

# Motor Specifications and Ratings **200V** MFMA

## 400W to 1.5kW Middle inertia, Medium Capacity

			AC200V				
Motor model MFMA			042P1□		042S1□	152P1□	152S1□
Applicable driver	Model No.	A4 series	MCDDT3520			MDDDT5540	
		A4F series	MCDDT3520F			MDDDT5540F	
		A4P series	MCDDT3520P			MDDDT5540P	
	Frame symbol		Frame C			Frame D	
Power supply capacity (kVA)			0.9			2.3	
Rated output (W)			400			1500	
Rated torque (N · m)			1.9			7.15	
Momentary Max. peak torque (N · m)			5.3			21.5	
Rated current (Arms)			2.8			9.5	
Max. current (Ao-p)			12.0			40.0	
Regenerative brake frequency (times/min) Note)1	Without option		No limit Note)2			100	
	DV0P4283		No limit Note)2			————	
	DV0P4284		————			No limit Note)2	
Rated rotational speed (r/min)			2000				
Max. rotational speed (r/min)			3000				
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		2.45			20.1	
	With brake		2.7			21.5	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less				
Rotary encoder specifications			2500P/r Incremental		17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
	Resolution per single turn		10000		131072	10000	131072
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)				
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : -20 to +65°C (Max.temperature guarantee 80°C for 72 hours <Nomal temperature>)				
	Ambient humidity		85%RH or lower (free from condensing)				
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude		1000m or lower				
	Vibration resistance		49m/s <sup>2</sup> or less				
Mass (kg), ( ) represents holding brake type			4.7 (6.7)			11.0 (14.0)	

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)		4.9
Engaging time (ms)		80
Releasing time (ms) Note)4		70
Exciting current (DC) (A)		0.59
Releasing voltage		DC2V or more
Exciting voltage		DC 24 V $\pm 10\%$

Permissible load		
During assembly	Radial load P-direction (N)	980
	Thrust load A-direction (N)	588
	Thrust load B-direction (N)	686
During operation	Radial load P-direction (N)	392
	Thrust load A-direction (N)	147
	Thrust load B-direction (N)	147

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

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

e.g.)

M F M A 0 4 2 S 1 G

Symbol	Type
MFMA	Middle inertia (400W-1.5kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Motor rated output

Symbol	Rated output
04	400W
15	1.5kW

Rotary encoder specifications

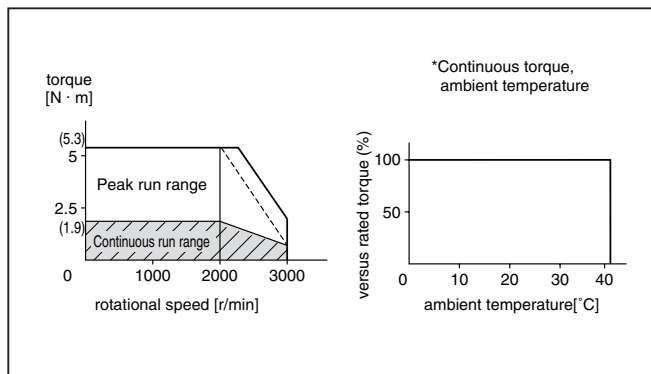
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

Products are standard stock items or build to order items. See index (page F31).

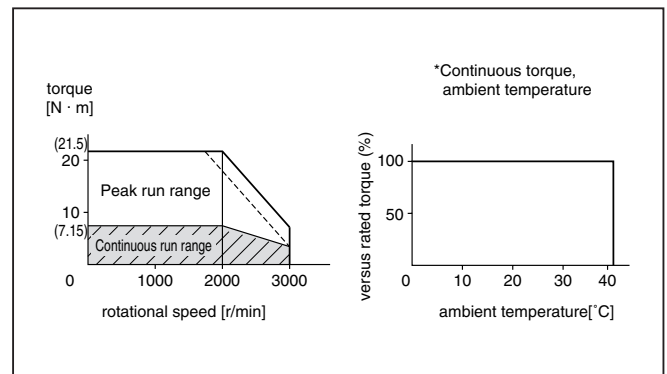
## Torque characteristics at AC200V of power voltage

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

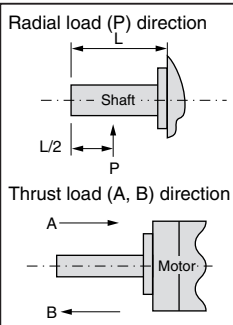
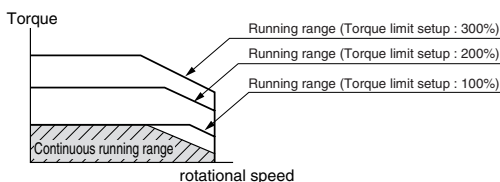
MFMA042□1□



MFMA152□1□



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



Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.

- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
- When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
- Power supply voltage is 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 regenerative brake.
- 3. Consult us or a dealer if the load moment of inertia exceeds the specified value.
- 4. Specified releasing time is obtained with the use of surge absorber for brake (Z15D151 by Ishizuka 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

			AC200V				
Motor model MFMA			252P1□		252S1□	452P1□	452S1□
Applicable driver	Model No.	A4 series	MEDDT7364			MFDDTB3A2	
		A4F series	MEDDT7364F			MFDDTB3A2F	
		A4P series	MEDDT7364P			MFDDTB3A2P	
	Frame symbol		Frame E			Frame F	
Power supply capacity (kVA)			3.8			6.8	
Rated output (W)			2500			4500	
Rated torque (N · m)			11.8			21.5	
Momentary Max. peak torque (N · m)			30.4			54.9	
Rated current (Arms)			13.4			23.5	
Max. current (Ao-p)			57.0			100.0	
Regenerative brake frequency (times/min) Note)1	Without option		75			67	
	DV0P4285 x 2		No limit Note)2			375	
Rated rotational speed (r/min)			2000				
Max. rotational speed (r/min)			3000				
Moment of inertia of rotor (x10 <sup>-4</sup> kg · m <sup>2</sup> )	Without brake		41.3			72.3	
	With brake		45.3			78.5	
Recommended moment of inertia ratio of the load and the rotor Note)3			10 times or less				
Rotary encoder specifications			2500P/r Incremental		17-bit Absolute/ Incremental	2500P/r Incremental	17-bit Absolute/ Incremental
			Resolution per single turn		10000	131072	10000
Protective enclosure rating			IP65 (except rotating portion of output shaft and lead wire end)				
Environment	Ambient temperature		0 to 40°C (free from freezing), Storage : −20 to +65°C (Max.temperature guarantee 80°C for 72 hours <Nomal temperature>)				
	Ambient humidity		85%RH or lower (free from condensing)				
	Installation location		Indoors (no direct sunlight), free from corrosive gas, inflammable gas, oil mist and dust				
	Altitude		1000m or lower				
	Vibration resistance		49m/s <sup>2</sup> or less				
Mass (kg), ( ) represents holding brake type			14.8 (17.5)			19.9 (24.3)	

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
Engaging time (ms)		150
Releasing time (ms) Note)4		100 (450)
Exciting current (DC) (A)		0.75
Releasing voltage		DC2V or more
Exciting voltage		DC 24 V ±10%

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

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

e.g.)

M F M A 2 5 2 S 1 G

Symbol	Type
MFMA	Middle inertia (2.5kW-4.5kW)

Voltage specifications	
Symbol	Specifications
2	200V

Design order  
1 : Standard

Motor structure

Symbol	Shaft		Holding brake		Oil seal	
	Round	Key-way	without	with	without	with
C	●		●			●
D	●			●		●
G		●	●			●
H		●		●		●

Products are standard stock items or build to order items. See index (page F31).

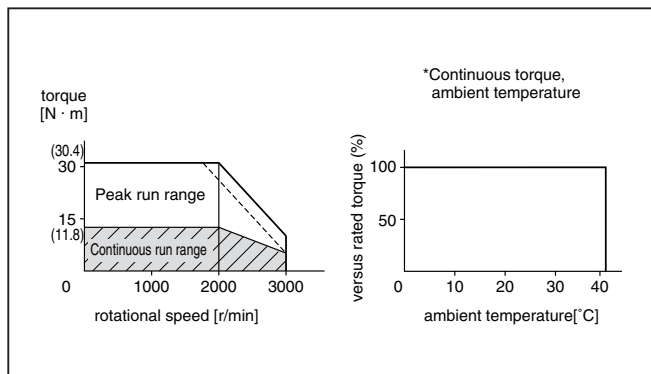
Motor rated output	
Symbol	Rated output
25	2.5kW
45	4.5kW

Rotary encoder specifications				
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

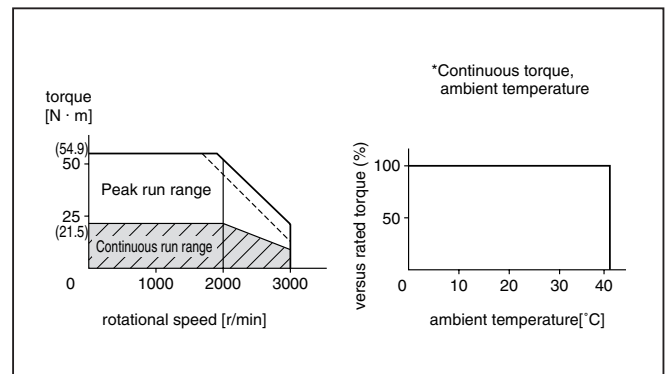
## Torque characteristics at AC200V of power voltage

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

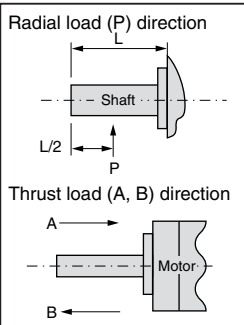
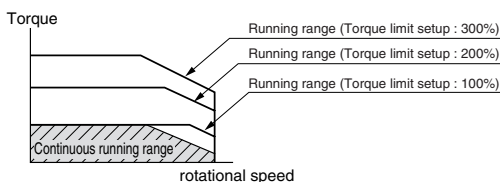
MFMA252□1□



MFMA452□1□



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



- Note) 1. Regenerative brake frequency represents the frequency of the motor's stops from the rated speed with deceleration without load.
- If the load is connected, frequency will be defined as  $1/(m+1)$ , where  $m$ =load moment of inertia/rotor moment of inertia.
  - When the motor speed exceeds the rated speed, regenerative brake frequency is in inverse proportion to the square of (running speed/rated speed).
  - Power supply voltage is 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)