E Series

Driver Specifications

	Ц	Sing	le phase, 100 V	Single phase, 100 V to 115 V ^{+10 %} 50 Hz/60 Hz –15 %					
	put po	Sing	le phase, 200 V	Single phase, 200 V to 240 V ^{+10 %} 50 Hz/60 Hz –15 %					
	wer	3-ph	nase, 200 V	3-phase, 200 V to 240 V +10 % 50 Hz/60 Hz -15 %					
	Env	Terr	perature	Operating : 0 °C to 55 °C, Storage : –20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal temperature="">)</nomal>					
	riron	Hun	nidity	Both operating and storage : 90 %RH or less (free from condensation)					
	mer	Altit	ude	1000 m or lower					
_	Ħ	Vibr	ation	5.88 m/s ² or less, 10 Hz to 60 Hz (No continuous use at resonance frequency)					
Basi	With	stand	voltage	Should be 1500 VAC (Sensed current: 20 mA) for 1 minute between Primary and Ground.					
င္ လူ	Con	trol m	ethod	IGBT PWM Sinusoidal wave drive					
becif	Enc	oder f	eedback	2500 P/r (10000 resolution) incremental encoder					
icati	် လ	Inpu	t	7 inputs (1) Servo-ON, (2) Alarm clear and other inputs vary depending on the control mode.					
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.					
	sп	Inpu	t	2 inputs Supports both line driver I/F and open collector I/F.					
	ignal	Out	out	4 outputs Feed out the encoder pulse (A, B and Z-phase) in line driver. Z-phase pulse is also feed out in open collector.					
	Con	muni	cation function RS232	1 : 1 communication to a host with RS232 interface is enabled.					
	Disp	olay LE	ED	(1) Status LED (STATUS), (2) Alarm code LED (ALM-CODE)					
	Rea	enera	tion	No built-in regenerative resistor (external resistor only)					
	Dvn	amic ł	orake	Built-in					
	_ j			3 modes of (1) High-speed position control (2) Internal velocity control and					
	Con	trol m	ode	 (3) High-functionality positioning control are selectable with parameter. (1) CW over travel inhibition. (2) CCW over travel inhibition. (3) Deviation counter clear. 					
		Control input		(4) Gain switching, (5) Electronic gear switching					
	_	Con	trol output	(1) Positioning complete (In-position)					
	Positior		Max. command pulse frequency	Line driver : 500 kpps, Open collector : 200 kpps					
	n contre	Pulse input	Type of input pulse train	Differential input. Selectable with parameter, ((1) CW/CCW, (2) A and B-phase, (3) Command and Direction)					
	<u>o</u>		Electronic gear (Division/Multiplication) of command pulse	Setup of electronic gear ratio Setup range of (1-10000) × 2 ⁽⁰⁻¹⁷⁾ /(1-10000)					
			Smoothing filter	Primary delay filter or FIR type filter is selectable to the command input.					
	Inter	Con	trol 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 					
	nals	Con	trol output	(1) Speed arrival (at-speed)					
	spee	Inte	rnal speed command	Internal 4-speed is selectable with control input.					
Ţ	ed cont	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.					
Incti	<u>o</u>	Zero	o-speed clamp	0-clamp of internal speed command with speed zero clamp input is enabled.					
ons		Auto-ga	Real-time	Estimates the load inertia in real-time in actual operation and sets up the gain automatically corresponding to the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control.					
		in tuning	Normal mode	Estimates the load inertia with an action command inside of the driver, and sets up the gain automatically corresponding to setup of the machine stiffness. Useable at (1) High-response position control, (2) Internal speed control and (3) High-functionality position control.					
		Mas inpu	king of unnecessary t	Masking of the following input signal is enabled. (1) Over-travel inhibition, (2) Speed zero clamp, (3) Torque limit switching					
	Comm	Divi: puls	sion of encoder feedback e	1 P/r to 2500 P/r (encoder pulses count is the max.).					
	ION	Prote: funct	Hardware error	Over-voltage, under-voltage, over-speed over-load, over-heat, over-current and encoder error etc.					
		ctive tion	Software error	Excess position deviation, command pulse division error, EEPROM error etc.					
		Trac	eability of alarm data	Traceable up to past 14 alarms including the present one.					
		Dan	nping control function	Manual setup with parameter					
		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**

Standard Wiring Example of Main Circuit

3-Phase, 200 V



Encorder Wiring Diagram



- 1) Refer the wiring diagram.
- bending resistance.
- 3) Use the twisted pair wire for the corresponding signal and power supply. 4) Shielding
- Connect the shield of the driver to the case of CN X4. Connect the shield of the motor to Pin-6.

E Series Wiring Diagram



When you make your own junction cable for encoder (Refer to P.239, P.240 "Options" for connector.)

2) Use the twisted pair wire with shield, with core diameter of 0.18 mm² (AWG24) or larger, with higher

Wiring Diagram

Control Circuit Standard Wiring Example

CN X 5 Wiring Example at Position Control Mode



CN X 5 Wiring Example at Internal Velocity Control Mode



Frame K 15 5 20 \$ 5 🛛 🖓 A.HI s 🛛 🖓 Connector for communicatior <u>___</u> Connector for control signal connection 120 130 Connector for encoder connection, CN X4 Connector for motor connection, CN X3 Connector for main Earth circuit connection, terminal CN X1 screws 5.2 Connector (Driver side)

Connector symbol	Connector type	Manufacturer
CNX1	5569-06A2	Molex Inc.
CNX3	5569-10A2	Molex Inc.
CNX4	53460-0621	Molex Inc.
CNX5	10226-52A11L(or equivalent)	Sumitomo 3M

Frame L



Connector symbol	Connector type	Manufacturer
CNX1	5569-06A2	Molex Inc.
CNX3	5569-10A2	Molex Inc.
CNX4	53460-0621	Molex Inc.
CNX5	10226-52A11L(or equivalent)	Sumitomo 3M

E Series **Dimensions of Driver**



Motor Specifications

100 V MUMA 50 W to 200 W Low inertia Small drives

			AC100 V					
Motor model		MUMA	5AZP1 🗆	011P1 🗆	021P1 🗆			
Annlingh In driv		Model No.	MKDET1105P	MKDET1110P	MLDET2110P			
Applicable driv	/er	Frame symbol	Fran	me K	Frame L			
Power supply	capacity (kVA)	0.3 0.4		0.5			
Rated output (W)		50	100	200			
Rated torque ((N·m)		0.16	0.32	0.64			
Momentary Ma	ax. peak t	orque (N·m)	0.48	0.95	1.91			
Rated current	(Arms)		1.0	1.6	2.5			
Max. current (Ао-р)		4.3	6.9	11.7			
Regenerative	brake	Without option	No limit Note)2					
(times/min)	Note)1	DV0P2890	No limit Note)2					
Rated rotation	al speed ((r/min)	3000					
Max. rotationa	nal speed (r/min)		5000					
Moment of ine	rtia	Without brake	0.021	0.032	0.10			
(×10 ⁻⁴ kg·m ²)		With brake	0.026	0.036	0.13			
Recommende of the load and	d moment d the rotor	of inertia ratio Note)3		30 times or less				
Rotary encode	er specific	ations	2500 P/r					
Rotary chood	er speeine		Incremental					
	Resolution per single turn		10000					
Protective end	closure rat	ting	IP65 (except rotating 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	Installati	on location	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
	Altitude		1000 m or lower					
	Vibration resistance		49 m/s² or less					
Mass(kg), () re	epresents l	nolding brake type	0.4 (0.6)	0.5 (0.7)	0.96 (1.36)			

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.) Static friction torque (N m) 0.29 1.27 25 50 Engaging time (ms) 20 (30) 15 (100) Releasing time (ms) Note)4 Exciting current (DC) (A) 0.26 0.36 DC 1 V or more Releasing voltage DV 24 V ±10 % Exciting voltage Permissible load 147 Radial load P-direction (N) 392 During 88 147 Thrust load A-direction (N) assembly 196 Thrust load B-direction (N) 117 68 Radial load P-direction (N) 245 During 58 98 Thrust load A-direction (N) operation

For motor dimensions, refer to P.231, and for the diver, refer to P.226.

Thrust load B-direction (N)

N	Model Designation								
e.	g.)	M	U	Μ	Α	5	Α	Ζ	
	Symbol		Туре						
	MUMA		Ultra low inertia (50 W to 200 W)						
Motor rated output			output			Voltage s	specificatio	ns	
	Symbol F		Rated output	:		Symbol	Specific	ations	
	5A		50 W	1		1	100	V	
	01		100 W			7	100/20	00 V	
	02		200 W			<u> </u>	(50 W	only)	

Torque Characteristics [at AC100 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]





MUMA021P1



*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.

rotational speed

Torqu





58

98



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
 - If the load is connected, frequency will be defined as 1/(m+1), where m = (load moment of inertia) / (rotor moment of inertia).
 - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
 - Power supply voltage is AC115 V (at 100 V of the main voltage).
 - If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/115) relative to the value in the table.
 - When regeneration occurs continuosly such cases as running speed frequently changes or vertical feeding, consult us or a dealer.
 - 2. If the effective torque is within the rated torque, there is no limit in regenerative brake
 - 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
 - 4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by SEMITEC Corporation or equivalent).
 - () represents the actually measured value using a diode (200 V, 1 A or equivalent)

E Series

Motor Specifications

200 V MUMA 50 W to 400 W [Low inertia Small drives]

<table-container>Moder modelMUMA5AZP1012P1022P1042P1Applicable driverMdel No.MKDET310PMLDET2310PApplicable driverMKDET1310PMLDET2310PApplicable driverFrame symbolMKDET210PMLDET2510PFrame symbolFrame symbolFrame NFrame NPower supplicabactive XV0.30.30.50.90Rated output (W)50100200400Rated output (W)0.0160.320.641.3Momentary Max_pextive (N·m)0.480.951.913.8Rated current (Arms)1.01.01.62.5Max_current (Arms)1.01.01.62.5Max_current (Arms)0.020.0100.0171.0Max_current (Arms)Without pointNotely2Terrent1.0Max_current (Arms)Without point0.0210.0320.100.17Max_current of inertify area0.0260.0360.130.20Moment of inertify areaNotely330 times reles1.00.20Recommended for the instrational spectorNotely330 times reles1.00.20Recommended for the instrational spectorNotely30.0200.0170.20Moment of inertify area0.0260.0360.130.20Recommended for the instrational spectorNotely30.201.5Recommender of inertify areaNotely30.0201.5Notely3Contor0.026<</table-container>				AC200 V					
Applicable driverModel No.MKDET1310PMLDET2310PApplicable driverFrame symbolFrame symbolMKDET210PMLDET2510PPower supply capacity (KVA)0.30.30.50.9Rated output (W)501000200400Rated output (W)0.160.320.641.3Momentary Max. peak Lorue (N·m)0.480.951.913.8Rated ourrent (Arms)1.01.01.62.5Max. current (Ac-p)4.34.37.511.7Regenerative brake frequency (Inseminity Note)1VOP2891NotimitNote)2Rated rotational speet (r/min)30020.0100.17Max. rotational speet (r/min)0.0260.0360.130.20Moment of inertia of the load and the rotNote)330 times or less30 times or lessRotary encoder speet (rest (rhoten metational speet (r/min)1P65 (except rotating portion of output shaft and lead with end)0 °C to 40 °C (free from freezing). Storage : -20 °C to 65 °C (Max.terpetating portion of output shaft and lead with end)Protective enclosure ratingIP65 (except rotating portion of output shaft and lead withing).0 °C to 40 °C (free from freezing). Storage : -20 °C to 65 °C (Max.terpetating guarantee 80 °C for 72 hours <-10 withing).Protective enclosure ratingIndoors (no direct surfating portion or output shaft and lead withing).Indianat and lead withing).Rotary encoder specificationIndoors (no direct surfating portion or output shaft and lead withing).Indianat and lead withing).Prot	Motor model		МИМА	5AZP1 🗆	012P1 🗆	022P1 🗆	042P1 🗆		
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Frame symbol Frame K Frame K Frame L Gal 10 1.0	Applicable drive	r	Model No.	MKDE11505P		MKDET2210P	MLDET2510P		
Power supply capacity (kVA)0.30.7.30.50.9Rated output (W)50100200400Rated output (W) ···50100200400Rated output (W) ···0.160.320.641.3Momentary Max. peak tor (N ··m)0.480.951.913.8Rated current (Arms)1.01.01.62.5Max. current (Arms)1.01.01.62.5Max. current (Arms)Without optionNo limitNote)2Regenerative brake frequency (times/mini) Note)1Without optionNo limitNote)2Rated rotational speed (r/min)0.2610.0320.100.17Max. rotational speed (r/min)0.0260.0360.130.20Recommended moment of inertia ratio of the load and the rotorNote)330 times or less0.10Retary encoder is ratio of the rotal and the rotorNote)30.100.17Protective rotating portion of user subjective1065 (scept rotating portion of user subjective).1000Protective international speed (r/min)11965 (scept rotating portion of user subjective).1081 (Max.terreture guarantee 80 °C for 72 hours <normal humidity.<="" td="">Rotating international speed (r/min)0.10 °C (free from freezing). Storage : -20 °C to 55 °C (Max.terreture guarantee 80 °C for 72 hours <normal humidity.<="" td="">Protective international speed (r/min)0.10 °C (free from freezing). Storage : -20 °C to 55 °C (Max.terreture guarantee 80 °C for 72 hours <normal humidity.<="" td="">Protective internation0.20 °C (do 10 °C (fr</normal></normal></normal>			Frame symbol	Frame K		Frame K	Frame L		
$ \begin{array}{c c c c } \label{eq:product} \begin{tabular}{ c c c } \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c c } \hline \begin{tabular}{ c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$			· · · · · · · · · · · · · · · · · · ·			Frame L			
Rated output (W) $>$ 50 100 200 400 Rated torque (N · m) 0.16 0.32 0.64 1.3 Momentary Max. peak $>>$ (x · m) 0.48 0.95 1.91 3.8 Rated current (Ar-s) 1.0 1.0 1.6 2.5 Max. current (Ar-s) 1.0 1.0 1.6 2.5 Max. current (Ar-s) 1.0 1.0 1.6 2.5 Regenerative brake frequency (times/min) Note)1without option $DV0P2891$ $VOP2891$ $VOP2891$ Rated rotational speed (rm m) $VOP2891$ $VOP2891$ $VOP2891$ Max. rotational speed (rm m) 0.021 0.032 0.10 0.17 Moment of inetria ratio of rotar (r10 rkg/m²) $VVOP2891$ $VOP2891$ 0.026 0.036 0.13 0.20 Recommender to functia ratio of the load and \pm vote V $VOP2891$ $VOP2891$ $VOP2891$ $VOP2891$ $OOP2891$ Retary encode to functia ratio of the load and \pm vote V $VOP2891$ $VOP2891$ $VOP2891$ $VOP2891$ Retary encode to functia ratio of the load and \pm vote V $VOP2891$ $VOP2891$ $VOP2891$ $VOP2891$ Retary encode to function persure single tum $VOP2891$ $VOP2891$ $VOP2891$ $VOP2891$ Retary encode to $VOP2801$ $VOP2891$ $VOP2891$ $VOP2891$ $VOP2891$ Retary encode to $VOP2801$ $VOP2891$ $VOP2891$ $VOP2891$ $VOP2891$ Retary encode to $VOP2801$ $VOP2891$ $VOP2891$ VOP	Power supply ca	apacity (kVA)	0.3	0.3	0.5	0.9		
Rated torque (N · m)0.160.320.641.3Momentary Max. peak torque (N · m)0.480.951.913.8Rated current (Arms)1.01.62.5Max. current (Ao-p)4.34.37.511.7Regenerative brake frequency (times/min) Note)1Without option DV0P2891Note)2Note)2Rated rotational speed (r/min)0.0210.0320.100.17Max. rotational speed (r/min)0.0260.0360.130.20Moment of inertia ratio of the load and the rota the load and the rotaWithout persingle tur0.0260.0360.130.20Retary encoder specificationsImperative specificationsStore SpecificationsStore SpecificationsStore SpecificationsStore SpecificationsRetary encoder specificationsMinient temperatureIP65 (except rotating portion of output shaft and lead wire end)Imit and dustProtective encoderImit and indoors (no direct surging free from concensing)Imit and dustImit and dustIndoors (no direct surging here from concensing)Imit and dustImit and dustImit and dustAmbient temperatureIndoors (no direct surging here from concensing)Imit and dustImit and dustInstallation locationIndoors (no direct surging here from concensing)Imit and dustImit and dustAmbient temperatureIndoors (no direct surging here from concensing)Imit and dustImit and dustInstallation locationIndoors (no direct surging here from concensing)Imit an	Rated output (W	/)		50	100	200	400		
$\begin{split} & \end{maintary Max. peak torque (N \cdot m)} & 0.48 & 0.95 & 1.91 & 3.8 \\ \hline \mbox{Rated current (Arms)} & 1.0 & 1.0 & 1.6 & 2.5 \\ \hline \mbox{Max. current (Ac-p)} & 4.3 & 4.3 & 7.5 & 11.7 \\ \hline \mbox{Regenerative brake training frequency (Imms/min)} & \hline \mbox{Note)} & \hline \mbox{Note} & \hline \mbox{Note)} & \hline \mbox{Note)} & \hline \mbox{Note)} & \hline \mbox{Note)} $	Rated torque (N	· m)		0.16	0.32	0.64	1.3		
$ \begin{split} \begin{tabular}{ c $	Momentary Max	. peak to	orque (N · m)	0.48	0.95	1.91	3.8		
$\begin{split} \begin{tabular}{ c $	Rated current (A	(rms)		1.0	1.0	1.6	2.5		
$\begin{tabular}{ c $	Max. current (Ac	o-p)		4.3	4.3	7.5	11.7		
$\begin{tabular}{ c $	Regenerative bra	ake	Without option		No limit	Note)2			
Rated rotational speed (r/min)SUMEMax. rotational speed (r/min)Mithout brake0.0210.0320.100.17Moment of inertia (x10^4kg·m²)Without brake0.0260.0360.130.20Recommended moment of inertia ratio of the load and the rotorNote)3State Note)3State OCC <td>frequency (time</td> <td>Note)1</td> <td>DV0P2891</td> <td colspan="6">No limit Note)2</td>	frequency (time	Note)1	DV0P2891	No limit Note)2					
$\begin{tabular}{ c c c c } \hline Max. rotational speed (r/min) & 0.021 & 0.032 & 0.10 & 0.17 & $	Rated rotational	al speed (r/min)		3000					
$\begin{tabular}{ c c c c c } \hline Moment of inertia $$ without brake $$ 0.021 $$ 0.032 $$ 0.10 $$ 0.17 $$$ 0.10 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.15 $$ 0.10 $$ 0.17 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.15 $$ 0.10 $$ 0.17 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.10 $$ 0.20 $$ 0.15 $$ 0.20 $$ 0.15 $$ 0.10 $$ 0.15 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.15 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.13 $$ 0.20 $$ 0.15 $$ 0.20 $$ 0.15$	Max. rotational s	speed (r/	/min)	5000					
$\begin{tabular}{ c $	Moment of inerti	а	Without brake	0.021	0.032	0.10	0.17		
$ \begin{array}{c} \mbox{Recommended the rotor Note})3 & \end{tabular} \end{tabular} $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$ $$$	(×10 ⁻⁴ kg⋅m ²)		With brake	0.026	0.036	0.13	0.20		
Rotary encoder specifications2500 P/r IncrementalRotary encoder specifications2500 P/r IncrementalResolution per single turn10000Protective encoder rating10000Protective encoder rating10000Protective encoder rating10000Protective encoder rating0 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity="">)Ambient temperature60 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity="">)Ambient temperature60 °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity="">)Ambient temperature1000 °C to 40 °C (free from condensing)Installation locationIndoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dustAltitude1000 m or lowerVibration resistance9.4 (0.6)0.5 (0.7)0.96 (1.36)1.5 (1.9)</nomal></nomal></nomal>	Recommended of the load and	ded moment of inertia ratio and the rotor Note)3		30 times or less					
Rotary encoder specifications Incremental Incremental Incremental Resolution per single turn Protective enclosure rating IP65 (except rotating portion of output shaft and lead wire end) Protective enclosure rating O °C to 40 °C (free from freezing), Storage : -20 °C to 65 °C (Max.temperature guarantee 80 °C for 72 hours <nomal humidity="">) Ambient temperature Ambient temperature guarantee 80 °C for 72 hours <nomal humidity="">) Ambient humidity 85 %RH or lower (free from condensing) Installation location Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust Altitude 49 m/s² or less Mass (kg), () represents holding brake type 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)</nomal></nomal>				2500 P/r					
Resolution per single turn 10000 Protective enclosure rating IP65 (except rotating 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="">) 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 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)</nomal>	Rotary encoder	er specifications		Incremental					
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Ambient humidity 85 %RH or lower (free from condensing) Installation location Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust Altitude 1000 m or lower Vibration resistance 49 m/s² or less Mass (kg), () represents holding brake type 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)		Ambier	nt 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>					
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/s² or less Mass (kg), () represents holding brake type 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)	-	Ambier	nt humidity	85 %RH or lower (free from condensing)					
Altitude 1000 m or lower Vibration resistance 49 m/s² or less Mass (kg), () represents holding brake type 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)	Environment	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
Vibration resistance 49 m/s² or less Mass (kg), () represents holding brake type 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)		Altitude	•	1000 m or lower					
Mass (kg), () represents holding brake type 0.4 (0.6) 0.5 (0.7) 0.96 (1.36) 1.5 (1.9)		Vibratio	on resistance	49 m/s² or less					
	Mass (kg), () rep	resents h	nolding brake type	0.4 (0.6)	0.5 (0.7)	0.96 (1.36)	1.5 (1.9)		

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

Exciting voltage	DV 24 V ±10 %		
Releasing voltage	DC 1 V or more		
Exciting current (DC) (A)	0.26	0.36	
Releasing time (ms) Note)4	20 (30)	15 (100)	
Engaging time (ms)	25	50	
Static friction torque (N · m)	0.29	1.27	

		Radial load P-direction (N)	147	392					
	During assembly	Thrust load A-direction (N)	88	147					
	,	Thrust load B-direction (N)	117	196					
		Radial load P-direction (N)	68	245					
Dur ope	During operation	Thrust load A-direction (N)	58	98					
	000.000	Thrust load B-direction (N)	58	98					

For motor dimensions, refer to P.231, and for the driver, refer to P.226.

Note) Driver for 50 W and 100 W has a common power supply of single phase and 3-phase 200 V.

Driver for 200 W, the upper row is the power supply of 3-phase 200 V, and lower is the power supply of single-phase 200 V.

Driver for 400 W, the upper row is the power supply of 3-phase 200 V, and lower is the common power supply of single-phase and 3-phase 200 V.

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	Symbol	Ту	pe				
	MUMA	Ultra low inertia (50 W to 400 W		l ')			
Motor rated output					Voltage s	specifications	
	Symbol	Rated out	tput		Symbol	Specification	ns
	5A	50 W	'		2	200 V	
	01	100 W	'		7	100/200 V	'
	02	200 W	'			(50 W only	')
	04	400 W	'				







*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well.







Torque Characteristics [at AC200 V of power voltage (Dotted line represents the torque at 10 % less supply voltage.)]