

# 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 ( $\times 10^{-4}$ 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 <Normal 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		7.8
Engaging time (ms)	80		80
Releasing time (ms) Note)4	70		35
Exciting current (DC) (A)	0.59		0.83
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	490
	Thrust load A-direction (N)	147	196
	Thrust load B-direction (N)	147	196

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

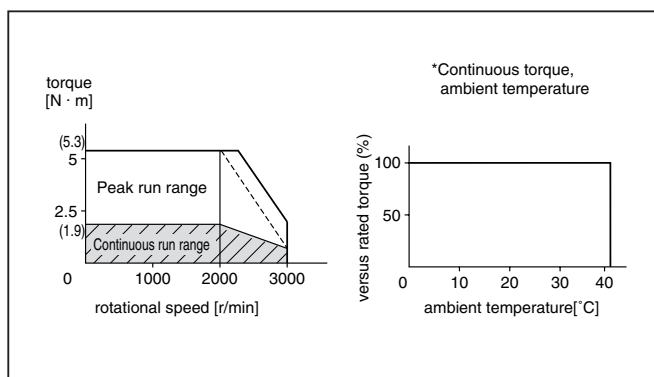
Symbol	Format	Pulse counts	Resolution	Wires
P	Incremental	2500P/r	10000	5
S	Absolute/Incremental	17-bit	131072	7

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

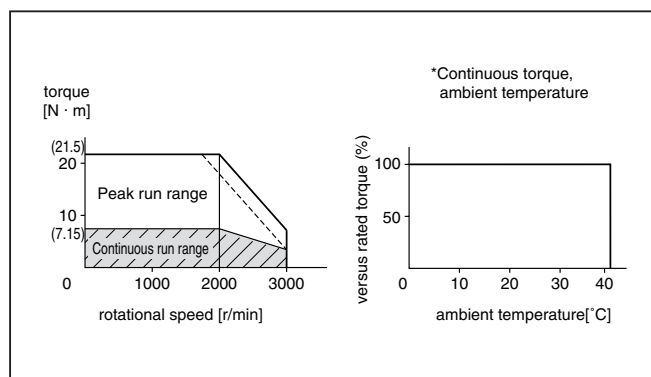
**Torque characteristics at AC200V of power voltage**

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

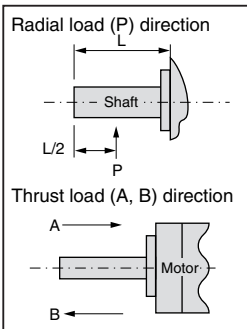
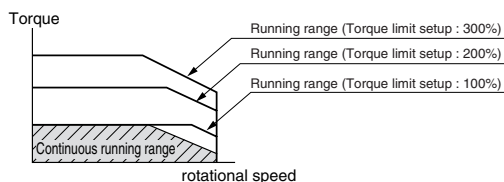
MFMA042□1□



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 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 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	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		14.8 (17.5)			19.9 (24.3)		

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

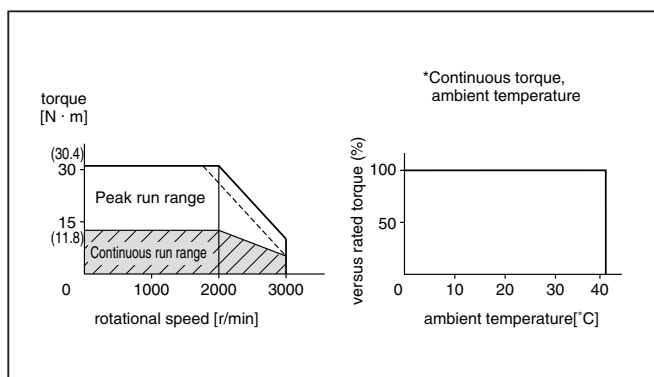
Motor rated output	
Symbol	Rated output
25	2.5kW
45	4.5kW

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

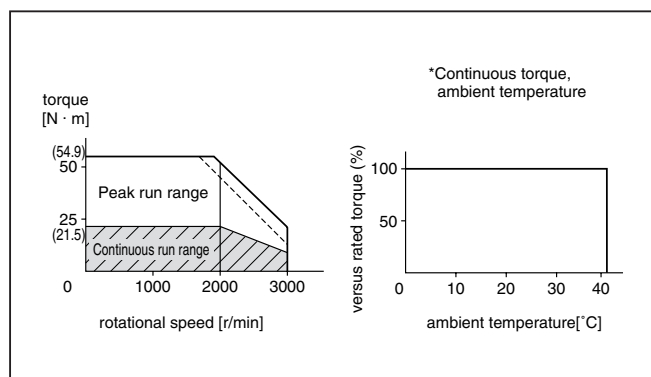
## Torque characteristics at AC200V of power voltage

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

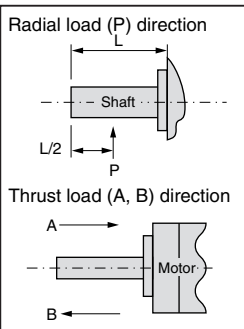
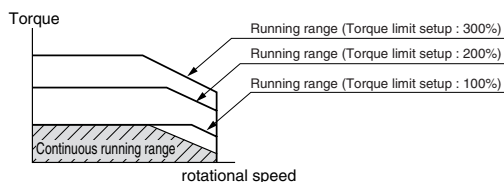
MFMA252□1□



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)