041L1 🗌 1	57 101	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9	(direction of motor shaft)	(For movable, direction of motor shaft	
Low inertia	MSMF (Connector) type		50	MSMF5AZL1 🗌 1	52 100	MADLT05SF	MADLN05S			0 * * 0MKE For movable, opposite direction of motor shaft	0 * * 0MKD For movable, opposite direction of motor shaft	
nertia	3000 r/min IP67		100	MSMF012L1 🗌 1	54 100	MADLT05SF	MADLN05S◇	A-frame	Approx. 0.5	MFECA 0 * * 0TJE / For fixed, \	MFECA 0 * * 0TJD / For fixed, \	
		Single phase/	200	MSMF022L1 🗌 1	56 100	MADLT15SF	MADLN15S			direction of motor shaft	direction of motor shaft	
		3-phase 200 V	400	MSMF042L1 🗌 1	58 101	MBDLT25SF	MBDLN25S	B-frame	Approx. 0.9	0 * * 0TKE For fixed, opposite direction of motor shaft	0 * * 0TKD For fixed, opposite direction of motor shaft	
			750	MSMF082L1 🗌 1	59 101	MCDLT35SF	MCDLN35S◇	C-frame	Approx. 1.3			
			1000	MSMF092L1 🗌 1	60 101	MDDLT45SF	MDDLN45S	D-frame	Approx. 1.8			
			100	MQMF011L1 🗌 1 MQMF011L1 🗌 3	67 104	MADLT11SF	MADLN11S	A-frame	Approx. 0.4	MFECA 0 * * 0MJE	MFECA 0 * * 0MJD	
M		Single phase 100 V	200	MQMF021L1 [] 1 MQMF021L1 [] 3	69 104	MBDLT21SF	MBDLN21S◇	B-frame	Approx. 0.5	(For movable, direction of motor shaft	(For movable, direction of motor shaft)	
liddle inertia	MQMF (Connector type		400	MQMF041L1 🗌 1 MQMF041L1 🗌 3	71 105	MCDLT31SF	MCDLN31S	C-frame	Approx. 0.9	MFECA 0 * * 0MKE (For movable, opposite direction of motor shaft	MFECA 0 * * 0MKD For movable, opposite direction of motor shaft	
tia Flat type	3000 r/min IP67	Single	100	MQMF012L1 🗌 1 MQMF012L1 🗌 3	68 104	MADLT05SF	MADLN05S	A .	Approx.	MFECA 0 * * 0TJE / For fixed, \	MFECA 0 * * 0TJD	
/pe		Single phase/ 3-phase	200	MQMF022L1 [] 1 MQMF022L1 [] 3	70 104	MADLT15SF	MADLN15S◇	A-frame	0.5	direction of motor shaft MFECA 0 * * 0TKE	(direction of motor shaft) MFECA 0 * * 0TKD	
		200 V	400	MQMF042L1 🗌 1 MQMF042L1 🗌 3	72 105	MBDLT25SF	MBDLN25S◇	B-frame	Approx. 0.9	(opposite direction of motor shaft)	(For fixed, opposite direction of motor shaft	

Note)1 \square : Represents the motor specifications. (refer to "Model designation" P.18.)

Note)2 \diamond : Represents the driver specifications. (refer to "Model designation" P.18.)

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

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

Note)5 Because A6SE series driver (dedicated for position control) does not support the absolute system specification,

only incremental system can be used in combination.

Optional pa	artS					Options	Title		Part No.	Page
Motor Cat	ole Note)3					Interface Cable			DV0P4360	Page 182
									DV0P4300 DV0P4120	182
		Dealer	External						DV0P4120 DV0P4121	182
		Brake	External	Reactor	Noise Filter	Interface Conv	ersion Cabl	۵	DV0P4121 DV0P4130	182
without	with	Cable	Regenerative	Single phase	Single phase	menace Conv		C		
Brake	Brake	Note)3	Resistor	3-phase	3-phase				DV0P4131	182
				, , , , , , , , , , , , , , , , , , , ,		Connector 1/2	c	Single row	DV0P4132	182
						Connector Kit for Power		single row	DV0PM20032	185
						Supply Input		Double row	DV0PM20033	185
						Connection	D-frame	ype	D V 0F 1V120033	105
						Connector Kit	A-frame to)		
			DV0P4280	DV0P227		for Motor	D-frame		DV0PM20034	186
					DV0P4170	Connection Connector	MSMF		DV0PM20035	187
					0,014110	Kit for Motor/				107
					-	Encoder Con-	MQMF		DV0PM24582	188
0**		MFMCB	DV0P4283			nection				
/For mo	ovable,	0**0PJT	2.01 1200			Connector Kit for				193
direct	tion of r shaft	(For movable, direction of		DV0P228			RS485, R	S232	DV0PM20024	183
		motor shaft	DV0P4282		DV0PM20042		Safety		DV0PM20025	183
	MCA	MFMCB				Connector Kit	Interface		DV0P4350	184
0**		0 * * 0PKT					External S	cale	DV0PM20026	184
opposite	ovable, direction	/ For movable, \					Encoder		DV0PM20010	184
	or shaft	opposite direction of motor shaft				Battery for Abs			DV0P2990	194
	10.1		DV0P4281	DV0P227		Battery Box for	Absolute E	ncoder	DV0P4430	194
						Mounting	For A-frame	e,B-frame	DV0PM20100	195
0 * * / For f		0 * * 0SJT / For fixed, \		DV0P220	DV0P4170	Bracket	For C-fram	e,D-frame	DV0PM20101	195
direct	tion of	direction of		1	DV0PM20042		For movable		MFECA0 * * 0MJE	172
	r shaft/	\motor shaft/			2007Z	Encoder	of motor sha For movable			
	MCA	MFMCB				Cable	direction of n	notor shaft	MFECA0 * * 0MKE	172
0**		0 * * 0SKT				(with	For fixed, dir motor shaft	ection of	MFECA0 * * 0TJE	172
(For f opposite	direction	opposite direction	DV0P4283			(Battery Box)	For fixed, op	posite		
\ of moto	or shaft /	\ of motor shaft		DV0P228			direction of n	notor shaft	MFECA0 * * 0TKE	172
Not	te)4			DV0P220			For movable of motor sha		MFECA0 * * 0MJD	172
					DV0PM20042	Encoder	For movable	, opposite		
						Cable	direction of n	notor shaft	MFECA0 * * 0MKD	172
			DUCE	DV0P228	D) (0D ((without	For fixed, dir motor shaft	ection of	MFECA0 * * 0TJD	172
			DV0P4284	DV0P222	DV0P4220	(Battery Box)	For fixed, op	posite	MFECA0 * * 0TKD	172
				2 101 222			direction of n			112
			D) (65 (55	D) /2 D			For movable of motor sha		MFMCA0 * * 0NJD	175
MFMCA	MFMCA		DV0P4280	DV0P227			For movable	, opposite	MFMCA0 * * 0NKD	175
0 * * 0UFD	0**0VFD				DV0P4170	Motor Cable (For MSMF type)	direction of n For fixed, dir			
(For movable, direction of	(For movable, direction of					(i or ivioivir' type)	motor shaft		MFMCA0 * * 0RJD	175
motor shaft	motor shaft		DV0P4283				For fixed, op		MFMCA0 * * 0RKD	175
				DV0P228			direction of n For movable			
MFMCA 0 * * 0UGD	MFMCA 0 * * 0VGD			DV0F228			of motor sha	ft	MFMCA0 * * 0UFD	176
/ For movable, \	/ For movable, \		DV0P4282		DV0PM20042	Motor Cable	For movable direction of n	, opposite	MFMCA0 * * 0UGD	176
opposite direction of motor shaft	opposite direction of motor shaft					(For MQMF type)	For fixed, dir			
						(without Brake)	motor shaft		MFMCA0 * * 0WFD	176
			DV0P4281				For fixed, op direction of n		MFMCA0 * * 0WGD	176
0 * * 0WFD / For fixed, \	0 * * 0XFD / For fixed, \			DV0P227			For movable	, direction	MFMCA0 * * 0VFD	178
direction of motor shaft	direction of motor shaft						of motor sha	ft		
				DV0P220	DV0P4170	Motor Cable	For movable direction of n	, opposite notor shaft	MFMCA0 * * 0VGD	178
MFMCA	MFMCA				DV0PM20042	(For MQMF type)	For fixed, dir		MFMCA0 * * 0XFD	178
0 * * 0WGD	0 * * 0XGD		DV0P4283			(with Brake)	motor shaft	nooite		
opposite direction	opposite direction of motor shaft			DV0P228			For fixed, op direction of n		MFMCA0 * * 0XGD	178
\ of motor shaft	UTHOTOT Shaft /			DV0P220			For movable	, direction	MFMCB0 * * 0PJT	181
				2 101 220			of motor sha			
Movable : F	or application	where the ca	able is moval	ble.	٦	Broke Ochie	For movable direction of n	, opposite notor shaft	MFMCB0 * * 0PKT	181
	For application					Brake Cable	For fixed, dir		MFMCB0 * * 0SJT	181
							motor shaft	nocito		
Urection of	f motor shaft/0	opposite direct	ction of moto	r shaft : Ca	able direction]		For fixed, op direction of n		MFMCB0 * * 0SKT	181
							50 Ω 25 W		DV0P4280	197
						External	100 Ω 25		DV0P4281	197
						regenerative	25 Ω 50 W		DV0P4282	197
						resistor	50 Ω 50 V		DV0P4283	197
							30 Ω 100		DV0P4284	197
), DV0P222	
						Reactor			7, DV0P228	196
						Nueles 500			70, DV0PM20042	
						Noise Filter		DV0P422		236
						Surge Absorbe			0, DV0P1450	237
						Ferite Core		DV0P146		238
						Tente Cole			0	23

MINAS A6 Family 26 GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

A6 Family Table of Part Numbers and Options

80 mm sq. or less 50 W to 1000 W

MHMF: Connector type IP67

		·	Moto	or			Driver					
						A6 SF series	A6 SG series		Power	Encoder Ca	able Note)3	
		D	0	Devi Ne	Rating/	Multi fanction type	RS485 communication		capacity / at \	23-bit A	bsolute	
N	Notor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(Pulse, analog, full-closed)	A6 SE series Basic (Pulse signal input) Note)2, Note)4	Frame		Use in the absolute system (with battery box)	Use in the Incremental system (without battery box)	
			50	MHMF5AZL1 🗌 1 MHMF5AZL1 🗌 3	73 109	MADLT01SF	MADLN01S◇	- A-frame	Approx.			
			100	MHMF011L1 [] 1 MHMF011L1 [] 3	75 109	MADLT11SF	MADLN11S	A-name	0.4			
		Single phase 100 V	200	MHMF021L1 🗌 1 MHMF021L1 🗍 3	77 110	MBDLT21SF	MBDLN21S۞	B-frame	Approx. 0.5			
High	MHMF (Connector)		400	MHMF041L1 🗌 1 MHMF041L1 🗌 3	79 110	MCDLT31SF	MCDLN31S◇	C-frame	Approx. 0.9	MFECA 0 * * 0MJE (^{For movable,} direction of motor shaft) MFECA 0 * * 0MKE For movable, opposite direction	MFECA 0 * * 0MJD (For movable, direction of motor shaft) MFECA 0 * * 0MKD (opposite direction)	
High inertia	(type / 3000 r/min IP67		50	MHMF5AZL1 🗌 1 MHMF5AZL1 🗌 3	74 109	MADLT05SF	MADLN05S◇			MFECA 0**0TJE (For fixed, direction of motor shaft)	(for motor shaft) MFECA 0 * * 0TJD (for fixed, direction of motor shaft)	
			100	MHMF012L1 🗌 1 MHMF012L1 🗌 3	76 109	MADLT05SF	MADLN05S◇	A-frame	Approx. 0.5	MFECA 0 * * 0TKE For fixed, opposite direction of motor shaft	MFECA 0**0TKD For fixed, opposite direction of motor shaft	
		Single phase/ 3-phase	200	MHMF022L1 🗌 1 MHMF022L1 🗌 3	78 110	MADLT15SF	MADLN15S◇					
		200 V	400	MHMF042L1 🗌 1 MHMF042L1 🗌 3	80 110	MBDLT25SF	MBDLN25S◇	B-frame	Approx. 0.9			
			750	MHMF082L1 🗌 1 MHMF082L1 🗌 3	81 111	MCDLT35SF	MCDLN35S◇	C-frame	Approx. 1.3			
			1000	MHMF092L1 🗌 1 MHMF092L1 🗌 3	82 111	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.3			

Note)1 🗌 : Represents the motor specifications. (refer to "Model designation" P.18.)

Note)2 \diamond : Represents the driver specifications. (refer to "Model designation" P.18.)

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

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

Optional pa							Title		Part No.	Page
Motor Cat	ole Note)3					Interface Cable)		DV0P4360	182
									DV0P4120	182
		Brake	External						DV0P4121	182
			Regenerative	Reactor	Noise Filter	Interface Conv	ersion Cable	e	DV0P4130	182
without	with	Note)3	Resistor	Single phase	Single phase			0	DV0P4131	182
Brake	Brake	NOLEJS	Resistor	3-phase	3-phase				DV0P4132	182
						Connector Kit	0	ingle row		
						for Power	ty the ty	ingle row pe	DV0PM20032	185
						Supply Input	to D	ouble row	DV0PM20033	185
MFMCA	MFMCA					Connection	D-frame b	rpe	DV0F1VI20033	100
0 * * 7UFD	0 * * 7VFD					Connector Kit	A-frame to			
Movable/fixed common-use,	Movable/fixed common-use,					for Motor Connection	D-frame		DV0PM20034	186
direction of motor shaft	direction of motor shaft					Connector	MHMF 200 W	to 1.0 kW	DV0PM24582	188
			DV0P4280	DV0P227		Kit for Motor/		10 T.0 KW	DV0F1V124302	100
MFMCA 0 * * 7UGD	MFMCA 0 * *7VGD					Encoder Con-	MHMF 50 W,	100 W	DV0PM24581	188
/ Movable/fixed	/ Movable/fixed \					nection				
common-use, opposite direction	common-use, opposite direction					Connector Kit for	or Brake Co	nnection	DV0PM20040	193
of motor shaft	of motor shaft				DV0P4170		RS485, RS	5232	DV0PM20024	183
							Safety		DV0PM20025	183
						Connector Kit	Interface		DV0P4350	184
0 * * 0UFD /For movable,\	0 * * 0VFD /For movable,\						External Se	cale	DV0PM20026	184
direction of	direction of						Encoder		DV0PM20010	184
\ motor shaft /	\ motor shaft		DV0P4283			Battery for Abs		ler	DV0P2990	194
MFMCA	MFMCA					Battery Box for			DV0P4430	194
0 * * 0UGD	0 * * 0VGD					Mounting	For A-frame		DV0PM20100	195
For movable, opposite direction	For movable, opposite direction					Bracket	For C-frame	,		195
of motor shaft	of motor shaft			DV0P228		Bracket	For movable,	,		
MFMCA	MFMCA			2 . 0. 220			of motor shaft		MFECA0 * * 0MJE	172
0 * * 0WFD	0**0XFD					Encoder	For movable,		MFECA0 * * 0MKE	172
/ For fixed, \	/ For fixed, \					Cable	direction of m			
direction of motor shaft	direction of motor shaft					(with Battery Box)	For fixed, dire motor shaft	ection of	MFECA0 * * 0TJE	172
MFMCA	MFMCA		DV0P4282		DV0PM20042		For fixed, opp	osite		170
0 * * 0WGD	0 * * 0XGD						direction of m		MFECA0 * * 0TKE	172
/ For fixed,	/ For fixed, \						For movable, of motor shaft		MFECA0 * * 0MJD	172
opposite direction of motor shaft	opposite direction of motor shaft					Encoder	For movable,			-
		_				Cable	direction of m		MFECA0 * * 0MKD	172
MFMCA	MFMCA					(without	For fixed, dire	ection of	MFECA0 * * 0TJD	172
0 * *7UFD /Movable/fixed	0 * * 7VFD /Movable/fixed\					(Battery Box)	motor shaft			
common-use,	common-use,						For fixed, opp direction of m		MFECA0 * * 0TKD	172
direction of motor shaft	direction of motor shaft						For movable,	direction	MFMCA0 * * 0UFD	176
MFMCA	MFMCA		DV0P4281				of motor shaf			170
0 * * 7UGD	0 * * 7 VGD			DV0P227		Motor Cable /For MHMF	For movable, direction of m		MFMCA0 * * 0UGD	176
/ Movable/fixed	/ Movable/fixed \					(200 W to 1.0 kW)	For fixed, dire			470
common-use, opposite direction	common-use, opposite direction			DV0P220	DV0P4170	(without Brake)	motor shaft		MFMCA0 * * 0WFD	176
of motor shaft	\ of motor shaft /					,	For fixed, opp		MFMCA0 * * 0WGD	176
					DV0PM20042		direction of m For movable,			
MFMCA	MFMCA						of motor shaft		MFMCA0 * * 0VFD	178
0 * * 0UFD /For movable,\	0 * * 0VFD /For movable,\					Motor Cable	For movable,	opposite		170
direction of	direction of					(For MHMF	direction of m		MFMCA0 * * 0VGD	178
\ motor shaft /	\ motor shaft /					(200 W to 1.0 kW)	For fixed, dire motor shaft	ection of	MFMCA0 * * 0XFD	178
MFMCA	MFMCA					(with Brake)	For fixed, opp	osite		/
0 * * 0UGD	0 * * 0VGD		DV0P4283				direction of m	otor shaft	MFMCA0 * * 0XGD	178
For movable, opposite direction	For movable, opposite direction			D) (2D		Motor Ochle	Movable/fixed			
of motor shaft	of motor shaft			DV0P228		Motor Cable	common-use, of motor shaf		MFMCA0 * *7UFD	175
				DV0P220	7	(50 W, 100 W)	Movable/fixed			-
	MFMCA 0 * * 0XFD					(without Brake)	common-use,	, opposite	MFMCA0 * *7UGD	175
0 * * 0WFD / For fixed, \	U * * UXFD / For fixed, \				DV0PM20042		direction of m			─
direction of motor shaft	direction of motor shaft					Motor Cable	Movable/fixed common-use,		MFMCA0 * *7VFD	178
						(For MHMF	of motor shaf			
MFMCA	MFMCA			DV0P228		(50 W, 100 W)	Movable/fixed			4-0
0 * * 0WGD	0 * * 0XGD		DV0P4284		DV0P4220	(with Brake)	common-use, direction of m		MFMCA0 * *7VGD	178
opposite direction of motor shaft	opposite direction of motor shaft			DV0P222			50 Ω 25 W		DV0P4280	197
(or motor shall)						Extornal	100 Ω 25 W		DV0P4280 DV0P4281	197
Movable : F	or application	where the ca	ble is moval	ole.	٦	External regenerative	25 Ω 50 W		DV0P4281 DV0P4282	197
	or application					resistor				197
				r abott - O		10313101	50 Ω 50 W		DV0P4283	
	motor shaft/C	phosite allec	non or moto	i shart : Ca			30 Ω 100 V		DV0P4284	197
						Reactor			, DV0P222	196
									7, DV0P228	<u> </u>
						Noise Filter		DV0P417 DV0P422	0, DV0PM20042	236
						Surgo Aboort			0, DV0P1450	227
						Surge Absorbe Ferite Core		DV0P419 DV0P146		237 238

Table of Part Numbers and Options

100 mm sq. or more 0.85 kW to 5.0 kW

IP67 motor Encorder connector (Large size JL10) type

		Moto	or			Driver					
	Power	Output	Part No	Rating/	A6 SF series Multi fanction type	A6 SG series RS485 communication		Power capacity	JL10 (La One-touch	rge size) lock type	
otor series	supply	(W)	Note)1	Spec. Dimensions	(Pulse, analog, full-closed)	A6 SE series	Frame	rated load			
				(page)		Basic (Pulse signal input) Note)2, Note)4		(kVA)	Use in the absolute system (with battery box)	Use in the Incremental system (without battery box)	
	Single phase/	1000	MSMF102L1 6 MSMF102L1 8	61	MDDLT55SF	MDDLN55S \diamondsuit	<u>م</u>	Approx.			
	3-phase 200 V	1500	MSMF152L1 🗌 6 MSMF152L1 🗌 8	62	MDDLT55SF		D-frame	2.3			
Large size		2000	MSMF202L1	63	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA 0 * * 0EPE	MFECA 0 * * 0EPD	
3000 r/min	3-phase	3000	MSMF302L1	64	MFDLTA3SF	MFDLNA3S◇		Approx. 4.5	MFECA 0 * * 0ESE	MFECA 0 * * 0ESD	
101	200 V	4000	MSMF402L1 🗌 6 MSMF402L1 🗌 8	65	MFDLTB3SF	MFDLNB3S	F-frame	Approx.	0	0	
		5000	MSMF502L1 🗌 6 MSMF502L1 🗌 8	66	MFDLTB3SF			7.5			
	Single phase/	1000	MDMF102L1 🗌 6 MDMF102L1 🗌 8	89	MDDLT45SF		D frame	Approx. 1.8			
MDMF	3-phase 200 V	1500	MDMF152L1 🗌 6 MDMF152L1 🗌 8	90	MDDLT55SF		D-liame	Approx. 2.3			
Large size JL10 type		2000	MDMF202L1 🗌 6 MDMF202L1 🗌 8	91	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA 0 * *0EPE	MFECA 0 * * 0EPD	
2000 r/min	3-phase	3000	MDMF302L1 6 MDMF302L1 8	92	MFDLTA3SF	MFDLNA3S◇		Approx. 4.5	MFECA 0 * * 0ESE	MFECA 0 * * 0ESD	
IFUI	200 V	4000	MDMF402L1 6 MDMF402L1 8	93	MFDLTB3SF		F-frame	Approx.	•	•	
		5000	MDMF502L1 6 MDMF502L1 8	94	MFDLTB3SF			7.5			
	Single phase/	850	MGMF092L1	95	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 1.8			
MGMF Large size	3-phase 200 V	1300	MGMF132L1 🗌 8	96	MDDLT55SF	MDDLN55S◇		Approx. 2.3	MFECA	MFECA	
/Low speed/\		1800	MGMF182L1 6 MGMF182L1 8	97	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8	0 * * 0EPE	0 * * 0EPD	
type /	3-phase 200 V	2900	MGMF292L1	98	MFDLTB3SF	MFDLNB3S◇	E /	Approx.	MFECA 0 * *0ESE	MFECA 0 * *0ESD	
IP67		4400	MGMF442L1 🗌 6 MGMF442L1 🗌 8	99	MFDLTB3SF	MFDLNB3S◇	F-frame	7.5			
	Single phase/	1000	MHMF102L1 🗌 6 MHMF102L1 🗌 8	83	MDDLT45SF	MDDLN45S	D-frame	Approx. 1.8			
	3-phase 200 V	1500	MHMF152L1 🗌 6 MHMF152L1 🗌 8	84	MDDLT55SF	MDDLN55S		Approx. 2.3			
MHMF Large size JL10 type 2000 r/min	2 phase	2000	MHMF202L1	85	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8	MFECA 0 * * 0EPE MFECA 0 * * 0ESE	MFECA 0 * * 0EPD MFECA 0 * * 0ESD	
1607	200 V	3000	MHMF302L1 6 MHMF302L1 8	86	MFDLTA3SF	MFDLNA3S◇		Approx. 4.5			
		4000	MHMF402L1 🗌 6 MHMF402L1 🗌 8	87	MFDLTB3SF	MFDLNB3S	F-frame	Approx.			
		5000	MHMF502L1 🗌 6 MHMF502L1 🗌 8	88	MFDLTB3SF			7.5			
	MSMF Large size JL10 type 3000 r/min IP67 MDMF Large size JL10 type 2000 r/min IP67 MGMF Large size JL10 type (Low speed/ High torque) type 1500 r/min IP67 MHMF Large size JL10 type 2000 r/min IP67	SupplySupplySingle phase/ 3-phase 200 VMSMF Large size JL10 type3000 r/min IP67IP67Single phase/ 3-phase 200 VMDMF Large size JL10 type 2000 r/min IP67MGMF Large size JL10 type 2000 r/min IP67MGMF Large size JL10 type 200 vMGMF Large size JL10 type Low speed/ High torque type 1500 r/min IP67Single phase/ 3-phase 200 vMGMF Large size JL10 type loo r/min IP67Single phase/ 3-phase 200 v	botor seriesPower supplyOutput supplybotor seriesSingle phase 200 v1000Anote 3000 r/min 1P67Single 3-phase 200 v10003000 r/min 1P67Single phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 200 v1000Anote 3-phase 3-phase 200 v1000Anote 3-phase	otor seriessupply(w)Note)1MSMFSingle phase/ 3-phase 200 V1000MSMF102L1 6 MSMF152L1 83-phase 200 V1500MSMF202L1 6 MSMF202L1 6 MSMF202L1 83000 r/min IP673-phase 200 V2000MSMF202L1 6 MSMF302L1 83-phase 200 V1000MSMF302L1 6 MSMF302L1 83-phase 200 V1000MSMF302L1 6 MSMF302L1 8MDMF Large size 200 V1000MDMF102L1 6 MDMF152L1 82000 r/min IP67Single phase/ 200 V1000MDMF102L1 6 MDMF102L1 6 MDMF102L1 6 MDMF102L1 8200 r/min IP67Single phase/ 200 V1000MDMF202L1 6 MDMF302L1 8MGMF Large size JL10 type (Low speed) type type 1500 r/min IP67Single phase 200 V850MGMF032L1 6 MGMF132L1 8MGMF Large size JL10 type type 2000 r/min IP67Single phase 200 V850MGMF132L1 6 MGMF132L1 8MGMF Large size JL10 type type 2000 r/min IP67Single phase 200 V1300MGMF132L1 6 MGMF132L1 6 MGMF132L1 6MHMF Large size JL10 type type 2000 r/min IP67Single phase 200 V1000MHMF102L1 6 MGMF132L1 6MHMF Large size JL10 type 2000 r/min IP67Single aphase 200 V1000MHMF102L1 6 MGMF132L1 8MHMF Large size JL10 type 2000 r/min IP67Single aphase 200 VMHMF102L1 6 MGMF132L1 8MHMF Large size JL10 type 2000 r/min IP67Singl	botor series Power supply output (W) Part No. Note)1 Rating/ Spec. Note)1 MSMF Single 3-phase/ 3-phase/ 2000 1000 MSMF102L1 6 61 MSMF102L1 8 61 1500 MSMF102L1 6 62 J1010 type 3-phase/ 2000 2000 MSMF102L1 6 63 J1010 type 3000 MSMF202L1 6 63 J2000 MSMF402L1 6 64 MSMF402L1 8 64 J2000 MSMF402L1 6 65 MSMF402L1 6 66 Sonon MSMF402L1 6 66 J1010 type 3000 MSMF402L1 6 69 J1010 type 1000 MDMF102L1 6 90 J1010 type 3-phase 1000 MDMF102L1 6 91 J1010 type 3-phase 2000 MDMF302L1 6 92 J100 type 3-phase 850 MGMF032L1 6 93 J1010 type 3-phase 850 MGMF032L1 6 94 J1010 type 3-phase 1300 MGMF132L	bor series Power supply Dutput (W) Part No. Note)1 Rainy/ Spec. S	Power series Power supply Output (W) Part No. Note)1 Bating/ spec. (putes appad) (pute signal input) (pute signal i	xtor series Power supply output (W) Part No. Note)1 Ratery Resc. Dimension (gene) A6 SS series (Pise, analog (Pise, analog) A6 SS series Resc. (Pise, analog) Frame A6 SS series (Pise, analog) Frame A6 SS series MSMF Large size JL 10 type 3000 //min (P67 Single (Pise, analog) MDDL755SF MDDLN55SS Drame MSMF Large size JL 10 type 3000 //min (P67 1000 MSMF102L1 6 62 MDDL75SSF MDDLN5SSS Drame MDMF Large size JL 10 type 3000 //min (P67 3-phase 200 V 2000 MSMF302L1 6 63 MEDLT3SSF MEDLN83SS Frame MDMF Large size JL 10 type 3000 //min (P67 Single phase(- 3-phase 200 V 1000 MDMF102L1 6 64 MFDLTB3SF MEDLN83SS Prame MGMF Large size JL 10 type 3000 //min (P67 Single phase(- 3-phase 200 V 1000 MDMF102L1 6 90 MDDL74SSF MDLN4SSS Prame MGMF 1967 Single phase(- 3-phase 200 V 1000 MDMF302L1 6 91 MEDLT3SSF MEDLN3SS Prame MGMF32L1 6 93 MFDLTB3SF <td< td=""><td>bror series Power Duty Part No. Noie)1 Rating Sacc (name) (name) A6 SF series (name)(name) (name) A6 SG series (name)(nam</td><td>Poter series Power supply Dodget (m) Pert No. (m) Istim Spc. (m) As S S series (m) As S G series (m) Power (m) Power (m) Power (m) Encoder Ca (m) Power (m) Power (m)</td><td>Proves Dots Part No. Novisitie Multi fanction type And SF series Constrained type Proves Encoder Cable Nublik) Interesting fance Multi fanction type Proves Encoder Cable Nublik) Interesting fance Interesting fance</td></td<>	bror series Power Duty Part No. Noie)1 Rating Sacc (name) (name) A6 SF series (name)(name) (name) A6 SG series (name)(nam	Poter series Power supply Dodget (m) Pert No. (m) Istim Spc. (m) As S S series (m) As S G series (m) Power (m) Power (m) Power (m) Encoder Ca (m) Power (m) Power (m)	Proves Dots Part No. Novisitie Multi fanction type And SF series Constrained type Proves Encoder Cable Nublik) Interesting fance Multi fanction type Proves Encoder Cable Nublik) Interesting fance Interesting fance

Note)1 🗌 : Represents the motor specifications. (refer to "Model designation" P.18.)

Note) 2 \diamond : Represents the driver specifications. (refer to "Model designation" P.18.)

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

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

Mater Oal	arts					Title	Part No.	P
	le Note)3,5	-			Interface Cable	;	DV0P4360	1
	.10						DV0P4120	1
One-touch	lock type						DV0P4121	1
JL04 scre	ewed type	Esternel			Interface Conv	ersion Cable	DV0P4130	1
		External	Reactor	Noise Filter			DV0P4130	1
		Regenerative	(Single phase / 3-phase)					_
without	with	Resistor					DV0P4132	1
Brake	Brake				Connector Kit for Power	A-frame Single to Doub		1
					Supply Input	D-frame type	DV0PM20033	1
MFMCD	MFMCA		DV0P228 / DV0P222		Connection	E-frame A-frame to	DV0PM20044	1
0**2EUD	0**2FUD	DV0P4284		DV0P4220	Connector Kit for Motor	D-frame	DV0PM20034	1
MFMCD	MFMCA		DV0PM20047 / DV0P222		Connection Connector Kit	E-frame	DV0PM20046	1
0**2ECD	0**2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043	for Regenera- tive Resistor	E-frame	DV0PM20045	1
MFMCA	MFMCA		DV0P224				DV0PM24587	
0 * * 3EUT	0 * * 3FUT						MSMF 1.0 kW to 2.0 kW MDMF 1.0 kW to 2.0 kW	
		DV0P4285		DV0P3410			MGMF 0.85 kW to 1.8 kW	
MFMCA	MFMCA	×2 in parallel	DV0P225	010410		without Brake	MHMF 1.0 kW, 1.5 kW	
0 * * 3ECT	0 * * 3FCT		DV0F220			Dianoa Diano	DV0PM24588	
	07701						MSMF 3.0 kW to 5.0 kW MDMF 3.0 kW to 5.0 kW	
 					Connector		MGMF 2.9 kW, 4.4 kW	1
MFMCD	MFMCA		DV0P228 / DV0P222		Kit for Motor/		MHMF 2.0 kW to 5.0 kW	'
0**2EUD	0**2FUD	DV0P4284		DV0P4220	Encoder Con-		DV0PM24589	
			DV0PM20047 / DV0P222		nection		MSMF 1.0 kW to 2.0 kW MDMF 1.0 kW to 2.0 kW	
MFMCD	MFMCA						MGMF 0.85 kW to 1.8 kW	
0 * * 2ECD	0 * * 2FCD	DV0P4285	DV0P223	DV0PM20043		with Brake	MHMF 1.0 kW, 1.5 kW	
		Note)6	DV0F223	D V 0F IVIZUU43		WITT DIAKE	DV0PM24590	
							MSMF 3.0 kW to 5.0 kW	
MFMCA	MFMCA		DV0P224				MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW	
0**3EUT	0 * * 3FUT	D)/00/00-					MHMF 2.0 kW to 5.0 kW	
		DV0P4285		DV0P3410		RS485, RS23	2 DV0PM20024	•
MFMCA	MFMCA	×2 in parallel	DV0P225			Safety	DV0PM20025	1
0 * * 3ECT	0 * * 3FCT		2 101 220		Connector Kit	Interface	DV0P4350	•
						External Scale		•
						Encoder	DV0PM20026	
MFMCD	MFMCA	D)/00/00	DV0P228 / DV0P221	D) (CD (CT)	Dottom: f== A!			-
0**2EUD	0**2FUD	DV0P4284		DV0P4220	Battery for Abs		DV0P2990	+
			DV0PM20047 / DV0P222		Battery Box for	ADSOIULE ENCO	der DV0P4430	
MFMCD	MFMCA				Mounting	D-frame	DV0PM20101	•
0**2ECD	0 * * 2FCD	DV0P4285	DV0P223	DV0PM20043	Bracket	One trust 1		+
					Encoder	Une-touch lock	type MFECA0 * * 0EPE	
MFMCA	MFMCA		D\/0D334		Cable /with	Screwed type		.
0 * * 3EUT	0 * * 3FUT	DV0P4285	DV0P224		(Battery Box)	Screwed type	MFECA0 * * 0ESE	
				DV0P3410	Encoder	One-touch lock	type MFECA0 * * 0EPD	+
MFMCA	MFMCA	×2 in parallel	DV0P225		Cable			+
0 * * 3ECT	0 * * 3FCT		D V 01 223		(without)	Screwed type	MFECA0 * * 0ESD	
 					Battery Box			
MFMCD	MFMCA		DV0P228 / DV0P222			One-touch lock	type MFMCD0 * * 2EUD) ·
0**2EUD	0 * * 2FUD					Screwed type	MFMCD0 * * 2ECD) 1
		DV0P4284		DV0P4220	Motor Cable		type MFMCE0 * * 2EUD	_
MFMCD	MFMCA		DV0PM20047 / DV0P222		(without Brake)		MFMCE0 * * 2ECD	_
0**2ECD	0 * * 2FCD						type MFMCA0 * * 3EUT	
MFMCE	MEMOE					Screwed type	MFMCA0 * * 3ECT	_
							type MFMCA0 * * 2FUD	_
0**2EUD	0 * * 2FUD	DV0P4285					· · ·	_
		Note)6	DV0P223	DV0PM20043		Screwed type		
MFMCE	MFMCE	, ,			Motor Cable		type MFMCE0 * * 2FUD	
0**2ECD	0 * * 2FCD				(with Brake)	Screwed type	MFMCE0 * * 2FCD	_
							type MFMCA0 * * 3FUT	_
MFMCA	MFMCA		DV0P224			Screwed type	MFMCA0 * * 3FCT	
0**3EUT	0 * * 3FUT	DV0P4285		1	External	30 Ω 100 W	DV0P4284	Γ
		x2 in parallel		DV0P3410	regenerative	30 Ω 100 W 20 Ω 130 W	DV0P4284 DV0P4285	
MFMCA	MFMCA		DV0P225		resistor	20 12 130 W	DV0F4200	
0 * * 3ECT	0 * * 3FCT						P222, DV0P223	
					Reactor	DVC	P224, DV0P225	1
Note)5 Use	e of JL10 type	encoder cable	s and motor cables er	hable one-		DVC	P228, DV0PM20047	
,	• •					DVC	P4220, DV0PM20043	
			tional screwed type N	ining and	Noise Filter		P3410	2
JL0-	4V type cable	es can also be	used.		Surge Absorbe		P4190, DV0P1450	2
					-			
Note)6 For	other possible	e combinations	s. refer to P.197		Ferite Core		P1460	

Note)6 For other possible combinations, refer to P.197.

238

A6 Family

E Series

Imformation

MINAS A6 Family 30 GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Ferite Core

DV0P1460

100 mm sq. or more 0.85 kW to 5.0 kW **Table of Part Numbers** and Options

IP67 motor Encorder connector (Small size JN2) type

			Moto	or			Driver					
		D		Berthie	Rating/	A6 SF series Multi fanction type	A6 SG series RS485 communication		Power capacity / at \	JN2 (Sm	able Note)3 nall size) n lock type)	
N	lotor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions	(Pulse, analog, full-closed	A6 SE series	Frame	(rated)	23-bit A	bsolute	
					(page)	· · ·	Basic (Pulse signal input) Note)2, Note)4		(kVA)	Use in the absolute system (with battery box)	Use in the Incremental system (without battery box)	
		Single phase/	1000	MSMF102L1 🗌 5 MSMF102L1 🗌 7	61 102	MDDLT55SF	MDDLN55S	-	Approx.			
	MSMF	3-phase 200 V	1500	MSMF152L1 5 MSMF152L1 7	62 102	MDDLT55SF		D-frame	2.3			
Low i	Small size JN2 type		2000	MSMF202L1 5 MSMF202L1 7	63 102	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA	MFECA	
Low inertia	3000 r/min	3-phase	3000	MSMF302L1 5 MSMF302L1 7	64 102	MFDLTA3SF	MFDLNA3S◇		Approx. 4.5	0 * * 0ETE	0**0ETD	
	IP67	200 V	4000	MSMF402L1 5 MSMF402L1 7	65 102	MFDLTB3SF	MFDLNB3S	F-frame	Approx.			
			5000	MSMF502L1 5 MSMF502L1 7	66 102	MFDLTB3SF	MFDLNB3S◇		7.5			
		Single phase/	1000	MDMF102L1 5 MDMF102L1 7	89 113	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 1.8			
	MDMF	3-phase 200 V	1500	MDMF152L1 🗌 5 MDMF152L1 🗌 7	90 113	MDDLT55SF		D-rrame	Approx. 2.3			
	Small size JN2 type		2000	MDMF202L1 5 MDMF202L1 7	91 113	MEDLT83SF	MEDLN83S	E-frame	Approx. 3.8	MFECA	MFECA	
	2000 r/min IP67	3-phase	3000	MDMF302L1	92 113	MFDLTA3SF	MFDLNA3S◇		Approx. 4.5	0 * * 0ETE	0**0ETD	
M	1201	200 V	4000	MDMF402L1 5 MDMF402L1 7	93 113	MFDLTB3SF	MFDLNB3S	F-frame	Approx.			
Middle inertia			5000	MDMF502L1 5 MDMF502L1 7	94 113	MFDLTB3SF			7.5			
nertia		Single phase/	850	MGMF092L1 5 MGMF092L1 7	95 114	MDDLT45SF	MDDLN45S◇	D-frame	Approx. 1.8			
	MGMF Small size	3-phase 200 V	1300	MGMF132L1 5 MGMF132L1 7	96 114	MDDLT55SF	MDDLN55S◇	Diname	Approx. 2.3			
	JN2 type (Low speed/)		1800	MGMF182L1	97 114	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8	MFECA 0 * * 0ETE	MFECA 0 * * 0ETD	
	High torque type 1500 r/min	3-phase 200 V	2900	MGMF292L1	98 114	MFDLTB3SF	MFDLNB3S	F-frame	Approx.	00212	00210	
	IP67		4400	MGMF442L1 🗌 5 MGMF442L1 🗌 7	99 114	MFDLTB3SF	MFDLNB3S◇	I -rrame	7.5			
		Single phase/	1000	MHMF102L1 🗌 5 MHMF102L1 🗌 7	83 112	MDDLT45SF	MDDLN45S	D-frame	Approx. 1.8			
		3-phase 200 V	1500	MHMF152L1 🗌 5 MHMF152L1 🗌 7	84 112	MDDLT55SF	MDDLN55S	2-name	Approx. 2.3			
High inertia	MHMF Small size JN2 type 2000 r/min IP67	3-phase	2000	MHMF202L1 🗌 5 MHMF202L1 🗌 7	85 112	MEDLT83SF	MEDLN83S◇	E-frame	Approx. 3.8	MFECA 0 * *0ETE	MFECA 0 * * 0ETD	
	1501	200 V	3000	MHMF302L1 5 MHMF302L1 7	86 112	MFDLTA3SF	MFDLNA3S◇		Approx. 4.5			
			4000	MHMF402L1 5 MHMF402L1 7	87 112	MFDLTB3SF	MFDLNB3S	F-frame	Approx.			
			5000	MHMF502L1 5 MHMF502L1 7	88 112	MFDLTB3SF	MFDLNB3S		7.5			
Nat		anraaant		notor specifications	("Madal desired						

Note)2 \diamond : Represents the driver specifications. (refer to "Model designation" P.18.)

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

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

only incremental system can be used in combination.

Optional pa	arts					T :41		D (N	
Motor Cab	le Note)3,5				Interface Cable	Title		Part No. DV0P4360	Pag
	.10				Interface Cable	;			182
/One-touch								DV0P4120	182
	ewed type							DV0P4121	182
 (JL04 SCIE	weu type /	External	Reactor	Noise Filter	Interface Conv	ersion Ca	ble	DV0P4130	182
		Regenerative	(Single phase / 3-phase)	Noise Filter				DV0P4131	182
without	with	Resistor	(enigio prices / e prices)				T=: .	DV0P4132	182
Brake	Brake				Connector Kit for Power	A-frame to	Single row type Double row	DV0PM20032	18
					Supply Input	D-frame	type	DV0PM20033	18
					Connection	E-frame		DV0PM20044	18
MFMCD 0**2EUD	MFMCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220	Connector Kit for Motor	A-frame D-frame	to	DV0PM20034	186
			DV0PM20047 / DV0P222		Connection	E-frame		DV0PM20046	186
MFMCD 0 * * 2ECD	MFMCA 0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043	Connector Kit for Regenera-	E-frame		DV0PM20045	18
		11010/0			tive Resistor			D) (0 D) (0 (7 0 0	
MFMCA	MFMCA		DV0P224					DV0PM24583 MSMF 1.0 kW to 2.0 kW	
0**3EUT	0 * * 3FUT							MDMF 1.0 kW to 2.0 kW	189
		DV0P4285		DV0P3410				MGMF 0.85 kW to 1.8 kW	
MFMCA	MFMCA	×2 in parallel	DV0P225			without B	Brake	MHMF 1.0 kW, 1.5 kW	
0 * * 3ECT	0 * * 3FCT							DV0PM24584 MSMF 3.0 kW to 5.0 kW	
								MDMF 3.0 kW to 5.0 kW	190
			DV0P228 / DV0P222		Connector			MGMF 2.9 kW, 4.4 kW MHMF 2.0 kW to 5.0 kW	
MFMCD	MFMCA	DV0P4284		DV0P4220	Kit for Motor/ Encoder Con-			DV0PM24585	
0**2EUD	0 * * 2FUD	DV0P4264		DV0P4220	nection			MSMF 1.0 kW to 2.0 kW	
			DV0PM20047 / DV0P222					MDMF 1.0 kW to 2.0 kW	18
MFMCD	MFMCA	DV0P4285						MGMF 0.85 kW to 1.8 kW MHMF 1.0 kW, 1.5 kW	
0**2ECD	0 * * 2FCD	Note)6	DV0P223	DV0PM20043		with Brak	ke	DV0PM24586	
		11010/0						MSMF 3.0 kW to 5.0 kW	
MFMCA	MFMCA		DV0P224					MDMF 3.0 kW to 5.0 kW	19
0 * * 3EUT	0 * * 3FUT		-					MGMF 2.9 kW, 4.4 kW MHMF 2.0 kW to 5.0 kW	
		DV0P4285		DV0P3410		RS485, I	RS232	DV0PM20024	18
MFMCA	MFMCA	×2 in parallel	DV0P225	21010110		Safety		DV0PM20025	18
0 * * 3ECT	0 * * 3FCT		2101 220		Connector Kit	Interface		DV0P4350	184
						External		DV0PM20026	184
			DV0P228 / DV0P221			Encoder		DV0PM20010	18
MFMCD	MFMCA	DV0P4284	DV01 2207 DV01 221	DV0P4220	Battery for Abs			DV0P2990	19
0**2EUD	0 * * 2FUD	DV0F4204		DV0F4220	Battery Box for			DV0P4430	19
MEMOD	MFMCA		DV0PM20047 / DV0P222		Mounting		Enoodor		
MFMCD 0**2ECD	0 * * 2FCD	D) (0D 4005	D) (0D000	D) (0D) 4000 40	Bracket	D-frame		DV0PM20101	19
0**2ECD	0**2FCD	DV0P4285	DV0P223	DV0PM20043	Encoder				
MFMCA	MFMCA				Cable				47
0 * * 3EUT	0 * * 3FUT		DV0P224		(with			MFECA0 * *0ETE	17
0**3L01	0**3101	DV0P4285		DV0P3410	Battery Box	One-touc	h lock type		
MFMCA	MFMCA	×2 in parallel		DV0F3410	Encoder	0.10 1000			
0 * * 3ECT	0 * * 3FCT		DV0P225		Cable (without			MFECA0 * * 0ETD	17
0**5201	0**0101				(Battery Box)				
MFMCD	MFMCA		DV0P228 / DV0P222			One-touc	h lock type	MFMCD0 * * 2EUD	17
0 * * 2EUD	0* *2FUD		DV0P228 / DV0P222			Screwed		MFMCD0 * * 2ECD	-
		DV0P4284		DV0P4220	Motor Cable			MFMCE0 * * 2EUD	
MFMCD	MFMCA		DV0PM20047 / DV0P222		(without Brake)			MFMCE0 * * 2ECD	
0**2ECD	0 * * 2FCD				(MFMCA0 * * 3EUT	
MFMCE	MFMCE					Screwed		MFMCA0 * * 3ECT	
								MFMCA0 * * 2FUD	
0 * * 2EUD	0 * * 2FUD	DV0P4285						MFMCA0 * * 2FOD MFMCA0 * * 2FCD	-
MFMCE	MFMCE	Note)6	DV0P223	DV0PM20043	Mater Orth	Screwed		MFMCA0 * * 2FCD MFMCE0 * * 2FUD	_
0 * * 2ECD	0 * * 2FCD				Motor Cable (with Brake)				-
					(with Diake)	Screwed		MFMCE0 * * 2FCD	
MFMCA	MFMCA		DV0P224					MFMCA0 * * 3FUT	18
0 * * 3EUT	0 * * 3FUT				Estern 1	Screwed	туре	MFMCA0 * * 3FCT	18
0~~3EUT	0~~5FUT	DV0P4285		DV0P3410	External	30 Ω 100	w	DV0P4284	40
MFMCA	MFMCA	×2 in parallel		DV0F3410	regenerative resistor	20 Ω 130		DV0P4285	19
0 * * 3ECT	0 * * 3FCT		DV0P225		100101			D\/0D222	
0.4.4.3001	0.4.4.0001				Reactor			2, DV0P223 4, DV0P225	19
		motor c-bl-			ACCOLOI			3, DV0PM20047	13
,	• ·		enable one-touch lock					20, DV0PM20043	
Cor	ventional scr	ewed type JL04	4V type cables can als	so be used.	Noise Filter		DV0P341		23
Note)6 For	other possible	e combinations	s, refer to P.197.		Surge Absorbe	r		0, DV0P1450	23
	-				Ferite Core		DV0P146		23

A6 Family

MINAS A6 Family 32

238

Ferite Core

DV0P1460

Driver Specifications

A6 SF series (Multifanction type) Position, Speed, Torque, Full-closed type

			Maii	n circuit	Single phase 100 V $^{+10}_{-15}$ % to 120 V $^{+10}_{-15}$ % 50 Hz / 60 Hz								
		100 V	Conti	ol circuit	Single phase $100 \text{ V} + 10 \% - 15 \%$ to $120 \text{ V} + 10 \% - 15 \%$ 50 Hz / 60 Hz								
	Input		Main	A-frame to D-frame	Single/3-phase 200 V ^{+10 %} _{-15 %} to 240 V ^{+10 %} _{-15 %} 50 Hz / 60 Hz								
	Input power	200 V	circuit	E-frame, F-frame	Single/3-phase 200 V +10 % -15 % to 240 V +10 % -15 % 50 Hz / 60 Hz								
		200 V	Control	A-frame to D-frame	Single phase 200 V ^{+10 %} 15 % to 240 V ^{+10 %} 15 % 50 Hz / 60 Hz								
			circuit	E-frame, F-frame	Single phase 200 V ^{+10 %} _{-15 %} to 240 V ^{+10 %} _{-15 %} 50 Hz / 60 Hz								
			temp	perature	Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation ^{*1})								
	En	/ironment	hu	midity	Both operating and storage : 20 % to 85 %RH (free from condensation ^{*1})								
			AI	titude	Lower than 1000 m								
			Vit	oration	5.88 m/s ² or less, 10 Hz to 60 Hz								
	Co	ntrol metho	d		IGBT PWM Sinusoidal wave drive								
	End	coder feedk	back		 23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using the product as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder. Instead, set the parameter Pr0.15 to [1] (default). 								
Basic Spe	Ext	ernal scale	e feedba	ck	A/B phase, initialization signal defferential input. Manufacturers that support serial communication scale: Fagor Automation S.Coop., Magnescale Co., Ltd., Mitutoyo Corporation Nidec Sankyo Corporation, Renishaw plc								
Specifications		Control si	anal	Input	General purpose 10 inputs The function of general-purpose input is selected by parameters.								
suc	Pa	Control Si	griai	Output	General purpose 6 outputs The function of general-purpose output is selected by parameters.								
	ralle		anol	Input	3 inputs (16-bit A/D : 1 input, 12-bit A/D : 2 inputs)								
	- 10 10	Analog si	ynai	Output	2 outputs (Analog monitor: 2 output)								
	Parallel I/O connector	Pulse sigr		Input	2 inputs (Photo-coupler input, Line receiver input) Both open collector and line driver interface can be connected. High speed line driver interface can be connected.								
		i uise sigi		Output	4 outputs (Line driver: 3 output, open collector: 1 output) Line driver output for encoder pulses (A/B/Z signal) or external feedback pulses (EXA/ EXB/EXZ signal) open collector output also available for Z or EXZ signal.								
				USB	USB interface to connect to computers for parameter setting or status monitoring.								
		mmunicatio	on	RS232	1:1 communication								
				RS485	1: n communication (max 31)								
	Saf	ety functio	n		A dedicated connector is provided for Functional Safety.								
	Fro	nt panel			(1) 5 keys (2) LED (6-digit)								
	Re	generation			A-frame, B,-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)								
	Dyr	namic brak	е		A-frame to F-frame: Built-in								
	Co	ntrol mode			Switching among the following 7 mode is enabled,(1) Position control(2) Speed control(3) Toque control(4) Position/Speed control(5) Position/Torque control(6) Speed/Torque control(7) Full-closed control								

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

Co	ntrol input			 (1) servo-ON input (2) Alarm clear input (3) Gain switch input (4) Positive direction drive inhibit input (5) Negative direction drive inhibit input (6) Forced alarm input (7) Inertia ratio switch input
Co	ntrol outpu	ut		 Servo-alarm output (2) Servo-ready output (3) External brake off output At-speed output (5) Torque in-limit output (6) Zero speed detection output Warning output (8) Alarm clear attribute output (9) Servo on status output
	Control ir	-		 (1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input (6) Control mode switch input
	Control o			(1) In-position output (2) Position command ON/OFF output
		Max. command	pulse frequency	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by
Pos		Input pulse sig	inal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)
Position control	Pulse input	Electronic gea (Division/Multi command puls	plication of	Applicable scaling ratio: $1/1000$ times to 8000 times Any value of $1 - 2^{30}$ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above.
으		Smoothing filte	ər	Primary delay filter or FIR type filter is adaptable to the command input
	Analog	Torque limit co	mmand input	Individual torque limit for both positive and negative direction is enabled.
	input	Torque feed for	orward input	Analog voltage can be used as torque feed forward input.
	Two-dear	ee-of-freedom		Available
		tion control		Available
		ation suppressi	on function	Available
	Control in			 (1) Internal command velocity selection input (2) Speed zero clamp input (3) Velocity command sign input (4) Control mode switch input
	Control o	utout		(1) Speed coincidence output (2) Velocity command ON/OFF output
	Control o			Velocity command input with analog voltage is possible. Scale setting and com-
Speed	Analog	Velocity comm	and input	mand polarity vary depending on parameters. (6 V/Rated rotational speed: Defaul
ec	input	Torque limit co	mmand input	Individual torque limit for both positive and negative direction is enabled.
2	1	Torque feed for		Analog voltage can be used as torque feed forward input.
contro	Internal v	elocity comman		Switching the internal 8 speed is enabled by command input.
<u>o</u>		/down function	-	Individual setup of acceleration and deceleration is enabled,
				with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.
	Speed ze			Internal velocity command can be clamped to 0 with speed zero clamp input.
<u> </u>		ee-of-freedom	control	Available
Torque	Control in	•		Speed zero clamp input, torque command sign input, control mode switch input.
hh	Control o	utput		(1) Speed coincidence output (2) Speed in-limit output
contro	Analog input	Torque comma	and input	Torque command input with analog voltage is possible. Scale setting and command polarity vary depending on parameters. (3 V/rated torque Default)
<u></u>	Speed lin	nit function		Speed limit value with parameter is enabled.
	Control ir	iput		 (1) Deviation counter clear input (2) Command pulse inhibit input (3) Command division/multiplication switch input (4) Anti-vibration switch input (5) Torque limit switch input
	Control o			
1		utput		(1) In-position output (2) Position command ON/OFF output
			oulse frequency	(1) In-position output (2) Position command ON/OFF output 500 kpps (Optocoupler interface) 8 Mpps (When using line receiver input multiplied by
		Max. command		500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by
Full-close	Pulse input	Max. command	gnal format	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encode
Full-closed co		Max. command Input pulse sig Electronic gea (Division/Multi	gnal format Ir plication of se)	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution p
Full-closed cont		Max. command Input pulse sig Electronic gea (Division/Multi command puls	gnal format Ir plication of se) er	 500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above.
Full-closed control	input	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte	gnal format plication of se) er ommand input	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. Primary delay filter or FIR type filter is adaptable to the command input
Full-closed control	input Analog input Setting ra	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co	gnal format plication of se) er ommand input orward input	500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2 ³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. Primary delay filter or FIR type filter is adaptable to the command input Individual torque limit for both positive and negative direction is enabled.
Full-closed control	input Analog input Setting ra division/n	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co Torque feed fo	gnal format plication of se) er ommand input orward input scale	 500 kps (Optocoupler interface), 8 Mps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. 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. 1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2²³ for the numerator and in the range of 1 to 2²³ for the denominator, this product should be used within the
Full-closed control	input Analog input Setting ra division/n Two-degr	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co Torque feed for ange of external nultiplication	gnal format plication of se) er ommand input orward input scale	 500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. 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. 1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2²³ for the numerator and ir the range of 1 to 2²³ for the denominator, this product should be used within the aforementioned range.
	input Analog input Setting ra division/n Two-degr	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co Torque feed fo ange of external nultiplication	gnal format plication of se) er ommand input orward input scale	 500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. 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. 1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2²³ for the numerator and in the range of 1 to 2²³ for the denominator, this product should be used within the aforementioned range. Available The load inertia is identified in real time by the driving state of the motor operating adoption of the set of the set of the motor operating adoption of the set of the set of the denominator.
	input Analog input Setting ra division/n Two-degr Anti-vibra Auto tunin	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co Torque feed fo ange of external nultiplication	gnal format plication of se) er ommand input orward input scale	 500 kpps (Optocoupler interface), 8 Mpps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. 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. 1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2²³ for the numerator and in the range of 1 to 2²³ for the denominator, this product should be used within the aforementioned range. Available The load inertia is identified in real time by the driving state of the motor operating agroup to the command given by the controlling device and set up support software
Full-closed control Common	input Analog input Setting ra division/n Two-degr Anti-vibra Auto tunin Division o	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co Torque feed for ange of external nultiplication ree-of-freedom of tion control	gnal format plication of se) er ommand input orward input scale	 500 kps (Optocoupler interface), 8 Mps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. 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. 1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2²³ for the numerator and in the range of 1 to 2²³ for the denominator, this product should be used within the aforementioned range. Available The load inertia is identified in real time by the driving state of the motor operating ac cording to the command given by the controlling device and set up support software "PANATERM". The gain is set automatically in accordance with the rigidity setting.
	input Analog input Setting ra division/n Two-degr Anti-vibra Auto tunin	Max. command Input pulse sig Electronic gea (Division/Multi command puls Smoothing filte Torque limit co Torque feed for ange of external nultiplication ree-of-freedom of tion control	gnal format plication of se) prommand input prward input scale control pack pulse	 500 kps (Optocoupler interface), 8 Mps (When using line receiver input multiplied by Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction) Applicable scaling ratio: 1/1000 times to 8000 times Any value of 1 - 2³⁰ can be set for both numerator (which corresponds to encode resolution) and denominator (which corresponds to command pulse resolution p motor revolution), but the combination has to be within the range shown above. 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. 1/40 times to 1280 times Although ratio of the encoder pulse (numerator) and external scale pulse (denominator) can be arbitrarily set in the range of 1 to 2²³ for the numerator and in the range of 1 to 2²³ for the denominator, this product should be used within the aforementioned range. Available Available The load inertia is identified in real time by the driving state of the motor operating ac cording to the command given by the controlling device and set up support software "PANATERM". The gain is set automatically in accordance with the rigidity setting. Set up of any value is enabled (encoder pulses count is the max.). Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and

A6 SG series (RS485 communication type) A6 SE series (Besic type) Position control only type **Driver Specifications**

	_	Main circuit		Single phase 100 V +10 % to -15 %	120 V +10 % -15 %	50 Hz / 60 Hz
	100 V	Control circuit		Single phase 100 V $^{+10}_{-15}$ % to	120 V +10 % -15 %	50 Hz / 60 Hz
Input	200 V	Main circuit	A-frame to D-frame	Single/3-phase 200 V $^{+10}_{-15}$ % to	240 V <mark>+10 %</mark> –15 %	50 Hz / 60 Hz
Input power			E-frame to F-frame	Single/3-phase 200 V $^{+10}_{-15}$ % to	240 V +10 % -15 %	50 Hz / 60 Hz
		Control circuit	A-frame to D-frame	Single phase 200 V $^{+10}_{-15}$ % to	240 V +10 % -15 %	50 Hz / 60 Hz
			E-frame to F-frame	Single phase $200 \vee +10 \% -15 \%$ to	240 V ^{+10 %} –15 %	50 Hz / 60 Hz
		temperature		Ambient temperature: 0 °C to 55 °C (free from freezing) Storage temperature: -20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation ^{*1})		
En	vironment	humidity		Both operating and storage : 20 % to 85 %RH (free from condensation ^{*1})		
		Altitude		Lower than 1000 m		
		Vibration		5.88 m/s ² or less, 10 Hz to 60 Hz		
Basic	Control method			IGBT PWM Sinusoidal wave drive		
Spe	Encoder feedback			 23-bit (8388608 resolution) absolute encoder, 7-wire serial * When using the product as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder. Instead, set the parameter Pr0.15 to [1] (default). 		
	Operational ac	Input		General purpose 10 inputs The function of general-purpose input is selected by parameters.		
Parallel I/O	Control si	gnai	Output	General purpose 6 outputs The function of general-purpose input is selected by parameters.		
	Analog signal		Input	None		
connec			Output	2 outputs (Analog monitor: 2 output)		
ctor	Pulse signal		Input	2 inputs (Photo-coupler input, Line receiver input)		
			Output	4 outputs (Line driver: 3 output, open collector: 1 output)		
USB			USB	USB interface to connect to computers for parameter setting or status monitoring.		
	mmunication	on	RS232	1:1 communication	* RS485, RS	* RS485, RS232 connector is not installed
			RS485	1: n communication (max 31)	on A6 SE series.	
Front panel				(1) 5 keys (2) LED (6-digit)		
Regeneration Dynamic brake				A-frame, B,-frame: no built-in regenerative resistor (external resistor only) C-frame to F-frame: Built-in regenerative resistor (external resistor is also enabled.)		
				Built-in		
Control mode				(1) Position control (2) Internal velocity command (3) Position/Internal velocity command		

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

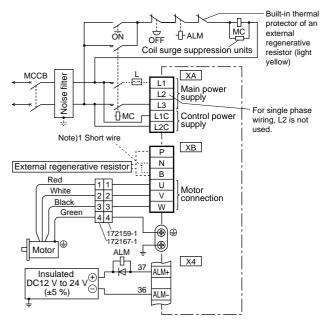
		Control inp	ut	(1) servo-ON input(2) Alarm clear input(3) Gain switch input(4) Positive direction drive inhibit inputect.		
		Control out	tput	In-Position output etc.		
			Max. command pulse frequency	500 kpps (Optocoupler interface) 8 Mpps (Line receiver interface)		
	Position control	Pulse	Input pulse signal format	Differential input. Selectable by parameter. ([1]Positive/Negative pulse [2]A/B quadrature [3]Pulse/Direction)		
	i control	input	Electronic gear (Division/Multiplica- tion of command pulse)	Applicable scaling ratio: $1/1000$ times to 8000 times Any value of $1 - 2^{30}$ can be set for both numerator (which corresponds to encoder resolution) and denominator (which corresponds to command pulse resolution per motor revolution), but the combination has to be within the range shown above.		
			Smoothing filter	Primary delay filter or FIR type filter is adaptable to the command input		
		Anti-vibration control		Available		
		Two-degree-of-freedom control		Available		
Ē		Control input		Internal command speed selections 1-3, speed-zero clamp, etc.		
Function		Control output		At speed etc.		
	Speed	Internal velocity command		Switching the internal 8 speed is enabled by command input.		
	Speed control	Soft-start/down function		Individual setup of acceleration and deceleration is enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled.		
		Zero-speed clamp		Internal velocity command can be clamped to 0 with speed zero clamp input.		
		Two-degree-of-freedom control		Available		
		Auto tuning		The load inertia is identified in real time by the driving state of the motor operating ac- cording to the command given by the controlling device and set up support software "PANATERM". The gain is set automatically in accordance with the rigidity setting.		
	Corr	Division of encoder feedback pulse		Set up of any value is enabled (encoder pulses count is the max.).		
	Common	Protective function	Hard error	Over-voltage, under-voltage, over-speed, over-load, over-heat, over-current and encoder error etc.		
			Soft error	Excess position deviation, command pulse division error, EEPROM error etc.		
		Alarm data	trace back	Tracing back of alarm data is available		

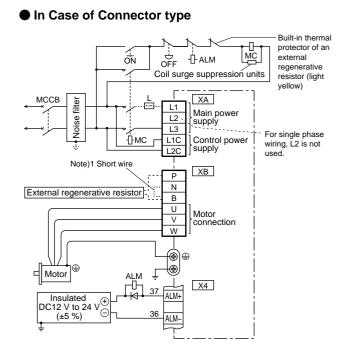
Wiring Diagram

Wiring to Connector, XA, XB, XC and Terminal Block

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

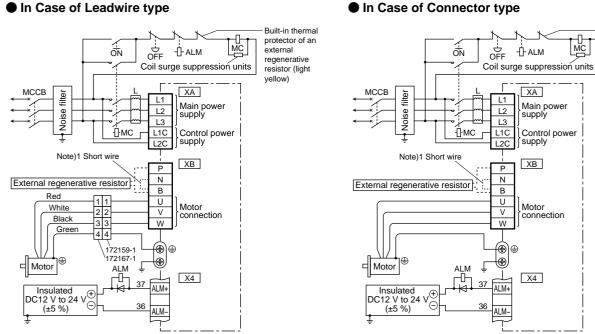
In Case of Leadwire type





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

In Case of Leadwire type



Built-in thermal protector of an external regenerative resistor (light vellow)

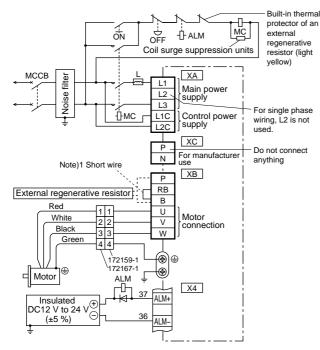
Note)1

		Built-in	Connection of the connector XB		
Frame No.	Short wire (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	without	 Connect an external regenerative resistor between P-B. 	 Always open between P-B. 	

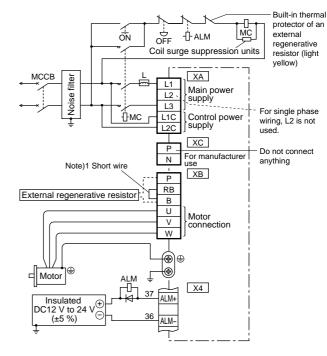
* Refer to P.169, P.170, Specifications of Motor connector.

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

In Case of Leadwire type



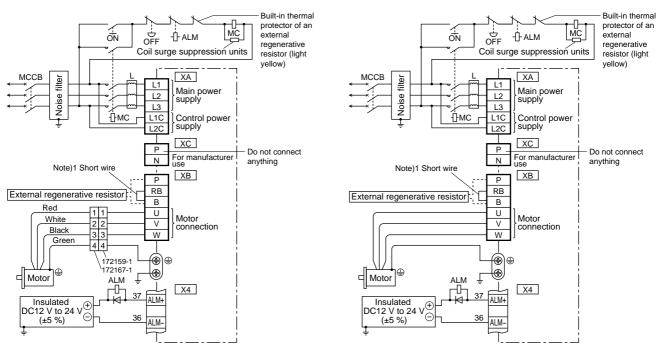
In Case of Connector type



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

In Case of Leadwire type

In Case of Connector type



Note)1

Fromo	Short wire	Built-in regenerative resistor	Connection of the connector XB		
Frame No.	(Accessory)		In case of using an external regenerative resistor	In case of not using an external regenerative resistor	
C-frame D-frame	with	with	 Remove the short wire accessory from between RB-B. Connect an external regenerative resistor between P-B. 	Shorted between RB-B with an attached short wire	

* Refer to P.169, P.170, Specifications of Motor connector.

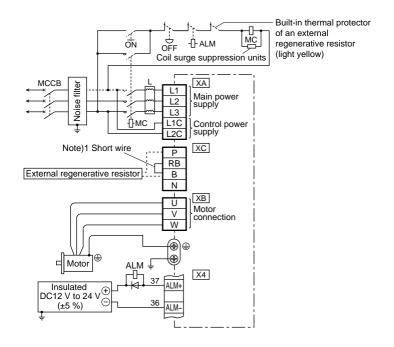
GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

ш

Wiring Diagram

Wiring to Connector, XA, XB, XC and Terminal Block

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

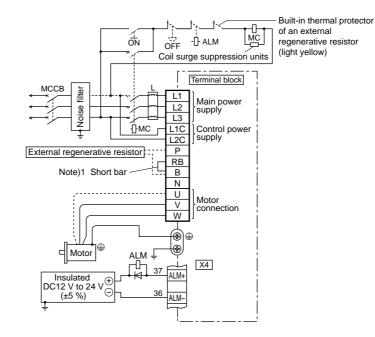


Note)1

F	Short wire	Built-in regenerative resistor	Connection of the connector XC		
Frame No.	(Accessory)		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 RB-B. Connect an external regenerative resistor between P-B. 	 Shorted between RB-B with an attached short wire 	

* Refer to P.170, Specifications of Motor connector.

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



Note)1

Fromo	Short bar	Built-in regenerative resistor	Connection of terminal block		
Frame No.	(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 RB-B. Connect an external regenerative resistor between P-B. 	Shorted between RB-B with an attached short bar	

* Refer to P.170, Specifications of Motor connector.

Safety Function

Wiring to the Connector, X3

* Excluding A6 SE, A6 SG Series

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

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

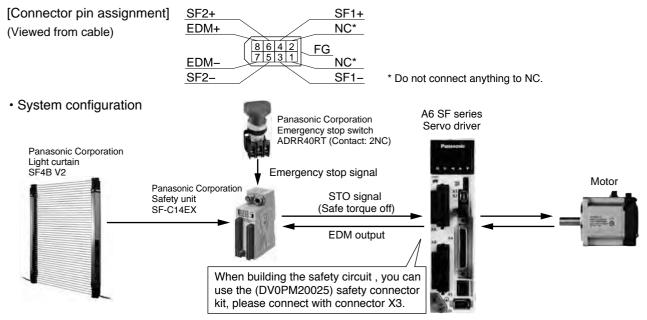
Outline Description of Safe Torque Off (STO)

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

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

Safety Precautions

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

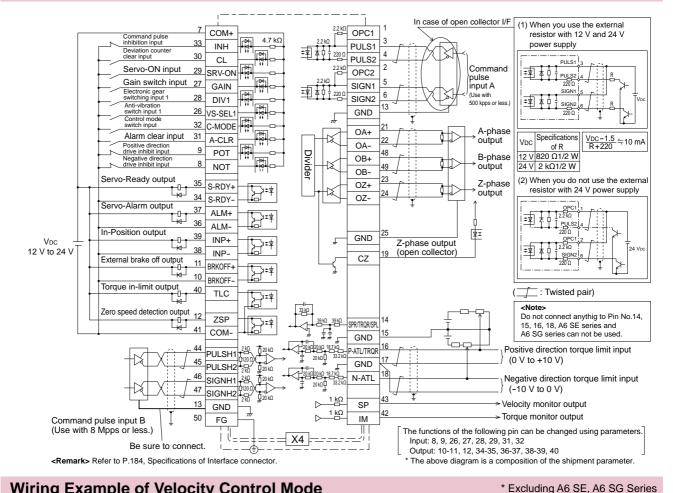


Panasonic Corporation Automotive & Industrial Systems Company http://panasonic.net/id/

Control Circuit Diagram

Wiring to the Connector, X4

Wiring Example of Position Control Mode



Wiring Example of Velocity Control Mode

COM+ Internal command speed selection 1 input Internal command speed _33_INTSPD1 4.7 kΩ election 2 input 30 INTSPD2 Servo-ON input 29 SRV-ON (____: Twisted pair) Gain switch input 27 GAIN **I**₩ rnal command speed ection 3 input Zero speed clamp input 26 ZEROSPDL OA+ ₹†♪ A-phase output Control mode switch input 32 C-MODE OA-Divider 48 OB+ **₽** Alarm clear input 31 A-CLR 印 B-phase output 49 OB-Positive direction drive inhibit input 9 POT 1+14 OZ+ **•**₩• Negative directio 8 ¢‡D Z-phase output NOT ΟZ Servo-Ready output 35 S-RDY+ ₽₽₽ 34 S-RDY-Servo-Alarm output Ī₹₹ 37 GND ALM+ 36 ALM-19 Z-phase output (open collector) CZ At-speed output 39 AT-SPEED+ VDC ≱≠≰ 38 AT-SPEED-12 V to 24 V Ć External brake off output 11 BRKOFF+ ¢ t₽ ¦>≠‡ 10 BRKOFF-33 kΩ Torque in-limit output <u>39 kΩ</u> 40 i <u>39</u>kΩ ₩-D-SPR/TROR/SP TLC Velocity command Ţ, 15 input (0 V to ± 10 V) GND Zero speed detection output 12 16 -ATI /TROF Positive direction torque ZSP ≯≠¢ 20 kΩ 41 limit input (0 V to +10 V) GND COM-N-ATL Negative direction torque Ωģ limit input (-10 V to 0 V) 1 <u>k</u>Ω SP Velocity monitor output 1 <u>k</u>Ω Torque monitor output 50 Ī FG \triangleright IM - X4 The functions of the following pin can be changed using parameters. Input: 8, 9, 26, 27, 28, 29, 30, 31, 32, 33 Output: 10-11, 12, 34-35, 36-37, 38-39, 40

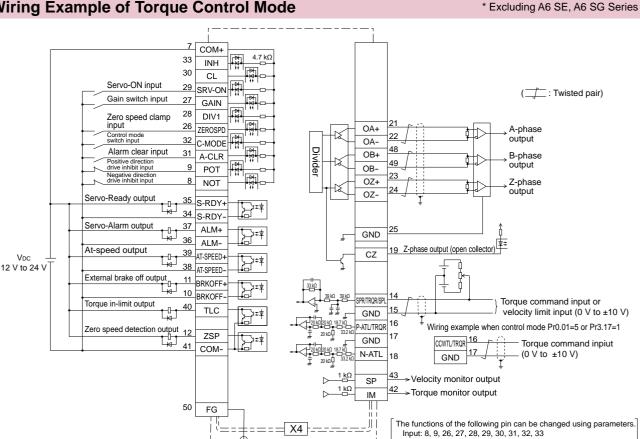
<Remark> Refer to P.184, Specifications of Interface connector

The above diagram is a composition of the shipment parameter.

ш

Control Circuit Diagram Wiring to the Connector, X4

Wiring Example of Torque Control Mode



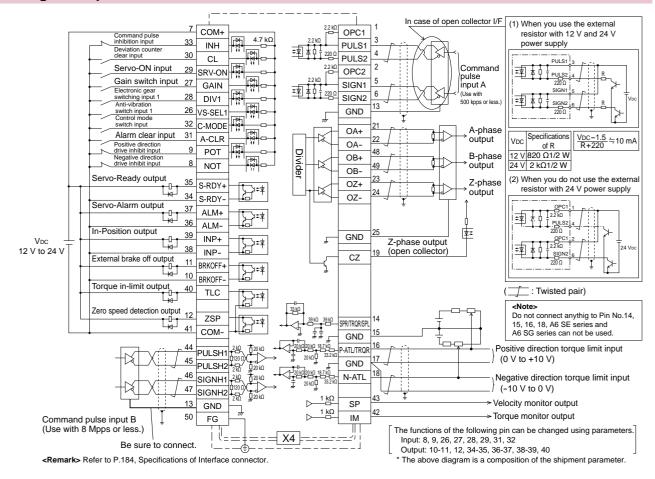
Wiring Example of Full-closed Control Mode

<Remark> Refer to P.184, Specifications of Interface connector

* Excluding A6 SE, A6 SG Series

Output: 10-11, 12, 34-35, 36-37, 38-39, 40

The above diagram is a composition of the shipment parameter.



Wiring to the Connector, X5

* Excluding A6 SE, A6 SG Series

Control Circuit Diagram

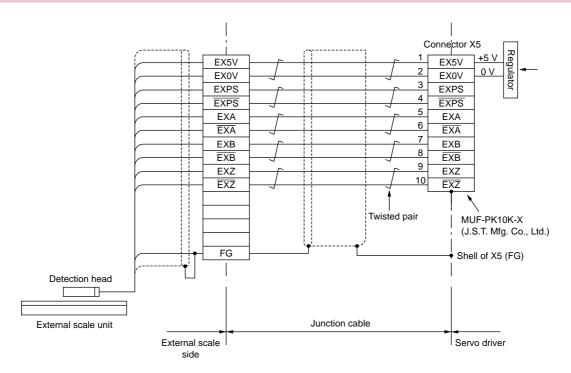
Applicable External Scale

Applicable External Scale	Manufacturer	Model No.	Resolution [µm]	Maximum speed (m/s) ^{*1}	
Parallel type (AB-phase)	General	-	Maximum speed after 4 × multiplication : 4 Mpps		
	Nidec Sankyo Corporation	PSLH	0.1	6	
		SL700-PL101RP/RHP	0.1	10	
Serial type		SL710-PL101RP/RHP	0.1	10	
(Incremental)	Magnescale Co., Ltd.	SR75	0.01 to 1	3.3	
		SR85	0.01 to 1	3.3	
		BF1	0.001/0.01	0.4/1.8	
		LIC2197P/LIC2199P	0.05/0.1	10	
	HEIDENHAIN	AIN LIC4193P/LIC4195P LIC4197P/LIC4199P		10	
	Manager Carlot	SR77	0.01 to 1	3.3	
	Magnescale Co., Ltd.	SR87	0.01 to 1	3.3	
		AT573A	0.05	2.5	
Serial type	Mitutoyo Corporation	ST778A(L)	0.1	5	
(Absolute)			0.001	0.4	
	Renishaw plc	RESOLUTE	0.05	20	
			0.1	40	
		SAP / SVAP / GAP	0.05	2.5	
	FAGOR AUTOMATION	LAP	0.1	2	
	FAGUR AUTUMATION	SAP10/SVAP10/GAP10	0.01	3	
		LAP10	0.01	2	

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

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

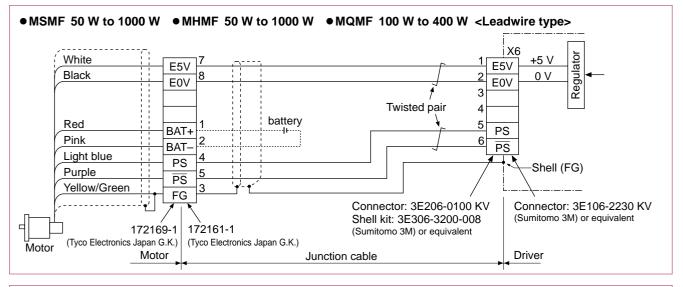
Wiring Diagram of X5

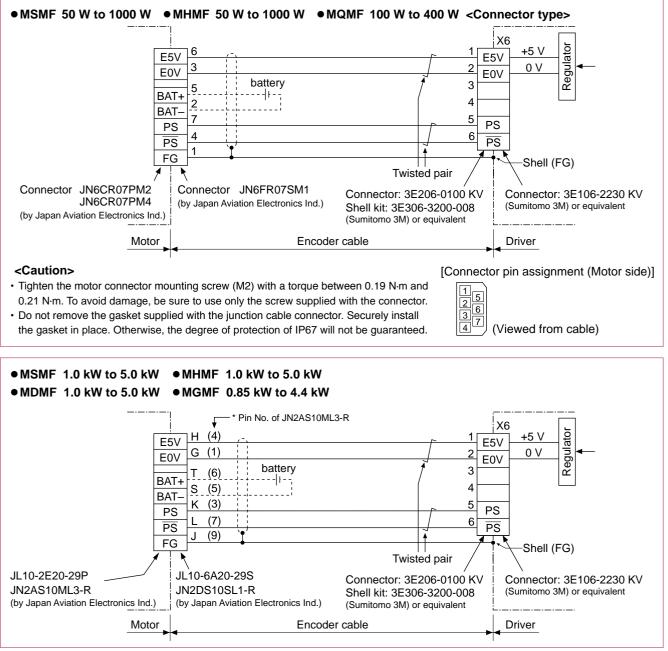


Control Circuit Diagram Wiring to the Connector, X6

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

* When use a multi-turn data.

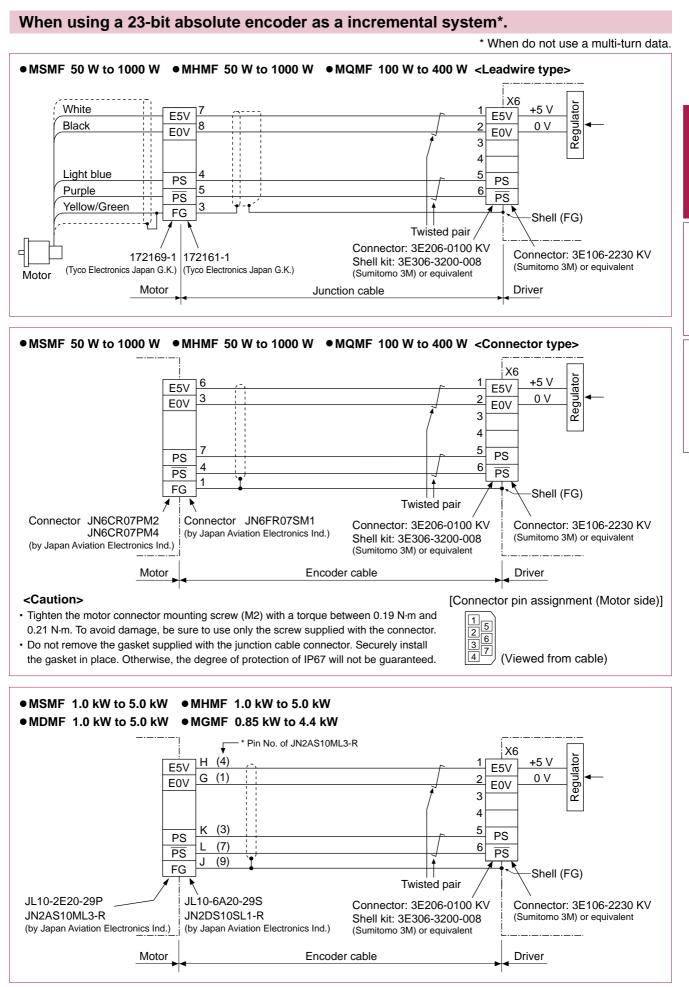




[Connector pin assignment] Refer to P.169, P.170 "Specifications of Motor connector".

45 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de



[Connector pin assignment] Refer to P.169, P.170 "Specifications of Motor connector".

A6 Family

ш

Series

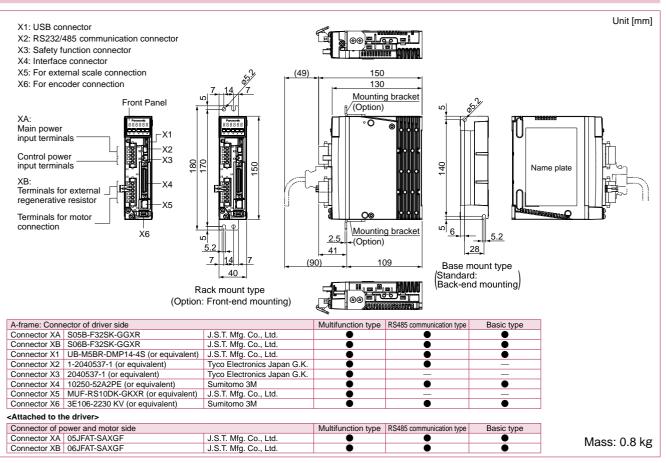
Imformation

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

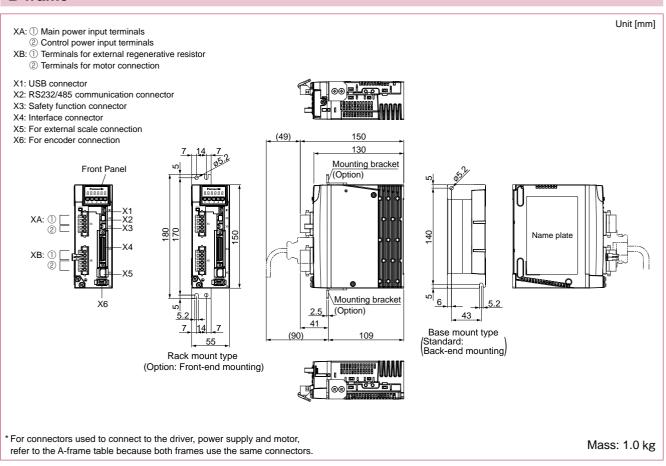
Dimensions of Driver

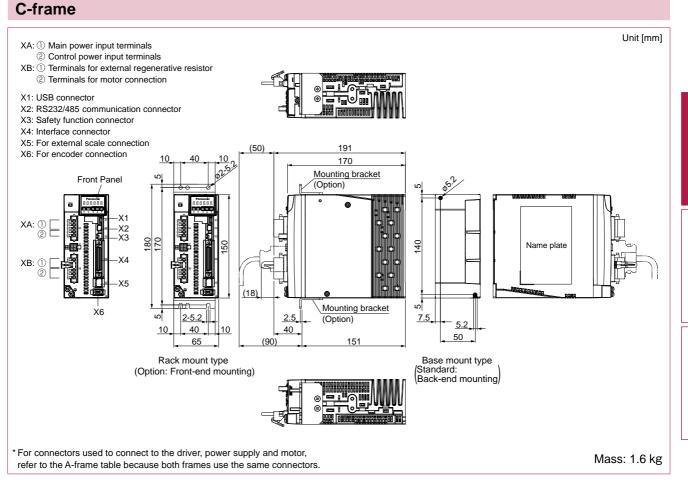
* All dimensions shown in this catalog are for the A6 SF series, but outer dimensions are the same as the A6 SE series. For appearance, refer to P. 19 and P. 20.

A-frame

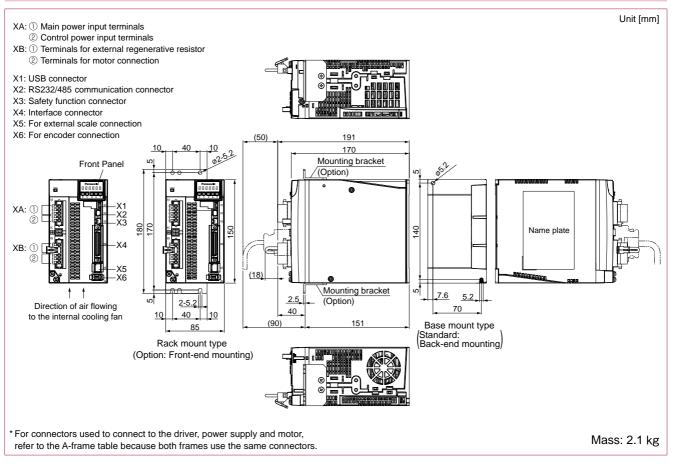


B-frame





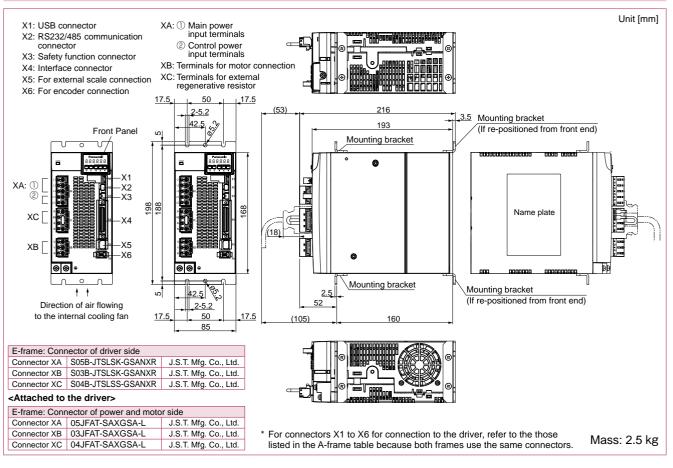
D-frame (200 V)



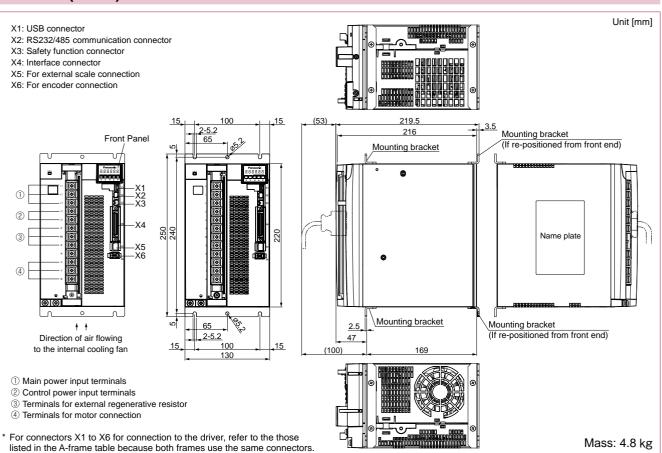
Dimensions of Driver

* All dimensions shown in this catalog are for the A6 SF series, but outer dimensions are the same as the A6 SE series. For appearance, refer to P.19 and P.20.

E-frame (200 V)



F-frame (200 V)



Features/Lineup

Features

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

Motor Lineup



Max. speed : 3000 r/min Rated speed: 1500 r/min Rated output: 0.85 kW to 4.4 kW Enclosure : IP67: Connector type



MHMF **High inertia** Max. speed : 6500 r/min 6000 r/min (750 W,1000 W) Rated speed: 3000 r/min Rated output: 50 W to 1000 W Enclosure: IP65: Leadwire type IP67: Connector type



Rated speed: 2000 r/min Rated output: 1.0 kW to 5.0 kW Enclosure : IP67: Connector type



MHMF **High inertia** Max. speed : 3000 r/min Rated speed : 2000 r/min Rated output: 1.0 kW to 5.0 kW Enclosure : IP67: Connector type

A6 Family

Motor Specifications

Motor Contents

MSMF

50 W to 5.0 kW	P.5′
----------------	------

MQMF 100 W to 400 W P.67

MHMF 50 W to 5.0 kW P.73

MDMF 1.0 kW to 5.0 kW P.89

MGMF 0.85 kW to 4.4 kW P.95

Dimensions

MSMF (50 W to 1000 W) Connector typeP.100

MSMF (1.0 kW to 5.0 kW) Small size connectorP.102

MQMF (100 W to 400 W) Leadwire type with protective lip/ with oil sealP.103

MQMF (100 W to 400 W) Connector typeP.104

MHMF (750 W, 1000 W) Leadwire type with oil seal.....P.106

MHMF (50 W to 1000 W) Leadwire type with protective lip/ with oil sealP.107

MHMF (50 W to 1000 W) Connector typeP.109

MHMF (1.0 kW to 5.0 kW) Small size connector P.112

MDMF (1.0 kW to 5.0 kW) Small size connector P.113

MGMF (0.85 kW to 4.4 kW) Small size connectorP.114

Motor Specification Description

Environmental Conditions... P.165 Notes on [Motor specification] page..... P.165 Permissible Load at Output Shaft..... P.166 Built-in Holding Brake P.167

ш Series

Motor Specifications

100 V **MSMF** 50 W

Specifications

		AC100 V			
Motor model *1			IP65	MSMF5AZL1	
		Multifunction type			MADLT01SF
Applicable	Model No.	RS48	5 communication ty	ype *2	MADLN01SG
driver	110.	Basio	type ^{*2}		MADLN01SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у	(k	(VA)	0.4
Rated output				(W)	50
Rated torque			1)	l∙m)	0.16
Continuous sta	all torqu	ie	1)	l∙m)	0.16
Momentary Ma	ax. pea	k torqı	1) eu	l∙m)	0.48
Rated current			(A(rr	ns))	1.1
Max. current			(A(c	o-p))	4.7
Regenerative	brake		Without optior	n	No limit Note)2
frequency (time	es/min)	Note)1	lote)1 DV0P4280		No limit Note)2
Rated rotation	al spee	d	(r/r	min)	3000
Max. rotationa	l speed		(r/r	min)	6000
Moment of ine	rtia		Without brake		0.026
of rotor (×10 ⁻⁴	kg∙m²)		With brake		0.029
Recommender ratio of the loa				lote)3	30 times or less
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
	Re	solutic	on per single tur	n	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

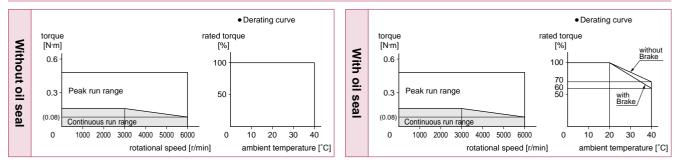
1 -	,
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

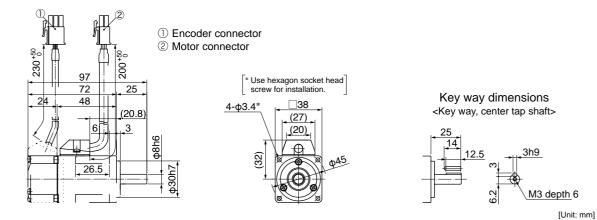
Torque characteristics (at AC100 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

<without Brake>

Mass: 0.32 kg



For connector type IP67 motors, refer to P.100.

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

Specifications

		AC200 V		
Motor model *1			IP65	MSMF5AZL1
		Multifunction type		MADLT05SF
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG
driver	110.	Basic	type ^{*2}	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	50
Rated torque			(N·m)	0.16
Continuous sta	all torqu	ie	(N·m)	0.16
Momentary Ma	ax. pea	k torqu	ue (N·m)	0.48
Rated current			(A(rms))	1.1
Max. current			(A(o-p))	4.7
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4281	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.026
of rotor (×10 ⁻⁴	kg∙m²)		With brake	0.029
Recommender ratio of the loa			30 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

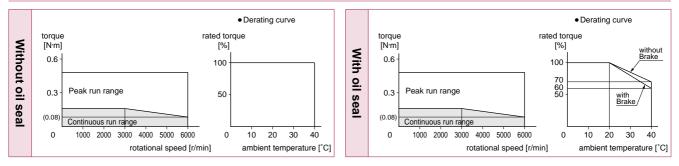
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

Permissible load (For details, refer to P.166)

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

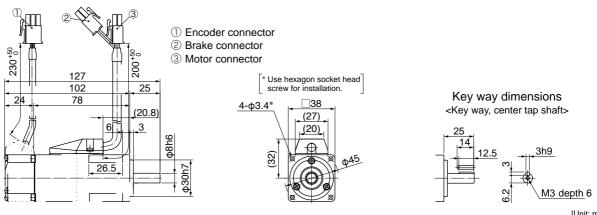
- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





For connector type IP67 motors, refer to P.100.

• 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]

Motor Specifications

100 V **MSMF** 100 W

[Low inertia] 38 mm sq.]

Specifications

					AC100 V
Motor model *1	IP65			MSMF011L1	
		Multi	Multifunction type		MADLT11SF
Applicable	Model No.	RS48	5 communication	type *2	MADLN11SG
driver	110.	Basio	type *2		MADLN11SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у		(kVA)	0.4
Rated output				(W)	100
Rated torque				(N·m)	0.32
Continuous sta	all torqu	ie		(N·m)	0.32
Momentary Ma	ax. pea	k torqu	le	(N·m)	0.95
Rated current			(A(rms))	1.6
Max. current (A(o-p))			(o-p))	6.9	
Regenerative brake			Without opti	on	No limit Note)2
frequency (times/min) Note)1		Note)1	DV0P4280		No limit Note)2
Rated rotation	al spee	d	(1	r/min)	3000
Max. rotationa	l speed		(1	r/min)	6000
Moment of ine	rtia		Without brake		0.048
of rotor (×10 ⁻⁴ kg·m ²)		With brake		0.051	
Recommended moment of inertia ratio of the load and the rotor Not			Note)3	30 times or less	
Rotary encode	er speci	ficatio	ns ^{⁺3}		23-bit Absolute
Resolution per single turn			ırn	8388608	

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

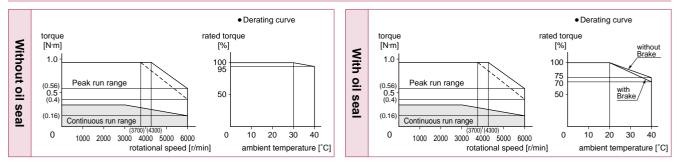
-	,
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

<without brake>



① Encoder connector ② Motor connector 22 4 230 200 117 Use hexagon socket head screw for installation. 92 25 Key way dimensions 24 68 38 4-φ3.4* <Key way, center tap shaft> (40.8) (27) (20) 6 3 **Φ8h6** 3h9 8 φ45 46.5 **D**30h7 M3 depth 6 [Unit: mm]

For connector type IP67 motors, refer to P.100.

• 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 model *1	IP65			MSMF012L1
		Multi	function type	MADLT05SF
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG
driver		Basic	c type *2	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	100
Rated torque			(N·m)	0.32
Continuous sta	all torqu	ie	(N·m)	0.32
Momentary Ma	ax. peal	k torqı	ue (N·m)	0.95
Rated current			(A(rms))	1.1
Max. current (A			(A(o-p))	4.7
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4281	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.048
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.051	
Recommended moment of inertia ratio of the load and the rotor				30 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolution pe			on per single turn	8388608

Motor Specifications

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

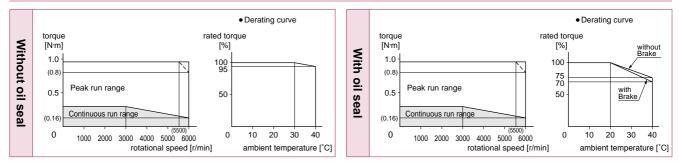
Static friction torque (N·m)	0.294 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

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

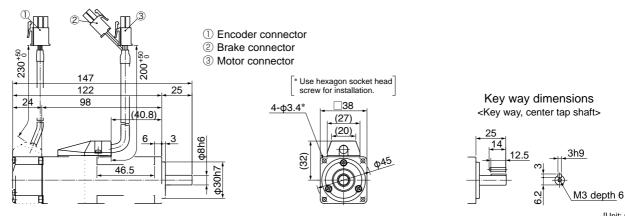
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





For connector type IP67 motors, refer to P.100.

• 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.

Mass: 0.68 kg

[Unit: mm]

Motor Specifications

100 V **MSMF** 200 W

Specifications

					AC100 V
Motor model *1	IP65			MSMF021L1	
		Multi	Multifunction type		MBDLT21SF
Applicable	Model No.	RS48	5 communication	type *2	MBDLN21SG
driver	110.	Basio	type ^{*2}		MBDLN21SE
	Fram	e sym	bol		B-frame
Power supply	capacit	у		(kVA)	0.5
Rated output				(W)	200
Rated torque				(N·m)	0.64
Continuous sta	Continuous stall torque (N·m)				0.64
Momentary Ma	Momentary Max. peak torque (N·m)				1.91
Rated current			(A(rms))	2.5
Max. current (A(o-p)			(o-p))	10.6	
Regenerative brake W			Without option	on	No limit Note)2
frequency (times/min) Note)1		DV0P4283		No limit Note)2	
Rated rotation	al spee	d	ı)	/min)	3000
Max. rotationa	l speed		(1	/min)	6000
Moment of ine	rtia		Without brake		0.14
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.17
Recommended moment of inertia ratio of the load and the rotor No			Note)3	30 times or less	
Rotary encode	er speci	ficatio	ns *3		23-bit Absolute
Resolution per single turn				ırn	8388608

• Brake specifications (For details, refer to P.167) (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

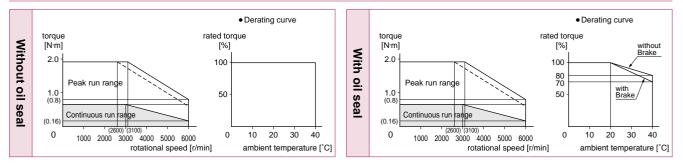
• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

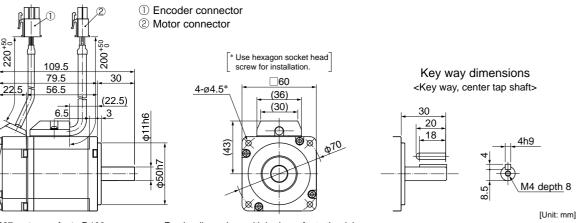
Mass: 0.82 kg

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



Dimensions





For connector type IP67 motors, refer to P.100.

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

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

Specifications

				AC200 V
Motor model *1	IP65			MSMF022L1
		Multi	function type	MADLT15SF
Applicable	Model	RS48	5 communication type *2	MADLN15SG
driver	110.	Basic	type ^{*2}	MADLN15SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	200
Rated torque			(N·m)	0.64
Continuous sta	all torqu	ie	(N·m)	0.64
Momentary Ma	ax. pea	k torqı	ue (N·m)	1.91
Rated current			(A(rms))	1.5
Max. current (A(o-p))			6.5	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.14
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.17
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Resolution per single turn			8388608

Motor Specifications

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

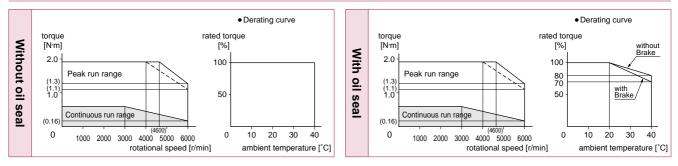
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

Permissible load (For details, refer to P.166)

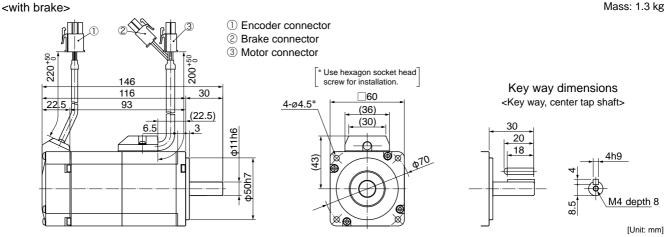
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For connector type IP67 motors, refer to P.100.

• For the dimensions without brake, refer to the left page

Motor Specifications

100 V MSMF 400 W

Specifications

					AC100 V
Motor model *1	IP65			MSMF041L1	
		Multi	function type		MCDLT31SF
Applicable	Model No.	RS48	5 communication	type *2	MCDLN31SG
driver		Basic	type ^{*2}		MCDLN31SE
	Fram	e sym	bol		C-frame
Power supply	capacit	у	(kVA)	0.9
Rated output				(W)	400
Rated torque			(N∙m)	1.27
Continuous sta	all torqu	ie	(N∙m)	1.27
Momentary Ma	ax. pea	k torqu) eu	N∙m)	3.82
Rated current			(A(r	ms))	4.6
Max. current			(A(o-p))	19.5
Regenerative brake			Without optio	n	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4282		No limit Note)2
Rated rotation	al spee	d	(r/	/min)	3000
Max. rotationa	l speed		(r/	/min)	6000
Moment of ine	rtia		Without brake		0.27
of rotor (×10 ⁻⁴ kg·m ²)		With brake		0.30	
Recommended moment of inertia ratio of the load and the rotor				Note)3	30 times or less
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
Resolution per			on per single tu	rn	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

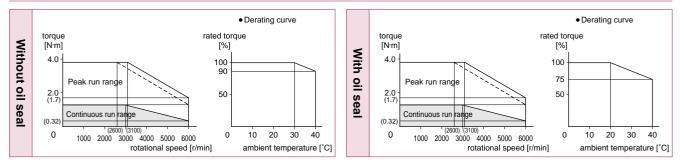
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

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)	98.0

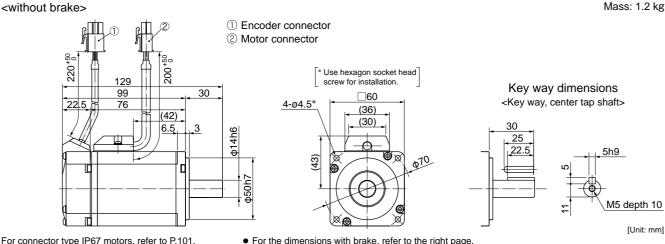
- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





For connector type IP67 motors, refer to P.101.

· 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 model *1	IP65			MSMF042L1
		Multi	function type	MBDLT25SF
Applicable	Model No.	RS48	5 communication type *	² MBDLN25SG
driver		Basic	type *2	MBDLN25SE
	Fram	e sym	bol	B-frame
Power supply	capacit	у	(kVA)	0.9
Rated output			(W)	400
Rated torque			(N·m)	1.27
Continuous sta	all torqu	ie	(N·m)	1.27
Momentary Ma	ax. pea	k torqı	ue (N·m)	3.82
Rated current			(A(rms))	2.4
Max. current (A(o-			(A(o-p))	10.2
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4283	No limit Note)2
Rated rotational speed		(r/min)	3000	
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.27
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.30
Recommended moment of inertia ratio of the load and the rotor Note				30 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolutio			on per single turn	8388608

Motor Specifications

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

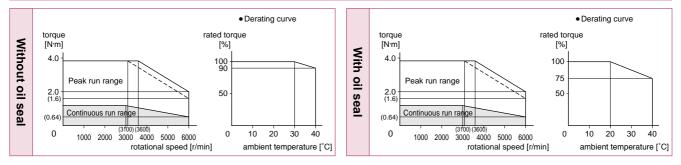
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

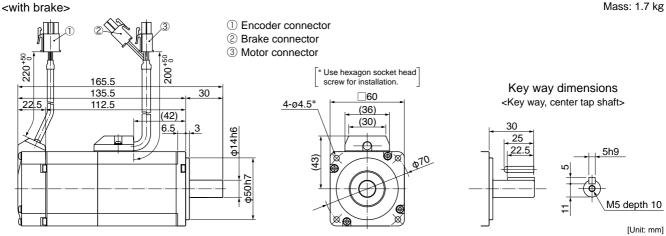
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For connector type IP67 motors, refer to P.101.

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

Motor Specifications

200 V **MSMF** 750 W

[Low inertia] 80 mm sq.

Specifications

					AC200 V
Motor model *1	IP65			MSMF082L1	
		Multi	Multifunction type		MCDLT35SF
Applicable	Model No.	RS48	5 communication typ	pe *2	MCDLN35SG
driver	110.	Basio	Basic type *2		MCDLN35SE
	Fram	e sym	bol		C-frame
Power supply	capacit	у	(k\	VA)	1.3
Rated output			(W)	750
Rated torque			(N	·m)	2.39
Continuous sta	all torqu	ie	(N	·m)	2.39
Momentary Ma	ax. pea	k torqu	Je (N	·m)	7.16
Rated current			(A(rm	ıs))	4.1
Max. current (A(o-			·p))	17.4	
Regenerative brake V			Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283		No limit Note)2
Rated rotation	al spee	d	(r/m	nin)	3000
Max. rotationa	l speed		(r/m	nin)	6000
Moment of ine	rtia		Without brake		0.96
of rotor (×10 ⁻⁴ kg·m ²)			With brake		1.06
Recommended moment of inertia ratio of the load and the rotor Note)3			ote)3	20 times or less	
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
Resolution			on per single turn		8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

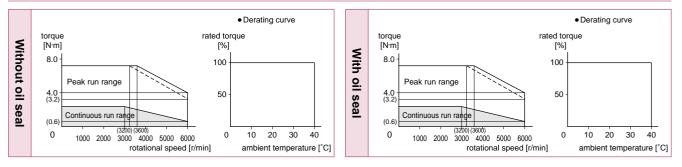
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

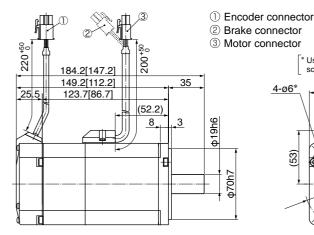
	,	,
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For connector type IP67 motors, refer to P.101.

•Figures in [] represent the dimensions without brake.

×®

Use hexagon socket head screw for installation.

__80

(36)

(30)

ሐ

®⊗́

Ð

X

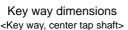
<u>\$90</u>

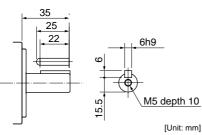
<Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. Contact us or a dealer for the latest information. Read the Instruction Manual carefully and understand all precautions and remarks before using the products.

4-ø6*

(53)

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





Specifications

				AC200 V
Motor model *1	IP65			MSMF092L1
		Multifunction type		MDDLT45SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN45SG
driver	110.	Basic	c type *2	MDDLN45SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	1.8
Rated output			(W)	1000
Rated torque			(N·m)	3.18
Continuous sta	all torqu	ie	(N·m)	3.18
Momentary Ma	ax. pea	k torqı	ue (N·m)	9.55
Rated current			(A(rms))	5.7
Max. current (A(d			(A(o-p))	24.2
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	1.26
of rotor (×10 ⁻⁴ kg·m ²)			With brake	1.36
Recommended moment of inertia ratio of the load and the rotor Note				15 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Resolution			8388608

Motor Specifications

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

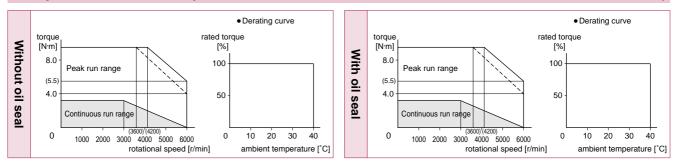
Static friction torque (N·m)	3.80 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

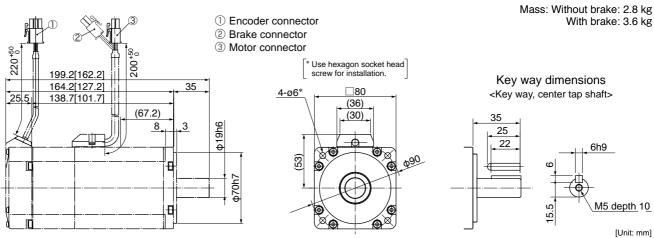
During assembly During operation	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
	Radial load P-direction (N)	392
	n Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For connector type IP67 motors, refer to P.101.

•Figures in [] represent the dimensions without brake.

Motor Specifications

200 V **MSMF** 1.0 kW

[Low inertia] 100 mm sq.]

Specifications

					AC200 V
Motor model *1		IP67			MSMF102L1
		Multi	function type		MDDLT55SF
Applicable	Model No.	RS48	5 communication type	e*²	MDDLN55SG
driver	110.	Basio	type ^{*2}		MDDLN55SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(kV/	4)	2.3
Rated output			(V	V)	1000
Rated torque			(N·r	n)	3.18
Continuous stall torque (N·m)				3.82	
Momentary Max. peak torque (N·m)			9.55		
Rated current (A(rms))			;))	6.6	
Max. current (A(o-p))))	28	
Regenerative brake Without			Without option		No limit Note)2
frequency (time	frequency (times/min) Note)1		DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/mi	n)	3000
Max. rotationa	l speed		(r/mi	n)	5000
Moment of ine	rtia		Without brake		2.15
of rotor (×10 ⁻⁴ kg·m ²)		With brake		2.47	
Recommended moment of inertia ratio of the load and the rotor				e)3	15 times or less
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
	Resolutio				8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) Do not use this for braking the motor in motion.)

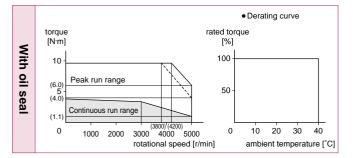
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

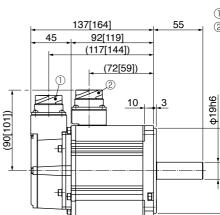
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

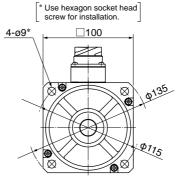
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

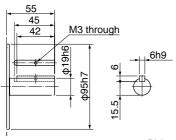


Encoder connector (Large size JL10)
 Motor/Brake connector



Mass: Without brake: 3.6 kg With brake: 4.7 kg

Key way dimensions



Encoder connector (Small size JN2), refer to P.102. • Figures in [] represent the dimensions with brake.

p95h

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

61 MINAS A6 Family

[Unit: mm]

Motor Specifications

200 V

Specifications

				AC200 V
Motor model *1	IP67			MSMF152L1
		Multi	function type	MDDLT55SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG
driver	110.	Basic	type ^{*2}	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	2.3
Rated output			(W)	1500
Rated torque			(N·m)	4.77
Continuous sta	all torqu	5.72		
Momentary Max. peak torque (N·m)			14.3	
Rated current			(A(rms))	8.2
Max. current (A(o-p))			35	
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4284	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	5000
Moment of inertia			Without brake	3.10
of rotor (×10 ⁻⁴ kg·m ²)		With brake	3.45	
Recommended moment of inertia ratio of the load and the rotor				15 times or less
Rotary encoder specifications ³			ns ^{∗3}	23-bit Absolute
Resolution per single			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

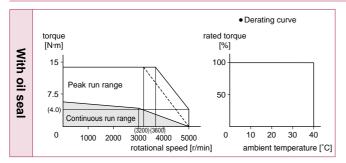
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.

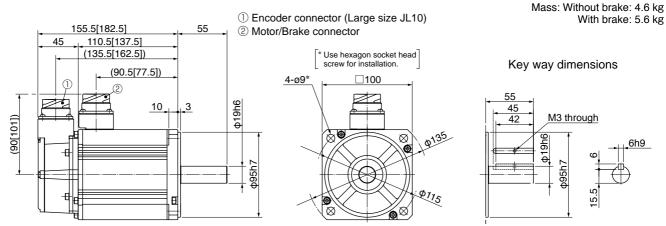
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



[Unit: mm]

Encoder connector (Small size JN2), refer to P.102. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V MSMF 2.0 kW [Low inertia]

Specifications

					AC200 V
Motor model *1	IP67			MSMF202L1	
		Multi	function type		MEDLT83SF
Applicable	Model No.	RS48	5 communication ty	/pe *2	MEDLN83SG
driver	110.	Basio	type ^{*2}		MEDLN83SE
	Fram	e sym	bol		E-frame
Power supply	capacit	у	(k	XA)	3.8
Rated output				(W)	2000
Rated torque			٩)	l∙m)	6.37
Continuous sta	Continuous stall torque (N·m)				7.64
Momentary Max. peak torque (N·m)			19.1		
Rated current (A			(A(rr	ns))	11.3
Max. current (A(o-p))			48		
Regenerative brake Without			Without optior	۱	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4285		No limit Note)2
Rated rotation	al spee	d	(r/r	min)	3000
Max. rotationa	l speed		(r/r	min)	5000
Moment of ine	rtia		Without brake		4.06
of rotor (×10 ⁻⁴ kg·m ²)		With brake		4.41	
Recommended moment of inertia ratio of the load and the rotor			lote)3	15 times or less	
Rotary encode	Rotary encoder specifications				23-bit Absolute
Resolution			on per single tur	n	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

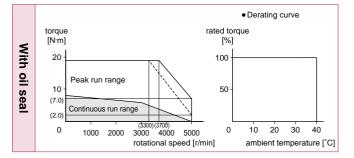
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.

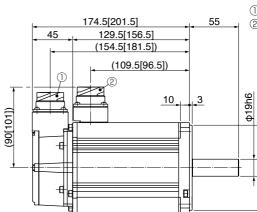
a battery for absolute encoder.

- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

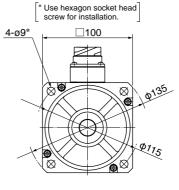
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

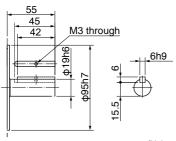


① Encoder connector (Large size JL10) ② Motor/Brake connector



Mass: Without brake: 5.6 kg With brake: 6.6 kg

Key way dimensions



Encoder connector (Small size JN2), refer to P.102. • Figures in [] represent the dimensions with brake.

φ95h7

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

63 MINAS A6 Family

[Unit: mm]

Motor Specifications

200 V

Specifications

				AC200 V
Motor model *1			IP67	MSMF302L1
		Multi	function type	MFDLTA3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNA3SG
driver		Basio	c type *2	MFDLNA3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	4.5
Rated output			(W)	3000
Rated torque			(N·m)	9.55
Continuous sta	Continuous stall torque (N·m)			11.0
Momentary Max. peak torque (N·m)			28.6	
Rated current (A			(A(rms))	18.1
Max. current (A(o-p))		77		
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	5000
Moment of ine	rtia		Without brake	7.04
of rotor (×10 ⁻⁴ kg·m ²)			With brake	7.38
	Recommended moment of in ratio of the load and the roto			15 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolutio			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	12.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) 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.166)

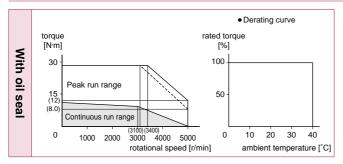
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.

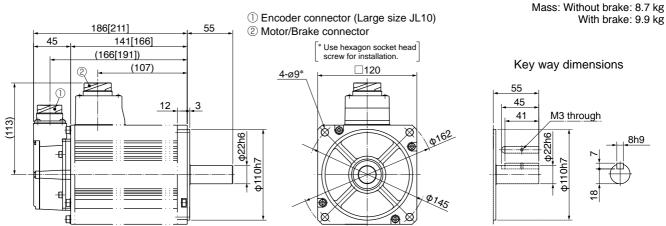
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



[Unit: mm]

Encoder connector (Small size JN2), refer to P.102. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V MSMF 4.0 kW Low inertia

Specifications

				AC200 V
		AC200 V		
Motor model *1	IP67			MSMF402L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *	² MFDLNB3SG
driver	110.	Basio	type ^{*2}	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	4000
Rated torque			(N·m)	12.7
Continuous sta	all torqu	ie	(N·m)	15.2
Momentary Ma	ax. pea	k torqu	Je (N·m)	38.2
Rated current (A(rms))				19.6
Max. current (A(o-p))			83	
Regenerative brake Without option			No limit Note)2	
frequency (time	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	14.4
of rotor (×10 ⁻⁴ kg·m ²)			With brake	15.6
Recommended moment of inertia ratio of the load and the rotor Note)3				15 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
Resolution per single tu				8388608

• Brake specifications (For details, refer to P.167) 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.166)

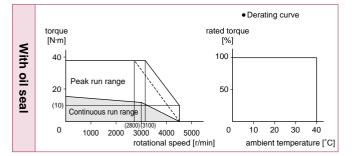
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.

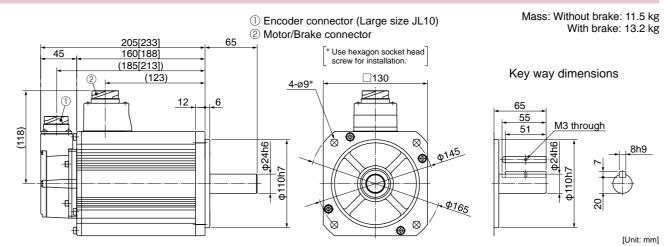
a battery for absolute encoder.

- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.102. • Figures in [] represent the dimensions with brake.

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.

Motor Specifications

200 V

Specifications

				AC200 V
Motor model *1	IP67			MSMF502L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS485 communication type *2		MFDLNB3SG
driver		Basio	type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	5000
Rated torque			(N·m)	15.9
Continuous sta	all torqu	ie	(N·m)	19.1
Momentary Ma	ax. pea	k torqu	ue (N·m)	47.7
Rated current (A(rms))			24.0	
Max. current (A(o-p))			102	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	4500
Moment of ine	rtia		Without brake	19.0
of rotor (×10 ⁻⁴ kg·m ²)		With brake	20.2	
Recommended moment of ine ratio of the load and the rotor				15 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolution per sir			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) 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.166)

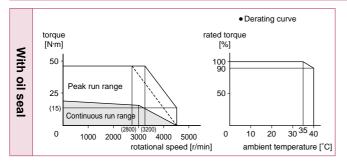
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.

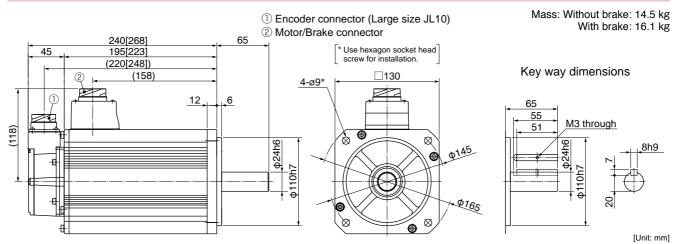
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.102. • Figures in [] represent the dimensions with brake.

Motor Specifications

Specifications

					AC100 V
Motor model *1	IP65			MQMF011L1	
		Multi	Multifunction type		MADLT11SF
Applicable	Model No.	RS48	5 communication typ	e *2	MADLN11SG
driver		Basio	type ^{*2}		MADLN11SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у	(kV	′A)	0.4
Rated output			()	N)	100
Rated torque			(N·ı	m)	0.32
Continuous sta	all torqu	ie	(N·I	m)	0.33
Momentary Ma	Momentary Max. peak torque (N·m)				1.11
Rated current (A(rms))				1.6	
Max. current (A(o-p))			7.9		
Regenerative brake Without option				No limit Note)2	
frequency (times/min) Note)1		DV0P4280		No limit Note)2	
Rated rotation	al spee	d	(r/m	in)	3000
Max. rotationa	l speed		(r/m	in)	6500
Moment of ine	rtia		Without brake		0.15
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.18
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less		
Rotary encode	Rotary encoder specifications *3				23-bit Absolute
Resolution per single turn					8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

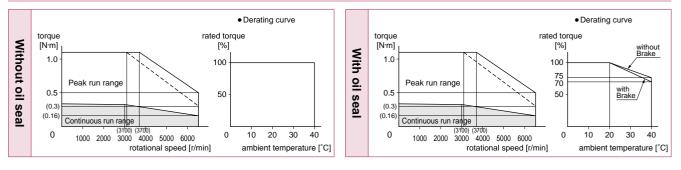
· ·	,
Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

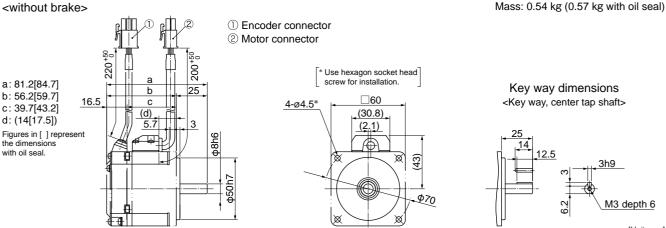
During assembly During operation	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



[Unit: mm]

For motors with protective lip, refer to P.103. For connector type IP67 motors, refer to P.104. • For the dimensions with brake, refer to the right page.

200 V

A6 Family

Motor Specifications

Specifications

				AC200 V
Motor model *1	IP65			MQMF012L1
		Multi	function type	MADLT05SF
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG
driver	110.	Basio	c type *2	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	100
Rated torque			(N·m)	0.32
Continuous sta	all torqu	ie	(N·m)	0.33
Momentary Ma	ax. pea	k torqu	ue (N·m)	1.11
Rated current (A(rms))			1.1	
Max. current (A(o-p))			5.5	
Regenerative brake W		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4281	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.15
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.18
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less	
Rotary encoder specifications *3			ns ^{*3}	23-bit Absolute
Resolutio			on per single turn	8388608

 Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

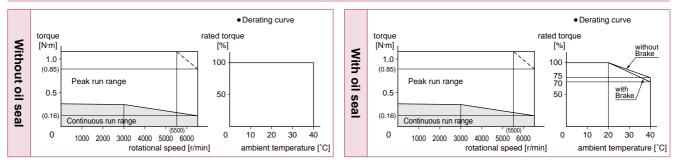
Static friction torque (N·m) 0.39 or more Engaging time (ms) 15 or less Releasing time (ms) Note)4 20 or less 0.30 Exciting current (DC) (A) Releasing voltage (DC) (V) 1 or more Exciting voltage (DC) (V) 24±2.4

Permissible load (For details, refer to P.166)

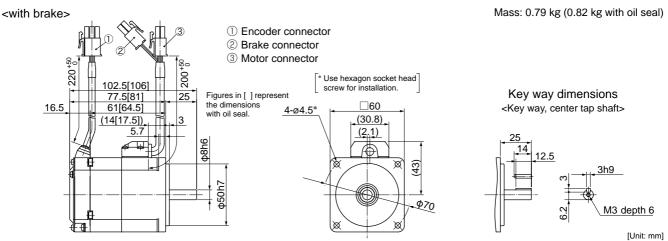
During assembly During operation	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For motors with protective lip, refer to P.103. For connector type IP67 motors, refer to P.104. •For the dimensions without brake, refer to the left page.

Motor Specifications

100 V MQMF 200 W

Specifications

					AC100 V
Motor model *1	IP65			MQMF021L1	
		Multifunction type			MBDLT21SF
Applicable	Model No.	RS485 communication type *2		type *2	MBDLN21SG
driver	110.	Basic type *2			MBDLN21SE
	Fram	e sym	bol		B-frame
Power supply	capacit	у	(kVA)	0.5
Rated output				(W)	200
Rated torque			(N∙m)	0.64
Continuous sta	all torqu	ie	(N∙m)	0.76
Momentary Ma	ax. pea	k torqu) eu	N∙m)	2.23
Rated current			(A(r	ms))	2.1
Max. current			(A(o-p))	10.4
Regenerative brake			Without option		No limit Note)2
frequency (times/min) Note)1		¹ DV0P4283		No limit Note)2	
Rated rotation	al spee	d	(r/	/min)	3000
Max. rotational speed			(r/	/min)	6500
Moment of ine	Moment of inertia			е	0.50
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.59
Recommended moment of inertia ratio of the load and the rotor			Note)3	20 times or less	
Rotary encoder specifications			ns ^{∗3}		23-bit Absolute
Resolution per single turn				rn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

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

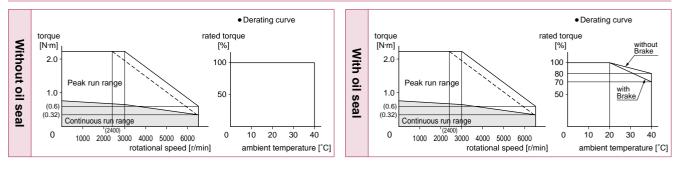
• Permissible load (For details, refer to P.166)

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

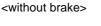
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

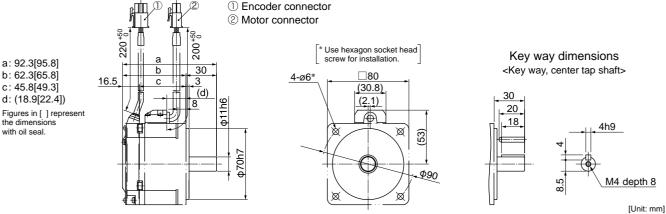
Mass: 1.1 kg (1.2 kg with oil seal)

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



Dimensions





For motors with protective lip, refer to P.103. For connector type IP67 motors, refer to P.104. • 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.

200 V

A6 Family

Motor Specifications

Specifications

				AC200 V
Motor model *1	IP65			
		Multifunction type		MADLT15SF
Applicable	Model No.	RS48	5 communication type *2	MADLN15SG
driver	110.	Basic	type *2	MADLN15SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	200
Rated torque			(N·m)	0.64
Continuous sta	all torqu	ie	(N·m)	0.76
Momentary Ma	ax. pea	2.23		
Rated current			(A(rms))	1.4
Max. current			(A(o-p))	6.9
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		Note)1	DV0P4283	No limit Note)2
Rated rotational speed			(r/min)	3000
Max. rotational speed			(r/min)	6500
Moment of inertia			Without brake	0.50
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.59
Recommended moment of inertia ratio of the load and the rotor Note)				20 times or less
Rotary encoder specification			ns *3	23-bit Absolute
Resolution			on per single turn	8388608

 Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

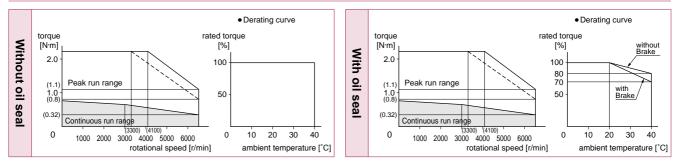
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

Permissible load (For details, refer to P.166)

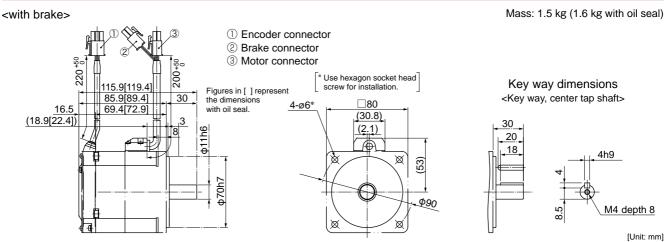
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For motors with protective lip, refer to P.103. For connector type IP67 motors, refer to P.104. • For the dimensions without brake, refer to the left page.

Motor Specifications

100 V **MQMF** 400 W

Specifications

					AC100 V
Motor model *1	IP65			MQMF041L1	
		Multifunction type		e	MCDLT31SF
Applicable	Model No.	RS485 communication type *2			MCDLN31SG
driver		Basic type ^{*2}			MCDLN31SE
	Fram	e sym	bol		C-frame
Power supply	capacit	у		(kVA)	0.9
Rated output				(W)	400
Rated torque				(N·m)	1.27
Continuous sta	all torqu	ie		(N·m)	1.40
Momentary Ma	ax. pea	k torqu	e	(N·m)	4.46
Rated current			(A(rms))	4.1
Max. current (A			(A(o-p))	20.3	
Regenerative brake			Without option		No limit Note)2
frequency (times/min) Note)1		DV0P4282		No limit Note)2	
Rated rotational speed				(r/min)	3000
Max. rotational speed				(r/min)	6500
Moment of inertia			Without brake		0.98
of rotor (×10 ⁻⁴ kg·m ²)			With brake		1.06
Recommended moment of inertia ratio of the load and the rotor			Note)3	20 times or less	
Rotary encoder specifications *3			ns *3		23-bit Absolute
Resolution per single turn				e turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

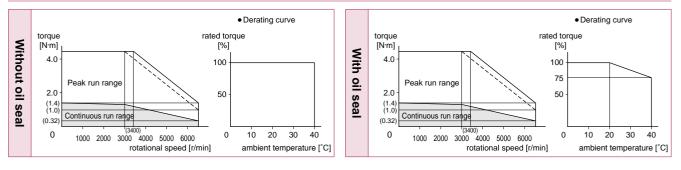
• –	,
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

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

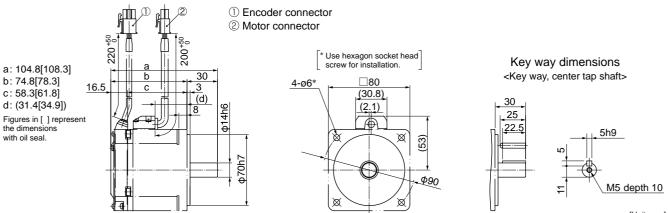
- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





[Unit: mm]

Mass: 1.5 kg (1.6 kg with oil seal)

For motors with protective lip, refer to P.103. For connector type IP67 motors, refer to P.105. • For the dimensions with brake, refer to the right page.

200 V

A6 Family

Motor Specifications

Specifications

				AC200 V	
Motor model *1	IP65				
		Multi	function type	MBDLT25SF	
Applicable	Model No.	RS48	5 communication type *2	MBDLN25SG	
driver	110.	Basic type *2		MBDLN25SE	
	Fram	e sym	bol	B-frame	
Power supply	capacit	у	(kVA)	0.9	
Rated output			(W)	400	
Rated torque			(N·m)	1.27	
Continuous sta	all torqu	ie	(N·m)	1.40	
Momentary Ma	ax. pea	k torqu	ue (N·m)	4.46	
Rated current			(A(rms))	2.1	
Max. current (A			(A(o-p))	10.4	
Regenerative brake			Without option	No limit Note)2	
frequency (time	frequency (times/min) Note)1		DV0P4283	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotationa	l speed		(r/min)	6500	
Moment of ine	rtia		Without brake	0.98	
of rotor (×10 ⁻⁴ kg·m ²)			With brake	1.06	
Recommended moment of inertia ratio of the load and the rotor				20 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute	
Resolution per single			on per single turn	8388608	

 Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

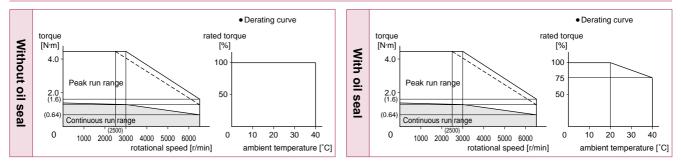
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

Permissible load (For details, refer to P.166)

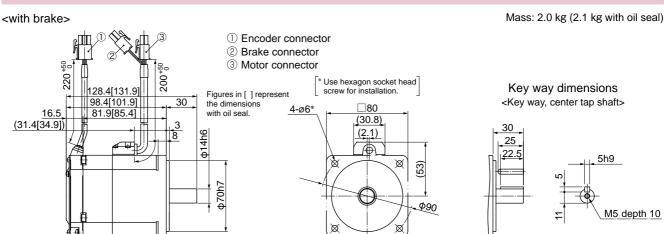
	,	,
	Radial load P-direction (N)	392
During assembly	Thrust load A-direction (N)	147
assembly	Thrust load B-direction (N)	196
During operation	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



[Unit: mm] For motors with protective lip, refer to P.103. For connector type IP67 motors, refer to P.105. • For the dimensions without brake, refer to the left page.

Motor Specifications

100 V MHMF 50 W

Specifications

					AC100 V
1.1.11					
Motor model *1		IP65			MHMF5AZL1
		Multifunction type			MADLT01SF
Applicable	Model No.	RS485 communication type $^{^{\star}2}$		type *2	MADLN01SG
driver		Basio	type ^{*2}		MADLN01SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у		(kVA)	0.4
Rated output				(W)	50
Rated torque				(N·m)	0.16
Continuous sta	all torqu	ie		(N·m)	0.18
Momentary Ma	ax. pea	k torqu	le	(N·m)	0.56
Rated current			(A(rms))	1.1
Max. current			(A	(o-p))	5.5
Regenerative brake			Without option	on	No limit Note)2
frequency (time	frequency (times/min) Note)1		¹ DV0P4280		No limit Note)2
Rated rotation	al spee	d	(1	r/min)	3000
Max. rotationa	l speed		(1	r/min)	6500
Moment of ine	rtia		Without brake		0.038
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.042
Recommended moment of inertia ratio of the load and the rotor			Note)3	30 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}		23-bit Absolute
Resolutio			ution per single turn		8388608
					•

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

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

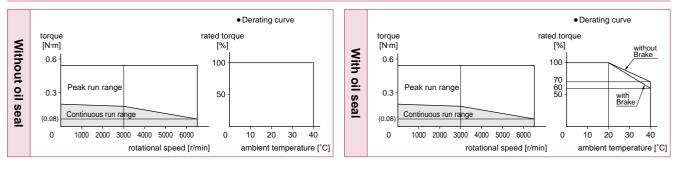
• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

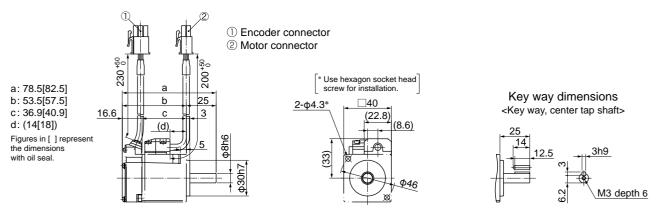
Mass: 0.29 kg (0.31 kg with oil seal)

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



Dimensions

<without brake>



[Unit: mm]

For motors with protective lip, refer to P.107. For connector type IP67 motors, refer to P.109. • 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.

Motor Specifications

[High inertia] **MHMF** 50 W 40 mm sq.

Specifications

200 V

				AC200 V
Motor model *1	IP65			MHMF5AZL1
		Multi	function type	MADLT05SF
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG
driver	110.	Basio	c type *2	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	50
Rated torque			(N·m)	0.16
Continuous sta	all torqu	ie	(N·m)	0.18
Momentary Ma	ax. pea	k torqu	ue (N·m)	0.56
Rated current			(A(rms))	1.1
Max. current (A			(A(o-p))	5.5
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		Note)1	DV0P4281	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.038
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.042
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolution pe			on per single turn	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

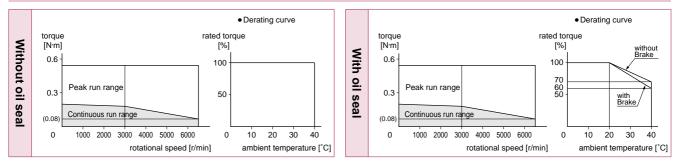
Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

Permissible load (For details, refer to P.166)

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

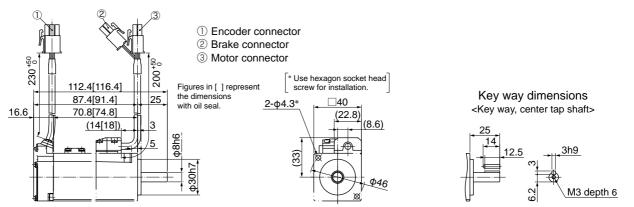
- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

<with brake>



[Unit: mm] For motors with protective lip, refer to P.107. For connector type IP67 motors, refer to P.109. •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.

Mass: 0.51 kg (0.53 kg with oil seal)

Motor Specifications

100 V MHMF 100 W

Specifications

					AC100 V
Motor model *1	IP65			MHMF011L1	
		Multi	Iultifunction type		MADLT11SF
Applicable	Model No.	RS48	5 communica	ation type *2	MADLN11SG
driver	110.	Basio	type *2		MADLN11SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у		(kVA)	0.4
Rated output				(W)	100
Rated torque				(N·m)	0.32
Continuous sta	all torqu	ie		(N·m)	0.33
Momentary Ma	ax. pea	k torqu	he	(N·m)	1.11
Rated current				(A(rms))	1.6
Max. current				(A(o-p))	7.9
Regenerative brake			Without option		No limit Note)2
frequency (time	frequency (times/min) Note)1		DV0P4280		No limit Note)2
Rated rotation	al spee	d		(r/min)	3000
Max. rotationa	l speed			(r/min)	6500
Moment of ine	rtia		Without brake		0.071
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.074
Recommended moment of inertia ratio of the load and the rotor				Note)3	30 times or less
Rotary encode	er speci	ficatio	ns ^{⁺3}		23-bit Absolute
Resolution per single			le turn	8388608	

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

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

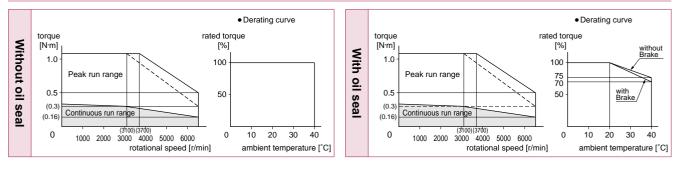
• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

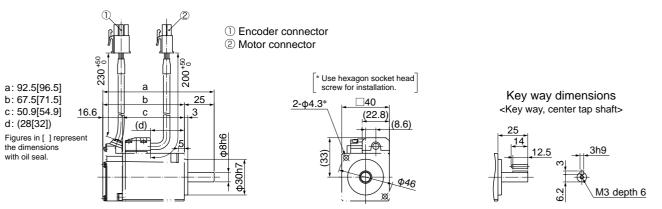
Mass: 0.40 kg (0.42 kg with oil seal)

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



Dimensions





[Unit: mm]

For motors with protective lip, refer to P.107. For connector type IP67 motors, refer to P.109. • 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.

200 V

Motor Specifications

Specifications

				AC200 V	
Motor model *1	IP65			MHMF012L1	
		Multi	function type	MADLT05SF	
Applicable	Model No.	RS485 communication type *2		MADLN05SG	
driver	110.	Basic type *2		MADLN05SE	
	Fram	e sym	bol	A-frame	
Power supply	capacit	у	(kVA)	0.5	
Rated output			(W)	100	
Rated torque			(N·m)	0.32	
Continuous sta	all torqu	ie	(N·m)	0.33	
Momentary Max. peak torque (N·m)				1.11	
Rated current			(A(rms))	1.1	
Max. current (A			(A(o-p))	5.5	
Regenerative brake			Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4281	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotational speed			(r/min)	6500	
Moment of inertia			Without brake	0.071	
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.074	
Recommended moment of inertia ratio of the load and the rotor				30 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute	
Resolution p			on per single turn	8388608	

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

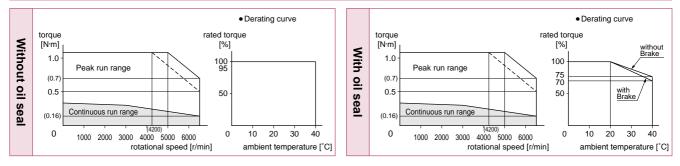
Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

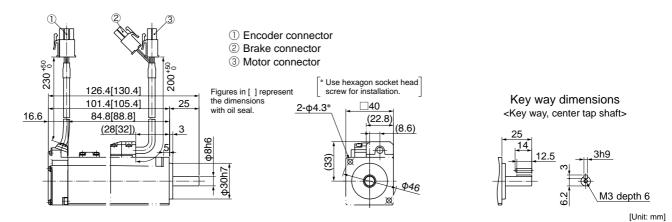
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

<with brake>





For motors with protective lip, refer to P.107. For connector type IP67 motors, refer to P.109. • For the dimensions without brake, refer to the left page.

Motor Specifications

100 V MHMF 200 W

Specifications

$\begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c } \hline \begin{tabular}{ c c c } \hline \begin{tabular}{ c c } \hline \hline \begin{tabular}{ c c } \hline$						AC100 V
Model ModelModelModel Minim CarlerApplicable driverModelMultifunction typeMBDLT21SFRS485 communication type "2MBDLN21SGBasic type "2MBDLN21SEFrameB-framePower supply capacity(kVA)0.5Rated output(W)200Rated torque(N·m)0.64Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(orp))10.4Regenerative brakeWithout optionNo limit Note)2Rated rotational sped(r/min)3000						
Applicable driverModel No.RS485 communication type "2MBDLN21SGBasic type "2MBDLN21SEBasic type "2MBDLN21SEFrame symbolB-framePower supply capacity(kVA)0.5Rated output(W)200Rated torque(N·m)0.64Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(rms))2.1Max. current(A(o-p))10.4Regenerative brake frequency (times/min)Without optionNo limit Note)2Rated rotational speed(r/min)3000	wotor model			IP65		
Applicable driverNo.RS485 communication type 2MBDLN21SGdriverBasic type 2MBDLN21SEFrame symbolB-framePower supply capacity(kVA)0.5Rated output(W)200Rated torque(N·m)0.64Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(rms))2.1Max. current(A(o-p))10.4Regenerative brake frequency (times/min)Without optionNo limit Note)2Rated rotational sped(r/min)3000			Multi	Multifunction type		MBDLT21SF
driver Basic type *2 MBDLN21SE Frame symbol B-frame Power supply capacity (kVA) 0.5 Rated output (W) 200 Rated torque (N·m) 0.64 Continuous stall torque (N·m) 0.76 Momentary Max. peak torque (N·m) 2.23 Rated current (A(rms)) 2.1 Max. current (A(o-p)) 10.4 Regenerative brake frequency (times/min) Without option No limit Note)2 DV0P4283 No limit Note)2 No limit Note)2 Rated rotational speed (r/min) 3000	Applicable		RS48	5 communicatio	on type *2	MBDLN21SG
Power supply capacity(kVA)0.5Rated output(W)200Rated torque(W)200Rated torque(N·m)0.64Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(rms))2.1Max. current(A(o-p))10.4Regenerative brake frequency (times/min)Without optionNo limit Note)2Rated rotational speed(r/min)3000	driver	110.	Basic type ^{*2}			MBDLN21SE
Rated output(W)200Rated torque(N·m)0.64Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(rms))2.1Max. current(A(o-p))10.4Regenerative brake frequency (times/min) Note)1Without optionNo limit Note)2Rated rotational speed(r/min)3000		Fram	e sym	bol		B-frame
Rated torque(N·m)0.64Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(rms))2.1Max. current(A(o-p))10.4Regenerative brake frequency (times/min)Without optionNo limit Note)2Rated rotational speed(r/min)3000	Power supply	capacit	у		(kVA)	0.5
Continuous stall torque(N·m)0.76Momentary Max. peak torque(N·m)2.23Rated current(A(rms))2.1Max. current(A(o-p))10.4Regenerative brake frequency (times/min)Without optionNo limit Note)2Rated rotational speed(r/min)3000	Rated output				(W)	200
Momentary Max. peak torque (N·m) 2.23 Rated current (A(rms)) 2.1 Max. current (A(o-p)) 10.4 Regenerative brake frequency (times/min) Without option No limit Note)2 DV0P4283 No limit Note)2 Rated rotational speed (r/min) 3000	Rated torque				(N·m)	0.64
Rated current (A(rms)) 2.1 Max. current (A(o-p)) 10.4 Regenerative brake frequency (times/min) Without option No limit Note)2 DV0P4283 No limit Note)2 Rated rotational speed (r/min)	Continuous sta	all torqu	ie		(N·m)	0.76
Max. current (A(o-p)) 10.4 Regenerative brake frequency (times/min) Without option No limit Note)2 DV0P4283 No limit Note)2 Rated rotational speed (r/min)	Momentary Ma	ax. pea	k torqu	e	(N·m)	2.23
Regenerative brake frequency (times/min) Without option No limit Note)2 Rated rotational speed (r/min) 3000	Rated current			(/	A(rms))	2.1
Integrited visition Note)1 DV0P4283 No limit Note)2 Rated rotational speed (r/min) 3000	Max. current (A(o-p			A(o-p))	10.4	
Rated rotational speed (r/min) 3000	Regenerative brake W			Without op	tion	No limit Note)2
			DV0P4283		No limit Note)2	
Max. rotational speed (r/min) 6500	Rated rotation	al spee	d		(r/min)	3000
	Max. rotationa	l speed			(r/min)	6500
Moment of inertia Without brake 0.29	Moment of inertia			Without brake		0.29
of rotor ($\times 10^{-4}$ kg·m ²) With brake 0.31	of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.31
Recommended moment of inertia ratio of the load and the rotor Note)3 30 times or less				Note)3	30 times or less	
Rotary encoder specifications ³ 23-bit Absolute	Rotary encode	er speci	ficatio	ns ^{∗3}		23-bit Absolute
Resolution per single turn 8388608	Resolution			on per single	turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

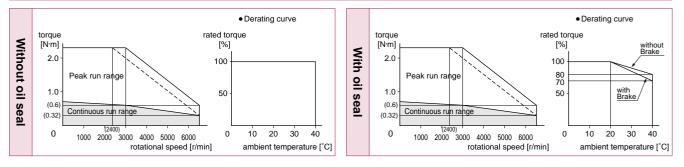
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

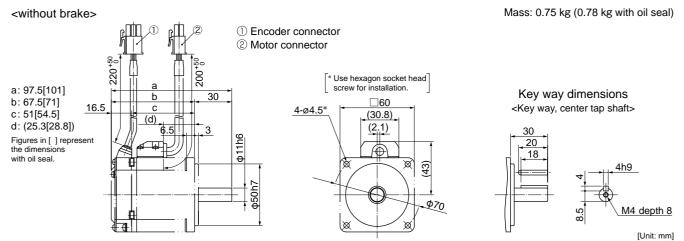
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For motors with protective lip, refer to P.107. For connector type IP67 motors, refer to P.110. • For the dimensions with brake, refer to the right page.

200 V

A6 Family

Motor Specifications

Specifications

				AC200 V	
Motor model *1	IP65			MHMF022L1	
		Multi	function type	MADLT15SF	
Applicable	Model No.	RS485 communication type *2		MADLN15SG	
driver	110.	Basic	c type *2	MADLN15SE	
	Fram	e sym	bol	A-frame	
Power supply	capacit	у	(kVA)	0.5	
Rated output			(W)	200	
Rated torque			(N·m)	0.64	
Continuous stall torque (N·m)				0.76	
Momentary Max. peak torque (N·m)				2.23	
Rated current			(A(rms))	1.4	
Max. current			(A(o-p))	6.9	
Regenerative brake		Without option	No limit Note)2		
frequency (times/min) Note)1		Note)1	DV0P4283	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000	
Max. rotational speed			(r/min)	6500	
Moment of inertia			Without brake	0.29	
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.31		
Recommended moment of inertia ratio of the load and the rotor				30 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute	
	Re	solutic	on per single turn	8388608	

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

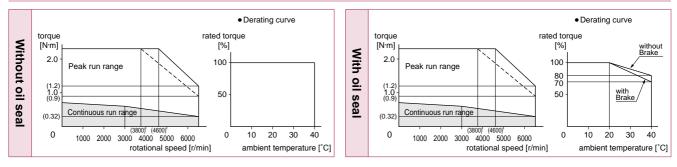
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

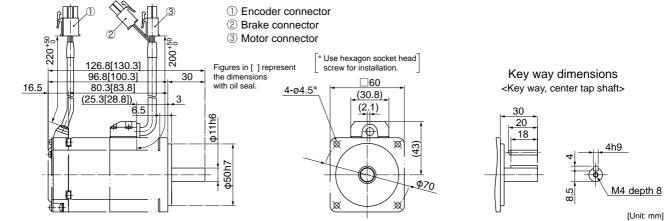
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

<with brake>





For motors with protective lip, refer to P.107. For connector type IP67 motors, refer to P.110. • For the dimensions without brake, refer to the left page.

Motor Specifications

100 V MHMF 400 W

Specifications

					AC100 V
Motor model ^{*1}	IP65			MHMF041L1	
		Multi	ultifunction type		MCDLT31SF
Applicable	Model No.	RS485 communication type *2		ation type *2	MCDLN31SG
driver	110.	Basio	type *2		MCDLN31SE
	Fram	e sym	bol		C-frame
Power supply	capacit	у		(kVA)	0.9
Rated output				(W)	400
Rated torque				(N·m)	1.27
Continuous stall torque				(N·m)	1.40
Momentary Ma	ax. pea	k torqı	he	(N·m)	4.46
Rated current				(A(rms))	4.1
Max. current				(A(o-p))	20.3
Regenerative brake			Without option		No limit Note)2
frequency (times/min) Note)1		DV0P4282		No limit Note)2	
Rated rotation	al spee	d		(r/min)	3000
Max. rotationa	Max. rotational speed			(r/min)	6500
Moment of ine	Moment of inertia			brake	0.56
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.58
Recommended moment of inertia ratio of the load and the rotor				Note)3	30 times or less
Rotary encode	er speci	ficatio	ns ^{∗3}		23-bit Absolute
Resolution per single turn			le turn	8388608	

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

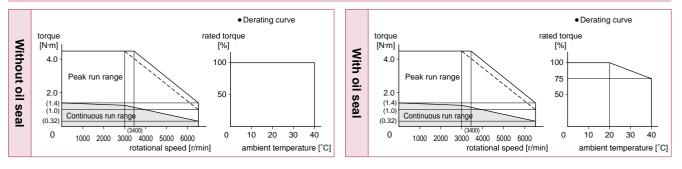
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

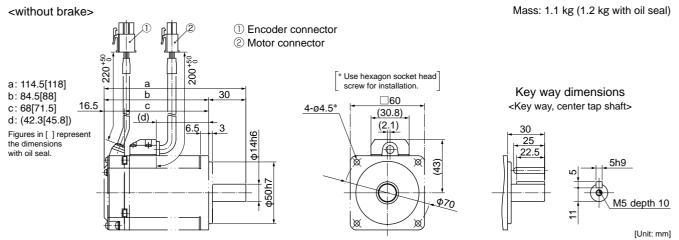
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For motors with protective lip, refer to P.108. For connector type IP67 motors, refer to P.110. • 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.

200 V

Specifications

				AC200 V
Motor model *1	IP65			MHMF042L1
		Multi	function type	MBDLT25SF
Applicable	Model No.	RS48	5 communication type *2	MBDLN25SG
driver	110.	Basic type *2		MBDLN25SE
	Fram	e sym	bol	B-frame
Power supply	capacit	у	(kVA)	0.9
Rated output			(W)	400
Rated torque			(N·m)	1.27
Continuous sta	all torqu	ie	(N·m)	1.40
Momentary Ma	ax. pea	k torqu	ue (N·m)	4.46
Rated current			(A(rms))	2.1
Max. current (A(o-p)			10.4	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	Moment of inertia		Without brake	0.56
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.58	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

 Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

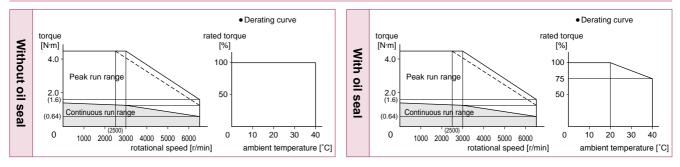
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

Permissible load (For details, refer to P.166)

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

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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

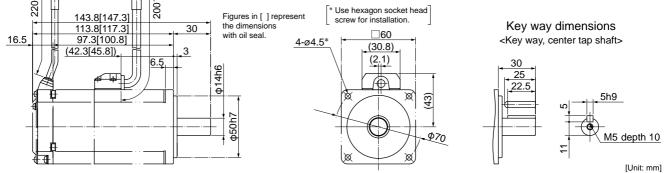


Dimensions

<with brake>

20





For motors with protective lip, refer to P.108. For connector type IP67 motors, refer to P.110. •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.

② Brake connector ③ Motor connector

Motor Specifications

200 V MHMF 750 W

Specifications

					AC200 V
Motor model ^{*1}	IP65			MHMF082L1	
		Multifunction type		;	MCDLT35SF
Applicable	Model No.	RS48	5 communicati	on type *2	MCDLN35SG
driver	110.	Basio	c type *2		MCDLN35SE
	Fram	e sym	bol		C-frame
Power supply	capacit	у		(kVA)	1.3
Rated output				(W)	750
Rated torque				(N·m)	2.39
Continuous sta	all torqu	ie		(N·m)	2.86
Momentary Ma	ax. pea	k torqu	he	(N·m)	8.36
Rated current			(/	A(rms))	3.8
Max. current			(A(o-p))	18.8
Regenerative brake			Without op	otion	No limit Note)2
frequency (times/min) Note)1		DV0P4283	}	No limit Note)2	
Rated rotation	al spee	d		(r/min)	3000
Max. rotationa	l speed			(r/min)	6000
Moment of ine	rtia		Without brake		1.56
of rotor (×10 ⁻⁴ kg·m ²)			With brake		1.66
Recommended moment of inertia ratio of the load and the rotor Note)3			Note)3	20 times or less	
Rotary encode	er speci	ficatio	ns [∗] ³		23-bit Absolute
	Resolutio			turn	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

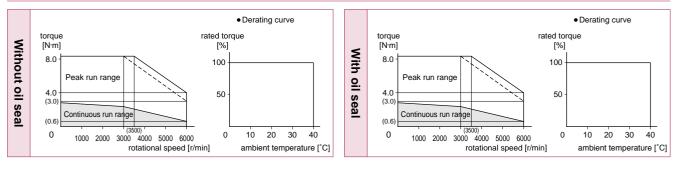
Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

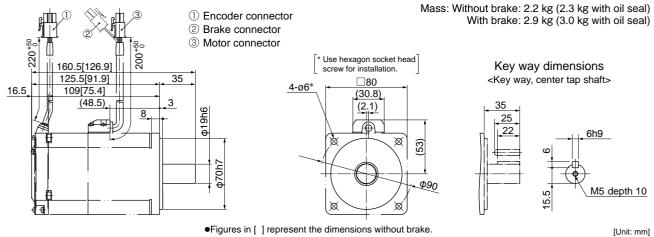
	,	,
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



•Figures in [] represent the dimensions without brake.

For motors with oil seal, refer to P.106. For motors with protective lip, refer to P.108. For connector type IP67 motors, refer to P.111. <Cautions> Reduce the moment of inertia ratio if high speed response operation is required. Dimensions are subject to change without notice. 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 MHMF 1000 W

A6 Family Motor Specifications

Specifications

				AC200 V
Motor model *1			IP65	MHMF092L1
		Multifunction type		MDDLT55SF
Applicable	Model No.	RS485 communication type *2		MDDLN55SG
driver	110.	Basio	c type *2	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	2.3
Rated output			(W)	1000
Rated torque			(N·m)	3.18
Continuous sta	all torqu	ie	(N·m)	3.34
Momentary Ma	ax. pea	k torqu	ue (N·m)	11.1
Rated current (A(rm			(A(rms))	5.7
Max. current (A(o-p))			28.2	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	2.03
of rotor (×10 ⁻⁴ kg·m ²)			With brake	2.13
Recommended moment of inertia ratio of the load and the rotor Note)3				20 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolution per			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

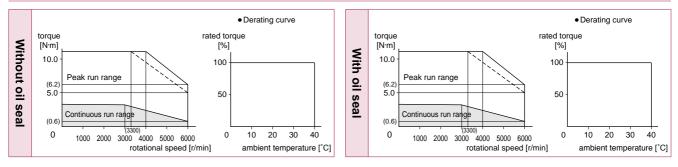
Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

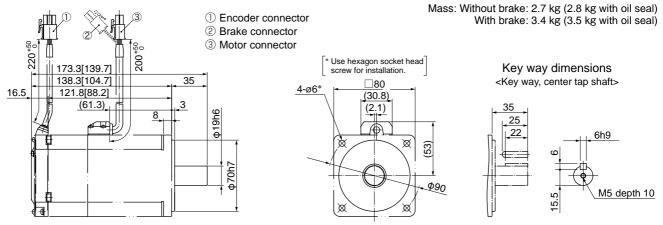
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



•Figures in [] represent the dimensions without brake.

For motors with oil seal, refer to P.106. For motors with protective lip, refer to P.108. For connector type IP67 motors, refer to P.111.

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

200 V MHMF 1.0 kW [High inertia]

Specifications

				AC200 V
Motor model *1	IP67			MHMF102L1
		Multifunction type		MDDLT45SF
Applicable	Model No.	RS48	5 communication type **	MDDLN45SG
driver		Basio	type *2	MDDLN45SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	1.8
Rated output			(W)	1000
Rated torque			(N·m)	4.77
Continuous sta	all torqu	ie	(N·m)	5.25
Momentary Ma	ax. pea	k torqı	ue (N·m)	14.3
Rated current			(A(rms))	5.2
Max. current (A(o-p))			22	
Regenerative brake With			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4284	No limit Note)2	
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	22.9
of rotor (×10 ⁻⁴ kg·m ²)			With brake	24.1
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less
Rotary encode	Rotary encoder specifications *3			23-bit Absolute
Resolution per single tu			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

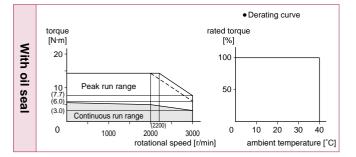
-	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

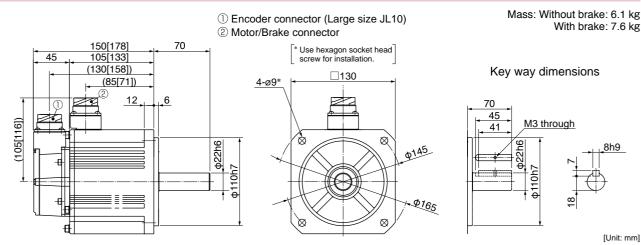
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



Encoder connector (Small size JN2), refer to P.112. • 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.

A6 Family **Motor Specifications**

[High inertia] [130 mm sq.]

Specifications

200 V

MHMF 1.5 kW

				AC200 V
Motor model *1	IP67			MHMF152L1
		Multifunction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG
driver	110.	Basio	c type *2	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	2.3
Rated output			(W)	1500
Rated torque			(N·m)	7.16
Continuous sta	all torqu	ie	(N·m)	7.52
Momentary Ma	ax. pea	k torqu	ue (N·m)	21.5
Rated current			(A(rms))	8.0
Max. current (A(c			(A(o-p))	34
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2	
		Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of inertia			Without brake	33.4
of rotor (×10 ⁻⁴ kg·m ²)			With brake	34.6
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) 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.166)

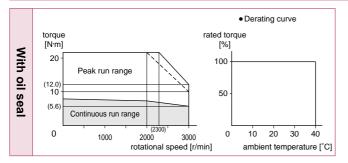
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.

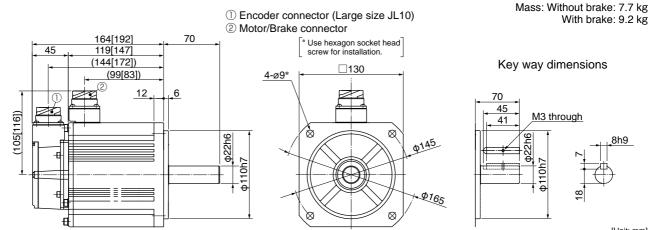
a battery for absolute encoder.

- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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

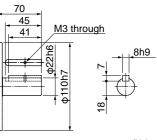


Dimensions



[Unit: mm]

Encoder connector (Small size JN2), refer to P.112. • Figures in [] represent the dimensions with brake.



Motor Specifications

200 V MHMF 2.0 kW [High inertia]

Specifications

				1
				AC200 V
Motor model *1	IP67			MHMF202L1
		Multi	function type	MEDLT83SF
Applicable	Model No.	RS48	5 communication type *2	MEDLN83SG
driver	110.	Basio	type *2	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	3.8
Rated output			(W)	2000
Rated torque			(N·m)	9.55
Continuous sta	all torqu	ie	(N·m)	11.5
Momentary Ma	ax. pea	k torqı	ue (N·m)	28.6
Rated current			(A(rms))	12.5
Max. current (A(o-p))			53	
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2	
		Note)1	DV0P4285	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	55.7
of rotor (×10 ⁻⁴ kg·m ²)			With brake	61.0
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less
Rotary encode	Rotary encoder specifications ^{*3}			23-bit Absolute
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

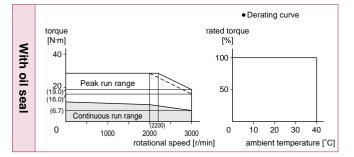
	,
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

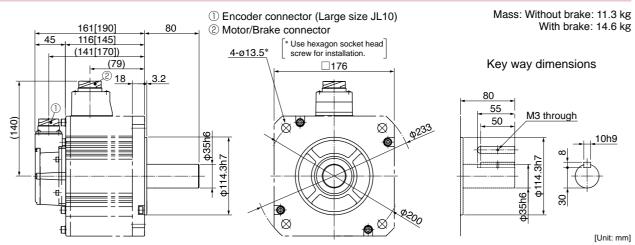
	,	,
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



Encoder connector (Small size JN2), refer to P.112. • 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.

A6 Family Motor Specifications

[High inertia] [176 mm sq.]

Specifications

200 V

MHMF 3.0 kW

				AC200 V
Motor model *1	IP67			MHMF302L1
		Multifunction type		MFDLTA3SF
Applicable	Model No.	RS485 communication type $^{^{\star 2}}$		MFDLNA3SG
driver	110.	Basio	c type *2	MFDLNA3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	y	(kVA)	4.5
Rated output			(W)	3000
Rated torque			(N·m)	14.3
Continuous sta	all torqu	е	(N·m)	17.2
Momentary Ma	ax. pea	< torqu	ue (N·m)	43.0
Rated current			(A(rms))	17.0
Max. current (A(o-p			(A(o-p))	72
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2	
		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	85.3
of rotor (×10 ⁻⁴ kg·m ²)		With brake	90.7	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolution			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

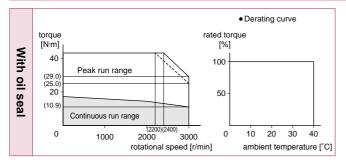
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.

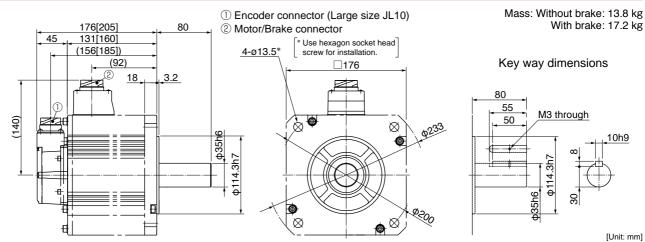
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.112. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V MHMF 4.0 kW [High inertia]

Specifications

					AC200 V
Motor model *1	IP67			MHMF402L1	
		Multifunction type			MFDLTB3SF
Applicable	lodel lo.	RS485	communication ty	ype *2	MFDLNB3SG
driver	.0.	Basic	type *2		MFDLNB3SE
F	Frame	e syml	ool		F-frame
Power supply ca	pacit	y	(k	(VA)	7.5
Rated output				(W)	4000
Rated torque			1)	l√m)	19.1
Continuous stall	torqu	е	1)	l√m)	22.0
Momentary Max.	Momentary Max. peak torque (N·m)				57.3
Rated current			(A(rr	ms))	20
Max. current (A(o-p)			o-p))	85	
Regenerative brake			Without option	n	No limit Note)2
frequency (times/r	frequency (times/min) Note)1		DV0P4285x2		No limit Note)2
Rated rotational	spee	d	(r/ı	min)	2000
Max. rotational s	peed		(r/ı	min)	3000
Moment of inertia	Moment of inertia		Without brake		104
of rotor (×10 ⁻⁴ kg·m ²)			With brake		110
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less		
Rotary encoder s	Rotary encoder specifications ^{*3}				23-bit Absolute
	Re	solutio	n per single tur	n	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

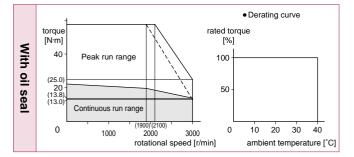
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

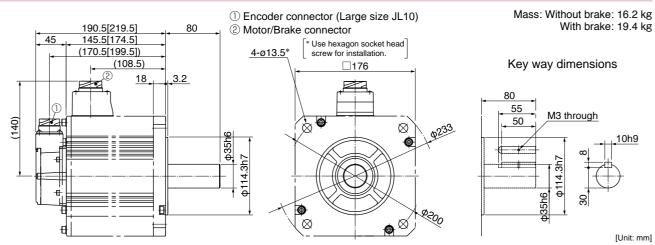
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



Encoder connector (Small size JN2), refer to P.112. • 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.

Motor Specifications

MHMF 5.0 kW [High inertia]

Specifications

200 V

				AC200 V
Motor model *1			IP67	MHMF502L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS485 communication type *2		MFDLNB3SG
driver		Basio	c type ^{*2}	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	5000
Rated torque			(N·m)	23.9
Continuous sta	all torqu	ie	(N·m)	26.3
Momentary Ma	ax. pea	k torqu	ue (N·m)	71.6
Rated current			(A(rms))	23.3
Max. current (A(o-p))		99		
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	146
of rotor (×10 ⁻⁴ kg·m ²)		With brake	151	
Recommended moment of inertia ratio of the load and the rotor				5 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	30 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

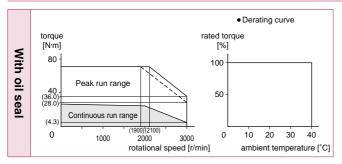
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.

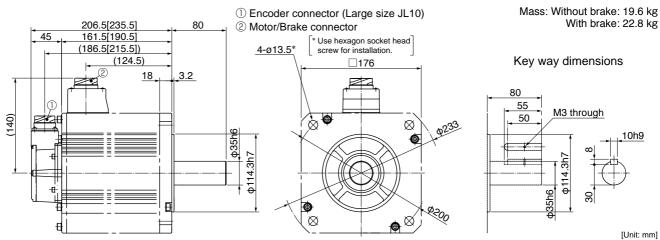
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.112. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V MDMF 1.0 kW 13

[Middle inertia] 130 mm sq.

Specifications

					AC200 V
Motor model *1	IP67				MDMF102L1
		Multifunction type			MDDLT45SF
Applicable	Model No.	RS485 communication type *2		*2	MDDLN45SG
driver	110.	Basio	type ^{*2}		MDDLN45SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(kVA	N)	1.8
Rated output			(W	/)	1000
Rated torque			(N·m	1)	4.77
Continuous sta	all torqu	ie	(N·m	1)	5.25
Momentary Ma	ax. pea	k torqu	ue (N·m	1)	14.3
Rated current (A(rms)))	5.2	
Max. current (A(o-p))))	22	
Regenerative brake			Without option		No limit Note)2
frequency (times/min) Note)1		Note)1	^{e)1} DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/mir	1)	2000
Max. rotationa	l speed		(r/mir	1)	3000
Moment of ine	rtia		Without brake		6.18
of rotor (×10 ⁻⁴ kg·m ²)		With brake		7.40	
Recommended moment of inertia ratio of the load and the rotor Note)3)3	10 times or less	
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
Resolution			on per single turn		8388608

• Brake specifications (For details, refer to P.167) (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.166)

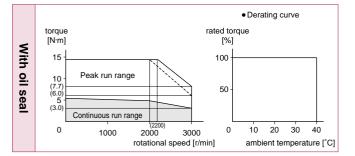
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.

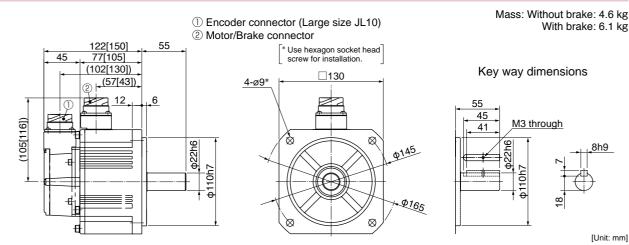
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.113. • 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.

Motor Specifications

MDMF 1.5 kW Middle inertia

Specifications

200 V

				AC200 V
Motor model *1	IP67			MDMF152L1
		Multi	function type	MDDLT55SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG
driver		Basic	c type *2	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	2.3
Rated output			(W)	1500
Rated torque			(N·m)	7.16
Continuous sta	all torqu	ie	(N·m)	7.52
Momentary Ma	ax. pea	k torqu	ue (N·m)	21.5
Rated current (A			(A(rms))	8.0
Max. current (A(o-p))			34	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	Moment of inertia		Without brake	9.16
of rotor (×10 ⁻⁴ kg·m ²)		With brake	10.4	
Recommended moment of inertia ratio of the load and the rotor Note				10 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (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.166)

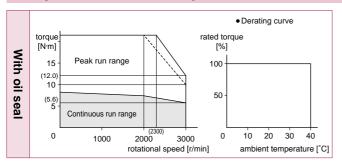
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.

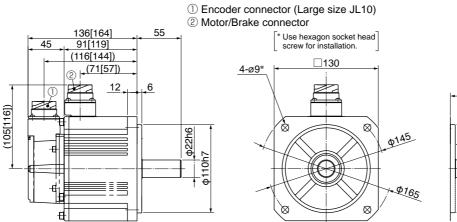
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



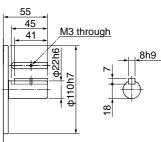
Dimensions



With brake: 7.2 kg

Mass: Without brake: 5.7 kg

Key way dimensions



[Unit: mm]

Encoder connector (Small size JN2), refer to P.113. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V MDMF 2.0 kW 130 m

[Middle inertia] [130 mm sq.]

Specifications

					AC200 V
Motor model ^{*1}	IP67			MDMF202L1	
		Multifunction type		MEDLT83SF	
Applicable	Model No.	RS48	5 communication typ	be *2	MEDLN83SG
driver	140.	Basic type ^{*2}			MEDLN83SE
	Fram	e sym	bol		E-frame
Power supply	capacit	у	(k\	/A)	3.8
Rated output			(W)	2000
Rated torque			(N [.]	·m)	9.55
Continuous sta	all torqu	ie	(N [.]	·m)	10.0
Momentary Ma	ax. pea	k torqu	ie (N	·m)	28.6
Rated current (A(rn			(A(rm	s))	9.9
Max. current (A(o-p))			42		
Regenerative brake			Without option		No limit Note)2
frequency (times/min) Note)1		Note)1	^{b)1} DV0P4285		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 brake		12.1
of rotor (×10 ⁻⁴ kg·m ²)		With brake		13.3	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
Resolution			n per single turn		8388608

• Brake specifications (For details, refer to P.167) (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.166)

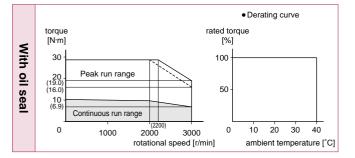
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.

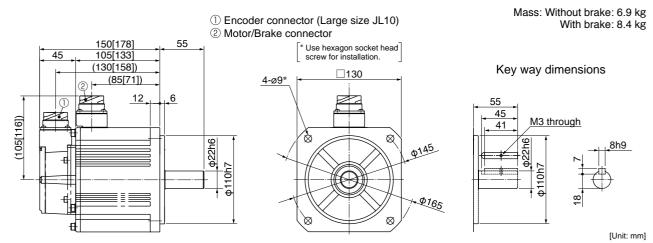
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.113. • 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.

Motor Specifications

[Middle inertia] [130 mm sq.] MDMF 3.0 kW

Specifications

200 V

				AC200 V
Motor model *1	IP67			MDMF302L1
		Multi	function type	MFDLTA3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNA3SG
driver		Basio	c type ^{*2}	MFDLNA3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	4.5
Rated output			(W)	3000
Rated torque			(N·m)	14.3
Continuous sta	all torqu	ie	(N·m)	15.0
Momentary Ma	ax. pea	k torqu	ue (N·m)	43.0
Rated current			(A(rms))	16.4
Max. current (A((A(o-p))	70
Regenerative brake		Without option	No limit Note)2	
frequency (time	frequency (times/min) Note)1		DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	18.6
of rotor (×10 ⁻⁴ kg·m ²)			With brake	19.6
Recommended moment of inertia ratio of the load and the rotor Note				10 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolutio			on per single turn	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) 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.166)

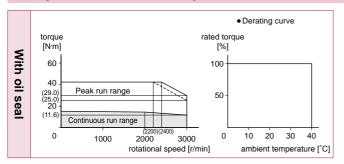
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.

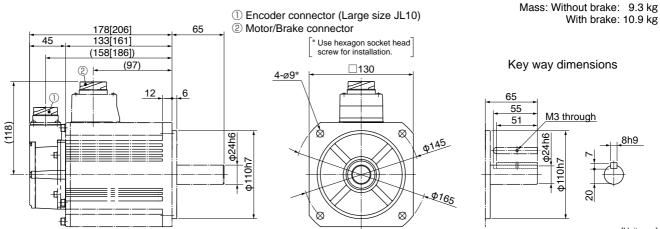
a battery for absolute encoder.

- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.113. • Figures in [] represent the dimensions with brake.

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]

Motor Specifications

200 V MDMF 4.0 kW [Middle inertia]

Specifications

					AC200 V
Motor model *1	IP67			MDMF402L1	
			Multifunction type		MFDLTB3SF
Applicable	Model No.	RS48	RS485 communication type *2		MFDLNB3SG
driver	110.	Basio	type ^{*2}		MFDLNB3SE
	Fram	e sym	bol		F-frame
Power supply	capacit	у	(kV	A)	7.5
Rated output			(V	V)	4000
Rated torque			(N·r	n)	19.1
Continuous sta	all torqu	ie	(N·r	n)	22.0
Momentary Ma	ax. pea	k torqı	ue (N∙r	n)	57.3
Rated current			(A(rms	s))	20.0
Max. current (A(o-p)))))	85	
Regenerative brake		Without option		No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/mi	n)	2000
Max. rotationa	l speed		(r/mi	n)	3000
Moment of ine	rtia		Without brake		46.9
of rotor (×10 ⁻⁴ kg·m ²)		With brake		52.3	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encode	er speci	ficatio	ns ^{*3}		23-bit Absolute
Resolution p			on per single turn		8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

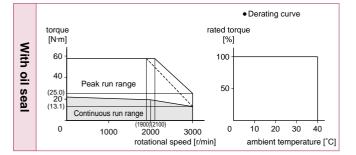
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

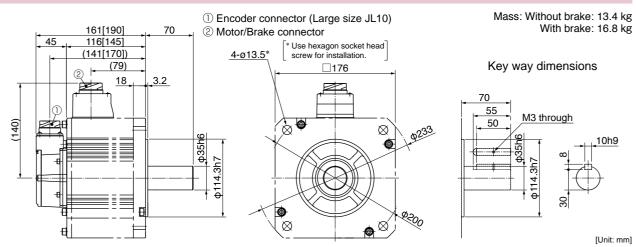
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



Encoder connector (Small size JN2), refer to P.113. • 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.

Motor Specifications

Specifications

200 V

MDMF 5.0 kW

				AC200 V
Motor model *1	IP67			MDMF502L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS485 communication type *2		MFDLNB3SG
driver	110.	Basio	c type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	5000
Rated torque			(N·m)	23.9
Continuous sta	all torqu	ie	(N·m)	26.3
Momentary Ma	ax. pea	k torqu	ue (N·m)	71.6
Rated current			(A(rms))	23.3
Max. current			(A(o-p))	99
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	58.2
of rotor (×10 ⁻⁴ kg·m ²)			With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
Resolutio			on per single turn	8388608

[Middle inertia] 176 mm sq.

> • Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	30 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

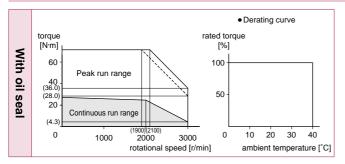
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.

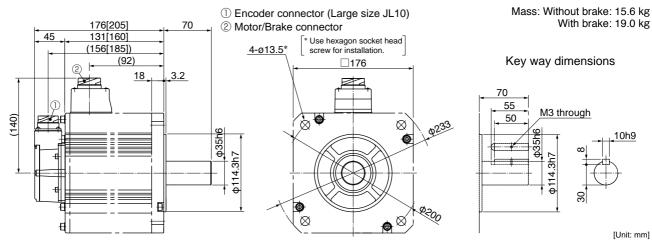
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.113. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V **MGMF** 0.85 kW

Specifications

					AC200 V
Motor model ^{*1}	or model ¹¹ IP67				MGMF092L1
		Multi	Multifunction type		MDDLT45SF
Applicable	Model No.	RS48	RS485 communication type *2		MDDLN45SG
driver	INU.	Basic	type *2		MDDLN45SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(kV/	4)	1.8
Rated output			(V	V)	850
Rated torque			(N·n	n)	5.41
Continuous sta	all torqu	ie	(N·n	n)	5.41
Momentary Ma	ax. pea	k torqu	ıe (N·n	n)	14.3
Rated current (A(rms			;))	5.9	
Max. current (A(o-p))))	22	
Regenerative brake			Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/mii	n)	1500
Max. rotationa	l speed		(r/mi	n)	3000
Moment of ine	rtia		Without brake		6.18
of rotor (×10 ⁻⁴	of rotor (×10 ⁻⁴ kg·m ²)				7.40
Recommended moment of inertia ratio of the load and the rotor Note)3				e)3	10 times or less
Rotary encoder specifications ^{*3}			ns ^{*3}		23-bit Absolute
Resolution pe			n per single turn		8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

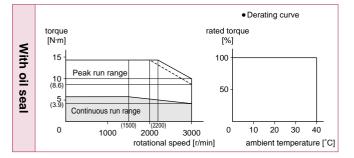
· ·	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

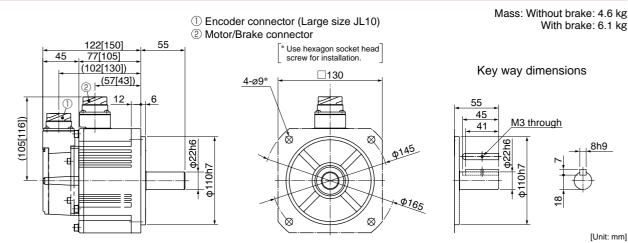
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



Encoder connector (Small size JN2), refer to P.114. • 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.

Motor Specifications

Specifications

200 V

MGMF 1.3 kW

				AC200 V
Motor model *1	IP67			MGMF132L1
		Multifunction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG
driver	110.	Basio	c type *2	MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	2.3
Rated output			(W)	1300
Rated torque			(N·m)	8.28
Continuous sta	all torqu	ie	(N·m)	8.28
Momentary Ma	ax. pea	k torqı	ue (N·m)	23.3
Rated current			(A(rms))	9.3
Max. current (A(o-p))			37	
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4284	No limit Note)2	
Rated rotational speed		d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of inertia			Without brake	9.16
of rotor (×10 ⁻⁴ kg·m ²)		With brake	10.4	
Recommended moment of inertia ratio of the load and the rotor Note				10 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
Resolution			on per single turn	8388608

Middle inertia

130 mm sq.

Low speed/High torque type

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

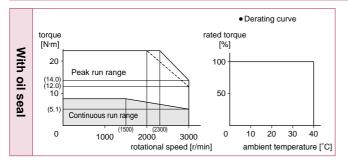
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

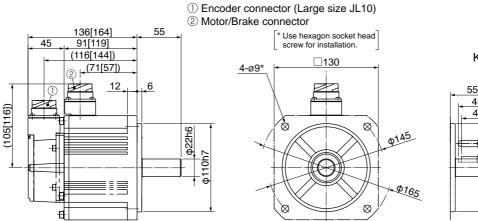
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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

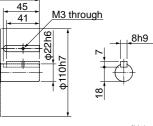


Dimensions



With brake: 7.5 kg

Mass: Without brake: 5.7 kg



Key way dimensions

[Unit: mm]

Encoder connector (Small size JN2), refer to P.114. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V MGMF 1.8 kW

Specifications

				AC200 V
Motor model *1	IP67			MGMF182L1
		Multifunction type		MEDLT83SF
Applicable	Model No.	RS485 communication type *2		MEDLN83SG
driver		Basio	type *2	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	3.8
Rated output			(W)	1800
Rated torque			(N·m)	11.5
Continuous sta	all torqu	ie	(N·m)	11.5
Momentary Ma	ax. pea	k torqu	ue (N·m)	28.7
Rated current			(A(rms))	11.8
Max. current (A(o-			(A(o-p))	42
Regenerative brake frequency (times/min) Note)1		Without option	No limit Note)2	
		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	12.1
of rotor (×10 ⁻⁴ kg·m ²)		With brake	13.3	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
Resolution			on per single turn	8388608

• Brake specifications (For details, refer to P.167) (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.166)

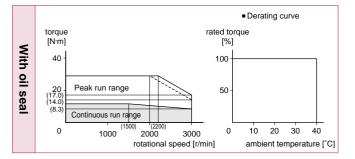
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.

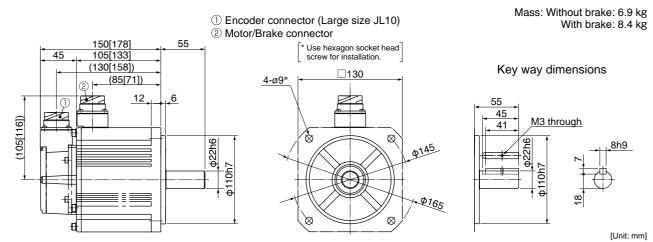
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



Encoder connector (Small size JN2), refer to P.114. • 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.

Motor Specifications

Specifications

200 V

MGMF 2.9 kW

				AC200 V	
Motor model *1	IP67			MGMF292L1	
		Multi	function type	MFDLTB3SF	
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG	
driver	110.	Basio	c type ^{*2}	MFDLNB3SE	
	Fram	e sym	bol	F-frame	
Power supply	capacit	у	(kVA)	7.5	
Rated output			(W)	2900	
Rated torque			(N·m)	18.5	
Continuous sta	all torqu	ie	(N·m)	18.5	
Momentary Ma	ax. pea	k torqı	ue (N·m)	45.2	
Rated current			(A(rms))	19.3	
Max. current (A(o-p))			67		
Regenerative brake			Without option	No limit Note)2	
frequency (times/min) Note)1		DV0P4285×2	No limit Note)2		
Rated rotational speed		d	(r/min)	1500	
Max. rotationa	l speed		(r/min)	3000	
Moment of inertia			Without brake	46.9	
of rotor (×10 ⁻⁴ kg·m ²)		With brake	52.3		
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less		
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute	
	Re	solutic	on per single turn	8388608	

Middle inertia

176 mm sq.

Low speed/High torque type

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

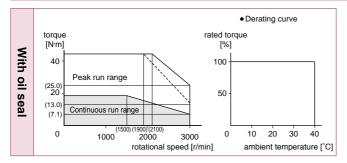
• Permissible load (For details, refer to P.166)

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

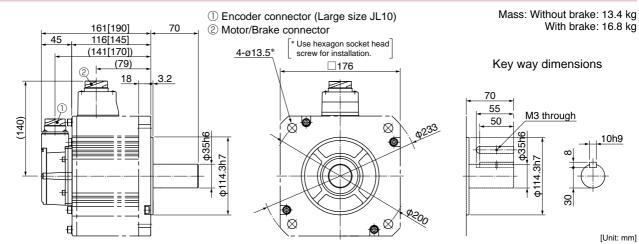
- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.

a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.18. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect
- Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions



Encoder connector (Small size JN2), refer to P.114. • Figures in [] represent the dimensions with brake.

Motor Specifications

200 V **MGMF** 4.4 kW

Specifications

				AC200 V
Motor model *1	IP67			MGMF442L1
		Multifunction type		MFDLTB3SF
Applicable	Model No.	RS48	5 communication type **	MFDLNB3SG
driver	110.	Basio	type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	4400
Rated torque			(N·m)	28.0
Continuous sta	all torqu	ie	(N·m)	28.0
Momentary Ma	ax. pea	k torqı	ue (N·m)	70.0
Rated current			(A(rms))	27.2
Max. current (A(o-			(A(o-p))	96
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4285×2	No limit Note)2	
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	58.2
of rotor (×10 ⁻⁴ kg·m ²)			With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encode	Rotary encoder specifications			23-bit Absolute
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

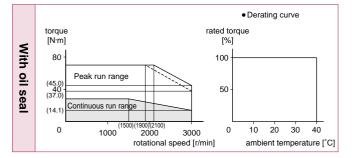
	,
Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	30 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

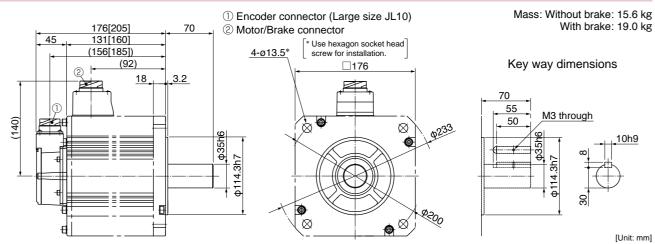
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.18.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



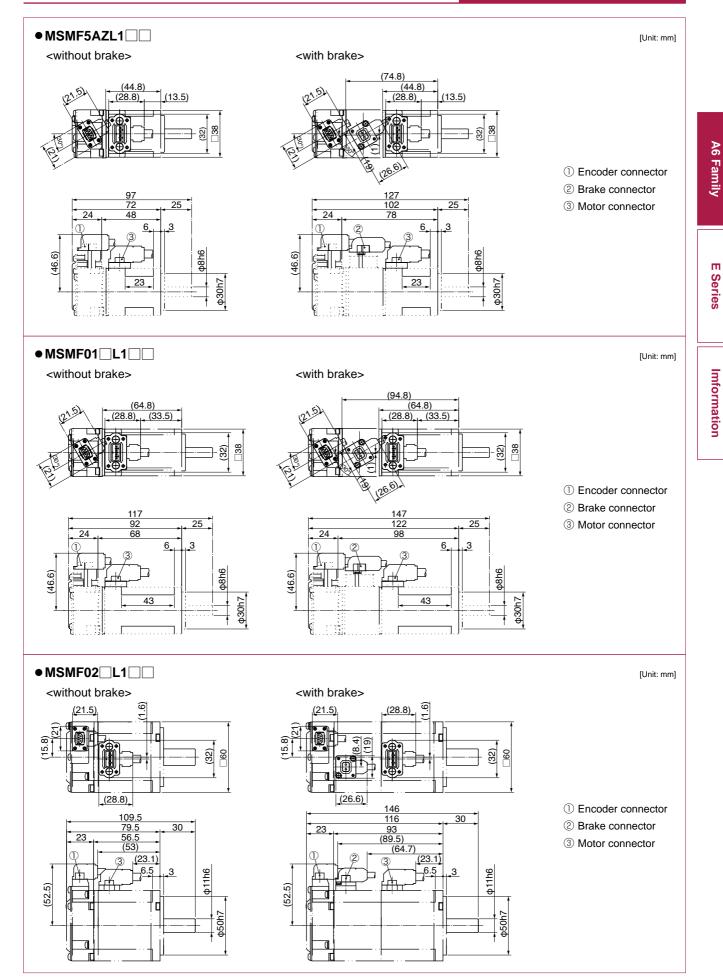
Encoder connector (Small size JN2), refer to P.114. • Figures in [] represent the dimensions with brake.

<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.

MSMF 50 W to 200 W Connector type (IP67)

A6 Family

Dimensions



* For motor specifications and mounting dimensions (on flange face), refer to P.51 to P.56.

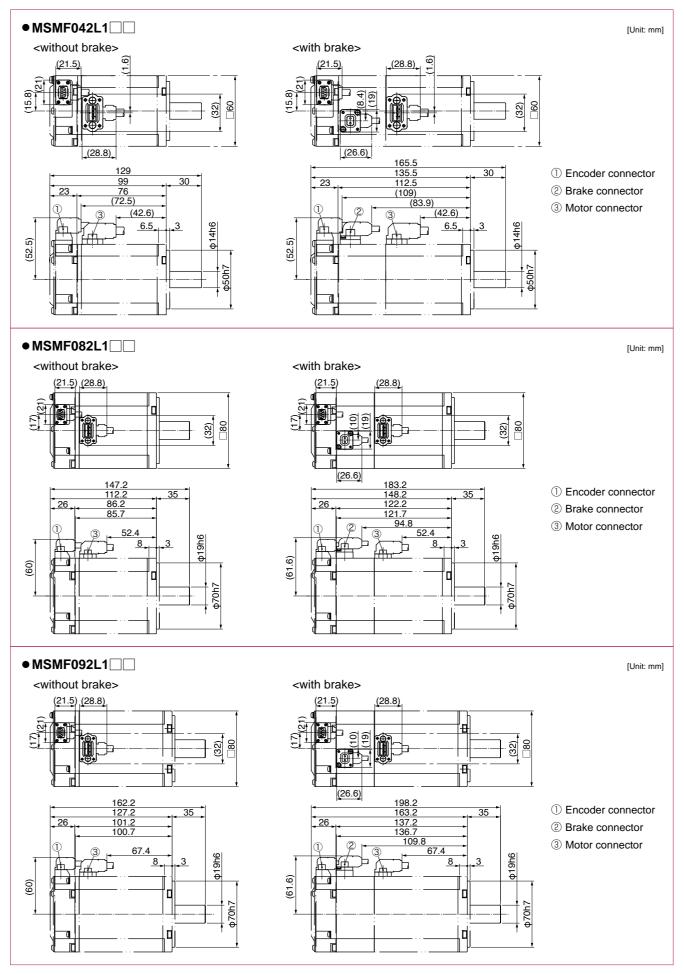
ш Series

Imformation

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

MSMF 400 W to 1000 W Connector type (IP67)

Dimensions



* For motor specifications and mounting dimensions (on flange face), refer to P.57 to P.60.

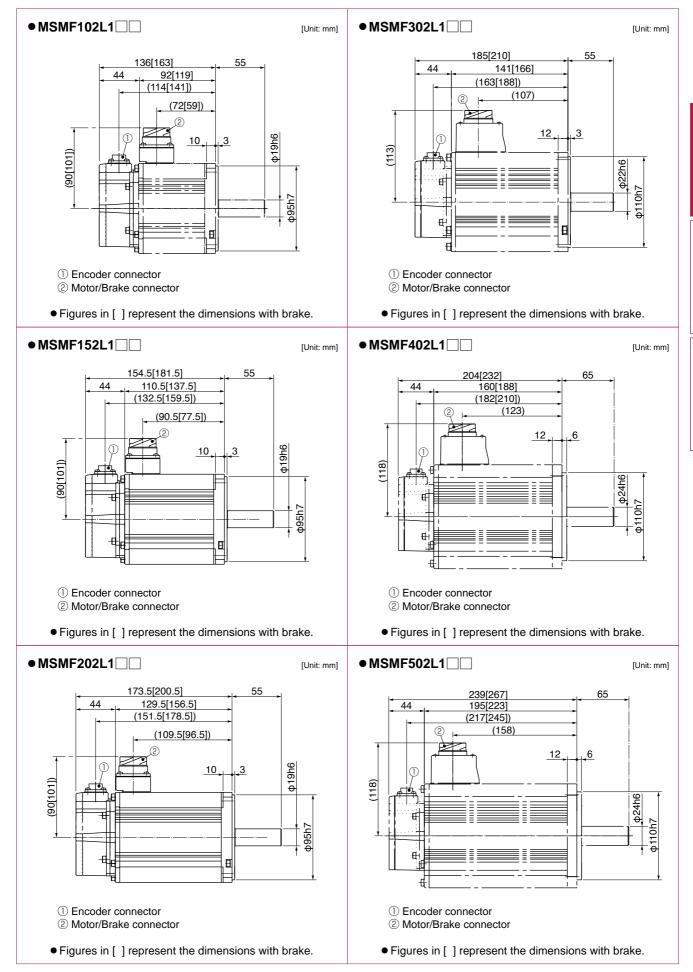
101 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

MSMF 1.0 kW to 5.0 kW Small size connector (JN2)

A6 Family

Dimensions

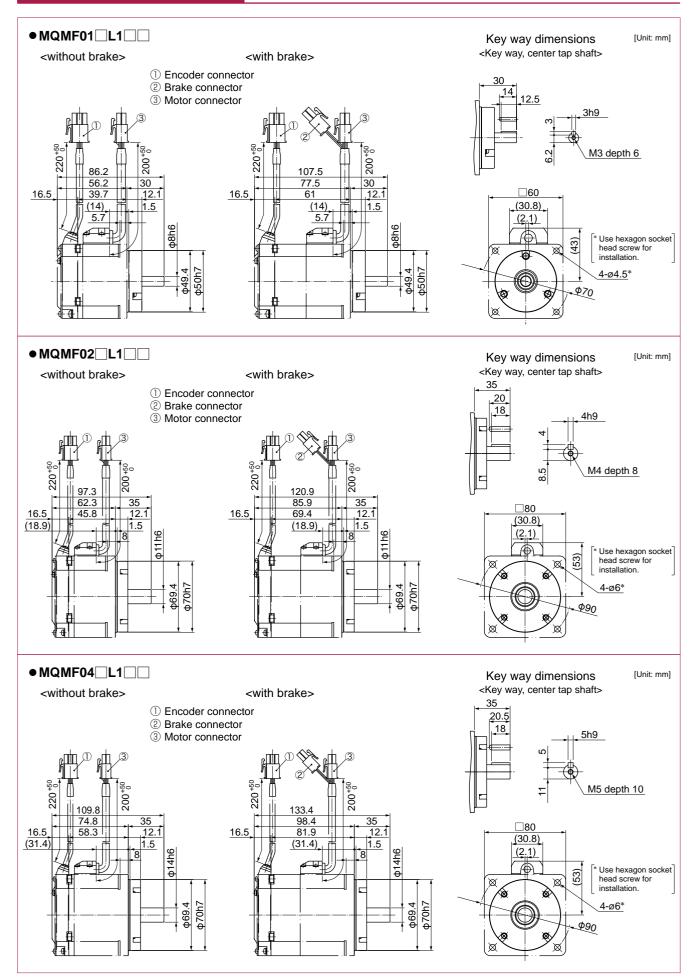


* For motor specifications and mounting dimensions (on flange face), refer to P.61 to P.66.

A6 Family

Dimensions

MQMF 100 W to 400 W Leadwire type (IP65) with protective lip/ with oil seal



* For motors specifications, refer to P.67 to P.72.

103 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

MQMF 100 W, 200 W Connector type (IP67)

• MQMF01 __L1 ___ Encoder connector [Unit: mm] Key way dimensions ② Motor/Brake connector without protective lip/ with oil seal <Key way, center tap shaft> <without brake> <with brake> (12.3[8.8]) (26.6) (12.3[8.8]) (26.6) 14 14 12.5 12.5 3h9 8 8 30. 30 -----(19.2) (19.2) 6.2 M3 depth 6 P (34.3[30.8]) (55.6[52.1]) (21.5) with without (21) 3 (protective lip) (protective lip) 106[102.5] 84.7[81.2] 59.7[56.2] 25 81[77.5] 25 60 16.5 43.2[39.7] 16.5 64.5[61] 3 5.7 3 5.7 Q (2) Use hexagon socket φ8h6 φ8h6 D head screw for installation. <u>D</u>h 1 1 H) (44) (44) `ൽ Ø 4-ø4.5* Φ50h7 Φ50h7 \$70 Ø, ▋₽₿ ₫₫ * Figures in [] represent the dimensions without oil seal. with protective lip/ with oil seal <without brake> <with brake> (86.2) 107.5 56.2 30 77.5 30 60 16. 39.7 12.1 16. 61 12.1 5 1.5 5.7 1.5 2 φ8h6 ф8h6 Use hexagon socket head screw for 1 顶 4 (44) installation. Ø 4-ø4.5* **b50h7 ⊅50h7** p49. p49. \$70 Ø P ø Ø • MQMF02 L1 Key way dimensions ① Encoder connector [Unit: mm] 2 Motor/Brake connector <Key way, center tap shaft> ■ without protective lip/ with oil seal 35 30 <without brake> <with brake> 20 20 (17.2[13.7]) (17.2[13.7]) (26.6)(26.6) 18 18 4h9 ŝ (21) (21.5 8 ά 3 . 08 09 30 M4 depth 8 8.5 <u>(21.5)</u> (40.4[36.9]) (64[60.5]) (21.5)(without protective lip) (with) protective lip/ 95.8[92.3] 119.4[115.9] 65.8[62.3] 30 89.4[85.9] 30 16.549.3[45.8] 16.5 □80 72.9[69.4] 3 ф11h6 1h6 3 \bigcirc (1 പപ്പ Use hexagon socket head screw for ┢ 庯 9 (54) (54) ø 8 installation 4-ø6* **4**70h b70h \$90 ø 4 * Figures in [] represent the dimensions without oil seal. with protective lip/ with oil seal <without brake> <with brake> 97.3 85.9 62 35 35 16. 80 16.5 69 Ф11h6 Ф11h6 O 1 낢 ╠╋ り雨 - (a) Use hexagon socket (54)(54) Ø head screw for installation. φ70h7 ф69.4 Φ70h7 4-ø6* ф69. <u>\$90</u> ø à Ø ø

* For motors specifications, refer to P.67 to P.70.

A6 Family

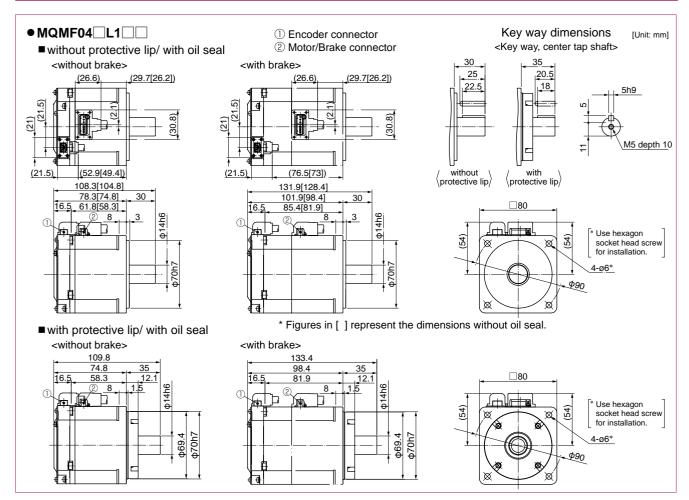
ш

Series

Dimensions

Dimensions

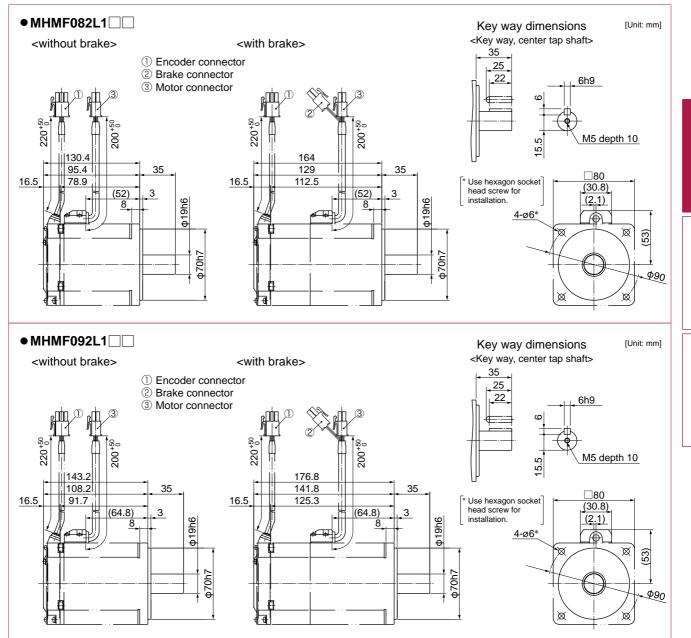
MQMF 400 W Connector type (IP67)



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

MHMF 750 W, 1000 W Leadwire type (IP65) with oil seal

A6 Family Dimensions

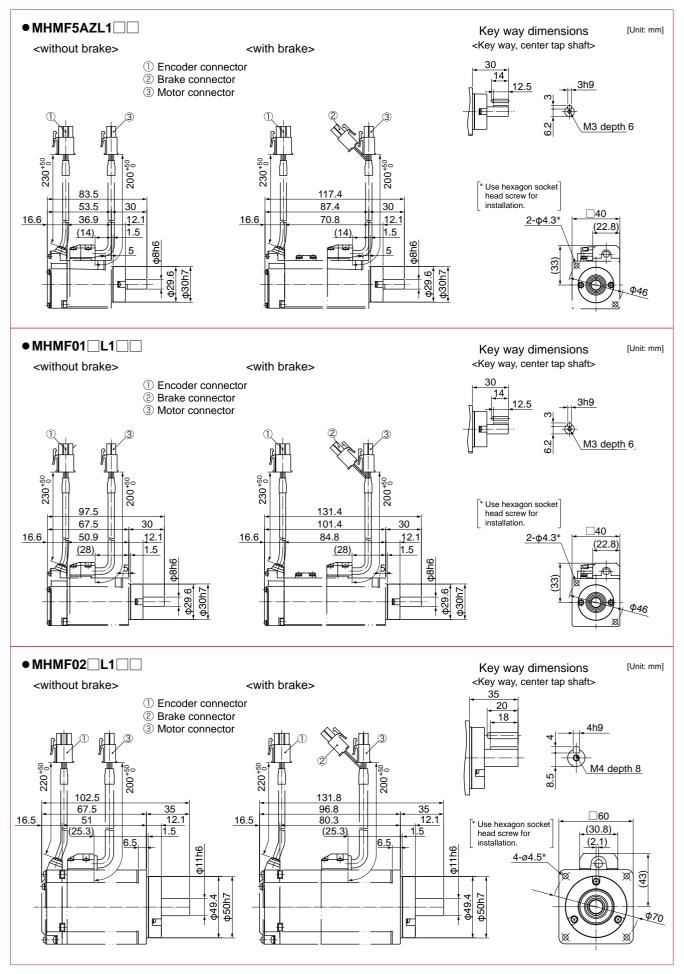


* For motors specifications, refer to P.81, P.82.

A6 Family

Dimensions

MHMF 50 W to 200 W Leadwire type (IP65) with protective lip/ with oil seal



^{*} For motors specifications, refer to P.73 to P.78.

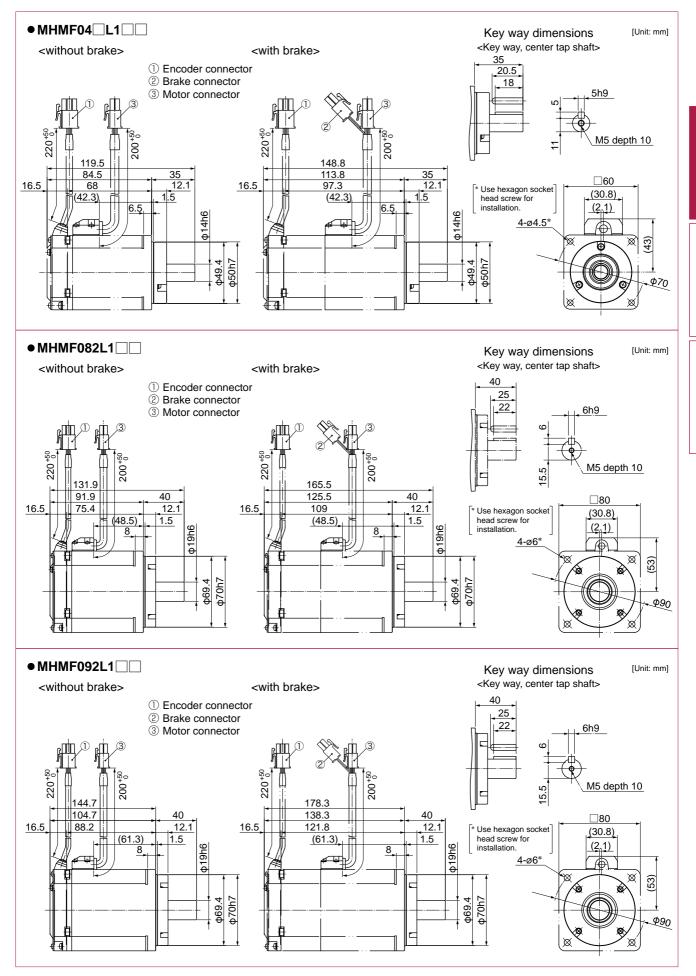
107 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

MHMF 400 W to 1000 W Leadwire type (IP65) with protective lip/ with oil seal

A6 Family

Dimensions



* For motors specifications, refer to P.79 to P.82.

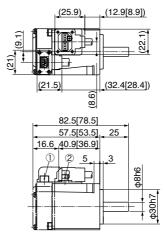
Imformation

Dimensions

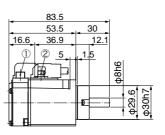
MHMF 50 W, 100 W Connector type (IP67)

MHMF5AZL1

■ without protective lip/ with oil seal <without brake>

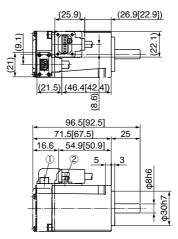


with protective lip/ with oil seal <without brake>

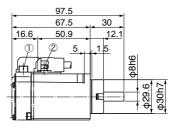


• MHMF01 L1

without protective lip/ with oil seal <without brake>



■ with protective lip/ with oil seal <without brake>

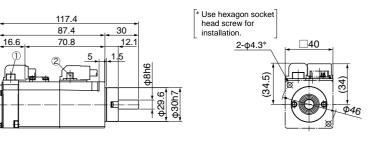


* For motors specifications, refer to P.73 to P.76.

① Encoder connector Key way dimensions 2 Motor/Brake connector <Key way, center tap shaft> <with brake> 30 (25.9)(12.9[8.9]) 12.5 22 without with (21 (66.3[62.3]) (protective lip) protective lip/ 8.6 Use hexagon socket 116.4[112.4] head screw for 91.4[87.4] 25 installation. 16.6 74.8[70.8] 40 2-ф4.3* 1 5 3 2 φ8h6 Ы ŝ Π 34 ф30h7

* Figures in [] represent the dimensions without oil seal.

<with brake>



[Unit: mm] Key way dimensions <Key way, center tap shaft>

3h9

M3 depth 6

30

14

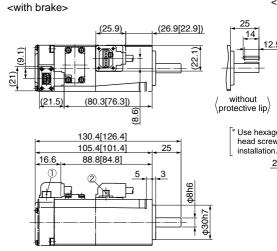
12.5

[Unit: mm]

M3 depth 6

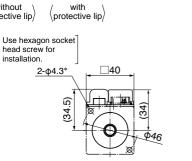
3h9

34)



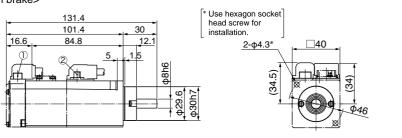
① Encoder connector

2 Motor/Brake connector



* Figures in [] represent the dimensions without oil seal.

<with brake>



MHMF 200 W, 400 W Connector type (IP67)

• MHMF02 L1 ① Encoder connector [Unit: mm] Key way dimensions ② Motor/Brake connector ■ without protective lip/ with oil seal <Key way, center tap shaft> <without brake> <with brake> 30 35 (23.6[20.1]) (26.6) (23.6[20.1]) 20 20 (26.6) 18 18 Ð 4h9 4 (30.8) 8 5 li (30 (19.2)(19.2)8.5 M4 depth 8 (45.6[42.1]) (74.9[71.4]) without with (21.5)(21) (21.5) 21) protective lip. protective lip 101[97.5] 130.3[126.8] 71[67.5] 30 100.3[96.8] 30 60 83.8[80.3] 16.5 54.5[51] 16.5 Use hexagon ф11h6 1h6 3 socket head **₩**100 łŧ 攔 14 加 ф screw for (44) (44) installation ø4.5* **450h7 b50h**7 \$<u>70</u> ø Figures in [] represent the dimensions without oil seal. with protective lip/ with oil seal <without brake> <with brake> 102.5 131.8 35 96.8 35 67.5 60 16.5 12.1 16.5 80.3 12.1 51 1.5 ф11h6 Use hexagon 1.5 Яĥ 6.5 socket head ф 11 兩 - 14 screw for (44) 44 installation ø4.5* Φ50h7 φ50h7 ф49.4 p49. \$70 P Ľ ø ∄∄ 1 • MHMF04 L1 ... Encoder connector Key way dimensions [Unit: mm] ② Motor/Brake connector ■ without protective lip/ with oil seal <Key way, center tap shaft> <without brake> <with brake> 30 35 25 20.5 (26.6) (40.6[37.1]) (26.6) (40.6[37.1] 22.5 18 5h9 (30.8) (30.8) 2 lŧ ณิ ณิ = 19. 6 M5 depth 10 Ð (62.6[59.1]) (21.5) (91.9[88.4]) without protective lip (with protective lip) (21 (21) (21) 118[114.5] 147.3[143.8] 30 88[84.5] 117.3[113.8] 30 □60 16.5 16.5 71.5[68] 100.8[97.3] Use hexagon ф14h6 6.5 6.5 14h6 socket head <u>+ n</u> 凮 screw for ė (44) 44 installation. 4-ø4.5* Φ50h7 Φ50h \$70 Ø * Figures in [] represent the dimensions without oil seal. with protective lip/ with oil seal <without brake> <with brake> 119.5 148.8 84.5 35 113.8 35 60 16.5 68 12.1 16.5 97.3 12.1 1.5 14h6 6.5 φ14h6 6.5 1.5 Use hexagon socket head 꼐 5 screw for 44) 44 installation ø4.5* φ50h7 φ50h7 ф49. ф49. \$70 P P 4 4 ଷ

* For motors specifications, refer to P.77 to P.80.

A6 Family

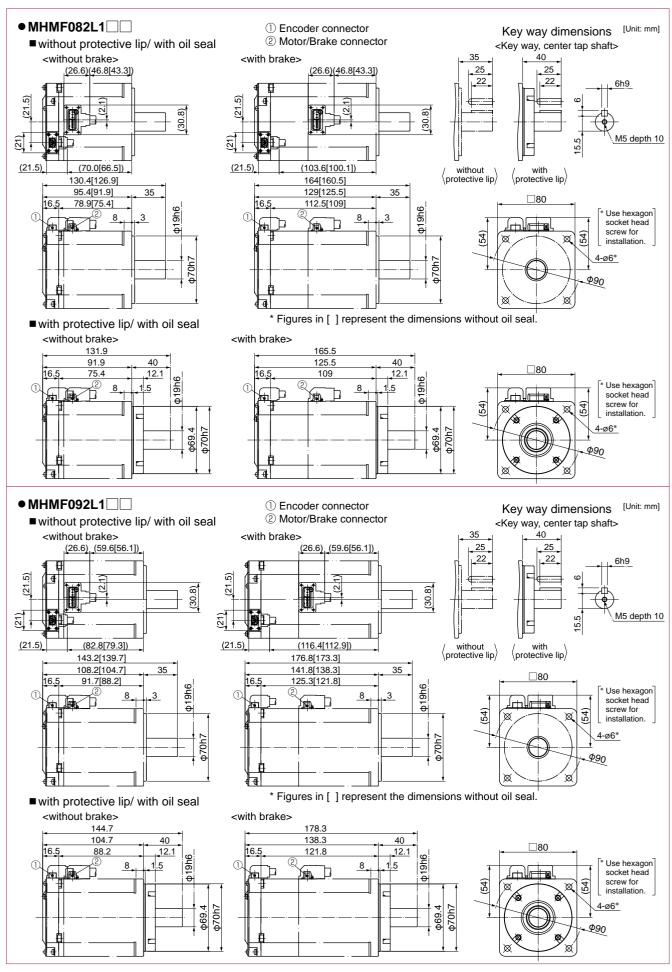
Imformation

ш

Dimensions

Dimensions

MHMF 750 W, 1000 W Connector type (IP67)



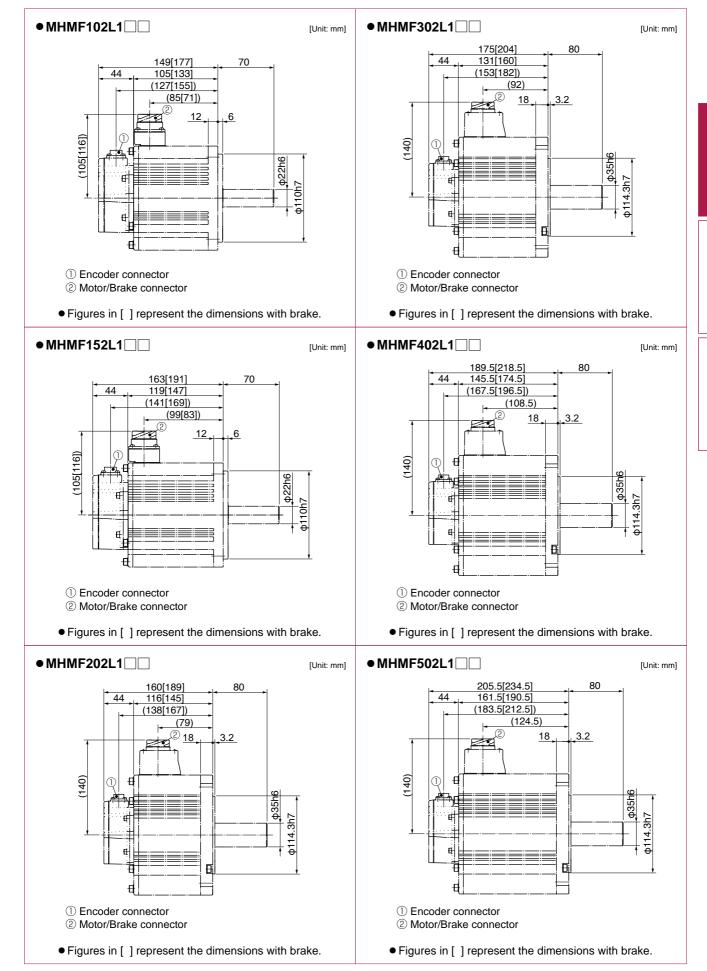
* For motors specifications, refer to P.81, P.82.

111 MINAS A6 Family

MHMF 1.0 kW to 5.0 kW Small size connector (JN2)

A6 Family

Dimensions



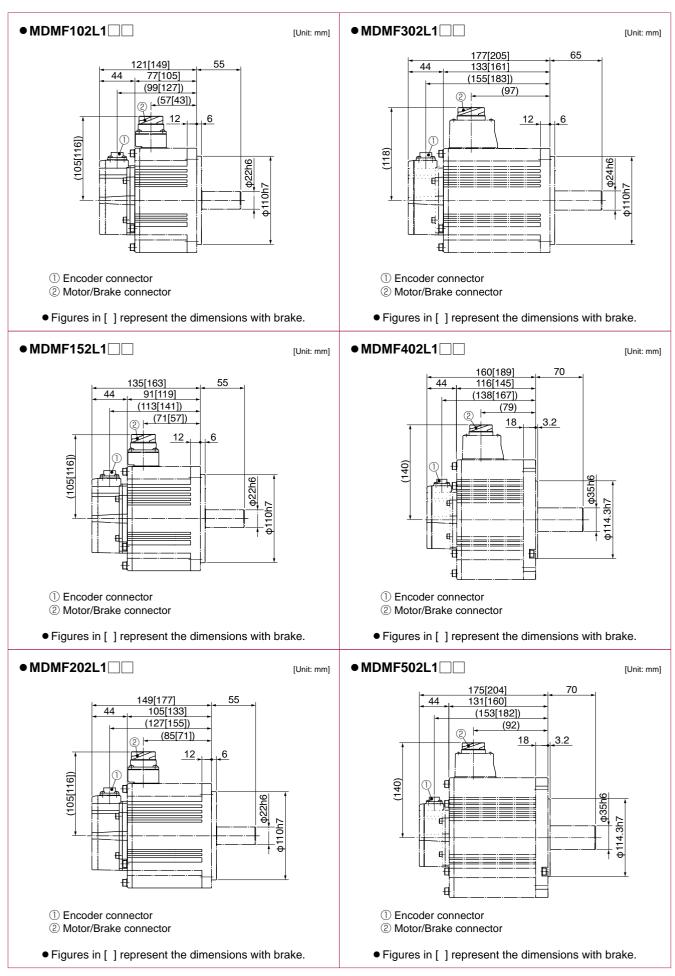
* For motor specifications and mounting dimensions (on flange face), refer to P.83 to P.88.

A6 Family

E Series

Dimensions

MDMF 1.0 kW to 5.0 kW Small size connector (JN2)



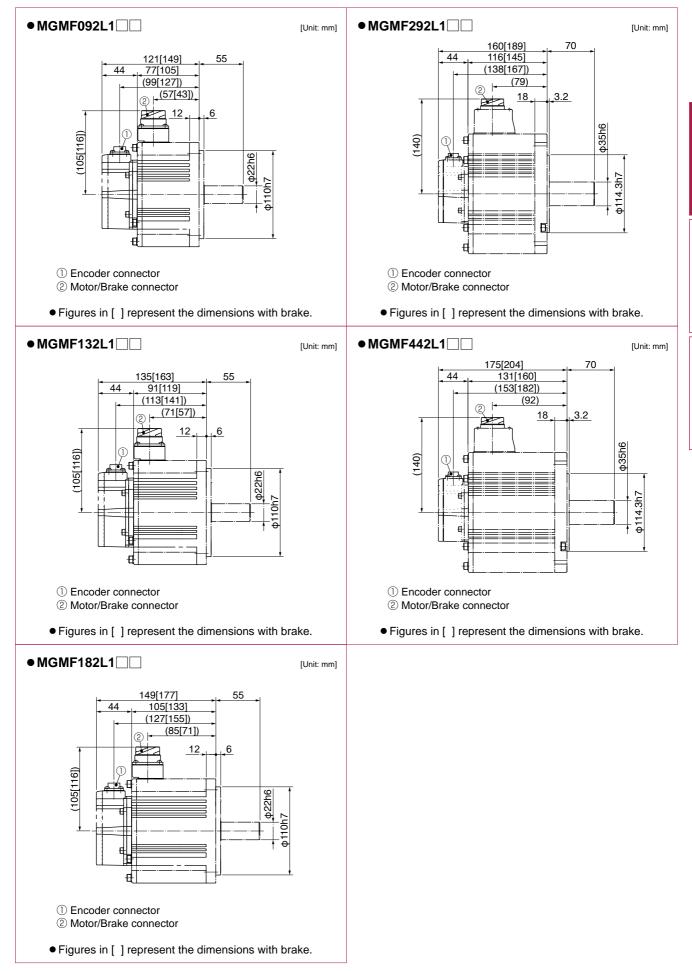
* For motor specifications and mounting dimensions (on flange face), refer to P.89 to P.94.

113 MINAS A6 Family

MGMF 0.85 kW to 4.4 kW Small size connector (JN2)

A6 Family

Dimensions



* For motor specifications and mounting dimensions (on flange face), refer P.95 to P.99.

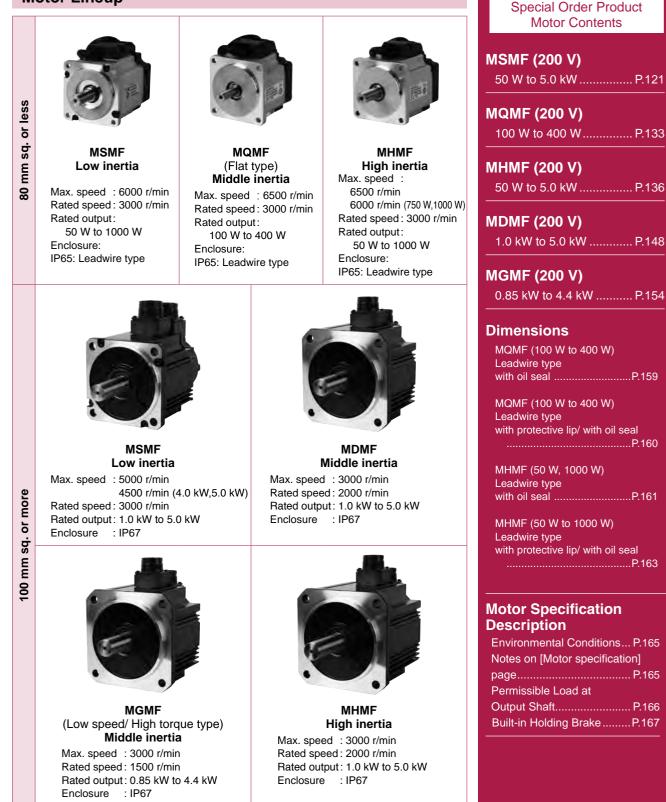
A6 Family

Special Order Product Features/ Lineup

Features

- Line-up IP67 motor: 1.0 kW to 5.0 kW
- Max speed: 6500r/min (MHMF 50 W to 400 W)
- · Low inertia (MSMF) to High inertia (MHMF).
- Low cogging torque: Rated torque ratio 0.5 % (typical value).
- 23-bit absolute encoder (8388608 pulse).

Motor Lineup



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

115 MINAS A6 Family

Special Order Product

Model Designation

* For combination of elements of model number, refer to Index P.272.

Servo Motor

M S M F 5 A 2 L 1 A 1 * Special specifications 1 2 3 4 5 6 7 * Special specifications

1) Type

~			
Symbol		Туре	
MSM	Low inertia	(50 W to 5.0 kW)	
MQM	Middle inertia	(100 W to 400 W)	
MDM	Middle inertia	(1.0 kW to 5.0 kW)	
MGM	Middle inertia	(0.85 kW to 4.4 kW)	
MHM	High inertia	(50 W to 5.0 kW)	

2 Series

Symbol	Series name

F A6 series

③ Motor rated output

ymbol	Rated output		Symbol	Rated output
5A	50 W		15	1.5 kW
01	100 W		18	1.8 kW
02	200 W		20	2.0 kW
04	400 W		29	2.9 kW
08	750 W		30	3.0 kW
00	0.85 kW, 1000 W		40	4.0 kW
(13	(130 mm sq.) (80 mm sq.)		44	4.4 kW
10	1.0 kW		50	5.0 kW
13	1.3 kW			
	5A 01 02 04 08 09 10	5A 50 W 01 100 W 02 200 W 04 400 W 08 750 W 09 0.85 kW, 1000 W 130 mm sq.) (80 mm sq.) 10 1.0 kW	5A 50 W 01 100 W 02 200 W 04 400 W 08 750 W 09 0.85 kW, 1000 W (130 mm sq.) (80 mm sq.) 10 1.0 kW	5A 50 W 15 01 100 W 18 02 200 W 20 04 400 W 29 08 750 W 30 09 0.85 kW, 1000 W 40 10 1.0 kW 50

④ Voltage specifications

Symbol	Specifications
2	200 V

(5) Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
L	Absolute	23-bit	8388608	7

<Note>

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

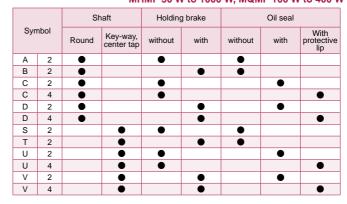
6 Design order

Symbol	Specifications
1	Standard

⑦ Motor specifications:	80 mm sq.	or less	Leadwire type IP65
	MOME EO	N to 100	0.W/

			IVIS	DIVIF DU V	to 1000	VV	
		Shaft		Holding	g brake	Oil seal	
Syr	nbol	Round	Key-way, center tap	without	with	without	with
Α	2						
В	2	•				•	
С	2	•					
D	2						
S	2			•		•	
Т	2						
U	2						
V	2						

⑦ Motor specifications: 80 mm sq. or less Leadwire type IP65 MHMF 50 W to 1000 W, MQMF 100 W to 400 W



⑦ Motor specifications: 100 mm sq. or more Encoder connector : JL10 IP67 MSMF, MHMF, MDMF, MGMF

		Shaft		Holding	g brake	Oil seal	
Sym	nbol	Round	Key-way	without	with	with	With protective lip
С	6	•		•		•	
С	8	۲					
D	6	•			•	•	
D	8	•					
G	6						
G	8			•			•
Н	6						
н	8				•		•

* Encoder connector JL10: Also applicable to screwed type

Servo Driver

Μ	Α	D	L	Ν	1	5	S	Ε	* * *	
	1)		(2)	3	(4)	(5)	6	(7)		

Special specifications

6 I/f specifications ⑦ Classification of type

① Frame symbol

SymbolFrameSymbolFrameMADA-FrameMDDD-Frame
MAD A-Frame MDD D-Frame
MBD B-Frame MED E-Frame
MCD C-Frame MFD F-Frame

2 Series

Symbol	Series name
L	A6 series

③ Safety Function

 Symbol
 Specifications

 N
 without the safety function

 T
 with the safety function

(4) Max. current rating

	Symbol	Current rating	Symbol	Current rating	
	0	6 A	5	40 A	
	1	8 A	8	60 A	
	2	12 A	Α	100 A	
	3	22 A	В	120 A	
	4	24 A			

(5) Supply voltage specifications

Symbol Specifications

 3
 3-phase 200 V

 5
 Single/3-phase 200 V

Symbol (specification)	Symbol	Specification			
	Е	Basic type (Pulse train only)			
S (Analog/Pulse)	F	Multi fanction type (Pulse, analog, full-closed)			
	G	RS485 communication type (Pulse train only)			
N	E	without the safety function			
(RTEX)	F	with the safety function			
B (EtherCAT)	(Scheduled to release in 2016)				

Table of Part Numbers and Options: Special Order Product 80 mm sq. or less 50 W to 1000 W

Motor												
						A6 SF series	A6 SG series		Power	Encoder C	able Note)3	
					Rating/	Multi fanction type	RS485 communication		capacity	23-bit A	bsolute	
	Motor series	Power supply	Output (W)	Part No. Note)1	Spec. Dimensions (page)	(Pulse, analog, full-closed)	A6 SE series Basic (Pulse signal input) Note)2, Note)4	Frame	(at rated load (kVA)	Use in the absolute system (with battery box)	Use in the Incremental system (without battery box)	
			50	MSMF5AZL1 🗌 2M	121	MADLT05SF	MADLN05S◇				(For fixed)	
			100	MSMF012L1 🗌 2M	122	MADLT05SF	MADLN05S◇	A-frame	Approx. 0.5	MFECA		
	MSMF	Single phase/	200	MSMF022L1 🗌 2M	123	MADLT15SF	MADLN15S◇					
	3000 r/min IP65	3-phase 200 V	400	MSMF042L1 🗌 2M	124	MBDLT25SF	MBDLN25S◇	B-frame	Approx. 0.9	0 * *0EAE (For fixed)		
			750	MSMF082L1 🗌 2M	125	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.3			
			1000	MSMF092L1 🗌 2M	126	MDDLT45SF	MDDLN45S	D-frame	Approx. 1.8			
	MQMF	Single	100	MQMF012L1 🗌 2M MQMF012L1 🗌 4M	133	MADLT05SF	MADLN05S◇	A .	Approx.			
		Single phase/ 3-phase	200	MQMF022L1 🗌 2M MQMF022L1 🗌 4M	134	MADLT15SF	MADLN15S◇	A-frame	0.5	MFECA 0 * * 0EAE (For fixed)		
ган туре	IP65	200 V	400	MQMF042L1 🗌 2M MQMF042L1 🗌 4M	135	MBDLT25SF	MBDLN25S◇	B-frame	Approx. 0.9			
			50	MHMF5AZL1 🗌 2M MHMF5AZL1 🗌 4M	136	MADLT05SF	MADLN05S◇					
			100	MHMF012L1 2M MHMF012L1 4M	137	MADLT05SF	MADLN05S◇	A-frame	Approx. 0.5			
- III	Leadwire type	Single phase/	200	MHMF022L1 🗌 2M MHMF022L1 🗌 4M	138	MADLT15SF	MADLN15S◇			MFECA	MFECA	
nigii iileilia	3000 r/min IP65	3-phase 200 V	400	MHMF042L1 🗌 2M MHMF042L1 🗌 4M	139	MBDLT25SF	MBDLN25S◇	B-frame	Approx. 0.9	0 * * 0EAE (For fixed)	0 * * 0EAD (For fixed)	
			750	MHMF082L1 2M MHMF082L1 4M	140	MCDLT35SF	MCDLN35S	C-frame	Approx. 1.3			
			1000	MHMF092L1 🗌 2M MHMF092L1 🗌 4M	141	MDDLT55SF	MDDLN55S	D-frame	Approx. 2.3			

Note)1 🗌 : Represents the motor specifications. (refer to "Model designation" P.116.)

Note)2 \diamond : Represents the driver specifications. (refer to "Model designation" P.116.)

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

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

	Optional pa	arts					Options				
	Motor Cal	ble Note)3						Title		Part No.	Page
							Interface Cable	9		DV0P4360	182
			Brake Cable	External Regenerative	Reactor	Noise Filter				DV0P4120	182
	without Brake	with Brake	Note)3	Resistor	Single phase 3-phase	Single phase 3-phase				DV0P4121	182
					1		Interface Conversion Cable			DV0P4130	182
										DV0P4131	182
										DV0P4132	182
				DV0P4281			Connector Kit for Power	A-frame	Single row type	DV0PM20032	185
					DV0P227 DV0P220		Supply Input	to D-frame	Double row type	DV0PM20033	185
				DV0F220	DV0P4170 DV0PM20042	Connection Connector Kit for Motor Connection	A-frame D-frame		DV0PM20034	186	
	MFN 0**	MCA 0EED	MFMCB 0 * * 0GET				Connector Kit f Motor/Encoder		on	DV0P4290	186
				DV0P4283	DV0P228		Woton/Encoder	RS485, RS232		DV0PM20024	183
					DV0P220			Safety		DV0PM20025	183
						DV0PM20042	Connector Kit	Interface		DV0P4350	184
					DV0P228			External		DV0PM20026	184
				DV0P4284	DV0P222	DV0P4220		Encoder		DV0PM20010	184
							Battery for Abs		oder	DV0P2990	194
				DV0P4281	DV0P227		Battery Box for			DV0P4430	194
	MFMCA 0 * *0EED		MFMCB		DV0P220	DV0P4170	Ballery BOX IOI	For A-fra			
			0**0GET	DV0P4283		DV0PM20042	Mounting	B-frame		DV0PM20100	195
				DV0F4203	DV0P228		Bracket	For C-fra D-frame	ime,	DV0PM20101	195
					DV0P220		Encoder	with Battery E	Box	MFECA0 * * 0EAE	171
							Cable	without Battery E		MFECA0 * * 0EAD	171
				DV0P4281	DV0P227 DV0P220	DV0P4170 DV0PM20042	Motor Cable	without E	Brake	MFMCA0 * * 0EED	175
							Brake Cable			MFMCB0 * * 0GET	181
								50 Ω 25 W		DV0P4280	197
		ИСА	MFMCB				Extornal	100 Ω 25	5 W	DV0P4281	197
	0**		0 * * 0GET	=			External regenerative	25 Ω 50	W	DV0P4282	197
				DV0P4283	DV0P228		resistor	50 Ω 50	W	DV0P4283	197
					DV0P220			30 Ω 100	W	DV0P4284	197
						DV0PM20042		1		DV0P220	196
				DV0P4284	DV0P228	DV0P4220				DV0P222	196
				2 0 1 4204	DV0P222		Reactor			DV0P227	196
										DV0P228	196
										DV0P4170	236
							Noise Filter			DV0PM20042	236
								INDISE FIITER		DV0P4220	236
											230
							Surge Absorbe	er		DV0P4190	
							Forito Coro			DV0P1450	237
							Ferite Core			DV0P1460	238

Special Order Product

Table of Part Numbers and Options:100 mm sq. or more0.85 kW to 5.0 kW

Notor series Single press (no. 100 model) Percent (no. 100 model) Percent (no. 100 model) Ad SG series (no. 100 model) Ad SG series (no. 100 model) Ad SG series (no. 100 model) Percent (no. 100 model) Encoder Call to (Log series (no. 100 model)) Concert Call				Mot	or		Driver						
U U	N	otor series				Spec. Dimensions	Multi fanction type (Pulse, analog,)	RS485 communication A6 SE series Basic (Pulse signal input)	Frame	capacity (at (rated load)	JL10 (La (One-touch N/MS scro 23-bit A Use in the	irge size) n lock type ewed type bsolute Use in the	
NSMF Note Signal of the Signal o								Note)2, Note)4					
Septem Septem<			phase/	1000		127	MDDLT55SF		D fromo				
Sector Sector Sector Market and the sector M		MSMF	•	1500		128	MDDLT55SF		D-marrie	2.3		MEEOA	
IP67 20 V 4000 MSMF402L1 BM 131 MFDLTB3SF MFDLNB3SO F-targe Approx Approx <td>Low in</td> <td>Large size</td> <td></td> <td>2000</td> <td></td> <td>129</td> <td>MEDLT83SF</td> <td></td> <td>E-frame</td> <td></td> <td>-</td> <td></td> <td></td>	Low in	Large size		2000		129	MEDLT83SF		E-frame		-		
MIMF Stand Model Minimetral	Iertia			3000		130	MFDLTA3SF	MFDLNA3S					
Soud Soud Soud Soud Soud MSMF5021 BM 132 MFDLTB3SF MFDLNB3SO Approx.		11 07	200 V	4000	MSMF402L1 🗌 8M	131	MFDLTB3SF	MFDLNB3S◇	F-frame				
MDMF Phase 3-phase 200 V Totol MMMF102L1 MM 148 MDDL14SS Dates MDDL15SS Dates Phase 233 MEECA 0**0EPE MFECA 0**0EPE MDMF 2000 // 2000 // 1500 // 1967 2000 // 2000 // 2000 // 2000 // 2000 // 1500 // 1500 // 1500 // 1500 // 1500 // 1500 // 1500 // 1500 // 1967 2000 // 2000 // 200				5000	MSMF502L1 🗌 8M	132	MFDLTB3SF	MFDLNB3S					
MDMF 200 V 1500 MDMF152L1 BM 149 MDDL155SF MDDLN55SC 2.3 MFECA 0**0EPD 2000 // 10 type 3-phase 2000 MDMF302L1 BM 150 MEDLT83SF MEDLN83SC E-main Approx. 0**0EPD 0**0EPD 2000 // 10 type 3000 MDMF302L1 BM 151 MFDLT83SF MFDLN83SC F-main Approx. 7.5 0**0EPD 0**0			phase/	1000	MDMF102L1 🗌 8M	148	MDDLT45SF	MDDLN45S	D-frame	1.8			
Image size Julio type 2000 immin JP67 2000 Immuno Humi 2021 eM MDMF302L1 eM 4000 150 MEDLR3SF MEDLN3SS Errams Approx 4.5 O* * 0EPD MFECA 0**0ESD 1000 3-phase 200 // MDMF302L1 eM 4000 300 MDMF302L1 eM MDMF402L1 eM 4000 151 MFDLR3SF MFDLNB3SS Frams Approx 4.5 Approx 7.5 Approx 4.5 Approx 7.5 Approx 4.5 Approx 4.5 Approx 7.5 Approx 4.5 Approx 7.5 <		MDMF		1500	MDMF152L1 🗌 8M	149	MDDLT55SF	MDDLN55S		2.3	MFECA	MFECA	
Loss final 3-phase (P67 3-unitset (P67 3-unitset (P6				2000	MDMF202L1 🗌 8M	150	MEDLT83SF	MEDLN83S	E-frame	3.8			
Mode 4000 MDMF402L1 0M 152 MFDLTB3SF MFDLB3SC F-trame Approx. Approx. 1000 MDMF502L1 0M 153 MFDLTB3SF MFDLNB3SC 7.5 MGMF Single Japhase/ JL10 type JL10 type J200 V 850 MGMF132L1 6M 155 MDDLT5SSF MDDLN5SSC D-frame Approx. Approx. 7.5 MFECA 0 * * 0EPE 0 * * 0ESD 1500 MGMF132L1 6M 157 MFDLTB3SF MEDLN83SC E-frame 7.5 MFECA 0 * * 0ESE 0 * * 0ESE </td <td></td> <td></td> <td></td> <td>3000</td> <td>MDMF302L1 🗌 8M</td> <td>151</td> <td>MFDLTA3SF</td> <td>MFDLNA3S</td> <td></td> <td></td> <td></td> <td></td> <td></td>				3000	MDMF302L1 🗌 8M	151	MFDLTA3SF	MFDLNA3S					
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Mid		200 V	4000	MDMF402L1 🗌 8M	152	MFDLTB3SF	MFDLNB3S	F-frame				
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	dle ine		0 a sta	5000	MDMF502L1 🗌 8M	153	MFDLTB3SF	MFDLNB3S					
Minum Large size JL 10 type 200 V 1300 MGMF132L1 8M 155 MDDLN5SS 2.3 MFECA 0**0EPD MFECA 0**0ESE MFE	ertia		phase/		MGMF092L1 🗌 8M				D-frame	1.8			
Low speed/ type Low speed/ (High torque) type Habo MGMF182L1 BM 156 MEDL183SF MEDLN83SC E-frame 3.8 Of formation Of formation 1500 r/min IP67 3-phase 200 V 2900 MGMF182L1 6M 157 MFDL1B3SF MFDLNB3SC F-frame 3.8 MFECA 0**0ESE 0**0ESE		Large size			MGMF132L1 🗌 8M					2.3	MFECA		
Image: style 3-phase 200 V 2900 MGMF292L1 6M MFDLTB3SF MFDLNB3S		/Low speed/\			MGMF182L1 🗌 8M	156	MEDLT83SF	MEDLN83S	E-frame				
IP67 4400 MGMF442L1 6M MGMF442L1 8M 158 MFDLTB3SF MFDLNB3S Approx. 1.8		type /		2900		157	MFDLTB3SF	MFDLNB3S	F-frame				
Herein and the phase/ phase/ 3-phase 200 V 1000 MHMF102L1 8M 142 MDDL145SF MDDLN45S 1.8 MHMF Large size JL10 type 2000 r/min IP67 1500 MHMF102L1 6M 143 MDDLT55SF MDDLN55S D-frame Approx. 2.3 2.3 MHMF Large size JL10 type 2000 r/min IP67 2000 MHMF202L1 6M 144 MEDLT83SF MEDLN83S E-frame Approx. 3.8 MFECA 0**0EPE MFECA 0**0ESE MFECA 0**0ESD 3-phase 200 V 3000 MHMF302L1 6M 145 MFDLTA3SF MFDLNA3S F-frame Approx. 4.5 MFECA 0**0ESE 0**0ESD MHMF402L1 6M 146 MFDLTB3SF MFDLNB3S F-frame Approx. 7.5 Approx. 4.5 Approx. 7.5		IP67		4400		158	MFDLTB3SF	MFDLNB3S	1 Hamo	7.5			
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$				1000		142	MDDLT45SF	MDDLN45S◇	5				
Large size JL10 type 2000 r/min IP67 2000 MHMF202L1 6M MHMF202L1 144 MEDLT83SF MEDLN83SO E-frame Approx. 3.8 0**0EPE MFECA 0**0ESE 0**0EPD MFECA 0**0ESE 3-phase 200 V 3000 MHMF302L1 6M MHMF302L1 145 MFDLTA3SF MFDLNA3SO 4.5 MFECA 0**0ESE 0**0ESE 0**0ESE 0**0ESE 4000 MHMF402L1 6M MHMF402L1 146 MFDLTB3SF MFDLNB3SO F-frame Approx. 4.5 Approx. 7.5				1500		143	MDDLT55SF	MDDLN55S	D-frame				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	High inertia	Large size JL10 type 2000 r/min	0.1	2000		144	MEDLT83SF	MEDLN83S	E-frame		0**0EPE 0** 	0 * * 0EPD MFECA	
4000 MHMF402L1 6M 146 MFDLTB3SF MFDLNB3S F-frame Approx. MHMF502L1 6M 7.5		IP67		3000		145	MFDLTA3SF	MFDLNA3S					
				4000	MHMF402L1 🗌 6M	146	MFDLTB3SF	MFDLNB3S	F-frame				
				5000		147	MFDLTB3SF	MFDLNB3S		7.5			

Note)1 \Box : Represents the motor specifications. (refer to "Model designation" P.116.)

Note)2 \diamond : Represents the driver specifications. (refer to "Model designation" P.116.)

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

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

only incremental system can be used in combination.

	Optional pa					Options	Title		Part No.	Page										
	Motor Cabl	le Note)3,5				Interface Cable			DV0P4360	182										
	JL	.10	1				•		DV0P4120	182										
	(One-touch lock type)								DV0P4121	182										
	JL04 scre	ewed type				Interface Conv	oraion Ca	blo												
		nou type /	External	Reactor	Noise Filter	Interface Conv	ersion Ca	bie	DV0P4130	182										
			Regenerative	(Single phase / 3-phase)					DV0P4131	182										
	without	with	Resistor					Cingle rout	DV0P4132	182										
	Brake	Brake				Connector Kit for Power	A-frame to	type Double row	DV0PM20032	185										
						Supply Input	D-frame	type	DV0PM20033	185										
						Connection	E-frame		DV0PM20044	185										
	MFMCD 0 * * 2EUD	MFMCA 0 * * 2FUD	DV0P4284	DV0P228 / DV0P222	DV0P4220	Connector Kit for Motor	A-frame D-frame	to	DV0PM20034	186										
	MFMCD	CD MFMCA		DV0PM20047 / DV0P222		Connection	E-frame		DV0PM20046	186										
	0* * 2ECD	0 * * 2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043	Connector Kit for Regenera- tive Resistor	E-frame		DV0PM20045	185										
	MFMCA	MFMCA		DV0P224					DV0PM24587 MSMF 1.0 kW to 2.0 kW											
	0 * * 3EUT	0 * * 3FUT							MDMF 1.0 kW to 2.0 kW	189										
			DV0P4285 ×2 in parallel		DV0P3410)	MGMF 0.85 kW to 1.8 kW MHMF 1.0 kW, 1.5 kW											
	MFMCA	MFMCA		DV0P225			without E	biake	DV0PM24588											
	0**3ECT	0 * * 3FCT				Connector			MSMF 3.0 kW to 5.0 kW MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW	190										
	MFMCD	MFMCA	DV0P4284	DV0P228 / DV0P222	DV0P4220	Kit for Motor/ Encoder Con-			MHMF 2.0 kW to 5.0 kW DV0PM24589	<u> </u>										
	0 * * 2EUD MFMCD	0 * * 2FUD MFMCA		DV0PM20047 / DV0P222	DV0P4220 Encoder Con- nection			MSMF 1.0 kW to 2.0 kW MDMF 1.0 kW to 2.0 kW MGMF 0.85 kW to 1.8 kW												
	0**2ECD	0**2FCD	DV0P4285 Note)6	DV0P223	DV0PM20043		with Brake		MHMF 1.0 kW, 1.5 kW DV0PM24590											
	MFMCA 0 * * 3EUT	MFMCA 0 * * 3FUT	D) (0D 4005	DV0P224					MSMF 3.0 kW to 5.0 kW MDMF 3.0 kW to 5.0 kW MGMF 2.9 kW, 4.4 kW MHMF 2.0 kW to 5.0 kW	190										
	MFMCA 0 * * 3ECT		DV0P4285 ×2 in parallel		DV0P3410		RS485,	RS232	DV0PM20024	183										
		MFMCA			MFMCA	MFMCA			DV0P225			Safety		DV0PM20025	183					
		0 * * 3FCT				Connector Kit	Interface)	DV0P4350	184										
							External	Scale	DV0PM20026	184										
	MFMCD	MFMCA 0 * * 2FUD	MFMCA	MFMCA	MFMCA	MFMCA	MFMCA	MFMCA	MFMCA	MFMCA	MFMCA	MFMCA		DV0P228 / DV0P221			Encoder		DV0PM20010	184
	0 * * 2EUD		DV0P4284		DV0P4220	Battery for Abs	olute Enc	oder	DV0P2990	194										
				DV0PM20047 / DV0P222		Battery Box for	Absolute	Encoder	DV0P4430	194										
	MFMCD	MFMCA 0 * * 2FCD	MFMCA				Mounting	D fromo		DV0PM20101	105									
	0**2ECD			0**2FCD	DV0P4285	DV0P223	DV0PM20043	Bracket	D-frame		DV0PINIZ0101	195								
			0101 4200	0101 220	D V 01 1020043	Encoder	One-touc	h lock type	MFECA0 * * 0EPE	173										
	MFMCA 0 * * 3EUT	MFMCA 0 * * 3FUT	DV0P4285	DV0P224		Cable (with (Battery Box)	Screwed	l type	MFECA0 * *0ESE	174										
			×2 in parallel	<u> </u>	DV0P3410	Encoder	One-touch lock type		MFECA0 * * 0EPD	173										
	MFMCA 0 * * 3ECT	MFMCA 0 * * 3FCT		DV0P225		Cable (without (Battery Box)	Screwed	l type	MFECA0 * * 0ESD	173										
	MFMCD	MFMCA					One-touc	h lock type	MFMCD0 * * 2EUD	176										
	0**2EUD	0**2FUD		DV0P228 / DV0P222			Screwed		MFMCD0 * * 2ECD	_										
			DV0P4284		DV0P4220	Motor Cable			MFMCE0 * * 2EUD											
	MFMCD	MFMCA		DV0PM20047 / DV0P222		(without Brake)			MFMCE0 * * 2ECD											
	0**2ECD	0 * * 2FCD							MFMCA0 * * 3EUT											
	MFMCE	MFMCE					Screwed		MFMCA0 * * 3ECT											
								21	MFMCA0 * * 3ECT											
	0**2EUD	0 * * 2FUD	DV0P4285	רככיםט/ום			Screwed		MFMCA0 * * 2FOD											
	MFMCE	MFMCE	Note)6	DV0P223	DV0PM20043	Motor Ochie			MFMCA0 * * 2FCD MFMCE0 * * 2FUD											
		0 * * 2FCD				Motor Cable (with Brake)				-										
	MFMCA MFM 0**3EUT 0**3					(WILLI DIAKE)	Screwed		MFMCE0 * * 2FCD											
		MFMCA		DV0P224					MFMCA0 * * 3FUT	180										
		0 * * 3FUT				Forta march	Screwed	туре	MFMCA0 * * 3FCT	180										
		MFMCA	DV0P4285 x2 in parallel	DV0P225	DV0P3410	DV0P3410	External regenerative resistor	30 Ω 100 20 Ω 130		DV0P4284 DV0P4285	197									
	0**3ECT	0 * * 3FCT						DV0P222	2, DV0P223	<u> </u>										
						Reactor			, DV0P225	196										
	Note)5 Use	of II 10 type	encoder cable	s and motor cables er	nable one-				8, DV0PM20047											
				itional screwed type N		Noise Filter			20, DV0PM20043	23										
			es can also be	• •		Surge Absorbe	r		0 0, DV0P1450	23										
		• •	e combinations			Ferite Core	1	DV0P418		23										
	NULEIN EN																			

Note)6 For other possible combinations, refer to P.197.

A6 Family

E Series

Imformation

238

DV0P1460

Ferite Core

Special Order Product

200 V

MSMF 50 W

Motor Specifications

· Please contact us for more information.

Specifications

					AC200 V
Motor model *1			IP65		MSMF5AZL1
		Multi	Multifunction type		MADLT05SF
Applicable	Model No.	RS48	5 communication	type *2	MADLN05SG
driver	110.	Basio	type ^{*2}		MADLN05SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у	((kVA)	0.5
Rated output				(W)	50
Rated torque			((N·m)	0.16
Continuous sta	all torqu	0.16			
Momentary Ma	ax. pea	k torqu	Je ((N·m)	0.48
Rated current			(A(I	rms))	1.1
Max. current			(A((o-p))	4.7
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4281		No limit Note)2
Rated rotation	al spee	d	(r,	/min)	3000
Max. rotationa	l speed		(r,	/min)	6000
Moment of ine	rtia		Without brak	е	0.026
of rotor (×10 ⁻⁴	kg∙m²)		With brake		0.029
Recommender ratio of the loa		30 times or less			
Rotary encode	er speci		23-bit Absolute		
	Re	solutic	on per single tu	irn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized. (Do not use this for braking the motor in motion.)

Low inertia 38 mm sq.

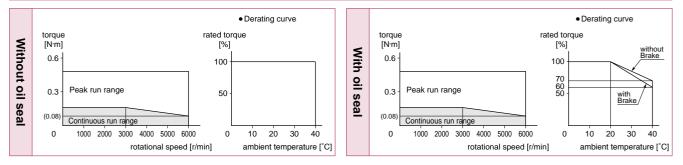
(
Static friction torque (N·m)	0.294 or more						
Engaging time (ms)	35 or less						
Releasing time (ms) Note)4	20 or less						
Exciting current (DC) (A)	0.30						
Releasing voltage (DC) (V)	1 or more						
Exciting voltage (DC) (V)	24±1.2						

• Permissible load (For details, refer to P.166)

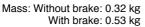
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

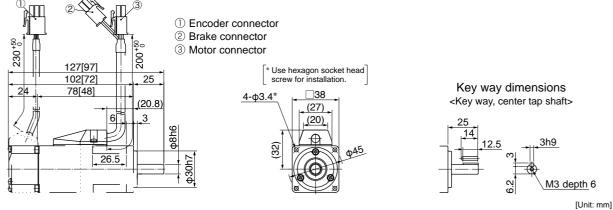
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





• Figures in [] represent the dimensions without 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.

200 V

MSMF 100 W Low inertia 38 mm sq.

Specifications

				AC200 V
Motor model *1			IP65	MSMF012L1
		Multi	function type	MADLT05SF
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG
driver	110.	Basio	c type ^{*2}	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output		(W)	100	
Rated torque			(N·m)	0.32
Continuous sta	all torqu	0.32		
Momentary Ma	ax. pea	k torqu	ue (N·m)	0.95
Rated current			(A(rms))	1.1
Max. current			(A(o-p))	4.7
Regenerative	brake		Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4281	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	0.048
of rotor ($\times 10^{-4}$	kg∙m²)		With brake	0.051
Recommender ratio of the loa		30 times or less		
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

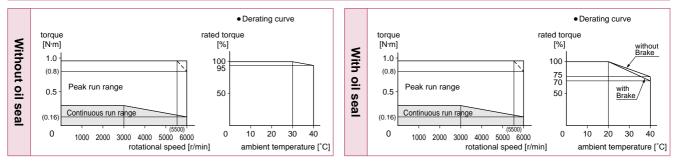
Static friction torque (N·m)0.294 or moreEngaging time (ms)35 or lessReleasing time (ms) Note)420 or lessExciting current (DC) (A)0.30Releasing voltage (DC) (V)1 or moreExciting voltage (DC) (V)24±1.2

• Permissible load (For details, refer to P.166)

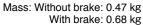
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88.0
assembly	Thrust load B-direction (N)	117.6
During operation	Radial load P-direction (N)	68.6
	Thrust load A, B-direction (N)	58.8

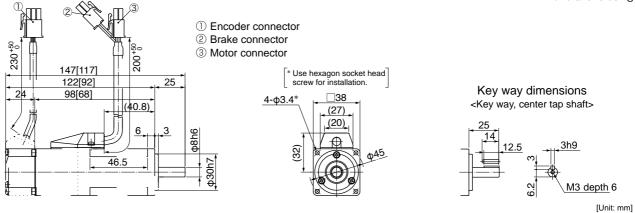
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





• Figures in [] represent the dimensions without 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

MSMF 200 W

Motor Specifications

· Please contact us for more information.

Specifications

					AC200 V
Motor model *1			IP65		MSMF022L1
		Multi	Multifunction type		MADLT15SF
Applicable	Model No.	RS48	5 communication type	e *2	MADLN15SG
driver	110.	Basio	type ^{*2}		MADLN15SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у	(kV	A)	0.5
Rated output			(V	V)	200
Rated torque			(N·r	n)	0.64
Continuous sta	all torqu	n)	0.64		
Momentary Ma	ax. pea	k torqı	ue (N∙r	n)	1.91
Rated current			(A(rms	s))	1.5
Max. current			(A(o-p)))	6.5
Regenerative	brake		Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283		No limit Note)2
Rated rotation	al spee	d	(r/mi	n)	3000
Max. rotationa	l speed		(r/mi	n)	6000
Moment of ine	rtia		Without brake		0.14
of rotor (×10 ⁻⁴	kg∙m²)		With brake		0.17
Recommender ratio of the loa		30 times or less			
Rotary encode	er speci		23-bit Absolute		
	Re	solutic	on per single turn		8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

[Low inertia]

60 mm sq.

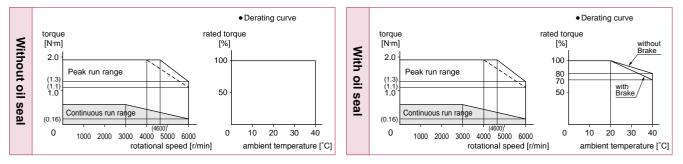
1	· · · · /
Static friction torque (N·m)	1.27 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

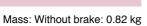
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98.0

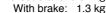
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

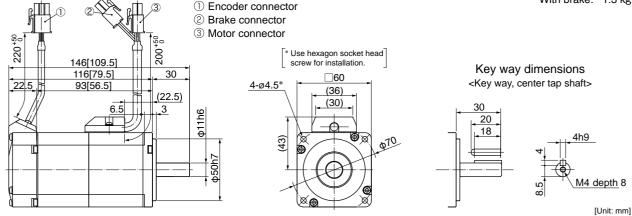
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions







• Figures in [] represent the dimensions without 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.

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

200 V

MSMF 400 W Low inertia 60 mm sq.

Specifications

				AC200 V
Motor model *1			IP65	MSMF042L1
		Multi	function type	MBDLT25SF
Applicable	Model No.	RS485 communication type *2		MBDLN25SG
driver	110.	Basio	c type *2	MBDLN25SE
	Fram	e sym	bol	B-frame
Power supply	capacit	у	(kVA)	0.9
Rated output			(W)	400
Rated torque			(N·m)	1.27
Continuous sta	all torqu	ie	(N·m)	1.27
Momentary Ma	ax. pea	k torqu	ue (N·m)	3.82
Rated current	Rated current (A(rms))		2.4	
Max. current		(A(o-p))		10.2
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		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	0.27
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.30	
Recommended moment of inertia ratio of the load and the rotor Not			30 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

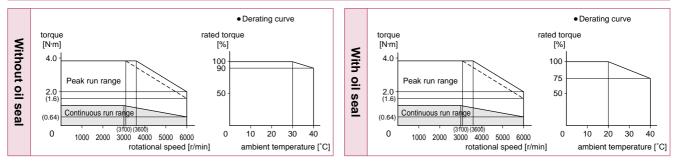
Static friction torque (N·m)1.27 or moreEngaging time (ms)50 or lessReleasing time (ms) Note)415 or lessExciting current (DC) (A)0.36Releasing voltage (DC) (V)1 or moreExciting voltage (DC) (V)24±1.2

• Permissible load (For details, refer to P.166)

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)	98.0

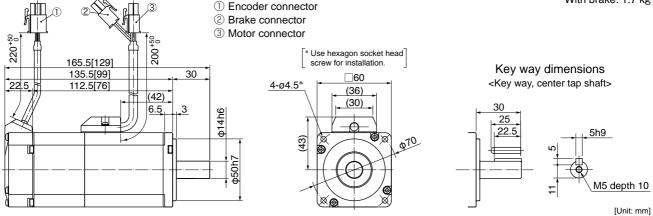
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

Mass: Without brake: 1.2 kg With brake: 1.7 kg



• Figures in [] represent the dimensions without 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.

MINAS A6 Family 124

Special Order Product

200 V

MSMF 750 W

Motor Specifications

· Please contact us for more information.

Specifications

					AC200 V
Motor model *1	IP65			MSMF082L1	
		Multi	Multifunction type		MCDLT35SF
Applicable	Model No.	RS48	5 communication ty	pe *2	MCDLN35SG
driver	110.	Basio	type *2		MCDLN35SE
	Fram	e sym	bol		C-frame
Power supply	capacit	у	(k'	VA)	1.3
Rated output				(W)	750
Rated torque			(N	ŀm)	2.39
Continuous sta	all torqu	ie	(N	ŀm)	2.39
Momentary Ma	ax. pea	k torqı	Je (N	ŀm)	7.16
Rated current (A(rms))				าร))	4.1
Max. current (A(o-p))				17.4	
Regenerative brake		Without option		No limit Note)2	
frequency (time	frequency (times/min) Note)1		DV0P4283		No limit Note)2
Rated rotation	al spee	d	(r/n	nin)	3000
Max. rotationa	l speed		(r/n	nin)	6000
Moment of ine	rtia		Without brake		0.96
of rotor (×10 ⁻⁴	kg∙m²)		With brake		1.06
Recommended moment of inertia ratio of the load and the rotor Note)			ote)3	20 times or less	
Rotary encode	Rotary encoder specifications ^{*3}				23-bit Absolute
	Re	solutic	on per single turr	١	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

[Low inertia]

80 mm sq.

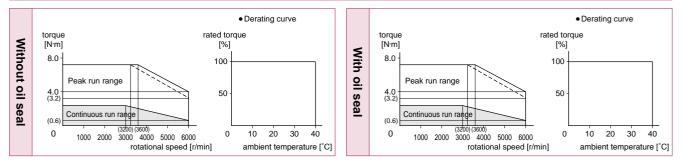
1	· · · · /
Static friction torque (N·m)	2.45 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±1.2

• Permissible load (For details, refer to P.166)

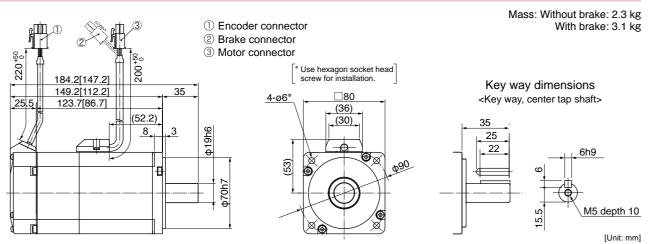
During assembly During operation	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



•Figures in [] represent the dimensions without 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.

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

200 V

[Low inertia] **MSMF** 1000 W 80 mm sq.

Specifications

				AC200 V
Motor model *1			IP65	MSMF092L1
		Multi	function type	MDDLT45SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN45SG
driver	110.	Basio	c type *2	MDDLN45SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	1.8
Rated output			(W)	1000
Rated torque			(N·m)	3.18
Continuous sta	all torqu	ie	(N·m)	3.18
Momentary Ma	ax. pea	k torqu	ue (N·m)	9.55
Rated current (A(rms))		5.7		
Max. current	x. current (A(o-p))		24.2	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	1.26
of rotor (×10 ⁻⁴ kg·m ²)			With brake	1.36
Recommended moment of inertia ratio of the load and the rotor			15 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

Please contact us for more information.

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

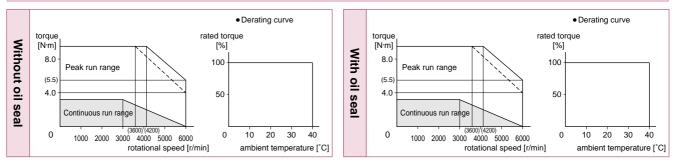
Static friction torque (N·m) 3.80 or more Engaging time (ms) 70 or less Releasing time (ms) Note)4 20 or less 0.42 Exciting current (DC) (A) Releasing voltage (DC) (V) 1 or more Exciting voltage (DC) (V) 24±2.4

• Permissible load (For details, refer to P.166)

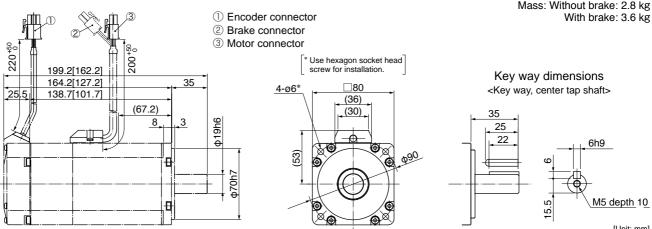
During assembly During operation	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
	Thrust load B-direction (N)	392
	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



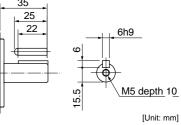
•Figures in [] represent the dimensions without brake.

<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.

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Mass: Without brake: 2.8 kg





Special Order Product

200 V

MSMF 1.0 kW

Motor Specifications

Please contact us for more information.

Specifications

					AC200 V
Motor model *1	IP67			MSMF102L1	
			unction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication ty	/pe *2	MDDLN55SG
driver		Basio	type *2		MDDLN55SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(k	VA)	2.3
Rated output				(W)	1000
Rated torque			(N	l∙m)	3.18
Continuous sta	all torqu	ie	(N	l∙m)	3.82
Momentary Ma	ax. pea	k torqı	ie (N	l∙m)	9.55
Rated current (A(rms))				6.6	
Max. current (A(o-p))				28	
Regenerative brake Without option		ı	No limit Note)2		
frequency (times/min) Note)1		Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/r	nin)	3000
Max. rotationa	l speed		(r/r	nin)	5000
Moment of ine	rtia		Without brake		2.15
of rotor (×10 ⁻⁴ kg·m ²)		With brake		2.47	
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less		
Rotary encode	Rotary encoder specifications ³				23-bit Absolute
	Re	solutio	n per single tur	n	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

[Low inertia 100 mm sq.]

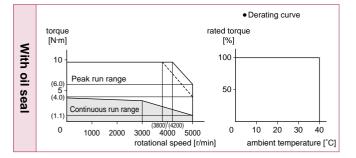
1 0	/
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

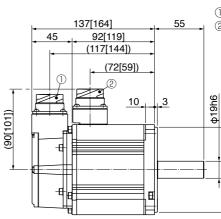
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

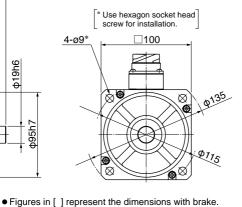
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

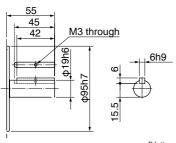


 Encoder connector (Large size JL10) ② Motor/Brake connector



Mass: Without brake: 3.6 kg With brake: 4.7 kg

Key way dimensions



[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.

p95h

127 MINAS A6 Family

200 V

MSMF 1.5 kW [Low inertia 100 mm sq.]

Specifications

		AC200 V		
Motor model *1	IP67			MSMF152L1
		Multifunction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN55SG
driver	110.	Basic type *2		MDDLN55SE
	Fram	e sym	bol	D-frame
Power supply	capacit	y	(kVA)	2.3
Rated output			(W)	1500
Rated torque			(N·m)	4.77
Continuous sta	all torqu	е	(N·m)	5.72
Momentary Ma	ax. pea	< torqu	ue (N·m)	14.3
Rated current (A(rn			(A(rms))	8.2
Max. current	fax. current (A(o-p))		35	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	5000
Moment of ine	rtia		Without brake	3.10
of rotor (×10 ⁻⁴ kg·m ²)			With brake	3.45
Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

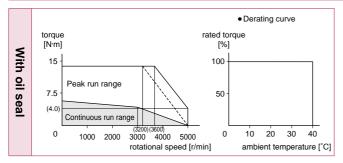
Static friction torque (N·m)8.0 or moreEngaging time (ms)50 or lessReleasing time (ms) Note)415 or lessExciting current (DC) (A)0.81±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

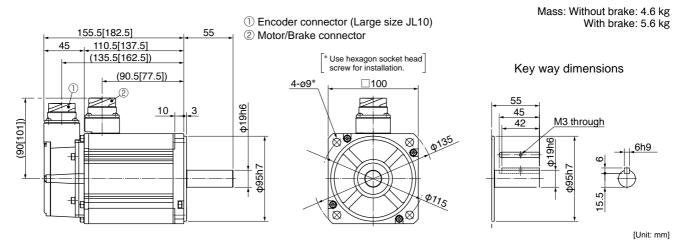
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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

MSMF 2.0 kW

Motor Specifications

Please contact us for more information.

Specifications

		AC200 V		
Motor model *1	IP67			MSMF202L1
		Multi	function type	MEDLT83SF
Applicable	Model No.	RS48	5 communication type	² MEDLN83SG
driver	110.	Basio	type ^{*2}	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA) 3.8
Rated output			(W)) 2000
Rated torque			(N·m) 6.37
Continuous sta	all torqu	ie	(N·m) 7.64
Momentary Ma	ax. pea	k torqu	ue (N·m) 19.1
Rated current			(A(rms)) 11.3
Max. current (A(o-p)) 48	
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285	No limit Note)2
Rated rotation	al spee	d	(r/min) 3000
Max. rotationa	l speed		(r/min	5000
Moment of ine	rtia		Without brake	4.06
of rotor (×10 ⁻⁴ kg·m ²)		With brake	4.41	
Recommended moment of inertia ratio of the load and the rotor Note)3				3 15 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Resolution per single			8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

[Low inertia 100 mm sq.]

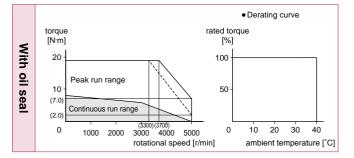
ι	/
Static friction torque (N·m)	8.0 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

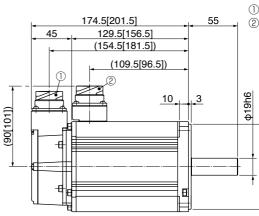
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

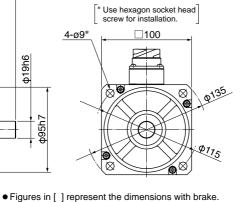
Torque characteristics (at AC200 V of power voltage < Dotted line represents the torque at 10 % less supply voltage.>)



Dimensions

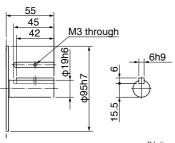


① Encoder connector (Large size JL10) ② Motor/Brake connector



Mass: Without brake: 5.6 kg With brake: 6.6 kg

Key way dimensions



[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.

φ95h7

129 MINAS A6 Family

200 V

MSMF 3.0 kW [Low inertia]

Specifications

				AC200 V
Motor model *1	IP67			MSMF302L1
		Multi	function type	MFDLTA3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNA3SG
driver	110.	Basio	c type *2	MFDLNA3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	4.5
Rated output			(W)	3000
Rated torque			(N·m)	9.55
Continuous sta	all torqu	ie	(N·m)	11.0
Momentary Ma	ax. pea	k torqu	ue (N·m)	28.6
Rated current (A			(A(rms))	18.1
Max. current (A(d		(A(o-p))	77	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	5000
Moment of ine	rtia		Without brake	7.04
of rotor (×10 ⁻⁴ kg·m ²)			With brake	7.38
	Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

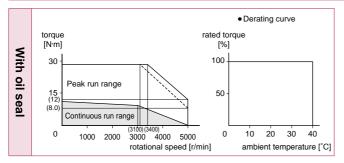
Static friction torque (N·m)	12.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	15 or less
Exciting current (DC) (A)	0.81±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

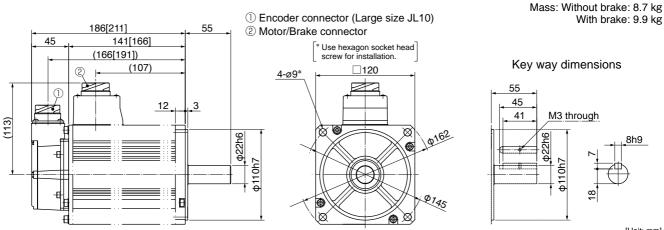
	,	
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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. A6 Family

E Series

Special Order Product

200 V

MSMF 4.0 kW [Low inertia 130 mm sq.]

Motor Specifications

Please contact us for more information.

Specifications

		AC200 V			
Motor model ^{*1}	IP67			MSMF402L1	
			unction type		MFDLTB3SF
Applicable	Model No.	RS48	5 communication type	e*²	MFDLNB3SG
driver	110.	Basio	type *2		MFDLNB3SE
	Fram	e sym	bol		F-frame
Power supply	capacit	у	(kV/	4)	7.5
Rated output			(V	V)	4000
Rated torque			(N·n	n)	12.7
Continuous sta	all torqu	ie	(N·n	n)	15.2
Momentary Ma	ax. pea	k torqı	ıe (N·n	n)	38.2
Rated current (A			(A(rms	;))	19.6
Max. current (A(o-p))))	83
Regenerative brake		Without option		No limit Note)2	
frequency (time	frequency (times/min) Note)1		DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/mii	n)	3000
Max. rotationa	l speed		(r/mii	n)	4500
Moment of ine	rtia		Without brake		14.4
of rotor (×10 ⁻⁴ kg·m ²)		With brake		15.6	
Recommended moment of inertia ratio of the load and the rotor Note)3				e)3	15 times or less
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
	Re	solutio	n per single turn		8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

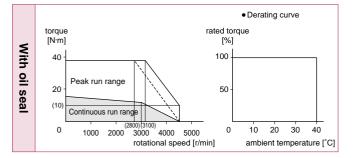
1 0	/
Static friction torque (N·m)	16.2 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

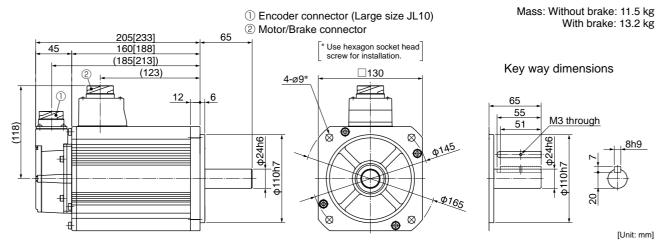
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.116.
- Detail of model designation, refer to F. 110.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

200 V

MSMF 5.0 kW [Low inertia 130 mm sq.]

Specifications

				AC200 V
Motor model *1	IP67			MSMF502L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG
driver	110.	Basic type *2		MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	5000
Rated torque			(N·m)	15.9
Continuous sta	all torqu	ie	(N·m)	19.1
Momentary Ma	ax. pea	k torqu	ue (N·m)	47.7
Rated current ((A(rms))	24.0
Max. current (A((A(o-p))	102	
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	4500
Moment of ine	rtia		Without brake	19.0
of rotor ($\times 10^{-4}$	kg∙m²)		With brake	20.2
	Recommended moment of inertia ratio of the load and the rotor Note)3			15 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

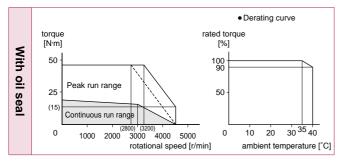
• -	,
Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

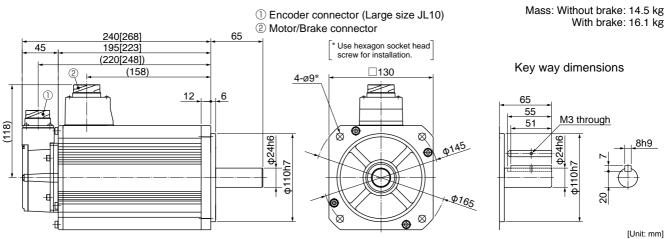
	Radial load P-direction (N)	980
During assembly	Thrust load A-direction (N)	588
assembly	Thrust load B-direction (N)	686
During	Radial load P-direction (N)	784
operation	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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

Motor Specifications

200 V **MQMF** 100 W

[Middle inertia [Flat type 60 mm sq.

· Please contact us for more information.

Specifications

				AC200 V
Motor model *1	IP65			MQMF012L1
			function type	MADLT05SF
Applicable	Model No.	RS48	5 communication type	² MADLN05SG
driver	110.	Basio	type ^{*2}	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA) 0.5
Rated output			(W) 100
Rated torque			(N·m) 0.32
Continuous sta	all torqu	ie	(N·m) 0.33
Momentary Ma	ax. pea	k torqu	ue (N·m) 1.11
Rated current (A(rms))) 1.1
Max. current (A(o-p))) 5.5	
Regenerative brake Without opt			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4281	No limit Note)2	
Rated rotation	al spee	d	(r/min) 3000
Max. rotationa	l speed		(r/min) 6500
Moment of ine	rtia		Without brake	0.15
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.18
Recommended moment of inertia ratio of the load and the rotor Note)3				20 times or less
Rotary encoder specifications *3			23-bit Absolute	
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

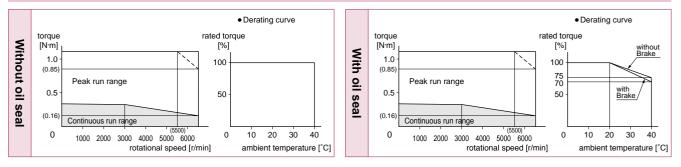
(=	, ,
Static friction torque (N·m)	0.39 or more
Engaging time (ms)	15 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

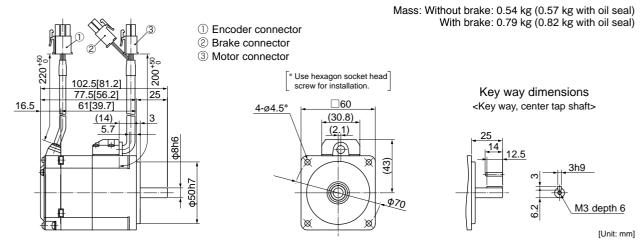
During assembly	Radial load P-direction (N)	147
	Thrust load A-direction (N)	88
	Thrust load B-direction (N)	117.6
During	Radial load P-direction (N)	68.6
operation	Thrust load A, B-direction (N)	58.8

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For motors with oil seal, refer to P.159. For motors with protective lip, refer to P.160. • Figures in [] represent the dimensions without 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.

133 MINAS A6 Family

200 V

MQMF 200 W

Middle inertia Flat type 80 mm sq.

Specifications

				AC200 V
Motor model *1	IP65			MQMF022L1
		Multi	function type	MADLT15SF
Applicable	Model No.	RS485 communication type *2		MADLN15SG
driver	110.	Basic	type *2	MADLN15SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	200
Rated torque			(N·m)	0.64
Continuous sta	all torqu	ie	(N·m)	0.76
Momentary Ma	ax. pea	k torqı	ue (N·m)	2.23
Rated current	Rated current (A(rms))			1.4
Max. current (A(o-p))			6.9	
Regenerative brake		Without option	No limit Note)2	
frequency (time	frequency (times/min) Note)1		DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.50
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.59	
Recommended moment of inertia ratio of the load and the rotor Note)3			20 times or less	
Rotary encoder specifications ^{*3}			ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

Please contact us for more information.

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

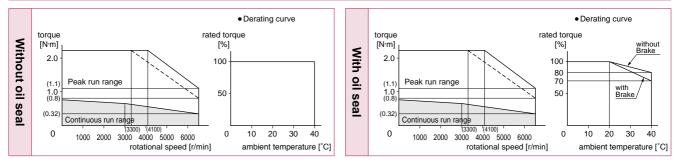
Static friction torque (N·m) 1.6 or more Engaging time (ms) 70 or less Releasing time (ms) Note)4 20 or less 0.36 Exciting current (DC) (A) Releasing voltage (DC) (V) 1 or more Exciting voltage (DC) (V) 24±2.4

• Permissible load (For details, refer to P.166)

	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)4, refer to P.165.
- · Dimensions of Driver, refer to P.47.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

Mass: Without brake: 1.1 kg (1.2 kg with oil seal) ① Encoder connector ② Brake connector ③ Motor connector 220 200 Use hexagon socket head Key way dimensions 115.9[92 screw for installation 85.9[62.3] 30 <Key way, center tap shaft> 80 4-ø6* 69.4[45.8] 16.5 (30.8)30 (2.1)ф11h6 20 Æ 18 4h9 8 Ø (53)Φ70h7 <u>Ф90</u> M4 depth 8 8.5 Ŕ \otimes

[Unit: mm]

For motors with oil seal, refer to P.159. For motors with protective lip, refer to P.160. • Figures in [] represent the dimensions without brake.

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.

With brake: 1.5 kg (1.6 kg with oil seal)

Special Order Product

200 V

Motor Specifications

[Middle inertia [Flat type 80 mm sq.

Specifications

					AC200 V
Motor model *1	IP65			MQMF042L1	
		Multi	Multifunction type		MBDLT25SF
Applicable	Model No.	RS48	5 communication ty	pe ^{*2}	MBDLN25SG
driver	110.	Basio	type ^{*2}		MBDLN25SE
	Fram	e sym	bol		B-frame
Power supply	capacit	у	(k'	VA)	0.9
Rated output			((W)	400
Rated torque			(N	ŀm)	1.27
Continuous sta	all torqu	ie	(N	ŀm)	1.40
Momentary Ma	ax. pea	k torqı	ie (N	ŀm)	4.46
Rated current (A(rms))			2.1		
Max. current (A(o-p))			10.4		
Regenerative brake Without op			Without option	I	No limit Note)2
frequency (time	frequency (times/min) Note)1		DV0P4283		No limit Note)2
Rated rotation	al spee	d	(r/m	nin)	3000
Max. rotationa	l speed		(r/m	nin)	6500
Moment of ine	rtia		Without brake		0.98
of rotor (×10 ⁻⁴ kg·m ²)			With brake		1.06
Recommended moment of inertia ratio of the load and the rotor Note)3				20 times or less	
Rotary encoder specifications *3			ns *3		23-bit Absolute
Resolution pe			n per single turr	۱	8388608

• Brake specifications (For details, refer to P.167) (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.

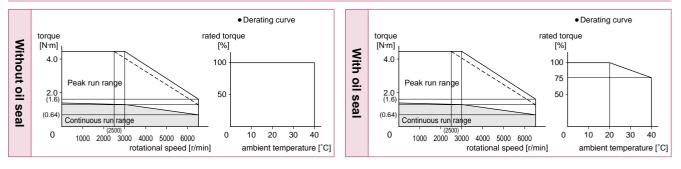
1	
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

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

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



 Encoder connector 2 Brake connector ③ Motor connector 200 220 Use hexagon socket head Key way dimensions 28.4[104.8 screw for installation 98.4[74.8] 30 <Key way, center tap shaft> 80 4-ø6* 16.5 81.9[58.3] (30.8) 30 (2.1)ф14h6 8 25 Æ 22.5 5h9 ø Ø 53) ഹ \$70h7 <u>Ф90</u> M5 depth 10 ø ø

[Unit: mm]

For motors with oil seal, refer to P.159. For motors with protective lip, refer to P.160. • Figures in [] represent the dimensions without 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.

135 MINAS A6 Family

200 V

MHMF 50 W [High inertia]

Specifications

				AC200 V
Motor model *1	IP65			MHMF5AZL1
		Multi	function type	MADLT05SF
Applicable	Model No.	RS48	5 communication type *2	MADLN05SG
driver		Basic	type *2	MADLN05SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	50
Rated torque			(N·m)	0.16
Continuous sta	all torqu	ie	(N·m)	0.18
Momentary Ma	ax. pea	k torqı	ue (N·m)	0.56
Rated current	Rated current (A(rms))			1.1
Max. current (A(o-p))			5.5	
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		DV0P4281	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.038
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.042	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less	
Rotary encode	Rotary encoder specifications ^{*3}			23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

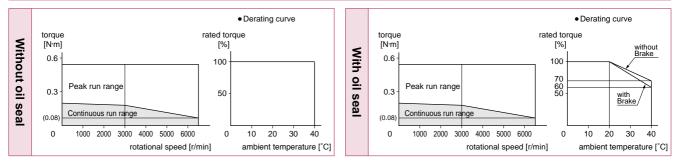
Static friction torque (N·m)0.38 or moreEngaging time (ms)35 or lessReleasing time (ms) Note)420 or lessExciting current (DC) (A)0.30Releasing voltage (DC) (V)1 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

	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)	49

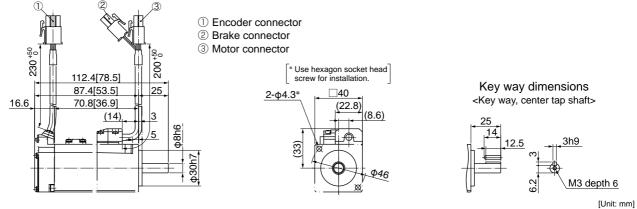
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

Mass: Without brake: 0.29 kg (0.31 kg with oil seal) With brake: 0.51 kg (0.53 kg with oil seal)



For motors with oil seal, refer to P.161. For motors with protective lip, refer to P.163. • Figures in [] represent the dimensions without 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.

n

Special Order Product

200 V

MHMF 100 W

Motor Specifications

· Please contact us for more information.

Specifications

		AC200 V			
Motor model *1	IP65				MHMF012L1
		Multi	Multifunction type		MADLT05SF
Applicable	Model No.	RS48	RS485 communication type		MADLN05SG
driver	110.	Basio	type ^{*2}		MADLN05SE
	Fram	e sym	bol		A-frame
Power supply	capacit	у	(k\	/A)	0.5
Rated output			(W)	100
Rated torque			(N·	m)	0.32
Continuous sta	all torqu	ie	(N·	·m)	0.33
Momentary Ma	ax. pea	k torqu	ie (N·	·m)	1.11
Rated current			(A(rm	s))	1.1
Max. current			(A(o-	p))	5.5
Regenerative brake			Without option		No limit Note)2
frequency (time	frequency (times/min) Note)1		DV0P4281		No limit Note)2
Rated rotation	al spee	d	(r/m	in)	3000
Max. rotationa	l speed		(r/m	in)	6500
Moment of ine	rtia		Without brake		0.071
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.074
Recommended moment of inertia ratio of the load and the rotor				te)3	30 times or less
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
	Re	solutic	n per single turn		8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

[High inertia]

40 mm sq.

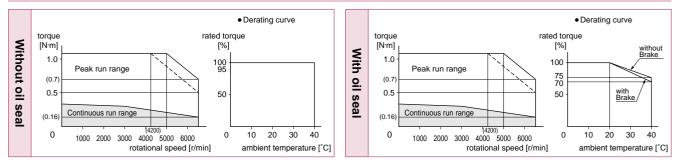
1 0	/
Static friction torque (N·m)	0.38 or more
Engaging time (ms)	35 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.30
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

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

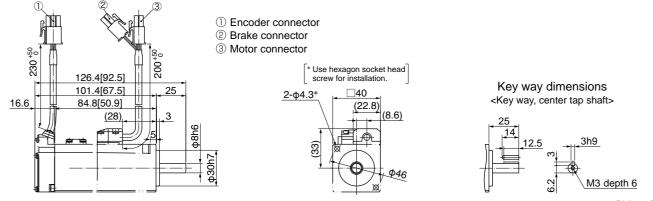
- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

Mass: Without brake: 0.40 kg (0.42 kg with oil seal) With brake: 0.62 kg (0.64 kg with oil seal)



[Unit: mm]

For motors with oil seal, refer to P.161. For motors with protective lip, refer to P.163. • Figures in [] represent the dimensions without 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.

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

200 V

MHMF 200 W High inertia 60 mm sq.

Specifications

		AC200 V		
Motor model *1	IP65			MHMF022L1
		Multi	function type	MADLT15SF
Applicable	Model No.	RS48	5 communication type *2	MADLN15SG
driver		Basio	c type *2	MADLN15SE
	Fram	e sym	bol	A-frame
Power supply	capacit	у	(kVA)	0.5
Rated output			(W)	200
Rated torque			(N·m)	0.64
Continuous sta	all torqu	ie	(N·m)	0.76
Momentary Ma	ax. pea	k torqı	ue (N·m)	2.23
Rated current			(A(rms))	1.4
Max. current		(A(o-p))	6.9	
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		DV0P4283	No limit Note)2	
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6500
Moment of ine	rtia		Without brake	0.29
of rotor (×10 ⁻⁴ kg·m ²)			With brake	0.31
Recommended moment of inertia ratio of the load and the rotor Note)3				30 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

Static friction torque (N·m)1.6 or moreEngaging time (ms)50 or lessReleasing time (ms) Note)420 or lessExciting current (DC) (A)0.36Releasing voltage (DC) (V)1 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

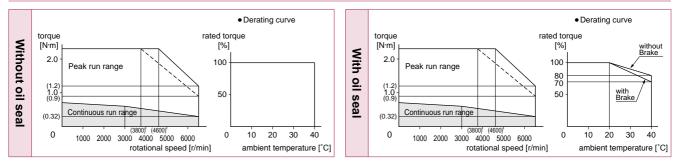
	Radial load P-direction (N)	392
During assembly	Thrust load A-direction (N)	147
assembly	Thrust load B-direction (N)	196
During	Radial load P-direction (N)	245
operation	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.

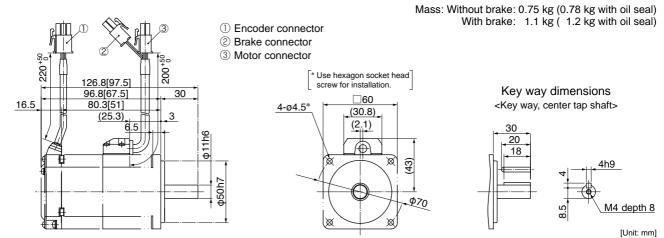
a battery for absolute encoder.

- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect

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



Dimensions



For motors with oil seal, refer to P.161. For motors with protective lip, refer to P.163. • Figures in [] represent the dimensions without 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. A6 Family

Ш

Special Order Product

200 V

MHMF 400 W

Motor Specifications

· Please contact us for more information.

Specifications

		AC200 V			
Motor model *1	IP65				MHMF042L1
		Multi	Multifunction type		MBDLT25SF
Applicable	Model No.	RS48	5 communicati	on type *2	MBDLN25SG
driver	110.	Basio	c type *2		MBDLN25SE
	Fram	e sym	bol		B-frame
Power supply	capacit	у		(kVA)	0.9
Rated output				(W)	400
Rated torque				(N·m)	1.27
Continuous sta	all torqu	ie		(N·m)	1.40
Momentary Ma	ax. pea	k torqu	Je	(N·m)	4.46
Rated current			(A(rms))	2.1
Max. current			((A(o-p))	10.4
Regenerative brake			Without option		No limit Note)2
frequency (time	es/min)	Note)1	DV0P4283		No limit Note)2
Rated rotation	al spee	d		(r/min)	3000
Max. rotationa	l speed			(r/min)	6500
Moment of ine	rtia		Without brake		0.56
of rotor (×10 ⁻⁴ kg·m ²)			With brake		0.58
Recommended moment of inertia ratio of the load and the rotor				Note)3	30 times or less
Rotary encode	er speci	ficatio	ns ^{∗3}		23-bit Absolute
	Re	solutic	on per single	turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

[High inertia]

60 mm sq.

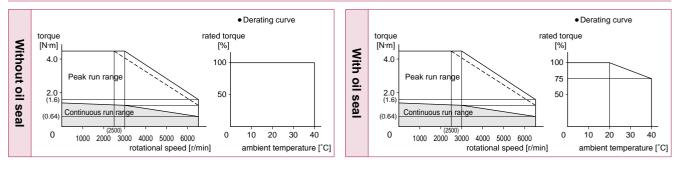
1 0	/
Static friction torque (N·m)	1.6 or more
Engaging time (ms)	50 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.36
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

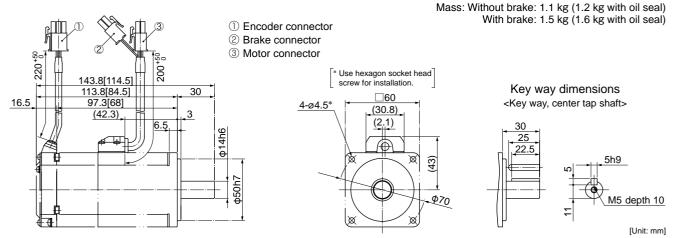
During assembly During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	196
	Radial load P-direction (N)	245
	Thrust load A, B-direction (N)	98

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.47.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



For motors with oil seal, refer to P.162. For motors with protective lip, refer to P.164. • Figures in [] represent the dimensions without 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.

139 MINAS A6 Family

200 V

High inertia **MHMF** 750 W 80 mm sq.

Specifications

				AC200 V
Motor model *1	IP65			MHMF082L1
		Multi	function type	MCDLT35SF
Applicable	Model No.	RS48	5 communication type *2	MCDLN35SG
driver	110.	Basio	c type *2	MCDLN35SE
	Fram	e sym	bol	C-frame
Power supply	capacit	у	(kVA)	1.3
Rated output			(W)	750
Rated torque			(N·m)	2.39
Continuous sta	all torqu	ie	(N·m)	2.86
Momentary Ma	ax. pea	k torqu	ue (N·m)	8.36
Rated current			(A(rms))	3.8
Max. current		(A(o-p))	18.8	
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4283	No limit Note)2
Rated rotation	al spee	d	(r/min)	3000
Max. rotationa	l speed		(r/min)	6000
Moment of ine	rtia		Without brake	1.56
of rotor (×10 ⁻⁴ kg·m ²)			With brake	1.66
Recommended moment of inertia ratio of the load and the rotor Note				20 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

Please contact us for more information.

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

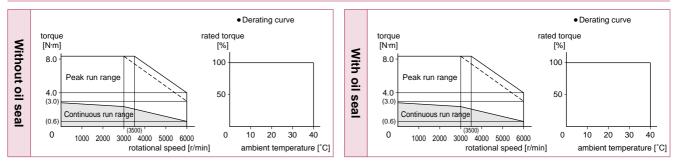
Static friction torque (N·m) 3.8 or more Engaging time (ms) 70 or less Releasing time (ms) Note)4 20 or less 0.42 Exciting current (DC) (A) Releasing voltage (DC) (V) 1 or more Exciting voltage (DC) (V) 24±2.4

• Permissible load (For details, refer to P.166)

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

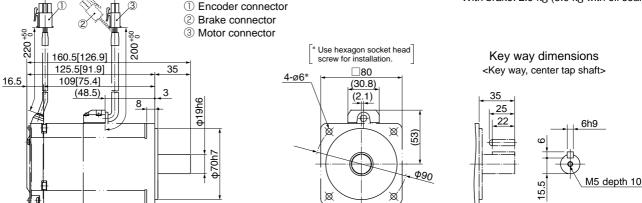
- · For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions

Mass: Without brake: 2.2 kg (2.3 kg with oil seal) With brake: 2.9 kg (3.0 kg with oil seal)



[Unit: mm]

For motors with oil seal, refer to P.162. For motors with protective lip, refer to P.164. • Figures in [] represent the dimensions without brake.

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 MHMF 1000 W

Motor Specifications

Please contact us for more information.

Specifications

		AC200 V			
Motor model *1	IP65				MHMF092L1
		Multifunction type			MDDLT55SF
Applicable	Model No.	RS48	5 communicatio	n type *2	MDDLN55SG
driver		Basio	c type *2		MDDLN55SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у		(kVA)	2.3
Rated output				(W)	1000
Rated torque				(N·m)	3.18
Continuous sta	all torqu	ie		(N·m)	3.34
Momentary Ma	ax. pea	k torqu	Je	(N·m)	11.1
Rated current			(A	(rms))	5.7
Max. current			(/	A(o-p))	28.2
Regenerative brake		Without option		No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d		(r/min)	3000
Max. rotationa	l speed			(r/min)	6000
Moment of ine	rtia		Without brake		2.03
of rotor (×10 ⁻⁴	of rotor (×10 ⁻⁴ kg·m ²)				2.13
Recommended moment of inert ratio of the load and the rotor				Note)3	20 times or less
Rotary encode	er speci	ficatio	ns ^{⁺3}		23-bit Absolute
	Re	solutic	on per single	turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

[High inertia]

80 mm sq.

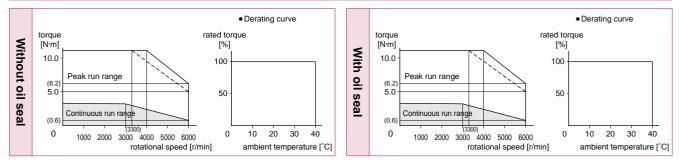
1 0	/
Static friction torque (N·m)	3.8 or more
Engaging time (ms)	70 or less
Releasing time (ms) Note)4	20 or less
Exciting current (DC) (A)	0.42
Releasing voltage (DC) (V)	1 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

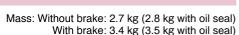
During assembly	Radial load P-direction (N)	686
	Thrust load A-direction (N)	294
assembly	Thrust load B-direction (N)	392
During operation	Radial load P-direction (N)	392
	Thrust load A, B-direction (N)	147

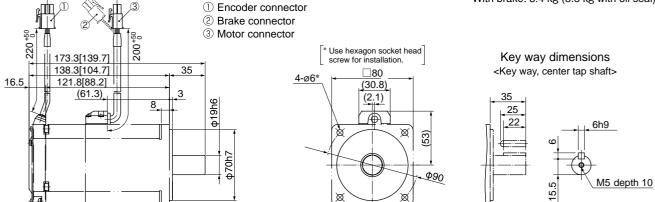
- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions





[Unit: mm]

For motors with oil seal, refer to P.162. For motors with protective lip, refer to P.164. • Figures in [] represent the dimensions without 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.

200 V

MHMF 1.0 kW [High inertia 130 mm sq.]

Specifications

				AC200 V
Motor model *1		IP67		MHMF102L1
		Multi	function type	MDDLT45SF
Applicable	Model No.	RS485 communication type *2		MDDLN45SG
driver		Basio	c type *2	MDDLN45SE
	Fram	e symbol		D-frame
Power supply	capacit	у	(kVA)	1.8
Rated output			(W)	1000
Rated torque	Rated torque (N·m)			4.77
Continuous sta	all torqu	ie	(N·m)	5.25
Momentary Ma	ax. pea	k torqu	ue (N·m)	14.3
Rated current	Rated current (A(rms))		5.2	
Max. current		(A(o-p))		22
Regenerative brake			Without option	No limit Note)2
frequency (time	s/min) Note)1		DV0P4284	No limit Note)2
Rated rotational speed		(r/min)	2000	
Max. rotational speed		(r/min)	3000	
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)			Without brake	22.9
			With brake	24.1
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less		
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
Resolutio		on per single turn	8388608	

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

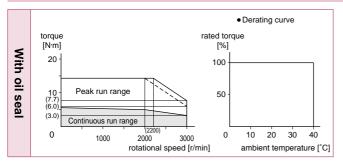
Static friction torque (N·m)13.7 or moreEngaging time (ms)100 or lessReleasing time (ms) Note)450 or lessExciting current (DC) (A)0.79±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

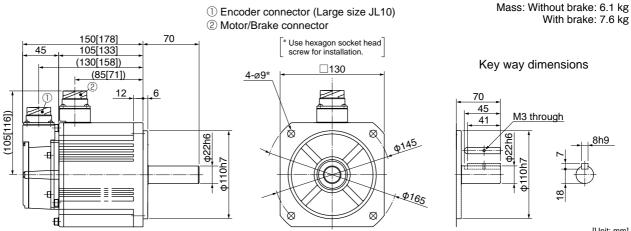
	. .	Radial load P-direction (N)	980
	During assembly	Thrust load A-direction (N)	588
	assembly	Thrust load B-direction (N)	686
	During	Radial load P-direction (N)	490
operation	Thrust load A, B-direction (N)	196	

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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

MHMF 1.5 kW [High inertia 130 mm sq.]

Motor Specifications

Please contact us for more information.

Specifications

					AC200 V
Motor model *1		IP67			MHMF152L1
	Model No.		function type		MDDLT55SF
Applicable		RS48	RS485 communication type *2		MDDLN55SG
driver		Basio	type ^{*2}		MDDLN55SE
	Fram	Frame symbol			D-frame
Power supply	capacit	у	(k	XA)	2.3
Rated output				(W)	1500
Rated torque			4)	l∙m)	7.16
Continuous sta	all torqu	ie	٩)	l∙m)	7.52
Momentary Ma	ax. pea	k torqı	4) eu	l∙m)	21.5
Rated current	Rated current (A(rms))			8.0	
Max. current (A(o-p))			34		
Regenerative brake		Without optior	۱	No limit Note)2	
frequency (time	s/min) Note)1		DV0P4284		No limit Note)2
Rated rotational speed (r/		nin)	2000		
Max. rotational speed (r/min)		nin)	3000		
Moment of inertia of rotor (×10 ⁻⁴ kg·m ²)		Without brake	•	33.4	
			With brake		34.6
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less		
Rotary encode	Rotary encoder specifications ^{*3}			23-bit Absolute	
Resolution per single turn			8388608		

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

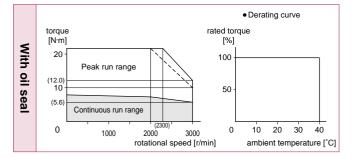
1 0	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

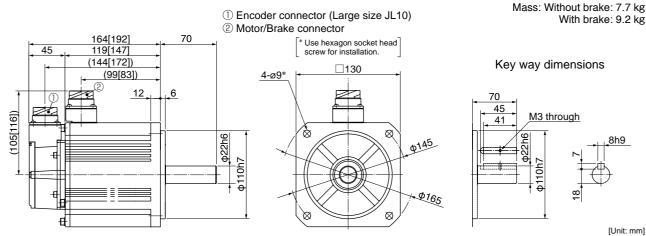
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• Figures in [] represent the dimensions with brake.

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.

200 V

MHMF 2.0 kW [High inertia 176 mm sq.]

Specifications

				AC200 V
Motor model *1			IP67	MHMF202L1
		Multi	function type	MEDLT83SF
Applicable	Model No.	RS485 communication type *2		MEDLN83SG
driver	140.	Basio	c type *2	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	3.8
Rated output			(W)	2000
Rated torque			(N·m)	9.55
Continuous sta	all torqu	ie	(N·m)	11.5
Momentary Ma	ax. pea	k torqu	ue (N·m)	28.6
Rated current	ated current (A(rms))		12.5	
Max. current		(A(o-p))		53
Regenerative brake		Without option	No limit Note)2	
frequency (time			DV0P4285	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	55.7
of rotor ($\times 10^{-4}$	kg∙m²)		With brake	61.0
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less		
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

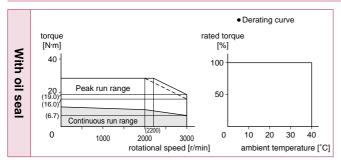
Static friction torque (N·m)25.0 or moreEngaging time (ms)80 or lessReleasing time (ms) Note)425 or lessExciting current (DC) (A)1.29±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

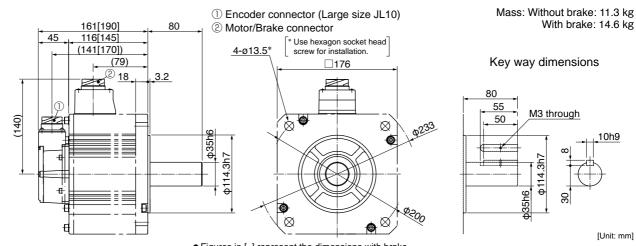
	During assembly During operation	Radial load P-direction (N)	1666
		Thrust load A-direction (N)	784
		Thrust load B-direction (N)	980
		Radial load P-direction (N)	784
		Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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. Series

MINAS A6 Family 144 GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Special Order Product

200 V

MHMF 3.0 kW [High inertia 176 mm sq.]

Motor Specifications

Please contact us for more information.

Specifications

				AC200 V
Motor model *1	IP67			MHMF302L1
		Multi	function type	MFDLTA3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNA3SG
driver	110.	Basio	type *2	MFDLNA3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	4.5
Rated output			(W)	3000
Rated torque			(N·m)	14.3
Continuous sta	all torqu	ie	(N·m)	17.2
Momentary Ma	ax. pea	k torqı	ue (N·m)	43.0
Rated current			(A(rms))	17.0
Max. current (A(o-p))		72		
Regenerative	brake		Without option	No limit Note)2
frequency (time	frequency (times/min) Note)1 DV0P4285×2		No limit Note)2	
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	85.3
of rotor (×10 ⁻⁴	of rotor (×10 ⁻⁴ kg·m ²)		With brake	90.7
Recommended moment of inertia ratio of the load and the rotor Note)3				5 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
Resolution per single turn				8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

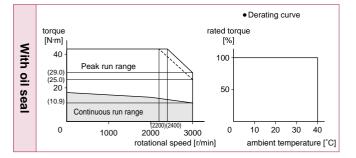
1 0	/
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

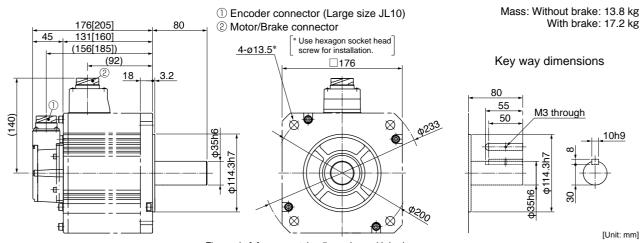
_ .	Radial load P-direction (N)	1666
During assembly		784
assembly	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

145 MINAS A6 Family

200 V

MHMF 4.0 kW [High inertia]

Specifications

				AC200 V
Motor model *1			IP67	MHMF402L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG
driver	110.	Basio	c type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	4000
Rated torque			(N·m)	19.1
Continuous sta	all torqu	ie	(N·m)	22.0
Momentary Ma	ax. pea	k torqu	ue (N·m)	57.3
Rated current			(A(rms))	20
Max. current	t (A(o-p))		(A(o-p))	85
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1 DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	104
of rotor ($\times 10^{-4}$	of rotor (×10 ⁻⁴ kg·m ²)		With brake	110
Recommended moment of inertia ratio of the load and the rotor Note)3		5 times or less		
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

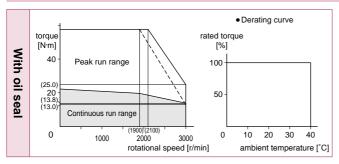
Static friction torque (N·m)25.0 or moreEngaging time (ms)80 or lessReleasing time (ms) Note)425 or lessExciting current (DC) (A)1.29±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

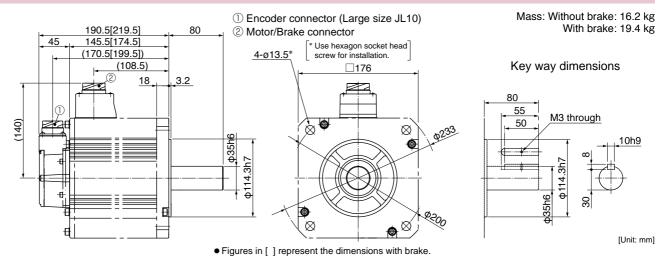
	_	Radial load P-direction (N)	1666
During assembly	Thrust load A-direction (N)	784	
	Thrust load B-direction (N)	980	
	During operation	Radial load P-direction (N)	784
		Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



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

MINAS A6 Family | 146 GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Special Order Product

200 V

MHMF 5.0 kW [High inertia 176 mm sq.]

Motor Specifications

Please contact us for more information.

Specifications

				AC200 V
Motor model *1	IP67			MHMF502L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *	² MFDLNB3SG
driver	110.	Basio	type ^{*2}	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	5000
Rated torque			(N·m)	23.9
Continuous sta	all torqu	ie	(N·m)	26.3
Momentary Ma	ax. pea	k torqı	ue (N·m)	71.6
Rated current	Rated current (A(rms))			23.3
Max. current (A(o-p))			99	
		Without option	No limit Note)2	
		DV0P4285×2	No limit Note)2	
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	146
of rotor (×10 ⁻⁴ kg·m ²)		With brake	151	
Recommended moment of inertia ratio of the load and the rotor Note)3			5 times or less	
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutio	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

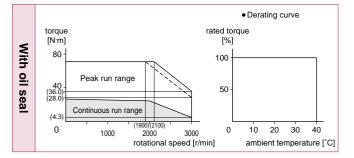
1	1
Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	30 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

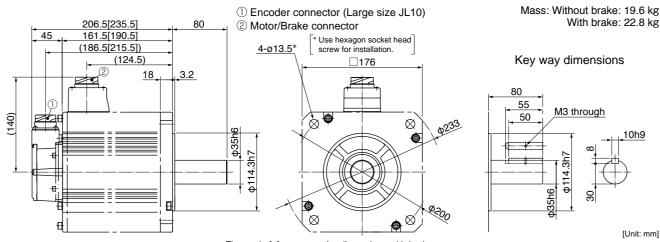
During assembly - During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.116.
- Detail of model designation, refer to P. 116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

200 V

MDMF 1.0 kW

[Middle inertia]

130 mm sq.

Specifications

				AC200 V
Motor model *1		IP67		MDMF102L1
		Multi	function type	MDDLT45SF
Applicable	Model No.	RS48	5 communication type *2	MDDLN45SG
driver	110.	Basio	c type *2	MDDLN45SE
	Fram	e sym	bol	D-frame
Power supply	capacit	у	(kVA)	1.8
Rated output			(W)	1000
Rated torque			(N·m)	4.77
Continuous sta	all torqu	ie	(N·m)	5.25
Momentary Ma	ax. pea	k torqu	ue (N·m)	14.3
Rated current	nt (A(rms))		(A(rms))	5.2
Max. current			(A(o-p))	22
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4284	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	6.18
of rotor ($\times 10^{-4}$	kg∙m²)		With brake	7.40
Recommended moment of inertia ratio of the load and the rotor Note)3		10 times or less		
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

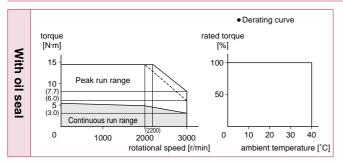
Static friction torque (N·m)13.7 or moreEngaging time (ms)100 or lessReleasing time (ms) Note)450 or lessExciting current (DC) (A)0.79±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

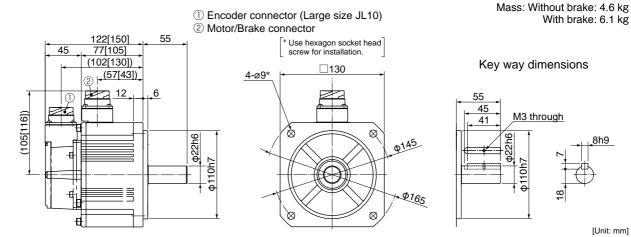
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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

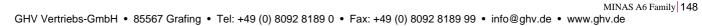


Dimensions



• 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

MDMF 1.5 kW

Motor Specifications

Please contact us for more information.

Specifications

					AC200 V
Motor model *1	IP67			MDMF152L1	
		Multi	Multifunction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication ty	pe *2	MDDLN55SG
driver		Basio	type *2		MDDLN55SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(k'	VA)	2.3
Rated output				(W)	1500
Rated torque			(N	ŀm)	7.16
Continuous sta	all torqu	ie	(N	ŀm)	7.52
Momentary Ma	ax. pea	k torqu	ie (N	ŀm)	21.5
Rated current			(A(rm	าร))	8.0
Max. current	Max. current			-p))	34
Regenerative brake		Without option	I	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/n	nin)	2000
Max. rotationa	l speed		(r/n	nin)	3000
Moment of ine	rtia		Without brake		9.16
of rotor (×10 ⁻⁴	kg∙m²)		With brake		10.4
Recommended moment of inertia ratio of the load and the rotor Not			ote)3	10 times or less	
Rotary encode	er speci	ficatio	ns*3		23-bit Absolute
Resolution per single			n per single turr	า	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

[Middle inertia] 130 mm sq.

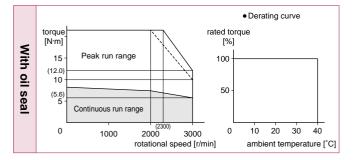
1 5	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

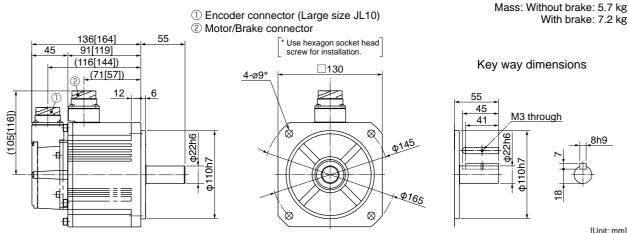
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

149 MINAS A6 Family

200 V

MDMF 2.0 kW

[Middle inertia] [130 mm sq.

Specifications

				AC200 V
Motor model *1	IP67			MDMF202L1
		Multifunction type		MEDLT83SF
Applicable	Model No.	RS48	5 communication type *2	MEDLN83SG
driver	110.	Basic type *2		MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	3.8
Rated output			(W)	2000
Rated torque			(N·m)	9.55
Continuous sta	all torqu	ie	(N·m)	10.0
Momentary Ma	ax. pea	k torqu	ue (N·m)	28.6
Rated current			(A(rms))	9.9
Max. current (A(c		(A(o-p))	42	
Regenerative brake			Without option	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4285	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	12.1
of rotor (×10 ⁻⁴ kg·m ²)			With brake	13.3
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Resolutio		on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

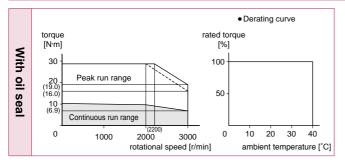
Static friction torque (N·m)13.7 or moreEngaging time (ms)100 or lessReleasing time (ms) Note)450 or lessExciting current (DC) (A)0.79±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

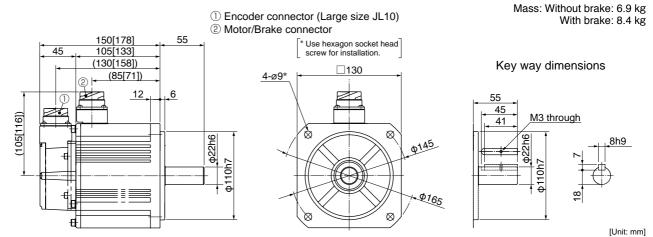
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	490
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

200 V

Special Order Product

MDMF 3.0 kW

Motor Specifications

Please contact us for more information.

Specifications

				AC200 V
Motor model *1	IP67			MDMF302L1
		Multi	function type	MFDLTA3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNA3SG
driver	110.	Basio	type *2	MFDLNA3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	4.5
Rated output			(W)	3000
Rated torque			(N·m)	14.3
Continuous sta	all torqu	ie	(N·m)	15.0
Momentary Ma	ax. pea	k torqu	ue (N·m)	43.0
Rated current			(A(rms))	16.4
Max. current			(A(o-p))	70
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	18.6
of rotor (×10 ⁻⁴	of rotor (×10 ⁻⁴ kg·m ²)		With brake	19.6
Recommended moment of inertia ratio of the load and the rotor Note				10 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
Resolution per single			on per single turn	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

[Middle inertia] [130 mm sq.]

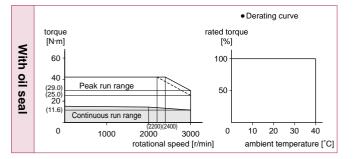
1 0	/
Static friction torque (N·m)	22.0 or more
Engaging time (ms)	110 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.90±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

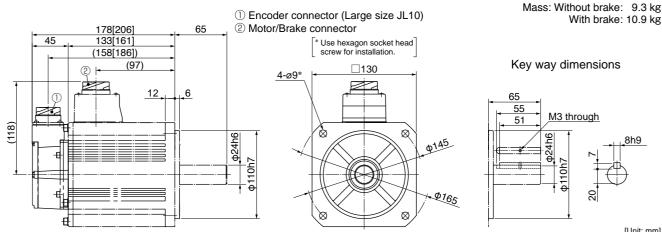
During assembly During operation	Radial load P-direction (N)	980	
	Thrust load A-direction (N) 588		
	Thrust load B-direction (N)	686	
	Radial load P-direction (N)	784	
	Thrust load A, B-direction (N)	343	

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *1
 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

151 MINAS A6 Family

200 V

MDMF 4.0 kW

[Middle inertia]

176 mm sq.

Specifications

				AC200 V
Motor model *1			IP67	MDMF402L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG
driver	110.	Basio	c type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	4000
Rated torque			(N·m)	19.1
Continuous sta	all torqu	ie	(N·m)	22.0
Momentary Ma	ax. pea	k torqu	ue (N·m)	57.3
Rated current		(A(rms))	20.0	
Max. current		(A(o-p))	85	
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	46.9
of rotor ($\times 10^{-4}$	kg∙m²)		With brake	52.3
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less	
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

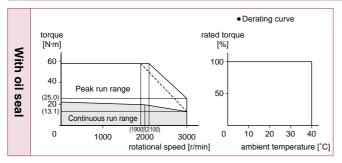
Static friction torque (N·m)25.0 or moreEngaging time (ms)80 or lessReleasing time (ms) Note)425 or lessExciting current (DC) (A)1.29±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

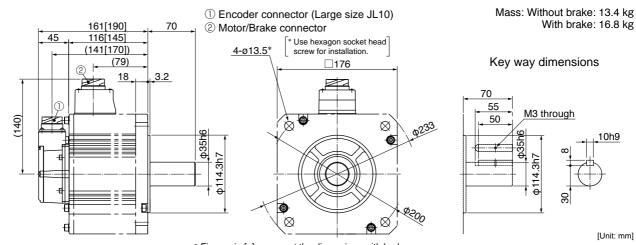
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

MINAS A6 Family | 152 GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Special Order Product

200 V

MDMF 5.0 kW

Motor Specifications

Please contact us for more information.

Specifications

				AC200 V
Motor model *1	IP67			MDMF502L1
			function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG
driver	110.	Basic	type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	5000
Rated torque			(N·m)	23.9
Continuous sta	all torqu	ie	(N·m)	26.3
Momentary Ma	ax. pea	k torqı	ue (N·m)	71.6
Rated current			(A(rms))	23.3
Max. current			(A(o-p))	99
Regenerative brake		Without option	No limit Note)2	
frequency (time	es/min)	Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	2000
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	58.2
of rotor (×10 ⁻⁴	of rotor (×10 ⁻⁴ kg·m ²)		With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times or less
Rotary encode	er speci	ficatio	ns ^{*3}	23-bit Absolute
	Re	solutic	on per single turn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

[Middle inertia]

176 mm sq.

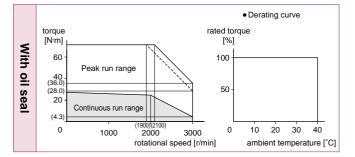
(e	,
Static friction torque (N·m)	44.1 or more
Engaging time (ms)	150 or less
Releasing time (ms) Note)4	30 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

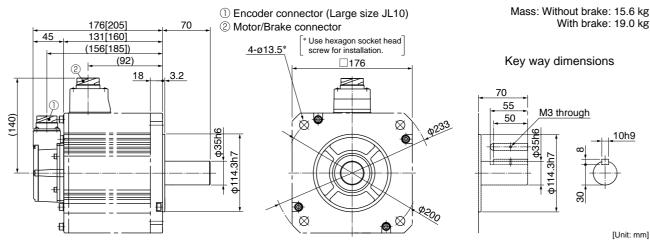
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	784
	Thrust load A, B-direction (N)	343

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.116.
- *O Milean using a natary analysis of a single
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

153 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

200 V

MGMF 0.85 kW

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

A6 Family

Motor Specifications

· Please contact us for more information.

Specifications

					AC200 V
Motor model *1		IP67			MGMF092L1
		Multi	unction type		MDDLT45SF
Applicable	Model No.	RS48	5 communication ty	pe *2	MDDLN45SG
driver	110.	Basic	type *2		MDDLN45SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(k'	VA)	1.8
Rated output			((W)	850
Rated torque			(N	·m)	5.41
Continuous sta	all torqu	ie	(N	·m)	5.41
Momentary Ma	ax. pea	k torqı	ie (N	·m)	14.3
Rated current (A(าร))	5.9
Max. current (A(o-p))				-p))	22
Regenerative brake			Without option		No limit Note)2
frequency (times/min) Note)1		Note)1	¹ DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/m	nin)	1500
Max. rotationa	l speed		(r/m	nin)	3000
Moment of ine	rtia		Without brake		6.18
of rotor (×10 ⁻⁴ kg·m ²)			With brake		7.40
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times or less	
Rotary encode	er speci	ficatio	ns *3		23-bit Absolute
Resolution per single turn				า	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

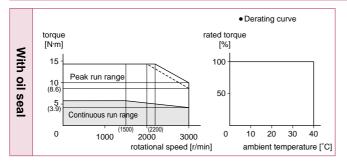
Static friction torque (N·m)13.7 or moreEngaging time (ms)100 or lessReleasing time (ms)50 or lessExciting current (DC) (A)0.79±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

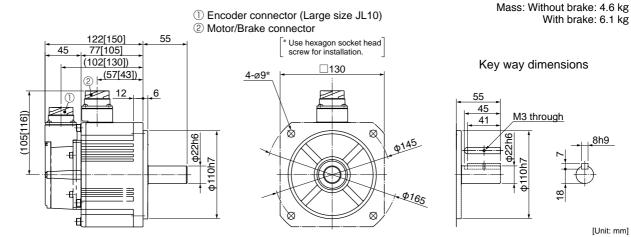
During assembly During operation	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.48.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
 - system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

Motor Specifications

Special Order Product

MGMF 1.3 kW 200 V

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

Please contact us for more information.

Specifications

					AC200 V
Motor model *1	IP67			MGMF132L1	
		Multi	unction type		MDDLT55SF
Applicable	Model No.	RS48	5 communication ty	ype *2	MDDLN55SG
driver	110.	Basio	type ^{*2}		MDDLN55SE
	Fram	e sym	bol		D-frame
Power supply	capacit	у	(k	(VA)	2.3
Rated output				(W)	1300
Rated torque			1)	l∙m)	8.28
Continuous sta	all torqu	ie	1)	l∙m)	8.28
Momentary Ma	ax. pea	k torqu	1) eı	l∙m)	23.3
Rated current			(A(rr	ns))	9.3
Max. current (A(o-p))				o-p))	37
Regenerative brake			Without optior	n	No limit Note)2
frequency (time	es/min)	Note)1	DV0P4284		No limit Note)2
Rated rotation	al spee	d	(r/r	min)	1500
Max. rotationa	l speed		(r/r	min)	3000
Moment of ine	rtia		Without brake		9.16
of rotor (×10 ⁻⁴ kg·m ²)		With brake		10.4	
Recommended moment of inertia ratio of the load and the rotor Note)3			lote)3	10 times or less	
Rotary encode	er speci	ficatio	ns⁺³		23-bit Absolute
Resolution per single turn				n	8388608

• Brake specifications (For details, refer to P.167) This brake will be released when it is energized. Do not use this for braking the motor in motion.

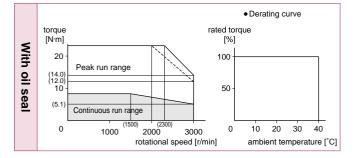
l e	,
Static friction torque (N·m)	13.7 or more
Engaging time (ms)	100 or less
Releasing time (ms) Note)4	50 or less
Exciting current (DC) (A)	0.79±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

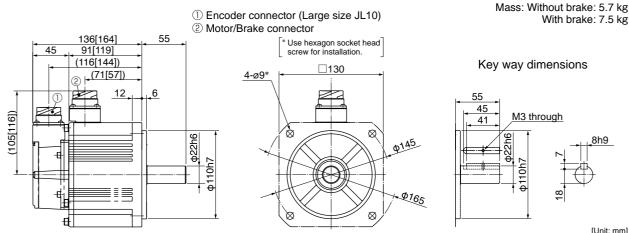
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	686
	Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.48.
- specifications.
- *2 Basic type and RS485 communication type are "Position control type". Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

155 MINAS A6 Family

200 V

MGMF 1.8 kW

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

Specifications

		AC200 V		
Motor model *1			IP67	MGMF182L1
		Multi	function type	MEDLT83SF
Applicable	Model No.	RS48	5 communication type *2	MEDLN83SG
driver	110.	Basic	c type *2	MEDLN83SE
	Fram	e sym	bol	E-frame
Power supply	capacit	у	(kVA)	3.8
Rated output			(W)	1800
Rated torque			(N·m)	11.5
Continuous sta	all torqu	ie	(N·m)	11.5
Momentary Ma	ax. pea	k torqı	ue (N·m)	28.7
Rated current			(A(rms))	11.8
Max. current ((A(o-p))	42
Regenerative brake		Without option	No limit Note)2	
frequency (times/min) Note)1		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	12.1
of rotor (×10 ⁻⁴ kg·m ²)			With brake	13.3
Recommended moment of inertia ratio of the load and the rotor Note				10 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Resolutio			8388608

A6 Family

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

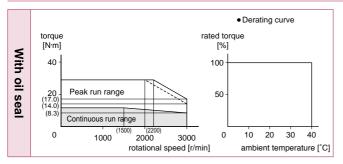
Static friction torque (N·m)13.7 or moreEngaging time (ms)100 or lessReleasing time (ms) Note)450 or lessExciting current (DC) (A)0.79±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

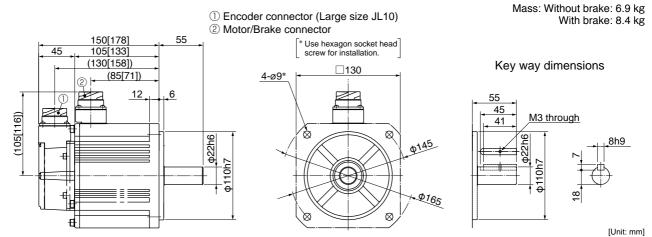
	During assembly During operation	Radial load P-direction (N)	980
		Thrust load A-direction (N)	588
		Thrust load B-direction (N)	686
		Radial load P-direction (N)	686
		Thrust load A, B-direction (N)	196

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

MINAS A6 Family | 156 GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Motor Specifications

Special Order Product

200 V MGMF 2.9 kW

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

Please contact us for more information.

Specifications

					AC200 V
Motor model ^{*1}	IP67			MGMF292L1	
			function type		MFDLTB3SF
Applicable	Model No.	RS48	5 communication	type *2	MFDLNB3SG
driver	110.	Basio	type ^{*2}		MFDLNB3SE
	Fram	e sym	bol		F-frame
Power supply	capacit	у	((kVA)	7.5
Rated output				(W)	2900
Rated torque			((N·m)	18.5
Continuous sta	all torqu	ie	((N·m)	18.5
Momentary Ma	ax. pea	k torqı	Je ((N·m)	45.2
Rated current			(A(I	rms))	19.3
Max. current (A(c				(o-p))	67
Regenerative brake			Without optic	on	No limit Note)2
frequency (time	es/min)	Note)1	¹ DV0P4285×2		No limit Note)2
Rated rotation	al spee	d	(r,	/min)	1500
Max. rotationa	l speed		(r.	/min)	3000
Moment of ine	rtia		Without brake		46.9
of rotor (×10 ⁻⁴ kg·m ²)		With brake		52.3	
Recommended moment of inertia ratio of the load and the rotor Note			Note)3	10 times or less	
Rotary encode	er speci	ficatio	ns *3		23-bit Absolute
Resolution per single				irn	8388608

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

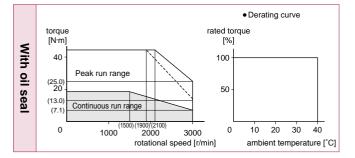
1 0	/
Static friction torque (N·m)	25.0 or more
Engaging time (ms)	80 or less
Releasing time (ms) Note)4	25 or less
Exciting current (DC) (A)	1.29±10 %
Releasing voltage (DC) (V)	2 or more
Exciting voltage (DC) (V)	24±2.4

• Permissible load (For details, refer to P.166)

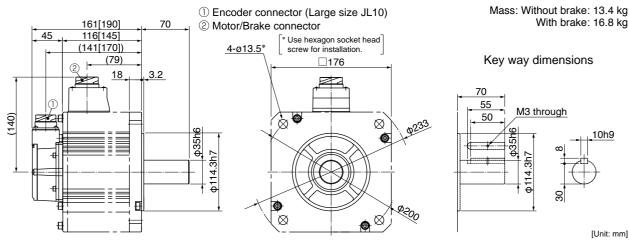
During assembly During operation	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
	Radial load P-direction (N)	1176
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.165.
- · Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116.
- *3 When using a rotary encoder as an incremental system (not using multi-turn data), do not connect a battery for absolute encoder.

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



Dimensions



• 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.

200 V

MGMF 4.4 kW

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

Specifications

		AC200 V		
Motor model *1			IP67	MGMF442L1
		Multi	function type	MFDLTB3SF
Applicable	Model No.	RS48	5 communication type *2	MFDLNB3SG
driver	110.	Basic	c type *2	MFDLNB3SE
	Fram	e sym	bol	F-frame
Power supply	capacit	у	(kVA)	7.5
Rated output			(W)	4400
Rated torque			(N·m)	28.0
Continuous sta	all torqu	ie	(N·m)	28.0
Momentary Ma	ax. pea	k torqı	ue (N·m)	70.0
Rated current			(A(rms))	27.2
Max. current (A(o-p			(A(o-p))	96
Regenerative brake			Without option	No limit Note)2
frequency (times/min) Note)1		Note)1	DV0P4285×2	No limit Note)2
Rated rotation	al spee	d	(r/min)	1500
Max. rotationa	l speed		(r/min)	3000
Moment of ine	rtia		Without brake	58.2
of rotor (×10 ⁻⁴ kg·m ²)			With brake	63.0
Recommended moment of inertia ratio of the load and the rotor Note)3				10 times or less
Rotary encode	er speci	ficatio	ns *3	23-bit Absolute
	Re	solutic	on per single turn	8388608

A6 Family

Motor Specifications

· Please contact us for more information.

• Brake specifications (For details, refer to P.167) (This brake will be released when it is energized.) (Do not use this for braking the motor in motion.)

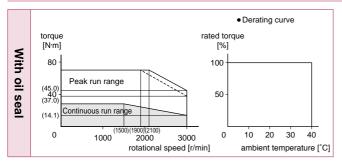
Static friction torque (N·m)44.1 or moreEngaging time (ms)150 or lessReleasing time (ms) Note)430 or lessExciting current (DC) (A)1.29±10 %Releasing voltage (DC) (V)2 or moreExciting voltage (DC) (V)24±2.4

• Permissible load (For details, refer to P.166)

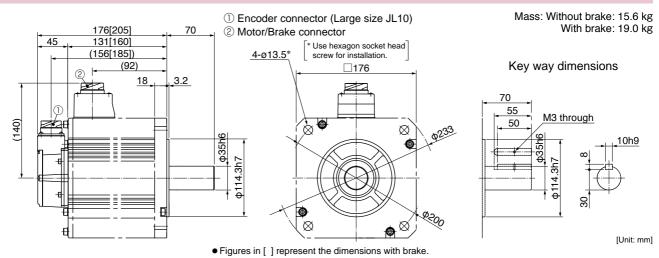
During assembly	Radial load P-direction (N)	1666
	Thrust load A-direction (N)	784
	Thrust load B-direction (N)	980
During operation	Radial load P-direction (N)	1470
	Thrust load A, B-direction (N)	490

- For details of Note)1 to Note)4, refer to P.165.
- Dimensions of Driver, refer to P.49.
- *1 in the motor part number represents the motor specifications.
- *2 Basic type and RS485 communication type are "Position control type".
- Detail of model designation, refer to P.116. *3 When using a rotary encoder as an incremental
- system (not using multi-turn data), do not connect a battery for absolute encoder.

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



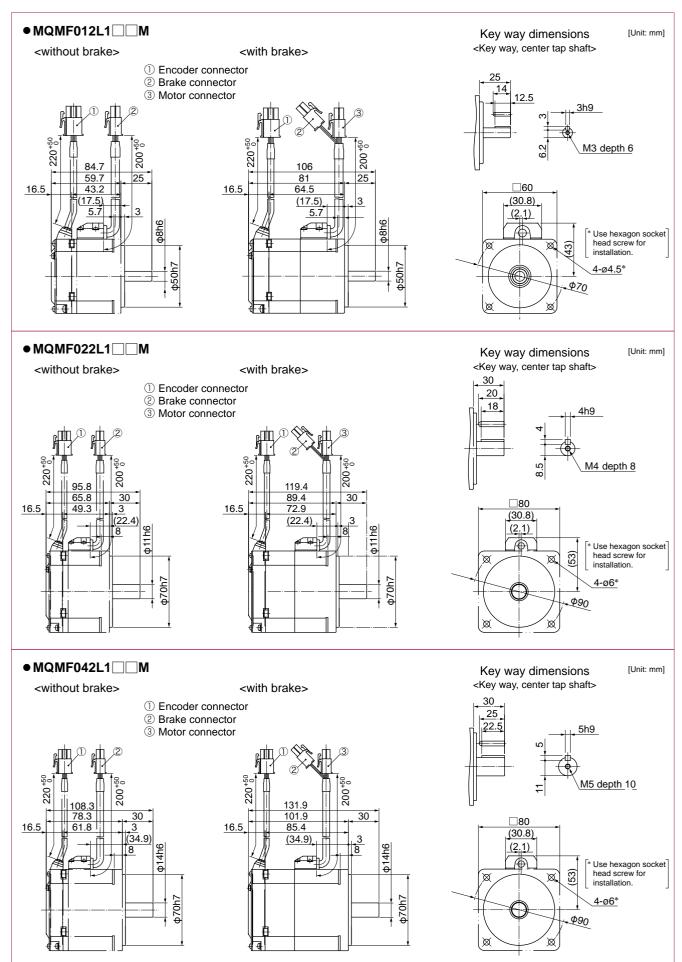
Dimensions



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

Dimensions

Special Order Product MQMF 100 W to 400 W Leadwire type (IP65) with oil seal



* For motors specifications, refer to P.133 to P.135.

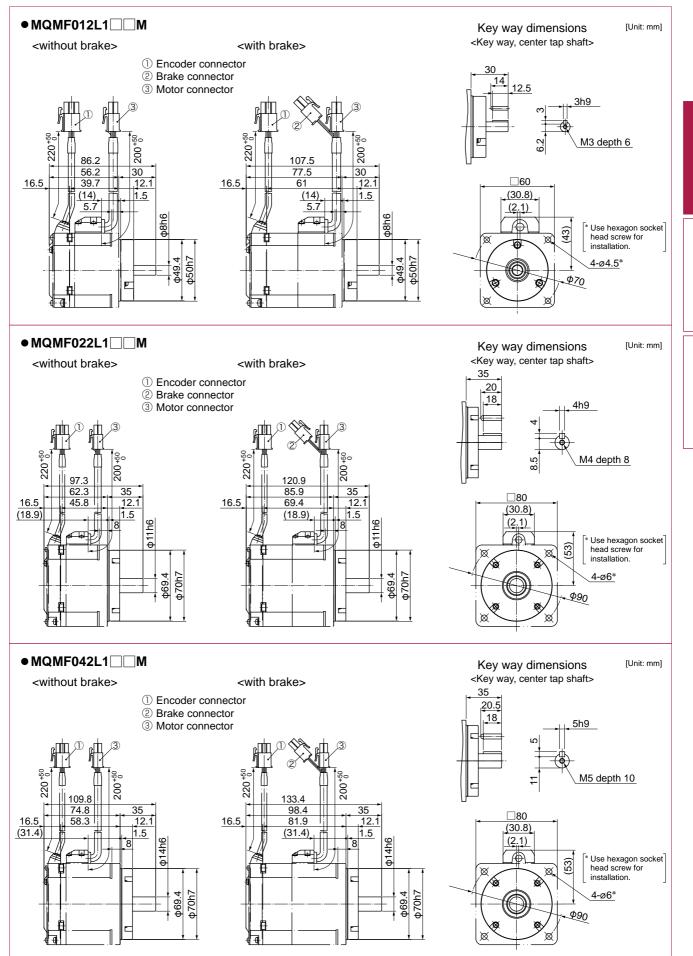
159 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Special Order Product MQMF 100 W to 400 W Leadwire type (IP65) with protective lip/ with oil seal

A6 Family

Dimensions



* For motors specifications, refer to P.133 to P.135.

Imformation

Special Order Product MHMF 50 W to 200 W Leadwire type (IP65) with oil seal

[Unit: mm]

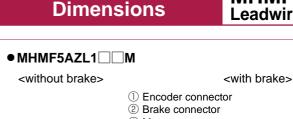
Φ70

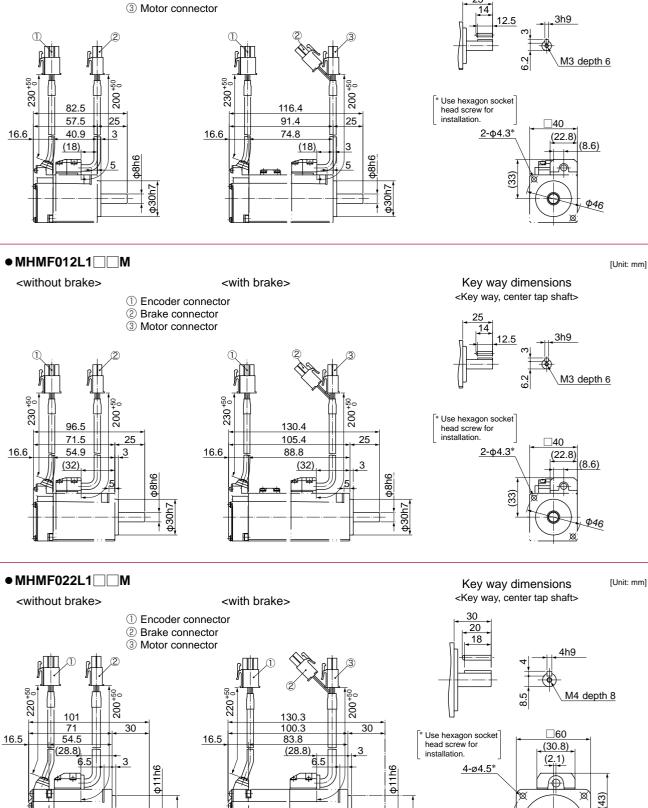
ø

ø

Key way dimensions

<Key way, center tap shaft>





D50h7

- 4

161 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

⊅50h7

^{*} For motors specifications, refer to P.136 to P.138.

Special Order Product MHMF 400 W to 1000 W Leadwire type (IP65) with oil seal

● MHMF042L1 □ □ M

A6 Family Dimensions

Key way dimensions

<Key way, center tap shaft> <without brake> <with brake> 30 ① Encoder connector 25 ② Brake connector 22.5 ③ Motor connector 5h9 P III D Шŋ ø M5 depth 10 2201 220 200 200 118 147 3 30 30 88 117.3 60 16.5 16.5 71.5 100.8 Use hexagon socket head screw for (30.8) 45.8) (45.8) 3 installation (2.1) 6.5 3 6.5 ф14h6 ф14h6 4-ø4.5* ø Ì 43) ф50h7 φ50h7 \$70 ø d (1 -fl ● MHMF082L1 □ □ M Key way dimensions [Unit: mm] <Key way, center tap shaft> <without brake> <with brake> 35 ① Encoder connector 25 2 Brake connector 22 6h9 ③ Motor connector 1 ПП ŝ 200 +50 မှိုင 220+ 2201 200 M5 depth 10 15.5 130.4 164 35 35 95.4 129 80 16.5 Use hexagon socket head screw for 16.5 78.9 112.5 (30.8) (52) 3 (52) 3 (2.1) ф19h6 ф19h6 installation. 8 8 4-ø6* A Ø Ś 53) φ70h7 Φ70h7 <u>\$90</u> Ø 8 ● MHMF092L1 □ □ M Key way dimensions [Unit: mm] <Key way, center tap shaft> <without brake> <with brake> 35 ① Encoder connector 25 2 Brake connector 22 6h9 ③ Motor connector ശ ŝ 220+ 220 200 200 M5 depth 10 15.5 176.8 143.2 108.2 35 141.8 35 80 16.5 91.7 16.5 125.3 Use hexagon socket (30.8) (64.8)3 (64.8) 3 head screw for ф19h6 installation. (2.1) φ19h6 4-ø6* A `⊗ Ø 53) Φ70h7 b70h7 <u>Ф90</u> Ø X

* For motors specifications, refer to P.139 to P.141.

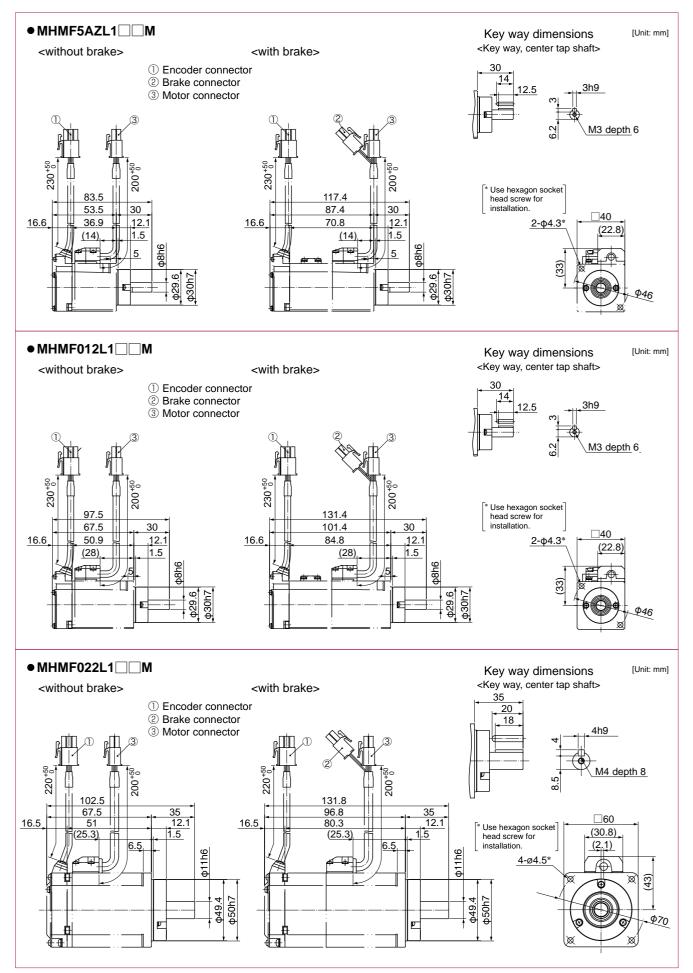
A6 Family

[Unit: mm]

MINAS A6 Family 162

Dimensions

Special Order ProductMHMF50 W to 200 WLeadwire type (IP65)with protective lip/ with oil seal



* For motors specifications, refer to P.136 to P.138.

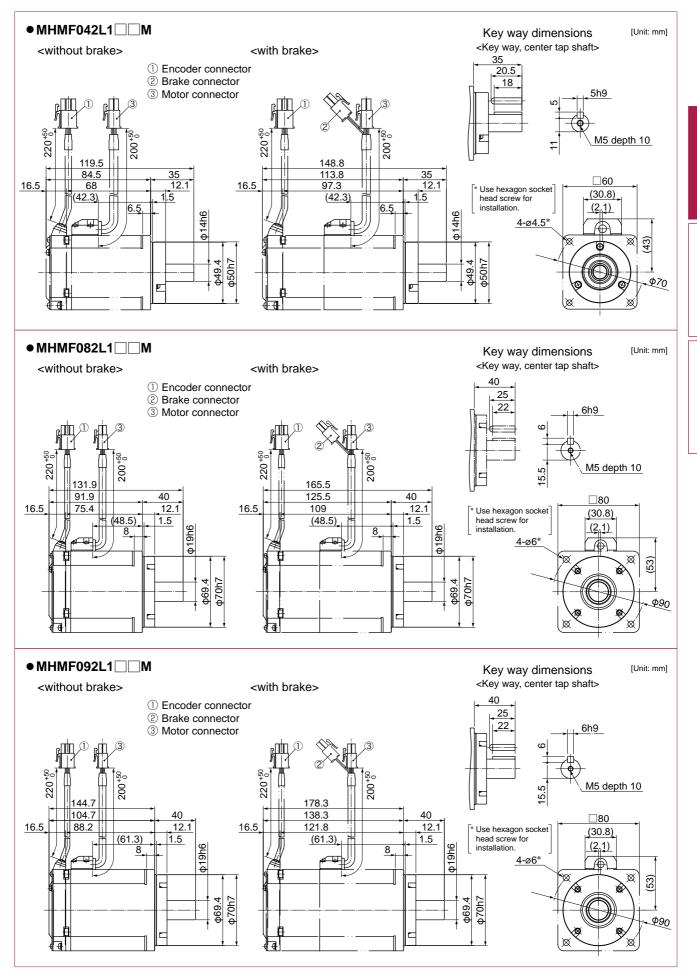
163 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Special Order Product MHMF 400 W to 1000 W Leadwire type (IP65) with protective lip/ with oil seal

A6 Family

Dimensions



* For motors specifications, refer to P.139 to P.141.

Imformation

A6 Family Motor Specification Description

Environmental Conditions

lte	em	Conditions	
Ambient temperature *1		0 °C to 40 °C (free from freezing)	
Ambient humidity		20 % to 85 % RH (free from condensation)	
Storage temperature *2		-20 °C to 65 °C (Max.temperature guarantee: 80 °C for 72 hours free from condensation ⁵)	
Storage hur	nidity	20 % to 85 % RH (free from condensation ^{*5})	
Vibration	Motor only	Lower than 49 m/s ² (5 G) at running, 24.5 m/s ² (2.5 G) at stall	
Impact	Motor only	Lower than 98 m/s² (10 G)	
Enclosure	IP65 *3	MSMF, MQMF, MHMF (except rotating portion of output shaft and leadwire end.) (MSMF, MQMF, MHMF In case of leadwire type.)	
rating (Motor only)	IP67 *3*4	IP67 motor (except rotating portion of output shaft and connecting pin part of the motor connector and the encoder connector)	
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.



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]

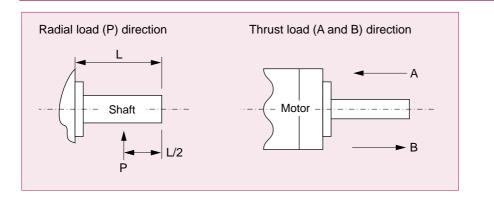
Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- 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.
- Note) 2. If the effective torque is within the rated torque, there is no limit in generative brake.
- Note) 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
- Note) 4. Releasing time values represent the ones with DC-cutoff using a varistor.

Permissible Load at Output Shaft

The radial load is defined as a load applied to the output shaft in the right-angle direction. This load is generated when the gear head is coupled to the machine using a chain, belt, etc., but not when the gear head is directly connected to the coupling. As shown in the right figure, the permissible value is determined based on the load applied to the L/2 position of the output shaft. The thrust load is defined as a load applied to the output shaft in the axial direction.

Because the radial load and thrust load significantly affect the life of the bearing, take care not to allow the load during operation to exceed the permissible radial load and thrust load shown in the table below.



Built-in Holding Brake

In the applications where the motor drives the vertical axis, this brake would be used to hold and prevent the work (moving load) from falling by gravity while the power to the servo is shut off.

Use this built-in brake for "Holding" purpose only, that is to hold the stalling status. Never use this for "Brake" purpose to stop the load in motion.

Output Timing of BRK-OFF Signal

- For the brake release timing at power-on, or braking timing at Servo-OFF/Servo-Alarm while the motor is in motion, refer to the Operating Instructions (Overall).
- With the parameter, Pr4.38 (Setup of mechanical brake action while the motor is in motion), you can set up a time between when the motor enters to a free-run from energized status and when BRK-OFF signal turns off (brake will be engaged), when the Servo-OFF or alarm occurs while the motor is in motion. For details, download a copy of the instruction manual from our website.

<Note>

- 1. The lining sound of the brake (chattering and etc.) might be generated while running the motor with built-in brake, however this does not affect any functionality.
- 2. Magnetic flux might be generated through the motor shaft while the brake coil is energized (brake is open). Pay an extra attention when magnetic sensors are used nearby the motor.

A6 Family Motor Specification Description

• Specifications of Built-in Holding Brake

Motor series	Motor output	Static friction torque N·m	Rotor inertia × 10 ⁻⁴ 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	total work	Permissible angular acceleration rad/s ²
	50 W,100 W	0.294 or more	0.002	35 or less	20 or less	0.30	1	39.2	4.9	
	200 W,400 W	1.27 or more	0.018	50 or less	15 or less	0.36	1 or more	137	44.1	
MSMF (80 mm sq.) or less	750 W	2.45 or more					24±1.2	196	147	30000
	1000 W	3.80 or more	0.075	70 or less	20 or less		1 or more 24±2.4	185	80.0	
	1.0 kW, 1.5 kW, 2.0 kW	8.0 or more	0.175	50 or less	15 or less	0.81		600	50	- 10000
MSMF (100 mm sq.)	3.0 kW	12.0 or more		80 or less		±10 %	2 or more	000	900	
(or more)	4.0 kW	16.2 or more	4.40	44.0	50 1	0.90	24±2.4	1470	2160	
	5.0 kW	22.0 or more	1.12	110 or less	50 or less	±10 %		1545	2000	
MQMF	100 W	0.39 or more	0.018	15 or less	20 or less	0.30	1 or more	105	44.1	
$\begin{pmatrix} 80 \text{ mm sq.} \\ \text{or less} \end{pmatrix}$	200 W, 400 W	1.6 or more	0.075	70 or less		0.36	24±2.4	4 185	80	- 30000
	50 W, 100 W	0.38 or more	0.002	35 or less	20 or less	0.30	- 1 or more 24±2.4	39.2	4.9	30000
MHMF (80 mm sq.)	200 W, 400 W	1.6 or more	0.018	50 or less		0.36		105	44.1	
\ or less /	750 W, 1000 W	3.8 or more	0.075	70 or less		0.42		185	80	
	1.0 kW, 1.5 kW	13.7 or more	1.12	100 or less	50 or less	0.79 ±10 %	_	1470	2160	10000
MHMF (100 mm sq.) or more	2.0 kW, 3.0 kW, 4.0 kW	25.0 or more	4.7	80 or less	25 or less 1.29	2412.4	1800	3000	5440	
	5.0 kW	44.1 or more	4.1	150 or less	30 or less	±10 %	%	1800	3100	5108
	1.0 kW, 1.5 kW, 2.0 kW	13.7 or more	1.12	100 or less	EQ or loop	0.79 ±10 %		1470	2160	10000
MDMF (100 mm sq.)	3.0 kW	22.0 or more	1.12	110 or less	50 or less	0.90 ±10 %	2 or more	1545	2000	10000
(or more)	4.0 kW	25.0 or more	4.7	80 or less	25 or less	1.29	24±2.4	4000	3000	5440
	5.0 kW	44.1 or more	4.1	150 or less	30 or less	+10 %		1800	3100	5108
	0.85 kW, 1.3 kW, 1.8 kW	13.7 or more	1.12	100 or less	50 or less	0.79 ±10 %	2 or more	1470	2160	10000
MGMF (100 mm sq. or more)	2.9 kW	25.0 or more	4.7	80 or less	25 or less	1.29	24±2.4	1800	3000	5440
(4.4 kW	44.1 or more	3.93	150 or less	30 or less	±10 %	2712.4	1800	3100	5108

• Releasing time values represent the ones with DC-cutoff using a varistor.

• 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.

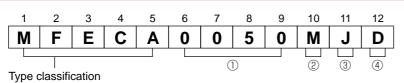
• Service life of the number of acceleration/deceleration with the above permissible angular acceleration is more than 10 million times. (Life end is defined as when the brake backlash drastically changes.)

Cable part No. Designation

A6 Family

Options

Encoder Cable



MFECA: Encoder cable

Ċ	 Cable length 			
	0030	3 m		
	0050	5 m		
	0100	10 m		
	0200	20 m		

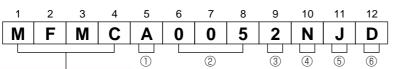
2 Cable type

Е	PVC cable with shield by Oki Electric Cable Co., 0.20 mm ² × 4P(8-wire), 3P(6-wire)			
М	Hitachi Cable, Ltd. Highly bendable type			
Т	Hitachi Cable, Ltd. Standard bendable type			
А	Tyco Electronics Japan G.K. connector			
А	Tyco Electronics Japan G.K. connector			
J	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)			
Κ	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)			
1				
P	Japan Aviation Electronics Industry, Ltd. plug connector			
	Japan Aviation Electronics Industry, Ltd. plug connector "S" shaped cannonplug			

④ Cable end (Driver side)

- D Connector (Without battery box)
- Connector (With battery box) Е

Motor Cable, Brake Cable



AC servo motor cable

① Type classification		
Α	Standard	

В	Special
÷	Design order

2 Cable length

0	5
003	3 m
005	5 m
010	10 m
020	20 m

③ Sectional area of cable core

0	0.75 mm ²
1	1.25 mm ²
2	2.0 mm ²
3	3.5 mm ²

④ Cat	DIE type ROBO-TOP⊛ is a trade mark of DYDEN CORPORATION
Е	ROBO-TOP _® 4-wire by DYDEN CORPORATION
F	ROBO-TOP _® 6-wire by DYDEN CORPORATION
G	ROBO-TOP _® 2-wire by DYDEN CORPORATION
Ν	4-wire by Hitachi Cable, Ltd. (Highly bendable type)
R	2-wire by Hitachi Cable, Ltd. (Highly bendable type)
Р	4-wire by Hitachi Cable, Ltd. (Standard bendable type)
S	2-wire by Hitachi Cable, Ltd. (Standard bendable type)
U	4-wire for A6 series small motor* (Highly bendable type)
V	6-wire for A6 series small motor* (Highly bendable type)
W	4-wire for A6 series small motor* (Standard bendable type)
Х	6-wire for A6 series small motor* (Standard bendable type)

* 80 mm sq. or less

5 Cable end at motor side

С	S type cannon plug
E	Tyco Electronics Japan G.K. connector
F	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
G	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
J	Japan Aviation Electronics Industry, Ltd. connector (Direction of motor shaft)
K	Japan Aviation Electronics Industry, Ltd. connector (Opposite direction of motor shaft)
U	Japan Aviation Electronics Industry, Ltd. plug connector

6 Cable end at driver side

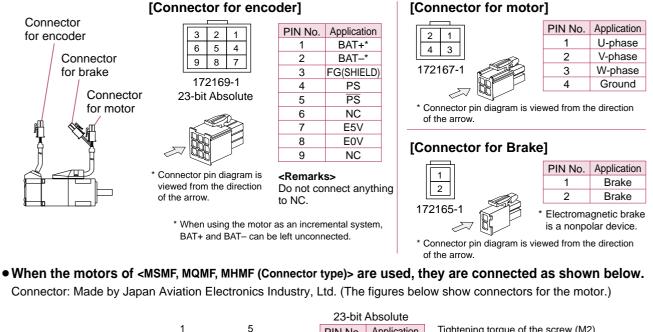
D Rod terminal

Т Clamp terminal

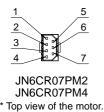
Options

50 W to 1000 W 80 mm sq. or less

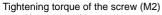
• When the motors of <MSMF, MQMF, MHMF (Leadwire type)> are used, they are connected as shown below. Connector: Tyco Electronics Japan G.K. (The figures below show connectors for the motor.)







23-bit Absolute			
PIN No. Applicatio			
1	FG(SHIELD)		
2	BAT-*		
3	E0V		
4	PS		
5	BAT+*		
6	E5V		
7	PS		



- 0.19 N·m to 0.21 N·m
- * Be sure to use only the screw supplied with the connector, to avoid damage.
- * When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

<MSMF>

PE	
3	KEN
2	
1	
	(⊕)

JN8AT04NJ1 * Top view of the motor.

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

Tightening torque of the screw (M2)

- 0.085 N·m to 0.095 N·m (screwed to plastic) * Be sure to use only the screw supplied with
- the connector, to avoid damage. Secure the gasket in place without removing
- it from the connector.

without Brake with Brake Connector <MHMF 50 W, 100 W> for motor PIN No. Application PIN No. Application PE U-phase 1 U-phase 1 5 4 2 V-phase 2 V-phase JN11AH06NN2 W-phase 3 W-phase 3 Top view of the motor. 4 NC 4 Brake 5 NC 5 Brake PE Ground PE Ground <MQMF, MHMF 200 W to 1000 W> Tightening torque of the screw (M2) PE 0.085 N·m to 0.095 N·m * Electromagnetic brake is a nonpolar device. 4 JN11AH06NN1 * Be sure to use only the screw supplied with the Top view of the motor. 3 connector, to avoid damage. 2 Secure the gasket in place without removing it from the connector. <Remarks> Do not connect anything to NC.

Tightening torque of the screw (M2) [Motor with brake] <MSMF> PIN No. Application Ð 0.19 N·m to 0.21 N·m 1 Brake Connector for brake * Electromagnetic brake is a nonpolar device. 2 Brake * Be sure to use only the screw supplied with 0 the connector, to avoid damage. Secure the gasket in place without removing JN4AT02PJM-R it from the connector. Top view of the motor.

169 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

- When the motors of <MSMF, MDMF, MGMF, MHMF> are used, they are connected as shown below. Connector: Made by Japan Aviation Electronics Industry, Ltd. (The figures below show connectors for the motor.)
 - Connector for encoder

IP67 motor Connector for encoder (Large size)



IP67 motor Connector for encoder (Small size)



<Large size Encoder connector>



JL10-2A20-29P

KPSLPSMNCNNC	23-bit Absolute			
B NC C NC D NC E NC F NC G E0V H E5V J FG(SHIELD) K PS L PS M NC N NC	PIN No.	Application		
C NC D NC E NC F NC G E0V H E5V J FG(SHIELD) K PS L PS M NC N NC	Α	NC		
D NC E NC F NC G E0V H E5V J FG(SHIELD) K PS L PS M NC N NC	В	NC		
E NC F NC G E0V H E5V J FG(SHIELD) K PS L PS M NC N NC	С	NC		
F NC G E0V H E5V J FG(SHIELD) K PS L PS M NC N NC	D	NC		
G E0V H E5V J FG(SHIELD) K PS L PS M NC N NC	E	NC		
H E5V J FG(SHIELD) K PS L PS M NC N NC	F	NC		
JFG(SHIELD)KPSLPSMNCNNC	G	E0V		
KPSLPSMNCNNC	Н	E5V		
L PS M NC N NC	J	FG(SHIELD)		
M NC N NC		PS		
N NC		PS		
	М	NC		
		NC		
P NC	Р	NC		
R NC		NC		
S BAT-* T BAT+*	S	BAT-*		
T BAT+*	Т	BAT+*		

<Small size Encoder connector>



JN2AS10ML3-R

23-bit Absolute			
PIN No. Application			
1	E0V		
2	NC		
3	PS		
4	E5V		
5 BAT-*			
6 BAT+*			
7	PS		
8	NC		
9	FG(SHIELD)		
10	NC		

<Remarks> Do not connect anything to NC.

* When using the motor as an incremental system, BAT+ and BAT- can be left unconnected.

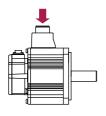
Connector for motor/brake

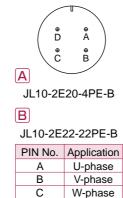
Table for motor connector and brake connector

Motor	Motor output		200 V Mo		Motor output	200 V	
part No.	Motor output	without Brake	with Brake	part No.	Motor output	without Brake	with Brake
MSMF	1.0 kW to 2.0 kW	Α	С		0.85 kW to 1.8 kW	Α	С
IVISIVIE	3.0 kW to 5.0 kW	В	D	MGMF	2.9 kW to 4.4 kW	В	D
MDMF	1.0 kW to 2.0 kW	Α	С		1.0 kW to 1.5 kW	Α	С
MDMF	3.0 kW to 5.0 kW	В	D	MHMF	2.0 kW to 5.0 kW	В	D

* Electromagnetic brake is a nonpolar device.

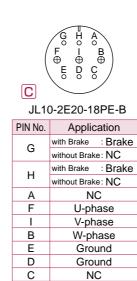
Connector for
motor/brake

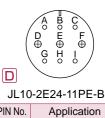




D

Ground





PIN No.	Application			
А	with Brake : Brake			
А	without Brake: NC			
В	with Brake : Brake			
Б	without Brake: NC			
С	NC			
D	U-phase			
Е	V-phase			
F	W-phase			
G	Ground			
Н	Ground			
I	NC			

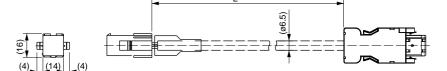
A6 Family

Options

Encoder Cable

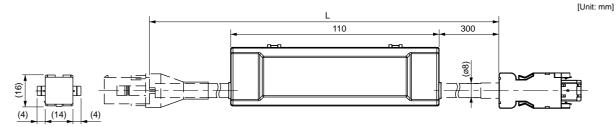
* It doesn't correspond to IP65 and IP67.

Part No.	MFECA0 * * 0EAD	80 mm sq. or less Applicable model		
Specifications 23-bit absolute encoder When used in incremental system (without battery box)				
			[Unit: mm]	



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EAD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EAD
Connector (Motor side)	172161-1	Tyco Electronics Japan	10	MFECA0100EAD
Connector pin	170365-1	G.K.	20	MFECA0200EAD
Cable	0.20 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0EAE	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W, MQMF 100 W to 400 W MHMF 50 W to 1000 W (Leadwire type)	
Specifications 23-bit absolute encoder When used in absolute system (with battery box)				



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EAE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EAE
Connector (Motor side)	172161-1	Tyco Electronics Japan	10	MFECA0100EAE
Connector pin	170365-1	G.K.	20	MFECA0200EAE
Cable	0.20 mm ² ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

-	MFECA0 * * 0MJD (Highly bendable type, Direction of motor shaft)	80 mm sq.	MSMF 50 W to 1000 W
Part No.	MFECA0 * * 0MKD (Highly bendable type, Opposite direction of motor shaft) MFECA0 * * 0TJD (Standard bendable type, Direction of motor shaft)	or less Applicable	MQMF 100 W to 400 W MHMF 50 W to 1000 W
	MFECA0 * * 0TKD (Standard bendable type, Opposite direction of motor shaft)	model	(Connector type)
Specifications	23-bit absolute encoder When used in incremental system (with	out batter	y box)
			[Unit: mm]

Direction of motor shaft



Title

Connector (Driver side)

Shell kit

Connector (Motor side)

Connector pin

motor shaft



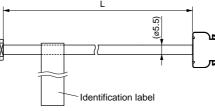
Part No.

3E206-0100 KV

3E306-3200-008

JN6FR07SM1

LY10-C1-A1-10000



Manufacturer

Sumitomo 3M

(or equivalent)

Japan Aviation

Electronics Ind.

L (m)

3

5

10

20

Part No.(ex.)

MFECA0030MJD

MFECA0050MJD

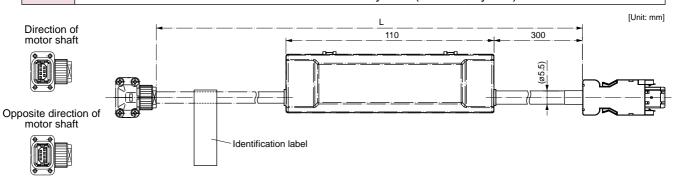
MFECA0100MJD

MFECA0200MJD

A6 Family

[Cable AWG24 4-wire, AWG22 2-wire (ø5.5) Hitachi Cable, Lte		d.			
-						
	MFECA0 * *	OMJE (Highly bendable type, Direction of	f motor shaft)		MSMF 50 W to 1000 W	
Pa	MFECA0 * *	OMKE (Highly bendable type, Opposite d	irection of motor shaft)	80 mm sq. or less	MQMF 100 W to 400 W	
Fai		OTJE (Standard bendable type, Direction	n of motor shaft)	Applicable model		
	MFECA0 * *	OTKE (Standard bendable type, Opposite	e direction of motor shaft)		(Connector type)	

Specifications 23-bit absolute encoder When used in absolute system (with battery box)



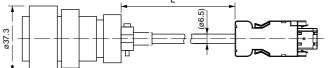
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030MJE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050MJE
Connector (Motor side)	JN6FR07SM1	Japan Aviation	10	MFECA0100MJE
Connector pin	LY10-C1-A1-10000	Electronics Ind.	20	MFECA0200MJE
Cable	AWG24 4-wire、AWG22 2-wire (ф5.5)	Hitachi Cable, Ltd.		

Options

Encoder Cable

* It doesn't correspond to IP65 and IP67.

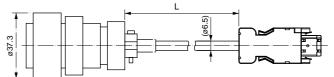
Part No.	MFECA0 * * 0EPD	100 mm sq. or more Applicable model	0.85 kW to 5.0 kW		
Specifications	pecifications 23-bit absolute encoder When used in incremental system (without battery box) <large lock="" one-touch="" type=""></large>				
	<u></u>	L	- [Unit:	mm]	



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EPD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPD
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation	10	MFECA0100EPD
Cable clamp	JL04-2022CK(09)-R	Electronics Ind.	20	MFECA0200EPD
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

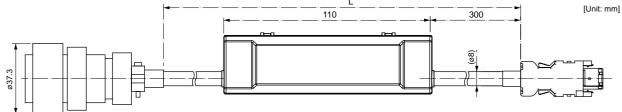
Part No.	MFECA0 * * 0ESD	100 mm sq. or more Applicable model	0.85 kW to 5.0 kW		
Specifications	23-bit absolute encoder When used in incremental system (without battery box) <large screwed="" type=""></large>				

[Unit: mm]



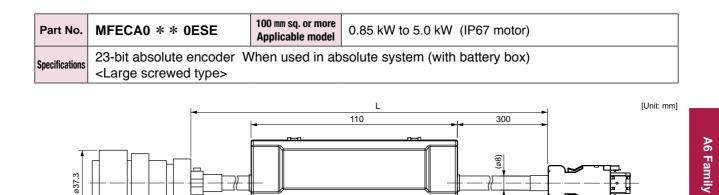
	Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
	Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESD
	Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESD
	Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	10	MFECA0100ESD
	Cable clamp	N/MS3057-12A	Electronics Ind.	20	MFECA0200ESD
[Cable	0.2 mm ² x3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0EPE	100 mm sq. or more Applicable model	0.85 kW to 5.0 kW (IP67 motor)	
Specifications	23-bit absolute encoder. When used in absolute system (with battery box)			



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030EPE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050EPE
Connector (Motor side)	JL10-6A20-29S-EB	Japan Aviation	10	MFECA0100EPE
Cable clamp	JL04-2022CK(09)-R	Electronics Ind.	20	MFECA0200EPE
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

173 |MINAS A6 Family GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de



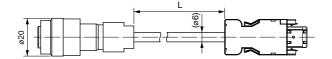
Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ESE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ESE
Connector (Motor side)	N/MS3106B20-29S	Japan Aviation	10	MFECA0100ESE
Cable clamp	N/MS3057-12A	Electronics Ind.	20	MFECA0200ESE
Cable	0.2 mm ² ×4P (8-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ETD	100 mm sq. or more Applicable model	0.85 kW to 5.0 kW (IP67 motor)		
Specifications	23-bit absolute encoder When used in incremental system (without battery box) <small lock="" one-touch="" type=""></small>				

[Unit: mm]

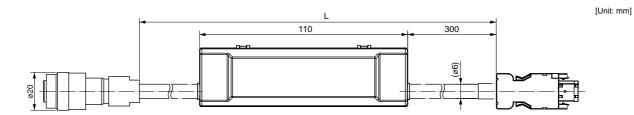
E Series

Imformation



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETD
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETD
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETD
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETD
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

Part No.	MFECA0 * * 0ETE 100 mm sq. or more Applicable model		0.85 kW to 5.0 kW (IP67 motor)
Specifications	23-bit absolute encoder V <small lock="" one-touch="" th="" typ<=""><th></th><th>solute system (with battery box)</th></small>		solute system (with battery box)



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M	3	MFECA0030ETE
Shell kit	3E306-3200-008	(or equivalent)	5	MFECA0050ETE
Connector (Motor side)	JN2DS10SL1-R	Japan Aviation	10	MFECA0100ETE
Connector pin	JN1-22-22S-PKG100	Electronics Ind.	20	MFECA0200ETE
Cable	0.2 mm ² ×3P (6-wire)	Oki Electric Cable Co., Ltd.		

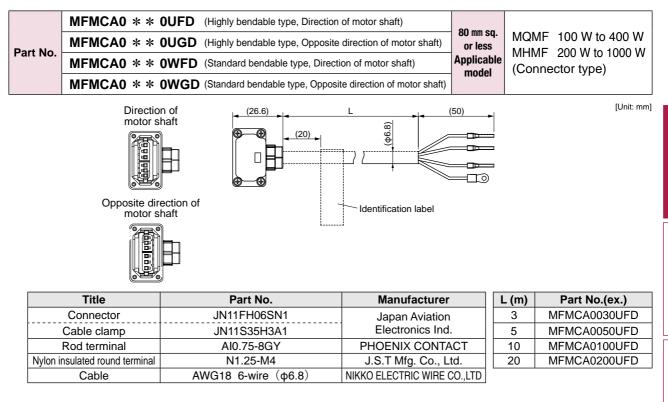
Options

Motor Cable (without Brake) * It doesn't correspond to IP65 and IP67.

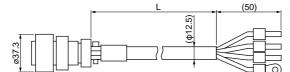
MFMCA0 * *	0EED	80 mm sq. or less Applicable model	MHMF 5		· ·	MQ	MF	100 W to 400 W
								[Unit: mm]
Title		Part No.		Manufacturer		L	(m)	Part No.(ex.)
Connector		172159-1	Тусо	Electronics Ja	apan		3	MFMCA0030EED
Cable clamp		170366-1		G.K.			5	MFMCA0050EED
Rod terminal		AI0.75-8GY					10	MFMCA0100EED
n insulated round terminal		N1.25-M4				2	20	MFMCA0200EED
			vire DYDE	N CORPORA	TION			
MFMCA0 * * MFMCA0 * *	0RJD (Stand 0NKD (Highl	dard bendable type, Dir y bendable type, Oppos	ection of moto site direction o	f motor shaft)	or les Applica	sq. s ble	(Cor MSN	MF 50 W to 1000 W nnector type) MF 200 W to 1000 W nnector type)
Opposite dir	rection of							
		<remarks> Motor cable for opp cannot be used with</remarks>						
Title		Motor cable for opp	h a motor 50		V.	L	(m)	Part No.(ex.)
Title Connector		Motor cable for opp cannot be used with	h a motor 50) W and 100 V	V.		<mark>(m)</mark> 3	Part No.(ex.) MFMCA0030NJD
		Motor cable for opp cannot be used with Part No.	h a motor 50	W and 100 W Manufacturer lapan Aviation	V.			MFMCA0030NJD MFMCA0050NJD
Connector Cable clamp Rod terminal	ј ј ј ST-ТІ	Motor cable for opp cannot be used with Part No. IN8FT04SJ1 MH-S-C1B-3500 Al0.75-8GY	h a motor 50	W and 100 W Manufacturer lapan Aviatior lectronics Ind DENIX CONTA	V. ACT		3 5 10	MFMCA0030NJD MFMCA0050NJD MFMCA0100NJD
Connector Cable clamp Rod terminal n insulated round terminal	J ST-TI	Motor cable for opp cannot be used with Part No. IN8FT04SJ1 MH-S-C1B-3500 Al0.75-8GY N1.25-M4	h a motor 50	W and 100 W Manufacturer lapan Aviatior lectronics Ind DENIX CONTA .T Mfg. Co., L	V. ACT td.		3 5	MFMCA0030NJD MFMCA0050NJD
Connector Cable clamp Rod terminal	J ST-TI AWG18 7UFD (¹ 7UFD (¹	Motor cable for opp cannot be used with Part No. IN8FT04SJ1 MH-S-C1B-3500 Al0.75-8GY	h a motor 50	W and 100 W Manufacturer lapan Aviation lectronics Ind DENIX CONTA .T Mfg. Co., L achi Cable, L 80 m or Appl	V. ACT td. id.	MH	3 5 10 20 MF	MFMCA0030NJD MFMCA0050NJD MFMCA0100NJD
	Title Connector Cable clamp Rod terminal ninsulated round terminal Cable MFMCA0 * * MFMCA0 * * MFMCA0 * * MFMCA0 * * MFMCA0 * *	Image: Second	MFMCA0 ** OEED Applicable model (50) L (4) (50) Title Part No. Connector 172159-1 Cable clamp 170366-1 Rod terminal Alo.75-8GY ninsulated round terminal N1.25-M4 Cable ROBO-TOP 600V 0.75 mm² 4-w MFMCA0 ** 0NJD (Highly bendable type, Direct MFMCA0 ** 0RJD (Standard bendable type, Direct MFMCA0 ** 0RKD (Standard bendable type, Oppo MFMCA0 ** 0RKD (Standard bendable type, Oppo Direction of motor shaft Opposite direction of Opposite direction of	MFMCA0 * * 0EED 80 mm sq. or less Applicable model MHMF 50 (Leadwire (50) L (50) (4) (4) (50) Title Part No. I Connector 172159-1 Tyco Cable clamp 170366-1 Tyco Rod terminal Al0.75-8GY PHC n insulated round terminal N1.25-M4 J.S Cable ROBO-TOP 600V 0.75 mm² 4-wire DYDE MFMCA0 ** 0NJD (Highly bendable type, Direction of motor st MFMCA0 ** 0RJD (Standard bendable type, Opposite direction of motor st MFMCA0 ** 0RKD (Highly bendable type, Opposite direction of motor sh aft Direction of motor shaft (28.8) L Direction of motor shaft Opposite direction of Uppendable type, Opposite direction of motor shaft Uppendable type, Opposite direction of motor shaft	MFMCA0 ** 0EED 80 mm sq. or less Applicable model MHMF 50 W to 1000 (Leadwire type) Image: the system of the system o	MFMCA0 ** 0EED 80 mm sq. or less Applicable model MHMF 50 W to 1000 W (Leadwire type) Image: Construction of the system of the syst	MFMCA0 ** 0EED 80 mm sq. or less Applicable model MHMF 50 W to 1000 W (Leadwire type) Image: construction of the system of the sys	MFMCA0 ** 0EED 80 mm sq. or less Applicable model MHMF 50 W to 1000 W (Leadwire type) Image: Consector Image: Consector

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN2	Japan Aviation	3	MFMCA0037UFD
Cable clamp	JN11S10K4A1	Electronics Ind.	5	MFMCA0057UFD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0107UFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0207UFD
Cable	AWG22 6-wire (φ5.4 mm)	NIKKO ELECTRIC WIRE CO., LTD		

175 MINAS A6 Family GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de



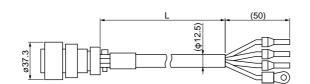
Part No.	MFMCDO * * 2EUD	100 mm sq. or more Applicable model		1.0 kW to 2.0 kW 0.85 kW to 1.8 kW
				[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A20-4SE-EB	Japan Aviation	3	MFMCD0032EUD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCD0052EUD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102EUD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCD0202EUD
Cable	ROBO-TOP 600V 2.0mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCDO * * 2ECD	100 mm sq. or more Applicable model	_	1.0 kW to 2.0 kW, 1.0 kW, 1.5 kW, ed type>		1.0 kW to 2.0 kW 0.85 kW to 1.8 kW
----------	-----------------	--	---	--	--	---------------------------------------

[Unit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A20-4SE-EB-R	Japan Aviation	3	MFMCD0032ECD
Cable clamp	Cable clamp JL04-2022CK(14)-R		5	MFMCD0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCD0102ECD
Nylon insulated round terminal	Nylon insulated round terminal N2-M4		20	MFMCD0202ECD
Cable	ROBO-TOP 600V 2.0mm ² 4-wire	DYDEN CORPORATION	,	

Options

Motor Cable (without Brake) * It doesn't correspond to IP65 and IP67.

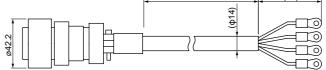
Ра	rt No.	MFMCEO * *	2EUD	100 mm sq. or more Applicable model	MHMF	2.0 kW	<one-touch< th=""><th>n lock type</th><th>?></th></one-touch<>	n lock type	? >
		042.2							[Unit: mm]
		Title		Part No.		Manufa	cturer	L (m)	Part No.(ex.)
		Connector	JL10	-6A22-22SE-EB		Japan A	viation	3	MFMCE0032EUD
					1	Fla atran			MEMOEAAEAEUD

L	0011100101		Japan Aviation	U	
	Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCE0052EUD
	Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102EUD
	Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202EUD
	Cable	ROBO-TOP DP6/2501 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCEO * *	2ECD	100 mm sq. or more Applicable model	MHMF	2.0 kW	<screwed t<="" th=""><th>ype></th><th></th></screwed>	ype>	
	<u></u>				• 			[Unit: mm]
	Title		Part No.		Manufa	cturer	L (m)	Part No.(ex.)
	Connector	JL04V-	6A22-22SE-EB-R		Japan A	viation	3	MFMCE0032ECD
[Cable damp	11 04	2022CK(14) P		Electroni		5	MEMCEO052ECD

Connector	JL04V-6A22-22SE-EB-R	Japan Aviation	3	MFMCE0032ECD
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCE0052ECD
Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102ECD
Nylon insulated round terminal	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202ECD
Cable	ROBO-TOP 600V 2.0 mm ² 4-wire	DYDEN CORPORATION		

Part No.	MFMCAO * * 3EUT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MDMF 3.0 kW to 5.0 k MDMF 3.0 kW to 5.0 k MGMF 2.9 kW to 4.4 k Additional k Addit Addit Additional k <th></th>	
		L		nit: mm]



Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL10-6A22-11SE-EB	Japan Aviation	3	MFMCA0033EUT
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCA0053EUT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103EUT
Cable	ROBO-TOP DP6/2501 3.5 mm ² 4-wire	DYDEN CORPORATION	20	MFMCA0203EUT

P	art No.	MFMCAO * * 3ECT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5.0 kW, MHMF 3.0 kW to 5.0 kW, <screwed type=""></screwed>	3.0 kW to 5.0 kW 2.9 kW to 4.4 kW
					[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JL04V-6A22-22SE-EB-R	Japan Aviation	3	MFMCA0033ECT
Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCA0053ECT
Nylon insulated round terminal	N5.5-5	J.S.T Mfg. Co., Ltd.	10	MFMCA0103ECT
Cable	ROBO-TOP 600V 3.5 mm ² 4-wire	DYDEN CORPORATION	20	MFMCA0203ECT

177 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Motor Cable (with Brake) * It doesn't correspond to IP65 and IP67.

Opposite direction of motor shaft

A6 Family

Options

-10

-10

Identification label

A6 Family

E Series

Imformation

Part No.	MFMCA0 * * 7 MFMCA0 * * 7	(Movable/fixed common u	se,) or le	able		50 W, 100 W ector type)
	Direction motor sh Opposite dire motor sh	ection of	L (50)			[Unit: mm]
	Title	Part No.	Manufacturer		L (m)	Part No.(ex.)
	Connector	JN11FH06SN2	Japan Aviation		3	MFMCA0037VFD
	Cable clamp	JN11S10K4A1	1 Electronics Ind.		5	MFMCA0057VFD
	Rod terminal	AI0.75-8GY	PHOENIX CONTACT	-	10	MFMCA0107VFD
Nylon i	nsulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.		20	MFMCA0207VFD
	Cable	AWG22 6-wire (φ5.4 mm)	NIKKO ELECTRIC WIRE CO.,I	LTD		
	MFMCA0 * * (DVFD (Highly bendable type, Direction o) mm sq.		
Part No.	MFMCA0 * * (DVGD (Highly bendable type, Opposite d	irection of motor shaft)	or less		/IF 100 W to 400 W /IF 200 W to 1000 W
	MEMCAO y y OVED (Standard handable type Direction of mater shaft) ADDIICADIE				nnector type)	
MFMCA0 * * 0XGD (Standard bendable type, Opposite direction of motor shaft)						
	Direction motor sh					[Unit: mm]

Title	Part No.	Manufacturer	L (m)	Part No.(ex.)
Connector	JN11FH06SN1	Japan Aviation	3	MFMCA0030VFD
Cable clamp	JN11S35H3A1	Electronics Ind.	5	MFMCA0050VFD
Rod terminal	AI0.75-8GY	PHOENIX CONTACT	10	MFMCA0100VFD
Nylon insulated round terminal	N1.25-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0200VFD
Cable	AWG18 6-wire (06.8 mm)	NIKKO ELECTRIC WIRE COLTD		

Options

Motor Cable (with Brake) * It doesn't correspond to IP65 and IP67.

			ISMF 1.0 kW to 2.0 kW,		1.0 kW to 2.0 kW	
Part No.	MFMCA0 * *	2FUD Applicable model	IHMF 1.0 kW to 1.5 kW,	MGMF	0.85 kW to 1.8 kW	
		<	One-touch lock type>			
	ø37.3				[Unit: mm	
			(50)			
	Title	Part No.	Manufacturer	L (m)	Part No.(ex.)	
	Connector	JL10-6A20-18SE-EB	Japan Aviation	3	MFMCA0032FUD	
	Cable clamp	JL042022CK(14)-R	Electronics Ind.	5	MFMCA0052FUD	
	Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FUD	
Nylor	insulated Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FUD	
round	d terminal Brake	N1.25-M4	5.5.1 Wilg. Co., Etd.			
	Cable	ROBO-TOP 600V 2.0 mm² 4-wire ROBO-TOP 600V 0.75 mm² 2-wire	DYDEN CORPORATION			
Part No.	MFMCA0 * *	2FCD 100 mm sq. or more Applicable model M	ISMF 1.0 kW to 2.0 kW, IHMF 1.0 kW to 1.5 kW, Screwed type>		1.0 kW to 2.0 kW 0.85 kW to 1.8 kW	
	637.3					
	Title	Part No.	Manufacturer	L (m)	Part No.(ex.)	
	Connector	JL04V-6A20-18SE-EB-R	Japan Aviation	3	MFMCA0032FCD	
	Cable clamp	JL04-2022CK(14)-R	Electronics Ind.	5	MFMCA0052FCD	
	Rod terminal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCA0102FCD	
Nylor	insulated Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCA0202FCD	
round	d terminal Brake	N1.25-M4	5.3.1 Wilg. Co., Etd.			
	Cable	ROBO-TOP 600V 2.0 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION			
Part No. MFMCE0 * * 2FUD 100 mm sq. or more Applicable model MHMF 2.0 kW <one-touch lock="" type=""></one-touch>						
	942.2 1				[Unit: mm	
			1-1-3 (50)			
	Title	Part No.	Manufacturer	L (m)	Part No.(ex.)	
	Title Connector Cable clamp		<u> </u>	L (m) 3 5	Part No.(ex.) MFMCE0032FUD MFMCE0052FUD	

		i altitol	manatatat		
Connector		JL10-6A24-11SE-EB	Japan Aviation	3	MFMCE0032FUD
Cable clamp		JL04-2428CK(17)-R	Electronics Ind.	5	MFMCE0052FUD
Rod term	inal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FUD
Nylon insulated	Earth	N2-M4		20	MFMCE0202FUD
round terminal	Brake	N1.25-M4	J.S.T Mfg. Co., Ltd.		
Cable		ROBO-TOP DP6/2501 2.0 mm ² 4-wire ROBO-TOP DP6/2501 0.75 mm ² 2-wire	DYDEN CORPORATION		

179 MINAS A6 Family

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Part No.	MFMCE0 * * 2		a. or more MHMF	2.0 kW	<screwed th="" ty<=""><th>/pe></th><th></th></screwed>	/pe>	
	<u>843.7</u>						[Unit: mm
	Title	Part No		Manufa	cturer	L (m)	Part No.(ex.)

Title		Part No.	Manufacturer	L (m)	Part No.(ex.)	
Connecto	or	JL04V-6A24-11SE-EB-R	3	MFMCE0032FCD		
Cable clan	np	JL04-2428CK(17)-R	Electronics Ind.	5	MFMCE0052FCD	
Rod termir	nal	NTUB-2	J.S.T Mfg. Co., Ltd.	10	MFMCE0102FCD	
Nylon insulated	Earth	N2-M4	J.S.T Mfg. Co., Ltd.	20	MFMCE0202FCD	
round terminal	Brake	N1.25-M4	5.3.1 Mig. Co., Etd.			
Cable		ROBO-TOP 600V 2.0 mm ² 4-wire ROBO-TOP 600V 0.75 mm ² 2-wire	DYDEN CORPORATION			

art No. MFN	/ICA0 * * :	3FUT	100 mm sq. or more Applicable model	MSMF 3.0 kW to 5. MHMF 3.0 kW to 5. <one-touch lock="" th="" type<=""><th>0 kW, MGMF</th><th>3.0 kW to 5.0 kW 2.9 kW, 4.4 kW</th></one-touch>	0 kW, MGMF	3.0 kW to 5.0 kW 2.9 kW, 4.4 kW
	ø42.2					[Unit: mm]
				150 150		
Tit	tle		Part No.	(50) Manufacture	er L (m)	Part No.(ex.)
Tit		JL10-	Part No. 6A24-11SE-EB	<u> </u>		Part No.(ex.) MFMCA0033FUT
-	ector			Manufactur	on 3	
Conne	ector clamp		-6A24-11SE-EB	Manufactur Japan Aviatio	on 3 nd. 5	MFMCA0033FUT

DYDEN CORPORATION

Part No.	MFMCA0 * *	3FCT 100 mm sq. or mo Applicable mod	del MHMF	3.0 kW to 5.0 kW, 3.0 kW to 5.0 kW, ed type>		3.0 kW to 5.0 kW 2.9 kW, 4.4 kW
	ø43.7		(i) (i) (i) (i) (i) (i) (i) (i) (i) (i)	50)	does not co	[Unit: mm] rrespond to IP67.
	Title	Part No.		Manufacturer	L (m)	Part No.(ex.)
	Connector	JL04V-6A24-11SE-EE	3-R	Japan Aviation	3	MFMCA0033FCT

ROBO-TOP DP6/2501 3.5 mm² 4-wire

ROBO-TOP DP6/2501 0.75 mm² 2-wire

Cable

l itie		Part No.	Manufacturer	L (m)	Part No.(ex.)
Connecto	or	JL04V-6A24-11SE-EB-R	Japan Aviation	3	MFMCA0033FCT
Cable clan	np	JL04-2428CK(17)-R	Electronics Ind.	5	MFMCA0053FCT
Nylon insulated	Nylon insulated Earth N5.5-5		J.S.T Mfg. Co., Ltd.	10	MFMCA0103FCT
round terminal	Brake	N1.25-M4	5.5.1 Mig. Co., Etd.	20	MFMCA0203FCT
Cable		$\begin{array}{l} \text{ROBO-TOP 600V 3.5 mm}^2 \text{ 4-wire} \\ \text{ROBO-TOP 600V 0.75 mm}^2 \text{ 2-wire} \end{array}$	DYDEN CORPORATION		

Options

Nylon insulated round terminal

Cable

Brake Cable

* It doesn't correspond to IP65 and IP67.

Part No. MFMCB0 * * 0GET 80 mm sq. or less Applicable model MSMF 50 W to 1000 W, MHMF MQMF 100 W (Leadwire type) 100 W 100 W 100 W 100 W 100 W	1 100 141
	to 400 W
	[Unit: mm]
Title Part No. Manufacturer L (m) Part	t No.(ex.)
	B0030GET
	B0050GET
	B0100GET
Cable ROBO-TOP 600V 0.75 mm² 2-wire DYDEN CORPORATION 20 MFMC	B0200GET
Part No. MFMCB0 * * 0PJT (Highly bendable type, Direction of motor shaft) 80 mm sq. or less MFMCB0 * * 0PKT (Highly bendable type, Opposite direction of motor shaft) 80 mm sq. or less MFMCB0 * * 0SJT (Standard bendable type, Direction of motor shaft) MSMF 50 V (Connector t model MFMCB0 * * 0SKT (Standard bendable type, Opposite direction of motor shaft) MSMF 50 V (Connector t	W to 1000 W type)
Direction of motor shaft Opposite direction of motor shaft Identification label	[Unit: mm
Direction of motor shaft Opposite direction of motor shaft $\widehat{\textbf{Direction of motor shaft}}$ $\widehat{\textbf{Direction of motor shaft}}$	[Unit: mm]
Direction of motor shaft Opposite direction of motor shaft Identification label Title Part No. Manufacturer L (m) Part	

J.S.T Mfg. Co., Ltd.

Hitachi Cable, Ltd.

10

20

MFMCB0100PJT

MFMCB0200PJT

N1.25-M4

AWG22 2-wire (\$4.3)

181 MINAS A6 Family

Interface Cable

Cable for Interface

DV0P4360

Part No.

Options

[Unit: mm]

Connector: 10150-3000PE

Sumitomo 3M or equivalent

52.4

18

A6 Family

Table for wiring

Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color	Pin No.	color
1	Orange (Red1)	11	Orange (Black2)	21	Orange (Red3)	31	Orange (Red4)	41	Orange (Red5)
2	Orange (Black1)	12	Yellow (Black1)	22	Orange (Black3)	32	Orange (Black4)	42	Orange (Black5)
3	Gray (Red1)	13	Gray (Red2)	23	Gray (Red3)	33	Gray (Red4)	43	Gray (Red5)
4	Gray (Black1)	14	Gray (Black2)	24	Gray (Black3)	34	White (Red4)	44	White (Red5)
5	White (Red1)	15	White (Red2)	25	White (Red3)	35	White (Black4)	45	White (Black5)
6	White (Black1)	16	Yellow (Red2)	26	White (Black3)	36	Yellow (Red4)	46	Yellow (Red5)
7	Yellow (Red1)	17	Yel (Blk2)/Pink (Blk2)	27	Yellow (Red3)	37	Yellow (Black4)	47	Yellow (Black5)
8	Pink (Red1)	18	Pink (Red2)	28	Yellow (Black3)	38	Pink (Red4)	48	Pink (Red5)
9	Pink (Black1)	19	White (Black2)	29	Pink (Red3)	39	Pink (Black4)	49	Pink (Black5)
10	Orange (Red2)	20	-	30	Pink (Black3)	40	Gray (Black4)	50	Gray (Black5)

<Remarks>

Color designation of the cable e.g.) Pin-1 Cable color : Orange (Red1) : One red dot on the cable The shield of this cable is connected to the connector shell but not to the terminal.

Connector cover: 10350-52A0-008

39

Ð

Q

Sumitomo 3M or equivalent

This 2 m connector cable contains AWG28 conductors.

2000+200

50⁺¹⁰

Interface Conversion Cable

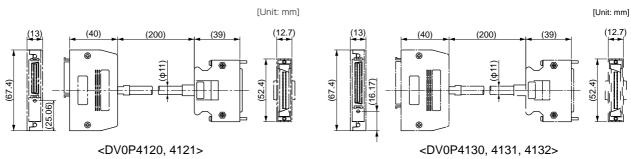
Part No. DV0P4120, 4121, 4130, 4131, 4132

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 \rightarrow A6 series (A5II, A5, A4, A series) for position control/velocity control
DV0P4121	MINAS XX \rightarrow A6 series (A5II, A5, A4, A series) for torque control
DV0P4130	MINAS V \rightarrow A6 series (A5II, A5, A4, A series) for position control
DV0P4131	MINAS V \rightarrow A6 series (A5II, A5, A4, A series) for velocity control
DV0P4132	MINAS V \rightarrow A6 series (A5II, A5, A4, A series) for torque control

* For details of wiring, contact our sales department.

Converts 36-pin configuration to 50-pin.

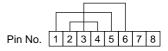


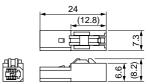
Options

Connector Kit

Connector Kit for Communication Cable (for RS485, RS232) (Excluding A6 SE Series)

Components							
Title	Part No.	Manufacturer	Note				
Connector	2040008-1	Tyco Electronics Japan G.K.	For Connector X2 (8-pins)				
Pin disposition of cor	nnector, connector X2	Dimensions	[Unit: m				
$ \begin{array}{r} $	RXD NC GND TXD NC Do not connect anything to NC.						
nnector Kit for Sat	ety (Excluding A6 SE, A6 SG S	Series)					
I							
•	Part No.	Manufacturar	Noto				
Components Title Connector	Part No. 2013595-1	Manufacturer Tyco Electronics Japan G.K.	Note For Connector X3 (8-pins)				
	2013595-1 nnector, connector X3 <u>SF1+</u> <u>NC</u> <u>NC</u> Shell: FG <u>SF1-</u> <u><remarks></remarks></u> Do not connect	Tyco Electronics Japan G.K. • Dimensions	For Connector X3 (8-pins)				
Title Connector • Pin disposition of cor SF2+ EDM+ EDM- 7531 SF2- (Viewed from cal	2013595-1 nnector, connector X3 SF1+ NC NC SF1- SF1- SF1- NC connect	Tyco Electronics Japan G.K. • Dimensions	For Connector X3 (8-pins)				
Title Connector • Pin disposition of cor SF2+ EDM+ EDM- 715131 SF2- (Viewed from cal ety bypass plug (E rt No. DV0PM20094	2013595-1 Innector, connector X3 SF1+ NC NC NC Shell: FG SF1- <remarks> Do not connect anything to NC.</remarks>	Tyco Electronics Japan G.K. • Dimensions	For Connector X3 (8-pins)				
Title Connector • Pin disposition of cor SF2+ EDM+ B642 7531 SF2- (Viewed from call	2013595-1 Innector, connector X3 SF1+ NC NC NC Shell: FG SF1- <remarks> Do not connect anything to NC.</remarks>	Tyco Electronics Japan G.K. • Dimensions	For Connector X3 (8-pins)				





<Remarks>

Connector Kit for Interface

Part No. DV0P4350

Components

Title	Part No.	Number	Manufacturer	Note
Connector	10150-3000PE	1	Sumitomo 3M	For Connector X4 (50-
Connector cover	10350-52A0-008	1	(or equivalent)	pins)

• Pin disposition (50 pins) (viewed from the soldering side)

26 SI3		28 SI5		30 SI7		32 SI9		34 SO:	2–	36 SO	3—	38 SO	4–	40 SO	6	42 IM		44 PUL	SH1	46 Sigi	NH1	48 OB+	+ I	50 FG
	27 SI4		29 SI6		31 SI8		33 SI1		35 SO:		37 SO		39 SO		41 CO		43 SP		45 PUL		47 SIGI	NH2	49 OB-	
1 OP	C1	3 PUI	_S1	5 SIG	N1	7 CO		9 SI2		11 SO		13 GN		15 GN	D	17 GN		19 CZ		21 OA	+	23 OZ+		25 GNI
	2 OP	C2	4 PUl	LS2	6 SIG	N2	8 SI1		10 SO		12 SO	5	14 SPF SPL	R/	16 P-A /TR	TL	18 N-A	\TL	20 NC		22 OA		24 OZ–	

1) Check the stamped pin-No. on the connector body while making a wiring. 2) For the function of each signal title or its

symbol, refer to the operating manual. 3) Do not connect anything to NC pins in the above table.

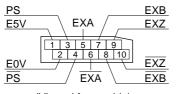
Connector Kit for External Scale (Excluding A6 SE, A6 SG Series)

Part No. DV0PM20026

Components

•			
Title	Part No.	Manufacturer	Note
Connector	MUF-PK10K-X	J.S.T Mfg. Co., Ltd.	For Connector X5 (10-pins)

• Pin disposition of connector, connector X5



 Dimensi 	ons	[Unit: mm]
		Recommended wire size: ø6.8 mm (MAX) Note: No wires are supplied with the connector kit.

(Viewed from cable)

Connector Kit for Encoder

Part No. DV0PM20010

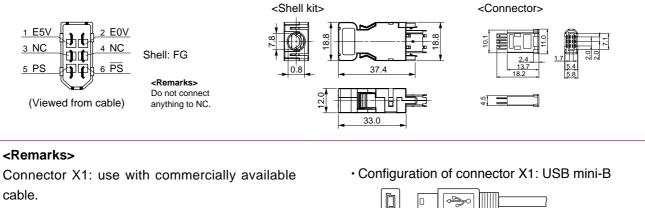
Components

Title	Part No.	Manufacturer	Note	
Connector (Driver side)	3E206-0100 KV	Sumitomo 3M		
Shell kit	3E306-3200-008	(or equivalent)	For Connector X6	

Pin disposition of connector, connector X6

Dimensions

<Connector>



[Unit: mm]

Options

Connector Kit

Connector Kit for Power Supply Input

Part No. DV0PM20032 (For A-frame to D-frame: Single row type)

Components

• Please refer to the Dimensions of driver P.47 for connector XA.

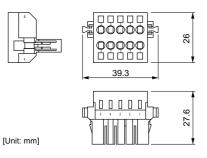
Components				
Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGF	1	J.S.T Mfg. Co., Ltd.	For Connector XA
Handle lever	J-FAT-OT	2		

Part No. DV0PM20033 (For A-frame to D-frame: Double row type)

Components

Title	Part No.	Number	Manufacturer	Note
Connector	05JFAT-SAXGSA-C	1	J.S.T Mfg. Co., Ltd.	For Connector VA
Handle lever	J-FAT-OT	2		For Connector XA

Dimensions



 * When connection multiple axes in series, make sure the sum of the current value does not exceed the rated current (11.25 A) of DV0PM20033.

Remarks 🔅

When using drivers MDDL * 55 * * in single-phase power supply, do not use DV0PM20033.

Driver part No.	Power supply	Rated input current
MADL * 01 * *	Single phase 100 V	1.7 A
MADL * 11 * *	Single phase 100 V	2.0 A
MADL * 05 * *	Single phase/3-phase 200 V	1.6 A/0.9 A
MADL * 15 * *	Single phase/3-phase 200 V	2.0 A/1.1 A
MBDL * 21 * *	Single phase 100 V	4.5 A
MBDL * 25 * *	Single phase/3-phase 200 V	3.7 A/2.1 A
MCDL * 31 * *	Single phase 100 V	7.0 A
MCDL * 35 * *	Single phase/3-phase 200 V	6.4 A/3.4 A
MDDL * 45 * *	Single phase/3-phase 200 V	7.9 A/4.6 A
MDDL * 55 * *	Single phase/3-phase 200 V	13.6 A/7.2 A

Part No. DV0PM20044 (For E-frame)

Components

	Title	Part No.	Number	Manufacturer	Note
	Connector	05JFAT-SAXGSA-L	1		Fan Oanna stan VA
	Handle lever	J-FAT-OT-L	2	J.S.T Mfg. Co., Ltd.	For Connector XA

Connector Kit for Regenerative Resistor Connection

Part No. DV0PM20045 (For E-frame)

Components

Title	Part No.	Number	Manufacturer	Note
Connector	04JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	200 V: For Connector XC
Handle lever	J-FAT-OT-L	2		* Jumper wire is included.

<Remarks>

Connector Kit for Motor/Encoder Connection

A6 Family

Options

Connector Kit for Motor Connection (Driver side)

Part No. DV0PM20034 (For A-frame to D-frame)

• Con	nponents	 Please refer to the Dimensions of driver P.47 for connector X 			
	Title	Part No.	Number	Manufacturer	Note
	Connector	06JFAT-SAXGF	1	J.S.T Mfg. Co., Ltd.	For Connector XB
	Handle lever	J-FAT-OT	2		* Jumper wire is included.

Part No. DV0PM20046 (For E-frame)

• Please refer to the Dimensions of driver P.49 for connector XB.

 Component 	ts
-------------------------------	----

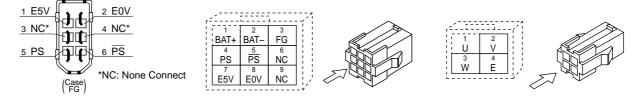
Title	Part No.	Number	Manufacturer	Note
Connector	03JFAT-SAXGSA-L	1	J.S.T Mfg. Co., Ltd.	For Connector XB
Handle lever	J-FAT-OT-L	2		

Connector Kit for Motor/Encoder Connection

* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No.	DV0P4290	80 mm sq. or less Applicable mode		50 W to 1000 W *, Mo 50 W to 1000 W * re type IP65)	QMF 100 W to 400 W
• Com	ponents			* MS	MF092L1 2, MHMF092L1
	Title	Part No.	Number	Manufacturer	Note
Cor	nnector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
	Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
	Connector	172161-1	1	Tyco Electronics Japan	For Encoder cable
	Connector pin	170365-1	9	G.K.	(9-pins)
	Connector	172159-1	1	Tyco Electronics Japan	For Motor cable
	Connector pin	170366-1	4	G.K.	(4-pins)

- Pin disposition of connector,
 Pin disposition of connector for encoder cable
- Pin disposition of connector for motor cable



* When you connect the battery for absolute encoder, refer to P.194, "When you make your own cable for 23-bit absolute encoder"

<Remarks>

Options

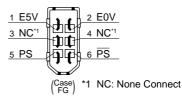
Connector Kit for Motor/Encoder Connection

Part No.	DV0PM20035	80 mm sq. or less Applicable model	MSMF	50 W to 1000 W * (Connector type IP67)		
----------	------------	---------------------------------------	------	--	--	--

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	(7-pins)
Motor connector	JN8FT04SJ1	1	Japan Aviation	For Motor cable
Socket contact	ST-TMH-S-C1B-3500	4	Electronics Ind.	(4-pins)

connector X6

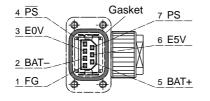


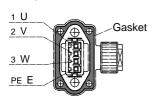
• Pin disposition of connector • Pin disposition of connector for encoder cable

• Pin disposition of connector for motor cable

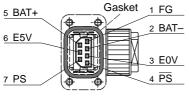
* MSMF092L1 1

[Direction of motor shaft]

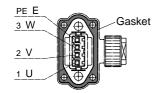




[Opposite direction of motor shaft]



* Pins 2 and 5 are left unused (NC) when used in incremental system.



<Remarks>

Secure the gasket in place without removing it from the connector.

Otherwise, the degree of protection of IP67 will not be guaranteed.

<Remarks>

• For crimp tool etc., necessary to produce a cable, access the web site of the manufacturer or consult with the manufacturer for details. For inquiries of manufacturer, refer to P.200 "List of Peripheral Equipments".

187 MINAS A6 Family

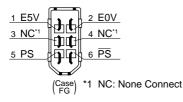
GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

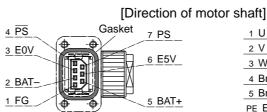
Part No.	DV0PM24581	80 mm sq. or less Applicable model	MHMF 50 W, 100 W (Connector type IP67)	
----------	------------	---------------------------------------	--	--

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	(7-pins)
Motor connector	JN11FH06SN2	1	Japan Aviation	For Motor cable
Socket contact	JN11S10K4A1	6	Electronics Ind.	(6-pins)

Pin disposition of connector Pin disposition of connector connector X6





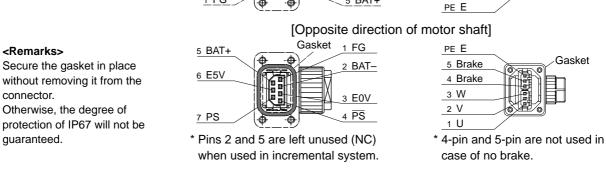
for encoder cable

1 U Gasket 2 V зW 4 Brake

Pin disposition of connector

for motor cable

5 Brake

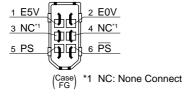


Dart No	DV0PM24582	80 mm sq. or less	MQMF 100 W to 400 W,	MHMF 200 W to 1000 W
Fart NO.	D V 0F 1V124582	Applicable model	(Connector type IP67)	

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN6FR07SM1	1	Japan Aviation	For Encoder cable
Socket contact	LY10-C1-A1-10000	7	Electronics Ind.	(7-pins)
Motor connector	JN11FL06SN1	1	Japan Aviation	For Motor cable
Socket contact	JN11S35H3A1	6	Electronics Ind.	(6-pins)

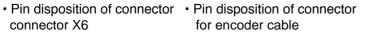
connector X6



<Remarks>

Secure the gasket in place without removing it from the connector.

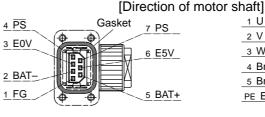
Otherwise, the degree of protection of IP67 will not be guaranteed.



5 BAT+

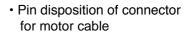
6 E5V

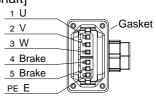
7 PS

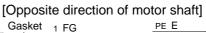


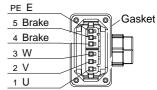
* Pins 2 and 5 are left unused (NC)

when used in incremental system.









* 4-pin and 5-pin are not used in case of no brake.

2 BAT-

3 E0V

4 PS

Options

Connector Kit for Motor/Encoder Connection

* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Part No. DV0PM24583 100 mm sq. or more Applicable model (IP67 motor) Encoder JN2 <small connector="" size=""> Without MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF MSMF 0.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW Without</small>	Part No DVDPM2/583 · ·
--	----------------------------

Components

* MSMF102L1 . , MHMF102L1 .

* MSMF102L1 , MHMF102L1

* MSMF102L1 , MHMF102L1

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-4SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)

Part No.	DV0PM24585	or more e model(IP67 motor) Encoder JN2 <small connector="" size=""> MSMF 1.0 kW * to 2.0 kW, MDMF 1.0 kW to 2.0 kW MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW</small>	With brake	
----------	------------	--	---------------	--

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)

		100 mm sa. or more	(IP67 motor) Encoder JL10 <large connector="" size=""></large>	Without
Part No.	DV0PM24587	Applicable model	MSME 10 kW * to 20 kW MDME 10 kW to 20 kW	brake
			MHMF 1.0 kW *, 1.5 kW, MGMF 0.85 kW to 1.8 kW	Diake

Components

Title Part No. Number Manufacturer Note Connector (Driver side) 3E206-0100 KV 1 Sumitomo 3M For Connector X6 (6-pins) (or equivalent) Shell kit 3E306-3200-008 1 Encoder connector JL10-6A20-29S 1 For Encoder cable Japan Aviation Electronics Ind. (One-touch lock type) Cable clamp JL04-2022-CK(14)-R 1 Motor connector JL10-6A20-4SE-EB 1 For Motor cable Japan Aviation Electronics Ind. (One-touch lock type) JL04-2022-CK(14)-R Cable clamp 1

Part No. DV0PM24589 100 mm sq. or more Applicable model (IF 07 midlor) Encoder 3E 10 < Earge size connectors	Part No.	,	DV0PM24589	V to 2.0 kW
---	----------	---	------------	-------------

Components

* MSMF102L1 . , MHMF102L1

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A20-18SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)

<Remarks>

Part No.	DV0PM24584	100 mm sq. or more Applicable model	MSMF	notor) Encoder JN2 < 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,		e connector> 3.0 kW to 5.0 kW 2.9 kW, 4.4 kW	Without brake
----------	------------	--	-------------	--	--	--	------------------

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)

		100	(IP67 m	otor) Encoder JN2 <	Small size	e connector>	\A/:+b
Part No.	DV0PM24586	100 mm sq. or more Applicable model	MSMF	3.0 kW to 5.0 kW,	MDMF	3.0 kW to 5.0 kW	With
		Applicable Illouel	MHMF	2.0 kW to 5.0 kW,	MGMF	2.9 kW, 4.4 kW	brake

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2428-CK(17)-R	1	Electronics Ind.	(One-touch lock type)

Part No	. DV0PM24588	100 mm sq. or more	notor) Encoder JL10 3.0 kW to 5.0 kW,	0	Without	t
Part NO	. DV0FWIZ4366	Applicable model	2.0 kW to 5.0 kW,		brake	

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JL10-6A20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A22-22SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)

Part No.	DV0PM24590		MSMF	notor) Encoder JL10 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,	MDMF	3.0 kW to 5.0 kW	With brake
----------	------------	--	------	---	------	------------------	---------------

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JL10-6A20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	JL04-2022-CK(14)-R	1	Electronics Ind.	(One-touch lock type)
Motor connector	JL10-6A24-11SE-EB	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2428-CK(17)-R	1	Electronics Ind.	(One-touch lock type)

<Remarks>

Options

Connector Kit for Motor/Encoder Connection

* When IP65 or IP67 are necessary, the customer must give appropriate processing.

	Without brake
--	------------------

Components

* MSMF102L1 . , MHMF102L1 .

* MSMF102L1 , MHMF102L1

* MSMF102L1 , MHMF102L1

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A20-4SE-EB-R	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(Screwed type)

Part No.	DV0PM20038	100 mm sq. or more Applicable model		With brake	
----------	------------	--	--	---------------	--

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A20-18SE-EB-R	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(Screwed type)

		100 mm sa. or more	(IP67 motor) Er		•		Without	
Part No.	DV0P4310	Applicable model	MSMF 1.0 kW	* to 2.0 kW,	MDMF	1.0 kW to 2.0 kW	brake	
			MHMF 1.0 kW	*, 1.5 kW,	MGMF	0.85 kW to 1.8 kW	Diake	

Components

Title Part No. Number Manufacturer Note Connector (Driver side) 3E206-0100 KV 1 Sumitomo 3M For Connector X6 (6-pins) (or equivalent) Shell kit 3E306-3200-008 1 Encoder connector N/MS3106B20-29S 1 For Encoder cable Japan Aviation Electronics Ind. (Screwed type) Cable clamp N/MS3057-12A 1 Motor connector N/MS3106B20-4S 1 For Motor cable Japan Aviation Electronics Ind. N/MS3057-12A (Screwed type) Cable clamp 1

Part No.	DV0P4330	100 mm sq. or more Applicable model	•	notor) Encoder JL10 < 1.0 kW * to 2.0 kW, 1.0 kW *, 1.5 kW,	MDMF		With brake
----------	----------	--	---	---	------	--	---------------

Components

* MSMF102L1 . , MHMF102L1 .

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	N/MS3106B20-29S	1	Japan Aviation For Encoder ca	
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)
Motor connector	N/MS3106B20-18S	1	Japan Aviation	For Motor cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)

<Remarks>

Part No.	DV0PM20037	100 mm sq. or more Applicable model	MSMF	otor) Encoder JN2 < 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,	MDMF		Without brake
----------	------------	--	------	---	------	--	------------------

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector X6 (6-pins)
Shell kit	3E306-3200-008	1	(or equivalent)	
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A22-22SE-EB-R	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2022CK(14)-R	1	Electronics Ind.	(Screwed type)

		100 mm on or more	(IP67 m	otor) Encoder JN2 <	<small siz<="" th=""><th>ze connector></th><th>With</th></small>	ze connector>	With
Part No	. DV0PM20039	100 mm sq. or more Applicable model	MSMF	3.0 kW to 5.0 kW,	MDMF	3.0 kW to 5.0 kW	
		Applicable model	MHMF	2.0 kW to 5.0 kW,	MGMF	2.9 kW, 4.4 kW	brake

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins) For Encoder cable
Encoder connector	JN2DS10SL1-R	1	Japan Aviation	For Encoder cable
Connector pin	JN1-22-22S-PKG100	5	Electronics Ind.	(One-touch lock type)
Motor connector	JL04V-6A24-11SE-EB-R	1	Japan Aviation	For Motor cable
Cable clamp	JL04-2428CK(17)-R	1	Electronics Ind.	(Screwed type)

Part No.	D) (0D (000	100 mm sq. or more		notor) Encoder JL10	0		Without	ł
Part No.	DV0P4320	Applicable model		3.0 kW to 5.0 kW,			brake	
			MHMF	2.0 kW to 5.0 kW,	MGMF	2.9 kW, 4.4 kW		

Components

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For Connector V6 (6 pipe)
Shell kit	3E306-3200-008	1	(or equivalent)	For Connector X6 (6-pins)
Encoder connector	N/MS3106B20-29S	1	Japan Aviation	For Encoder cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)
Motor connector	N/MS3106B22-22S	1	Japan Aviation	For Motor cable
Cable clamp	N/MS3057-12A	1	Electronics Ind.	(Screwed type)

Part No.	DV0P4340		MSMF	notor) Encoder JL10 3.0 kW to 5.0 kW, 2.0 kW to 5.0 kW,	MDMF	3.0 kW to 5.0 kW	With brake
----------	----------	--	------	---	------	------------------	---------------

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.	(Screwed type)
Motor connector	N/MS3106B24-11S	1	Japan Aviation	For Motor cable
Cable clamp	N/MS3057-16A	1	Electronics Ind.	(Screwed type)

<Remarks>

Options

Connector Kit for Motor/Brake Connection

* When IP65 or IP67 are necessary, the customer must give appropriate processing.

Connector Kit for Motor/Brake Connection

Part No.	DV0PM20040	80 mm sq. or less Applicable model	MSMF 50 W to 1000 W * (Connector type IP67)	
• Com	ponents			* MSMF092L1 1

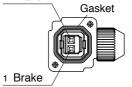
Title	Part No.	Number	Manufacturer	Note
Connector	JN4FT02SJM-R	1	Japan Aviation	For broke coble
Socket contact	ST-TMH-S-C1B-3500	2	Electronics Ind.	For brake cable

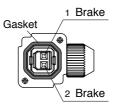
• Pin disposition of connector for brake cable

[Direction of motor shaft]

[Opposite direction of motor shaft]

2 Brake





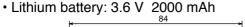
<Remarks>

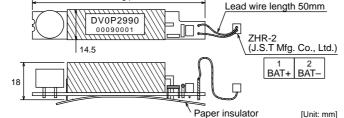
Secure the gasket in place without removing it from the connector. Otherwise, the degree of protection of IP67 will not be guaranteed.

Options

Battery for Absolute Encoder

Part No. DV0P2990

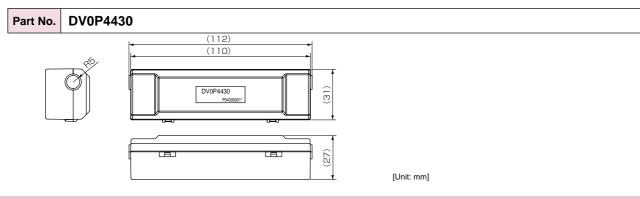




<Caution>

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 23-bit absolute encoder by yourself

When you make your own cable for 23-bit absolute encoder, connect the optional battery for absolute encoder, DV0P2990 as per the wiring diagram below. Connector of the battery for absolute encoder shall be provided by customer as well.

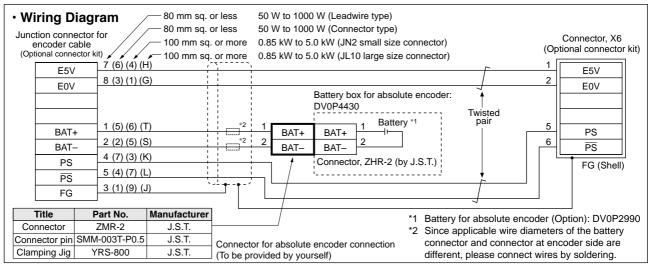
<Caution>

Install and fix the battery securely. If the installation and fixing of the battery is not appropriate, it may cause the wire breakdown or damage of the battery.

Refer to the instruction manual of the battery for handling the battery.

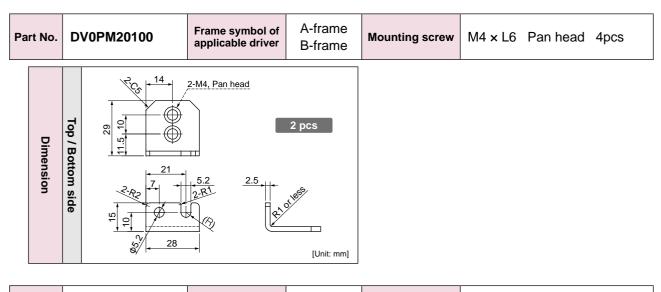
Installation Place of Battery

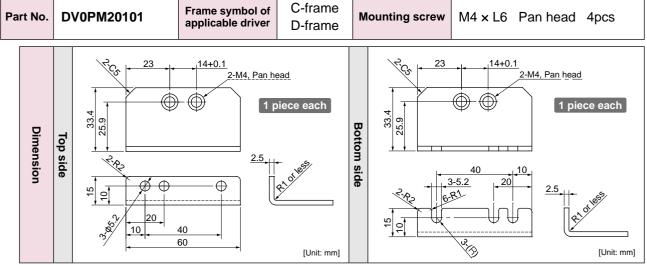
- 1) Indoors, where the products are not subjected to rain or direct sun beam.
- 2) Where the products are not subjected to corrosive atmospheres such as hydrogen sulfide, sulfurous acid, chlorine, ammonia, chloric gas, sulfuric gas, acid, alkaline and salt and so on, and are free from splash of inflammable gas, grinding oil, oil mist, iron powder or chips and etc.
- 3) Well-ventilated and humid and dust-free place.
- 4) Vibration-free place



Options

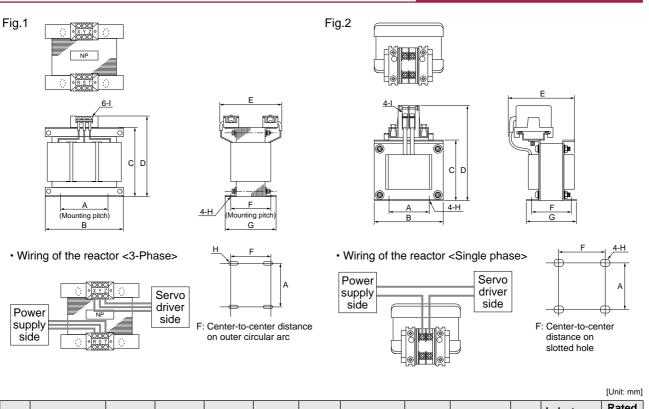
Mounting Bracket





Reactor

A6 Family Options



	Part No.	Α	В	с	D	E (Max)	F	G	н	I	Inductance (mH)	Rated current (A)
	DV0P220	65±1	125±1	(93)	136 _{Max}	155	70+3/–0	85±2	4-7φ×12	M4	6.81	3
	DV0P221	60±1	150±1	(113)	155мах	130	60+3/–0	75±2	4-7φ×12	M4	4.02	5
Fig.1	DV0P222	60±1	150±1	(113)	155мах	140	70+3/–0	85±2	4-7φ×12	M4	2	8
Fig. I	DV0P223	60±1	150±1	(113)	155Max	150	79+3/–0	95±2	4-7φ×12	M4	1.39	11
	DV0P224	60±1	150±1	(113)	160Max	155	84+3/–0	100±2	4-7φ×12	M5	0.848	16
	DV0P225	60±1	150±1	(113)	160 _{Max}	170	100+3/–0	115±2	4-7φ×12	M5	0.557	25
	DV0P227	55±0.7	80±1	66.5±1	110мах	90	41±2	55±2	4-5φ×10	M4	4.02	5
Fig.2	DV0P228	55±0.7	80±1	66.5±1	110мах	95	46±2	60±2	4-5φ×10	M4	2	8
	DV0PM20047	55±0.7	80±1	66.5±1	110мах	105	56±2	70±2	4-5φ×10	M4	1.39	11

* For application, refer to P.23 to P.32 and P.117 to P.120 "Table of Part Numbers and Options".

Harmonic restraint

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.

When installing a product for Japan, refer to the instruction manual available on our website.

[Panasonic Corporation, Motor Business Unit web site]

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

<Remarks>

When using a reactor, be sure to install one reactor to one servo driver.

A6 Family

Options

External Regenerative Resistor

			Spec	cification	s		
Part No.	Manufacturer's	Resistance	cable core outside		Rated (refere		Activation
Part NO.	part No.	Resistance	diameter	Weight	Free air	with fan 1 m/s ^{*2}	temperature of built-in thermal protector
		Ω	mm	kg	w	W	
DV0P4280	RF70M	50		0.1	10	25	
DV0P4281	RF70M	100		0.1	10	25	140±5 °C B-contact
DV0P4282	RF180B	25	φ1.27 / AWG18 \	0.4	17	50	Open/Close capacity
DV0P4283	RF180B	50	stranded	0.2	17	50	(resistance load)
DV0P4284	RF240	30		0.5	40	100	1 A 125 VAC 6000 times 0.5 A 250 VAC 10000 times
DV0P4285	RH450F	20		1.2	52	130	

Manufacturer : Iwaki Musen Kenkyusho

*1 Power with which the driver can be used without activating the built-in thermal protector.

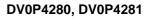
A built-in thermal fuse and a thermal protector are provided for safety.

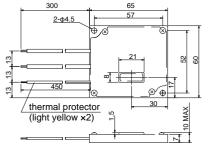
The circuit should be so designed that the power supply will be turned off as the thermal protector operates. The built-in thermal fuse blows depending on changes in heat dissipation condition, operating temperature limit, power supply voltage or load.

Mount the regenerative resistor on a machine operating under aggressive regenerating condition (high power supply voltage, large load inertia, shorter deceleration time, etc.) and make sure that the surface temperature will not exceed 100 °C.

*2 If the wind speed is 1m / s by the fan.

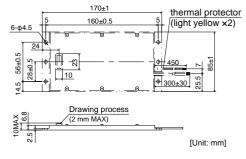
	Powe	r supply
Frame	Single phase, 100 V	Single phase, 200 V 3-phase, 200 V
A	DV0P4280	DV0P4281 (100 W or less) DV0P4283 (200 W)
В	DV0P4283	D\/0D4202
С	DV0P4282	DV0P4283
D		DV0P4284
E		DV0P4284 × 2 in parallel or DV0P4285
F	_	DV0P4285 × 2 in parallel
G		DV0P4285 × 3 in parallel
н		DV0P4285 × 6 in parallel



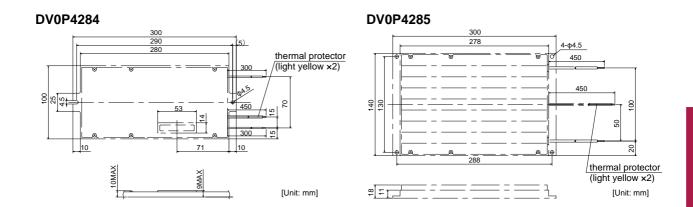


[Unit: mm]

DV0P4282, DV0P4283



197 MINAS A6 Family



<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.

Options

Surge Absorber for Motor Brake

Recommended components

	Motor	Part No.	Manufacturer	
	50 W to 1000 W	TND15G271K	NIPPON CHEMI-CON CORPORATION	
MSMF	1.0 kW to 3.0 kW	Z15D151	SEMITEC Corporation	
	4.0 kW, 5.0 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION	
MQMF	100W to 400 W		NIPPON CHEMI-CON	
	50 W to 1000 W	TND15G271K	CORPORATION	
MHMF	1.0 kW, 1.5 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION	
	2.0 kW to 4.0 kW	Z15D151	SEMITEC Corporation	
	5.0 kW	NVD07SCD082	KOA Corporation	
	1.0 kW to 3.0 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION	
MDMF	4.0 kW	Z15D151	SEMITEC Corporation	
	5.0 kW	NVD07SCD082	KOA Corporation	
	0.85 kW to 1.8 kW	TNR9G820K	NIPPON CHEMI-CON CORPORATION	
MGMF	2.9 kW	Z15D151	SEMITEC Corporation	
	4.4 kW	NVD07SCD082	KOA Corporation	

List of Peripheral Equipments

A6 Family

Options

Manufacturer	Tel No. / Home Page	Peripheral components
Panasonic Corporation Eco Solutions Company	http://panasonic.net/es/	Circuit breaker
Panasonic Corporation Automotive & Industrial Systems Company	http://panasonic.net/id/	Surge absorber Switch, Relay
Iwaki Musen Kenkyusho Co., Ltd.	+81-44-833-4311 http://www.iwakimusen.co.jp/	Regenerative resistor
KOA Corporation	+81-42-336-5300 http://www.koanet.co.jp/en/index.htm	
NIPPON CHEMI-CON CORPORATION	+81-3-5436-7711 http://www.chemi-con.co.jp/e/index.html	Surge absorber for holding brake
SEMITEC Corporation	+81-3-3621-2703 http://www.semitec.co.jp/english2/	
KK-CORP.CO.JP	+81-184-53-2307 http://www.kk-corp.co.jp/	
MICROMETALS (Nisshin Electric Co., Ltd.)	+81-4-2934-4151 http://www.nisshin-electric.com/	Ferite core for signal lines
TDK Corporation	+81-3-5201-7229 http://www.global.tdk.com/	
Okaya Electric Industries Co. Ltd.	+81-3-4544-7040 http://www.okayaelec.co.jp/english/index.html	Surge absorber Noise filter
Japan Aviation Electronics Industry, Ltd.	+81-3-3780-2717 http://www.jae.co.jp/e-top/index.html	
Japan Molex Inc.	+81-462-65-2313 http://www.molex.co.jp	
J.S.T. Mfg. Co., Ltd.	+81-45-543-1271 http://www.jst-mfg.com/index_e.php	Connector
Sumitomo 3M	+81-3-5716-7290 http:/solutions.3m.com/wps/portal/3M/ja_JP/ WW2/Country/	
Tyco Electronics Japan G.K.	+81-44-844-8052 http://www.te.com/ja/home.html	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable
DR. JOHANNES HEIDENHAIN GmbH	+81-3-3234-7781 http://www.heidenhain.de/de_EN/company/contact/	
Fagor Automation S.Coop.	+34-943-719-200 http://www.fagorautomation.com	
Magnescale Co., Ltd.	+81-463-92-7971 http://www.mgscale.com/mgs/language/english/	External apple
Mitutoyo Corporation	+81-44-813-8234 http://www.mitutoyo.co.jp/eng/	External scale
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/	
TDK-Lambda Corporation	+81-3-5201-7140 http://www.tdk-lambda.com/	Noise filter

* The above list is for reference only. We may change the manufacturer without notice.

Compact Servo Only for

Ultra compact position control type

MINAS E Series



Best Fit to Small Drives

- Further evolution in down-sizing, by 47 % in size. (Note)
- Exclusively designed for position control.

(Note) Compared to MUDS043A1

Easy to Handle, Easy to Use

- DIN-rail mounting unit (option) improves handling/installation.
- User-friendly Console makes the setup easy.
- High functionality Real-Time Auto-Gain Tuning enables adjustment-free operation.





High-Speed Positioning with Resonance Suppression Filters

- Built-In notch filter suppresses resonance of the machine.
- Built-in adaptive filter detect resonance frequency and suppress vibration.

Smoother operation for Low Stiffness Machine

Damping control function suppresses vibration during acceleration/deceleration

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

Position Control.

Contents

Features	201
Motor Line-up	205
Model Designation	206
Overall Wiring	207
Driver and List of Applicable Peripheral Equipments	207
Driver	209
Driver Specifications	209
Standard Wiring Example of Main Circuit	210
Encorder Wiring Diagram2	210
Control Circuit Standard Wiring Example	211
Dimensions of Driver	212
Motor	213
Specifications/Model designation/Torque Characteristics	213
Dimensions of Moter	217
Motors with Gear Reducer	218
Options	222
Options	
	222
Setup Support Software2	222 223
Setup Support Software	222 223 224
Setup Support Software	222 223 224 224
Setup Support Software	222 223 224 224 224 224
Setup Support Software	222 223 224 224 224 224 224
Setup Support Software	222 223 224 224 224 224 224 225
Setup Support Software	222 223 224 224 224 224 224 225 227
Setup Support Software	222 223 224 224 224 224 225 227 227
Setup Support Software 2 Cable part No. Designation 2 Cable Set 2 Encoder Cable 2 Motor Cable 2 Brake Cable 2 Connector Kit 2 Interface Cable 2 Communication Cable 2	222 223 224 224 224 224 225 227 227 227
Setup Support Software	2222 223 224 224 224 224 225 227 227 227 227 228
Setup Support Software 2 Cable part No. Designation 2 Cable Set 2 Encoder Cable 2 Motor Cable 2 Brake Cable 2 Connector Kit 2 Interface Cable 2 Communication Cable 2 DIN Rail Mounting Unit 2	2222 223 224 224 224 225 227 227 227 228 228
Setup Support Software 2 Cable part No. Designation 2 Cable Set 2 Encoder Cable 2 Motor Cable 2 Brake Cable 2 Connector Kit 2 Interface Cable 2 Communication Cable 2 DIN Rail Mounting Unit 2 External Regenerative Resistor 2	2222 223 224 224 224 225 227 227 227 227 227 228 228 228 229

Features

Easy to Handle, Easy to Use

High-functionality Real-Time Auto-Gain Tuning^(Note 1)

- Offers real automatic gain tuning for low and high stiffness machines with a combination of an adaptive filter.
- Supports the vertical axis application where the load torque is different in rotational direction.

D. Further Reduction of Vibration

Adaptive filter (Note1)

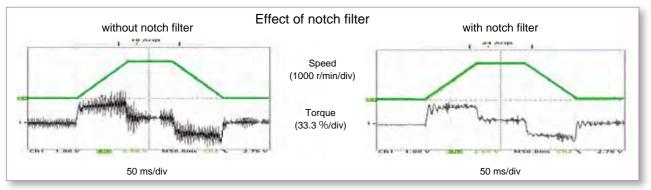
- Makes the notch filter frequency automatically follow the machine resonance frequency in real-time auto-gain tuning.
- Suppression of "Judder" noise of the machine, which is caused by variation of the machines or resonance frequency due to aging, can be expected.

DIN-rail mounting unit (option)

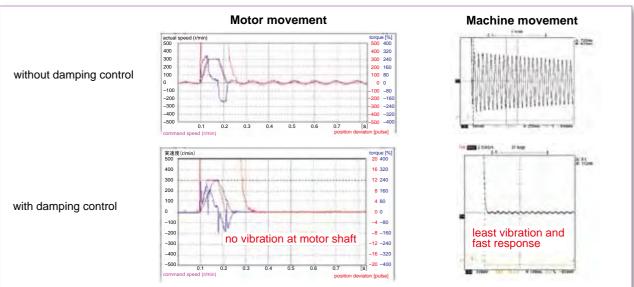
- DIN-rail mounting unit allows parallel mounting with small control devices such as PLC.
- Easy to mount and easy to dismount.

Notch filter (Note1)

- 1-channel notch filter is equipped in the driver independent from adaptive filter.
- Each of 2 filters can set up frequency and notch width, and frequency in 1Hz unit. Suppression of "Judder" noise of the machine which has multiple resonance points can be expected.



Damping control (Note1)



You can suppress vibration occurring at both starting and stopping in low stiffness machine, by manually setting up vibration frequency in 0.1 Hz unit. Note) Only applies to manual adjustment

(Note1) Select at positioning action mode.

At high speed positioning mode (Pr02=0) Select either one of notch filter, damping control or high-functionality real-time auto- gain tuning. Not possible to use them all at the same time. Adaptive filter cannot be used.

 At high-functionality positioning mode (Pr02=1) All of notch filter, damping control, high-functionality real-time auto-gain tuning and adaptive filter can be used at the same time.

3. Further Flexibility and Multiplicity

Console (Option)

- You can set up parameters, copy and make a JOG run.
- Convenient for maintenance at site.
- Refer to P.227, 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.222 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.222 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.222 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	
	EN61000-6-2	Immunity for Industrial Environments	
	EC61000-4-2	Electrostatic Discharge Immunity Test	
Motor and driver	Field Immunity Test		Conforms to references
unver	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test	by EMC Directives
	IEC61000-4-5	Lightening Surge Immunity Test	
	IEC61000-4-6	High Frequency Conduction Immunity Test	
	IEC61000-4-11	Instantaneous Outage Immunity Test	1
EN : E EMC : E UL : U	nternational Elec Europaischen No Electromagnetic (Inderwriters Lab Canadian Standa	Compatibility oratories	
Pursuar	nt to at the directi	ve 2004/108/EC,article 9(2)	
	nic Testing Centr nic Service Euro		

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

a division of Panasonic Marketing Europe GmbH Winsbergring 15,22525 Hamburg, F.R. Germany

Motor Line-up

		Rated rotational	Rotary	encoder	Brake	Gear				
Motor series	Rated output (kW)	speed (Max. (speed) (r/min)	2500 P/r incremental	17bit absolute/ incremental	Holding	High precision	UL/ CSA	Enclosure	Features	Applications
MUMA										
	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

		Μ	U	Μ	Α	5	Α	Ζ	Ρ	1	S	*	*
Symbol		Ту	ре								Mot	or s	truct
MUMA	Ultra low ine	rtia	(50 V	V to 4	00 W)							nuci
Motor ra	ated output										Sym	nbol	K

Symbol	Rated output		
5A	50 W		V
01	100 W		
02	200 W		
04	400 W		
		· [

/oltage	specifications	
Symbol	Specifications	
1	100 V	
2	200 V	
Z	100 V/200 V commo (50 W only)	n

Rotary encoder specifications

Symbol	Format	Pulse counts	Resolution	Wires
Р	Incremental	2500 P/r	10000	5

Special specifications

Motor structure

	Shaft	Holding	g brake	Oil s	seal
Symbol	Key-way, center tap	without	with	without	with*
S	•	•		•	
Т	•		•		

* Motor with oil seal is manufactured by order.

Design order

Symbol	Specifications
1	Standard

Ν

See P.213 for motor specifications

Imformation

E Series

A6 Family

Motor with gear reducer

	N	ΙU	JM	A	0	1	1	Ρ	3	1
			Moto	r ra	ited o	 utput				
Symbol	Туре		Symb	ol	Rated	outpu	t			
	Ultra low iner	rtia	01		100	W				
MUMA	(100 W to 400	(W)	02		200	W				
			04		400	W				
	Vo	oltage	e spec	ific	ations	s —				
	S	ymbol	Speci	ficat	tions					

100 V

200 V

<u> </u>	-	

Servo Driver

Rotary encoder specifications Symbol Format Pulse counts Resolution Wires 2500 P/r Ρ Incremental 10000 5

1 2

Gear reduction ration, gear type

	Gear	Moto	r outpu	t (W)	
Symbol	reduction ratio	100	200	400	Gear type
1N	1/5				Fay bish
2N	1/9				For high accuracy
4N	1/25				accuracy

Motor structure

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

See P.218 for motor with gear reducer specifications

M K D E T 1 3 1 0 P ** **Special specifications Control mode** Frame symbol Symbol Specifications Symbol Frame Р Pulse train MKDE E series, K-frame **Current detector** MLDE E series, L-frame current rating Supply voltage specifications Symbol Current rating Power device Symbol Specifications 05 5 A Max. current rating Single phase, 100 V 10 10 A 1 Symbol Current rating 2 Single phase, 200 V 10 A T1 3 3-phase, 200 V T2 15 A Single/3-phase, 200 V 5

See P.209 for driver specifications

Overall Wiring/ Driver and List of Applicable Peripheral Equipments

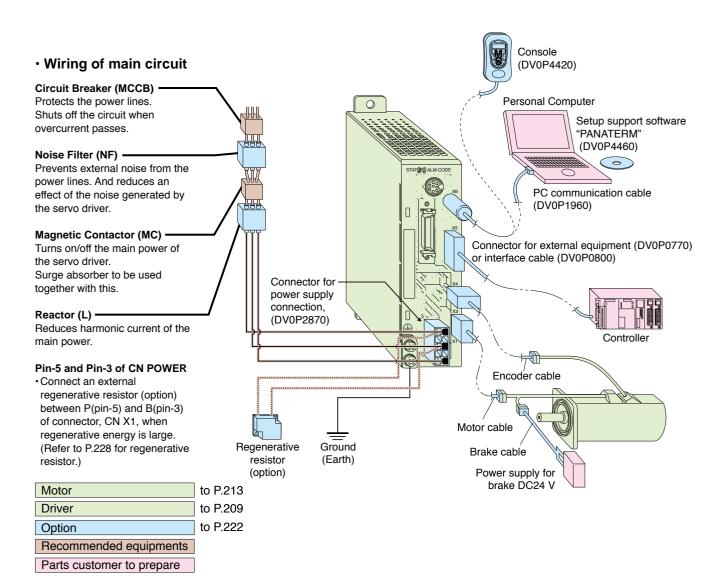


Table of Part Numbers and Options

			2500P/r, Incremental							
Power supply	Output (W)	Motor Note) 1	Rating/Spec. (page)	Driver	Dimensions (Frame (symbol)	Encoder Cable	Motor Cable Note) 2			
Single	50	MUMA5AZP1	213	MKDET1105P	212 (K)					
phase	100	MUMA011P1 🗌	213	MKDET1110P	212 (K)					
100 V	200	MUMA021P1	213	MLDET2110P	212 (L)					
	50	MUMA5AZP1	215	MKDET1505P	212 (K)					
Single phase	100	MUMA012P1	215	MKDET1505P	212 (K)		MFECA0 * * 0EAM MFMCA0 * * 0AEB			
200 V	200	MUMA022P1	215	MLDET2210P	212 (L)					
	400	MUMA042P1	215	MLDET2510P	212 (L)	MFECAU * * UEAM				
	50	MUMA5AZP1	215	MKDET1505P	212 (K)					
	100	MUMA012P1	215	MKDET1505P	212 (K)					
3-phase 200 V	200	MUMA022P1	215	MKDET1310P	212 (K)					
	400		215	MLDET2510P	212 (L)					
	400 MUMA	MUMA042P1	215	MLDET2310P						

Note) 1 Motor model number suffix:

S : Key way with center tap, without brake

T: Kew way with center tap, with brake

Note) 2 ** represents cable length. For details, refer to P.223.

	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	(3 A)		10 A (3P+1a)																		
100 V		200 W	0.5 kVA	(10 A)																				
		50 W	0.2 10/0																					
Single		100 W	0.3 kVA	(5 A) DV0P4160	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)	(5 A)		15 A	0.75 31 0.05 3
phase, 200 V	MUMA	200 W	0.5 kVA		DV0P4160	(3P+1a)	0.75 mm ² to 0.85 mm ² AWG18																	
		400 W	0.9 kVA	(10 A)			Awaro																	
		50 W	0.010/0																					
3-phase		100 W	0.3 kVA	(5 A)		10 A																		
200 V		200 W	0.5 kVA	(3P+1a	1	(3P+1a)																		
		400 W	0.9 kVA	(10 A)																				

List of recommended peripheral equipments

* 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, (1)) marked) between noise filter and power supply.

• For details of the noise filters, refer to P.240.

<Remarks>

Option

Brake Cable

Note) 2

MFMCB0 * * 0GET

• Use a copper conductor cables with temperature rating of 60 °C or higher for main power connector and ground terminal wiring.

Use a cable for ground with diameter of 2.0 mm² (AWG14) or larger.

External

Regenerative

Resistor

DV0P2890

DV0P2891

Carrying	page

Console

Software

Setup Support

Options

Japanese

eter of 2.0 m	m² (AWG14)	PANATERM		English	DV0P4460		
		RS232 Commu (for Connection			DV0P1960		
		Interface Cable)		DV0P0800		
		Connector Kit f	or Exter	nal Equipment	DV0P0770		
		Connector Kit f	or Moto	r and Encoder	DV0P3670		
		Connector Kit f	or Drive	r Power Supply	DV0P2870		
		Encoder Cable		MFECA0 * *	0EAM		
		Motor Cable		MFMCA0 * *	0AEB		
		Brake Cable		MFMCB0 * *	0GET		
		Cable Set (3 m) (Note 3)	DV0P37300			
		Cable Set (5 m) (Note 3)	DV0P39200			
		DIN Rail Moun	DIN Rail Mount Unit		DV0P3811		
Reactor	Noise Filter	External Regenerative	100 V	50 Ω 10 W	DV0P2890		
		Resistor	200 V	100 Ω 10 W	DV0P2891		
DV0P227				100 V	DV0P227		
		Reactor	Reactor		DV0P228		
DV0P228				200 V	DV0P220		
		Noise Filter	Noise Filter				
	DV0P4160	Surge Absorbe		ngle phase 0 V, 200 V	DV0P4190		
			3-р		DV0P1450		
		Ferite core for	DV0P1460				
DV0P220		(Note 3) Cable set (3 m) contains, 1) Interface cable: DV0P0800 2) Foresides set (4 m) MEE 0400005 AM					

- 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

Carrying page

227

222

228

228

229

240

240

240

Part No.

DV0P4420

DV0P4460

Driver Specifications

Image: single phase, 200 V Single phase, 200 V <thsingle 200="" phase,="" th="" v<=""> Single phase, 200</thsingle>		_	Sing	le phase, 100 V	Single phase, 100 V to 115 V +10 % -15 % 50 Hz/60 Hz			
Sphase, 200 V 3-phase, 200 V 3-24 Phase, 200 V 16 240 V _{-15 %} 50 1/2200 Hz Sphase, 200 V 16 240 V _{-15 %} 50 1/2200 Hz Temperature Sphase, 200 V 16 240 V _{-15 %} 50 1/2200 Hz Temperature Sphase, 200 V 16 240 V _{-15 %} Sphase, 200 V 12 40 V _{15 %} Sphase, 200 V 16 240 V _{-15 %} Sphase, 200 V 16 240 V _{15 %} Sphase, 200 V 16 240 V 17 W 15 Sphase, 200 V 16 240 V 17 W 10 V 10		nput po	Sing	le phase, 200 V				
Image: membrane set in the set i		ower	3-ph	nase, 200 V				
Vibration 5.8 B m/s ² or less. 10 let to 60 Hz (Mo continuous use at resonance frequency) Withstand voltage Should be 1500 VAC (Seneed current: 20 MA) for 1 minute between Primary and Ground. Vibration voltage Should be 1500 VAC (Seneed current: 20 MA) for 1 minute between Primary and Ground. Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage Vibration voltage <th c<="" td=""><td></td><td>Ę</td><td>Tem</td><td>perature</td><td></td></th>	<td></td> <td>Ę</td> <td>Tem</td> <td>perature</td> <td></td>		Ę	Tem	perature			
Vibration S 88 m/s ² or less, 10 lpt to 60 Hz (Mo continuous use at resonance frequency) Witheration visiting Should be also 00 Vac (Senead current: 20 mA) for 1 minute between Primary and Ground. Vibration visiting Should be 1500 Vac (Senead current: 20 mA) for 1 minute between Primary and Ground. Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting Vibration visiting <th cols<="" td=""><td></td><td>viror</td><td>Hum</td><td>nidity</td><td>Both operating and storage : 90 %RH or less (free from condensation)</td></th>	<td></td> <td>viror</td> <td>Hum</td> <td>nidity</td> <td>Both operating and storage : 90 %RH or less (free from condensation)</td>		viror	Hum	nidity	Both operating and storage : 90 %RH or less (free from condensation)		
Vibration S Boald be of the (bio continuous use at resonance frequency) Vibration Should be 200 Via (Smood current: 20 ma) for 1 minute between Primary and Ground. Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration Vibration <th colspa<="" td=""><td></td><td>Ime</td><td>Altit</td><td>ude</td><td>1000 m or lower</td></th>	<td></td> <td>Ime</td> <td>Altit</td> <td>ude</td> <td>1000 m or lower</td>		Ime	Altit	ude	1000 m or lower		
Nome Control memory Top Prive Situation wave drive Provide memory Control memory 2500 PF (rulo) memory 2500 PF (rulo) memory Provide memory Output 4 outputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode. Provide memory Output 4 outputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode. Provide memory Provide memory Supports both line driver /F and cpen collector /F. Communication function R5232 1:1 communication to a host with R5232 interface is enabled. Dynamic brack No ballithin regenerative resistor (external resistor only) Dynamic brack Dynamic brack Built-in 3 modes of (1) High-speed position control, (2) Internal velocity control and (3) High-trackenity (4) Can switching, (5) Electronic gear switching. Provide P		크	Vibr	ation	5.88 m/s ² or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)			
Product Tele Provision and wate drive Product Produt Produt Product<	Basi	With	stand	voltage	Should be 1500 VAC (Sensed current: 20 mA) for 1 minute between Primary and Ground.			
Product Control Control <t< td=""><td>ic S</td><td>Con</td><td>trol m</td><td>ethod</td><td>IGBT PWM Sinusoidal wave drive</td></t<>	ic S	Con	trol m	ethod	IGBT PWM Sinusoidal wave drive			
Product Control Control <t< td=""><td>oeci</td><td>Enc</td><td>oder fe</td><td>eedback</td><td>2500 P/r (10000 resolution) incremental encoder</td></t<>	oeci	Enc	oder fe	eedback	2500 P/r (10000 resolution) incremental encoder			
Product Control Control <t< td=""><td>ficati</td><td>s C</td><td>Inpu</td><td>t</td><td>7 inputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode.</td></t<>	ficati	s C	Inpu	t	7 inputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode.			
Image: Provide the second s	ons	ontrol Ignal	Out	out	4 outputs (1) Servo alarm, (2) Alarm, (3) Release signal of external brake and other outputs vary depending on the control mode.			
Image: state base base base base base base base bas		<u>ю</u> т	Inpu	it	2 inputs Supports both line driver I/F and open collector I/F.			
Display_LED (1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE) Regeneration No built-in regenerative resistor (external resistor only) Dynamic brake Built-in Control input 3 modes of (1) High-speed position control, (2) Internal velocity control and (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) Vertice Max. command pulse Internal velocity control and pulse Line driver : 500 kpps, Open collector : 200 kpps Pge of put put pulse train Differential input. Selectable with parameter, (11) CW/CCW, (2) A and B-phase, (3) Command and Direction) Control output Control input 4 (3) Selection 2 of internal command speed, (4) Selectable with parameter, (11) CW/CCW, (2) A and B-phase, (3) Command and Direction) Control input (1) Seed arrival (at-speed) Control output (1) Seed arrival (at-speed) Internal speed command Internal speed command wite speed area colamp input is en		^o ulse signal	Out	out				
Regeneration No built-in regenerative resistor (external resistor only) Dynamic brake Built-in Control mode 3 modes of (1) High-speed position control. (2) Internal velocity control and (3) High-Indicionality position control. (2) Internal velocity control and (3) High-Indicionality position control. (2) CW over-travel inhibition. (3) Deviation counter clear, (4) Gain switching. (5) Electronic gear switching Vertex Image: Control input (1) CW over-travel inhibition. (2) CCW over-travel inhibition. (3) Deviation counter clear, (4) Gain switching. (5) Electronic gear switching Vertex Image: Control output (1) Positioning compete (In-position) Vertex Image: Control input (1) CW over-travel inhibiton. (2) CCW over-travel inhibiton. (3) Electronic gear switching Vertex Image: Control output (1) Positioning compete (In-position) Vertex Image: Control input Electronic gear following. (2) CW over-travel inhibiton. (3) Electronic gear ratio. Setup following (1) CW over-travel inhibiton. (3) Electronic dear following. (3) Electronic dear following. (2) CW over-travel inhibiton. (3) Electronic dear following. (3) Electronic dear following input is electable to the command input. Control input Control input (1) Sever-travel inhibiton. (2) CW over-travel inhibiton. (3) Electronic dear following input is electable with parameter. Control output (1) Sever-travel inhibiton. (2) CW over-travel inhibiton. (3) Electronic d		Con	nmunio	cation function RS232	1 : 1 communication to a host with RS232 interface is enabled.			
Regeneration No built-in regenerative resistor (external resistor only) Dynamic brake Built-in Control mode 3 modes of (1) High-speed position control. (2) Internal velocity control and (3) High-Indicionality position control. (2) Internal velocity control and (3) High-Indicionality position control. (2) CM over-travel inhibition. (3) Deviation counter clear, (4) Gain switching. (5) Electronic gear switching Vertex Image: Control input (1) CW over-travel inhibition. (2) CCW over-travel inhibition. (3) Deviation counter clear, (4) Gain switching. (5) Electronic gear switching Vertex Image: Control output (1) Positioning complete (In-position) Vertex Image: Control input (1) Positioning complete (In-position) Vertex Image: Control input (1) Positioning complete (In-position) Vertex Image: Control input (1) Positioning complete (In-position) Statup of electronic gear ratio Setup of electronic gear ratio. Setup range of (1-10000) × 2 ^{o tr} /(1-10000) Smoothing filter Primary delay filter or FIR type filter is selectable to the command input. Control input (1) Seveer-ravel inhibiton. (2) CW over-travel inhibiton. (3) Selection 1 of internal command speed. (5) Speed zero clamp Control input (1) Seveer-ravel inhibiton. (2) CW over-travel inhibiton. (3) Sigmoid acceleration and deceleration are enabled. <tr< td=""><td></td><td>Disp</td><td>olav LE</td><td>ED</td><td>(1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE)</td></tr<>		Disp	olav LE	ED	(1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE)			
Dynamic brake Built-in Control mode 3 modes of (1) High-speed position control (2) Internal velocity control and (3) High-functionality positioning control are selectable with parameter. Control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Deviation counter clear, (4) Gain switching, (5) Electronic gear switching Control output (1) Positioning complete (In-position) Max. command pulse Line driver : 500 kpps, Open collector : 200 kpps Type of input pulse train Differential input. Selectable with parameter. ((1) CW/CCW, (2) A and B-phase, (3) Command and Direction) Smoothing filter Primary delay filter or FIR type filter is selectable to the command input. Control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (4) Selection 2 of internal command speed, (5) Speed zero clamp Control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (4) Selection 2 of internal command speed, (5) Speed zero clamp Control output (1) CW over-travel inhibition, (2) CeW over-travel inhibition, (2) Selectable with 0 s to 10 s/1000 r/min. Sigmoid acceleration fare enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration fare enabled, is also enabled. Zero-speed clamp O-clamp of internal speed corminal with an action command miss beed at (1) High-response position control. Wasking of unnecessary interval								
Image: control mode 3 modes of (1) High-speed position control, (2) Internal velocity control and (3) High-functionality positioning control are selectable with parameter. Image: control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Deviation counter clear, (4) Gain switching, (5) Electronic gear switching. Image: control input (1) Positioning complete (In-position) Image: control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (5) Speed zero clamp Control input (1) Speed arrival (at-speed) Internal speed command Internal speed command speed, (5) Speed zero clamp Control input (1) Speed arrival (at-speed) Internal speed command Internal speed command speed, (5) Speed zero clamp Control output (1) Speed arrival (at-speed) Internal speed control and (3) High-functional		-						
Toto Control output (4) Gain switching, (5) Electronic gear switching Vertice Vertice (1) Positioning complete (In-position) Max. command pulse frequency Max. command pulse frequency Line driver : 500 kpps, Open collector : 200 kpps Vertice Vertice Max. command pulse frequency Line driver : 500 kpps, Open collector : 200 kpps Vertice Vertice Max. command pulse frequency Line driver : 500 kpps, Open collector : 200 kpps Vertice Vertice Vertice Differential input. Selectable with parameter, ((1) CW/CCW, (2) A and B-phase, (3) Command and Direction) Status Figure Control output Primary delay filter or FIR type filter is selectable to the command input. Control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (6) Speed zero clamp Control output (1) Speed arrival (at-speed) Internal speed command Internal 4-speed is selectable with control input. Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex Vertex					3 modes of (1) High-speed position control, (2) Internal velocity control and			
Max. command pulse requency Line driver : 500 kpps, Open collector : 200 kpps Type of input pulse train point Differential input. Selectable with parameter, ((1) CW/CCW, (2) A and B-phase, (3) Command and Direction) Electronic gear (Division/Mituiplication) for command pulse Setup of electronic gear ratio Setup range of (1-10000) × 2 ⁽⁰⁺⁷⁾ /(1-10000) Smoothing filter Primary delay filter or FIR type filter is selectable to the command input. Control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (4) Selection 2 of internal command speed, (6) Speed zero clamp Control output (1) Speed arrival (at-speed) Internal speed command Internal 4-speed is selectable with control input. Soft-start/down function Individual setup of acceleration and deceleration are enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled. Zero-speed clamp O-clamp of internal speed command with speed zero clamp input is enabled. Zero-speed clamp O-clamp of internal speed command with speed zero clamp input is enabled. 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 sittliness. Useable at (1) High-response position control. (2) Internal speed cortrol and (3) High-functionality position control. Masking of unnecessary input Masking			Con	trol input	(1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Deviation counter clear,			
Image: second			Control output		(1) Positioning complete (In-position)			
Image: second		Positio		-	Line driver : 500 kpps, Open collector : 200 kpps			
Image: Properties of the second sec		n contr	Pulse	Type of input pulse train				
Protect Control input (1) CW over-travel inhibition, (2) CCW over-travel inhibition, (3) Selection 1 of internal command speed, (4) Selection 2 of internal command speed, (5) Speed zero clamp Control output (1) Speed arrival (at-speed) Internal speed command Internal 4-speed is selectable with control input. Soft-start/down function Individual setup of acceleration and deceleration are enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled. Zero-speed clamp O-clamp of internal speed command with speed zero clamp input is enabled. Vergen Real-time Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control. Normal mode Estimates the load inertia with an action command inise of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control. Masking of unnecessary input Masking of the following input signal is enabled. Departmention of encoder feedback (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Hardware error Over-voltage, over-speed over-load, over-heat, over-current and encoder error etc. Traceability of alarm data <td></td> <td><u>0</u></td> <td>input</td> <td>(Division/Multiplication)</td> <td>Setup of electronic gear ratio Setup range of (1-10000) $\times 2^{(0-17)}/(1-10000)$</td>		<u>0</u>	input	(Division/Multiplication)	Setup of electronic gear ratio Setup range of (1-10000) $\times 2^{(0-17)}/(1-10000)$			
Processe Control might (4) Selection 2 of internal command speed, (5) Speed zero clamp Control output (1) Speed arrival (at-speed) Internal speed command Internal 4-speed is selectable with control input. Soft-start/down function Individual setup of acceleration and deceleration are enabled, with 0 s to 10 s/1000 r/min. Sigmoid acceleration/deceleration is also enabled. Zero-speed clamp O-clamp of internal speed command with speed zero clamp input is enabled. Keal-time Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control. Normal mode Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control. Masking of unnecessary input Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Masking of unnecessary input 1 P/r to 2500 P/r (encoder pulses count is the max.). Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Darrivetoret Software error O				Smoothing filter	Primary delay filter or FIR type filter is selectable to the command input.			
Provide and the provided claim provided claim provided communication with speed control and with speed control and provided claim provided communication with speed control and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control. Normal mode Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control. Masking of unnecessary input Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Prove the other error Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc. Software error Excess position deviation, command pulse division error, EEPROM error etc. Traceability of alarm data Traceable up to past 14 alarms including the present one. Damping control function Manual setup with parameter g Manual Console		Inter	Con	trol input				
Provide and the provided claim provided claim provided communication with speed control and with speed control and provided claim provided communication with speed control and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control. Normal mode Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control. Masking of unnecessary input Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Prove the other error Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc. Software error Excess position deviation, command pulse division error, EEPROM error etc. Traceability of alarm data Traceable up to past 14 alarms including the present one. Damping control function Manual setup with parameter g Manual Console		nal	Con	trol output	(1) Speed arrival (at-speed)			
Program Percent product of the final speed continuant with speed 2ero clamp input is enabled. Program Real-time Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control. Normal mode Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control. Masking of unnecessary input Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Program Hardware error Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc. Software error Excess position deviation, command pulse division error, EEPROM error etc. Traceability of alarm data Traceable up to past 14 alarms including the present one. Damping control function Manual setup with parameter g Manual Console		spee	Inter	rnal speed command	Internal 4-speed is selectable with control input.			
Program Percent product of the final speed continuant with speed 2ero clamp input is enabled. Program Real-time Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control. Normal mode Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control. Masking of unnecessary input Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Program Hardware error Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc. Software error Excess position deviation, command pulse division error, EEPROM error etc. Traceability of alarm data Traceable up to past 14 alarms including the present one. Damping control function Manual setup with parameter g Manual Console	л	ed cont	Soft	-start/down function				
Image: Provide the second se	unct	<u>0</u>	Zerc	o-speed clamp	0-clamp of internal speed command with speed zero clamp input is enabled.			
Masking of unnecessary input Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Image: Provide the following input signal details in the max.). Image: Provide the following input signal details in the max.). Image: Provide the following input signal details in the max.). Image: Provide the following input signal details in the max.). Image: Provide the following input signal details in the max.). Image: Provide the followin	ions		Auto-ga	Real-time	corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal			
Input (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching Division of encoder feedback pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse 1 P/r to 2500 P/r (encoder pulses count is the max.). Image: Provide the pulse the			lin tuning	Normal mode	automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position			
Individual construction Construction <td></td> <td></td> <td></td> <td>-</td> <td></td>				-				
Individual original and original and original origina origina original original original original original		Comm	puls		1 P/r to 2500 P/r (encoder pulses count is the max.).			
Traceability of alarm data Traceable up to past 14 alarms including the present one. Damping control function Manual setup with parameter Image: Setup with parameter Image: Setup with parameter Image: Setup with parameter Image: Setup with parameter		n	Prote func	Hardware error	Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc.			
Damping control function Manual setup with parameter Image: Wanual Console)ctive	Software error	Excess position deviation, command pulse division error, EEPROM error etc.			
Manual Console			Trac	eability of alarm data	Traceable up to past 14 alarms including the present one.			
Vertical Manual Console E Setup support software PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)			Dam	nping control function	Manual setup with parameter			
ਓ Setup support software PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)			Se	Manual	Console			
			tup	Setup support software	PANATERM (Supporting OS : Windows98, Windows ME, Windows2000, and WindowsXP)			

Standard Wiring Example of Main Circuit/ Encorder Wiring Diagram

Wiring Diagram

A6

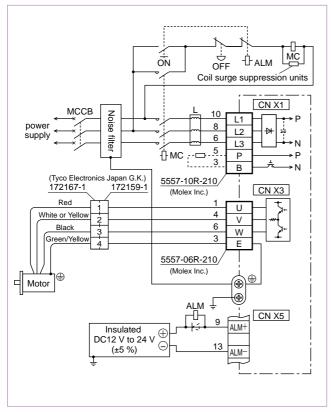
Family

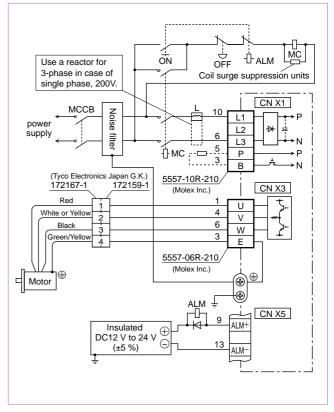
E Series

mformation

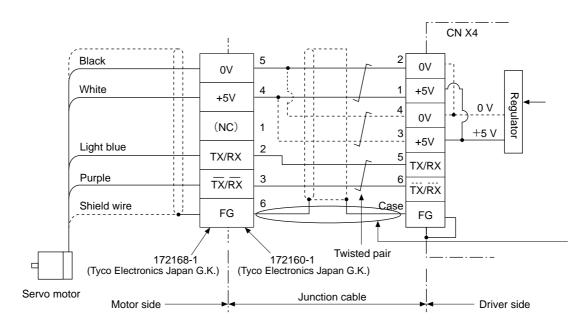
Standard Wiring Example of Main Circuit

3-Phase, 200 V





Encorder Wiring Diagram

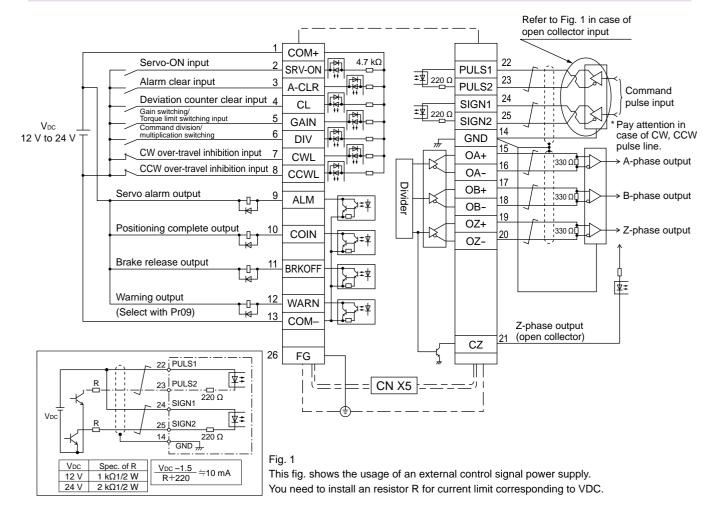


When you make your own junction cable for encoder (Refer to P.225, P.226 "Options" for connector.) 1) Refer the wiring diagram.

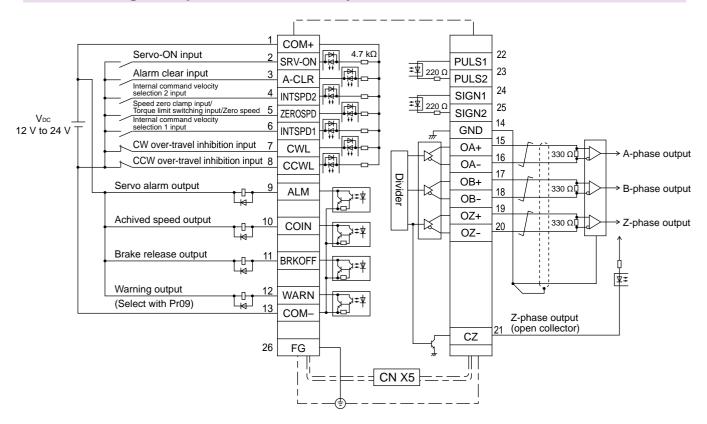
- 2) Use the twisted pair wire with shield, with core diameter of 0.18 mm² (AWG24) or larger, with higher bending resistance.
- 3) Use the twisted pair wire for the corresponding signal and power supply.
- 4) Shielding
- Connect the shield of the driver to the case of CN X4. Connect the shield of the motor to Pin-6.

Wiring Diagram

CN X 5 Wiring Example at Position Control Mode



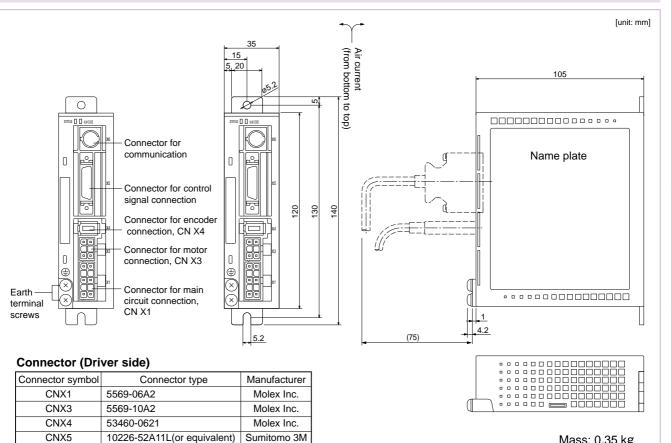
CN X 5 Wiring Example at Internal Velocity Control Mode



211 MINAS E Series

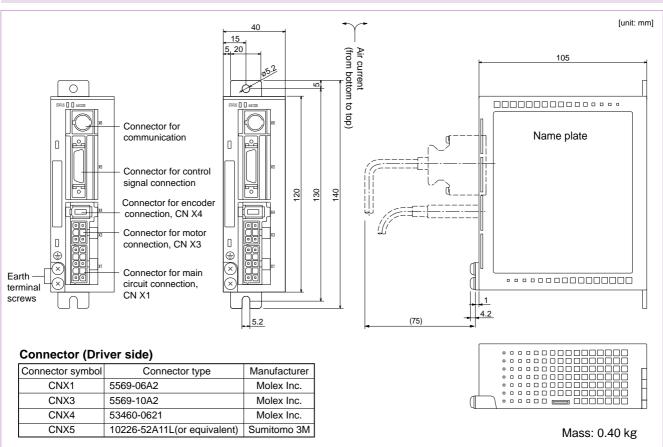
Dimensions of Driver

Frame K



Mass: 0.35 kg

Frame L



MINAS E Series 212

E Series

A6

Motor Specifications

100 V MUMA 50 W to 200 W

[Low inertia Small drives]

245

98

98

AC100 V			AC100 V			
Motor model		MUMA	5AZP1	011P1	021P1	
		Model No.	MKDET1105P	MKDET1110P	MLDET2110P	
Applicable driv	/er	Frame symbol	Frame K		Frame L	
Power supply capacity (kVA)		(VA)	0.3	0.4	0.5	
Rated output (W)			50	100	200	
Rated torque (N·m)			0.16	0.32	0.64	
Momentary Ma	ax. peak to	orque (N·m)	0.48	0.95	1.91	
Rated current	(Arms)		1.0	1.6	2.5	
Max. current (Ao-p)		4.3	6.9	11.7	
Regenerative	brake Without option Note)1 DV0P2890		No limit Note)2			
frequency (times/min)			No limit Note)2			
Rated rotation	al speed (r/min)	3000			
Max. rotationa	l speed (r/	min)	5000			
Moment of ine	rtia	Without brake	0.021	0.032	0.10	
of rotor (×10 ⁻⁴ kg·m ²)		With brake	0.026	0.036	0.13	
Recommended moment of inertia ratio of the load and the rotor Note)3			30 times or less			
Doton/ onood	Rotary encoder specifications		2500 P/r			
Rotary encou	er specific	allons	Incremental			
	Resolution	n per single turn		10000		
Protective end	closure rat	ing	IP65 (except rot	ating portion of output shaft and	lead wire end)	
	Ambient temperature		0 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity="">)</nomal>			
	Ambient humidity		85 %RH or lower (free from condensing)			
Environment	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust			
	Altitude			1000 m or lower		
	Vibration resistance			49 m/s ² or less		
Mass (kg), () r	epresents h	olding brake type	0.4 (0.6)	0.5 (0.7)	0.96 (1.36)	
Brake specif	ications	(This brake will I	be released when it is energized	d. Do not use this for braking t	he motor in motion.)	
Static friction	torque (N	m)	0.29		1.27	
Engaging time	e (ms)		25		50	
Releasing time (ms) Note)4		Note)4	20 (30)		15 (100)	
Exciting current (DC) (A))	0.26		0.36	
Releasing voltage			DC 1 V or more			
Exciting voltage			DV 24 V ±10 %			
Permissible lo	ad					
During		d P-direction (N)	147	,	392	
	Thrust load A-direction (N)		88		147	
assembly	Thrust loa	d A-direction (N)	88		14/	

For motor dimensions, refer to P.217, and for the diver, refer to P.212.

Radial load P-direction (N)

Thrust load A-direction (N)

Thrust load B-direction (N)

213 MINAS E Series

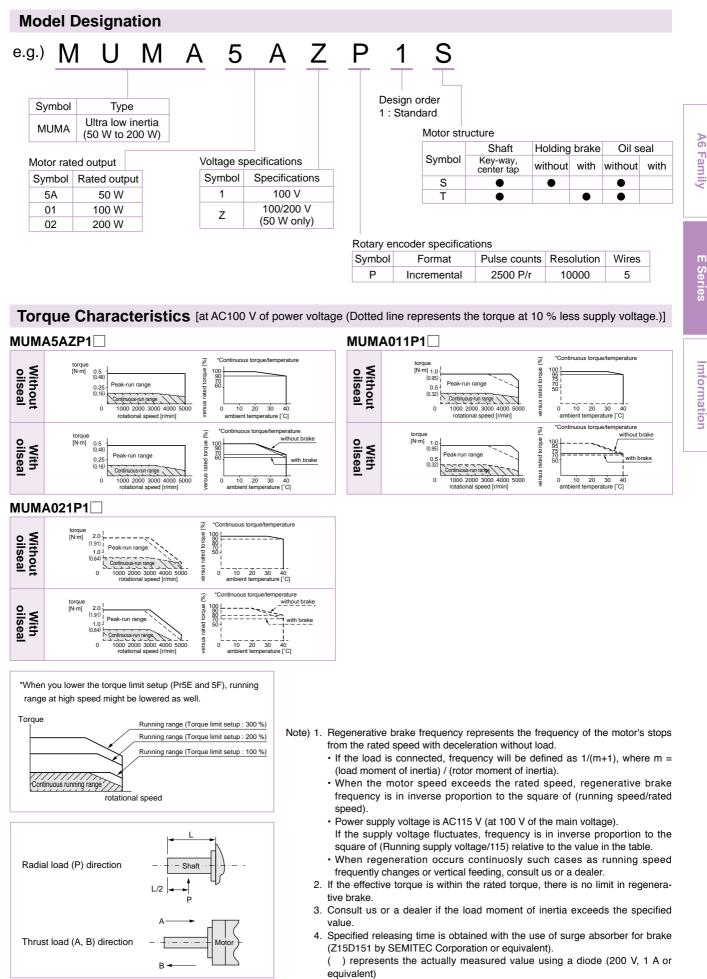
During

operation

68

58

58



Motor Specifications

200 V MUMA 50 W to 400 W Sm

[Low inertia Small drives]

			AC200 V				
Motor model		MUMA	5AZP1	012P1	022P1	042P1	
			MKDET1505P Frame K		MKDET1310P	MLDET2310P	
Applicable driv	er	Model No.			MKDET2210P	MLDET2510P	
11		Frame symbol			Frame K Frame L	Frame L	
Power supply capacity (kVA)		«VA)	0.3	0.3	0.5	0.9	
Rated output (W)		50	100	200	400		
Rated torque (N · m)		0.16	0.32	0.64	1.3		
Momentary Max. peak torque (N · m)		0.48	0.95	1.91	3.8		
Rated current (Arms)		1.0	1.0	1.6	2.5	
Max. current (Ao-p)		4.3	4.3	7.5	11.7		
Regenerative b frequency (tim		Without option		No limit	Note)2		
irequency (iiii	Note)1	DV0P2891		No limit	Note)2		
Rated rotationa	al speed (r/min)	3000				
Max. rotational speed (r/min)		5000					
Moment of iner	tia	Without brake	0.021	0.032	0.10	0.17	
of rotor (×10⁻⁴ kg⋅m²)		With brake	0.026	0.036	0.13	0.20	
Recommended moment of inertia ratio of the load and the rotor Note)3		30 times or less					
Rotary encoder specifications		2500 P/r					
		Incremental					
	Resoluti	on per single turn	10000				
Protective enclosure rating		IP65 (except rotating portion of output shaft and lead wire end)					
Environment	Ambient temperature		0 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity="">)</nomal>				
	Ambient humidity		85 %RH or lower (free from condensing)				
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude		1000 m or lower				
	Vibration resistance		49 m/s ² or less				
Mass (kg), () represents holding brake type			0.4 (0.6)	0.5 (0.7)	0.96 (1.36)	1.5 (1.9)	
Brake specifi	cations	(This brake will	be released when it is	s energized. Do not use t	his for braking the moto	or 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			

	0.20	0.50	
Releasing voltage	DC 1 V or more		
Exciting voltage	DV 24 V ±10 %		

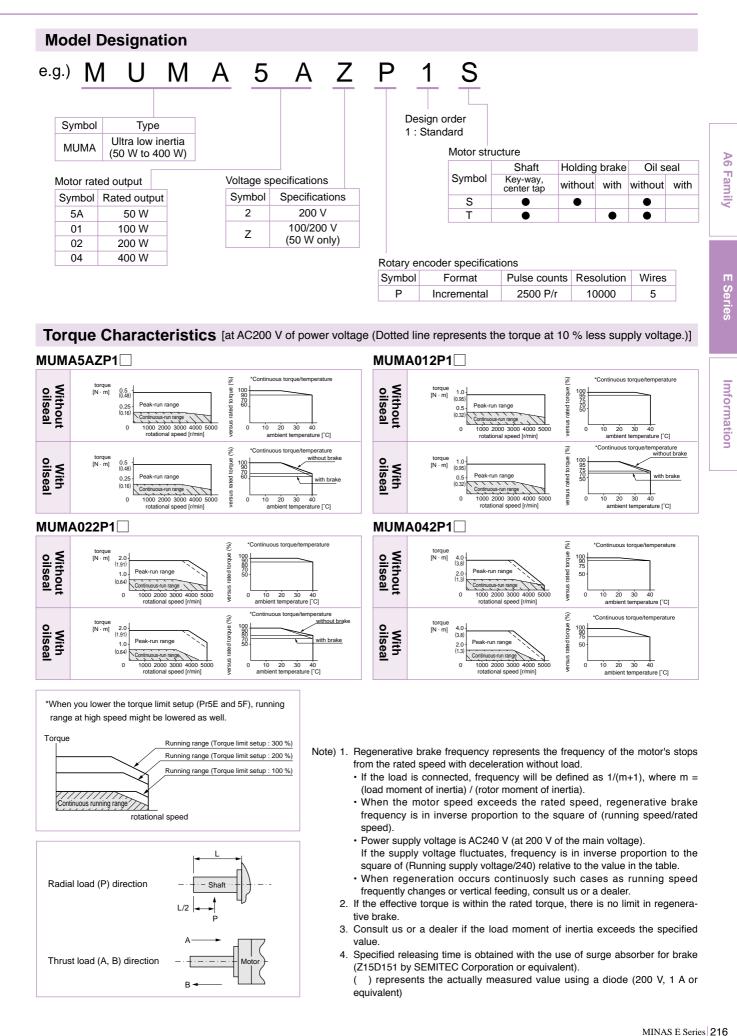
Permissible load				
During assembly	Radial load P-direction (N)	147	392	
	Thrust load A-direction (N)	88	147	
	Thrust load B-direction (N)	117	196	
During operation	Radial load P-direction (N)	68	245	
	Thrust load A-direction (N)	58	98	
	Thrust load B-direction (N)	58	98	
	Thrust load B-direction (N)		98	

For motor dimensions, refer to P.217, and for the driver, refer to P.212.

Note) Driver for 50 W and 100 W has a common power supply of single phase and 3-phase 200 V.

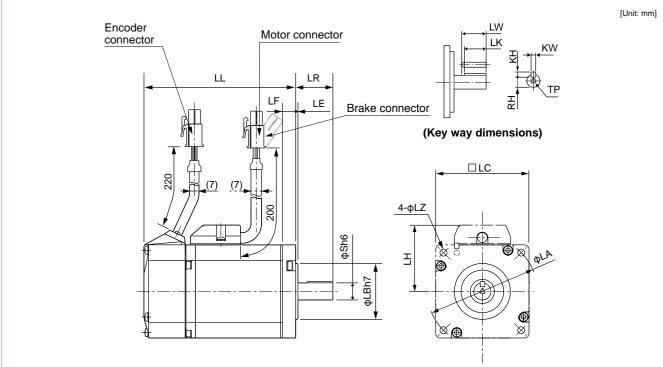
Driver for 200 W, the upper row is the power supply of 3-phase 200 V, and lower is the power supply of single-phase 200 V.

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.



E Series

Dimensions of Motor MUMA 50 W to 400 W



[Unit: mm]

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

MUMA series (Ultra low inertia) Motor output 50 W 100 W 200 W 400 W MUMA Motor model 5A 🗆 P1 🗌 01 P1 02 P1 04 P1 2500 P/r 2500 P/r 2500 P/r 2500 P/r Rotary encoder specifications Incremental Incremental Incremental Incremental 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 14 11 LA 48 48 70 70 LΒ 22 22 50 50 LC 42 42 60 60 LE 2 2 3 3 7 LF 7 7 7 LH 34 34 43 43 LΖ 3.4 4.5 4.5 34 LW 14 14 20 25 12.5 22.5 LΚ 12.5 18 ΚW 3h9 5h9 3h9 4h9 Key way 3 4 5 KΗ 3 6.2 RH 6.2 8.5 11 TΡ M3 × 6 (depth) M3 × 6 (depth) M4 × 8 (depth) $M5 \times 10$ (depth) 0.40 0.50 0.96 Without brake 1.5 Mass (kg) 0.60 0.70 1.36 1.9 With brake Connector/Plug specifications refer to Options, P.225, P.226.

<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.

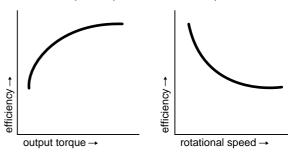
Motors with Gear Reducer

MINAS E Series Motors with Gear Reducer

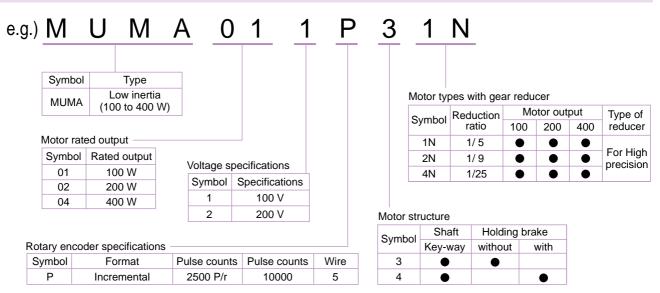
Motor Types with Gear Reducer

Reduction	Мо	tor output ((W)	Type of
ratio	100	200	400	reducer
1/5				
1/9	\bullet			For high precision
1/25				precision

Efficiency of the gear reducer shows the following inclination in relation to output torque and rotational speed.



Model No. Designation



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 %		
Coor	Rotational direction at output shaft (of reducer)	Same direction as the motor output shaft		
Gear reducer	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 moto		
	(conversion to the motor shaft)			
	Protective structure	IP44 (at gear reducer)		
	Ambient temperature	0 °C to 40 °C		
	Ambient humidity	85 %RH (free from condensation) or less		
Environment	Vibration resistance	49 m/s ² or less (at motor frame)		
_	Impact resistance	98 m/s ² or less		

E Series

Motors with Gear Reducer

Table of Motor Specifications/The Combination of the Driver and the Motor

Table of Motor with Gear Reducer Specifications

	Motor		MUMA with gear reducer										
Model	Output	Reduction	Output	Rated speed	Max.		Peak max.	Imotor + redu				Permissible radial load	Permissible thrust load
		ratio	-	speeu	speed	torque	torque	w/o brake	w/ brake	w/o brake	w/ brake	Taulai luau	tillust loau
	(W)	-	(W)	(r/min)	(r/min)	(N·m)	(N·m)	J (× 10	^{_₄} kg⋅m²)	(k	g)	(N)	(N)
MUMA01 P 1N		1/5	75	600	1000	1.18	3.72	0.072	0.076	1.05	1.25	490	245
MUMA01 P 2N	100	1/9	80	333	555	2.25	6.86	0.0663	0.0703	1.05	1.25	588	294
MUMA01 P 4N		1/25	80	120	200	6.27	19.0	0.0645	0.0685	2.20	2.40	1670	833
MUMA02 P 1N		1/5	170	600	1000	2.65	8.04	0.218	0.248	1.68	2.08	490	245
MUMA02 P 2N	200	1/9	132	333	555	3.72	11.3	0.368	0.398	2.66	3.06	1180	588
MUMA02 P 4N		1/25	140	120	200	11.1	33.3	0.388	0.418	2.66	3.06	1670	833
MUMA042P 1N		1/5	340	600	1000	5.39	16.2	0.533	0.563	3.2	3.6	980	490
MUMA042P 2N	400	1/9	332	333	555	9.51	28.5	0.438	0.468	3.2	3.6	1180	588
MUMA042P 4N		1/25	332	120	200	26.4	79.2	0.470	0.500	4.7	5.1	2060	1030

For dimensions, refer to P.221.

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	
Elicodel	output	with gear reducer	Part No. of driver	with gear reducer	Part No. of driver	Part No. of driver	
	100 W	MUMA011P	MKDET1110P	MUMA012P	MKDET1505P	MKDET1505P	
2500 P/r	200 W	MUMA021P	MLDET2110P	MUMA022P	MKDET1310P	MLDET2210P	
Incremental	400 W _		MUMA042P	MLDET2510P	MLDET2510P		
	400 VV _		_		MLDET2310P	WILDE 12510P	

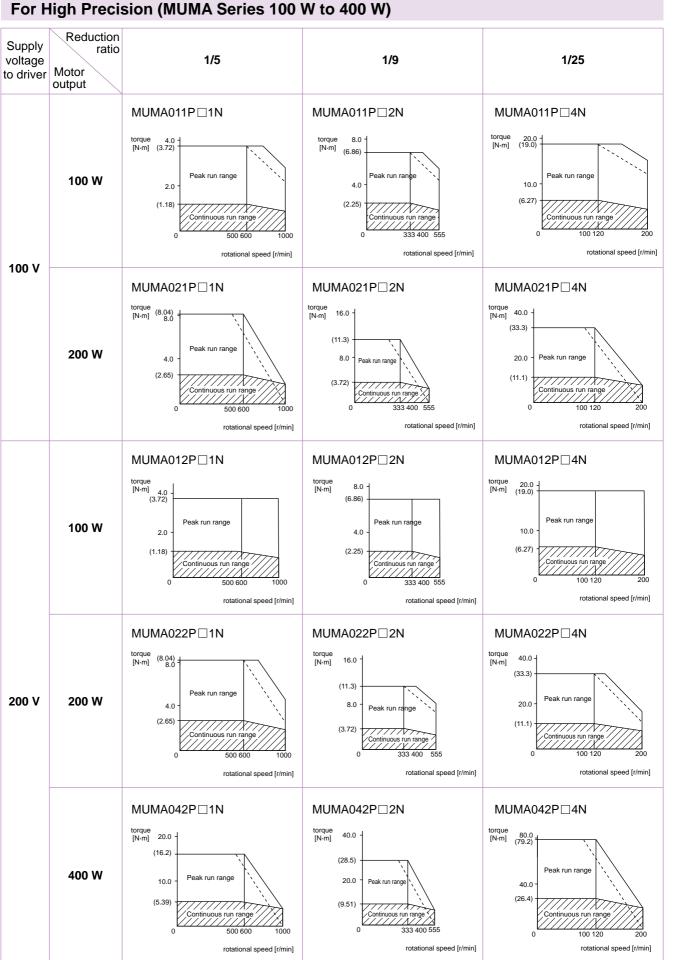
For dimensions, refer to P.212.

219 MINAS E Series

Torque Characteristics

E Series

Motors with Gear Reducer



Dotted line represents the torque at 10 % less supply voltage.

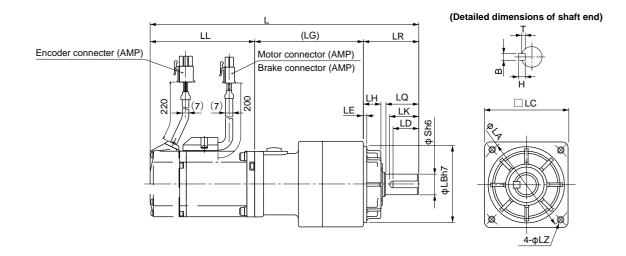
MINAS E Series 220

A6 Family

Motors with Gear Reducer Motor Dimensions

[Unit: mm]

MUMA series with Gear Reducer



2500 P/r Encoder

Unit: mr	[L	-							-							-						
т	Key way B×H×LD	LE	(LG)	LK	LZ	LH	S	LA	LB	LC	LQ	LR	LL	L	Reduction ratio	Motor output	Model					
													92.5	192	1/5		MUMA01□P□1N					
2.5	4×4×16		67.5	18	M5	10	12	60	50	52	20	32	124	223.5	175							
2.5	44410		07.5	10	(Depth: 12)	10 (C	12	00	50	52	20	52	92.5	192	1/9	100 W	MUMA01□P□2N					
												124	223.5	175	100 00							
3.5	6×6×22	3	92	26	M6	17	19	90	70	78	30	50	92.5	234.5	1/25		MUMA01□P□4N					
0.0	02022	5	52	20	(Depth: 20)		13			30 70	30 30			124	266	1/20						
2.5	4×4×16		72.5	18	M5	10	12	60	50	52	20	32	32 20	32 20	32 20	22	96	1 / 5 200.5	_	MUMA02□P□1N		
2.0			12.0	10	(Depth: 12)	10	12	00		02	20					129	233.5 12	.,,,				
			89.5															96	235.5	1/9	200 W	MUMA02□P□2N
			00.0	26	7 M6 (Depth: 20) 2					30 78				129	268.5		200 00					
			100			19 17		70 90 19	70 0		79	78	20 -		96	246	1/25		MUMA02□P□4N			
3.5	6×6×22		100				19							50	129	279	1/20					
0.0	0x0x22								10	10	00		123.5	263	1/5		MUMA042P□1N					
			89.5										156.5	296								
			03.0										123.5	263	1/9	400 W	MUMA042P 2N					
													156.5	296		400 00						
4	8x7x30	5	104	35	M8	18	24	115	90	98	40	61	123.5	288.5	1/25		MUMA042P□4N					
4	0.1.200	5	104	55	(Depth: 20)	10	24	113	50	50	-10		156.5	321.5	1,20							

Upper column : without brake _____ Lower column : with brake _____

221 MINAS E Series

Setup Support Software

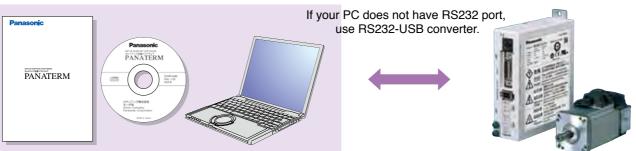
E Series

Options

Setup Support Software "PANATERM" for MINAS series AC Servo Motor & Driver

Part No. DV0P4460 (Japanese/English version)

The PANATERM assists users in setting parameters, monitoring control conditions, setup support, and analyzing mechanical operation data on the PC screen, when installed in a commercially available personal computer, and connected to the MINAS A4 series, E series through the RS232 serial interface.



Basic Function

Parameter setup

- After a parameter is defined on the screen, it will be sent to the driver immediately.
- Once you register parameters you frequently use, they can be easily set up on the screen.

Monitoring Control Conditions

Monitor

- Control conditions: Control mode, velocity, torque, error and warning
- Driver input signal
- Load conditions: Total count of command/feedback pulses, Load ratio, Regenerative resistor load ratio

Alarm

- Displays the numbers and contents of the current alarm and up to 14 error events in the past.
- Clears the numbers and contents of the current alarm and up to 14 error events in the past.

Setup

Auto tuning

· Gain adjustment and inertia ratio measurement

Graphic waveform display

• The graphic display shows command velocity, actual velocity, torque, and error waveforms.

Absolute encoder setup

- · Clears absolute encoder at the origin.
- Displays single revolution/multi-revolution data.
- · Displays absolute encoder status.

Analysis of Mechanical Operation Data

Frequency analysis

• Measures frequency characteristics of the machine, and displays Bode diagram.

■ Can not use with A5 family.

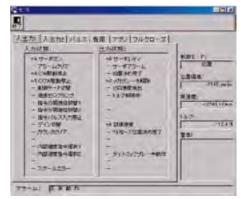
Hardware configuration

[Personal computer] • CPU : Pentium 100MHz or more • Memory : 16 MB or more (32 MB recommended)

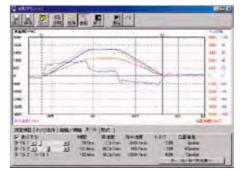
- Hard disk capacity (vacancy of 25 MB or more recommended)
 OS : Windows[®] 98, Windows[®] Me, Windows[®] 2000, Windows[®] XP (US version)
 Communication speed of serial communication port : 2400 bps or more (The software may not operate normally using USB-to-Serial adapter.)
 [Display] Resolution : 640*480 (VGA) or more (desirably 1024*768)
 Number of colors : 256 colors or more
- [CD-ROM drive] · CD-ROM drive operable on the above-mentioned personal computer

#1950-7 10111124-3	2 2	3 4 1		167	
	California - 3 1	10-1-10-10-10-10			
	TRO-LO MICH		TARK STAR	s-tres-	-
10日 新日本部(日本のです)。 1 + 3488 1 = 3568	S.WACK HIYA				a protector
II 第1後期(-1992) (1) 300 (1) II 第1後期(-1992) (1) 11 (1) II 第1後期(-1994) (1) 11 (1) (1) (1) (1) II (1) (1) (1) (1) (1) (1) (1) (1) II (1) (1) (1) (1) (1) (1) (1) II (1) (1) (1) (1) (1) (1) II (1) (1) (1) (1) (1) (1) II (1) (1) (1) II (1) (1) (1) (1) II (1) (1) II (1) (1) (1) II (1) (1) II (1) (1) II (1) (1) (1) II (1) II (1) (1) II (1) II (1) (1) II (1	1441) 05/8	N 1	101
13 新学術型は小学術研究的 1 - 1964 王 14 新学術型目的になる 4 - 8 - 3 14 新学校のないの研究的 7 - 1960 (41) 15 新学術学校 7 - 1960 (41) 15 新学術学校 7 - 1960 (41) 16 新学術学校 7 - 1960 (41) 17 - 1960 (15) 17 - 1960 (15) 18 - 1960 (15) 19 -	10 MICZA	074	1.4	3629	11
11 新潟市田田2016年 日 5 11 第1時の3245年1月 日 1600 年11 11 第1日、1540年1月 日 11日 11	11 31-250	-996	17	1908	135
11 2013-000-000000000 01 01 000 0100 11 2010-000-0000000000 01 000 0000000000	to middle		1-	1404	11.4
18 ##3F3+0-F 8- 110 5-		22189	4-1	5	18
	11 第7連連結			1620	411
18 To-PTA-PTA-ANTAP A. 1475 7		14A.041310			
	is methods	and the second	2-	110	25
17 June 1 74	la anti-uco	P3+9-+	2-	110	24
		2.087	1	1620	41)

Parameter



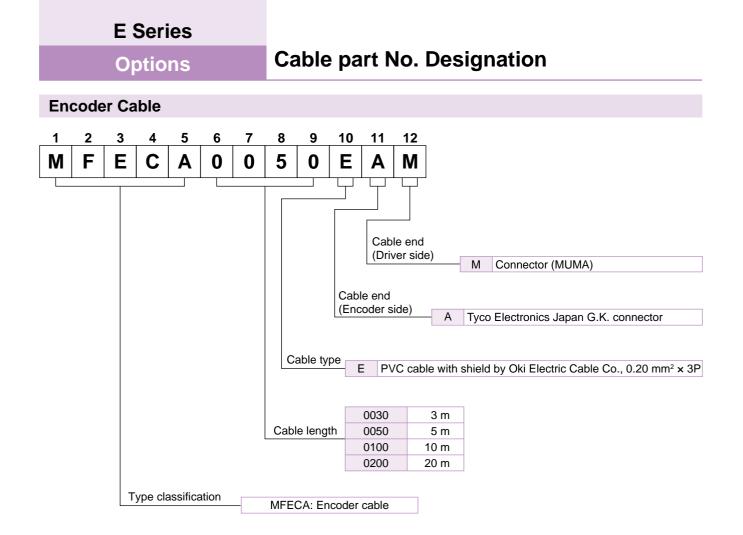
Monitor



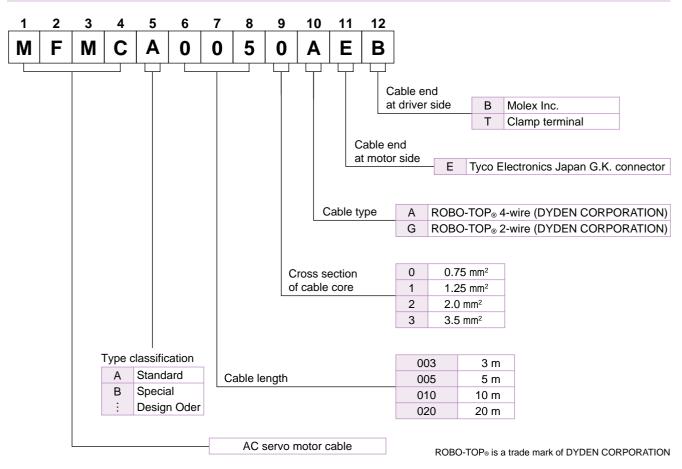
Graphic waveform display

E Series

A6 Fa



Motor Cable, Brake Cable



223 MINAS E Series

GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

E Series

Cable

Options

Cable Set (3 m)

Part No. DV0P37300

- 1) Interface cable : DV0P0800
- 2) Encoder cable (3 m) : MFECA0030EAM

MFECA0 * * 0EAM

(4) (14)

Title

Connector (Driver side)

Shell kit

Connector

Connector Pin

Cable

- 3) Motor cable (3 m) : MFMCA0030AEB
- 4) Connector kit for driver power supply connection : DV0P2870

Encoder Cable

Part No.

Part No.

Cable Set (5 m)

Part No. DV0P39200

1) Interface cable : DV0P0800

Manufacturer

Sumitomo 3M

or equivalent

Tyco Electronics

Oki Electric Cable Co., Ltd.

- 2) Encoder cable (5 m) : MFECA0050EAM
- 3) Motor cable (5 m) : MFMCA0050AEB
- 4) Connector kit for driver power supply connection : DV0P2870

A6 Family

Imformation

Part No. MFECA0030EAM MFECA0050EAM MFECA0100EAM

MFECA0200EAM

[Unit: mm]

Motor Cable (ROBO-TOP_® 105 °C 600 V . DP)

(4)

ROBO-TOP_® is a trade mark of DYDEN CORPORATION

L (m)

3

5

10

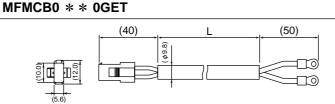
20

Part No.	MFMCA0 * * 0A	EB			
					[Unit: mm]
	Title	Part No.	Manufacturer	L (m)	Part No.
	Connector	172159-1	Tugo Electronico	3	MFMCA0030AEB
	Connector Pin	170362-1, 170366-1	Tyco Electronics	5	MFMCA0050AEB
	Connector 5557-06R-210		Molex Inc	10	MFMCA0100AEB
	Connector Pin	5556T		20	MFMCA0200AEB
	Cable	ROBO-TOP 600 V 0.75 mm ²	Daiden Co.,Ltd.		

Brake Cable (ROBO-TOP® 105 °C 600V . DP)

 ROBO-TOP_{\odot} is a trade mark of DYDEN CORPORATION





(20)

φ9.2)

Part No.

3E206-0100KV

3E306-3200-008

172160-1

170365-1

0.20 mm² × 3P

Title	Part No.	Manufacturer	L (m)	Part No.
Connector	172157-1	Tugo Electronico	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 ²	Daiden Co.,Ltd.	20	MFMCB0200GET

Options

Connector Kit

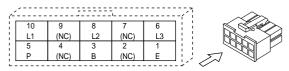
Connector Kit for Power Supply Connection

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		(10 pins)

Pin configuration of connector CN X1



Recommended manual crimping tool (to be prepared by customer)

Part No.	Cable material
57026-5000	UL1007
57027-5000	UL1015

<Cautions>

- 1. The above pin disposition is shown when viewed from the terminal inserting direction. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Refer to P.210 for wiring and connection.
- 3. Do not connect anything to pins marked "NC".

Connector Kit for Motor/Encoder Connection

Part No. DV0P3670 (Incremental 2500 pulse, 5-wire)

This option is required when you make your own encoder cable and motor cable. (Brake cable is required for brake.)

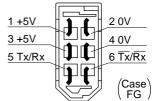
Parts composition

Title	Part No.	Number	Manufacturer	Note
Connector (Driver side)	3E206-0100 KV	1	Sumitomo 3M	For connector, CN X4
Shell kit	3E306-3200-008	1	or equivalent	(6 pins)
Connector (6 pins)	172160-1	1	Tyco Electronics	For junction to encoder cable
Connector pin	170365-1	6	Tyco Electronics	(6 pins)
Connector (4 pins)	172159-1	1	Tugo Electronico	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	MOIEX INC.	(6 pins)

<Remarks>

We may use parts equivalent to the above for shell and connector cover.

Pin configuration of connector CN X4 plug

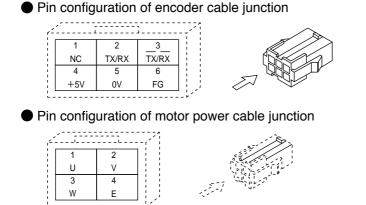


Recommended manual crimping tool (to be prepared by customer)

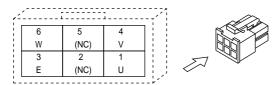
Title	Part No.	Manufacturer	Cable material	
For encoder cable junction	755330-1	Tyco Electronics		
For motor power cable junction	755331-1	Tyco Electronics		
For Connector CN X3	57026-5000 Malay Inc.		UL1007	
FOI CONNECTOR CIN X3	57027-5000	Molex Inc.	UL1015	

<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.
- 2. Connect the shield of the wire to the case (FG) without fail.
- 3. For wiring and connection, refer to P.210.



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.210 for wiring and connection.

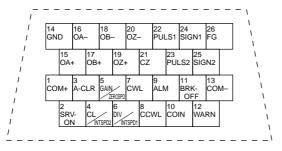
Connector Kit for External Peripheral Equipment

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>

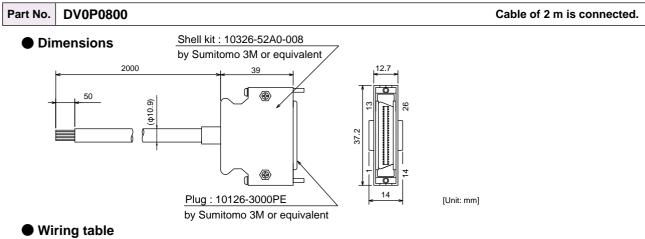
- 1. Make a correct wiring by checking the stamped pin numbers on the connector itself.
- 2. Refer to P.211 for symbols and functions of the above signals.

A6 Family

Options

Interface Cable/ Communication Cable/ Console

Interface Cable



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>

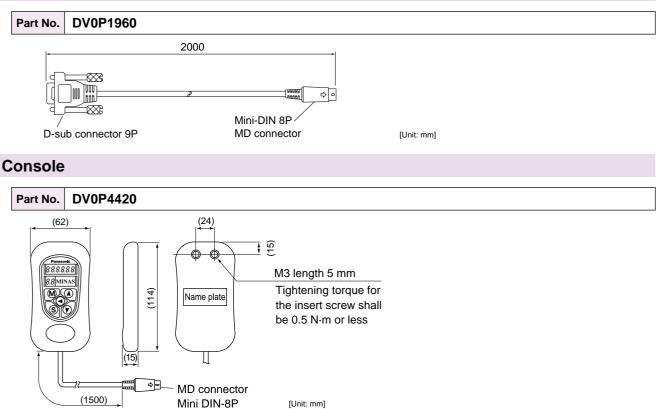
e. g. of Pin No. designation : Pin No. 1 Wire color is orange, and one red dot.

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.

Communication Cable (For Connection with PC)



227 MINAS E Series

DIN Rail Mounting Unit/ External Regenerative Resistor

E Series

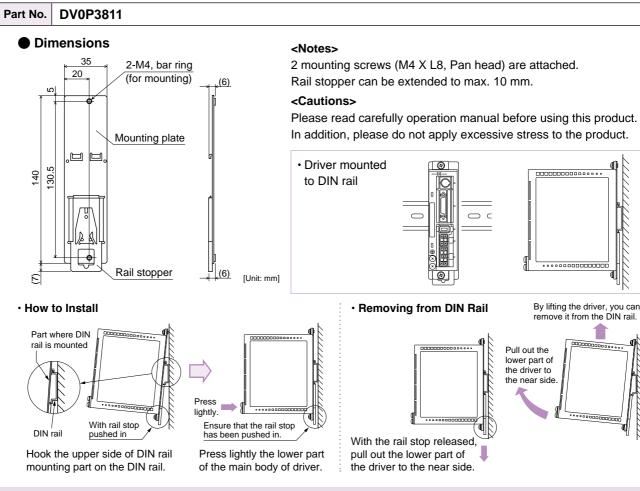
Options

A6 Family

E Series

Imtormatior

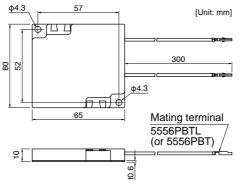
DIN Rail Mounting Unit



External Regenerative Resistor

	Specifications			
Manufacturer's Part No.	Resistance		Activation temperature of built-in fuse	Note (Input Power of drive)
	Ω	W	°C	
45M03	50	10	137 ⁺³ ₋₂	Single phase, 100 V
45M03	100	10	137 ⁺³ ₋₂	Single/3-phase, 200 V
	Part No. 45M03	Part No. Resistance Ω 3 45M03 50	Manufacturer's Part No.ResistanceRated powerΩW45M0350	Manufacturer's Part No.ResistanceRated powerActivation temperature of built-in fuseΩW°C45M035010137 $^{+3}_{-2}$

Dimensions



Manufactured by Iwaki Musen Kenkyuusho Co., Ltd.

<Caution of when using external regeneration resistor>

Since it becomes high temperature, external regeneration resistor must be installed according to the contents shown below. · Attach to incombustibles, such as metal. · Install in the place which cannot touch directly by covering with incombustibles etc. · Do not install near the combustibles. Although the thermal cutoff is built in external regeneration resistor, the skin temperature of regeneration resistor may become high exceeding the operating temperature of thermal cutoff by the time the thermal cutoff operates in driver failure. The thermal cutoff is for preventing ignition of the regeneration resistor in driver failure, and is not for controlling the skin temperature of resistor.

<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.

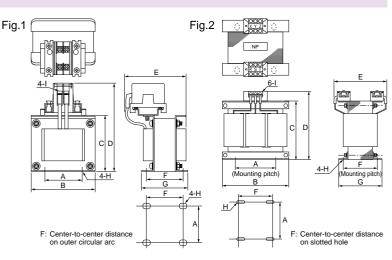
E Series

Options

Reactor/ Surge Absorber for Motor Brake

Reactor

Frame symbol of driver	Power supply specifications	Rated output	Part No.	Fig.
	Single phase, 100 V	50 W to 100 W	DV0P227	1
MKDE	Single phase, 200 V	50 W to 100 W	DV0P220	2
	3-phase, 200 V	50 W to 200 W	DV0F220	
	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		



[Unit: mm]

	Part No.	А	В	С	D	E(Max)	F	G	н	I	Inductance (mH)	Rated current (A)
	DV0P227	55±0.7	80±1	66.5±1	110 Max	90	41±2	55±2	4-5φ×10	M4	4.02	5
Fig.1	DV0P228	55±0.7	80±1	66.5±1	110 Max	95	46±2	60±2	4-5φ×10	M4	2	8
Fig.2	DV0P220	65±1	125±1	(93)	136 Max	155	70+3/-0	85±2	4-7φ×12	M4	6.81	3

Harmonic restraint

Harmonic restraint measures are not common to all countries. Therefore, prepare the measures that meet the requirements of the destination country.

When installing a product for Japan, refer to the instruction manual available on our website.

[Panasonic Corporation, Motor Business Unit web site]

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

<Remarks>

When using a reactor, be sure to install one reactor to one servo driver.

Recommended components

Surge Absorber for Motor Brake

Motor	Surge absorber for motor brake				
Motor	Part No. (Manufacturer's)	Manufacturer			
MUMA 50 W to 400 W	Z15D151	SEMITEC Corporation			

229 MINAS E Series

List of Peripheral Components

E Series

Options

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/	Ferite core 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 Japan G.K.	+81-44-844-8052 http://www.te.com/ja/home.html	Connector
Japan Molex Inc.	+81-462-65-2313 http://www.molex.co.jp	
DYDEN CORPORATION	+81-3-5805-5880 http://www.dyden.co.jp/english/index.htm	Cable

* The above list is for reference only. We may change the manufacturer without notice.

MEMO

Information

Contents
A6 Family
EU Directives / Conformity to UL Standards / KC
Composition of Peripheral Equipments
E Series
Compliance to EU and EMC Directives
Composition of Peripheral Components
Conformity to UL Standards
Motor capacity selection software
AC Servo Motor Capacity Selection Software
Option Selection Software for AC Servo Motor
Guide to the International System of Units (SI)
Selecting Motor Capacity
Request Sheet for Motor Selection
Connection Between Driver and Controller
Connection Between A6 Family Driver and Controller
Replacing Old Model Servo Driver with MINAS A6 Series
Connection Between E Series Driver and Controller
Index
Sales Office

A6 Family

Conformance to International Standards

EU Directives

The EU Directives apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products.

However, our AC servos meet the relevant EU Directives for Low Voltage Equipment so that the machine or equipment comprising our AC servos can meet EU Directives.

EMC Directives

MINAS Servo System conforms to relevant standard under EMC Directives setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EMC Directives, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

Conformity to UL Standards

Observe the following conditions of (1) and (2) to make the system conform to UL508C (E164620).

- (1) Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1.
- (e.g. Install in the control box with IP54 enclosure.)
- (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.21 "Driver and List of Applicable Peripheral Equipments".

Use a copper cable with temperature rating of 75 °C or higher.

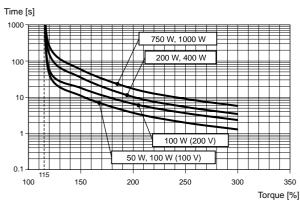
(3) Over-load protection level

Over-load protective function will be activated when the effective current exceeds 115 % or more than the rated current based on the time characteristics (see the graph). Confirm that the effective current of the driver does not exceed the rated current.

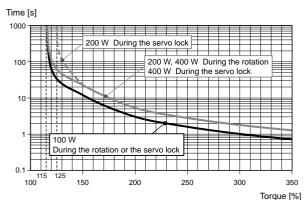
Set up the peak permissible current with Pr0.13 (Setup of 1st torque limit) and Pr5.22 (Setup 2nd torque limit).

Overload protection time characteristics

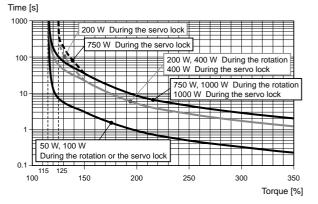
Motor type: 80 mm sq. or less MSMF



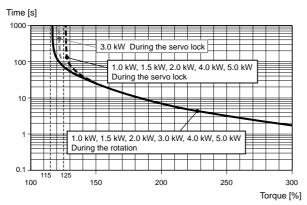
Motor type: 80 mm sq. or less MQMF



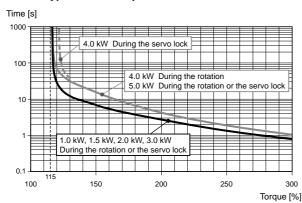
Motor type: 80 mm sq. or less MHMF



Motor type: 100 mm sq. or more MSMF



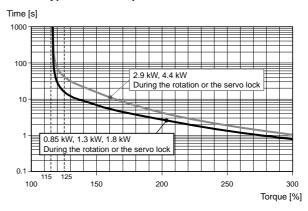
Motor type: 100 mm sq. or more MDMF



Motor type: 100 mm sq. or more MHMF

Time [s] 1000 4.0 kW During the servo lock 3.0 kW During the servo lock 100 3.0 kW, 4.0 kW During the rotation 5.0 kW During the rotation or the servo lock 10 2.0 kW During the servo lock 1 ----1.0 kW, 1.5 kW During the rotation or the servo lock 2.0 kW During the rotation 0.1 115 125 100 150 200 250 300 Torque [%]

Motor type: 100 mm sq. or more MGMF



Conformed Standards

	_	Driver		Motor
	EMC Directives	EN55011 EN61000-6-2 EN61000-6-4 EN61800-3		_
EU Directives	Low-Voltage Directives	EN61800-5-1 EN50178		EN60034-1 EN60034-5
	Machinery Directives	ISO13849-1(PL e, Cat.3) EN62061(SILCL 3)	EN61508(SIL3)	
	Functional safety ^{*1}	EN61800-5-2(SIL3, STO) IEC60240-1	IEC61326-3-1	_
UL Standards		UL508C (E164620)		UL1004-1, UL1004-6 (E327868)
CSA Standards	5	C22.2 No.14		C22.2 No.100-4
Radio Waves A (South Korea)		KN11 KN61000-4-2,3,4,5,6,8,11		_
N : Europaisch MC : Electromag	netic Compatibility s Laboratories	,	Panasonic Test Panasonic Se Panasonic Ma	directive 2004/108/EC, article 9(2) ing Centre rvice Europe, a division of rketing Europe GmbH 5, 22525 Hamburg, F.R. Germany

- When export this product, follow statutory provisions of the destination country.
- *1 A6 SE, A6 SG series doesn't correspond to the functional safety standard.
- *2 Information related to the Korea Radio Law

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

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

(대상기종 : Servo Driver)

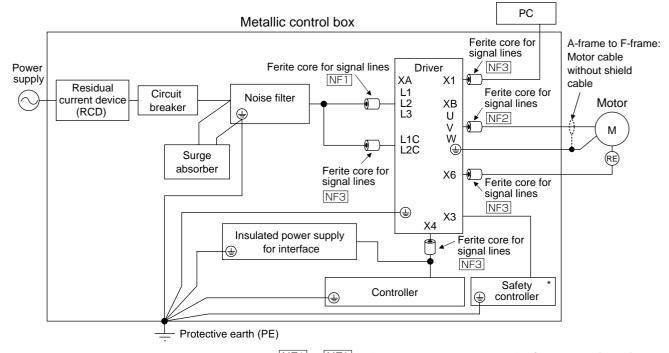
A6 Family Conformance to

International Standards

Composition of Peripheral Equipments

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 "Ferite core for Signal Line" (P.238). * A6 SE, A6 SG is not provided with X3 terminal.

<Caution>

Use options correctly after reading Operating Instructions of the options to better understand the precautions. Take care not to apply excessive stress to each optional part.

Power Supply

100 V type (A-frame to C-frame)	Single phase, 100 V $^{+10}_{-15}$ % to $~120$ V $^{+10}_{-15}$ %	50 Hz/60 Hz
200 V type (A-frame to D-frame)	Single/3-phase, 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ %	50 Hz/60 Hz
200 V type (E-frame, F-frame)	3-phase, 200 V $^{+10}_{-15}$ % to 240 V $^{+10}_{-15}$ %	50 Hz/60 Hz

(1) This product is designed to be used in over-voltage category (installation category) II of EN 61800-5-1:2007.
(2) Use an insulated power supply of DC12 V to 24 V which has CE marking or complies with EN60950.

Circuit Breaker

Install a circuit breaker which complies with IEC Standards and UL recognized (Listed and marked) between power supply and noise filter.

The short-circuit protection circuit on the product is not for protection of branch circuit.

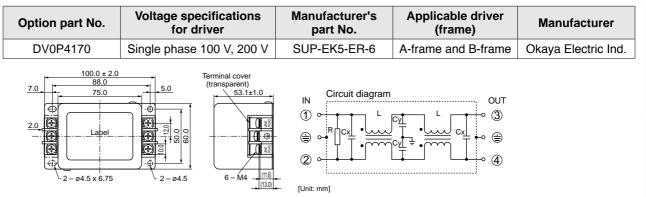
The branch circuit should be protected in accordance with NEC and the applicable local regulations in your area.

235 Information

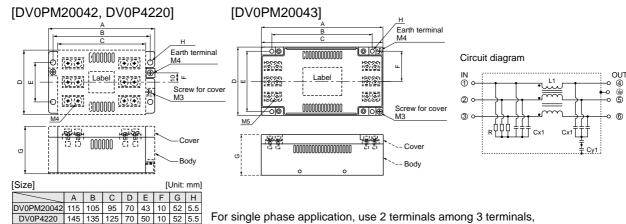
Noise Filter

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

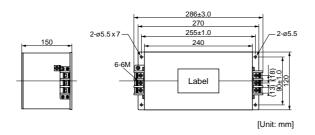


Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
	3-phase 200 V		A-frame and B-frame	
DV0PM20042	Single phase 100 V, 200 V 3-phase 200 V	3SUP-HU10-ER-6	C-frame	Okaya Electric Ind.
DV0P4220	Single/3-phase 200 V	3SUP-HU30-ER-6	D-frame	
DV0PM20043	3-phase 200 V	3SUP-HU50-ER-6	E-frame	

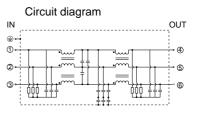


For single phase application, use 2 terminals among 3 terminals, leaving the remaining terminal unconnected.

Option part No.	Voltage specifications for driver	Manufacturer's part No.	Applicable driver (frame)	Manufacturer
DV0P3410	3-phase 200 V	3SUP-HL50-ER-6B	F-frame	Okaya Electric Ind.



54 5.5



<Remarks>

DV0PM20043 165 136 165 90 80 40

- 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.

A6 Family

ര

A6 Family Conformance to

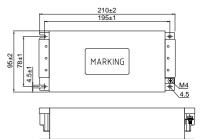
International Standards

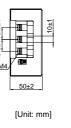
Composition of Peripheral Equipments

Recommended components

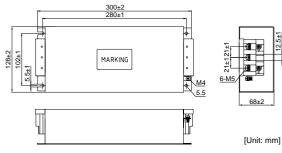
Part No.	Voltage specifications for driver	Current rating (A)	Applicable driver (frame)	Manufacturer
RTHN-5010		10	A-frame to C-frame	
RTHN-5030	Single phase 100 V, 200 V 3-phase 200 V	30	D-frame	TDK-Lambda Corp.
RTHN-5050		50	E-frame and F-frame	

[RTHN-5010]

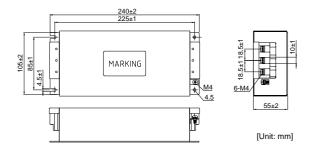




[RTHN-5050]



[RTHN-5030]

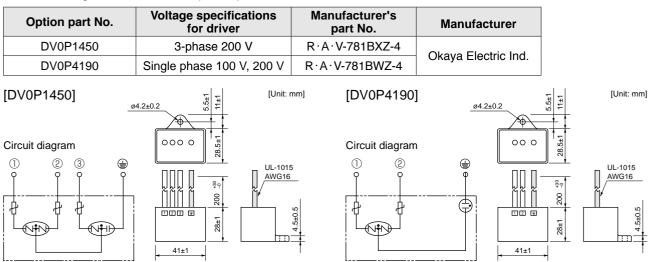


<Remarks>

- Select a noise filter of capacity that exceeds the capacity of the power source (also check for load condition).
- For detailed specification of the filter, contact the manufacturer.
- When two or more servo drivers are used with a single noise filter at the common power source, consult with the noise filter manufacturer.

Surge Absorber

Provide a surge absorber for the primary side of noise filter.



<Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.

237 Information

Ferite core for Signal Lines

Symbol ^{*1}	Cable Name	100 V/200 V Driver frame symbol	Option part No.	Manufacturer's part No.	Manufacturer	Qty.
		A, B, C, D	DV0P1460	ZCAT3035-1330	TDK Corp.	4
NF1	Power cable	E, F	Recommended components	RJ8035	KK-CORP.CO.JP	1
NF2	Motor cable	A, B, C, D, E, F	DV0P1460	ZCAT3035-1330	TDK Corp.	4
NF3	 24 V Power cable Encoder cable Interface cable USB cable Control power cable 	Common (to all frames)	DV0P1460	ZCAT3035-1330	TDK Corp.	4

Install ferite core for signal lines to all cables (power cable, motor cable, encoder cable and interface cable)

*1 For symbols, refer to the Block Diagram "Installation Environment" (P.235).

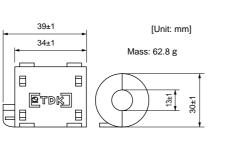
<Remarks>

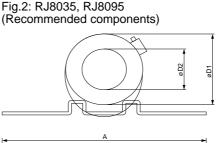
To connect the ferite core to the connector XB connection cable, adjust the sheath length at the tip of the cable, as required.

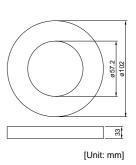
<Caution>

Fix the signal line ferite core in order to prevent excessive stress to the cables.

Fig.1: DV0P1460 (Option)







(Recommended components)

Fig.3: T400-61D

<Fig.2: Dimensions>

Part No.	Current	100 kHz				Siz	e [Unit: I	mm]		
Fall NO.	Current	(µH)	А	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

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 ((=)). 2 terminals are provided for protective earth.

<Note>

For driver and applicable peripheral equipments, refer to P.21 "Driver and List of Applicable Peripheral Equipments".

A6 Family

E Series

Information 238

Conformance to International Standards

Compliance to EU and EMC Directives

EU Directives

The EU Directives apply to all such electronic products as those having specific functions and have been exported to EU and directly sold to general consumers. Those products are required to conform to the EU unified standards and to furnish the CE marking on the products. MINAS AC Servos conforms to the EU Directives for Low Voltage Equipment so that the machine incorporating our servos has an easy access to the conformity to relevant EU Directives for the machine.

EMC Directives

MINAS Servo System conform to relevant standard under EMC Directives setting up certain model (condition) with certain locating distance and wiring of the servo motor and the driver. And actual working condition often differs from this model condition especially in wiring and grounding. Therefore, in order for the machine to conform to the EMC Directives, especially for noise emission and noise terminal voltage, it is necessary to examine the machine incorporating our servos.

Conformed Standards

Subject		Conformed Standard	÷	IEC : International Electrotechnical Commission
Motor	IEC60034-1	IEC60034-5 UL1004 CSA22.2 No.100	Conforms to	EN : Europaischen Normen
	EN50178	UL508C CSA22.2 No.14	Low- Voltage Directives	EMC: Electromagnetic Compatibility UL : Underwriters Laboratories
	EN55011	Radio Disturbance Characteristics of Industrial, Scientific and Medical (ISM) Radio-Frequency Equipment		CSA : Canadian Standards Association
	EN61000-6-2	Immunity for Industrial Environments	1	Pursuant to at the directive 2004/108/EC,article 9(2)
Motor	IEC61000-4-2	Electrostatic Discharge Immunity Test	Conforms to	$\begin{bmatrix} -100, -20, -100, -20, -100, -20, -100, -20, -20, -20, -20, -20, -20, -20, -$
and driver	IEC61000-4-3	Radio Frequency Electromagnetic Field Immunity Test	references	Panasonic Testing Centre
unver	IEC61000-4-4	Electric High-Speed Transition Phenomenon/Burst Immunity Test	by EMC Directives	Panasonic Service Europe, a division of Panasonic Marketing Europe GmbH
	IEC61000-4-5	Lightening Surge Immunity Test]	Winsbergring 15,22525 Hamburg, F.R. Germany
	IEC61000-4-6	High Frequency Conduction Immunity Test]	
	IEC61000-4-11	Instantaneous Outage Immunity Test]	

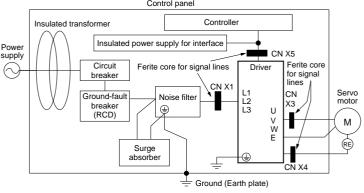
Composition of Peripheral Components

<Precautions in using options>

Use options correctly after reading operation manuals of the options to better understand the precautions. Take care not to apply excessive stress to each optional part.

Installation Environment

Use Minas driver in environment of Pollution Degree 1 or 2 prescribed in IEC-60664-1 (e.g. Install the driver in control panel with IP54 protection structure.)



Power Supply

100 V system	Single phase, 100 V $^{+10\%}_{-15\%}$ to 115 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz
200 V system	Single phase, 200 V $^{+10\%}_{-15\%}$ to 240 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz
200 V system	3-phase, 200 V $^{+10\%}_{-15\%}$ to 240 V $^{+10\%}_{-15\%}$	50 Hz/60 Hz

(1) Use the power supply under an environment of Overvoltage Category II specified in IEC60664-1.

(2) For a interface power supply, use the insulated one with 12 VDC to 24 VDC which conforms to CE Marking or EN Standards (EN60950).

Circuit Breaker

Connect a circuit breaker which conforms to IEC standards and is UL recognized (UL Listed, (1)) marked), between the power supply and the noise filter.

Composition of Peripheral Components Conformity to UL Standards

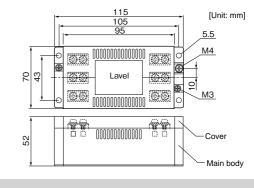
Noise Filter

When you install one noise filter in the power supply for multi axis application, consult with the manufacture of the filter.

Option part No.	Part No.	Manufacturer
DV0P4160	3SUP-HU10-ER-6	Okaya Electric Industries Co.

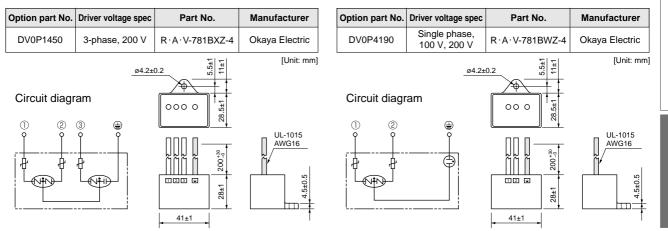
E Series

Conformance to International Standards



Surge Absorber

Install a surge absorber at primary side of the noise filter.



<Remarks>

Remove this surge absorber when you perform dielectric test on the machine, or surge absorber might be damaged.

Option part No.

DV0P1460

39+1

34±1

STDK

Part No.

ZCAT3035-1330

Qty. Manufacturer

[Unit: mm]

30±1 30±1

TDK Corp.

4

Mass : 62.8 g

Ferite core for Signal Lines

Install ferite core for signal lines to all cables (Power line, motor cable, encoder cable, interface cable)

<Caution>

- Please fix a line ferite core to avoid excessive stress to the cable.
- When using multiple axes, noise generated from each driver might influence driver and peripheral equipment and result to malfunction.

Please insert line ferite core between driver and motor wires (U, V, W but grounding).

(Please refer to P.239 "Composition of Peripheral Components".)

Grounding

- (1) Connect the protective earth terminal of the driver ((=)) and protective earth terminal of the control panel (PE) without fail to prevent electrical shocks.
- (2) Do not co-clamp to the ground terminals $((\underline{\underline{1}}))$. Two ground terminals are provided.

Ground-Fault Breaker

Install a ground fault curcuit braker (RCD) to the primary side of the power supply. Please use B-type (DC sensitive) ground fault circuit breakers defined in IEC60947-2, JISC8201-2-2.

Conformity to UL Standards

Observe the following conditions of (1) and (2) to make the system conform to UL508C (File No. E164620).

- (1) Use the driver in an environment of Pollution Degree 2 or 1 prescribed in IEC60664-1. (e.g. Install in the control box with IP54 enclosure.)
- (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.

East	111	Tex stars	State and	and and a state of the	And I	And installing 1	Jackson, 1	Atom .
-	-	1	2.24	1000				-10717
	in l	1404	188	interio -	180	100	104	
	-	1881	-	Argume.	14.00	852	0.00	-
-	ús#	1490	199	1188	1440			420
	-	2884		1000040	100	*84	10.00	- mailed
		_		No. Pol. Stat. Buch		-		-
104								
								_

3. Select the motor

When the data required in step 1 and 2 above have been input, the software lists the motors,

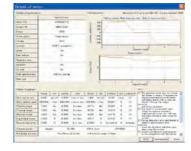
which will be appropriate to use with your machine. Select the motor that is best suitable for your machine application.

Concerned inter		-							
Description of the party	-				Contra Canto	-			
ELSS:	of Cold Service		in Alter	-	State and	No. 1	MINAS	- A - E	÷
Sec. 1	-	-						-	1
for last	ier-	Real Property	- Hadi					24	
(Sector)	-1847-	6 (A) .	10.00		- T)				
		Pass						11	2
					*	100		12 884	
		No. 14		1	award in	felo		-	۰.
		100	£11		-21		hotel	-	- 4
10000000	-		the state of the s		-		Ostoriandados 1 (Pla	States.	
	1000 10			inter			Contraction of the local		4
							and the local division of the		
-									
		-	a local diama	i then i	and the second second				
		- 14	8. 108 linna	144	-	1 Mar 2	the same name	-	- #
						1 Mar 2.	James and		- 4
-							to see backen!		1
-	-	-				Finder to [Internet		1
	-	-			+		Internet		
-	-				*				
		1111				-			
Anne ander Anne Anne anne a Anne anne a	1	1.1.1			* 	-			1111

Details of motor

Once the motor is selected, specifications of the motor and driver, and details of reason for

determination are displayed and may be printed out.



Option Selection Software for AC Servo Motor

We have prepared PC software to enable fast, easy, and correct option selection, a complicated job without the software.

Two procedures for option selection 1. Selection according to driver series **Driver series** had then MINAS and motor type An Andrew Street Suitable option can be selected by selecting driver Motor type series, motor type and motor specification through The way the the pulldown menu. Motor specification Model number input area 2. Entry of model number If you know the model number based on the servo motor and driver currently used, enter the model number. Tab **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. Pert Deer Indus

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

Organization of the System of Units

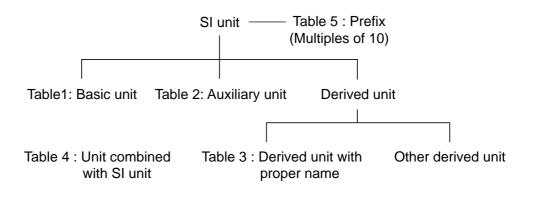


Table1: Basic unit

Quantity	Name of unit	Symbol of unit
Length	meter	m
Weight	kilogram	kg
Time	second	S
Current	ampere	А
Thermodynamic temperature	kelvin	К
Amount of substance	mol	mol
Luminous intensity	candela	cd

Table 2: Auxiliary unit

Name of unit	Symbol of unit
radian	rad
steradian	sr
	radian

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	$1 \text{ Hz} = 1 \text{ s}^{-1}$			
Force	newton	N	1 N = 1 kg·m/s ²			
Pressure, Stress	pascal	Pa	1 Pa = 1 N/m ²			
Energy, Work, Amount of heat	joule	J	1 J = 1 N·m			
Amount of work, Work efficiency, Power, Electric power	watt	W	1 W = 1 J/s			
Electric charge, Amount of electricity	coulomb	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 ⁻¹			
Magnetic flux	weber	Wb	1 Wb = 1 V·s			
Magnetic flux density, Magnetic induction	tesla	Т	1 T = 1 Wb/m ²			
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	$1 \text{ Ix} = 1 \text{ Im}/\text{m}^2$			

Table 4: Unit combined with SI unit

Quantity	Name	Symbol of unit			
	minute	min			
Time	hour	h			
	day	d			
	degree	0			
Plane angle	minute	,			
	second	n			
Volume	liter	I, L			
Weight	ton	t			

Table 5: Prefix

Multiples powered	Prefix			
to unit	Name	Symbol		
10 ¹⁸	exa	E		
10 ¹⁵	peta	Р		
10 ¹²	tera	Т		
10 ⁹	giga	G		
10 ⁶	mega	М		
10 ³	kilo	k		
10 ²	hecto	h		
10	deca	da		
10 ⁻¹	deci	d		
10 ⁻²	centi	С		
10 ⁻³	milli	m		
10 ⁻⁶	micro	μ		
10 ⁻⁹	nano	n		
10 ⁻¹²	pico	р		
10 ⁻¹⁵	femto	f		
10 ⁻¹⁸	atto	а		

Guide to the International System of Units (SI)

Major Compatible Unit

Quantity	Symbol of conventional unit	Symbol of SI unit and compatible unit	Conversion value
Length	μ (micron)	μ m	1 μ = 1 μm (micrometer)
Acceleration	Gal	m/s ²	1 Gal = 10^{-2} m/s ²
	G	m/s ²	$1 \text{ G} = 9.80665 \text{ m/s}^2$
Frequency	c/s, c	Hz	1 c/s = Hz
Revolving speed, Number of revolutions	rpm	s ⁻¹ or min ⁻¹ , r/min	$1 \text{ rpm} = 1 \text{ min}^{-1}$
Weight	kgf	-	
Mass	_	kg	Same value
Weight flow rate	kgf/s	-	
Mass flow rate	_	kg/s	Same value
Specific weight	kgf/m ³	-	
Density	_	kg/m ³	Same value
Specific volume	m ³ /kgf	m ³ /kg	Same value
Load	kgf	N	1 kgf = 9.80665 N
Force	kgf	Ν	1 kgf = 9.80665 N
	dyn	Ν	1 dyn = 10 ⁻⁵ N
Moment of force	kgf∙m	N∙m	1 kgf⋅m = 9.806 N⋅m
Pressure	kgf/cm ²	Pa, bar (1) or kgf/cm ²	$1 \text{ kgf/cm}^2 = 9.80665 \text{ x } 10^4 \text{ Pa}$
			= 0.980665 bar
	at (Engineering atmospheric pressure)	Ра	1 at = 9.80665 x 10 ⁴ Pa
	atm (Atmospheric pressure)	Pa	$1 \text{ atm} = 1.01325 \text{ x} 10^5 \text{ Pa}$
	mH2O, mAq	Pa	$1 \text{ mH}_2\text{O} = 9.80665 \text{ x } 10^3 \text{ Pa}$
	mmHg	Pa or mmHg ⁽²⁾	1 mmHg = 133.322 Pa
	Torr	Pa	
Stress	kgf/mm ²	Pa or N/m ²	1 kgf/mm ² = 9.80665 x 10 ⁶ Pa
Olless			$=9.80665 \times 10^6 \text{ N/m}^2$
	kgf/cm ²	Pa or N/m ²	$1 \text{ kgf/cm}^2 = 9.80665 \times 10^4 \text{ Pa}$
	Kgi/cm		$= 9.80665 \times 10^4 \text{ N/m}^2$
Elastic modulus	kgf/m ²	Pa or N/m ²	1 kgf/m ² = 9.80665 Pa = 9.80665 N/n
	KBI/III		$1 \text{ kgf/cm}^2 = 9.80665 \text{ x } 10^4 \text{ N/m}^2$
Energy, Work	kgf∙m	J (joule)	1 kgf·m = 9.80665 J
Energy, work	-	J	$1 \text{ erg} = 10^{-7} \text{ J}$
Work efficiency, Power	erg kgf·m/s	W (watt)	1 kgf·m/s = 9.80665 W
Work enciency, Fower	PS	W (wait)	1 PS = 0.7355 kW
Viceocity	PP	 Pa·s	1 P = 0.1 Pa·s
Viscosity			10^{-2} St = 1 mm ² /s
Kinetic viscosity	St	mm²/s K (kelvin)	1 K = 1 K
Thermodynamic temperature	K	K (Keivin) K ⁽³⁾	
Temperature interval	deg		1 deg = 1 K
Amount of heat	cal	J J/K ⁽³⁾	1 cal = 4.18605 J
Heat capacity	cal/°C		$1 \text{ cal/}^{\circ}\text{C} = 4.18605 \text{ J/K}$
Specific heat, Specific heat capacity	cal/ (kgf·°C)	cal/ (kgf·K) ⁽³⁾	$1 \text{ cal/ (kgf} \cdot ^{\circ}\text{C}) = 4.18605 \text{ J/ (kg} \cdot \text{K})$
Entropy	cal/K	J/K	1 cal/K = 4.18605 J/K
Specific entropy	cal/ (kgf⋅K)	J/(kg·K)	$1 \text{ cal/ } (\text{kgf} \cdot \text{K}) = 4.18605 \text{ J/ } (\text{kg} \cdot \text{K})$
Internal energy (Enthalpy)	cal	J	1 cal = 4.18605 J
Specific internal energy (Specific enthalpy)	cal/kgf	J/kg	1 cal/kgf = 4.18605 J/kg
Heat flux	cal/h	W	1 kcal/h = 1.16279 W
Heat flux density	cal/ (h⋅m²)	W/m ²	1 kcal/ ($h \cdot m^2$) = 1.16279 W/m ²
Thermal conductivity	cal/ (h⋅m⋅°C)	W/ (m·K) ⁽³⁾	1 kcal/ (h·m·°C) = 1.16279 W/ (m·K)
Coefficient of thermal conductivity	cal/ (h·m²·°C)	W/ (m ² ·K) ⁽³⁾	1 kcal/ (h·m2·°C) = 1.16279 W/ (m2·k
Intensity of magnetic field	Oe	A/m	$1 \text{ Oe} = 10^3 / (4\pi) \text{ A/m}$
Magnetic flux	Mx	Wb (weber)	$1 \text{ Mx} = 10^{-8} \text{ Wb}$
Magnetic flux density	Gs,G	T (tesla)	$1 \text{ Gs} = 10^{-4} \text{ T}$

Note

(1) Applicable to liquid pressure. Also applicable to atmospheric pressure of meteorological data, when "bar" is used in international standard. (2) Applicable to scale or indication of blood pressure manometers.
(3) "°C" can be substituted for "K".

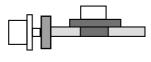
Flow of Motor Selection

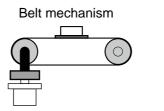
1. Definition of mechanism to be driven by motor.

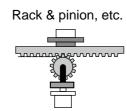
Define details of individual mechanical components (ball screw length, lead and pulley diameters, etc.)

<Typical mechanism>



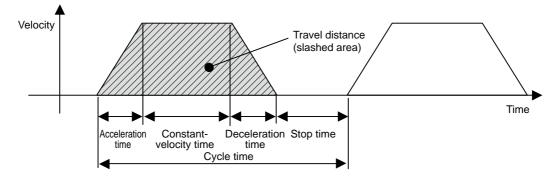






2. Definition of operating pattern.

Acceleration/deceleration time, Constant-velocity time, Stop time, Cycle time, Travel distance



Note) Selection of motor capacity significantly varies depending on the operating pattern. The motor capacity can be reduced if the acceleration/deceleration time and stop time are set as long as possible.

3. Calculation of load inertia and inertia ratio.

Calculate load inertia for each mechanical component. (Refer to "General inertia calculation method" described later.)

Divide the calculated load inertia by the inertia of the selected motor to check the inertia ratio. For calculation of the inertia ratio, note that the catalog value of the motor inertia is expressed as " $\times 10^{-4}$ kg·m²".

4. Calculation of motor velocity

Calculate the motor velocity from the moving distance, acceleration / deceleration time and constant-velocity time.

5. Calculation of torque

Calculate the required motor torque from the load inertia, acceleration/deceleration time and constant-velocity time.

6. Calculation of motor

Select a motor that meets the above 3 to 5 requirements.

Description on the Items Related to Motor Selection

1. Torque

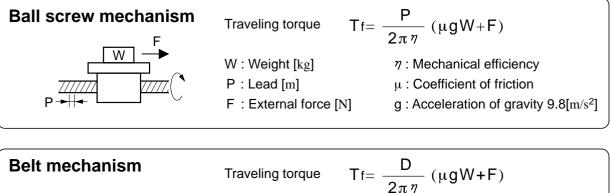
(1) Peak torque

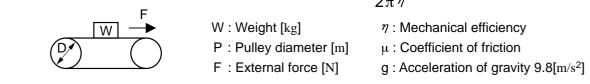
Indicate the maximum torque that the motor requires during operation (mainly in acceleration and deceleration steps). The reference value is 80% or less of the maximum motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

(2) Traveling torque, Stop holding torque

Indicates the torque that the motor requires for a long time. The reference value is 80% or less of the rated motor torque. If the torque is a negative value, a regenerative discharge resistor may be required.

Traveling torque calculation formula for each mechanism





(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.

$$Trms = \sqrt{\frac{Ta^{2} x ta + Tf^{2} x tb + Td^{2} x td}{tc}}$$

$$Ta: Acceleration torque [N·m] ta: Acceleration time [s] tc: Cycle time [s]$$

$$Tf: Traveling torque [N·m] tb: Constant-velocity time [s] (Run time + Stop time)$$

$$Td: Deceleration torque [N·m] td: Deceleration time [s]$$

2. Motor velocity

Maximum velocity

Maximum velocity of motor in operation: The reference value is the rated velocity or lower value. When the motor runs at the maximum velocity, you must pay attention to the motor torque and temperature rise. For actual calculation of motor velocity, see "Example of motor selection" described later.

3. Inertia and inertia ratio

Inertia is like the force to retain the current moving condition.

Inertia ratio is calculated by dividing load inertia by rotor inertia.

Generally, for motors with 750 W or lower capacity, the inertia ratio should be "20" or less. For motors with 1000 W or higher capacity, the inertia ratio should be "10" or less.

If you need quicker response, a lower inertia ratio is required.

(For example, when the motor takes several seconds in acceleration step, the inertia ratio can be further) increased.

Shape	J calculation formula	Shape	J calculation formula
Disk	J = $\frac{1}{8}$ W D ² [kg·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·m ²] W : Weight [kg] a, b, c : Side length [m]		$J = \frac{1}{48} W(3D^2 + 4L^2) [kg \cdot m^2]$ 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" $J = J_{1} + \left(\frac{n_{2}}{n_{1}}\right)^{2} J_{2}[kg \cdot m^{2}]$ $n_{1} : A \text{ rotational speed of a shaft [r/min]}$ $n_{2} : A \text{ rotational speed of b shaft [r/min]}$		
Conveyor	J = $\frac{1}{4}$ W D ² [kg·m ²] W : Workpiece weight on conveyor [kg] D : Drum diameter [m] * Excluding drum J	Ball screw	$J = J_{B} + \frac{W \cdot P^{2}}{4\pi^{2}} [kg \cdot m^{2}]$ W : Weight [kg] P : Lead JB : J of ball screw

General inertia calculation method

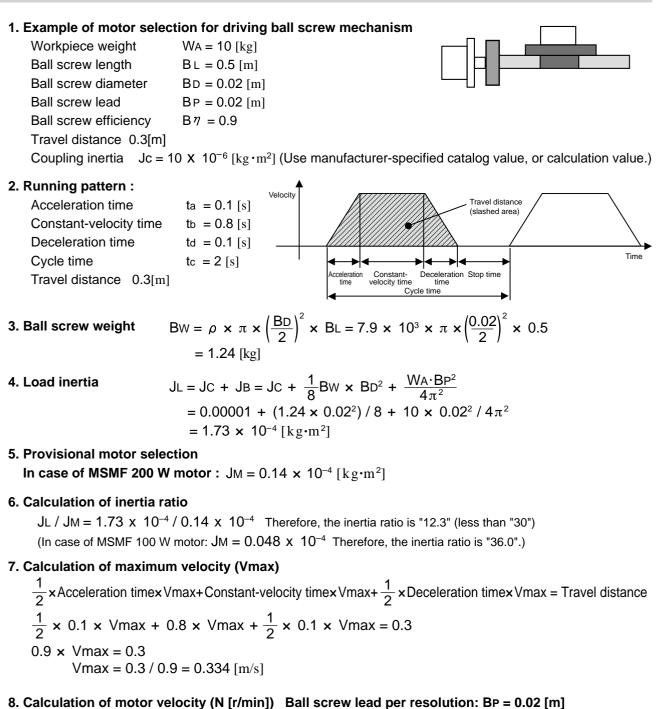
If weight (W [kg]) is unknown, calculate it with the following formula:

Weight W[kg]=Density ρ [kg/m³] x Volume V[m³] Density of each material

Iron ρ =7.9 x 10³ [kg/m³] Brass ρ =8.5 x 10³ [kg/m³]

Aluminum ρ =2.8 x 10³ [kg/m³]

To Drive Ball Screw Mechanism



N = 0.334 / 0.02 = 16.7 [r/s]

= 16.7 × 60 = 1002 [r/min] < 3000 [r/min] (Rated velocity of MSMF 200 W motor)

9. Calculation of torque

Traveling torque
$$Tf = \frac{BP}{2\pi B\eta} (\mu gWA + F) = \frac{0.02}{2\pi \times 0.9} (0.1 \times 9.8 \times 10 + 0)$$

= 0.035 [N·m]
Acceleration torque $Ta = \frac{(JL + JM) \times 2\pi N[r/s]}{Acceleration time [s]} + Traveling torque$
 $= \frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} + 0.035$
= 0.196 + 0.035 = 0.231 [N·m]

247 Information

Deceleration torque
$$T_d = \frac{(J_L + J_M) \times 2\pi N[r/s]}{Deceleration time [s]} - Traveling torque$$

= $\frac{(1.73 \times 10^{-4} + 0.14 \times 10^{-4}) \times 2\pi \times 16.7}{0.1} - 0.035$
= $0.196 - 0.035 = 0.161 [N \cdot m]$

10. Verification of maximum torque

Acceleration torque = Ta = 0.231 [N·m] < 1.91 [N·m] (Maximum torque of MSMF 200 W motor)

11. Verification of effective torque

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 MSMF 200 W motor)

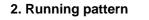
12. Judging from the inertia ratio calculated above, selection of 200 W motor is preferable, although the torque margin is significantly large.

Example of Motor Selection

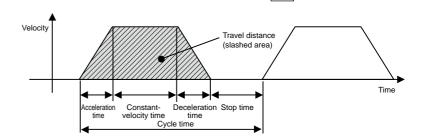
Example of motor selection for timing belt mechanism

1.MechanismWorkpiece weightWA = 2[kg] (including belt)Pulley diameterPD = 0.05[m]Pulley weightWP = 0.5[kg] (Use manufactMechanical efficiency $B\eta = 0.8$ Coupling inertiaJc = 0 (Direct connectionBelt mechanism inertiaJBPulley inertiaJP

PD = 0.05[m]WP = 0.5[kg] (Use manufacturer-specified catalog value, or calculation value.) B $\eta = 0.8$ Jc = 0 (Direct connection to motor shaft)



Acceleration timeta= 0.1[s]Constant-velocity timetb= 0.8[s]Deceleration timetd= 0.1[s]Cycle timetc= 2[s]Travel distance1[m]



3. Load inertia JL = JC + JB + JP

$$= JC + \frac{1}{4}WA \times PD^{2} + \frac{1}{8}WP \times PD^{2} \times 2$$

= 0 + $\frac{1}{4} \times 2 \times 0.05^{2} + \frac{1}{8} \times 0.5 \times 0.05^{2} \times 2$
= 0.00156 = 15.6 × 10⁻⁴ [kg·m²]

4. Provisional motor selection

In case of MSMF 750 W motor : $JM = 0.96 \times 10^{-4} [kg \cdot m^2]$

5. Calculation of inertia ratio

JL / JM = 15.6×10^{-4} / 0.96×10^{-4} Therefore, the inertia ratio is "16.3" (less than "20")

E Series

6. Calculation of maximum velocity (Vmax)

 $\frac{1}{2} \times \text{Acceleration time} \times \text{Vmax} + \text{Constant-velocity time} \times \text{Vmax} + \frac{1}{2} \times \text{Deceleration time} \times \text{Vmax} = \text{Travel distance}$ $\frac{1}{2} \times 0.1 \times \text{Vmax} + 0.8 \times \text{Vmax} + \frac{1}{2} \times 0.1 \times \text{Vmax} = 1$ $0.9 \times \text{Vmax} = 1$ 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 MSMF 750 W motor)

8. Calculation of torque

$$\begin{array}{ll} \text{Traveling torque} & \mathsf{Tf} = \frac{\mathsf{PD}}{2\eta} (\mu \mathsf{gWA} + \mathsf{F}) = \frac{0.05}{2 \times 0.8} \ (0.1 \times 9.8 \times 3 + 0) \\ & = 0.061 [\,\mathrm{N} \cdot \mathrm{m} \,] \\ \\ \text{Acceleration torque} & \mathsf{Ta} = \frac{(\mathsf{JL} + \mathsf{JM}) \times 2\pi \mathsf{N}[\mathsf{r}/\mathsf{s}]}{\mathsf{Acceleration time}[\mathsf{s}]} + \mathsf{Traveling torque} \\ & = \frac{(15.6 \times 10^{-4} + 0.87 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} + 0.061 \\ & = 0.751 + 0.061 = 0.812 [\,\mathrm{N} \cdot \mathrm{m} \,] \\ \\ \text{Deceleration torque} & \mathsf{Td} = \frac{(\mathsf{JL} + \mathsf{JM}) \times 2\pi \mathsf{N}[\mathsf{r}/\mathsf{s}]}{\mathsf{Deceleration time}[\mathsf{s}]} - \mathsf{Traveling torque} \\ & = \frac{(15.6 \times 10^{-4} + 0.87 \times 10^{-4}) \times 2\pi \times 7.08}{0.1} - 0.061 \\ & = 0.751 - 0.061 = 0.69 [\,\mathrm{N} \cdot \mathrm{m} \,] \end{array}$$

9. Verification of maximum torque

Acceleration torque $Ta = 0.812[N \cdot m] < 7.1[N \cdot m]$ (Maximum torque of MSMF 750 W motor)

10. Verification of effective torque

Trms =
$$\sqrt{\frac{Ta^2 \times ta + Tf^2 \times tb + Td^2 \times td}{tc}}$$

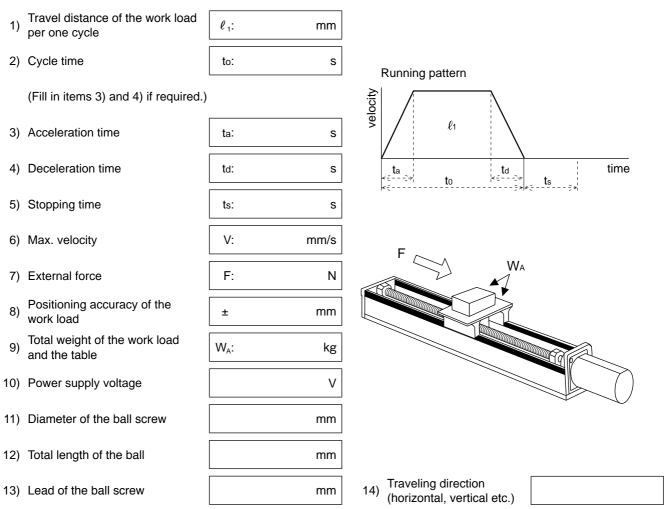
= $\sqrt{\frac{0.812^2 \times 0.1 + 0.061^2 \times 0.8 + 0.69^2 \times 0.1}{2}}$
= 0.241 [N·m] < 2.4 [N·m] (Rated torque of MSMF 750 W motor)

11. Judging from the above calculation result, selection of MSMF 750W motor is acceptable.

249 Information

Request for motor selection I : Ball screw drive

1. Driven mechanism and running data



2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
E-mail address:

Request Sheet for Motor Selection

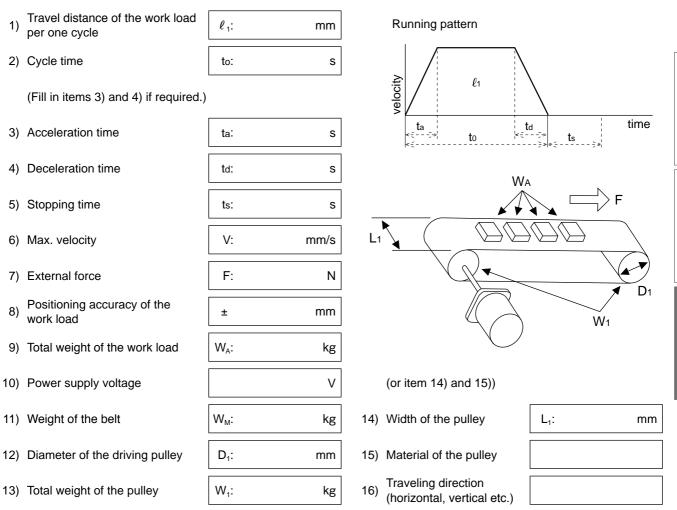
	Request for motor selection II : Timing pulley + Ball screw drive										
1. [Driven	mechanism and	d running data					М	lotor side	Ball	screw side
1)		listance of the work r one cycle	ℓ ₁ : n	nm 15	5) D	iameter o	of the pulley	y D ₁ :	mm	D ₂ :	mm
2)	Cycle ti	me	to:	s 16	6) V	Veight of t	he pulley	W ₁ :	kg	W ₂ :	kg
	(Fill in it	ems 3) and 4) if require	ed.)		(0	or item 17) and 18))				
3)	Acceler	ation time	ta:	s 17	7) W	Vidth of the	e pulley	L1:		m	n
4)	Deceler	ation time	td:	s 18	B) N	laterial of	the pulley				
5)	Stoppin	g time	ts:	s 19	9) V	Veight of t	he belt	W _M :		k	g
6)	Max. ve	locity	V: mn	n/s		Running p	pattern				
7)	Externa	I force	F:	Ν	>						
8)	Positior work loa	ning accuracy of the	± n	nm	velocity		ℓ1				
9)	Total we and the	eight of the work load table	W _A :	kg		ta <> <	to	td <⇒	ts ∗≦₽	tim	9
10)	Powers	supply voltage		V		F			WA		
11)	Diamete	er of the ball screw	n	nm							
12)	Total ler	ngth of the ball screw	n	nm							
13)	Lead of	the ball screw	n	nm							D2(W2)
14)		ng direction ntal, vertical etc.)					L1		D1(W1)	Ŵм	

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request for motor selection III : Belt drive

1. Driven mechanism and running data



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:

E Series

Request Sheet for Motor Selection

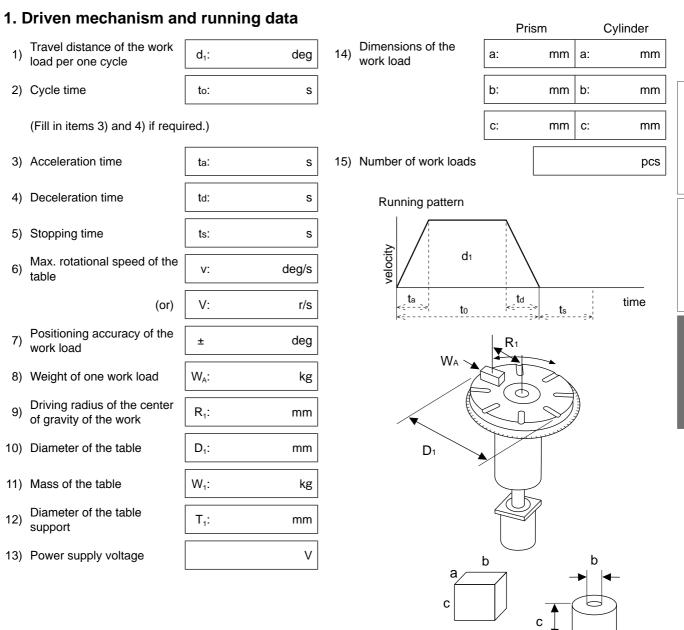
Belt side n D4: mm g W4: kg
g W ₄ : kg
mm
kg
time
L2
NL LZ
D4(W4)
D3(W3)

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:

Г

Request for motor selection V : Turntable drive



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:

а

Request Sheet for Motor Selection

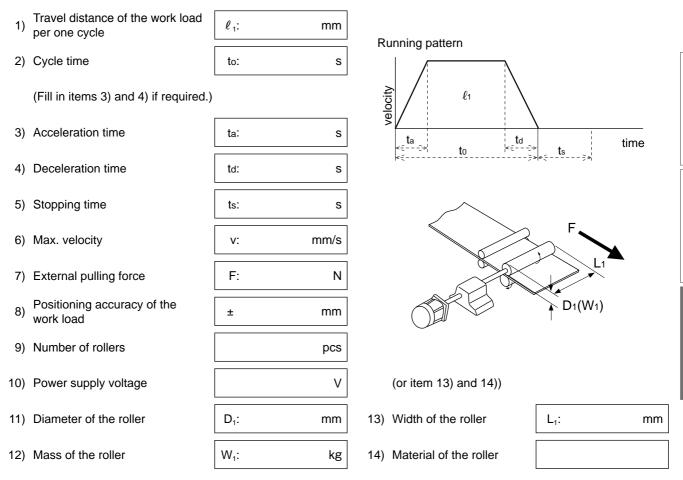
	Req	uest for	moto	or selection	on VI	: Ti	ming pul	ley + Tu	rntable	drive	;	
1. [Driven mecha	nism an	nd rur	nning dat	a				Motor	side	Turnt	table side
1)	Travel distance of load per one cycle		d ₁ :		deg	16)	Diameter of	f the pulley	D ₂ :	mm	D ₃ :	mm
2)	Cycle time		to:		s	17)	Weight of th	ne pulley	W ₂ :	kg	W ₃ :	kg
	(Fill in items 3) and	d 4) if requi	ired.)				(or item 18)	and 19))				
3)	Acceleration time		ta:		S	18)	Width of the	e pulley		L1:		mm
4)	Deceleration time		td:		S	19)	Material of	the pulley				
5)	Stopping time		ts:		s	20)	Weight of th	ne belt		W _M :		kg
6)	Max. rotational spe table	eed of the	v:	d	eg/s		Running	g pattern				
		(or)	V:		r/s							
7)	Positioning accura work load	acy of the	±		deg		velocity	dı		\backslash		
8)	Weight of one wor	k load	W _A :		kg		ta	🗧 to	td < ⊃	⇒ ts		time
9)	Driving radius of the wo	ne center ork	R ₁ :		mm					R1		
10)	Diameter of the tal	ble	D ₁ :		mm			V	VA			
11)	Mass of the table		W ₁ :		kg				D1		$\sum_{j=1}^{n}$	
12)	Diameter of the tal support	ble	T ₁ :		mm							
13)	Power supply volta	age			V		D2(W2)			J		
		(Prisr	n)	(Cylinde	r)		↓ L1 _					D3(W3)
14)	Dimension of the work load	a:	mm	a:	mm		↓		`w	M		b
		b:	mm	b:	mm			a	b	_		
		с:	mm	C:	mm			c		a _		
15)	Number of work lo	ads			pcs						-	C D

2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request for motor selection VII : Roller feed drive

1. Driven mechanism and running data



2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

Request Sheet for Motor Selection

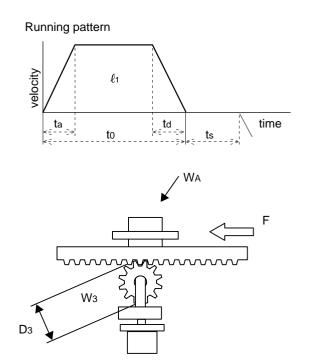
Request for motor selection VIII : Driving with Rack & Pinion

1. Driven mechanism and running data

 Travel distance of the work load per one cycle 	ℓ ₁ :	mm
2) Cycle time	to:	S

(Fill in items 3) and 4) if required.)

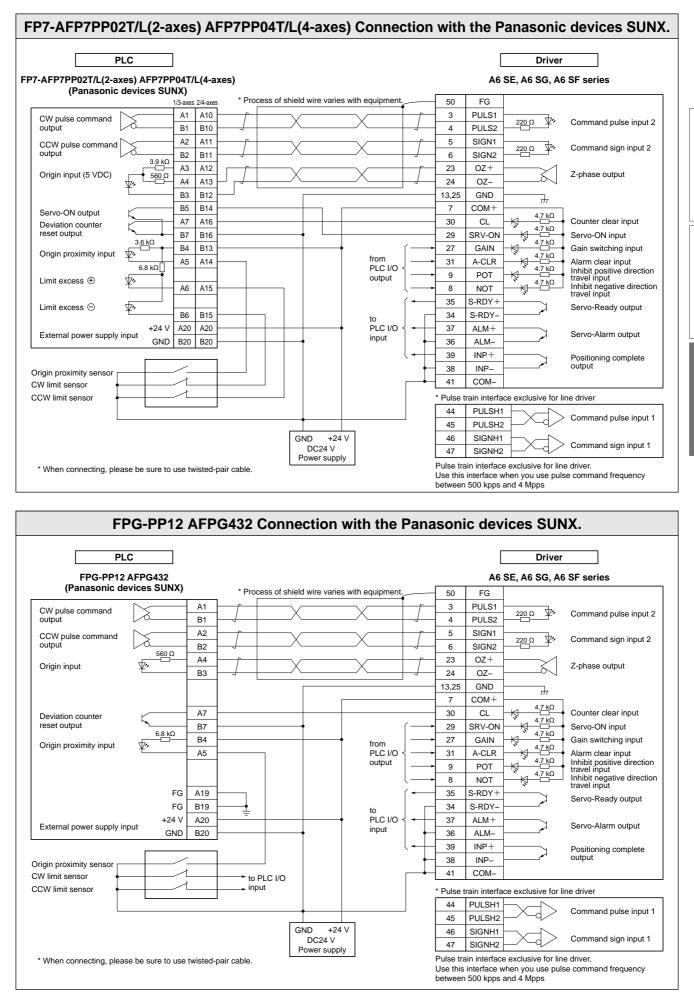
3)	Acceleration time	ta:	s
4)	Deceleration time	td:	S
5)	Stopping time	ts:	S
6)	Max. velocity	V:	mm/s
7)	External force	F:	Ν
8)	Positioning accuracy of the work load	±	mm
9)	Total weight of the work load	W _A :	kg
10)	Power supply voltage		V
11)	Diameter of the pinion	D ₃ :	mm
12)	Mass of the pinion	W ₃ :	kg
13)	Traveling direction (horizontal, vertical, etc.)		



2. Other data (Fill the details on specific mechanism and its configurations in the following blank.)

Company name :
Department/Section :
Name :
Address :
Tel :
Fax :
E-mail address:

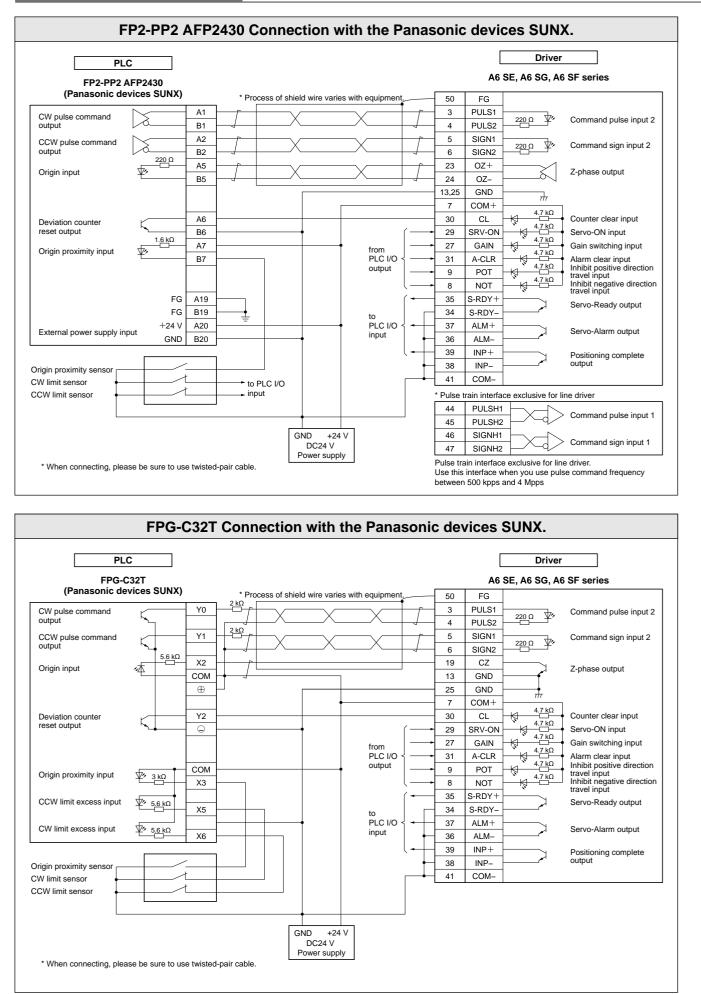
Connection Between Driver and Controller

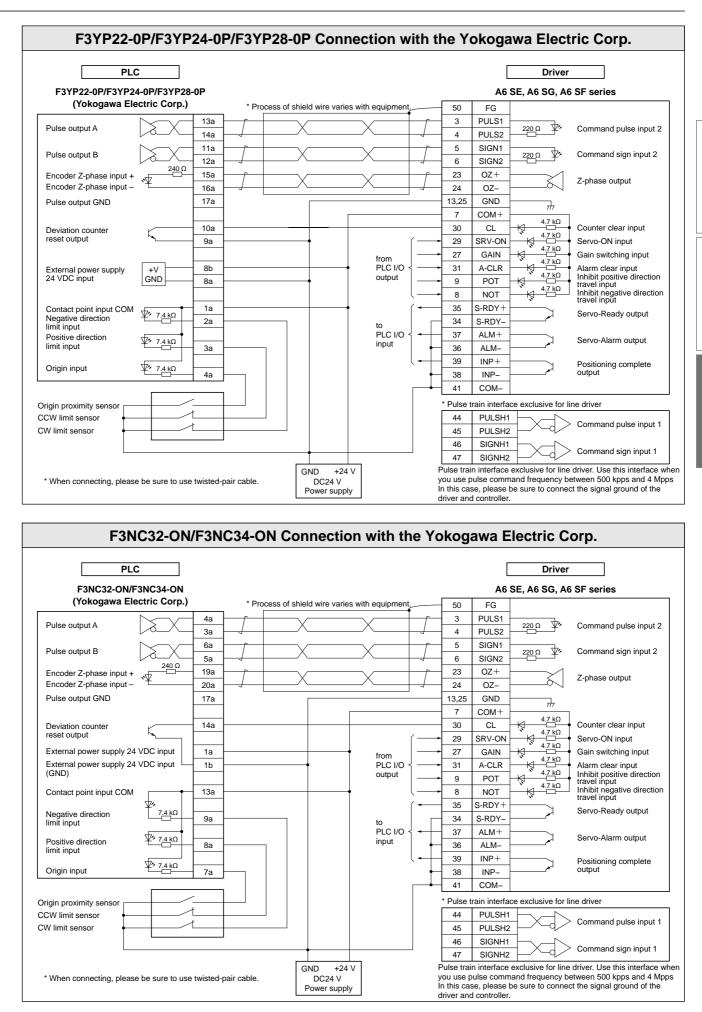


A6 Family

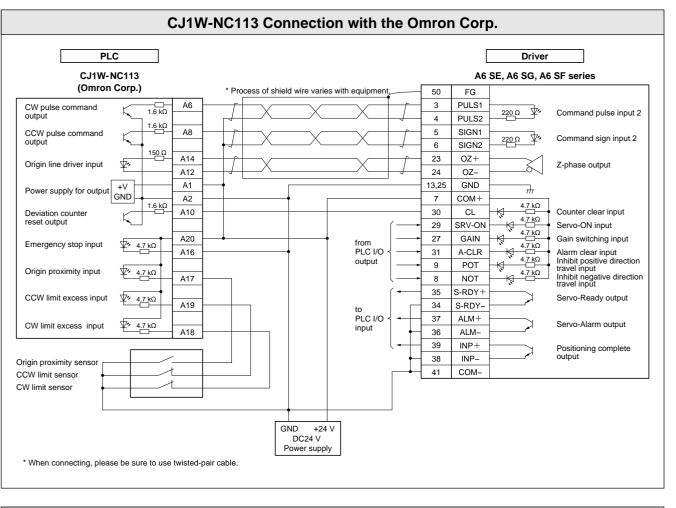
Connection Between Driver and Controller

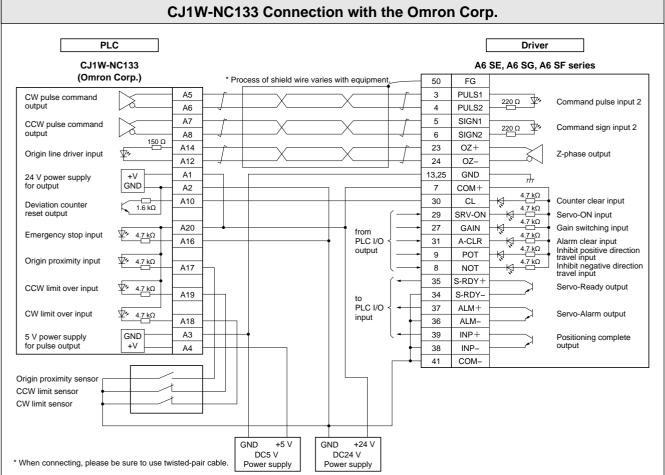
Connection Between Driver and Controller

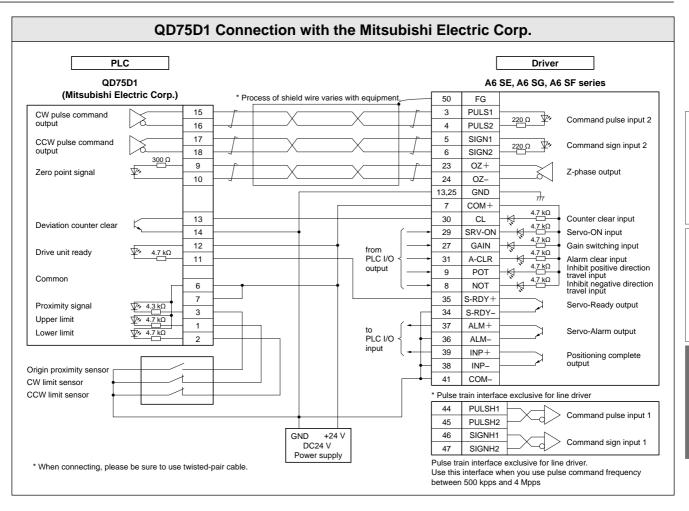


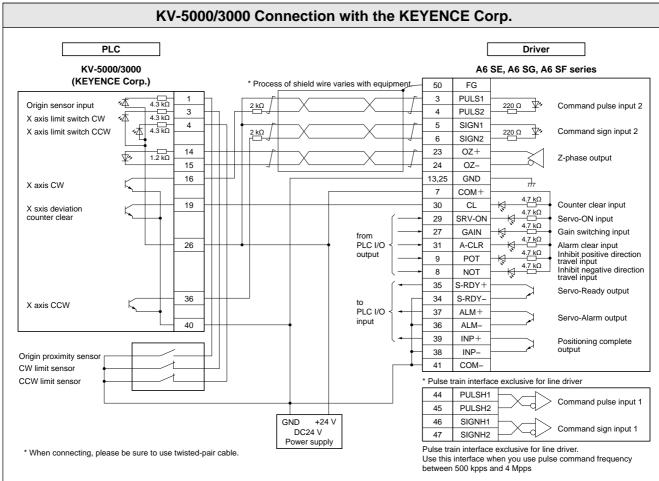


Connection Between Driver and Controller



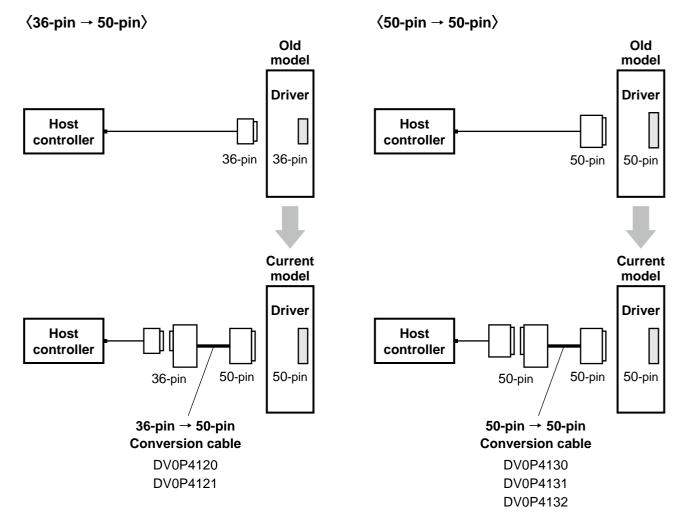






A6 Family Connection Between Driver and Controller

For easier replacement of old driver (MINAS X/XX/V series) with A6 series, use the interface conversion connector.



When selecting the cable, refer to the table below because the part number of the cable is specific to the control mode of the old model.

Old model	Control mode	Conversion cable part No.	Conversion wiring table
X series XX series	Position/velocity control	DV0P4120	P.264
(36-pin)	Torque control	DV0P4121	F.204
	Position control	DV0P4130	P.265
V series (50-pin)	Velocity control	DV0P4131	F.200
	Torque control	DV0P4132	P.266

* For external dimensions, refer to P.182.

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	

A6 Family

* "NC" is no connect.

Connection Between Driver and Controller

Replacing Old Model Servo Driver with MINAS A6 series

		DV0P4130			DV0P4131	
Pin No. on Old Model	Pin No. on Current Model	Signal Name	Symbol	Pin No. on Current Model	Signal Name	Symbol
1	8	CW over-travel inhibit input	CWL	8	CW over-travel inhibit input	CWL
2	9	CCW over-travel inhibit input	CCWL	9	CCW over-travel inhibit input	CCWL
3	3	Command pulse input 2	PULS1	NC		
4	4	Command pulse input 2	PULS2	NC		
5	5	Command pulse sign input 2	SIGN1	NC		
6	6	Command pulse sign input 2	SIGN2	NC		
7	7	Power supply for control signal (+)	COM+	7	Power supply for control signal (+)	COM+
8	NC	· · · · · · · · · · · · · · · · · · ·		NC		
9	NC			NC		
10	NC			NC		
11	11	External brake release signal	BRK-OFF+	11	External brake release signal	BRK-OFF+
12	12	<u> </u>	ZSP	12		ZSP
		Zero-speed detection output signal		-	Zero-speed detection output signal	-
13	13	Torque in-limit signal output	TLC	13	Torque in-limit signal output	TLC
14	NC			14	Speed command input	SPR
15	15	Signal ground	GND	15	Signal ground	GND
16	16	CCW direction torque limit input	CCWTL	16	CCW direction torque limit input	CCWTL
17	17	Signal ground	GND	17	Signal ground	GND
18	18	CW direction torque limit input	CWTL	18	CW direction torque limit input	CWTL
19	19	Z-phase output	CZ	19	Z-phase output	CZ
20	NC			NC		
21	21	A-phase output	OA+	21	A-phase output	OA+
22	22	A-phase output	OA-	22	A-phase output	OA-
23	23	Z-phase output	OZ+	23	Z-phase output	OZ+
24	24	Z-phase output	OZ-	24	Z-phase output	OZ-
25	50	Frame ground	FG	50	Frame ground	FG
26	26	Speed zero clamp input	ZEROSPD	26	Speed zero clamp input	ZEROSPD
27	27	Gain switching input	GAIN	27	Gain switching input	GAIN
28	NC			33	Selection 1 input of internal command speed	INTSPD1
29	29	Servo-ON input	SRV-ON	29	Servo-ON input	SRV-ON
30	30	Deviation counter clear input	CL	NC		
31	31	Alarm clear input	A-CLR	31	Alarm clear input	A-CLR
32	32	· ·	C-MODE	32	Control mode switching input	C-MODE
		Control mode switching input		-		C-INIODE
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		
		B-phase output			B-phase output	OB
48	48	B-phase output	OB+	48	B-phase output	OB+
49	49	B-phase output	OB-	49	B-phase output	OB-

* "NC" is no connect.

		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

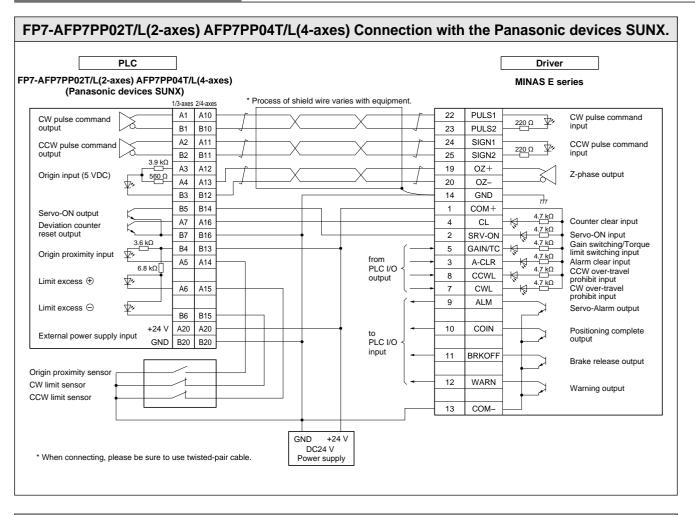
* "NC" is no connect.

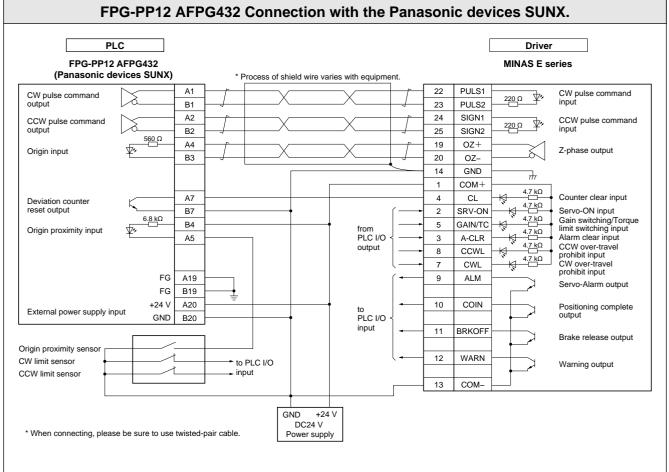
GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de

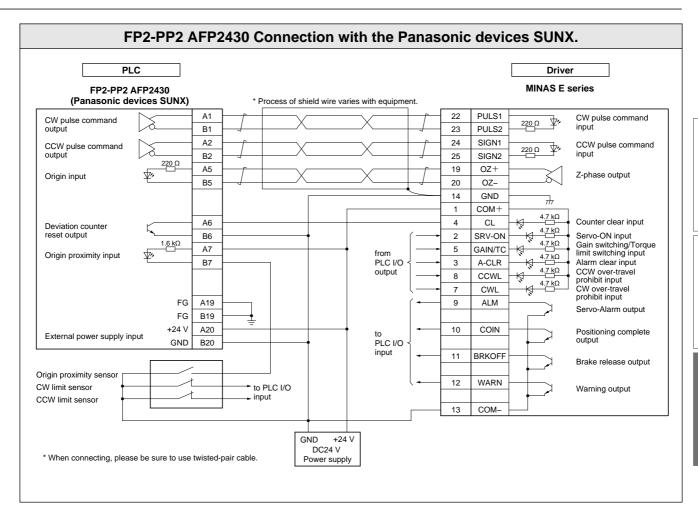
Information 266

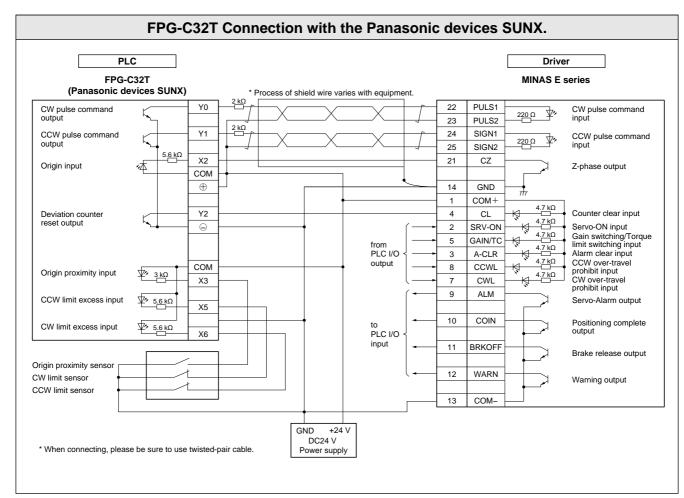
E Series

Connection Between Driver and Controller





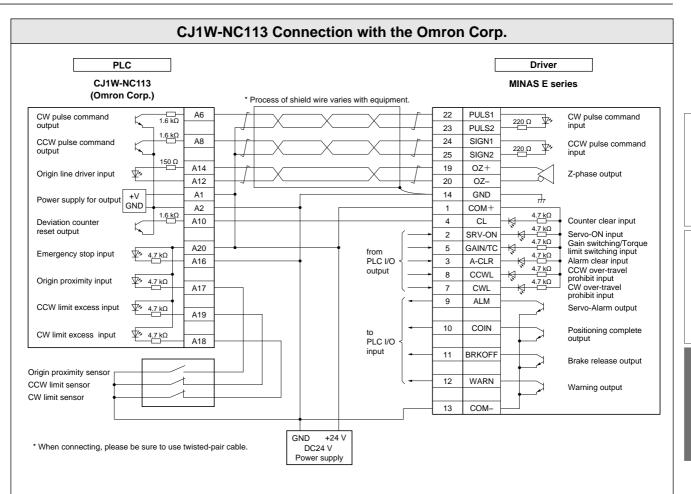


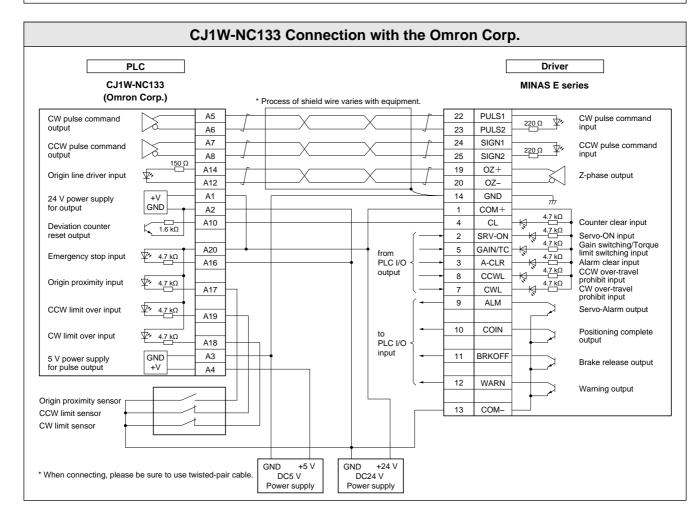


E Series

Connection Between Driver and Controller

PLC F3YP22-0P/F3YP24 (Yokogawa Ele	-0P/F3YP28-	0 P 13a	* F	Process of shi	eld wire varies with e	quipment.	22	PULS1	Driver MINAS E s	
Pulse output A		14a		X	X_		23	PULS2	220 Ω ¥*	input
Pulse output B		11a 12a					24 25	SIGN1 SIGN2	220 Ω 🐺	CCW pulse command input
ncoder Z-phase input +	240 Ω	15a					19	OZ+		Z-phase output
ncoder Z-phase input – Pulse output GND	τ	16a 17a					20	OZ- GND		
uise ouiput GND		17a					- 1	COM+	#T	
Deviation counter eset output		10a 9a				(4	CL SRV-ON	4.7 kΩ 4.7 kΩ	 Counter clear input Servo-ON input
		94			fre	om	→ <u>5</u>	GAIN/TC	4.7 kΩ	Gain switching/Torque limit switching input
xternal power supply 4 VDC input	+V GND	8b			P	_C I/O {	→ <u>3</u>	A-CLR	4.7 kΩ	Alarm clear input CCW over-travel
		8a					→ 8 → 7	CCWL CWL	4.7 kΩ	prohibit input CW over-travel
Contact point input COM	1 ² γ 7.4 kΩ	1a				ſ •	9	ALM		prohibit input Servo-Alarm output
Positive direction		2a			1-	-	10	COIN		Positioning complete
imit input	Ψ* 7.4 kΩ	3a		-		_C I/O {				output
Drigin input	₹ ⁷ .4 kΩ	4a				out 🚽	11	BRKOFF		Brake release output
		τu	1			L 🗕	12	WARN		Warning output
gin proximity sensor		r r					13	COM-		
W limit sensor		,					13			
F3N	C32-ON/	F3N	pair cable.		DC24 V ower supply	h the Y	′okoga	awa E	lectric Co	orp.
		F3N(ower supply	h the Y	′okoga	awa E		-
F3NC32-ON/F	C 3NC34-ON	F3N(C34-C	N Coni	nection wit		′okoga	awa E	Iectric Co Driver MINAS E s	- r]
PLO	C 3NC34-ON		C34-C	N Coni	ower supply				Drive MINAS E s	r veries
F3NC32-ON/F	C 3NC34-ON	F3N (4a 3a	C34-C	N Coni	nection wit		22 23	PULS1 PULS2	Drive	- r]
F3NC32-ON/F (Yokogawa Ele	C 3NC34-ON	4a 3a 6a	C34-C	N Coni	nection wit		22 23 24	PULS1 PULS2 SIGN1	Drive MINAS E s	r eries CW pulse command input CCW pulse command
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B	C 3NC34-ON	4a 3a	C34-C	N Coni	nection wit		22 23	PULS1 PULS2	Driver	CW pulse command input CCW pulse command input
Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input -	SINC34-ON setric Corp.)	4a 3a 6a 5a 19a 20a	C34-C	N Coni	nection wit		22 23 24 25 19 20	PULS1 PULS2 SIGN1 SIGN2 OZ+ OZ-	Driver MINAS E s 220 Ω 220 Ω 220 Ω 220 Ω 220 Ω 220 Ω 220 Ω	r eries CW pulse command input CCW pulse command
Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input -	SINC34-ON setric Corp.)	4a 3a 6a 5a 19a	C34-C	N Coni	nection wit		22 23 24 25 19	PULS1 PULS2 SIGN1 SIGN2 OZ+	Driver MINAS E s 220 Ω ¥* 220 Ω ¥* 220 Ω ¥*	CW pulse command input CCW pulse command input
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND	SINC34-ON setric Corp.)	4a 3a 6a 5a 19a 20a	C34-C	N Coni	nection wit		22 23 24 25 19 20 14 1 4	PULS1 PULS2 SIGN1 SIGN2 OZ+ OZ- GND COM+ CL	Driver MINAS E s 220 Ω ¥* 220 Ω ¥* 220 Ω ¥* 37 77 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND Deviation counter eset output	3NC34-ON ectric Corp.)	4a 3a 6a 5a 19a 20a 17a	C34-C	N Coni	eld wire varies with e		22 23 24 25 19 20 14 1	PULS1 PULS2 SIGN1 SIGN2 OZ+ OZ- GND COM+	Driver MINAS E s 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Counter clear input Servo-ON input Gain switching/Torque
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND Deviation counter eset output External power supply 24 External power supply 24	S 3NC34-ON ectric Corp.) 240Ω 240Ω VDC input	4a 3a 6a 5a 19a 20a 17a 14a	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 4 2 5 3	PULS1 PULS2 SIGN1 SIGN2 OZ+ OZ- GND COM+ CL SRV-ON GAIN/TC A-CLR	Driver MINAS E s 220 Ω 220 Ω 220 Ω 77 220 Ω 77 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Counter clear input Servo-ON input Gain switching/Torque limit switching input Alarm clear input CCW over-travel
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input - Pulse output GND Deviation counter eset output External power supply 24 External power supply 24 GND)	S 3NC34-ON ectric Corp.) 240Ω 240Ω VDC input	4a 3a 6a 5a 19a 20a 17a 14a 14a	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 4 ↓ 2 5	PULS1 PULS2 SIGN1 SIGN2 OZ+ OZ- GND COM+ CL SRV-ON GAIN/TC	Driver MINAS E s 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Servo-ON input Gain switching/Torque limit switching/Torque limit switching/Torque limit switching/Torque prohibit input CCW over-travel prohibit input CW over-travel
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND Deviation counter eset output External power supply 24 External power supply 24 GND) Contact point input COM Negative direction	S 3NC34-ON ectric Corp.) 240Ω 240Ω VDC input	4a 3a 6a 5a 19a 20a 17a 14a 1a 1b 13a	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 4 5 5 3 3 8	PULS1 PULS2 SIGN1 SIGN2 OZ+ OZ- GND COM+ CL SRV-ON GAIN/TC A-CLR CCWL	Driver MINAS E s 220 Ω 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Servo-ON input Gain switching/Torque limit switching/Torque limit switching input Alarm clear input CCW over-travel prohibit input
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND Deviation counter eset output External power supply 24 External power supply 24 GND) Contact point input COM Negative direction imit input	3NC34-ON sectric Corp.) 240Ω VDC input VDC input VDC input	4a 3a 6a 5a 19a 20a 17a 14a 14a 1a 1b	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 • 2 • 5 • 3 • 8 • 7	PULS1 PULS2 SIGN1 SIGN2 OZ- GND COM+ CL SRV-ON GAIN/TC A-CLR CCWL CWL	Driver MINAS E s 220 Ω 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Servo-ON input Gain switching/Torque limit switching/Torque limit switching/Torque limit switching/Torque prohibit input CW over-travel prohibit input Servo-Alarm output Positioning complete
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A	SINC34-ON setric Corp.)	4a 3a 6a 5a 19a 20a 17a 14a 1a 1b 13a	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 20 14 1 4 5 3 8 * 7 9 9	PULS1 PULS2 SIGN1 SIGN2 OZ- GND COM+ CL SRV-ON GAIN/TC A-CLR CCWL CWL ALM	Driver MINAS E s 220 Ω 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Servo-ON input Gain switching/Torque limit switching/Torque limit switching/Torque limit switching/Torque prohibit input CCW over-travel prohibit input
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND Deviation counter eset output External power supply 24 External power supply 24 GND) Contact point input COM Negative direction imit input Positive direction	3NC34-ON sectric Corp.) 240Ω VDC input VDC input VDC input	4a 3a 5a 19a 20a 17a 14a 14a 1b 13a 9a	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 2 5 3 8 * 7 9	PULS1 PULS2 SIGN1 SIGN2 OZ- GND COM+ CL SRV-ON GAIN/TC A-CLR CCWL CWL ALM	Driver MINAS E s 220 Ω 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	CW pulse command input CCW pulse command input CCW pulse command input Z-phase output Servo-ON input Gain switching/Torque limit switching/Torque limit switching/Torque limit switching/Torque prohibit input CW over-travel prohibit input Servo-Alarm output Positioning complete
PLC F3NC32-ON/F (Yokogawa Ele Pulse output A Pulse output B Encoder Z-phase input + Encoder Z-phase input – Pulse output GND Deviation counter eset output External power supply 24 External power supply 24 GND) Contact point input COM Negative direction imit input	2 3NC34-ON ectric Corp.)	4a 3a 6a 5a 19a 20a 17a 14a 1a 1b 13a 13a 9a 8a	C34-C	N Coni	eld wire varies with e	quipment.	22 23 24 25 19 20 14 1 4 20 14 1 4 5 3 8 * 7 9 9	PULS1 PULS2 SIGN1 SIGN2 OZ- GND COM+ CL SRV-ON GAIN/TC A-CLR CCWL CWL ALM	Driver MINAS E s 220 Ω 220 Ω 220 Ω 220 Ω 47 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ 4.7 kΩ	

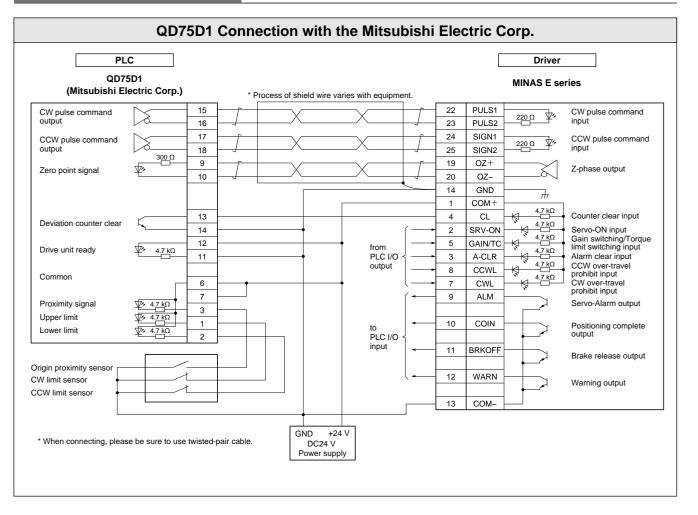




E Series

Connection Between Driver and Controller

Connection Between Driver and Controller



Part No.	Title	Page
DV0P0770	Connector kit for external peripheral equipment	226
DV0P0800	Interface cable	227
DV0P1450	Surge absorber (3-phase)	240
DV0P1450 DV0P1460	Ferite core for signal lines	-
	Communication cable	240
DV0P1960		227
DV0P220	Reactor	196,22
DV0P221	Reactor	196
DV0P222	Reactor	196
DV0P223	Reactor	196
DV0P224	Reactor	196
DV0P225	Reactor	196
DV0P227	Reactor	196,22
DV0P228	Reactor	196,22
DV0P2870	Connector kit for power supply connection	225
DV0P2890	External regenerative resistor	228
DV0P2891	External regenerative resistor	228
DV0P2990	Battery for absolute encoder	194
DV0P3410	Noise filter	236
DV0P3670	Connector kit for motor/encoder connection	225
DV0P37300	Cable set (3 m)	224
DV0P3811	DIN rail mounting unit	224
DV0P39200	Cable set (5 m)	220
DV0P4120	Interface conversion cable	263
DV0P4121	Interface conversion cable	263
DV0P4130	Interface conversion cable	263
DV0P4131	Interface conversion cable	263
DV0P4132	Interface conversion cable	263
DV0P4160	Noise filter	240
DV0P4170	Noise filter	236
DV0P4190	Surge absorber (Single phase)	240
DV0P4220	Noise Filter	236
DV0P4280	External regenerative resistor: 50 Ω 25 W	197
DV0P4281	External regenerative resistor: 100 Ω 25 W	197
DV0P4282	External regenerative resistor: $25 \Omega 50 W$	197
DV0P4283	External regenerative resistor: $50 \Omega 50 W$	197
		-
DV0P4284	External regenerative resistor: 30 Ω100 W	197
DV0P4285	External regenerative resistor: 20 Ω130 W	197
DV0P4290	Connector kit for motor/encoder connection	186
DV0P4310	Connector kit for motor/encoder connection	191
DV0P4320	Connector kit for motor/encoder connection	192
DV0P4330	Connector kit for motor/encoder connection	191
DV0P4340	Connector kit for motor/encoder connection	192
DV0P4350	Interface connector	184
DV0P4360	Interface cable	182
DV0P4420	Console	227
DV0P4430	Battery box	194
	Setup support software "PANATERM" for	-
DV0P4460	MINAS series AC servo motor & driver	222
DV0PM20010	Connector Kit: Encoder	184
DV0PM20024	Connector kit: RS485, 232	183
DV0PM20025	Connector kit: Safety	183
DV0PM20026	Connector kit: External scale	184
	Connector for power supply input connection	-
DV0PM20032	(A-frame to D-frame (Single row type))	185
	Connector for power supply input connection	
DV0PM20033	(A-frame to D-frame (Double row type))	185
	Connector for motor connection	400
DV0PM20034	(A-frame to D-frame)	186
DV0PM20035	Connector kit for motor/encoder connection	187
DV0PM20036	Connector kit for motor/encoder connection	191
DV0PM20037	Connector kit for motor/encoder connection	192
DV0PM20038	Connector kit for motor/encoder connection	191
DV0PM20039	Connector kit for motor/encoder connection	192
DV0PM20040	Connector kit for motor/brake connection	192
DV0PM20042	Noise filter	236
DV0PM20043 DV0PM20044	Noise filter Connector for power supply input connection	236 185
DV0PM20045	(E-frame) Connector for regenerative resistor	185
DV0PM20045	(E-frame 200 V/400 V common Connector for motor connection	186
	(E-frame 200 V/400 V common)	100
DV0PM20047	Reactor	196
	Safety by-pass plug	183

DV0P Part No.	Title	Page
DV0PM20100	Mounting bracket for A-frame and B-frame	195
DV0PM20101	Mounting bracket for C-frame and D-frame	195
DV0PM24581	Connector kit for motor/encoder connection	188
DV0PM24582	Connector kit for motor/encoder connection	188
DV0PM24583	Connector kit for motor/encoder connection	189
DV0PM24584	Connector kit for motor/encoder connection	190
DV0PM24585	Connector kit for motor/encoder connection	189
DV0PM24585		
DV0PM24586	Connector kit for motor/encoder connection	190
	Connector kit for motor/encoder connection	189
DV0PM24588	Connector kit for motor/encoder connection	190
DV0PM24589	Connector kit for motor/encoder connection	189
DV0PM24590	Connector kit for motor/encoder connection	190
MADL	T:41 -	Demo
Part No.	Title	Page
MADLN01SE	A6SE series driver: A-frame	35,36
MADLN05SE	A6SE series driver: A-frame	35,36
MADLN11SE	A6SE series driver: A-frame	35,36
MADLN15SE	A6SE series driver: A-frame	35,36
MADLN01SF	A6SF series driver: A-frame	33,34
MADLN05SF	A6SF series driver: A-frame	33,34
MADLN11SF	A6SF series driver: A-frame	33,34
MADLN15SF	A6SF series driver: A-frame	33,34
MADLN01SG	A6SG series driver: A-frame	35,36
MADLN05SG	A6SG series driver: A-frame	35,36
MADLN11SG	A6SG series driver: A-frame	35,36
MADLN15SG	A6SG series driver: A-frame	35,36
MBDL		
Part No.	Title	Page
MBDLN21SE	A6SE series driver: B-frame	35,36
MBDLN25SE	A6SE series driver: B-frame	35,36
MBDLT21SF	A6SF series driver: B-frame	33,34
		,
MBDLT25SF MBDLT21SG	A6SF series driver: B-frame A6SG series driver: B-frame	33,34
		35,36
MBDLT25SG	A6SG series driver: B-frame	35,36
MCDI		
MCDL Dort No	T:41-	Dama
Part No.	Title	Page
MCDLN31SE	A6SE series driver: C-frame	35,36
MCDLN35SE	A6SE series driver: C-frame	35,36
MCDLT31SF	A6SF series driver: C-frame	33,34
MCDLT35SF	A6SF series driver: C-frame	33,34
MCDLT31SG	A6SG series driver: C-frame	35,36
MCDLT35SG	A6SG series driver: C-frame	35,36
MDDL		
Part No.	Title	Page
MDDLN45SE	A6SE series driver: D-frame	35,36
MDDLN55SE	A6SE series driver: D-frame	35,36
MDDLT45SF	A6SF series driver: D-frame	33,34
MDDLT55SF	A6SF series driver: D-frame	33,34
MDDLT45SG	A6SG series driver: D-frame	35,36
MDDLT55SG	A6SG series driver: D-frame	35,36
		-
MDMF		
Part No.	Title	Page
MDMF102L1C5	MDMF 1.0 kW Absolute encoder	89
MDMF102L1C6	MDMF 1.0 kW Absolute encoder	89
MDMF102L1C6M	MDMF 1.0 kW Absolute encoder	148
MDMF102L1C7	MDMF 1.0 kW Absolute encoder	89
MDMF102L1C8	MDMF 1.0 kW Absolute encoder	89
MDMF102L1C8	MDMF 1.0 kW Absolute encoder	148
		-
MDMF102L1D5	MDMF 1.0 kW Absolute encoder	89
	MDMF 1.0 kW Absolute encoder	89
MDMF102L1D6		
MDMF102L1D6M	MDMF 1.0 kW Absolute encoder	148
MDMF102L1D6M MDMF102L1D7	MDMF 1.0 kW Absolute encoder	89
MDMF102L1D6M MDMF102L1D7 MDMF102L1D8	MDMF 1.0 kW Absolute encoder MDMF 1.0 kW Absolute encoder	89 89
MDMF102L1D6M MDMF102L1D7 MDMF102L1D8	MDMF 1.0 kW Absolute encoder	89
MDMF102L1D6M	MDMF 1.0 kW Absolute encoder MDMF 1.0 kW Absolute encoder	89 89

MDMF 1.0 kW Absolute encoder

MDMF102L1G6M MDMF 1.0 kW Absolute encoder

E Series

A6 Family

89

148

MDMF102L1G6

MDMF			MDMF	
Part No.	Title	Page	Part No.	Title
MDMF102L1G7	MDMF 1.0 kW Absolute encoder	89	MDMF302L1G7	MDMF 3.0 kW Absolute encoder
MDMF102L1G8	MDMF 1.0 kW Absolute encoder	89	MDMF302L1G8	MDMF 3.0 kW Absolute encoder
MDMF102L1G8M	MDMF 1.0 kW Absolute encoder	148	MDMF302L1G8M	MDMF 3.0 kW Absolute encoder
MDMF102L1H5	MDMF 1.0 kW Absolute encoder	89	MDMF302L1H5	MDMF 3.0 kW Absolute encoder
MDMF102L1H6	MDMF 1.0 kW Absolute encoder	89	MDMF302L1H6	MDMF 3.0 kW Absolute encoder
MDMF102L1H6M	MDMF 1.0 kW Absolute encoder	148	MDMF302L1H6M	MDMF 3.0 kW Absolute encoder
MDMF102L1H7	MDMF 1.0 kW Absolute encoder	89	MDMF302L1H7	MDMF 3.0 kW Absolute encoder
MDMF102L1H8	MDMF 1.0 kW Absolute encoder	89	MDMF302L1H8	MDMF 3.0 kW Absolute encoder
MDMF102L1H8M	MDMF 1.0 kW Absolute encoder	148	MDMF302L1H8M	MDMF 3.0 kW Absolute encoder
MDMF152L1C5	MDMF 1.5 kW Absolute encoder	90	MDMF402L1C5	MDMF 4.0 kW Absolute encoder
MDMF152L1C6	MDMF 1.5 kW Absolute encoder	90	MDMF402L1C6	MDMF 4.0 kW Absolute encoder
MDMF152L1C6M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1C6M	MDMF 4.0 kW Absolute encoder
MDMF152L1C7	MDMF 1.5 kW Absolute encoder	90	MDMF402L1C7	MDMF 4.0 kW Absolute encoder
MDMF152L1C8	MDMF 1.5 kW Absolute encoder	90	MDMF402L1C8	MDMF 4.0 kW Absolute encoder
MDMF152L1C8M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1C8M	MDMF 4.0 kW Absolute encoder
MDMF152L1D5	MDMF 1.5 kW Absolute encoder	90	MDMF402L1D5	MDMF 4.0 kW Absolute encoder
MDMF152L1D6	MDMF 1.5 kW Absolute encoder	90	MDMF402L1D6	MDMF 4.0 kW Absolute encoder
MDMF152L1D6M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1D6M	MDMF 4.0 kW Absolute encoder
MDMF152L1D7	MDMF 1.5 kW Absolute encoder	90	MDMF402L1D7	MDMF 4.0 kW Absolute encoder
MDMF152L1D8	MDMF 1.5 kW Absolute encoder	90	MDMF402L1D8	MDMF 4.0 kW Absolute encoder
MDMF152L1D8M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1D8M	MDMF 4.0 kW Absolute encoder
MDMF152L1G5	MDMF 1.5 kW Absolute encoder	90	MDMF402L1G5	MDMF 4.0 kW Absolute encoder
MDMF152L1G6	MDMF 1.5 kW Absolute encoder	90	MDMF402L1G6	MDMF 4.0 kW Absolute encoder
MDMF152L1G6M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1G6M	MDMF 4.0 kW Absolute encoder
MDMF152L1G7	MDMF 1.5 kW Absolute encoder	90	MDMF402L1G7	MDMF 4.0 kW Absolute encoder
MDMF152L1G8	MDMF 1.5 kW Absolute encoder	90	MDMF402L1G8	MDMF 4.0 kW Absolute encoder
MDMF152L1G8M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1G8M	MDMF 4.0 kW Absolute encoder
MDMF152L1H5	MDMF 1.5 kW Absolute encoder	90	MDMF402L1H5	MDMF 4.0 kW Absolute encoder
MDMF152L1H6	MDMF 1.5 kW Absolute encoder	90	MDMF402L1H6	MDMF 4.0 kW Absolute encoder
MDMF152L1H6M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1H6M	MDMF 4.0 kW Absolute encoder
MDMF152L1H7	MDMF 1.5 kW Absolute encoder	90	MDMF402L1H7	MDMF 4.0 kW Absolute encoder
MDMF152L1H8	MDMF 1.5 kW Absolute encoder	90	MDMF402L1H8	MDMF 4.0 kW Absolute encoder
MDMF152L1H8M	MDMF 1.5 kW Absolute encoder	149	MDMF402L1H8M	MDMF 4.0 kW Absolute encoder
MDMF202L1C5	MDMF 2.0 kW Absolute encoder	91	MDMF502L1C5	MDMF 5.0 kW Absolute encoder
MDMF202L1C5	MDMF 2.0 kW Absolute encoder	91	MDMF502L1C6	MDMF 5.0 kW Absolute encoder
MDMF202L1C6M	MDMF 2.0 kW Absolute encoder	150	MDMF502L1C6M	MDMF 5.0 kW Absolute encoder
MDMF202L1C0M	MDMF 2.0 kW Absolute encoder	91	MDMF502L1C7	MDMF 5.0 kW Absolute encoder
MDMF202L1C7	MDMF 2.0 kW Absolute encoder	91	MDMF502L1C8	MDMF 5.0 kW Absolute encoder
MDMF202L1C8	MDMF 2.0 kW Absolute encoder			MDMF 5.0 kW Absolute encoder
MDMF202L1C8M MDMF202L1D5	MDMF 2.0 kW Absolute encoder	150 91	MDMF502L1C8M MDMF502L1D5	MDMF 5.0 kW Absolute encoder
MDMF202L1D6 MDMF202L1D6M	MDMF 2.0 kW Absolute encoder MDMF 2.0 kW Absolute encoder	91	MDMF502L1D6 MDMF502L1D6M	MDMF 5.0 kW Absolute encoder MDMF 5.0 kW Absolute encoder
	MDMF 2.0 kW Absolute encoder	91		
MDMF202L1D7		-	MDMF502L1D7	MDMF 5.0 kW Absolute encoder
MDMF202L1D8	MDMF 2.0 kW Absolute encoder	91	MDMF502L1D8	MDMF 5.0 kW Absolute encoder
MDMF202L1D8M	MDMF 2.0 kW Absolute encoder	150	MDMF502L1D8M	MDMF 5.0 kW Absolute encoder
MDMF202L1G5	MDMF 2.0 kW Absolute encoder	91	MDMF502L1G5	MDMF 5.0 kW Absolute encoder
MDMF202L1G6	MDMF 2.0 kW Absolute encoder	91	MDMF502L1G6	MDMF 5.0 kW Absolute encoder
MDMF202L1G6M	MDMF 2.0 kW Absolute encoder	150	MDMF502L1G6M	MDMF 5.0 kW Absolute encoder
MDMF202L1G7	MDMF 2.0 kW Absolute encoder	91	MDMF502L1G7	MDMF 5.0 kW Absolute encoder
MDMF202L1G8	MDMF 2.0 kW Absolute encoder	91	MDMF502L1G8	MDMF 5.0 kW Absolute encoder
MDMF202L1G8M	MDMF 2.0 kW Absolute encoder	150	MDMF502L1G8M	MDMF 5.0 kW Absolute encoder
MDMF202L1H5	MDMF 2.0 kW Absolute encoder	91	MDMF502L1H5	MDMF 5.0 kW Absolute encoder
MDMF202L1H6	MDMF 2.0 kW Absolute encoder	91	MDMF502L1H6	MDMF 5.0 kW Absolute encoder
MDMF202L1H6M	MDMF 2.0 kW Absolute encoder	150	MDMF502L1H6M	MDMF 5.0 kW Absolute encoder
MDMF202L1H7	MDMF 2.0 kW Absolute encoder	91	MDMF502L1H7	MDMF 5.0 kW Absolute encoder
MDMF202L1H8	MDMF 2.0 kW Absolute encoder	91	MDMF502L1H8	MDMF 5.0 kW Absolute encoder
MDMF202L1H8M	MDMF 2.0 kW Absolute encoder	150	MDMF502L1H8M	MDMF 5.0 kW Absolute encoder
MDMF302L1C5	MDMF 3.0 kW Absolute encoder	92		
MDMF302L1C6	MDMF 3.0 kW Absolute encoder	92	MEDL	
MDMF302L1C6M	MDMF 3.0 kW Absolute encoder	151	Part No.	Title
MDMF302L1C7	MDMF 3.0 kW Absolute encoder	92	MEDLN83SE	A6 SE series driver: E-frame
MDMF302L1C8	MDMF 3.0 kW Absolute encoder	92	MEDLT83SF	A6 SF series driver: E-frame
MDMF302L1C8M	MDMF 3.0 kW Absolute encoder	151	MEDLT83SG	A6 SG series driver: E-frame
MDMF302L1D5	MDMF 3.0 kW Absolute encoder	92	L	
MDMF302L1D6	MDMF 3.0 kW Absolute encoder	92	MFDL	
MDMF302L1D6M	MDMF 3.0 kW Absolute encoder	151	Part No.	Title
MDMF302L1D7	MDMF 3.0 kW Absolute encoder	92	MFDLNA3SE	A6 SE series driver: F-frame
MDMF302L1D7	MDMF 3.0 kW Absolute encoder	92	MFDLNB3SE	A6 SE series driver: F-frame
MDMF302L1D8	MDMF 3.0 kW Absolute encoder	151	MFDLNA3SF	A6 SF series driver: F-frame
MDMF302L1D8M MDMF302L1G5	MDMF 3.0 kW Absolute encoder	92		A6 SF series driver: F-frame
MDMF302L1G5	MDMF 3.0 kW Absolute encoder		MFDLNB3SF	A6 SG series driver: F-frame
	WDWI 5.0 KW ADSOIULE EIICOUEI	92	MFDLNA3SG	Au ou senes unver. F-frame
MDMF302L1G6M	MDMF 3.0 kW Absolute encoder	151	MFDLNB3SG	A6 SG series driver: F-frame

Page

Page

35.36

33,34 35,36

Page

35,36

35,36

33,34

33,34

35,36

35,36

MFECA Part No.	Title	Page	MFMCA Part No.	Title	De
		Page			Pa
MFECA0030EAD	Encoder cable (without battery box)	171	MFMCA0030AEB	Motor Cable	22
IFECA0030EAE	Encoder cable (with battery box)	171	MFMCA0030EED	Motor Cable (without Brake)	17
IFECA0030EAM	Encoder cable (without battery box)	224	MFMCA0030NJD	Motor Cable (without Brake)	17
IFECA0030EPD	Encoder cable (without battery box)	173	MFMCA0030NKD	Motor Cable (without Brake)	17
FECA0030EPE	Encoder cable (with battery box)	173	MFMCA0030RJD	Motor Cable (without Brake)	1
IFECA0030ESD	Encoder cable (without battery box)	173	MFMCA0030RKD	Motor Cable (without Brake)	1
IFECA0030ESE	Encoder cable (with battery box)	174	MFMCA0030UFD	Motor Cable (without Brake)	1
IFECA0030ETD	Encoder cable (without battery box)	174	MFMCA0030UGD	Motor Cable (without Brake)	1
IFECA0030ETE	Encoder cable (with battery box)	174	MFMCA0030VFD	Motor Cable (with Brake)	1
/IFECA0030MJD	Encoder cable (without battery box)	172	MFMCA0030VGD	Motor Cable (with Brake)	1
IFECA0030MJE	Encoder cable (with battery box)	172	MFMCA0030WFD	Motor Cable (without Brake)	1
IFECA0030MKD	Encoder cable (without battery box)	172	MFMCA0030WGD	Motor Cable (without Brake)	1
IFECA0030MKE	Encoder cable (with battery box)	172	MFMCA0030XFD	Motor Cable (with Brake)	1
IFECA0030TJD	Encoder cable (without battery box)	172	MFMCA0030XGD	Motor Cable (with Brake)	1
IFECA0030TJE	Encoder cable (with battery box)	172	MFMCA0032FCD	Motor Cable (with Brake)	1
IFECA0030TKD	Encoder cable (without battery box)	172	MFMCA0032FUD	Motor Cable (with Brake)	1
IFECA0030TKE	Encoder cable (with battery box)	172	MFMCA0033ECT	Motor Cable (with Brake)	1
IFECA0050EAD	Encoder cable (with battery box)	172	MFMCA0033EUT	Motor Cable (without Brake)	1
IFECA0050EAE		171		, , ,	
	Encoder cable (with battery box)		MFMCA0033FCT	Motor Cable (with Brake)	1
IFECA0050EAM	Encoder cable (without battery box)	224	MFMCA0033FUT	Motor Cable (with Brake)	1
IFECA0050EPD	Encoder cable (without battery box)	173	MFMCA0037UFD	Motor Cable (without Brake)	1
IFECA0050EPE	Encoder cable (without battery box)	173	MFMCA0037UGD	Motor Cable (without Brake)	1
IFECA0050ESD	Encoder cable (without battery box)	173	MFMCA0037VFD	Motor Cable (with Brake)	1
IFECA0050ESE	Encoder cable (with battery box)	174	MFMCA0037VGD	Motor Cable (with Brake)	1
IFECA0050ETD	Encoder cable (without battery box)	174	MFMCA0050AEB	Motor Cable	2
IFECA0050ETE	Encoder cable (with battery box)	174	MFMCA0050EED	Motor Cable (without Brake)	1
/IFECA0050MJD	Encoder cable (without battery box)	172	MFMCA0050NJD	Motor Cable (without Brake)	1
IFECA0050MJE	Encoder cable (with battery box)	172	MFMCA0050NKD	Motor Cable (without Brake)	1
IFECA0050MKD	Encoder cable (without battery box)	172	MFMCA0050RJD	Motor Cable (without Brake)	1
IFECA0050MKE	Encoder cable (with battery box)	172	MFMCA0050RKD	Motor Cable (without Brake)	1
IFECA0050TJD	Encoder cable (without battery box)	172	MFMCA0050UFD	Motor Cable (without Brake)	1
IFECA0050TJE	Encoder cable (with battery box)	172	MFMCA0050UGD	Motor Cable (without Brake)	1
IFECA0050TKD	Encoder cable (with battery box)	172	MFMCA0050VFD	Motor Cable (with Brake)	1
		172		, ,	
AFECA0050TKE	Encoder cable (with battery box)		MFMCA0050VGD	Motor Cable (with Brake)	1
AFECA0100EAD	Encoder cable (without battery box)	171	MFMCA0050WFD	Motor Cable (without Brake)	1
IFECA0100EAE	Encoder cable (with battery box)	171	MFMCA0050WGD	Motor Cable (without Brake)	1
IFECA0100EAM	Encoder cable (without battery box)	224	MFMCA0050XFD	Motor Cable (with Brake)	1
IFECA0100EPD	Encoder cable (without battery box)	173	MFMCA0050XGD	Motor Cable (with Brake)	1
IFECA0100EPE	Encoder cable (without battery box)	173	MFMCA0052FCD	Motor Cable (with Brake)	1
IFECA0100ESD	Encoder cable (without battery box)	173	MFMCA0052FUD	Motor Cable (with Brake)	1
/IFECA0100ESE	Encoder cable (with battery box)	174	MFMCA0053ECT	Motor Cable (without Brake)	1
/IFECA0100ETD	Encoder cable (without battery box)	174	MFMCA0053EUT	Motor Cable (without Brake)	1
IFECA0100ETE	Encoder cable (with battery box)	174	MFMCA0053FCT	Motor Cable (with Brake)	1
IFECA0100MJD	Encoder cable (without battery box)	172	MFMCA0053FUT	Motor Cable (with Brake)	1
IFECA0100MJE	Encoder cable (with battery box)	172	MFMCA0057UFD	Motor Cable (without Brake)	1
IFECA0100MKD	Encoder cable (without battery box)	172	MFMCA0057UGD	Motor Cable (without Brake)	1
IFECA0100MKE	Encoder cable (with battery box)	172	MFMCA0057VFD	Motor Cable (with Brake)	1
IFECA0100TJD	Encoder cable (with battery box)	172	MFMCA0057VGD	Motor Cable (with Brake)	1
				, ,	
IFECA0100TJE	Encoder cable (with battery box)	172	MFMCA0100AEB	Motor Cable	2
AFECA0100TKD	Encoder cable (without battery box)	172	MFMCA0100EED	Motor Cable (without Brake)	1
AFECA0100TKE	Encoder cable (with battery box)	172	MFMCA0100NJD	Motor Cable (without Brake)	1
IFECA0200EAD	Encoder cable (without battery box)	171	MFMCA0100NKD	Motor Cable (without Brake)	1
IFECA0200EAE	Encoder cable (with battery box)	171	MFMCA0100RJD	Motor Cable (without Brake)	1
IFECA0200EAM	Encoder cable (without battery box)	224	MFMCA0100RKD	Motor Cable (without Brake)	1
IFECA0200EPD	Encoder cable (without battery box)	173	MFMCA0100UFD	Motor Cable (without Brake)	1
IFECA0200EPE	Encoder cable (without battery box)	173	MFMCA0100UGD	Motor Cable (without Brake)	1
IFECA0200ESD	Encoder cable (without battery box)	173	MFMCA0100VFD	Motor Cable (with Brake)	1
IFECA0200ESE	Encoder cable (with battery box)	174	MFMCA0100VGD	Motor Cable (with Brake)	1
IFECA0200ETD	Encoder cable (without battery box)	174	MFMCA0100WFD	Motor Cable (without Brake)	1
IFECA0200ETE	Encoder cable (with battery box)	174	MFMCA0100WGD	, , ,	1
IFECA0200MJD	Encoder cable (without battery box)	172	MFMCA0100XFD	Motor Cable (with Brake)	1
IFECA0200MJE	Encoder cable (with battery box)	172	MFMCA0100XGD	Motor Cable (with Brake)	1
IFECA0200MKD	Encoder cable (with battery box)	172	MFMCA0100XGD	Motor Cable (with Brake)	1
				, ,	
IFECA0200MKE	Encoder cable (with battery box)	172	MFMCA0102FUD	Motor Cable (with Brake)	1
IFECA0200TJD	Encoder cable (without battery box)	172	MFMCA0103ECT	Motor Cable (without Brake)	1
IFECA0200TJE	Encoder cable (with battery box)	172	MFMCA0103EUT	Motor Cable (without Brake)	1
IFECA0200TKD	Encoder cable (without battery box)	172	MFMCA0103FCT	Motor Cable (with Brake)	1
IFECA0200TKE	Encoder cable (with battery box)	172	MFMCA0103FUT	Motor Cable (with Brake)	1
			MFMCA0107UFD	Motor Cable (without Brake)	1
			MFMCA0107UGD	Motor Cable (without Brake)	1
			MFMCA0107VFD	Motor Cable (with Brake)	1
			MFMCA0107VGD	· · · ·	1

MFMCA0107VGD Motor Cable (with Brake)

MFMCA		
Part No.	Title	Page
MFMCA0200AEB	Motor Cable	224
MFMCA0200EED	Motor Cable (without Brake)	175
MFMCA0200NJD	Motor Cable (without Brake)	175
MFMCA0200NKD	Motor Cable (without Brake)	175
MFMCA0200RJD	Motor Cable (without Brake)	175
MFMCA0200RKD	Motor Cable (without Brake)	175
MFMCA0200UFD	Motor Cable (without Brake)	176
MFMCA0200UGD	Motor Cable (without Brake)	176
MFMCA0200VFD	Motor Cable (with Brake)	178
MFMCA0200VGD	Motor Cable (with Brake)	178
MFMCA0200WFD	Motor Cable (without Brake)	176
MFMCA0200WGD	Motor Cable (without Brake)	176
MFMCA0200XFD	Motor Cable (with Brake)	178
MFMCA0200XGD	Motor Cable (with Brake)	178
MFMCA0202FCD	Motor Cable (with Brake)	179
MFMCA0202FUD	Motor Cable (with Brake)	179
MFMCA0203ECT	Motor Cable (without Brake)	177
MFMCA0203EUT	Motor Cable (without Brake)	177
MFMCA0203FCT	Motor Cable (with Brake)	180
MFMCA0203FUT	Motor Cable (with Brake)	180
MFMCA0207UFD	Motor Cable (without Brake)	175
MFMCA0207UGD	Motor Cable (without Brake)	175
MFMCA0207VFD	Motor Cable (with Brake)	178
MFMCA0207VGD	Motor Cable (with Brake)	178

MFMCB		
Part No.	Title	Page
MFMCB0030GET	Brake cable	224
MFMCB0030PJT	Brake cable	181
MFMCB0030PKT	Brake cable	181
MFMCB0030SJT	Brake cable	181
MFMCB0030SKT	Brake cable	181
MFMCB0050GET	Brake cable	224
MFMCB0050PJT	Brake cable	181
MFMCB0050PKT	Brake cable	181
MFMCB0050SJT	Brake cable	181
MFMCB0050SKT	Brake cable	181
MFMCB0100GET	Brake cable	224
MFMCB0100PJT	Brake cable	181
MFMCB0100PKT	Brake cable	181
MFMCB0100SJT	Brake cable	181
MFMCB0100SKT	Brake cable	181
MFMCB0200GET	Brake cable	224
MFMCB0200PJT	Brake cable	181
MFMCB0200PKT	Brake cable	181
MFMCB0200SJT	Brake cable	181
MFMCB0200SKT	Brake cable	181

MFMCD		
Part No.	Title	Page
MFMCD0032ECD	Motor cable (without brake)	176
MFMCD0032EUD	Motor cable (without brake)	176
MFMCD0052ECD	Motor cable (without brake)	176
MFMCD0052EUD	Motor cable (without brake)	176
MFMCD0102ECD	Motor cable (without brake)	176
MFMCD0102EUD	Motor cable (without brake)	176
MFMCD0202ECD	Motor cable (without brake)	176
MFMCD0202EUD	Motor cable (without brake)	176

MFMCE		
Part No.	Title	Page
MFMCE0032ECD	Motor cable (without brake)	177
MFMCE0032EUD	Motor cable (without brake)	177
MFMCE0032FCD	Motor cable (with brake)	180
MFMCE0032FUD	Motor Cable (with Brake)	179
MFMCE0052ECD	Motor Cable (without Brake)	177
MFMCE0052EUD	Motor Cable (without Brake)	177
MFMCE0052FCD	Motor Cable (with Brake)	180
MFMCE0052FUD	Motor Cable (with Brake)	179
MFMCE0102ECD	Motor Cable (without Brake)	177
MFMCE0102EUD	Motor Cable (without Brake)	177
MFMCE0102FCD	Motor Cable (with Brake)	180

MFMCE		
Part No.	Title	Page
MFMCE0102FUD	Motor Cable (with Brake)	179
MFMCE0202ECD	Motor Cable (without Brake)	177
MFMCE0202EUD	Motor Cable (without Brake)	177
MFMCE0202FCD	Motor Cable (with Brake)	180
MFMCE0202FUD	Motor Cable (with Brake)	179

175			
176		nertia/Low speed high torque)	
176	Part No.	Title	Page
178	MGMF092L1C5	MGMF 0.85 kW Absolute encoder	95
178	MGMF092L1C6	MGMF 0.85 kW Absolute encoder	95
176	MGMF092L1C6M	MGMF 0.85 kW Absolute encoder	154
176	MGMF092L1C7	MGMF 0.85 kW Absolute encoder	95
178	MGMF092L1C8	MGMF 0.85 kW Absolute encoder	95
178	MGMF092L1C8M	MGMF 0.85 kW Absolute encoder	154
179	MGMF092L1D5	MGMF 0.85 kW Absolute encoder	95
179	MGMF092L1D6	MGMF 0.85 kW Absolute encoder	95
177	MGMF092L1D6M	MGMF 0.85 kW Absolute encoder	154
177	MGMF092L1D7	MGMF 0.85 kW Absolute encoder	95
180	MGMF092L1D8	MGMF 0.85 kW Absolute encoder	95
180	MGMF092L1D8M	MGMF 0.85 kW Absolute encoder	154
175	MGMF092L1G5	MGMF 0.85 kW Absolute encoder	95
175	MGMF092L1G6	MGMF 0.85 kW Absolute encoder	95
178	MGMF092L1G6M	MGMF 0.85 kW Absolute encoder	154
178	MGMF092L1G7	MGMF 0.85 kW Absolute encoder	95
	MGMF092L1G8	MGMF 0.85 kW Absolute encoder	95
	MGMF092L1G8M	MGMF 0.85 kW Absolute encoder	154
Page	MGMF092L1H5	MGMF 0.85 kW Absolute encoder	95
224	MGMF092L1H6	MGMF 0.85 kW Absolute encoder	95
181	MGMF092L1H6M	MGMF 0.85 kW Absolute encoder	154
181	MGMF092L1H7	MGMF 0.85 kW Absolute encoder	95
181	MGMF092L1H8	MGMF 0.85 kW Absolute encoder	95
181	MGMF092L1H8M	MGMF 0.85 kW Absolute encoder	154
224	MGMF132L1C5	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1C6	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1C6M	MGMF 1.3 kW Absolute encoder	155
181	MGMF132L1C7	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1C8	MGMF 1.3 kW Absolute encoder	96
224	MGMF132L1C8M	MGMF 1.3 kW Absolute encoder	155
181	MGMF132L1D5	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1D6	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1D6M	MGMF 1.3 kW Absolute encoder	155
181	MGMF132L1D7	MGMF 1.3 kW Absolute encoder	96
224	MGMF132L1D8	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1D8M	MGMF 1.3 kW Absolute encoder	155
181	MGMF132L1G5	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1G6	MGMF 1.3 kW Absolute encoder	96
181	MGMF132L1G6M	MGMF 1.3 kW Absolute encoder	155
	MGMF132L1G7	MGMF 1.3 kW Absolute encoder	96
	MGMF132L1G8	MGMF 1.3 kW Absolute encoder	96
Page	MGMF132L1G8M	MGMF 1.3 kW Absolute encoder	155
176	MGMF132L1H5	MGMF 1.3 kW Absolute encoder	96
176	MGMF132L1H6	MGMF 1.3 kW Absolute encoder	96
176	MGMF132L1H6M	MGMF 1.3 kW Absolute encoder	155
176	MGMF132L1H7	MGMF 1.3 kW Absolute encoder	96
176	MGMF132L1H8	MGMF 1.3 kW Absolute encoder	96
176	MGMF132L1H8M	MGMF 1.3 kW Absolute encoder	155
176	MGMF182L1C5	MGMF 1.8 kW Absolute encoder	97
176	MGMF182L1C6	MGMF 1.8 kW Absolute encoder	97
	MGMF182L1C6M	MGMF 1.8 kW Absolute encoder	156
	MGMF182L1C7	MGMF 1.8 kW Absolute encoder	97
Page	MGMF182L1C8	MGMF 1.8 kW Absolute encoder	97
177	MGMF182L1C8M	MGMF 1.8 kW Absolute encoder	156
177	MGMF182L1D5	MGMF 1.8 kW Absolute encoder	97
	MGMF182L1D6	MGMF 1.8 kW Absolute encoder	97
	MGMF182L1D6M	MGMF 1.8 kW Absolute encoder	156
180 179		MGMF 1.8 kW Absolute encoder	97
179	MGME182L1D7		97
179 177	MGMF182L1D7 MGMF182L1D8	MGME 1.8 kW Absolute encoder	
179 177 177	MGMF182L1D8	MGMF 1.8 kW Absolute encoder	
179 177 177 180	MGMF182L1D8 MGMF182L1D8M	MGMF 1.8 kW Absolute encoder	156
179 177 177 180 179	MGMF182L1D8 MGMF182L1D8M MGMF182L1G5	MGMF 1.8 kW Absolute encoder MGMF 1.8 kW Absolute encoder	156 97
179 177 177 180	MGMF182L1D8 MGMF182L1D8M	MGMF 1.8 kW Absolute encoder	156

	nertia/Low speed high torque)	Page	MHMF (High ine		Daga
Part No. MGMF182L1G8	Title MGMF 1.8 kW Absolute encoder	97	Part No. MHMF011L1S2	Title MHMF 100 W 100 V Absolute encoder	Page 75
MGMF182L1G8	MGMF 1.8 kW Absolute encoder	156	MHMF011L132	MHMF 100 W 100 V Absolute encoder	75
MGMF182L1H5	MGMF 1.8 kW Absolute encoder	97	MHMF011L1T2	MHMF 100 W 100 V Absolute encoder	75
			-		-
MGMF182L1H6	MGMF 1.8 kW Absolute encoder	97	MHMF011L1U1	MHMF 100 W 100 V Absolute encoder	75
MGMF182L1H6M	MGMF 1.8 kW Absolute encoder	156	MHMF011L1U2	MHMF 100 W 100 V Absolute encoder	75
MGMF182L1H7	MGMF 1.8 kW Absolute encoder	97	MHMF011L1U3	MHMF 100 W 100 V Absolute encoder	75
MGMF182L1H8	MGMF 1.8 kW Absolute encoder	97	MHMF011L1U4	MHMF 100 W 100 V Absolute encoder	75
MGMF182L1H8M	MGMF 1.8 kW Absolute encoder	156	MHMF011L1V1	MHMF 100 W 100 V Absolute encoder	75
MGMF292L1C5	MGMF 2.9 kW Absolute encoder	98	MHMF011L1V2	MHMF 100 W 100 V Absolute encoder	75
MGMF292L1C6	MGMF 2.9 kW Absolute encoder	98	MHMF011L1V3	MHMF 100 W 100 V Absolute encoder	75
MGMF292L1C6M	MGMF 2.9 kW Absolute encoder	157	MHMF011L1V4	MHMF 100 W 100 V Absolute encoder	75
MGMF292L1C7	MGMF 2.9 kW Absolute encoder	98	MHMF012L1A1	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1C8	MGMF 2.9 kW Absolute encoder	98	MHMF012L1A2	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1C8M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1A2M	MHMF 100 W 200 V Absolute encoder	137
MGMF292L1D5	MGMF 2.9 kW Absolute encoder	98	MHMF012L1B1	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1D6	MGMF 2.9 kW Absolute encoder	98	MHMF012L1B2	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1D6M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1B2M	MHMF 100 W 200 V Absolute encoder	137
MGMF292L1D7	MGMF 2.9 kW Absolute encoder	98	MHMF012L1C1	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1D8	MGMF 2.9 kW Absolute encoder	98	MHMF012L1C2	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1D8M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1C2M	MHMF 100 W 200 V Absolute encoder	137
MGMF292L1G5	MGMF 2.9 kW Absolute encoder	98	MHMF012L1C3	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1G6	MGMF 2.9 kW Absolute encoder	98	MHMF012L1C4	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1G6M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1C4M	MHMF 100 W 200 V Absolute encoder	137
MGMF292L1G7	MGMF 2.9 kW Absolute encoder	98	MHMF012L1D1	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1G8	MGMF 2.9 kW Absolute encoder	98	MHMF012L1D2	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1G8M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1D2M	MHMF 100 W 200 V Absolute encoder	137
MGMF292L1H5	MGMF 2.9 kW Absolute encoder	98	MHMF012L1D3	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1H6	MGMF 2.9 kW Absolute encoder	98	MHMF012L1D4	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1H6M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1D4M	MHMF 100 W 200 V Absolute encoder	137
MGMF292L1H7	MGMF 2.9 kW Absolute encoder	98	MHMF012L1S1	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1H8	MGMF 2.9 kW Absolute encoder	98	MHMF012L1S2	MHMF 100 W 200 V Absolute encoder	76
MGMF292L1H8M	MGMF 2.9 kW Absolute encoder	157	MHMF012L1S2M	MHMF 100 W 200 V Absolute encoder	137
MGMF442L1C5	MGMF 4.4 kW Absolute encoder	99	MHMF012L1T1	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1C6	MGMF 4.4 kW Absolute encoder	99	MHMF012L1T2	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1C6M	MGMF 4.4 kW Absolute encoder	158	MHMF012L1T2M	MHMF 100 W 200 V Absolute encoder	137
MGMF442L1C7	MGMF 4.4 kW Absolute encoder	99	MHMF012L1U1	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1C8	MGMF 4.4 kW Absolute encoder	99	MHMF012L1U2	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1C8M	MGMF 4.4 kW Absolute encoder	158	MHMF012L1U2M	MHMF 100 W 200 V Absolute encoder	137
MGMF442L1D5	MGMF 4.4 kW Absolute encoder	99	MHMF012L1U3	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1D6	MGMF 4.4 kW Absolute encoder	99	MHMF012L1U4	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1D6M	MGMF 4.4 kW Absolute encoder	158	MHMF012L1U4M	MHMF 100 W 200 V Absolute encoder	137
MGMF442L1D7	MGMF 4.4 kW Absolute encoder	99	MHMF012L1V1	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1D8	MGMF 4.4 kW Absolute encoder	99	MHMF012L1V2	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1D8M	MGMF 4.4 kW Absolute encoder	158	MHMF012L1V2M	MHMF 100 W 200 V Absolute encoder	137
MGMF442L1G5	MGMF 4.4 kW Absolute encoder	99	MHMF012L1V3	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1G6	MGMF 4.4 kW Absolute encoder	99	MHMF012L1V4	MHMF 100 W 200 V Absolute encoder	76
MGMF442L1G6M	MGMF 4.4 kW Absolute encoder	158	MHMF012L1V4M	MHMF 100 W 200 V Absolute encoder	137
MGMF442L1G7	MGMF 4.4 kW Absolute encoder	99	MHMF021L1A1	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1G8	MGMF 4.4 kW Absolute encoder	99	MHMF021L1A2	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1G8M	MGMF 4.4 kW Absolute encoder	158	MHMF021L1B1	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1H5					
	MGMF 4.4 kW Absolute encoder	99	MHMF021L1B2	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1H6	MGMF 4.4 kW Absolute encoder	99	MHMF021L1C1	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1H6M	MGMF 4.4 kW Absolute encoder	158	MHMF021L1C2	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1H7	MGMF 4.4 kW Absolute encoder	99	MHMF021L1C3	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1H8	MGMF 4.4 kW Absolute encoder	99	MHMF021L1C4	MHMF 200 W 100 V Absolute encoder	77
MGMF442L1H8M	MGMF 4.4 kW Absolute encoder	158	MHMF021L1D1	MHMF 200 W 100 V Absolute encoder	77
			MHMF021L1D2	MHMF 200 W 100 V Absolute encoder	77
MHMF (High ine	rtia)		MHMF021L1D3	MHMF 200 W 100 V Absolute encoder	77
Part No.	Title	Page	MHMF021L1D4	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1A1	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1S1	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1A2	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1S2	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1B1	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1T1	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1B2	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1T2	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1C1	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1U1	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1C2	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1U2	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1C3	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1U3	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1C4	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1U4	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1D1	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1V1	MHMF 200 W 100 V Absolute encoder	77
		_			
MHMF011L1D2	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1V2	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1D3	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1V3	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1D4	MHMF 100 W 100 V Absolute encoder	75	MHMF021L1V4	MHMF 200 W 100 V Absolute encoder	77
MHMF011L1S1	MHMF 100 W 100 V Absolute encoder	75	MHMF022L1A1	MHMF 200 W 200 V Absolute encoder	78

MHMF (High ine		Den	MHMF (High ine	đ
Part No.	Title	Page	Part No.	
MHMF022L1A2	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1D2	Ν
MHMF022L1A2M	MHMF 200 W 200 V Absolute encoder	138	MHMF042L1D2M	Ν
MHMF022L1B1	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1D3	N
MHMF022L1B2	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1D4	N
MHMF022L1B2M	MHMF 200 W 200 V Absolute encoder	138	MHMF042L1D4M	N
MHMF022L1C1	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1S1	N
MHMF022L1C2	MHMF 200 W 200 V Absolute encoder MHMF 200 W 200 V Absolute encoder	78	MHMF042L1S2	N
MHMF022L1C2M MHMF022L1C3	MHMF 200 W 200 V Absolute encoder MHMF 200 W 200 V Absolute encoder	138	MHMF042L1S2M MHMF042L1T1	N
	MHMF 200 W 200 V Absolute encoder MHMF 200 W 200 V Absolute encoder	78		N N
MHMF022L1C4 MHMF022L1C4M	MHMF 200 W 200 V Absolute encoder MHMF 200 W 200 V Absolute encoder	138	MHMF042L1T2 MHMF042L1T2M	N
MHMF022L1C4M MHMF022L1D1	MHMF 200 W 200 V Absolute encoder MHMF 200 W 200 V Absolute encoder	78	MHMF042L112M	n N
MHMF022L1D1	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1U2	N
MHMF022L1D2	MHMF 200 W 200 V Absolute encoder	138	MHMF042L1U2M	N
MHMF022L1D2M	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1U3	N
MHMF022L1D4	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1U4	N
MHMF022L1D4M	MHMF 200 W 200 V Absolute encoder	138	MHMF042L1U4M	N
MHMF022L1S1	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1V1	N
MHMF022L1S2	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1V2	N
MHMF022L1S2M	MHMF 200 W 200 V Absolute encoder	138	MHMF042L1V2	N
MHMF022L1T1	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1V3	N
MHMF022L1T2	MHMF 200 W 200 V Absolute encoder	78	MHMF042L1V4	N
MHMF022L1T2M	MHMF 200 W 200 V Absolute encoder	138	MHMF042L1V4M	N
MHMF022L1U1	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1A1	N
MHMF022L1U2	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1A2	N
MHMF022L1U2M	MHMF 200 W 200 V Absolute encoder	138	MHMF082L1A2M	Ν
MHMF022L1U3	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1B1	N
MHMF022L1U4	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1B2	Ν
MHMF022L1U4M	MHMF 200 W 200 V Absolute encoder	138	MHMF082L1B2M	Ν
MHMF022L1V1	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1C1	Ν
MHMF022L1V2	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1C2	Ν
MHMF022L1V2M	MHMF 200 W 200 V Absolute encoder	138	MHMF082L1C2M	Ν
MHMF022L1V3	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1C3	Ν
MHMF022L1V4	MHMF 200 W 200 V Absolute encoder	78	MHMF082L1C4	Ν
MHMF022L1V4M	MHMF 200 W 200 V Absolute encoder	138	MHMF082L1C4M	Ν
MHMF041L1A1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1D1	Ν
MHMF041L1A2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1D2	Ν
MHMF041L1B1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1D2M	Ν
MHMF041L1B2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1D3	N
MHMF041L1C1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1D4	N
MHMF041L1C2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1D4M	Ν
MHMF041L1C3	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1S1	Ν
MHMF041L1C4	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1S2	N
MHMF041L1D1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1S2M	N
MHMF041L1D2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1T1	N
MHMF041L1D3	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1T2	N
MHMF041L1D4	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1T2M	N
MHMF041L1S1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1U1	N
MHMF041L1S2 MHMF041L1T1	MHMF 400 W 100 V Absolute encoder MHMF 400 W 100 V Absolute encoder	79	MHMF082L1U2 MHMF082L1U2M	N
MHMF041L1T2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1U2	N
MHMF041L1U1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1U4	N
MHMF041L1U2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1U4M	N
MHMF041L1U3	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1V1	N
MHMF041L1U4	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1V2	N
MHMF041L1V1	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1V2M	N
MHMF041L1V2	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1V3	N
		79	MHMF082L1V4	Ν
MHMF041L1V3	MHMF 400 W 100 V Absolute encoder			-
MHMF041L1V3 MHMF041L1V4	MHMF 400 W 100 V Absolute encoder MHMF 400 W 100 V Absolute encoder		MHMF082L1V4M	
MHMF041L1V4	MHMF 400 W 100 V Absolute encoder	79	MHMF082L1V4M MHMF092L1A1	N N
			MHMF082L1V4M MHMF092L1A1 MHMF092L1A2	
MHMF041L1V4 MHMF042L1A1	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80	MHMF092L1A1	N
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80	MHMF092L1A1 MHMF092L1A2	N
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder MHMF 400 W 200 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M	N N N
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139 80	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1	
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1 MHMF042L1B2	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139 80 80	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1 MHMF092L1B2	
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1 MHMF042L1B2 MHMF042L1B2M	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139 80 80 80 139	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1 MHMF092L1B2 MHMF092L1B2M	
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1 MHMF042L1B2 MHMF042L1B2M MHMF042L1C1	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 139 80 139 80 80 80 80 80 80	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1 MHMF092L1B2 MHMF092L1B2M MHMF092L1C1	
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1 MHMF042L1B2 MHMF042L1B2M MHMF042L1C1 MHMF042L1C2	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139 80 80 139 80 80 80	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1 MHMF092L1B2 MHMF092L1B2M MHMF092L1C1 MHMF092L1C2	
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1 MHMF042L1B2 MHMF042L1B2M MHMF042L1C1 MHMF042L1C2 MHMF042L1C2M	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139 80 139 80 80 139 80 139 80 139 80 139 80 139 80 139	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1 MHMF092L1B2 MHMF092L1B2M MHMF092L1C1 MHMF092L1C2 MHMF092L1C2M	
MHMF041L1V4 MHMF042L1A1 MHMF042L1A2 MHMF042L1A2M MHMF042L1B1 MHMF042L1B2 MHMF042L1B2M MHMF042L1C1 MHMF042L1C2 MHMF042L1C3	MHMF 400 W 100 V Absolute encoder MHMF 400 W 200 V Absolute encoder	79 80 80 139 80 139 80 80 139 80 139 80 139 80 139 80 80 80 80 80 80	MHMF092L1A1 MHMF092L1A2 MHMF092L1A2M MHMF092L1B1 MHMF092L1B2 MHMF092L1C1 MHMF092L1C1 MHMF092L1C2 MHMF092L1C3	

AHMF (High ine Part No.	Title	Dogo
HMF042L1D2	MHMF 400 W 200 V Absolute encoder	Page 80
MMF042L1D2M	MHMF 400 W 200 V Absolute encoder	139
/HMF042L1D3	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1D4	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1D4M	MHMF 400 W 200 V Absolute encoder	139
IHMF042L1S1	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1S2	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1S2M	MHMF 400 W 200 V Absolute encoder	139
IHMF042L1T1	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1T2	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1T2M	MHMF 400 W 200 V Absolute encoder	139
1HMF042L1U1	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1U2	MHMF 400 W 200 V Absolute encoder	80
IHMF042L1U2M	MHMF 400 W 200 V Absolute encoder	139
HMF042L1U3	MHMF 400 W 200 V Absolute encoder	80
HMF042L1U4	MHMF 400 W 200 V Absolute encoder	80
HMF042L1U4M	MHMF 400 W 200 V Absolute encoder	139
HMF042L1V1	MHMF 400 W 200 V Absolute encoder	80
HMF042L1V2	MHMF 400 W 200 V Absolute encoder	80
HMF042L1V2	MHMF 400 W 200 V Absolute encoder	139
HMF042L1V3	MHMF 400 W 200 V Absolute encoder	80
HMF042L1V3	MHMF 400 W 200 V Absolute encoder	80
HMF042L1V4 HMF042L1V4M	MHMF 400 W 200 V Absolute encoder MHMF 400 W 200 V Absolute encoder	139
HMF082L1A1	MHMF 750 W 200 V Absolute encoder	81
HMF082L1A2	MHMF 750 W 200 V Absolute encoder	81
HMF082L1A2M	MHMF 750 W 200 V Absolute encoder	140
IHMF082L1B1	MHMF 750 W 200 V Absolute encoder	81
HMF082L1B2	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1B2M	MHMF 750 W 200 V Absolute encoder	140
IHMF082L1C1	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1C2	MHMF 750 W 200 V Absolute encoder	81
HMF082L1C2M	MHMF 750 W 200 V Absolute encoder	140
IHMF082L1C3	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1C4	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1C4M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1D1	MHMF 750 W 200 V Absolute encoder	81
HMF082L1D2	MHMF 750 W 200 V Absolute encoder	81
HMF082L1D2M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1D3	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1D4	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1D4M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1S1	MHMF 750 W 200 V Absolute encoder	81
HMF082L1S2	MHMF 750 W 200 V Absolute encoder	81
HMF082L1S2M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1T1	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1T2	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1T2M	MHMF 750 W 200 V Absolute encoder	140
IHMF082L1U1	MHMF 750 W 200 V Absolute encoder	81
IHMF082L1U2	MHMF 750 W 200 V Absolute encoder	81
HMF082L1U2M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1U3	MHMF 750 W 200 V Absolute encoder	81
HMF082L1U4	MHMF 750 W 200 V Absolute encoder	81
HMF082L1U4M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1V1	MHMF 750 W 200 V Absolute encoder	81
HMF082L1V2	MHMF 750 W 200 V Absolute encoder	81
HMF082L1V2M	MHMF 750 W 200 V Absolute encoder	140
HMF082L1V3	MHMF 750 W 200 V Absolute encoder	81
HMF082L1V4	MHMF 750 W 200 V Absolute encoder	81
HMF082L1V4M	MHMF 750 W 200 V Absolute encoder	140
HMF092L1A1	MHMF 1000 W 200 V Absolute encoder	82
HMF092L1A2	MHMF 1000 W 200 V Absolute encoder	82
HMF092L1A2M	MHMF 1000 W 200 V Absolute encoder	141
HMF092L1B1	MHMF 1000 W 200 V Absolute encoder	82
HMF092L1B2	MHMF 1000 W 200 V Absolute encoder	82
HMF092L1B2	MHMF 1000 W 200 V Absolute encoder	141
HMF092L1B2M HMF092L1C1	MHMF 1000 W 200 V Absolute encoder	82
	MHMF 1000 W 200 V Absolute encoder	
IHMF092L1C2		82
IHMF092L1C2M	MHMF 1000 W 200 V Absolute encoder	141
IHMF092L1C3	MHMF 1000 W 200 V Absolute encoder	82
	MHMF 1000 W 200 V Absolute encoder	82
IHMF092L1C4 IHMF092L1C4M	MHMF 1000 W 200 V Absolute encoder	141

	rtia)	Dest	MHMF (High ine		D
Part No. MHMF092L1D2	Title MHMF 1000 W 200 V Absolute encoder	Page 82	Part No. MHMF202L1C6	Title MHMF 2.0 kW Absolute encoder	85
	MHMF 1000 W 200 V Absolute encoder	141		MHMF 2.0 kW Absolute encoder	144
MHMF092L1D2M MHMF092L1D3	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1C6M MHMF202L1C7	MHMF 2.0 kW Absolute encoder	85
		-		MHMF 2.0 kW Absolute encoder	
MHMF092L1D4	MHMF 1000 W 200 V Absolute encoder MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1C8		85
MHMF092L1D4M		141	MHMF202L1C8M	MHMF 2.0 kW Absolute encoder	144
MHMF092L1S1	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1D5	MHMF 2.0 kW Absolute encoder	85
MHMF092L1S2	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1D6	MHMF 2.0 kW Absolute encoder	85
MHMF092L1S2M	MHMF 1000 W 200 V Absolute encoder	141	MHMF202L1D6M	MHMF 2.0 kW Absolute encoder	144
MHMF092L1T1	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1D7	MHMF 2.0 kW Absolute encoder	85
MHMF092L1T2	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1D8	MHMF 2.0 kW Absolute encoder	85
MHMF092L1T2M	MHMF 1000 W 200 V Absolute encoder	141	MHMF202L1D8M	MHMF 2.0 kW Absolute encoder	144
MHMF092L1U1	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1G5	MHMF 2.0 kW Absolute encoder	85
MHMF092L1U2	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1G6	MHMF 2.0 kW Absolute encoder	85
MHMF092L1U2M	MHMF 1000 W 200 V Absolute encoder	141	MHMF202L1G6M	MHMF 2.0 kW Absolute encoder	144
MHMF092L1U3	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1G7	MHMF 2.0 kW Absolute encoder	85
MHMF092L1U4	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1G8	MHMF 2.0 kW Absolute encoder	85
MHMF092L1U4M	MHMF 1000 W 200 V Absolute encoder	141	MHMF202L1G8M	MHMF 2.0 kW Absolute encoder	144
MHMF092L1V1	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1H5	MHMF 2.0 kW Absolute encoder	85
MHMF092L1V2	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1H6	MHMF 2.0 kW Absolute encoder	85
MHMF092L1V2M	MHMF 1000 W 200 V Absolute encoder	141	MHMF202L1H6M	MHMF 2.0 kW Absolute encoder	144
MHMF092L1V3	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1H7	MHMF 2.0 kW Absolute encoder	85
MHMF092L1V4	MHMF 1000 W 200 V Absolute encoder	82	MHMF202L1H8	MHMF 2.0 kW Absolute encoder	85
MHMF092L1V4M	MHMF 1000 W 200 V Absolute encoder	141	MHMF202L1H8M	MHMF 2.0 kW Absolute encoder	144
MHMF102L1C5	MHMF 1.0 kW Absolute encoder	83	MHMF302L1C5	MHMF 3.0 kW Absolute encoder	86
MHMF102L1C5	MHMF 1.0 kW Absolute encoder	83	MHMF302L1C5	MHMF 3.0 kW Absolute encoder	86
MHMF102L1C6 MHMF102L1C6M	MHMF 1.0 kW Absolute encoder MHMF 1.0 kW Absolute encoder	142	MHMF302L1C6 MHMF302L1C6M	MHMF 3.0 kW Absolute encoder MHMF 3.0 kW Absolute encoder	145
MHMF102L1C7	MHMF 1.0 kW Absolute encoder	83	MHMF302L1C7	MHMF 3.0 kW Absolute encoder	86
MHMF102L1C8	MHMF 1.0 kW Absolute encoder	83	MHMF302L1C8	MHMF 3.0 kW Absolute encoder	86
MHMF102L1C8M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1C8M	MHMF 30 kW Absolute encoder	145
MHMF102L1D5	MHMF 1.0 kW Absolute encoder	83	MHMF302L1D5	MHMF 3.0 kW Absolute encoder	86
MHMF102L1D6	MHMF 1.0 kW Absolute encoder	83	MHMF302L1D6	MHMF 3.0 kW Absolute encoder	86
MHMF102L1D6M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1D6M	MHMF 3.0 kW Absolute encoder	145
MHMF102L1D7	MHMF 1.0 kW Absolute encoder	83	MHMF302L1D7	MHMF 3.0 kW Absolute encoder	86
MHMF102L1D8	MHMF 1.0 kW Absolute encoder	83	MHMF302L1D8	MHMF 3.0 kW Absolute encoder	86
MHMF102L1D8M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1D8M	MHMF 3.0 kW Absolute encoder	145
MHMF102L1G5	MHMF 1.0 kW Absolute encoder	83	MHMF302L1G5	MHMF 3.0 kW Absolute encoder	86
MHMF102L1G6	MHMF 1.0 kW Absolute encoder	83	MHMF302L1G6	MHMF 3.0 kW Absolute encoder	86
MHMF102L1G6M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1G6M	MHMF 3.0 kW Absolute encoder	145
MHMF102L1G7	MHMF 1.0 kW Absolute encoder	83	MHMF302L1G7	MHMF 3.0 kW Absolute encoder	86
MHMF102L1G8	MHMF 1.0 kW Absolute encoder	83	MHMF302L1G8	MHMF 3.0 kW Absolute encoder	86
MHMF102L1G8M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1G8M	MHMF 3.0 kW Absolute encoder	145
MHMF102L1H5	MHMF 1.0 kW Absolute encoder	83	MHMF302L1H5	MHMF 3.0 kW Absolute encoder	86
MHMF102L1H6	MHMF 1.0 kW Absolute encoder	83	MHMF302L1H6	MHMF 3.0 kW Absolute encoder	86
MHMF102L1H6M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1H6M	MHMF 3.0 kW Absolute encoder	145
MHMF102L1H7	MHMF 1.0 kW Absolute encoder	83	MHMF302L1H7	MHMF 3.0 kW Absolute encoder	86
MHMF102L1H8	MHMF 1.0 kW Absolute encoder	83	MHMF302L1H8	MHMF 3.0 kW Absolute encoder	86
MHMF102L1H8M	MHMF 1.0 kW Absolute encoder	142	MHMF302L1H8M	MHMF 3.0 kW Absolute encoder	145
MHMF152L1C5	MHMF 1.5 kW Absolute encoder	84	MHMF402L1C5	MHMF 4.0 kW Absolute encoder	87
MHMF152L1C6	MHMF 1.5 kW Absolute encoder	84	MHMF402L1C6	MHMF 4.0 kW Absolute encoder	87
MHMF152L1C6M	MHMF 1.5 kW Absolute encoder	143	MHMF402L1C6M	MHMF 4.0 kW Absolute encoder	146
MHMF152L1C7	MHMF 1.5 kW Absolute encoder	84	MHMF402L1C0	MHMF 4.0 kW Absolute encoder	87
MHMF152L1C7	MHMF 1.5 kW Absolute encoder	84	MHMF402L1C7	MHMF 4.0 kW Absolute encoder	87
	MHMF 1.5 kW Absolute encoder MHMF 1.5 kW Absolute encoder			MHMF 4.0 kW Absolute encoder MHMF 4.0 kW Absolute encoder	
MHMF152L1C8M		143	MHMF402L1C8M		146
MHMF152L1D5	MHMF 1.5 kW Absolute encoder	84	MHMF402L1D5	MHMF 4.0 kW Absolute encoder	87
MHMF152L1D6	MHMF 1.5 kW Absolute encoder	84	MHMF402L1D6	MHMF 4.0 kW Absolute encoder	87
MHMF152L1D6M	MHMF 1.5 kW Absolute encoder	143	MHMF402L1D6M	MHMF 4.0 kW Absolute encoder	146
MHMF152L1D7	MHMF 1.5 kW Absolute encoder	84	MHMF402L1D7	MHMF 4.0 kW Absolute encoder	87
MHMF152L1D8	MHMF 1.5 kW Absolute encoder	84	MHMF402L1D8	MHMF 4.0 kW Absolute encoder	87
MHMF152L1D8M	MHMF 1.5 kW Absolute encoder	143	MHMF402L1D8M	MHMF 4.0 kW Absolute encoder	146
MHMF152L1G5	MHMF 1.5 kW Absolute encoder	84	MHMF402L1G5	MHMF 4.0 kW Absolute encoder	87
MHMF152L1G6	MHMF 1.5 kW Absolute encoder	84	MHMF402L1G6	MHMF 4.0 kW Absolute encoder	87
MHMF152L1G6M	MHMF 1.5 kW Absolute encoder	143	MHMF402L1G6M	MHMF 4.0 kW Absolute encoder	146
MHMF152L1G7	MHMF 1.5 kW Absolute encoder	84	MHMF402L1G7	MHMF 4.0 kW Absolute encoder	87
MHMF152L1G8	MHMF 1.5 kW Absolute encoder	84	MHMF402L1G8	MHMF 4.0 kW Absolute encoder	87
	MHMF 1.5 kW Absolute encoder	143	MHMF402L1G8M	MHMF 4.0 kW Absolute encoder	146
MHMF152L1G8M	MHMF 1.5 kW Absolute encoder	84	MHMF402L1H5	MHMF 4.0 kW Absolute encoder	87
		84	MHMF402L1H6	MHMF 4.0 kW Absolute encoder	87
MHMF152L1H5	MHMF 1.5 kW Absolute encoder				01
MHMF152L1H5 MHMF152L1H6	MHMF 1.5 kW Absolute encoder			MHME 4.0 kW Absolute opcodor	116
MHMF152L1H5 MHMF152L1H6 MHMF152L1H6M	MHMF 1.5 kW Absolute encoder	143	MHMF402L1H6M	MHMF 4.0 kW Absolute encoder	146
MHMF152L1G8M MHMF152L1H5 MHMF152L1H6 MHMF152L1H6M MHMF152L1H7 MHMF152L1H7	MHMF 1.5 kW Absolute encoder MHMF 1.5 kW Absolute encoder	143 84	MHMF402L1H7	MHMF 4.0 kW Absolute encoder	87
MHMF152L1H5 MHMF152L1H6 MHMF152L1H6M	MHMF 1.5 kW Absolute encoder	143			

MHMF (High ine	rtia)	
Part No.	Title	Page
MHMF502L1C6	MHMF 5.0 kW Absolute encoder	88
MHMF502L1C6M	MHMF 5.0 kW Absolute encoder	147
MHMF502L1C7	MHMF 5.0 kW Absolute encoder	88
MHMF502L1C8	MHMF 5.0 kW Absolute encoder	88
MHMF502L1C8M	MHMF 50 kW Absolute encoder	147
MHMF502L1D5	MHMF 5.0 kW Absolute encoder	88
MHMF502L1D6	MHMF 5.0 kW Absolute encoder	88
MHMF502L1D6M	MHMF 5.0 kW Absolute encoder	147
MHMF502L1D7	MHMF 5.0 kW Absolute encoder	88
MHMF502L1D8	MHMF 5.0 kW Absolute encoder	88
MHMF502L1D8M	MHMF 5.0 kW Absolute encoder	147
MHMF502L1G5	MHMF 5.0 kW Absolute encoder	88
MHMF502L1G6	MHMF 5.0 kW Absolute encoder	88
MHMF502L1G6M	MHMF 5.0 kW Absolute encoder	147
MHMF502L1G7	MHMF 5.0 kW Absolute encoder	88
MHMF502L1G8	MHMF 5.0 kW Absolute encoder	88
MHMF502L1G8M	MHMF 5.0 kW Absolute encoder	147
MHMF502L1H5	MHMF 5.0 kW Absolute encoder	88
MHMF502L1H6	MHMF 5.0 kW Absolute encoder	88
MHMF502L1H6M	MHMF 5.0 kW Absolute encoder	147
MHMF502L1H7	MHMF 5.0 kW Absolute encoder	88
MHMF502L1H8	MHMF 5.0 kW Absolute encoder	88
MHMF502L1H8M	MHMF 5.0 kW Absolute encoder	147
MHMF5AZL1A1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1A2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1A2	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1B1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1B2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1B2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1C1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1C2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1C2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1C3	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1C4	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1C4M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1D1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1D2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1D2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1D3	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1D4	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1D4	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1S1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1S2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1S2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1T1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1T2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1T2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1U1	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1U2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1U2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1U3	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL103	MHMF 50 W 100 V/200 V common Absolute encoder MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1U4M	MHMF 50 W 100 V/200 V common Absolute encoder	
MHMF5AZL104M MHMF5AZL1V1	MHMF 50 W 100 V/200 V common Absolute encoder MHMF 50 W 100 V/200 V common Absolute encoder	136
		73,74
MHMF5AZL1V2	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1V2M	MHMF 50 W 100 V/200 V common Absolute encoder	136
MHMF5AZL1V3	MHMF 50 W 100 V/200 V common Absolute encoder	73,74
MHMF5AZL1V4 MHMF5AZL1V4M	MHMF 50 W 100 V/200 V common Absolute encoder MHMF 50 W 100 V/200 V common Absolute encoder	73,74
	WI IVI JU V TUU V/200 V COMIMUN ADSOIULE ENCODER	136

MKDET		
Part No.	Title	Page
MKDET1105P		
MKDET1110P	E series driver: K-frame	207 209
MKDET1310P	E series unver. K-irame	209
MKDET1505P		

Part No.	Title	Page
MLDET2110P		- I age
MLDET2210P	1	207
MLDET2310P	E series driver: L-frame	209
MLDET2510P		212
	L	
MQMF (Middle i		
Part No.	Title	Page
MQMF011L1A1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1A2	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1B1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1B2	MQMF 100 W 100 V Absolute encoder MQMF 100 W 100 V Absolute encoder	67
MQMF011L1C1		67
MQMF011L1C2 MQMF011L1C3	MQMF 100 W 100 V Absolute encoder MQMF 100 W 100 V Absolute encoder	67
MQMF011L1C4	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1D1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1D2	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1D3	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1D4	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1S1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1S2	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1T1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1T2	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1U1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1U2	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1U3	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1U4	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1V1	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1V2	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1V3	MQMF 100 W 100 V Absolute encoder	67
MQMF011L1V4	MQMF 100 W 100 V Absolute encoder	67
MQMF012L1A1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1A2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1A2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1B1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1B2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1B2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1C1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1C2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1C2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1C3	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1C4	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1C4M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1D1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1D2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1D2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1D3	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1D4	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1D4M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1S1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1S2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1S2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1T1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1T2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1T2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1U1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1U2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1U2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1U3	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1U4	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1U4M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1V1	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1V2	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1V2M	MQMF 100 W 200 V Absolute encoder	133
MQMF012L1V3	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1V4	MQMF 100 W 200 V Absolute encoder	68
MQMF012L1V4M	MQMF 100 W 200 V Absolute encoder	133
MQMF021L1A1 MQMF021L1A2	MQMF 200 W 100 V Absolute encoder MQMF 200 W 100 V Absolute encoder	69
MQMF021L1A2 MQMF021L1B1	MQMF 200 W 100 V Absolute encoder	69 69
MQMF021L1B1	MQMF 200 W 100 V Absolute encoder	69
MQMF021L1B2	MQMF 200 W 100 V Absolute encoder	69
		0.9

69

MQMF021L1C1 MQMF 200 W 100 V Absolute encoder

MLDET

MQMF (Middle in	nertia flat type)		MQMF (Middle i
Part No.	Title	Page	Part No.
MQMF021L1C2	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1U2
MQMF021L1C3	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1U3
MQMF021L1C4	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1U4
MQMF021L1D1	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1V1
MQMF021L1D2	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1V2
MQMF021L1D3	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1V3
MQMF021L1D4	MQMF 200 W 100 V Absolute encoder	69	MQMF041L1V4
MQMF021L1S1	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1A1
MQMF021L1S2 MQMF021L1T1	MQMF 200 W 100 V Absolute encoder MQMF 200 W 100 V Absolute encoder	69	MQMF042L1A2 MQMF042L1A2M
MQMF021L1112	MQMF 200 W 100 V Absolute encoder	69 69	MQMF042L1A2M MQMF042L1B1
MQMF021L1U1	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1B1
MQMF021L1U2	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1B2M
MQMF021L1U3	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1C1
MQMF021L1U4	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1C2
MQMF021L1V1	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1C2M
MQMF021L1V2	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1C3
MQMF021L1V3	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1C4
MQMF021L1V4	MQMF 200 W 100 V Absolute encoder	69	MQMF042L1C4M
MQMF022L1A1	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1D1
MQMF022L1A2	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1D2
MQMF022L1A2M	MQMF 200 W 200 V Absolute encoder	134	MQMF042L1D2M
MQMF022L1B1	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1D3
MQMF022L1B2	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1D4
MQMF022L1B2M	MQMF 200 W 200 V Absolute encoder	134	MQMF042L1D4M
MQMF022L1C1	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1S1
MQMF022L1C2	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1S2
MQMF022L1C2M MQMF022L1C3	MQMF 200 W 200 V Absolute encoder MQMF 200 W 200 V Absolute encoder	134 70	MQMF042L1S2M MQMF042L1T1
MQMF022L1C3	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1T2
MQMF022L1C4 MQMF022L1C4M	MQMF 200 W 200 V Absolute encoder	134	MQMF042L1T2 MQMF042L1T2M
MQMF022L1D1	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1U1
MQMF022L1D2	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1U2
MQMF022L1D2M	MQMF 200 W 200 V Absolute encoder	134	MQMF042L1U2M
MQMF022L1D3	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1U3
MQMF022L1D4	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1U4
MQMF022L1D4M	MQMF 200 W 200 V Absolute encoder	134	MQMF042L1U4M
MQMF022L1S1	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1V1
MQMF022L1S2	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1V2
MQMF022L1S2M	MQMF 200 W 200 V Absolute encoder	134	MQMF042L1V2M
MQMF022L1T1	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1V3
MQMF022L1T2	MQMF 200 W 200 V Absolute encoder	70	MQMF042L1V4
MQMF022L1T2M MQMF022L1U1	MQMF 200 W 200 V Absolute encoder MQMF 200 W 200 V Absolute encoder	134	MQMF042L1V4M
MQMF022L1U1 MQMF022L1U2	MQMF 200 W 200 V Absolute encoder	70	MSMF (Low ine
MQMF022L1U2M	MQMF 200 W 200 V Absolute encoder	134	Part No.
MQMF022L1U3	MQMF 200 W 200 V Absolute encoder	70	MSMF011L1A1
MQMF022L1U4	MQMF 200 W 200 V Absolute encoder	70	MSMF011L1A2
MQMF022L1U4M	MQMF 200 W 200 V Absolute encoder	134	MSMF011L1B1
MQMF022L1V1	MQMF 200 W 200 V Absolute encoder	70	MSMF011L1B2
MQMF022L1V2	MQMF 200 W 200 V Absolute encoder	70	MSMF011L1C1
MQMF022L1V2M	MQMF 200 W 200 V Absolute encoder	134	MSMF011L1C2
MQMF022L1V3	MQMF 200 W 200 V Absolute encoder	70	MSMF011L1D1
MQMF022L1V4	MQMF 200 W 200 V Absolute encoder	70	MSMF011L1D2
MQMF022L1V4M	MQMF 200 W 200 V Absolute encoder	134	MSMF011L1S1
MQMF041L1A1	MQMF 400 W 100 V Absolute encoder	71	MSMF011L1S2
MQMF041L1A2	MQMF 400 W 100 V Absolute encoder	71	MSMF011L1T1
MQMF041L1B1	MQMF 400 W 100 V Absolute encoder	71	MSMF011L1T2
MQMF041L1B2 MQMF041L1C1	MQMF 400 W 100 V Absolute encoder MQMF 400 W 100 V Absolute encoder	71	MSMF011L1U1 MSMF011L1U2
MQMF041L1C2	MQMF 400 W 100 V Absolute encoder	71	MSMF011L1V1
MQMF041L1C3	MQMF 400 W 100 V Absolute encoder	71	MSMF011L1V2
MQMF041L1C4	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1A1
MQMF041L1D1	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1A2
MQMF041L1D2	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1A2M
MQMF041L1D3	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1B1
MQMF041L1D4	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1B2
MQMF041L1S1	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1B2M
MQMF041L1S2	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1C1
MQMF041L1T1	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1C2
MQMF041L1T2	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1C2M
MQMF041L1U1	MQMF 400 W 100 V Absolute encoder	71	MSMF012L1D1

MQMF (Middle in	nertia flat type)	
Part No.	Title	Page
MQMF041L1U2	MQMF 400 W 100 V Absolute encoder	71
MQMF041L1U3	MQMF 400 W 100 V Absolute encoder	71
MQMF041L1U4	MQMF 400 W 100 V Absolute encoder	71
MQMF041L1V1	MQMF 400 W 100 V Absolute encoder	71
MQMF041L1V2	MQMF 400 W 100 V Absolute encoder	71
MQMF041L1V3	MQMF 400 W 100 V Absolute encoder	71
MQMF041L1V4	MQMF 400 W 100 V Absolute encoder	71
MQMF042L1A1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1A1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1A2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1B1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1B2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1B2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1C1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1C2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1C2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1C3	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1C4	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1C4M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1D1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1D2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1D2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1D3	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1D4	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1D4M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1S1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1S2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1S2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1T1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1T2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1T2 MQMF042L1T2M	MQMF 400 W 200 V Absolute encoder	
		135
MQMF042L1U1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1U2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1U2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1U3	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1U4	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1U4M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1V1	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1V2	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1V2M	MQMF 400 W 200 V Absolute encoder	135
MQMF042L1V3	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1V4	MQMF 400 W 200 V Absolute encoder	72
MQMF042L1V4M	MQMF 400 W 200 V Absolute encoder	135
MSMF (Low iner	tia)	
Part No.	Title	Page
		53
MSMF011L1A1	MSMF 100 W 100 V Absolute encoder	
	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53
MSMF011L1A2	MSMF 100 W 100 V Absolute encoder	53
MSMF011L1A2 MSMF011L1B1	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1 MSMF011L1C2	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53 53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1 MSMF011L1C2 MSMF011L1D1	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53 53 53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1 MSMF011L1C2 MSMF011L1D1 MSMF011L1D2	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53 53 53 53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1 MSMF011L1C2 MSMF011L1D1 MSMF011L1D2 MSMF011L1S1	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53 53 53 53 53 53 53
MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1 MSMF011L1C2 MSMF011L1D1 MSMF011L1D2 MSMF011L1S1 MSMF011L1S2	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53 53 53 53 53 53 53 53 53 53 53 53 53 53 53
MSMF011L1A1 MSMF011L1A2 MSMF011L1B1 MSMF011L1B2 MSMF011L1C1 MSMF011L1C2 MSMF011L1D1 MSMF011L1D2 MSMF011L1S1 MSMF011L1S2 MSMF011L1T1 MSMF011L1T1	MSMF 100 W 100 V Absolute encoder MSMF 100 W 100 V Absolute encoder	53 53 53 53 53 53 53 53 53 53 53

MSMF 100 W 100 V Absolute encoder

MSMF 100 W 200 V Absolute encoder

A6 Family

53

53

53

53

53

54

54

122

54

54

122

54

54

122

54

Part No. MSMF012L1D2 MSMF012L1D2 MSMF012L1S2 MSMF012L1S2 MSMF012L1S2 MSMF012L1T1 MSMF012L1T2 MSMF012L1T2 MSMF012L1U2 MSMF012L1U2 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A1 MSMF021L1A1 MSMF021L1B1 MSMF021L1C1 MSMF021L1C1 MSMF021L1C2 MSMF021L1C1	Title MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder	Page 54 122 54 122 54 122 54 122 54 122 54 122 54 122 54 54 54 54 54 54 54 54 54 54 54 54 55 55 55 55	MSMF042L11 MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L11 MSMF042L11 MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L13
MSMF012L1D2M MSMF012L1S1 MSMF012L1S2 MSMF012L1S2 MSMF012L1T2 MSMF012L1T2 MSMF012L1T2 MSMF012L1U2 MSMF012L1U2 MSMF012L1U2 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1C1 MSMF021L1C1	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder	122 54 54 122 54 122 54 122 54 122 54 122 54 122 54 122 54 55 55	MSMF042L18 MSMF042L18 MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L11
MSMF012L1S1 MSMF012L1S2 MSMF012L1S2 MSMF012L1T2 MSMF012L1T2 MSMF012L1T2 MSMF012L1U2 MSMF012L1U2 MSMF012L1U2 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1C1 MSMF021L1C1	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder	54 54 122 54 122 54 122 54 122 54 122 54 122 54 122 54 55 55	MSMF042L1E MSMF042L1C MSMF042L1C MSMF042L1C MSMF042L1C MSMF042L1E MSMF042L1E MSMF042L1S MSMF042L1S MSMF042L1E MSMF042L1
MSMF012L1S2M MSMF012L1T1 MSMF012L1T2 MSMF012L1T2 MSMF012L1U2 MSMF012L1U2 MSMF012L1U2 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	122 54 54 122 54 122 54 122 54 122 54 122 54 55	MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L11 MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L11
MSMF012L1T1 MSMF012L1T2 MSMF012L1T2 MSMF012L1U1 MSMF012L1U2 MSMF012L1U2 MSMF012L1V2 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	54 54 122 54 122 54 122 54 122 54 55	MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L10 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L11
MSMF012L1T2 MSMF012L1T2M MSMF012L1U1 MSMF012L1U2 MSMF012L1U2 MSMF012L1V1 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	54 122 54 122 54 122 54 54 122 55 55 55	MSMF042L10 MSMF042L11 MSMF042L11 MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L11
MSMF012L1T2M MSMF012L1U1 MSMF012L1U2 MSMF012L1U2 MSMF012L1V2 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	122 54 54 122 54 54 122 54 122 55 55	MSMF042L11 MSMF042L11 MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L11 MSMF042L1
MSMF012L1U1 MSMF012L1U2 MSMF012L1U2 MSMF012L1V1 MSMF012L1V2 MSMF012L1V2 MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	54 54 122 54 122 54 55 55	MSMF042L11 MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L17 MSMF042L17
MSMF012L1U2 MSMF012L1U2M MSMF012L1V1 MSMF012L1V2 MSMF012L1V2M MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	54 122 54 54 122 55 55 55	MSMF042L11 MSMF042L13 MSMF042L13 MSMF042L13 MSMF042L17 MSMF042L17
MSMF012L1U2M MSMF012L1V1 MSMF012L1V2 MSMF012L1V2M MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	122 54 54 122 55 55 55	MSMF042L15 MSMF042L15 MSMF042L15 MSMF042L17 MSMF042L17
MSMF012L1V1 MSMF012L1V2 MSMF012L1V2M MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 100 W 200 V Absolute encoder MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	54 54 122 55 55	MSMF042L1S MSMF042L1S MSMF042L1 ^T MSMF042L1 ^T
MSMF012L1V2M MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 100 W 200 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	122 55 55	MSMF042L1 MSMF042L1
MSMF021L1A1 MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	55 55	MSMF042L1
MSMF021L1A2 MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	55	
MSMF021L1B1 MSMF021L1B2 MSMF021L1C1 MSMF021L1C2	MSMF 200 W 100 V Absolute encoder		
MSMF021L1B2 MSMF021L1C1 MSMF021L1C2		E E	MSMF042L1
MSMF021L1C1 MSMF021L1C2	MSMF 200 W 100 V Absolute encoder		MSMF042L1U
MSMF021L1C2		55	MSMF042L1U
	MSMF 200 W 100 V Absolute encoder MSMF 200 W 100 V Absolute encoder	55 55	MSMF042L1U MSMF042L1V
	MSMF 200 W 100 V Absolute encoder	55	MSMF042L1
MSMF021L1D2	MSMF 200 W 100 V Absolute encoder	55	MSMF042L1
MSMF021L1S1	MSMF 200 W 100 V Absolute encoder	55	MSMF082L1
MSMF021L1S2	MSMF 200 W 100 V Absolute encoder	55	MSMF082L1
MSMF021L1T1	MSMF 200 W 100 V Absolute encoder	55	MSMF082L1
MSMF021L1T2	MSMF 200 W 100 V Absolute encoder	55	MSMF082L1
MSMF021L1U1	MSMF 200 W 100 V Absolute encoder	55	MSMF082L1E
MSMF021L1U2	MSMF 200 W 100 V Absolute encoder	55	MSMF082L1E
MSMF021L1V1	MSMF 200 W 100 V Absolute encoder	55	MSMF082L10
MSMF021L1V2 MSMF022L1A1	MSMF 200 W 100 V Absolute encoder MSMF 200 W 200 V Absolute encoder	55 56	MSMF082L10 MSMF082L10
MSMF022L1A1	MSMF 200 W 200 V Absolute encoder	56	MSMF082L10
MSMF022L1A2M	MSMF 200 W 200 V Absolute encoder	123	MSMF082L1
MSMF022L1B1	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1B2	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1B2M	MSMF 200 W 200 V Absolute encoder	123	MSMF082L1
MSMF022L1C1	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1C2	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1C2M	MSMF 200 W 200 V Absolute encoder MSMF 200 W 200 V Absolute encoder	123	MSMF082L1
MSMF022L1D1 MSMF022L1D2	MSMF 200 W 200 V Absolute encoder MSMF 200 W 200 V Absolute encoder	56 56	MSMF082L1 MSMF082L1
MSMF022L1D2 MSMF022L1D2M	MSMF 200 W 200 V Absolute encoder	123	MSMF082L1
MSMF022L1S1	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1S2	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1S2M	MSMF 200 W 200 V Absolute encoder	123	MSMF082L1
MSMF022L1T1	MSMF 200 W 200 V Absolute encoder	56	MSMF082L1
MSMF022L1T2	MSMF 200 W 200 V Absolute encoder	56	MSMF092L1/
MSMF022L1T2M	MSMF 200 W 200 V Absolute encoder	123	MSMF092L1/
MSMF022L1U1	MSMF 200 W 200 V Absolute encoder	56	MSMF092L1/
MSMF022L1U2 MSMF022L1U2M	MSMF 200 W 200 V Absolute encoder MSMF 200 W 200 V Absolute encoder	56 123	MSMF092L1E MSMF092L1E
MSMF022L1V1	MSMF 200 W 200 V Absolute encoder	56	MSMF092L1E
MSMF022L1V2	MSMF 200 W 200 V Absolute encoder	56	MSMF092L10
MSMF022L1V2M	MSMF 200 W 200 V Absolute encoder	123	MSMF092L10
MSMF041L1A1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L10
MSMF041L1A2	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1B1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1B2	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1C1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1C2	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1D1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1D2 MSMF041L1S1	MSMF 400 W 100 V Absolute encoder MSMF 400 W 100 V Absolute encoder	57	MSMF092L1 MSMF092L1
MSMF041L1S1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1T1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1T2	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1U
MSMF041L1U1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1U2	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1V1	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF041L1V2	MSMF 400 W 100 V Absolute encoder	57	MSMF092L1
MSMF042L1A1 MSMF042L1A2	MSMF 400 W 200 V Absolute encoder MSMF 400 W 200 V Absolute encoder	58 58	MSMF102L10 MSMF102L10

MSMF (Low iner Part No.	Title	Page
MSMF042L1A2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1B1	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1B2	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1B2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1C1	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1C2	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1C2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1D1 MSMF042L1D2	MSMF 400 W 200 V Absolute encoder MSMF 400 W 200 V Absolute encoder	58 58
MSMF042L1D2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1S1	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1S2	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1S2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1T1	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1T2	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1T2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1U1	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1U2	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1U2M	MSMF 400 W 200 V Absolute encoder	124
MSMF042L1V1	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1V2	MSMF 400 W 200 V Absolute encoder	58
MSMF042L1V2M MSMF082L1A1	MSMF 400 W 200 V Absolute encoder MSMF 750 W 200 V Absolute encoder	124
MSMF082L1A1	MSMF 750 W 200 V Absolute encoder MSMF 750 W 200 V Absolute encoder	59 59
MSMF082L1A2	MSMF 750 W 200 V Absolute encoder MSMF 750 W 200 V Absolute encoder	125
VISINF082L1A2IN VISINF082L1B1	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1B1	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1B2M	MSMF 750 W 200 V Absolute encoder	125
MSMF082L1C1	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1C2	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1C2M	MSMF 750 W 200 V Absolute encoder	125
MSMF082L1D1	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1D2	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1D2M	MSMF 750 W 200 V Absolute encoder	125
MSMF082L1S1	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1S2	MSMF 750 W 200 V Absolute encoder MSMF 750 W 200 V Absolute encoder	59
MSMF082L1S2M MSMF082L1T1	MSMF 750 W 200 V Absolute encoder MSMF 750 W 200 V Absolute encoder	125 59
MSMF082L1T2	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1T2M	MSMF 750 W 200 V Absolute encoder	125
MSMF082L1U1	MSMF 750 W 200 V Absolute encoder	59
VSMF082L1U2	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1U2M	MSMF 750 W 200 V Absolute encoder	125
MSMF082L1V1	MSMF 750 W 200 V Absolute encoder	59
VSMF082L1V2	MSMF 750 W 200 V Absolute encoder	59
MSMF082L1V2M	MSMF 750 W 200 V Absolute encoder	125
MSMF092L1A1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1A2	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1A2M	MSMF 1000 W 200 V Absolute encoder	126
MSMF092L1B1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1B2	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1B2M MSMF092L1C1	MSMF 1000 W 200 V Absolute encoder MSMF 1000 W 200 V Absolute encoder	126 60
MSMF092L1C1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1C2M	MSMF 1000 W 200 V Absolute encoder	126
MSMF092L1D1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1D2	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1D2M	MSMF 1000 W 200 V Absolute encoder	126
MSMF092L1S1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1S2	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1S2M	MSMF 1000 W 200 V Absolute encoder	126
MSMF092L1T1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1T2	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1T2M	MSMF 1000 W 200 V Absolute encoder	126
MSMF092L1U1	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1U2 MSMF092L1U2M	MSMF 1000 W 200 V Absolute encoder MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1U2M MSMF092L1V1	MSMF 1000 W 200 V Absolute encoder MSMF 1000 W 200 V Absolute encoder	126 60
VISINF092L1V1 VISINF092L1V2	MSMF 1000 W 200 V Absolute encoder	60
MSMF092L1V2M	MSMF 1000 W 200 V Absolute encoder	126
MSMF102L1C5	MSMF 1.0 kW 200 V Absolute encoder	61
		.

MSMF (Low iner		Der	MSMF (Low iner		D
Part No.		Page	Part No.		Page
MSMF102L1C6M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1C6M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1C7	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1C7	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1C8	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1C8	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1C8M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1C8M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1D5	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1D5	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1D6	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1D6	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1D6M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1D6M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1D7	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1D7	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1D8	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1D8	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1D8M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1D8M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1G5	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1G5	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1G6	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1G6	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1G6M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1G6M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1G7	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1G7	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1G8	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1G8	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1G8M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1G8M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1H5	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1H5	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1H6	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1H6	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1H6M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1H6M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF102L1H7	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1H7	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1H8	MSMF 1.0 kW 200 V Absolute encoder	61	MSMF302L1H8	MSMF 3.0 kW 200 V Absolute encoder	64
MSMF102L1H8 MSMF102L1H8M	MSMF 1.0 kW 200 V Absolute encoder	127	MSMF302L1H8 MSMF302L1H8M	MSMF 3.0 kW 200 V Absolute encoder	130
MSMF152L1C5	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1C5	MSMF 4.0 kW 200 V Absolute encoder MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1C6	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1C6		65
MSMF152L1C6M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1C6M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1C7	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1C7	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1C8	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1C8	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1C8M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1C8M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1D5	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1D5	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1D6	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1D6	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1D6M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1D6M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1D7	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1D7	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1D8	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1D8	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1D8M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1D8M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1G5	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1G5	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1G6	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1G6	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1G6M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1G6M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1G7	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1G7	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1G8	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1G8	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1G8M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1G8M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1H5	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1H5	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1H6	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1H6	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1H6M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1H6M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF152L1H7	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1H7	MSMF 4.0 kW 200 V Absolute encoder	65
MSMF152L1H8				MSMF 4.0 kW 200 V Absolute encoder	
	MSMF 1.5 kW 200 V Absolute encoder	62	MSMF402L1H8		65
MSMF152L1H8M	MSMF 1.5 kW 200 V Absolute encoder	128	MSMF402L1H8M	MSMF 4.0 kW 200 V Absolute encoder	131
MSMF202L1C5	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1C5	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1C6	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1C6	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1C6M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1C6M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1C7	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1C7	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1C8	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1C8	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1C8M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1C8M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1D5	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1D5	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1D6	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1D6	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1D6M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1D6M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1D7	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1D7	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1D8	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1D8	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1D8M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1D8M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1G5	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1G5	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1G6	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1G6	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1G6M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1G6M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1G7	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1G7	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1G7 MSMF202L1G8	MSMF 2.0 kW 200 V Absolute encoder		MSMF502L1G7 MSMF502L1G8	MSMF 5.0 kW 200 V Absolute encoder	66
		63			
MSMF202L1G8M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1G8M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1H5	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1H5	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1H6	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1H6	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1H6M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1H6M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF202L1H7	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1H7	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1H8	MSMF 2.0 kW 200 V Absolute encoder	63	MSMF502L1H8	MSMF 5.0 kW 200 V Absolute encoder	66
MSMF202L1H8M	MSMF 2.0 kW 200 V Absolute encoder	129	MSMF502L1H8M	MSMF 5.0 kW 200 V Absolute encoder	132
MSMF302L1C5	MSMF 3.0 kW 200 V Absolute encoder	64	MSMF5AZL1A1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52
					· · · · · ·

MSMF (Low inertia)					
Part No.	Title	Page			
MSMF5AZL1A2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1B1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1B2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1B2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1C1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1C2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1C2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1D1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1D2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1D2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1S1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1S2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1S2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1T1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1T2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1T2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1U1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1U2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1U2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			
MSMF5AZL1V1	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1V2	MSMF 50 W 100 V/200 V common Absolute encoder	51,52			
MSMF5AZL1V2M	MSMF 50 W 100 V/200 V common Absolute encoder	121			

MUMA (Low inertia MINAS E series Motor)				
Part No.	Title	Page		
MUMA011P1S	MUMA 100 W 100 V Incremental encoder	213,217		
MUMA011P1T	MUMA 100 W 100 V Incremental encoder	213,217		
MUMA012P1S	MUMA 100 W 200 V Incremental encoder	215,217		
MUMA012P1T	MUMA 100 W 200 V Incremental encoder	215,217		
MUMA021P1S	MUMA 200 W 100 V Incremental encoder	213,217		
MUMA021P1T	MUMA 200 W 100 V Incremental encoder	213,217		
MUMA022P1S	MUMA 200 W 200 V Incremental encoder	215,217		
MUMA022P1T	MUMA 200 W 200 V Incremental encoder	215,217		
MUMA042P1S	MUMA 400 W 200 V Incremental encoder	215,217		
MUMA042P1T	MUMA 400 W 200 V Incremental encoder	215,217		
MUMA5AZP1S	MUMA 50 W 100 V/200 V common	213,215		
WOWASAZE 13	Incremental encoder	217		
MUMA5AZP1T	MUMA 50 W 100 V/200 V common	213,215		
	Incremental encoder	217		

MUMA (MINAS E series Motor with gear reducer)					
Part No.	Title	Page			
MUMA011P31N		218,221			
MUMA011P32N		218,221			
MUMA011P34N	MUMA with reduction gear 100 W 100 V	218,221			
MUMA011P41N	Incremental encoder	218,221			
MUMA011P42N		218,221			
MUMA011P44N		218,221			
MUMA012P31N		218,221			
MUMA012P32N		218,221			
MUMA012P34N	MUMA with reduction gear 100 W 200 V	218,221			
MUMA012P41N	Incremental encoder	218,221			
MUMA012P42N		218,221			
MUMA012P44N		218,221			
MUMA021P31N		218,221			
MUMA021P32N		218,221			
MUMA021P34N	MUMA with reduction gear 200 W 100 V	218,221			
MUMA021P41N	Incremental encoder	218,221			
MUMA021P42N		218,221			
MUMA021P44N		218,221			
MUMA022P31N		218,221			
MUMA022P32N		218,221			
MUMA022P34N	MUMA with reduction gear 200 W 200 V	218,221			
MUMA022P41N	Incremental encoder	218,221			
MUMA022P42N		218,221			
MUMA022P44N		218,221			
MUMA042P31N		218,221			
MUMA042P32N		218,221			
MUMA042P34N	MUMA with reduction gear 400 W 200 V	218,221			
MUMA042P41N	Incremental encoder	218,221			
MUMA042P42N		218,221			
MUMA042P44N		218,221			

Sales Office

[Panasonic Sales Office of Motors]

TEL Company Name Country City Address [Category] FAX Panasonic Industrial Devices Sales +1-800-228-2350 Two Riverfront Plaza, 7th Floor Newark, NJ U.S.A Company of America New Jersey 07102-5490 U.S.A [Sales office] Avenida do Cafe, 277 Torre A-8 Andar +55-11-3889-4022Panasonic do Brazil Brazil Sao Paulo Jabaquara [Sales office] ZIP Code: 04311-900 Sao Paulo SP Brazil +55-11-3889-4103 +49-89-46-159-0 Hans-Pinsel-Strasse 2 · D - 85540 Haar · Panasonic Industrial Devices Sales Germany +49-89-46-159-212 Europe GmbH Munich http://eu.industrial.panasonic.com/about-us/contact-us e-mail [Sales office] [European Headquarter] http://eu.industrial.panasonic.com/products/motors-Web site compressors-pumps +49(0)-80-92/81-89-0 Am Schammacher Feld 47 D-85567 Grafing ahv Vertriebs-GmbH b. Munich +49(0)-80-92/81-89-99 Munich [Distributors] e-mail http://www.ghv.de/kontakt.html Germanv +49 (0) 8024 648-0 Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Panasonic Electric Works Europe AG Deutschland +49 (0) 8024 648-111 Holzkirchen [Sales office] https://www.panasonic-electric-works.com/eu/93.htm e-mail [European Headquarter] Web site https://www.panasonic-electric-works.com/eu/index.htm +49 (0) 8024 648-0 Rudolf-Diesel-Ring 2, 83607 Holzkirchen, Deutschland +49 (0) 8024 648-111 Panasonic Electric Works Europe AG Holzkirchen [Subsidiarv] e-mail https://www.panasonic-electric-works.com/eu/93.htm Web site https://www.panasonic-electric-works.com/eu/index.htm +33(0)160135757 10, rue des petits ruisseaux, Panasonic Electric Works Sales 91370 Verrières-Le-Buisson, France +31(0)160135758 Verrières-France Western Europe B.V. Le-Buisson https://www.panasonic-electric-works.com/eu/93.htm e-mail [Sales office] Web site https://www.panasonic-electric-works.com/eu/index.htm +39-045-6752711 Via del Commercio 3-5 (Z.I.Ferlina), 37012 Bussolengo (VR), Italy +39-045-6700444 Panasonic Electric Works Italia srl Verona [Subsidiarv] e-mail https://www.panasonic-electric-works.com/eu/93.htm Web site https://www.panasonic-electric-works.com/eu/322.htm Italy +39-02-270-98-1 Viale Monza 338 20128 Milano +39-02-270-98-290 Lenze Italia S.r.l. Milano [Distributors] mail@l enzeltalia it e-mail Web site http://www.lenze.com/it-it/azienda/lenze-in-italia/ +44(0)1908231599 Sunrise Parkway, Linford Wood Milton Keynes, MK14 6LF United Kingdom +44(0)1908231555 Panasonic Electric Works UK Ltd. Milton [Sales office] Keynes e-mail https://www.panasonic-electric-works.com/eu/93.htm Web site https://www.panasonic-electric-works.com/eu/index.htm United Kingdom +44-1234-7532-00 Priory Business Park, Bedford, MK44 3WH. +44-1234-7532-20 Lenze Limited Bedford [Distributors] uk.sales@lenze.com e-mail Web site http://www.lenze.com/en-gb/about-lenze/lenze-in-united-kingdom/ +43(0)2236-26846 Josef Madersperger Strasse 2. 2362 Biedermannsdorf (Vienna), Austria +43(0)2236-46133 Panasonic Electric Works Austria GmbH Austria Biedermannsdorf [Sales office] https://www.panasonic-electric-works.com/eu/93.htm e-mail Web site https://www.panasonic-electric-works.com/eu/index.htm +48(0)22338-11-33 ul. Wołoska 9a, 02-583 Warszawa Panasonic Electric Works Polska sp. +48(0)22213-95-01 Polska z.o.o. Warszawa e-mail https://www.panasonic-electric-works.com/eu/93.htm [Sales office] Web site https://www.panasonic-electric-works.com/eu/index.htm +31(0)499372727De Rijn 4 (Postbus 211), 5684 PJ Best, Panasonic Electric Works Sales Nederland +31(0)499372185 Nederland PJ Best Western Europe B.V. e-mail https://www.panasonic-electric-works.com/eu/93.htm [Sales office]

(December.01.2015)

Web site

https://www.panasonic-electric-works.com/eu/index.htm

Sales Office

Country	Company Name	City	Address	TEL
country	[Category]	City	Address	FAX
				+420(0)541217001
Czech Republic	Panasonic Electric Works Czech s.r.o.	Brno	Veveří 3163/111, 616 00 Brno, Czech	+420(0)541217101
	[Sales office]	Brno	e-mail https://www.panasonic-electric-works.	.com/eu/93.htm
			Web site https://www.panasonic-electric-works.cc	m/eu/index.htm
			Barajas Park, San Severo 20, 28042 Madrid,	+34-91-329-3875
Spain	Panasonic Electric Works Espana S.A.	Madrid	Spain	+34-91-329-2976
opani	[Subsidiary]	maana	e-mail https://www.panasonic-electric-works.	.com/eu/93.htm
			Web site https://www.panasonic-electric-works.	.com/eu/322.htm
			sos. Bucuresti, nr.63, Ciorogirla, Ilfov, RO-	+40-21-255-0543
Romania	C.I.T. Automatizari SRL	Bucuresti	077055, ROMANIA	+40-21-255-0544
	[Distributors]		e-mail office@citautomatizari.ro	
			Web site http://www.citautomatizari.ro	Γ
			Neumann J. u. 1., 1117 Budapest, Hungary	+36(0)19998926
Hungary	Panasonic Electric Works Hungary	Budapest	······································	+36(0)19998927
	[Sales office]		e-mail https://www.panasonic-electric-works.	
			Web site https://www.panasonic-electric-works.	r
			Grundstrasse 8, 6343 Rotkreuz,	+33(0)417997050
Switzerland	Panasonic Electric Works Schweiz AG	Rotkreuz	Schwitzerland	+31(0)417997055
	[Sales office]		e-mail https://www.panasonic-electric-works	
			Web site https://www.panasonic-electric-works.	
	Electroprivod Ltd.		Office 417, litera 43, Polustrovskiy avenue,	+7-812-703-09-81
Russia	[Distributors]	St.Petersburg	Saint-Petersburg, Russia	+7-812-493-27-26
			Web site http://www.electroprivod.ru	Γ
			10042 SOK.NO:10 A.O.S.B CIGLI-IZMIR,	+90 232 433 8515
	BOSTEK TEKNOLOJI GELISTIRME VE ROBOT SIST.SAN.TIC.A.S	Izmir	TURKEY	+90 232 433 8881
	[Distributors]		e-mail sales@bostek.com.tr	
Turkey			Web site http://www.bostek.com.tr/	1
-			Des Sanayi Sitesi 104 Sokak A07 Blok No:02	+90-216-466-3683
	Savior Kontrol Otomasyon	Istanbul	Yukarı Dudullu Ümraniye İstanbul Turkey +90-216-466-3	
	[Distributors]		e-mail info@savior.com.tr	
			Web site http://www.savior.com.tr/	
	Panasonic Industrial Devices Sales (Hong Kong) Co.,Ltd. (PIDSHK)	Hong kong	Top Floor, South Wing, ChinaChem Gloden Plaza, 77 Mody Road, S.T.S. East, Kowloon,	+852-2529-7322
	[Sales office]		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		-	+86-755-8255-8791
	(China) Co.,Ltd. (PIDSCN)	Shenzhen	8/F, Tower Three, Kerry Plaza, 1-1 Zhongxinsi Road, Futian District, Shenzhen, China	100-100-0200-0191
	[Sales office]			—
			12th Floor, Ambience Commercial, Behind Ambience Mall,	+91-124-6670400
	Industrial Division, Panasonic India Pvt Ltd. [Sales office]	Gurgaon, Haryana	Gurgaon - 122002, Haryana, India	+91-124-6670338
			Web site http://industrial.panasonic.com/sa/pro compressors/fa-motors	ducts/motors-
			Sardar Patel Ring Road, Near Bright School,	+91-79-39845300
	Lubi Electronics	Gandhinaga,	Nana Chiloda, Dist.: Gandhinagar - 382330, Gujarat, India	+91-79-39845599
	[Distributors]	Gujarat	Web site http://www.lubielectronics.com	
India	Luna Bearings [Distributors]			+91-22-23455052
		Mumbai, Maharashtra	59, Bibijan Street, 2nd Floor, Moiz Manzil, Mumbai - 400003, Maharashtra, India	+91-22-23455052
			Web site http://www.lunabearings.com	101-22-20421113
			A/6, Plot No.74, Shree Ganesh Complex,	
				+91-2522-661600
			Behind Gupta Compound, Dapole Road,	+31-2322-001000
	Vashi Electricals Pvt. Ltd. [Distributors]	Mumbai, Maharashtra		+91-2522-661620

Country		Company Name [Category]	City	Address	TEL
				Address	FAX
	Kawaa	Panasonic Industrial Devices Sales	0 a sud	6F DONG-IL Tower 38, Teheran-ro 114-gil,	+82-2-795-9600
Korea		Korea Co., Ltd. (PIDSKR) [Sales office]	Seoul	Gangnam-gu, Seoul, 135-851, Korea	+82-2-2052-1053
	Talaan	Panasonic Industrial Devices Sales Taiwan Co.,Ltd. [Sales office]	Taipei	12F, No.9, SongGao Rd., Taipei 110, Taiwan,	+886-2-2757-1900
	Taiwan			R.O.C.	+886-2-2757-1977
		Panasonic Industrial Devices Sales Asia Pte.Ltd.	0:	No.3 Bedok South Road Singapore 469269	+65-6390-3718
		[Sales office]	Singapore	NO.3 DECOR SOUTH HOAD Singapore 469269	+65-9435-6844
				2 Woodlands Sector 1 #03-25, Woodlands	+65-6751-5088
	Singapore	Intermech Machinery Pte.Ltd.	Singapore	Spectrum 1 Singapore 738068	+65-6759-2122
				Web site http://www.intermech.com.sg	
				No.14, Lorong Sanggul 1C, Bandar Puteri,	+60-3-5161-7876
		Panamech Machinery Sdn Bhd [Distributors]	Kuala Lumpur	41200 Klang, Selangor Darul Ehsan	+60-3-5161-7136
	Malaysia			Web site http://panamech.com.my/	
	malaysia	Developments (DO) Order Dist		Sri Relau Komplex, Unit 1-3-11, Persiaran	+60-4-643-8266
		Panamech (PG) Sdn Bhd [Distributors]	Penang	Bukit Jambul 1, 11900 Penang	+60-4-645-1639
Sol				Web site http://panamech.com.my/	
South-eastern Asia		Premier Automation Center Co.,Ltd. [Distributors]	Bangkok	73 Soi Ladkrabang 30 Ladkrabang	+66-2181-2299
east				Ladkrabang Bangkok 10520	+66-2181-2288
tern	Thailand			Web site http://www.premier-ac.co.th	
Asi	Thananu	Plenty Island (Thai) Co.,Ltd. [Distributors]	Bangkok	3 Soi Charoenrat 10, Charoenrat Road.,	+66-2291-9933
a				Bangkhlo, Bangkhorlaem, Bangkok 10120	+66-2291-2065
				Web site http://www.plenty.co.th	
	Indonesia	PT. Handal Yesindo Sejahtera [Distributors]	Surabaya	JI. Raya Kutisari 8A, Surabaya, Indonesia	+62-31-843-8844
					+62-31-841-4333
				Web site http://www.handalyesindo.com	
	indonesia	PT.Riasarana Electrindo [Distributors]	Jakarta	Jl. Prof. Dr. Latumenten Grogol Permai blok	+62-21-564-9178
				D No. 8-15 Jakarta 11460, Indonesia	+62-21-566-7405
				Web site http://www.risacorps.com	
	Philippines	pines Movaflex Designs Unlimited, Inc. [Distributors]	Manila	136 Calbayog Street, Mandaluyong City,	+63-2-881-3636
				Metro Manila, Philippines.	+63-2-998-3881
				Web site http://www.movaflex.com/	

Safety Precautions · Important Notes on exporting this product or equipment containing this product; If the end-user or application of this product is related to military affairs or weapons, its export may be controlled by "Foreign Exchange and Foreign Trade Control Law" of Japan where export license will be required before product can be exported from Japan. • This product is designed and manufactured for use in General Purpose Industrial Equipment and it is not intended to be used in equipment or system that may cause personal injury or death. • All servicing such as installation, wiring, operation, maintenance and etc., should be performed by qualified personnel only. · Tighten mounting screws with an adequate torque by taking into consideration strength of the screws and the characteristics of material to which the product will be mounted. Over tightening can damage the screw and/or material; under tightening can result in loosening. *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 :	ISO 9001 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 Tel : +81-72-871-1212 Fax: +81-72-870-3151
	The contents of this catalog apply to the products as of January 2016.

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. GHV Vertriebs-GmbH • 85567 Grafing • Tel: +49 (0) 8092 8189 0 • Fax: +49 (0) 8092 8189 99 • info@ghv.de • www.ghv.de