

Motor Drives & Controllers

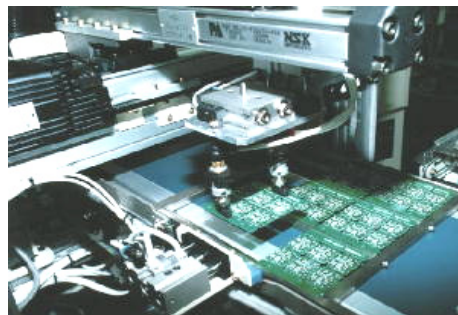
For the past 20 years, **FORMOSA MOTORS** is well known for pursuing high technology motors in Taiwan. To make customer's requirements satisfactory & perfect We supply customers precision driver/controller with feed back sensor, low vibration & audible noise design and high efficiency. Also capable of making your custom design with very competitive price.

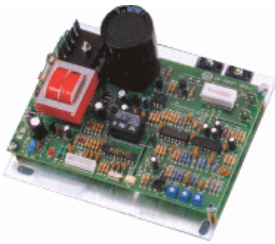
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Product information & technical questions:
Please contact to Electrical division R&D dept
by telst@ms67.hinet.net



MOTOR DRIVERS/CONTROLLERS IN ACCORD WITH FACTORY AUTOMATION USAGE





■ Non Frame type
 ■ L-Frame type
 ■ Plastic Housing type
 ■ Metal Enclosure type

PMDC MOTOR SPEED CONTROLLER - DC POWER SOURCE TYPE

MODEL	MS-400T-1204	MS-400T1208	MS-400T1215	MS-400T1230	MS-400T2404	MS-400T2408	MS-400T2415
MATCHING MOTOR	FDD52 FDD60	FDD60 FDD80	FDD80 FDD90	FDD90 FDD95 FDK115	FDD60 FDD80	FDD80 FDD90 FDD95	FDD90 FDD95 FDK115
MOTOR OUTPUT	20W	40W,60W	80W,120W	250W	20W ~ 60W	80W,120W	250W
MAIN CIRCUIT	FET PWM control (Non-reversible)						
SUPPLY VOLTAGE	DC 12V ± 20%				DC 24V ± 20%		
OUTPUT VOLTAGE	DC 0 ~ 11V (Power Supply 12V)				DC 0 ~ 23V (Power Supply 24V)		
RATED CURRENT	DC 4A	DC 8A	DC 15A	DC 30A	DC 4A	DC 8A	DC 15A
COMMAND VOLTAGE	DC 0 ~ 10V						
COMMAND INPUT IMPEDANCE	100 kΩ						
SPEED FEEDBACK	3 ~ 7V/krpm TACHO-GENERATOR						
SPEED CONTROL RANGE	300 : 1 min.						
SPEED FLUCTUATION	±0.3% max.						
ADJUSTMENT	STATIC GAIN, PHASE COMPEN, SOFT START OFFSET, SPEED, CURRENT LIMIT						
PROTECTION	LOW VOLTAGE						
OPERATING TEMPERATURE	-10 ~ 40°C						

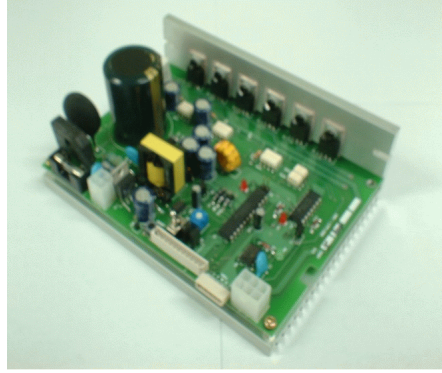
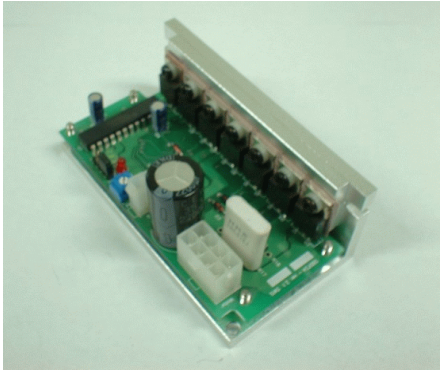
PMDC MOTOR SPEED CONTROLLER - AC POWER SOURCE TYPE

MODEL	MS-300C1001	MS-300T1001	MS300C1005	MS-300T1005
MATCHING MOTOR	FDD60~FDD80	FDD80~FDD90	FDD90~FDD95	FDD95~FDK115
MOTOR OUTPUT	20W~80W		120W~350W	
MAIN CIRCUIT	PWM control (Non-reversible)			
SUPPLY VOLTAGE	AC 100V~115, Single Phase, 50/60Hz			
OUTPUT VOLTAGE	DC 0~100V			
RATED CURRENT	1.2A		5A	
FUSE	3A 5.2 Ø		10A 6.3 Ø	
COMMAND VOLTAGE	DC 0 ~ 100V			
COMMAND INPUT IMPEDANCE	100kΩ			
SPEED FEEDBACK	COUNTER EMF	DC T.G 3V/krpm	COUNTER EMP	DC T.G 3V/krpm
SPEED CONTROL RANGE	10 : 1	300 : 1	10 : 1	300 : 1
SPEED FLUCTUATION	10%	0.3%	10%	0.3%
OPERATING TEMPERATURE	-10 ~ 40°C			
ADJUSTMENT	SOFTSTART, SPEED, GAIN, PHASE COMPEN, OFFSET			
PROTECTION	CURRENT LIMIT			

■ Please find the detailed **spur/planetary/worm gearhead** specification at “[World Standard Gearhead for industrial usage](#)” section or contact our sales dep. by telst@ms67.hinet.net for more detailed technical spec. data/drawing.

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■ FBDD6-1215 ■ FBDD6-2430
 ■ FBDD8-1220 ■ FBDD8-2430
 ■ FBDD9-1240 ■ FBDD9-2460

■ FBDD6-22060
 ■ FBDD8-22060
 ■ FBDD9-220150

■ Metal Enclosure type
 (Japanese ORIENTAL compatible type ,
 pls contact our sales dep. for detailed spec.)

BLDC MOTOR DRIVER SPECIFICATION

MODEL	FBDD6-1215	FBDD6-2430	FBDD6-22060	FBDD8-1220	FBDD8-2430	FBDD8-22060
Rated Output Power	15W	30W	15W	20W	30W	60W
Rated Input Current	1.6A	1.6A	0.8A	2.1A	1.6A	1.25A
Input Voltage	12VDC	24VDC	220VAC,60Hz	12VDC	24VDC	220VAC,60Hz
Input Signal	Speed Commend 0~5V (DC input) / 0~60V (AC Input)					
Output Signal	Hall Sensor Puls					
Control Method	3 Phase PWM					
LED Display	Power Input , Direction					
Temperature	-20°C ~ 80°C					

MODEL	FBDD9-1240	FBDD9-2460	FBDD9-220150			
Rated Output Power	40W	60W	150W			
Rated Input Current	4.2A	3.1A	2.0A			
Input Voltage	12VDC	24VDC	220VAC,60Hz			
Input Signal	Speed Commend 0~5V (DC input) / 0~60V (AC Input)					
Output Signal	Hall Sensor Puls					
Control Method	3 Phase PWM					
LED Display	Power Input , Direction					
Temperature	-20°C ~ 80°C					

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DC SERVO MOTOR DRIVER SPECIFICATION

MODEL				FDS020DV57□00	FDS020DV57□00	FDS020DV57□00	FDS020DV57□00
Applicable motor model number				FSK76-N048100	FSK76-N048100	FSK76-N048100	FSK76-N048100
Control power supply	Condi.	Symbol	Unit	24VDC +10% -15%			
Main power supply				140VDC +10% -15%			
Operating temperature & humidity of amplifier				Temperature: 0 to 55°C, humidity 90% or less(non-condensing)			
Power capacity			kVA	0.4	0.6	0.9	1.0
Amplifier weight			kg	0.35	0.35	0.35	0.6
Rated output	★	PR	W	110	200	300	400
Rated rotating speed	★	NR	min ⁻¹	3,000			2500
Max. rotating speed	★	Nmax	min ⁻¹	3,000			2500
Rated torque	★	TR	N · m	0.326	0.605	1.00	1.33
Max. momentary stall torque	★	TPS	N · m	0.784	1.47	2.45	3.72
Rated armature voltage	☆	ER	V	75	80	75	85
Rated armature current	★	IR	A	1.87	3.13	4.33	4.88
Max. momentary stall current	★	IP	A	4.43	6.90	10.70	14.10
Torque constant	☆	KT	N·m/A	0.21	0.23	0.273	0.302
Induced voltage constant	☆	KE	V/kmin ⁻¹	21.8	24.2	28.6	31.6
Armature resistance	☆	Ra	Ω	4.8	2.8	1.1	0.95
Rated power rate	★	QR	KW/S	3.2	2.7	5.1	5
Electric time constant	☆	tc	ms	0.5	1.1	1.5	2
Mechanical time constant	☆	tm	ms	4.1	7.8	4	5.2
Applicable load inertia		JL	kgm ² (GD ² /4)	1.13 x 10 ⁻⁴	4.43 x 10 ⁻⁴	8.12 x 10 ⁻⁴	15 x 10 ⁻⁴
Standard encoder for detector			P/R	1000 (line driver)			
Inertia (incl. encoder)		JM	kgm ² (GD ² /4)	0.378 x 10 ⁻⁴	1.478 x 10 ⁻⁴	2.708 x 10 ⁻⁴	5.008 x 10 ⁻⁴
Motor weight (incl. encoder)			kg	1.1	2.05	2.75	3.65
Brake holding torque	★	TB	N · m	0.29	1.47	1.47	1.96
Brake excitation voltage	☆	VB	V	90			
Brake excitation current	☆	IB	A	0.06	0.11	0.11	0.11
Brake inertia		JB	kgm ² (GD ² /4)	0.01 x 10 ⁻⁴	0.09 x 10 ⁻⁴	0.09 x 10 ⁻⁴	0.2 x 10 ⁻⁴
Brake weight			Kg	0.26	0.59	0.59	0.79
Motor operating temperature & humidity				Temperature: 0 to 55°C, humidity 90% or less(non-condensing)			

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PM Synchronous AC Servo Motors Drivers Specification

MODEL NO.	FPSD	030	040	055	075	100	150	200	300	450	600	750	860	1100	1500
POWER VOLTAGE	AC 220V +10 ~ -15% 3														
MATCH MOTOR KW		0.3	0.4	0.55	0.75	1.0	1.5	2.0	3.0	4.5	6.0	7.5	8.6	1.1	1.5
CONTROL METHOD	SINE PWM														
SPEED COMMAND	TO ALTER DC $\pm 5 \sim 10V$ /RATING SPEED														
PULSE COMMAND	A/B CW/CCW PLS/DIR METHOD, MPG MOTION CONTROL														
FEED BACK DEVICE	2500 P/R ENCODER WITH UVW COMMUTATION SIGNALS (STANDARD PRODUCT)														
CONTROL RATIO	1 : 3000														
SPEED VARIABILITY RATIO	LOAD VARIABLE 0 ~ 100% RATING SPEED $\pm 0.1\%$														
SYSTEM OVERLOAD ABILITY	150% /min														
SOFT START DEVICE	0 ~ 10 sec. (OPTION)														
PULSE OUTPUT	A B PHASE, C PHASE INDEX PULSE OUTPUT														
REGENERATION	REGENERATION RESISTANCE INTEGRATED								HIGH INERTIA LOAD WITH TO ADD						
DISSIPATION-HEAT METHOD	NATURAL VENTILATION								FAN INTEGRATED						
PROTECTIVE FUNCTION	OVER VOLTAGE OVER CURRENT OVER TEMPERATURE OVER LOAD LOW VOLTAGE ENCODER FAILURE OVER SPEED PROTECT														
OPERATING AMBIENT	0-40°C, HUMIDITY 90% NON-CONDENSING														
INSTALL ATTENTION	RACK MOUNTING OR WALL MOUNTING										WALL MOUNTING				

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AC Induction Servo Motors Drivers Specification

Model		FSD-S Single-Phase	FSD-3 3 Phase-Phase																		
Input power source		Single-phase AC100-115V +10%~15%, 50/60Hz					3-phase AC220-230V +10%~15%, 50/60Hz														
Rated output for applicable motor (continuous) W		50	100	200	300	500	300	400	500	750	1000	1500	2000	3000	4500	6000	7500	8500			
Output	Rated current(continuous) A	0.9	0.9	1.5	2.2	3.6	1.1	1.4	1.8	2.7	3.6	6.8	9.0	13.6	10.8	27.2	34	39			
	Maximum current A	3.6	3.6	4.5	8.2	13.8	4.1	4.3	5.5	8.2	10.8	16.4	21.8	32.8	49.2	65.6	82.0	94.0			
Control system		Sine-wave PWM																			
Applicable load inertia		20 times the rotor inertia or less																			
Standard control frequency (times/min) Inertia (Rated revolutions, 300% torque) $m = \text{load inertia} / \text{rotor}$		240/ Braking resistor required for regular braking applications and $m \geq 4$ Braking resistor not required when $m < 4$ Note: The above equation indicates braking frequency when a standard braking resistor is connected externally.																			
Speed and position detector		Optical encoder (2048P/rev)																			
Mounting		Rack mount																			
Cooling method		Natural cooling																			
Weight		0.56																			
Control Specifications	Speed control	Speed command	0±maximum r/min (Maximum of 8 internal setting points)																		
		Speed control range	1 : 5000																		
		Speed fluctuation ratios	. 0.03% or less (load fluctuation of 0-100%) . ± 0.1% or less (power fluctuation of ±10%) . ± 0.1% or less (temperature fluctuation of 25 °C± 25 °C)																		
		Speed adjustment pattern	Trapezoidal (0-10 [s] Acceleration and deceleration set separately)																		
		Speed response frequency	250Hz (when load inertia equals rotor inertia)																		
	Pules control	Pulse command form	F/R, Sign/pulse, A/B																		
		Pulse command frequency	Maximum 500 kpps (in multiples of 4)																		
		Electronic gear	P/Q (P, Q=1-9999), 1/50<p/Q<50																		
		Positioning completion range	±1±9999 pulses (in multiples of four)																		
	Torque limit commands		0±400[%] (1 internal setting point; forward and reverse set separately) Note: 200W model is 0 x300[%]																		
Speed limiting commands		0±maximum r/min (1 internal setting point; forward and reverse set separately)																			
Other		Gain selection (3-step), test operation																			
Input / output	Power source for I/O contact points		Use an external DC24V power source (80mA or higher)																		
	Output contact points	Speed control	Servo on; reset; speed command selection (1-3)																		
		Position control	Servo on; reset; counter clear; forward limit; reverse limit																		
	Input contact points	Speed control	Servo ready; alarm; zero speed detector; speed arrival																		
		Position control	Servo ready; alarm; zero speed detector; positioning completion																		
	Power Source for pulse input		Use an external DC24V or DC5V power source (40mA or higher)																		
Z-phase pulse output		Z-phase open collector output (with limit on maximum output frequency)																			
Protection	Protective functions		Excessive voltage; abnormal power element; over load; braking-resistor overheating; excessive speed; excessive positional deviation (only under pulse positional control); external alarm; disconnected encoder; CPU abnormality; memory abnormality; encoder setting error; abnormal communications; temporary power failure																		
Communications	Transmission mode		Conforms with RS-422																		
	Transmission speed		Dipswitch selection of 9600 or 192000																		
	Number of communication stations		Maximum of 32 stations; dipswitch selection of station number																		



■ L-Frame type



■ 2 Phase Stepping Drivers



■ 5 Phase Stepping Drivers

HYBRID STEPPING MOTOR DRIVERS

Items \ Models	FHD 550	FHD 225	FHD 205	FHD 168
Phase	5 Phase	2 Phase	2 Phase	2 Phase
Driving Method	Constant Current			
Driving Current	1.4A/phase	2A/phase	1.5A/phase	1.2A/phase
Excitation	Full Step / Half Step			
Step Phase	0.72°/full-step 0.36°/half-step	1.8°/full-step 0.9°/half-step		
Output Terminal	Open Collector			
Connection Method	Removable Socket			
Rated Current auto-Down	Rated Current down to 20% ~100%	Rated Current down to 30%~80%		
Over-heat Protection	Standard			No
Over-heat Alarm Output	Standard	Standard	No	No
Disable Function by External Signal	Standard	Standard	No	No
Rotation direction Control (1p, 2p)	Front Panel Control	Front Panel Control	Internal Control	No
Zero Timing Output	Standard	Standard	Option	No
Input Signal	0 ~ 5V or Input Current < 25mA			
Input Resistance	220Ω			
Noise Isolation	Photo-Coupler			
Operating Temperature	0 ~+ 40° C			
Operating Humidity	<85%RH			
Power	110V ± 10%, 50 or 60 Hz			
Weight	1 Kg	0.6Kg	0.6Kg	0.4Kg
Dimension (mm)	240(W)x101(D)x41(H)	155(W)x100(D)x41(H)	155(W)x127(D)x46(H)	147(W)x96(D)x40(H)

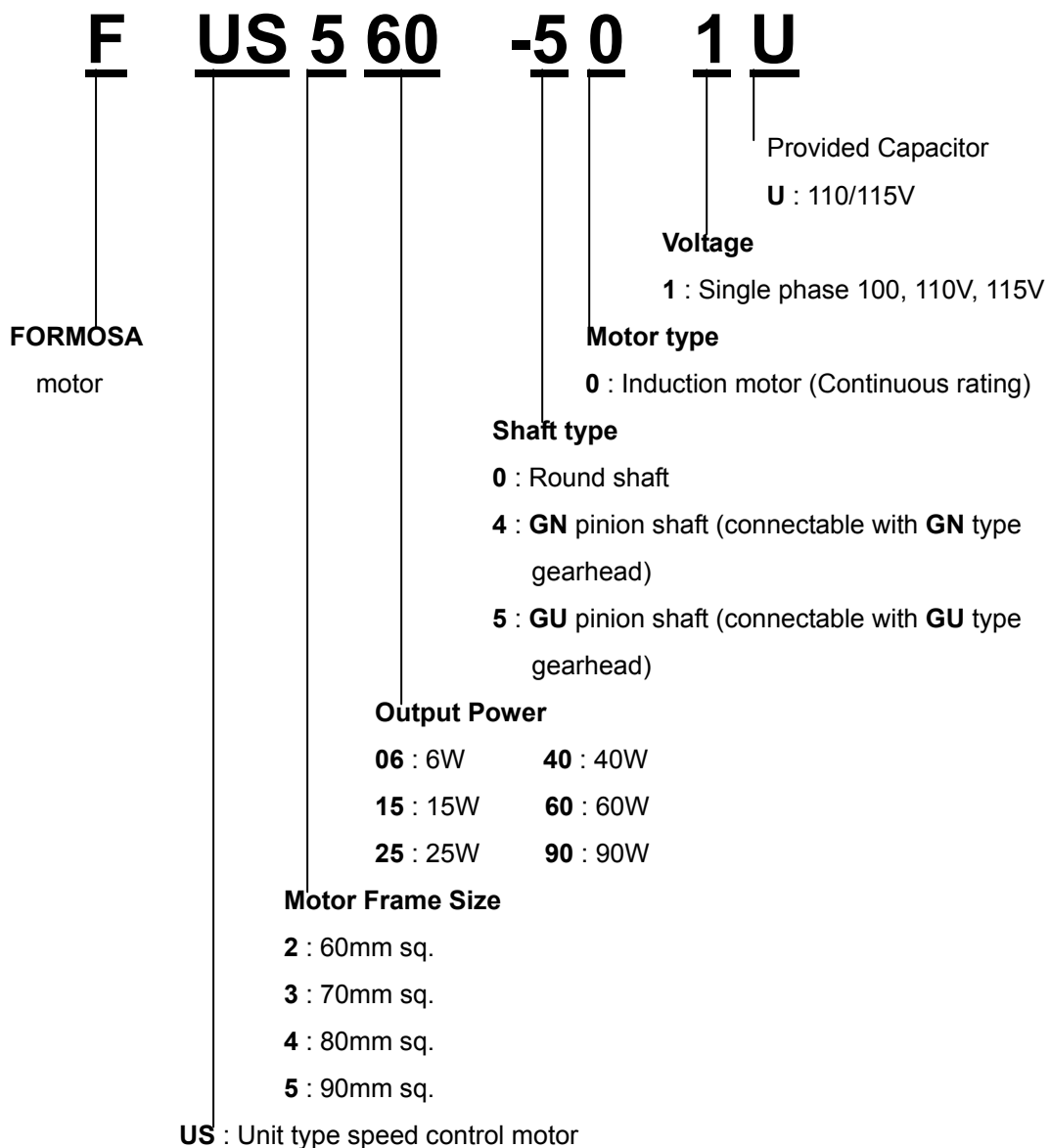
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SPEED CONTROL MOTOR CODING SYSTEM



- When the motor and the control pack are approved under various safety standards, the each name-plate is adopted.

General Specifications

Item	Specifications
Insulation Resistance	100MΩ or more when 500V DC is applied between the windings and the frame after Rated motor operation under normal ambient temperature and humidity.
Dielectric Strength	Sufficient to withstand 1.5kV at 50Hz and 60Hz applied between the windings and the frame after rated motor operation under normal ambient temperature and humidity
Temperature Rise	144°F(80°C) or less measured by the resistance change method after rated operation of motor with connecting a gearhead or equivalent heat radiation plate.
Overheating Protection Device	FUS206 type is impedance protected. All others have built-in thermal protector (Automatic return type) Operating temperature, open: 266°F±9°F(130°C±5°C) Close: 179.6°F±27°F(82°C±15°C)
Insulation Class	Class B (266°F[130°C])
Ambient Temperature Range	14°F ~ 104°F (-10°C ~ + 40°C)
Ambient Humidity	85% maximum (non condensing)
Degree of protection	FUS206, FUS315, FUS425, FUS540 type: IP20 FUS560, FUS590 type: IP40

TYPICAL SPECIFICATIONS

●Single-Phase 110V/115V

Output HP	Power W	Packages Model	Motor Model	Control Unit Model
1/124	6	FUS206-401U	FUSM206-401W	FUSP206-1U
		FUS206-002U	FUSM206-001W	
1/50	15	FUS315-401W	FUSM315-401W	FUSP315-1U
		FUS315-001U	FUSM315-001W	
1/30	25	FUS425-401U	FUSM425-401W	FUSP425-1U
		FUS425-001U	FUSM425-001W	
1/18.5	40	FUS540-401U	FUSM540-401W	FUSP540-1U
		FUS540-001U	FUSM540-001W	
1/12.5	60	FUS560-501U	FUSM560-501W	FUSP560-1U
		FUS560-001U	FUSM560-001W	
1/8	90	FUS590-501U	FUSM590-501W	FUSP590-1U
		FUS590-001U	FUSM590-001W	

●Single-Phase 220V/230V

Output HP	Power W	Packages Model	Motor Model	Control Unit Model
1/124	6	FUS206-402E	FUSM206-402W	FUSP206-2E
		FUS206-002E	FUSM206-002W	
1/50	15	FUS315-402E	FUSM315-402W	FUSP315-2E
		FUS315-002E	FUSM315-002W	
1/30	25	FUS425-402E	FUSM425-402W	FUSP425-2E
		FUS425-002E	FUSM425-002W	
1/18.5	40	FUS540-402E	FUSM540-402W	FUSP540-2E
		FUS540-002E	FUSM540-002W	
1/12.5	60	FUS560-502E	FUSM560-502W	FUSP560-2E
		FUS560-002E	FUSM560-002W	
1/8	90	FUS590-502E	FUSM590-502W	FUSP590-2E
		FUS590-002E	FUSM590-002W	

■ Pls choose the right item for your equipment and e-mail to telst@ms67.hinet.net for detailed drawing & technical specification.

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