## Motor Specifications and Ratings 200V MAMA 100W to 750W Ultra low inertia Small capacity

Motor model				AC200V							
		M	AMA	012P1 🗆	012S1 🗆	022P1 🗆	022S1 🗆	042P1 🗆	042S1 🗆	082P1 🗆	082S1 🗆
			A4 series	MADD	T1207	MBDD	T2210	MCDD	T3520	MDDDT5540	
		del No.	A4F series	MADD	1207F	MBDD1	2210F	MCDD.	T3520F	MDDDT5540F	
Applicable driv	er		A4P series	MADD	1207P	MBDD1	2210P	MCDD.	T3520P	MDDDT5540P	
	F	rame s	/mbol	Frar	ne A	Frar	ne B	Frar	me C	Frar	ne D
Power supply of	capacity (	(kVA)		0	.3	0	.5	0	.9	1	.6
Rated output (	W)			1	00	20	00	4	00	7	50
Rated torque (	N·m)			0.	19	0.	38	0.	76	1.	43
Momentary Ma	ax. peak t	orque (I	N · m)	0.	95	1.	91	3.	82	7.	16
Rated current (	(Arms)			0	.9	1.	54	3	.1	5	.1
Max. current (A	Ао-р)			6	.3	10	).9	21	1.7	36	3.0
Regenerative b	orake	Withc	ut option		No limit Note)2						
frequency (times/min)		DV0F	4283		No limit Note)2						
Note)1		DV0F	4284		No limit Note)2						
Rated rotationa	al speed	(r/min)		5000							
Max. rotational	l speed (r	/min)		6000							
Moment of iner of rotor	rtia	Withou	ut brake	0.025	0.035	0.078	0.088	0.14	0.15	0.50	0.51
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	0.029	0.039	0.11	0.12	0.17	0.18	0.58	0.59
Recommended of the load and			tia ratio Note)3	15 times or less							
Rotary encode	r specific	ations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
Γ	Resoluti	onpersi	ngleturn	10000	131072	10000	131072	10000	131072	10000	131072
Protective encl	losure rat	ing		IP65 (except rotating portion of output shaft and lead wire end)							
	Ambient	tempera	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>							
	Ambient humidity		85%RH or lower (free from condensing)								
Environment	Installati	on locat	ion	lr	ndoors (no dire	ect sunlight), free from corrosive gas, inflammable gas, oil mist and dust				st	
	Altitude						1000m	or lower			
Vibration resistance			nce	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less
Mass(kg),()rep	oresents h	olding bi	aketype	0.65 (0.85)	0.71 (0.91)	1.1 (1.5)	1.2 (1.6)	1.5 (1.9)	1.6 (2.0)	3.3 (4.0)	3.4 (4.1)

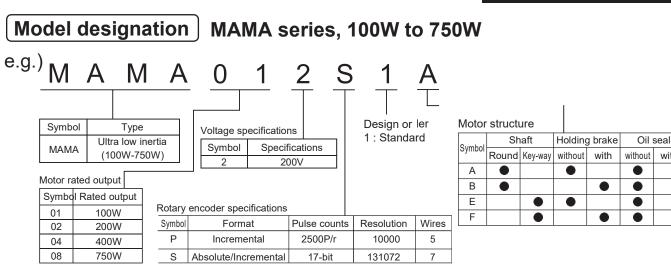
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)								
Static friction torque (N · m)	0.29	1.27	2.45					
Engaging time (ms)	35	50	70					
Releasing time (ms) Note)4	10 (60)	10 (100)	20 (–)					
Exciting current (DC) (A)	0.25	0.30	0.35					
Releasing voltage	DC2V or more							
Exciting voltage	DC 24 V ±5%							

Permissible load								
	Radial load P-direction (N)	147	392	686				
During assembly	Thrust load A-direction (N)	88	147	294				
	Thrust load B-direction (N)	117.6	196	392				
	Radial load P-direction (N)	68.6	245	392				
During operation	Thrust load A-direction (N)	49	68.6	68.6				
	Thrust load B-direction (N)	49	68.6	68.6				

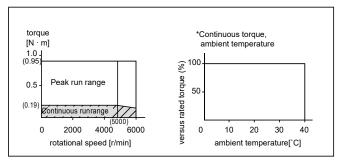
For motor dimensions, refer to page A4-115, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

# MINAS A4E

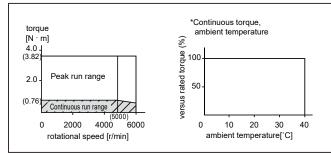
with



#### **Torque characteristics** at AC200V of power voltage MAMA012 🛙 🗆



#### MAMA042 1

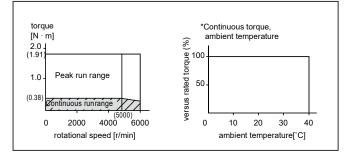


Running range (Torque limit setup : 100%)

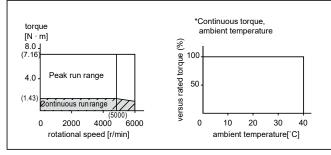
\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well. Torque Running range (Torque limit setup : 300%) Running range (Torque limit setup : 200%)

rotational speed





### MAMA082 1



Radial load (P) direction Shaft L/2Thrust load (A, B) direction в

uous running range

- 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 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 AC230V (at 200V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative brake.
  - 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

) represents the actually measured value using a diode (200V, 1A or equivalent)

<sup>4.</sup> Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).

## Motor Specifications and Ratings 100V MSMD 50W to 100W Low inertia Small Capacity

				AC100V					
Motor model		MS	SMD	5AZP1□	5AZS1⊡	011P1⊡	011S1⊡		
			A4 series	MADE	DT1105	MADDT1107			
		del No.	A4F series	MADD	T1105F	MADDT1107F			
Applicable dri	ver		A4P series	MADD	Г1105Р	MADDT1107P			
		Frame s	ymbol		Fran	ne A			
Power supply	capacity	(kVA)		0	.5	C	.4		
Rated output	(W)			5	50	1	00		
Rated torque	(N · m)			0.	16	0.	32		
Momentary M	ax. peak	torque (l	N · m)	0.	48	0.	.95		
Rated current	(Arms)			1	.1	1	.7		
Max. current (	,			4	.7	7.2			
Regenerative frequency	brake	Witho	out option	No limit Note)2					
(times/min) N	ote)1	DV0F	4280	No limit Note)2					
Rated rotation	nal speed	(r/min)		3000					
Max. rotationa	al speed (	r/min)		5000					
Moment of ine of rotor	ertia	Withou	ut brake	0.0	)25	0.0	951		
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	0.0	)27	0.0	954		
Recommende of the load an			tia ratio Note)3	30 times or less					
Rotary encod	er specifi	cations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental		
	Resolut	ionpersi	ngleturn	10000	131072	10000	131072		
Protective end	closure ra	ting		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambien	t temper	ature	0 to $40^{\circ}$ C (free from freezing),	, Storage : –20 to +65°C (Max.ten	nperature guarantee 80°C for 72	hours <nomal temperature="">)</nomal>		
	Ambien	t humidit	y		85%RH or lower (fre	ee from condensing)			
Environment	Installat	ion locat	tion	Indoors (no dire	ect sunlight), free from corros	sive gas, inflammable gas, c	il mist and dust		
	Altitude			1000m or lower					
Vibration resistance		ince	49m/s <sup>2</sup>	<sup>2</sup> or less	49m/ s <sup>2</sup> or less				
Mass(kg),()re	presents	holding b	rake type	0.32	(0.53)	0.47	(0.68)		

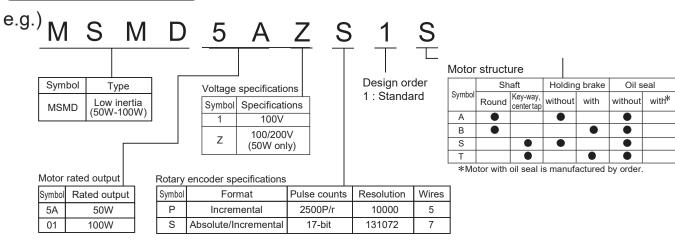
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)								
Static friction torque (N . m)	0.29							
Engaging time (ms)	35							
Releasing time (ms) Note)4	20 (–)							
Exciting current (DC) (A)	0.30							
Releasing voltage	DC1V or more							
Exciting voltage	DC 24 V ±5%							

Permissible load							
	Radial load P-direction (N)	147					
During assembly	Thrust load A-direction (N)	88					
	Thrust load B-direction (N)	117					
	Radial load P-direction (N)	68					
During operation	Thrust load A-direction (N)	58					
	Thrust load B-direction (N)	58					

For motor dimensions, refer to page A4-116, and for the diver, refer to pages A4-22, 48 and 73.

# MINAS A4E

## Model designation | MSMD series, 50W to 100W

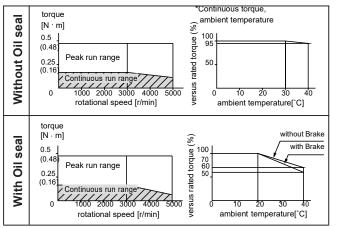


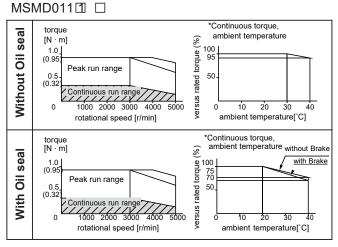
### **Torque characteristics**

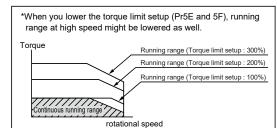
### at AC100V of power voltage

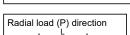
(Dotted line represents the torque at 10% less supply voltage.)

#### MSMD5AZ1









Shaft

Thrust load (A, B) direction

L/2

в

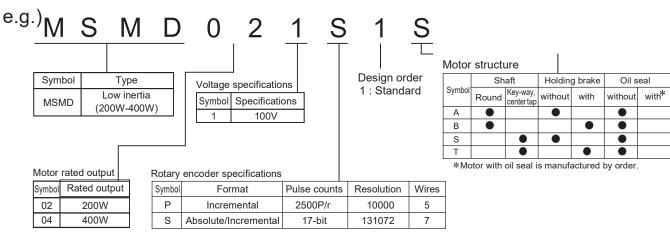
- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load. If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC115V (at 100V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative 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 (Z15D271 by Ishizuka Electronic or equivalent). ) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 100V MSMD 200W to 400W Low inertia Small Capacity

				AC100V					
Motor model	tor model <b>MSMD</b>		021P1⊡	021S1	041P1	041S1			
	A4 series		MBDD	0T2110	MCDDT3120				
N		del No.	A4F series	MBDD1	[2110F	MCDDT	3120F		
Applicable driv	ver		A4P series	MBDD1		MCDDT3120P			
	F	rame sy			me B	Fran			
Power supply		-			.5	0.	-		
Rated output (					00		00		
Rated torque (					64	1.	.3		
Momentary Ma	ax. peak t	orque (N	l · m)	1.	91	3.	.8		
Rated current				2	.5	4.	6		
Max. current (	Ao-p)			10	).6	19	.5		
Regenerative	brake	Witho	out option		No limit	Note)2			
frequency		DV0F	P4282	-		No limit	Note)2		
(times/min) No	ote)1	DV0F	P4283	No limit	Note)2	-	-		
Rated rotation	al speed	(r/min)			30	00			
Max. rotationa		/min)			50	00			
Moment of ine of rotor		Withou	ut brake	0.	14	0.	26		
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b		0.	16	0.28			
Recommende of the load and			ia ratio Note)3	30 times or less					
Rotary encode	er specific	ations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental		
ſ	Resoluti	onpersi	ngleturn	10000 131072		10000 131072			
Protective end	losure rat	ing		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient	tempera	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>					
	Ambient	humidit	y	85%RH or lower (free from condensing)					
Environment	Installatio	on locati	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
-	Altitude			1000m or lower					
	Vibration	resista	nce	49m/s <sup>2</sup> or less					
Mass (kg), () re	presents h	olding br	ake type	0.82 (1.3) 1.2 (1.7)					
Brake specif	ications (	This br	ake will b	e released when it is ener	gized. Do not use this for	braking the motor in motio	on.)		
Static friction		. m)		1.27					
Engaging time				50					
Releasing time	. ,	Note)4	1	15 (–)					
Exciting current (DC) (A)				0.36					
Releasing voltage Exciting voltage				DC1V or more					
LANILING VOILAYE				DC 24 V ±5%					
Permissible lo	bad								
Radial load P-direction (N)		392							
During assembly	Thrust loa	ad A-dire	ection (N)	147					
	Thrust loa		. ,			96			
During another	Radial loa		. ,			45			
During operation		rust load A-direction (N)		98					
	Thrust loa	rust load B-direction (N)		98					

For motor dimensions, refer to page A4-117, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

## Model designation MSMD series, 200W to 400W



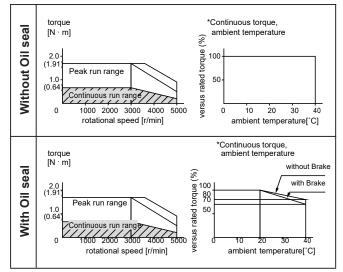
MINAS A4E

### Torque characteristics

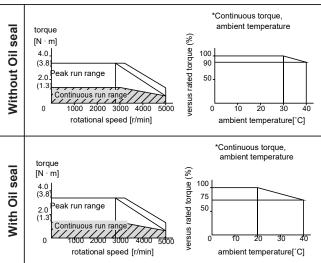
### at AC100V of power voltage

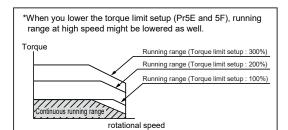
(Dotted line represents the torque at 10% less supply voltage.)

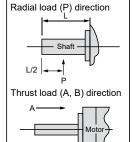
#### MSMD0211



#### MSMD041 🛛 🗆







в

- 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 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 AC115V (at 100V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative 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 (Z15D271 by Ishizuka Electronic or equivalent).
     ( ) represents the actually measured value using a diode (200V, 1A or equivalent)
    - A4-82

## Motor Specifications and Ratings 200V MSMD 50W to 100W Low inertia Small Capacity

					AC2	00V						
Motor model		MS	SMD	5AZP1□	5AZS1	012P1⊡	012S1					
		A4 series	MADDT1205									
		el No.	A4F series	MADDT1205F								
Applicable dri	ver		A4P series		MADDT1205P							
	Fr	ame sy	/mbol		Fran	ne A						
Power supply	capacity (k	(VA)		0	.5	0	.5					
Rated output	(W)			5	50	1	00					
Rated torque	(N · m)			0.	16	0.	32					
Momentary M	ax. peak to	orque (l	N · m)	0.	48	0.	95					
Rated current	(Arms)				1.	1						
Max. current (	(Ао-р)			4.7								
Regenerative frequency	brake	Witho	ut option	No limit Note)2								
(times/min) N	ote)1	DV0F	P4281	No limit Note)2								
Rated rotation	nal speed (r	r/min)			30	00						
Max. rotationa	al speed (r/i	min)		5000								
Moment of ine of rotor	ertia	Withou	ıt brake	0.0	)25	0.0	51					
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$	)	With b	rake	0.0	)27	0.0	54					
Recommende of the load an			tia ratio Note)3	30 times or less								
Rotary encod	er specifica	ations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental					
	Resolutio	npersi	ngleturn	10000	131072	10000	131072					
Protective end	closure ratir	ng		IP65 (except rotating portion of output shaft and lead wire end)								
	Ambient t	empera	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>								
-	Ambient humidity		у	85%RH or lower (free from condensing)								
Environment	Installatio	n locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust								
	Altitude				1000m (	or lower						
	Vibration	resista	nce	49m/s <sup>2</sup>	or less	49m/s <sup>2</sup> or less						
Mass(kg), () represents holding brake type			aketype	0.32(	(0.53)	0.47(	0.68)					

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							
Engaging time (ms)	35							
Releasing time (ms) Note)4	20 (–)							
Exciting current (DC) (A)	0.30							
Releasing voltage	DC1V or more							
Exciting voltage	DC 24 V ±5%							

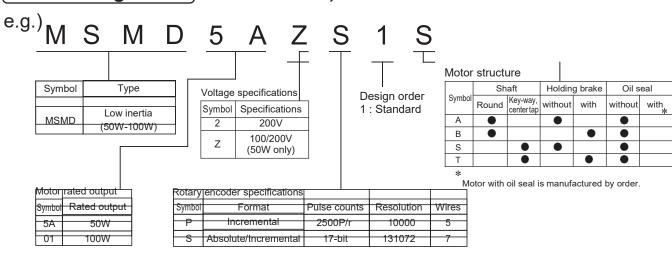
Permissible lo	Permissible load							
	Radial load P-direction (N)	147						
During assembly	Thrust load A-direction (N)	88						
	Thrust load B-direction (N)	117						
	Radial load P-direction (N)	68						
During operation	Thrust load A-direction (N)	58						
	Thrust load B-direction (N)	58						

For motor dimensions, refer to page A4-116, and for the diver, refer to pages A4-22, 48 and 73.

MINAS A4/A4F/A4P Motor

### MINAS A4F A4P

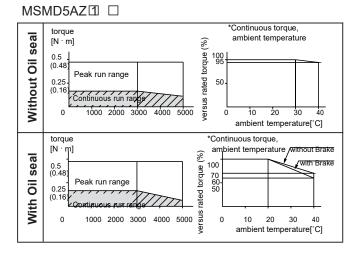
### Model designation MSMD series, 50W to 100W



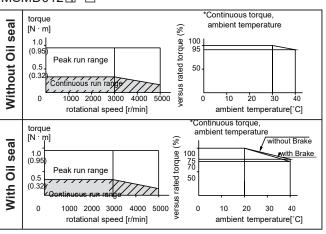
### Torque characteristics

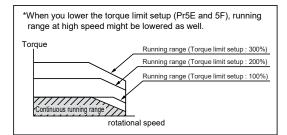
### at AC200V of power voltage

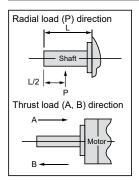
(Dotted line represents the torque at 10% less supply voltage.)



### MSMD0121







- 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 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 AC230V (at 200V 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.
- 2. If the effective torgue is within the rated torgue, there is no limit in generative 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 (Z15D271 by Ishizuka Electronic or equivalent).
  - () represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MSMD 200W to 750W Low inertia Small Capacity

				AC200V						
Motor model MSMD		022P1⊡	022S1 🗆	042P1⊡	042S1⊡	082P1⊡	082S1⊡			
			A4 series	MADD	T1207	MBDD	T2210	MCDDT3520		
		del No.	A4F series	MADD	Г1207F	MBDD1	2210F	MCDDT3520F		
Applicable driv	/er		A4P series	MADDT1207P		MBDD1	2210P	MCDDT3520P		
	F	Frame s	ymbol	Frar	ne A	Fran	ne B	Frar	ne C	
Power supply	capacity	(kVA)		0.	5	0	.9	1	.3	
Rated output (	W)			20	00	40	00	7	50	
Rated torque (	N·m)			0.0	64	1	.3	2	4	
Momentary Ma	ax. peak t	orque (I	N · m)	1.9	91	3	.8	7	.1	
Rated current	(Arms)			1.	.6	2	.6	4	.0	
Max. current (	Ао-р)			6.	.9	11.0		17.0		
Regenerative	brake	Witho	ut option	No limit Note)2						
frequency (times/min) No	ote)1	DV0	P4283	No limit Note)2						
Rated rotation	al speed	(r/min)		3000						
Max. rotationa	l speed (ı	/min)			50	450	00			
Moment of ine of rotor	rtia	Withou	ut brake	0.	14	0.26		0.87		
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	0.	16	0.3	28	0.97		
Recommende of the load and			tia ratio Note)3	30 times or less			20 times or less			
Rotary encode	er specific	ations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
	Resoluti	onpersi	ngleturn	10000	131072	10000	131072	10000	131072	
Protective enc	losure rat	ting			IP65 (except	rotating portion of	output shaft and le	ad wire end)		
Ambient temperature			0 to 40°C (free from	n freezing), Storage : -	20 to +65°C (Max.tem	perature guarantee 8	30°C for 72 hours <no< td=""><td>mal temperature&gt;)</td></no<>	mal temperature>)		
Ambient humidity			8	5%RH or lower (fre	e from condensing	1)				
Environment	Environment Installation location		Indoor	s (no direct sunligh	t), free from corros	ive gas, inflammat	ole gas, oil mist an	d dust		
Ī	Altitude					1000m d	or lower			
Vibration resistance			nce			49m/s <sup>2</sup>	or less			
Mass(kg),()re	presentsh	olding b	aketype	0.82	(1.3)	1.2 (	1.7)	2.3 (	(3.1)	

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) 1.27 2.45 50 70 Engaging time (ms) 15 (-) 20 (-) Releasing time (ms) Note)4 Exciting current (DC) (A) 0.36 0.42 Releasing voltage DC1V or more Exciting voltage DC 24 V ±5%

Permissible load							
	Radial load P-direction (N)	392	686				
During assembly	Thrust load A-direction (N)	147	294				
	Thrust load B-direction (N)	196	392				
	Radial load P-direction (N)	245	392				
During operation	Thrust load A-direction (N)	98	147				
	Thrust load B-direction (N)	98	147				

For motor dimensions, refer to page A4-117, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

# MINAS A4E

#### Model designation MSMD series, 200W to 750W <sup>e.g.)</sup> M S 2 2 S M 0 Motor structure Design order Symbol Shaft Туре Holding brake Oil seal Voltage specifications 1 : Standard Symbo Key-way, with Low inertia Round without without with\* Symbol Specifications MSMD center tap (200W-750W) A 200V в . . • S т . . Motor rated output \*Motor with oil seal is manufactured by order Rated output Symbol Rotary encoder specifications Pulse counts Resolution Wires 200W Symbol Format 02 2500P/r 400W Ρ Incremental 10000 04 5 80 750W S Absolute/Incremental 17-bit 131072 7 Torque characteristics at AC200V of power voltage (Dotted line represents the torque at 10% less supply voltage.) MSMD0221 MSMD0421 \*Continuous torque \*Continuous torque torque [N · m] torque [N · m] seal seal ambient temperature ambient temperature torque (%) torque (%) 100 100 Ö Without Oil (1.91 (3.8 90 Peak run range eak run range rated t 1.0 rersus rated 50 Without 2.0 50 (0.6 (1 Continuous run ran ange versus 0 1000 2000 3000 4000 5000 0 10 20 30 40 0 1000 2000 3000 4000 5000 0 10 20 40 rotational speed [r/min] rotational speed [r/min] ambient temperature[°C] ambient temperature[°C] \*Continuous torque torque torque \*Continuous torque ambient temperature without Brake [N · m] [N · m] ambient temperature (%) rated torque (%) seal seal 0100 80 70 2.0 4.0-100 with Brake (1.9 80 70 (3.8 75 Peak run range Ö Ö eak run range 2.0 1.0 · (0.64 rated 50 With ( (1 With Continuous run rar ousrunra versus /ersus 1000 2000 3000 4000 5000 0 10 20 30 40 0 1000 2000 3000 4000 5000 0 10 20 30 40 0 rotational speed [r/min] ambient temperature[°C] rotational speed [r/min] ambient temperature[°C] MSMD0821 \*Continuous torque. torque seal ambient temperature [N · m] versus rated torque (%) 100 8.0 Without Oil (7. Peak run range 50 4.0 (2.-Continuous run range 0 1000 2000 3000 4000 5000 0 10 20 30 40 ambient temperature[°C] rotational speed [r/min] \*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well \*Continuous torque, torque ambient temperature Torque [N · m] versus rated torque (%) seal Running range (Torque limit setup : 300%) 8.0 100 Running range (Torque limit setup : 200%) (7. lio Peak run range Running range (Torque limit setup : 100%) 4 0 50 With ( (2.4 Continuous run range Continuous running range 0 1000 2000 3000 4000 5000 0 10 20 30 40 Trotational speed rotational speed [r/min] ambient temperature[°C] Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load. Radial load (P) direction 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). Shaft Power supply voltage is AC230V (at 200V of the main voltage). If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) L/2 relative to the value in the table When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or Thrust load (A, B) direction a dealer. 2. If the effective torque is within the rated torque, there is no limit in generative brake.

3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

4

в

Specified releasing time is obtained with the use of surge absorber for brake (Z15D271 by Ishizuka Electronic or equivalent).

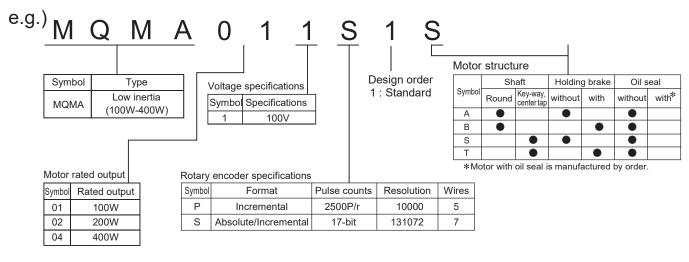
) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 100V MQMA 100W to 400W Low inertia, Flat, Small Capacity

						AC10			
Motor model		M	QMA	011P1 🗆	011S1 🗆	021P1 🗌	021S1 🗌	041P1 🗌	041S1 🗆
			A4 series	MADD	T1107	MBDD	T2110	MCDE	DT3120
Applicable dri		del No.	A4F series	MADD	Г1107F	MBDD	2110F	MCDD	T3120F
	Vei		A4P series	MADD	Г1107 <b>Р</b>	MBDD1	2110P	MCDD	T3120P
	I	=rame s	ymbol	Fran	me A	Frai	me B	Fra	ime C
Power supply	Power supply capacity (kVA)			0	.4	0	.5		0.9
Rated output	(W)			1	00	2	00		400
Rated torque	(N · m)			0.	32	0.	64		1.3
Momentary M	ax. peak	torque (	N · m)	0.	95	1.	91	3	3.82
Rated current	. ,			1	.6	2	.5		4.4
Max. current (	(Ao-p)	1		6	.9	10	).5	1	8.6
<b>D</b> ()			ut option			No limit	Note)2		
Regenerative frequency	brake	DV0P4		No limit	Note)2				
(times/min) N	ote)1	DV0P4	-				Nete)2	No limit	Note)2
Data d vatation		DV0P	4283			No limit	Note)2		
Rated rotation	-	. ,			50	100	00		500
Moment of ine			ut brake	0.09	0.10	0.34	0.35	0.64	0.65
of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	)	With b		0.12	0.13	0.42	0.43	0.72	0.73
Recommende of the load an	ed momer	t of iner				20 times			
Rotary encod	Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
[	Resoluti	onpersi	ingle turn	10000	131072	10000	131072	10000	131072
Protective end	closure ra	ting		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient	bient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>					
	Ambient	humidit	ty	85%RH or lower (free from condensing)					
Environment	Installat	ion locat	tion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
-	Altitude					1000m d		1	1
	Vibratio	n resista	ince	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less
Mass (kg), () re	epresents	nolding b	rake type	0.65 (0.90)	0.75 (1.0)	1.3 (2.0)	1.4 (2.1)	1.8 (2.5)	1.9 (2.6)
Brake specifi	ications (	This bra	ake will b	e released when it	-	not use this for br	aking the motor i	n motion.)	
Static friction t		· m)		0.2			1.2		
Engaging time				5			6		
Releasing time		Note)-	4	15 (*			15 (*		
Exciting current Releasing volt		.)		0.2	23	DC1V c	0.4	+1	
Exciting voltage	<u> </u>					DC 24			
Permissible lo	ad			1					
		ad P-dire	ection (N)	14	7		39	02	
During assembly			ection (N)	8			14		
<u> </u>			ection (N)	11			19		
			ection (N)	6			24		
Duringoperation				5					
-		rust load A-direction (N)		5		98			

For motor dimensions, refer to page A4-118, and for the diver, refer to pages A4-22, 23, 48, 49, 73 and 74.

### Model designation MQMA series, 100W to 400W



### **Torque characteristics**

#### at AC100V of power voltage

With / Without Oil seal

(Dotted line represents the torque at 10% less supply voltage.) MQMA021 1

torque

[N · m]

Peak run range

Continuous run ran

1000 2000 3000 4000

rotational speed [r/min]

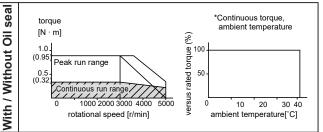
2.0 (1.91

1.0 (0.64

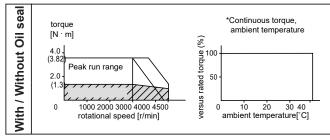
0

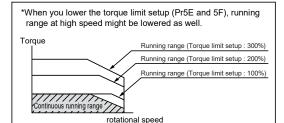
MINAS A4E

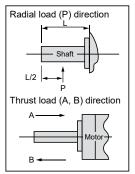




#### MQMA0411 🗆







- 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 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 AC115V (at 100V 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.
- 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent).
    - ) represents the actually measured value using a diode (200V, 1A or equivalent)

(%) 100 rated torque

5000

50

0

versus

\*Continuous torque

10 20

ambient temperature[°C]

30 40

ambient temperature

## Motor Specifications and Ratings 200V MQMA 100W to 400W Low inertia, Flat, Small Capacity

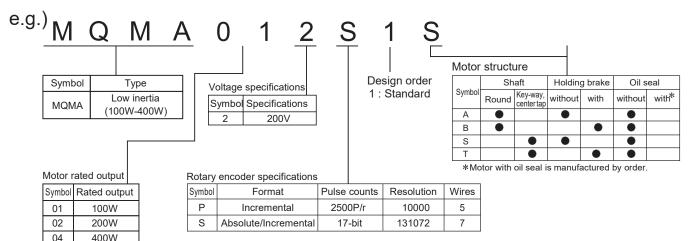
				AC200V						
Motor model		M	QMA	012P1 🗌	012S1 🗆	022P1 🗆	022S1 🗆	042P1 🗆	042S1 🗆	
			A4 series	MADD	T1205	MADD	T1207	MBDDT2210		
		del No.	A4F series	MADD	1205F	MADD	1207F	MBDD	T2210F	
Applicable driv	/er		A4P series	MADD	1205P	MADD	1207P	MBDD	T2210P	
	F	Frame s	ymbol		Frai	me A		Fra	me B	
Power supply	capacity	(kVA)		0.	3	C	.5		0.9	
Rated output	(W)			10	00	2	00	2	100	
Rated torque	(N·m)			0.:	32	0.	64		1.3	
Momentary M	ax. peak	torque (	N · m)	0.9	95	1.	91	3	3.82	
Rated current	(Arms)			1.	0	1	.6		2.5	
Max. current (	. ,			4.	3	6.8		10.5		
Regenerative frequency	Regenerative brake Without option		out option		No limit Note)2					
	Note)1	DV0F	4283			No limit	Note)2			
Rated rotation	al speed	(r/min)				30	00			
Max. rotationa	l speed (	r/min)				50	00	1		
Moment of ine of rotor	ertia	Without brake		0.090	0.100	0.340	0.350	0.640	0.650	
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	0.120	0.130	0.420	0.430	0.720	0.730	
Recommende of the load an			tia ratio Note)3	20 times or less						
Rotary encode	er specifio	cations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
	Resoluti	onpersi	ngleturn	10000	131072	10000	131072	10000	131072	
Protective end	losure ra	ting			IP65 (except	rotating portion of	output shaft and le	ead wire end)		
	Ambient	t temper	ature	0 to 40°C (free from	freezing), Storage : -	20 to +65°C (Max.ten	nperature guarantee 8	80°C for 72 hours <no< td=""><td>mal temperature&gt;)</td></no<>	mal temperature>)	
	Ambient	t humidit	y		8	5%RH or lower (fre	e from condensing	g)		
Environment	Installati	ion locat	ion	Indoor	s (no direct sunligh	it), free from corros	ive gas, inflammal	ble gas, oil mist an	d dust	
	Altitude					1000m o	or lower			
	Vibratio	n resista	ince	49m/s <sup>2</sup> or less	24m/s <sup>2</sup> or less	49m/ s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	49m/s <sup>2</sup> or less	24m/ s <sup>2</sup> or less	
Mass(kg),()re	presents	holding b	raketype	0.65 (0.90)	0.75 (1.0)	1.3 (2.0)	1.4 (2.1)	1.8 (2.5)	1.9 (2.6)	

Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)							
Static friction torque (N · m)	0.29	1.27					
Engaging time (ms)	50	60					
Releasing time (ms) Note)4	15 (100)	15 (100)					
Exciting current (DC) (A)	0.29	0.41					
Releasing voltage	DC1V or more						
Exciting voltage	DC 24 V ±10%						

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

For motor dimensions, refer to page A4-118, and for the diver, refer to pages A4-22, 48 and 73.

## Model designation MQMA series, 100W to 400W



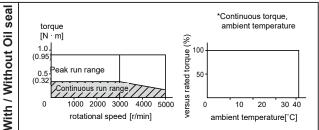
MINAS A4E

## **Torque characteristics**

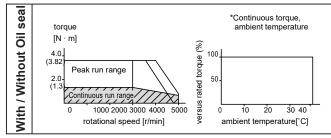
#### at AC200V of power voltage

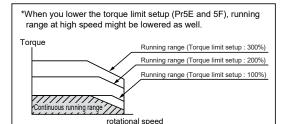
(Dotted line represents the torque at 10% less supply voltage.)

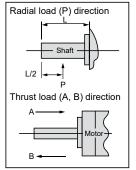




#### MQMA0421

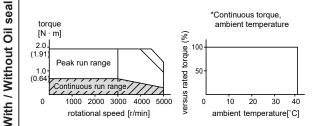






- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load. If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/rotor moment of inertia. When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the
  - square of (running speed/rated speed).
  - · Power supply voltage is AC230V (at 200V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent).
      - ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

MQMA022 1



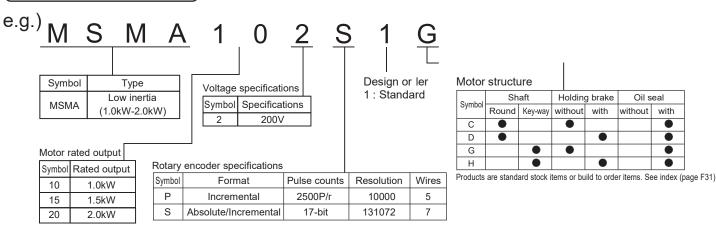
# Motor Specifications and Ratings 200V MSMA 1.0kW to 2.0kW Low inertia, Medium Capacity

				AC200V					
Motor model		M	SMA	102P1	102S1	152P1	152S1	202P1	202S1
			A4 series	MDDDT5540			MEDD	Г <b>736</b> 4	
	Mod	lel No.	A4F series		MDDD.			MEDDT7364F	
Applicable driv	/er	A4P		MDDDT5540P MEDDT7364P					7364P
	F	rame s	series			ne D			me E
Power supply	Power supply capacity (kVA)			1.		1	3		
Rated output (		KVA)		10	-		500		)00
Rated torque	,			3.			77		.36
Momentary M	· · ·	oraue (	N·m)	9.			4.3		9.1
Rated current	-			7.			.4		3.0
Max. current (	. ,			3					5.0
Regenerative	• •	Witho	ut option		•	No limit	Note)2		
frequency (times/min) No	ote)1	DV0P			No limit			-	
			4285 x 2			-		- No limit	Note)2
Rated rotation	al speed (		1200 X 2			30	00		
Max. rotationa		. ,				50			
Moment of ine	. 、	,	ut brake	1.6	39	2.		3.4	16
of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )		With b		1.8		2.84		3.81	
Recommende of the load and	d moment	of iner					s or less		
Rotary encode	Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
	Resolutio	onpersi	ngleturn	10000	131072	10000	131072	10000	131072
Protective end	losure rat	ing		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient	pient temperature		0 to 40°C (free from	freezing), Storage : -	20 to +65°C (Max.tem	nperature guarantee	80°C for 72 hours <nor< td=""><td>nal temperature&gt;)</td></nor<>	nal temperature>)
	Ambient	humidit	ty	85%RH or lower (free from condensing)					
Environment	Installatio	on locat	tion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
	Altitude	itude		1000m or lower					
	Vibration	resista	ince	49m/s <sup>2</sup> or less					
Mass(kg),()re	presentsh	olding b	raketype	4.5	(5.1)	5.1	(6.5)	6.5	(7.9)
Brake specifi	cations (	This br	ake will b	e released when i	t is energized. Do	o not use this for t	praking the motor	r in motion.)	
Static friction t	orque (N	· m)		4	9		7	.8	
Engaging time	e (ms)			5	0		5	50	
Releasing time	e (ms)	Note)4	4	15 (	100)		15 (	100)	
Exciting curre	nt (DC) (A	)		0.	74		0.	81	
Releasing volt	age					DC2V o	r more		
Exciting voltag	je					DC 24 V	/ ±10%		
Permissible lo	ad								
	Radial loa	ad P-dire	ection (N)	68	36		98	30	
During assembly	Thrust loa	ad A-dire	ection (N)	39	92		58	38	
	Thrust loa	ad B-dire	ection (N)	49	90		68	36	
	Radial loa	ad P-dire	ection (N)	39	92		49	90	
1		adial load P-direction (N)		392		196			
During operation	Thrust loa	ad A-dire	ection (N)	14	17		19	96	

For motor dimensions, refer to page A4-119, and for the diver, refer to pages A4-23, 24, 49, 50, 74 and 75.

MSMA 1.0kW - 2.0kV

### Model designation MSMA series, 1.0kW to 2.0kW



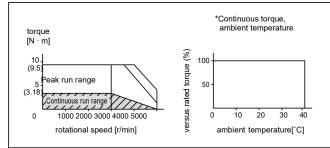
MINAS A4E

### **Torque characteristics**

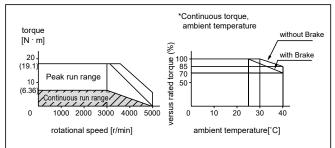
#### at AC200V of power voltage

(Dotted line represents the torgue at 10% less supply voltage.)

#### MSMA1021



#### MSMA2021



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well. Torque Running range (Torque limit setup : 300%) Running range (Torque limit setup : 200%) Running range (Torque limit setup : 100%)

unning range rotational speed Radial load (P) direction Shaft

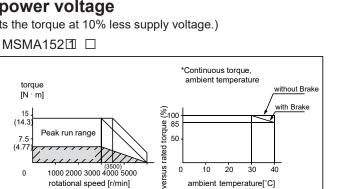
L/2

в

Thrust load (A, B) direction

- 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 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 AC230V (at 200V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent). ) represents the actually measured value using a diode (200V, 1A or equivalent) (

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## Motor Specifications and Ratings 200V MSMA 3.0kW to 5.0kW Low inertia, Medium Capacity

						AC20	00V		
Motor model		MS	SMA	302P1⊡	302S1⊡	402P1⊡	402S1	502P1	502S1
			A4 series	MFDD	ГА390	MFDDTB3A2			
Applicable driv	ver Mo	del No.	A4F series	MFDDT	A390F		MFDD	TB3A2F	
			A4P series	MFDDT	A390P		MFDD	TB3A2P	
	F	Frame s	ymbol			Frar	ne F		
Power supply	capacity	(kVA)		4.	5	6	.0	7	<b>7</b> .5
Rated output	(W)			30	00	40	000	50	000
Rated torque	(N · m)			9.9	54	12	2.6	1	5.8
Momentary M	ax. peak	torque (l	N · m)	28	.6	37	7.9	4	7.6
Rated current	(Arms)			18	.6	24	1.7	2	8.5
Max. current (	• /			8	0	1	05	1	20
Regenerative frequency	brake	Witho	ut option		No limit	Note)2		3	26
(times/min) No	ote)1	DV0P	4285 x 2			No limit	Note)2		
Rated rotation	al speed	(r/min)				30	00		
Max. rotationa	I speed (	r/min)		50	00		45	00	
Moment of ine of rotor	ertia	Withou	ut brake	6.7	77	12	2.7	17	.8
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	7.4	45	14	.1	19	.7
Recommende of the load an			tia ratio Note)3			15 time	s or less		
Rotary encode	er specific	cations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
	Resolutio	on per si	ngle turn	10000	131072	10000	131072	10000	131072
Protective end	losure ra	ting		IP65 (except rotating portion of output shaft and lead wire end)					
_	Ambient	t temper	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>					
-	Ambient	t humidit	y		8	5%RH or lower (fre	e from condensing	g)	
Environment	Installati	ion locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
-	Altitude			1000m or lower					
	Vibratio	n resista	nce			49m/s <sup>2</sup>	or less		
Mass(kg),()re	presentsh	holding b	raketype	9.3 (	11.0)	12.9	(14.8)	17.3	(19.2)
Brake specif	ications	(This br	ake will b	e released when i	t is energized. Do	o not use this for I	praking the motor	r in motion.)	
Static friction	orque (N	· m)		11	.8		16	5.1	
Engaging time	e (ms)			8	0		1	10	
Releasing time	e (ms)	Note)4	1	15 (	100)		50 (	130)	
Exciting curre	nt (DC) (A	4)		0.	81		0.	90	
Releasing vol	age					DC2V c	r more		
Exciting voltage	ge					DC 24 \	/ ±10%		

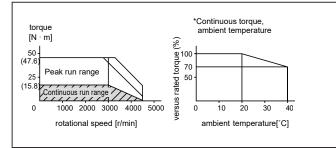
Permissible load							
	Radial load P-direction (N)	980					
During assembly	Thrust load A-direction (N)	588					
	Thrust load B-direction (N)	686					
	Radial load P-direction (N)	490	784				
During operation	Thrust load A-direction (N)	196	343				
	Thrust load B-direction (N)	196	343				

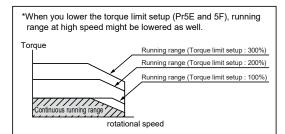
For motor dimensions, refer to page A4-120, and for the diver, refer to pages A4-24, 50 and 75.

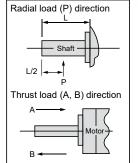
MINAS A4F

#### Model designation ] MSMA series, 3.0kW to 5.0kW <sup>e.g.)</sup> M S 3 Μ 0 Design or ler Motor structure Symbol Туре Voltage specifications 1 : Standard Low inertia Shaft Holding brake Oil seal MSMA Symbol Specifications Symbo (3.0kW-5.0kW) Round Key-way without with with without 2 200V . С . D . Motor rated output G Н Symbol Rated output Rotary encoder specifications Products are standard stock items or build to order items. See index (page F31). Wires 3.0kW Pulse counts Resolution 30 Symbol Format 40 4.0kW P Incremental 2500P/r 10000 5 50 5 0kW S Absolute/Incremental 17-bit 131072 7 **Torque characteristics** at AC200V of power voltage (Dotted line represents the torque at 10% less supply voltage.) MSMA302 1 MSMA402 1 \*Continuous torque \*Continuous torque ambient temperature ambient temperature torque without Brake vithout Brake torque [N · . m] (%) [N 30 rated torque (%) m with Brake with Brake 40. 100 90 85 85 100 90 85 (37.9 (28.6 ak run range Peak run range 50 50 20 15 (9.54 rated (12.6) run range versus versus 0 1000 2000 3000 4000 5000 0 10 20 30 40 0 1000 2000 3000 4000 0 10 20 30 40 5000 rotational speed [r/min] ambient temperature[°C1 rotational speed [r/min] ambient temperature[°C]

#### MSMA502 1







- 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 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 AC230V (at 200V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent).
     ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MDMA 1.0kW to 1.5kW Low inertia, Medium Capacity

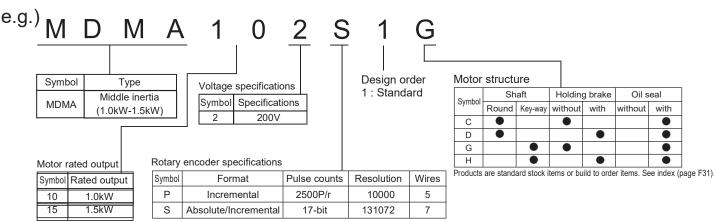
				AC2	200V			
Motor model		MDMA	102P1□	102S1	152P1	152S1□		
		A4 series	MDDI	DT3530	MDDD	)T5540		
	Model I	A4F	MDDD	T3530F	MDDD	۲5540F		
Applicable drive	er	A4P series	MDDD	T3530P	MDDD	Г5540Р		
	Fram	ne symbol		Frar	ne D			
Power supply c				1.8		.3		
Rated output (W)		1	000	15	500			
Rated torque (N	,			4.8		15		
Momentary Ma		ue (N · m)	1	4.4	2'	1.5		
Rated current (	Arms)			5.6	9	.4		
Max. current (A	ю-р)			24	4	0		
Regenerative b frequency	rake W	ithout option		No limit	Note)2			
(times/min) Not	e)1 D	V0P4284		No limit	Note)2			
Rated rotationa	l speed (r/m	in)		20	000			
Max. rotational	speed (r/mir	ו)		30	00			
Moment of iner of rotor	tia Wi	ithout brake	6	.17	11	1.2		
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$	Wi	ith brake	6	.79	12	2.3		
Recommended of the load and		inertia ratio Note)3		10 time	s or less			
Rotary encoder	specificatio	ns	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental		
	Resolutionp	ersingleturn	10000	131072	10000	131072		
Protective enclo	osure rating		IP	65 (except rotating portion of	output shaft and lead wire	end)		
	Ambient tem	perature	0 to 40°C (free from freezing	), Storage : -20 to +65°C (Max.ter	nperature guarantee 80°C for 72	hours <nomal td="" temperatu<=""></nomal>		
	Ambient hun	nidity	85%RH or lower (free from condensing)					
Environment	Installation lo	ocation	Indoors (no di	rect sunlight), free from corro	sive gas, inflammable gas,	oil mist and dust		
	Altitude			1000m	or lower			
,	Vibration res	sistance		49m/s <sup>2</sup>	or less			
Mass(kg),()rep	resents holdi	ng brake type	6.8	8 (8.7)	8.5 (	10.1)		
Brake specific	ations (This	s brake will	be released when it is ene	rgized. Do not use this for l	braking the motor in motio	on.)		
Static friction to	rque (N · m)	)	4	4.9	10	3.7		
Engaging time	(ms)			80	1	00		
Releasing time	. ,	ote)4	70	(200)	50 (	130)		
Exciting current			0	.59	0.	79		
Releasing voltage			DC2V or more					
Exciting voltage					V ±10%			

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

For motor dimensions, refer to page A4-121, and for the diver, refer to pages A4-23, 49 and 74.

## MINAS A4F

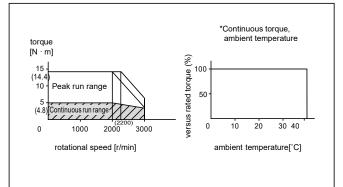
## Model designation MDMA series, 1.0kW to 1.5kW



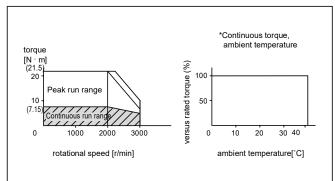
### Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

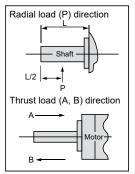
#### MDMA1021



#### MDMA1521



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well. Torque Running range (Torque limit setup : 300%) Running range (Torque limit setup : 200%) Running range (Torque limit setup : 100%) rotational speed



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 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/ratedspeed).
- Power supply voltage is AC230V (at 200V of the main voltage).

 $\label{eq:linear} If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.$ 

•When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

- 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent).
 ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MDMA 2.0kW to 3.0kW Middle inertia, Medium Capacity

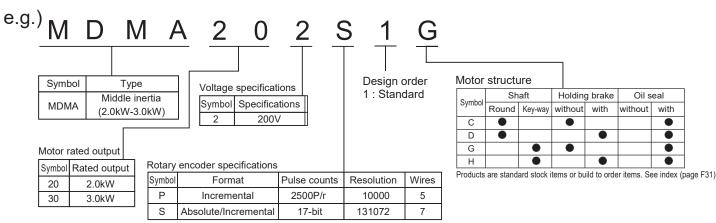
				AC200V					
Motor model		M	ома	202P1	202S1⊡	302P1⊡	302S1⊡		
Applicable driv		del No.	A4 series A4F series A4P	MEDD	T7364 T7364F	MFDDTA390 MFDDTA390F			
			series	MEDDI			ГА390Р		
		Frame s	ymbol		ne E		ne F		
Power supply		(KVA)			.3		.5		
Rated output					00		000		
Rated torque	. ,				54		4.3		
Momentary M	•	torque (I	N · m)		3.5	42	2.9		
Rated current	(Arms)			12	2.3	17	7.8		
Max. current (	,			5	2	7	6		
Regenerative frequency	brake	Witho	ut option		No limit	Note)2			
(times/min) No	ote)1	DV0P	4285 x 2		No limit	Note)2			
Rated rotation	al speed	(r/min)			20	000			
Max. rotationa	al speed (r	r/min)			30	000			
Moment of ine of rotor	ertia	Withou	ut brake	15	5.2	22	2.3		
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$	1	With b	rake	16	6.7	24	4.6		
Recommende of the load an			tia ratio Note)3		10 time	s or less			
Rotary encode	er specific	ations		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental		
	Resoluti	onpersi	ngleturn	10000	131072	10000	131072		
Protective end	closure rat	ting		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient	temper	ature	0 to 40°C (free from freezing)	, Storage : -20 to +65°C (Max.ter	nperature guarantee 80°C for 72	hours <nomal temperature="">)</nomal>		
-	Ambient	humidit	y		85%RH or lower (free	ee from condensing)			
Environment	Installati	on locat	tion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
-	Altitude			1000m or lower					
-	Vibratior	n resista	nce		49m/s	<sup>2</sup> or less			
Mass(kg),()re	presentsh	nolding b	raketype	10.6	(12.5)	14.6	(16.5)		
Brake specif	ications (	This br	ake will b	e released when it is ener	gized. Do not use this for l	braking the motor in motio	on.)		
Static friction	torque (N	· m)		13	3.7	16	5.1		
Engaging time	e (ms)			1	00	1	10		
Releasing time	e (ms)	Note)4	4	50 (	130)	50 (	130)		
Exciting curre	nt (DC) (A	۹)		0.	79	0.	90		
Releasing vol	tage				DC2V	or more			
Exciting voltage	ge				DC 24	V ±10%			

Permissible load							
During assembly	Radial load P-direction (N)	980	980				
	Thrust load A-direction (N)	588	588				
	Thrust load B-direction (N)	686	686				
	Radial load P-direction (N)	490	784				
During operation	Thrust load A-direction (N)	196	343				
	Thrust load B-direction (N)	196	343				

For motor dimensions, refer to page A4-122, and for the diver, refer to pages A4-24, 50 and 75.

MINAS A4/A4F/A4P Motoi

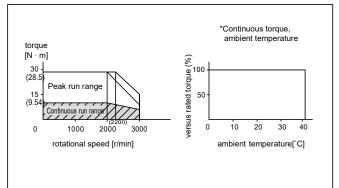
### Model designation MDMA series, 2.0kW to 3.0kW



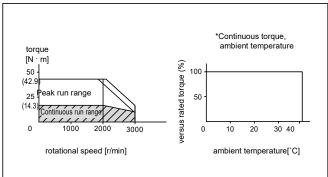
#### **Torque characteristics** at AC200V of power voltage

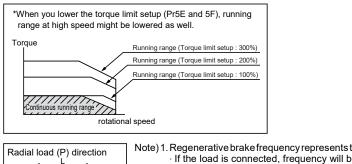
(Dotted line represents the torque at 10% less supply voltage.)

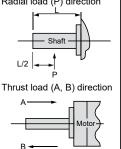
#### MDMA2021



MDMA3021







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 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 AC230V (at 200V 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.

- 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent). (

) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MDMA 4.0kW to 7.5kW Middle inertia, Medium Capacity

						AC2	00V			
Motor model		M	OMA	402P1⊡	402S1	502P1⊡	502S1	752P1	752S1🗆	
			A4 series	MFDDTB3A2			MGDDTC3B4			
		el No.	A4F series		MFDD	B3A2F		MGDDT	C3B4F	
Applicable driv	ver	A4P series		MFDDTB3A2P						
	F	- rame s			Fran	ne F		Fran	ne G	
Power supply			,	6	.0	7	5	1	1	
	Rated output (W)				00		00		00	
Rated torque	(N · m)			18	3.8	23	8.8	4	8	
Momentary M	ax. peak to	orque (l	N · m)	56	6.4	71	.4	1	19	
Rated current	(Arms)			23	3.4	28	8.0	46	6.6	
Max. current (	Ao-p)			10	0.0	12	0.0	16	5.0	
Regenerative	brake	Withou	ut option	2	50	9	4	No limit	Note)2	
frequency		DV0P4	4285 x 2		No limit	Note)2				
(times/min) No	Jie) I	DV0P4	4285 x 4			No limit	Note)2			
Rated rotation	al speed (	r/min)			20	000		15	00	
Max. rotationa	. 、	'min)			30	000		30	00	
Moment of ine of rotor	-		ut brake	42	2.5	60.7		99.0		
, ,	$(x10^{-4} \text{ kg} \cdot \text{m}^2)$ With brake			46	5.8	66	6.7	10	5.0	
Recommende of the load an			tia ratio Note)3			10 time	10 times or less			
Rotary encode	Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
	Resolutio	npersi	ngleturn	10000	131072	10000	131072	10000	131072	
Protective end	closure rati	ng		IP65 (except rotating portion of output shaft and lead wire end)						
	Ambient	temper	ature	0 to 40°C (free fron	r freezing), Storage : -	-20 to +65°C (Max.ten	nperature guarantee	80°C for 72 hours <nc< td=""><td>mal temperature&gt;)</td></nc<>	mal temperature>)	
_	Ambient I	bient humidity		85%RH or lower (free from condensing)						
Environment	Installatio	on locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
-	Altitude			1000m or lower						
	Vibration	resista	nce		49m/s <sup>2</sup>	or less		24m/ s <sup>2</sup> or less		
Mass(kg),()re	presentsho	oldingb	rake type	18.8	(21.3)	25.0	(28.5)	41.0	(45.0)	
			ake will b	e released when	it is energized. De	o not use this for	braking the moto	r in motion.)		
Static friction		m)		21	.5	24	.5	58	3.8	
Engaging time	( )				0	8	0		50	
Releasing time	. ,	Note)4	1		150)		200)		130)	
Exciting curre	. , , , ,	)		1.	10		30	1.	40	
Releasing volt						DC2V c				
Exciting voltage	Je					DC 24 V	v ±1070			
Permissible lo								1		
F	Radial loa		. ,			666			)58	
During assembly	Thrust loa		. ,			84			80	
	Thrust loa		. ,			80			176	
During operation	Radial loa		. ,			84			176	
During operation	Thrust loa		. ,			43			90	
	i nrust Ioa	hrust load B-direction (N)		343			490			

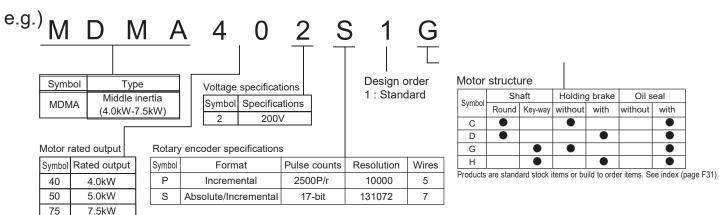
For motor dimensions, refer to page A4-123, and for the diver, refer to pages A4-24, 25, 50, 51 and 75.

MINAS A4F

without Brake

with Brake

## Model designation MDMA series, 4.0kW to 7.5kW



### Torque characteristics

### at AC200V of power voltage

torque [N · m]

(71.4

(23.8)

0

(Dotted line represents the torque at 10% less supply voltage.) MDMA502 □ □

Peak run range

11111

1000

rotational speed [r/min]

2000

\*Continuous torque,

10 20 30 40

ambient temperature[°C]

versus rated torque (%

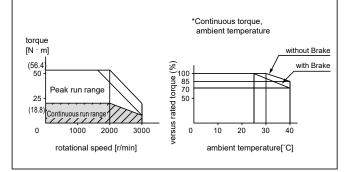
00 90 85

50

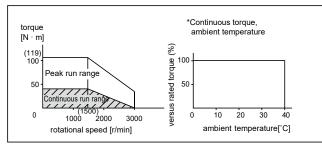
0

ambient temperature

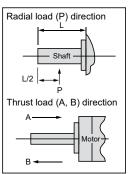
#### MDMA4021



#### MDMA752 1



\*When you lower the torque limit setup (Pr5E and 5F), running range at high speed might be lowered as well. Torque Running range (Torque limit setup : 300%) Running range (Torque limit setup : 200%) Running range (Torque limit setup : 100%) Continuous running range



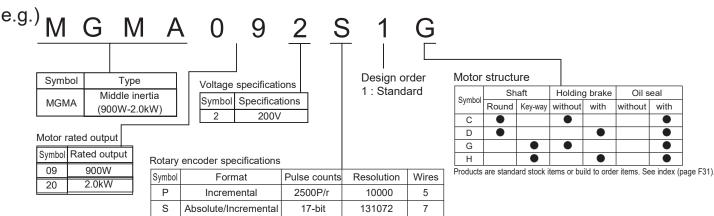
- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load. If the load is connected, frequency will be defines as 1/(m+1), where m=load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is AC230V (at 200V 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.
  - 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent).
       ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

# Motor Specifications and Ratings 200V MGMA 900W to 2.0kW Middle inertia, Medium Capacity

					AC20	V0V			
Motor model		M	GMA	092P1	092S1⊡	202P1	202S1		
		A4 series		MDDDT5540		MFDDTA390			
		Model No. A		MDDDT5540F		MFDDTA390F			
Applicable driv	ver		A4P series	MDDDT	5540P	MFDDTA390P			
	F	Frame s		Frar	ne D	Frar	me F		
Power supply	capacity	(kVA)		1	.8	3	.8		
Rated output	(W)			9	00	20	000		
Rated torque	(N · m)			8.	62	19	9.1		
Momentary M	ax. peak	torque (	N · m)	19	9.3	4	4		
Rated current	(Arms)			7	.6	18	3.5		
Max. current (	(Ao-p)	1		24	4.0	60	0.0		
Regenerative	brake	Witho	out option		No limit	Note)2			
frequency (times/min) No	ote)1	DV0F	4284	No limit	Note)2				
· · · ·	,		4285 x 2			No limit	Note)2		
Rated rotation	•	( )				000			
Max. rotationa Moment of ine		, 1				000			
of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )		Withou With b	ut brake		1.2		5.5		
Recommende				12.3			41.4		
of the load an			Note)3	10 times or less					
Rotary encode	Rotary encoder specifications		2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental			
ſ	Resoluti	ionpersi	ngleturn	10000 131072		10000	131072		
Protective end	closure ra	ting		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient	t temper	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours < Nomal temperature >)					
_	Ambient	t humidit	iy.	85%RH or lower (free from condensing)					
Environment	Installati	ion locat	tion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
-	Altitude			1000m or lower					
	Vibration			49m/s <sup>2</sup> or less					
Mass(kg),()re	epresentsh	nolding b	raketype	8.5 (10.0) 17.5 (21.0)					
Brake specif	ications (	(This br	ake will b	e released when it is ener	gized. Do not use this for I	braking the motor in motio	on.)		
Static friction		· m)		13	3.7	24.5			
Engaging time					00	80			
Releasing time		Note)	4		130)	25 (200)			
Exciting curre		4)		0.	79		30		
Releasing voltage					DC2V c				
Exciting voltage					DC 24 \	/ ±1070			
Permissible lo	bad								
F	Radial lo	ad P-dir	ection (N)	9	80	1666			
During assembly			ection (N)		88	784			
			ection (N)		86		80		
			ection (N)		86		76		
During operation			ection (N)		96		90		
Thrust load B-direction (N)		1	96	490					

For motor dimensions, refer to page A4-124, and for the diver, refer to pages A4-23, 24, 49, 50, 74 and 75.

## Model designation MGMA series, 900W to 2.0kW

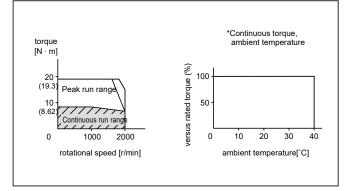


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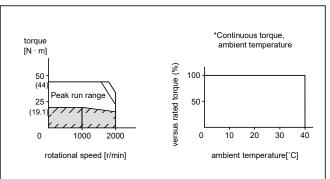
### Torque characteristics at AC200V of power voltage

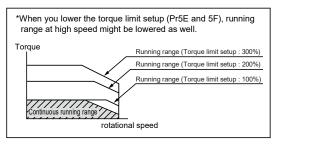
(Dotted line represents the torque at 10% less supply voltage.)

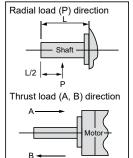
#### MGMA0921



#### MGMA2021







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 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/ratedspeed).
- Power supply voltage is AC230V (at 200V of the main voltage).

 $\label{eq:linear} If the supply voltage fluctuates, frequency is in inverse proportion to the square of (Running supply voltage/230) relative to the value in the table.$ 

• When regeneration occurs continuously such cases as running speed frequently changes or vertical feeding, consult us or a dealer.

- 2. If the effective torque is within the rated torque, there is no limit in generative brake.
- 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

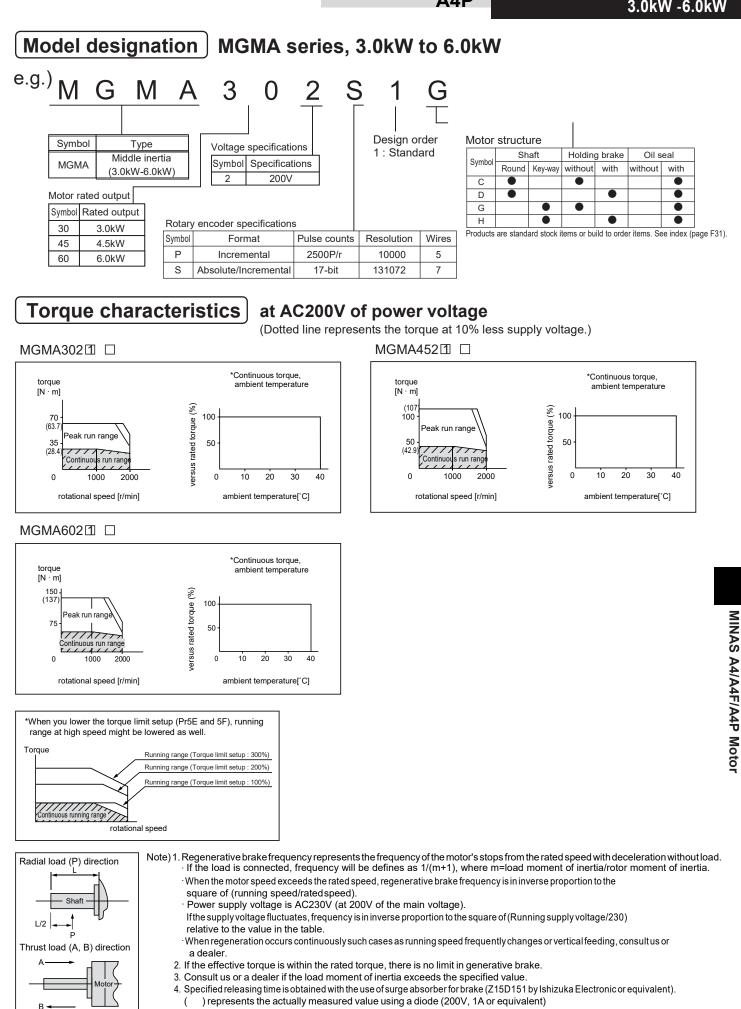
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).
 ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MGMA 3.0kW to 6.0kW Middle inertia, Medium Capacity

						AC2	00V			
Motor model MGMA		302P1⊡	302S1⊡	452P1	452S1	602P1	602S1			
			A4 series		MFDD	MGDD	TC3B4			
		del No.	A4F series		MFDD	TB3A2F		MGDDT	C3B4F	
Applicable driv	ver		A4P series		MFDDT	B3A2 P				
		Frame s			Frar	me F		Fran	ne G	
Power supply	capacity	(kVA)	-	4	.5	7	.5	1	1	
Rated output (		( )		30	00	45	00	60	00	
Rated torque	(N · m)			28	3.4	42	2.9	57	7.2	
Momentary Ma	ax. peak t	torque (	N · m)	63	3.7	1(	)7	1:	37	
Rated current	(Arms)			2	4	3	3	47	7.0	
Max. current (	Ao-p)			80	).0	1 <sup>-</sup>	18	17	0.0	
Regenerative	brake	Witho	ut option			No limit	Note)2			
frequency (times/min) No		DV0P	4285 x 2		No limit	Note)2				
(umes/min) No	JUE)I	DV0P	4285 x 4					No limit	Note)2	
Rated rotation	-	. ,				10				
Max. rotationa		r/min)				20	00			
Moment of ine of rotor			ut brake		5.7	80		99		
(x10 <sup>-4</sup> kg · m <sup>2</sup> )		With b		6′	.7	108				
Recommende of the load and			Note)3	10 times or less						
Rotary encode	Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	
[	Resoluti	onpersi	ngleturn	10000	10000 131072 10000 131072 10000					
Protective end	losure rat	ting		IP65 (except rotating portion of output shaft and lead wire end)						
	Ambient	temper	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>						
_	Ambient	humidit	ty	85%RH or lower (free from condensing)						
Environment	Installati	on locat	tion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
-	Altitude			1000m or lower						
	Vibratior				49m/s <sup>2</sup>	24m/ s <sup>2</sup> or less				
Mass(kg),()re	presentsh	nolding b	raketype	25.0 (28.5) 34.0 (39.5) 41.0 (45.0)						
•			ake will b	e released when	it is energized. Do	o not use this for	braking the moto	r in motion.)		
Static friction t	• •	· m)		58.8						
Engaging time	. ,			150						
Releasing time	. ,	Note)	4	50 (130)						
Exciting currer	. , .	A)		1.40 DC2V or more						
Releasing voltage					DC2V 0					
	-					5024				
Permissible load										
Duraine i i			ection (N)			058			58	
During assembly			ection (N)	980				980		
			ection (N) ection (N)			76			76 64	
During operation			ection (N)			90			38	
			ection (N)							
	iniust 10			490 588						

For motor dimensions, refer to page A4-125, 128 and for the diver, refer to pages A4-24, 25, 50, 51 and 75.

MGMA 3.0kW -6.0kW



MINAS A4E

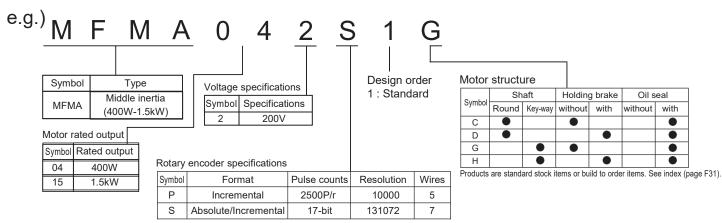
## Motor Specifications and Ratings 200V MFMA 400W to 1.5kW Middle inertia, Medium Capacity

					AC2	00V			
Motor model		MF	MA	042P1⊡	042S1⊡	152P1	152S1⊡		
		A4 series A4F series		MCDD	T3520	MDDDT5540			
	Mode			A4I		MCDDT3520F		MDDDT5540F	
Applicable driv	/er		A4P series	MCDDT	3520P	MDDDT5540P			
	Fr	ame s		Fran	ne C	Fran	ne D		
Power supply	capacity (k	(VA)		0.	9	2	.3		
Rated output (		,		40	00	15	00		
Rated torque (	[N · m)			1.	9	7.	15		
Momentary Ma	ax. peak to	rque (I	N · m)	5.	3	21	1.5		
Rated current	(Arms)			2.	8	9	.5		
Max. current (A	Ao-p)			12	.0	40	).0		
Regenerative	brake	Withou	ut option	No limit	Note)2	10	00		
frequency		DV0P4	4283	No limit	Note)2				
(times/min) No	ne) i	DV0P4	4284			No limit	Note)2		
Rated rotation	al speed (r	/min)			20	00			
Max. rotationa	· 、	min)			30	00			
Moment of ine of rotor			ut brake	2.4	45	20.1			
(x10 <sup>-4</sup> kg · m <sup>2</sup> )		With b		2.7		21.5			
Recommender of the load and			tia ratio Note)3	10 times or less					
Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental			
Γ	Resolution	npersi	ngleturn	10000	131072	10000	131072		
Protective enc			-	IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient te	emper	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>					
	Ambient h	numidit	у	85%RH or lower (free from condensing)					
Environment	Installation	n locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
	Altitude			1000m or lower					
	Vibration i	resista	nce	49m/s <sup>2</sup> or less					
Mass(kg),()re	presents ho	lding bi	raketype	4.7 (6.7) 11.0 (14.0)			(14.0)		
Brake specifi	cations (T	his br	ake will b	e released when it is energ	gized. Do not use this for t	oraking the motor in motio	on.)		
Static friction t	orque (N ·	m)		4.	9	7.8			
Engaging time	e (ms)			8	0	80			
Releasing time	e (ms)	Note)4	4	7	0	35			
Exciting currer	nt (DC) (A)			0.9	59	0.	83		
Releasing volt	-			DC2V or more					
Exciting voltage			DC 24 Y	V ±10%					
Permissible lo	ad								
	Radial load	d P-dire	ection (N)		98	30			
During assembly	Thrust load	d A-dire	ection (N)		58	38			
	Thrust load	d B-dire	ection (N)		68	36			
	Radial load	d P-dire	ection (N)	39	02	4	90		
During operation	Thrust load	d A-dire	ection (N)	14	7	196			
	Thrust load	d B-dire	ection (N)	14	7	196			

For motor dimensions, refer to page A4-127, and for the diver, refer to pages A4-23, 49 and 74.

MINAS A4/A4F/A4P Motor

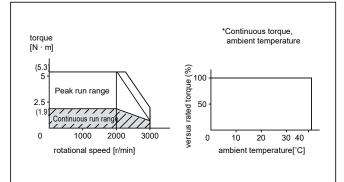
### Model designation MFMA series, 400W to 1.5kW

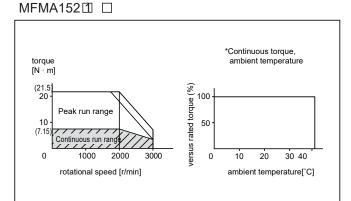


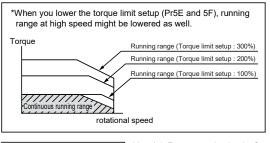
### Torque characteristics at AC200V of power voltage

(Dotted line represents the torque at 10% less supply voltage.)

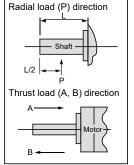
#### MFMA0421 🗆







(



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 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 AC230V (at 200V 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.
- 2. If the effective torque is within the rated torque, there is no limit in generative brake.
- 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
- $4. \ Specified \ releasing \ time \ is \ obtained \ with \ the \ use \ of \ surge \ absorber \ for \ brake \ (Z15D151 \ by \ lshizuka \ Electronic \ or \ equivalent).$ 
  - ) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MFMA 2.5kW to 4.5kW Middle inertia, Medium Capacity

					AC2	200V			
Motor model	otor model MFMA		252P1□	252S1⊡	452P1⊡ 452S1⊡				
		A		MEDDT7364		MFDDTB3A2			
	Mode	el No.	A4F series	MEDD	T7364F	MFDDT	B3A2F		
Applicable driv	/er		A4P series	MEDDT	7364 P	MFDDT	B3A2P		
	F	rame s		Fran	ne E	Frai	ne F		
Power supply	capacity (k	(VA)	-	3.	.8	6	.8		
Rated output (		,		25	00	45	500		
Rated torque (				11	.8	2.	1.5		
Momentary Ma	ax. peak to	rque (l	N · m)	30	).4	54	1.9		
Rated current	(Arms)			13	3.4	23	3.5		
Max. current (	Ao-p)			57	7.0	10	0.0		
Regenerative frequency	brake	Withou	it option	75		67			
(times/min)	Note)1	DV0P4	4285 x 2	No limit Note)2		375			
Rated rotation	al speed (r	/min)		2000					
Max. rotationa	I speed (r/r	min)		3000					
Moment of ine of rotor	rtia	Without brake		41.3		72.3			
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	45	5.3	78	.5		
Recommende of the load and			tia ratio Note)3	10 times or less					
Rotary encode	er specifica	itions		2500P/r 17-bit Incremental Incremental		2500P/r Incremental	17-bit Absolute/ Incremental		
Γ	Resolution	npersi	ngleturn	10000	131072	10000	131072		
Protective enc	losure ratir	ng		IP65 (except rotating portion of output shaft and lead wire end)					
	Ambient to	empera	ature	0 to 40°C (free from freezing),	Storage : -20 to +65°C (Max.ten	nperature guarantee 80°C for 72	hours <nomal temperature="">)</nomal>		
	Ambient h	numidit	у	85%RH or lower (free from condensing)					
Environment	Installatio	n locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust					
	Altitude				1000m d	or lower			
	Vibration	resista	nce		49m/s <sup>2</sup>	<sup>2</sup> or less			
Mass(kg),() represents holding brake type		aketype	14.8 (17.5) 19.9 (24.3)						
Brake specifi	cations (T	his br	ake will b	be released when it is energized. Do not use this for braking the motor in motion.)					
Static friction t	orque (N ·	m)		21	1.6	31.4			
						1			

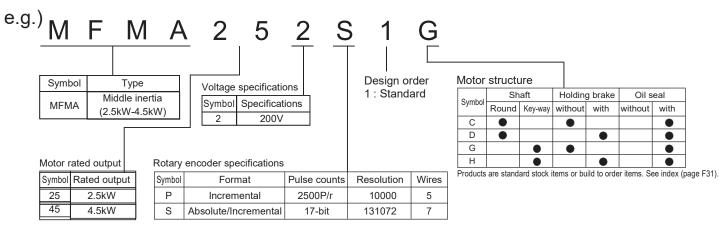
Brake specifications (This brake will be released when it is energized. Do not use this for braking the motor in motion.)							
Static friction torque (N · m)	21.6	31.4					
Engaging time (ms)	150	150					
Releasing time (ms) Note)4	100 (450)	100 (450)					
Exciting current (DC) (A)	0.75 0.75						
Releasing voltage	DC2V or more						
Exciting voltage	DC 24 V ±10%						

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

For motor dimensions, refer to page A4-128, and for the diver, refer to pages A4-24, 50 and 75.

## MINAS A4F

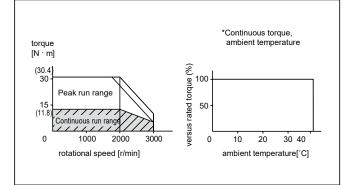
### Model designation MFMA series, 2.5kW to 4.5kW



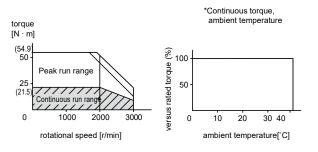
### Torque characteristics at AC200V of power voltage

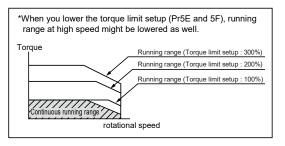
(Dotted line represents the torque at 10% less supply voltage.) MFMA452 团 □

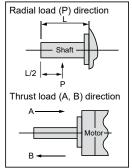
#### MFMA2521 🗆











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 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 AC230V (at 200V 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.

- 2. If the effective torque is within the rated torque, there is no limit in generative brake.
- 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.

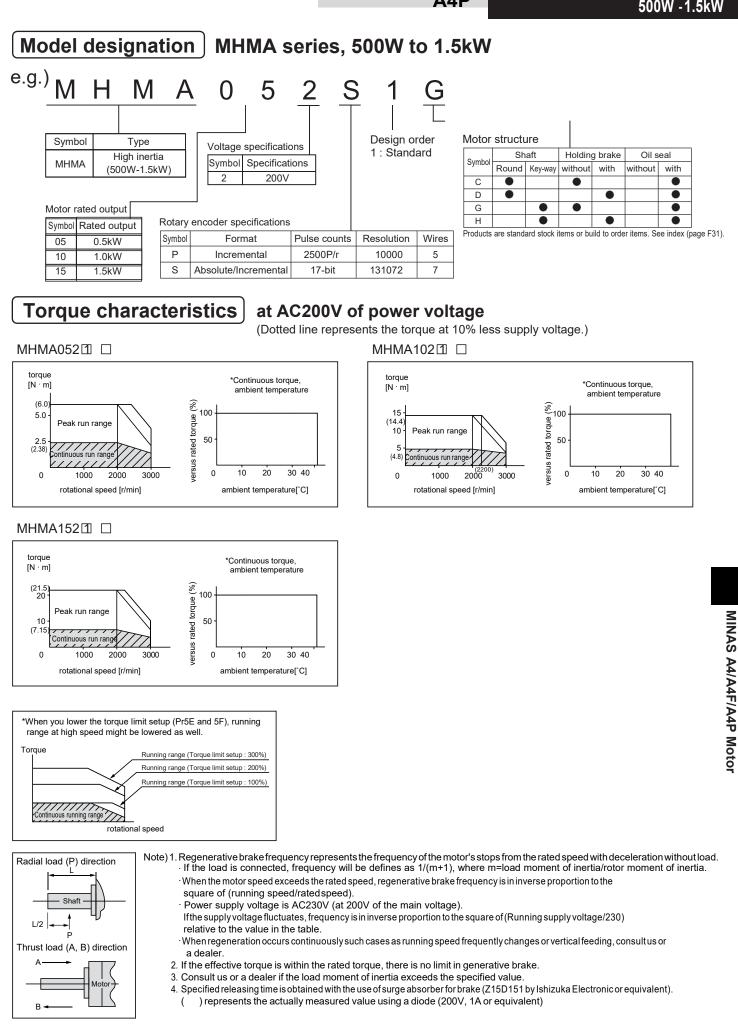
4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka Electronic or equivalent).
 ( ) represents the actually measured value using a diode (200V, 1A or equivalent)

## Motor Specifications and Ratings 200V MHMA 500W to 1.5kW High inertia, Medium Capacity

						AC2	00V			
Motor model			052P1⊡ 052S1⊡		102P1□ 102S1□		152P1⊡	152S1⊡		
		A4 series		MCDD	T3520	MDDDT3530		MDDDT5540		
		el No.	A4F series	MCDDT3520F		MDDDT3530F		MDDDT5540F		
Applicable driv	er		A4P series	MCDDT3520P		MDDDT	3530P	MDDDT5540P		
	Fr	rame s		Fran	ne C		Fran			
Power supply of	capacity (k	(VA)	·	1.	1	1	.8	2	.3	
Rated output (		,		50			00		00	
Rated torque (I	, N·m)			2.3	38	4	.8	7.	15	
Momentary Ma	x. peak to	rque (N	l · m)	6.	0	14	.4	21	.5	
Rated current (	(Arms)			3.	2	5	.6	9	.4	
Max. current (A	Ао-р)			11	.5	24	.0	40	0.0	
Regenerative b	orake	Witho	ut option	No limit	Note)2	3	3	2	5	
frequency (times/min) No		DV0P	4283	No limit	Note)2					
(umes/min) No	le) I	DV0P	4284				No limit	Note)2		
Rated rotationa	al speed (r	/min)				20	00			
Max. rotational	speed (r/r	min)				30	00			
Moment of iner of rotor	rtia	Withou	ut brake	14	.0	26	.0	42.9		
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b		15.2 27.2			44.1			
Recommended of the load and			ia ratio Note)3							
Rotary encode	Rotary encoder specifications			2500P/r Incremental	Absolute/ Absolute/		Absolute/	2500P/r Incremental	17-bit Absolute/ Incremental	
Γ	Resolutio	npersi	ngleturn	10000	131072	10000	131072	10000	131072	
Protective encl	osure ratir	ng		IP65 (except rotating portion of output shaft and lead wire end)						
	Ambient te	empera	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>						
	Ambient h	numidity	4	85%RH or lower (free from condensing)						
Environment	Installation	n locati	on	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust						
	Altitude			1000m or lower						
	Vibration I	resista	nce	49m/s <sup>2</sup> or less						
Mass (kg), () rep	presents ho	olding br	ake type	5.3 (6.9) 8.9 (9.5) 10.0 (11.6)					(11.6)	
Brake specifi	cations (T	This br	ake will b	e released when i	t is energized. Do	not use this for t	oraking the motor	in motion.)		
Static friction to	orque (N ·	m)			4.	9		13	.7	
Engaging time	(ms)				8	0		10	00	
Releasing time	, ,	Note)4	1		70 (2	50 (130)				
Exciting currer		)		0.59 0.79						
Releasing voltage			DC2V or more							
Exciting voltage					DC 24 \	1 ±10%				
Permissible lo	ad									
	Radial loa	d P-dire	ection (N)			98	30			
During assembly	Thrust loa	d A-dire	ection (N)	588						
	Thrust loa	d B-dire	ection (N)			68	36			
F	Radial loa	d P-dire	ection (N)			49	90			
During operation	Thrust loa	d A-dire	ection (N)			19	96			
	Thrust loa	rust load B-direction (N)		196						

For motor dimensions, refer to page A4-129, and for the diver, refer to pages A4-23, 49 and 74.

**MHMA** 500W - 1.5kW



MINAS A4E

## Motor Specifications and Ratings 200V MHMA 2.0kW to 5.0kW High inertia, Medium Capacity

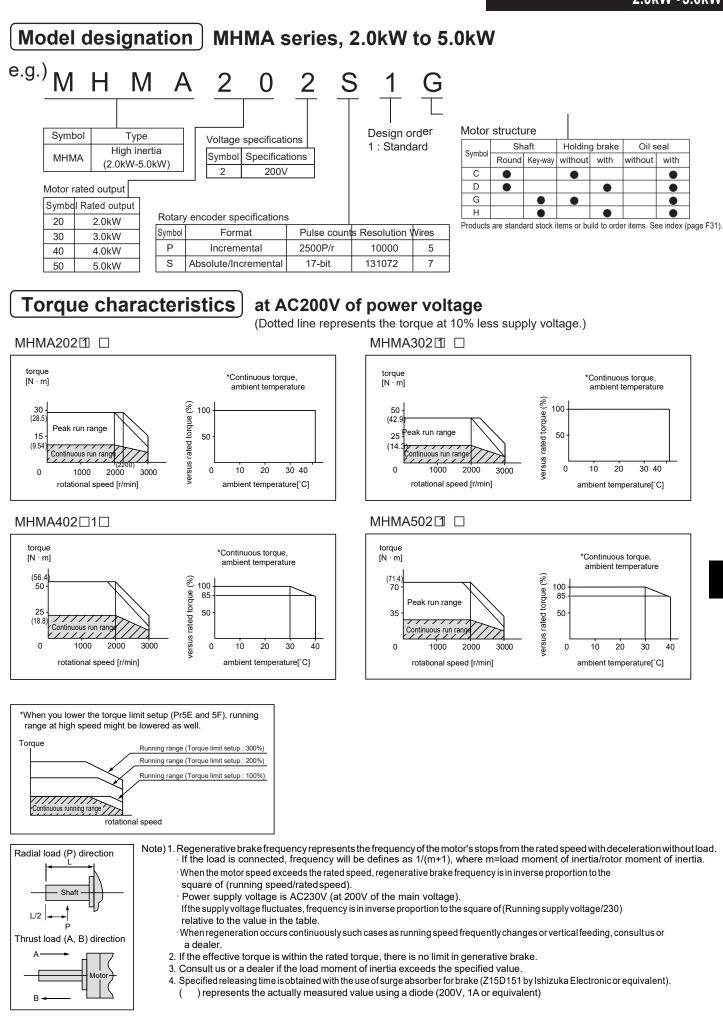
							AC2	200V															
Motor model	or model MHMA		202P1□	202S1	302P1⊡	302S1⊡	402P1	402S1	502P1	502S1													
		A4 series				A4 series Model No. A4F series										MEDD	T7364	MFDD	TA390		MFDD	TB3A2	
	M	Model No.	MEDD	MEDDT7364F				A390F	MFDDTB3A2F														
Applicable dri	ver		A4P series	MEDDI	7364 P	MFDDT	A390P		MFDDT	B3A2 P													
		Frame s			ne E			Frai	me F														
Power supply	capacity	(kVA)		3.	3	4	.5	6	.0	7	.5												
Rated output	(W)	. ,		20	00	30	00	40	000	50	000												
Rated torque	(N · m)			9.	54	14	.3	18	3.8	23	3.8												
Momentary M	lax. peak	torque (l	N · m)	28	.5	42	2.9	56	6.4	7	1.4												
Rated current	t (Arms)			12	.3	17	7.8	23	3.4	28	3.0												
Max. current	(Ao-p)			52	.0	76	6.0	10	0.0	12	0.0												
Regenerative	brake	Witho	ut option	3	8	4	3	3	32	2	20												
frequency (times/min) N	ote)1	DV0P	4285	1(	00																		
		DV0P	4285 x 2			No limit	Note)2	20	00	1	50												
Rated rotation	nal speed	d (r/min)					20	000															
Max. rotationa	al speed	(r/min)				_	30	000															
Moment of ine	ertia	Withou	ut brake	62	.0	94	.1	120.0		170.0													
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$	)	With b	rake	67	.9	100	0.0	126.0		176.0													
Recommende of the load an			tia ratio Note)3		5 times or less																		
Rotary encod	Rotary encoder specifications			2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental												
	Resolu	tionpersi	ngleturn	10000	131072	10000	131072	10000	131072	10000	131072												
Protective en	closure ra	ating		IP65 (except rotating portion of output shaft and lead wire end)																			
	Ambier	nt temper	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>																			
	Ambier	nt humidit	у	85%RH or lower (free from condensing)																			
Environment	Installa	tion locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust																			
	Altitude	de		1000m or lower																			
	Vibratio	on resista	nce				49m/s	<sup>2</sup> or less															
Mass(kg),()re	epresents	holding b	raketype	16.0	(19.5)	18.2	18.2 (21.7) 22.0 (2		(25.5) 26.7 (30.2)		(30.2)												
Brake specif	ications	(This br	ake will b	oe released w	hen it is ener	gized. Do not	use this for	braking the n	notor in moti	on.)													
Static friction	torque (N	l · m)		24.5																			
Engaging time	e (ms)			80																			
Releasing tim	e (ms)	Note)4	1	25 (200)																			
Exciting current (DC) (A)			1.30																				
Releasing voltage			DC2V or more																				
Exciting voltage			DC 24 V ±10%																				
Permissible load																							
	Radial I	oad P-dire	ection (N)				16	66															
During assembly	Thrust I	oad A-dire	ection (N)				7	84															
	Thrust I	oad B-dire	ection (N)				9	80															
	Radial I	oad P-dire	ection (N)				7	84															
During operation	Thrust I	oad A-dire	ection (N)				3	43															
			U†U																				

For motor dimensions, refer to page A4-130, and for the diver, refer to pages A4-24, 50 and 75.

Thrust load B-direction (N)

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## MINAS A4F



A4-112

# Motor Specifications and Ratings 200V MHMA

7.5kW High inertia, Large Capacity

				AC2	200V			
Motor model		MI	HMA	752P1	752S1			
		A4 series		MGDDTC3B4				
	Mo	del No.	A4F series	MGDD	ГC3B4F			
Applicable driv	ver		A4P series					
		Frame s		Fran	ne G			
Power supply	capacity	(kVA)		1	1			
Rated output (	(W)			75	00			
Rated torque	(N · m)			4	8			
Momentary Ma	ax. peak	torque (l	N · m)	1'	19			
Rated current	(Arms)			46	0.6			
Max. current (	Ao-p)			16	5.0			
Regenerative frequency	brake	Witho	ut option	(	)			
(times/min) No	ote)1	DV0P	4285 x 4	No limit	Note)2			
Rated rotation	al speed	(r/min)		1500				
Max. rotational speed (r/min)			3000					
Moment of ine	ertia	Withou	ut brake	282				
$(x10^{-4} \text{ kg} \cdot \text{m}^2)$		With b	rake	28	88			
Recommende of the load and			tia ratio Note)3	5 times or less				
Rotary encode	er specific	cations		2500P/r Incremental	17-bit Absolute/ Incremental			
[	Resoluti	onpersi	ngleturn	10000	131072			
Protective end	losure ra	ting		IP65 (except rotating portion of	output shaft and lead wire end)			
	Ambient	temper	ature	0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.ter	nperature guarantee 80°C for 72 hours <nomal temperature="">)</nomal>			
	Ambient	humidit	y	85%RH or lower (fro	ee from condensing)			
Environment	Installati	ion locat	ion	Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude			1000m	or lower			
Vibration resistance		nce	24m/s <sup>2</sup> or less					
Mass (kg), () represents holding brake type		raketype	43.5 (47.5)					
Brake specifi	cations (	(This br	ake will b	e released when it is energized. Do not use this for	braking the motor in motion.)			
Static friction t	orque (N	· m)		58	3.8			
Engaging time	e (ms)			1	50			
Releasing time	e (ms)	Note)4	4	50 (	130)			
Exciting curre	nt (DC) (A	4)		1.40				

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

DC2V or more

DC 24 V ±10%

For motor dimensions, refer to page A4-131, and for the diver, refer to pages A4-25 and 51.

Releasing voltage

Exciting voltage

# MINAS

Oil seal

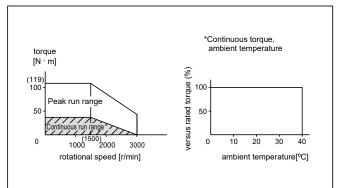
ê

#### Model designation MHMA series, 7.5kW e.g.) Μ 5 н M S G 7 Design order Motor structure Symbol Туре Voltage specifications 1 : Standard Shaft Holding brake High inertia Symbo MHMA Symbol Specifications Round Key-way without with without with (7.5kW) 200V 2 С . Motor rated output D G Symbol Rated output н Rotary encoder specifications 75 7.5kW Products are standard stock items or build to order items. See index (page F31). Symbol Format Pulse counts Resolution Wires Р 2500P/r 10000 Incremental 5 S Absolute/Incremental 17-bit 131072 7

#### **Torque characteristics** at AC200V of power voltage

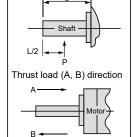
(Dotted line represents the torque at 10% less supply voltage.)

MHMA7521 🗆



*When you lower the torque li range at high speed might b	mit setup (Pr5E and 5F), running e lowered as well.
Torque	Running range (Torque limit setup : 300%)
	Running range (Torque limit setup : 200%)
Continuous running range	Running range (Torque limit setup : 100%)
rotation	al speed
Radial load (P) direction	Note) 1. Regenerative brake fr

equency 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 AC230V (at 200V 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.

- 2. If the effective torque is within the rated torque, there is no limit in generative 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 Ishizuka Electronic or equivalent). ) represents the actually measured value using a diode (200V, 1A or equivalent) (