



M SERIES

Servo Drives



### Bus Voltage Input

- 17 - 135 VAC
- 180 – 260 VAC

### Control Modes

- Gearing
- Position
- Velocity
- Torque

### Command Interface

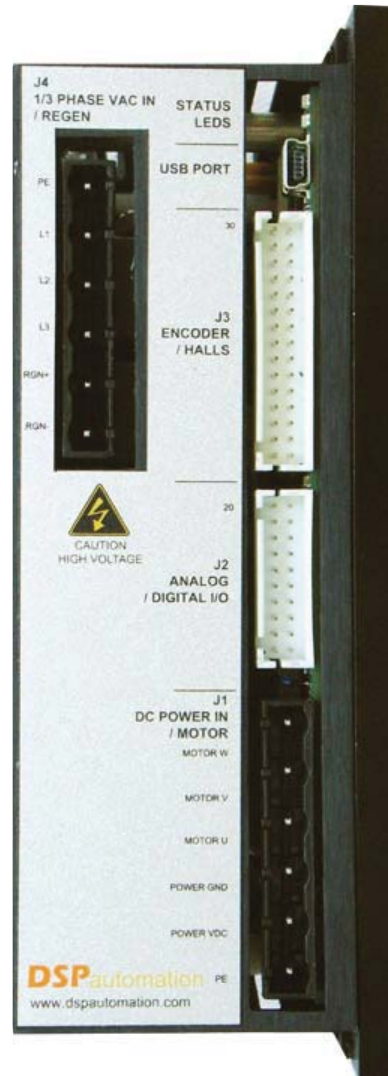
- Step/Direction
- $\pm 10V$  Velocity or Torque Command
- Master encoder (gearing)
- Network (EtherCAT, CANopen)
- Discrete I/O

### Communication

- USB
- Network

### Servomotor Feedback

- Incremental quadrature A/B encoder
- Resolver
- Serial Encoder (BiSS, EnDAT 2.2)
- Digital Halls



### Description

The M Series servo drive is for powering brushless or brush servomotors. Logic control power is internally generated from the VDC bus. An option is available for 24 VDC isolated control power supplied externally by the end user. The small package design outputs up to 3.6 kW continuous power.

The M Series all digital servo drive utilizes a 32 bit digital signal processor (DSP) and 16 bit A/D's and D/A's for control loops and servomotor feedback inputs to provide ultimate high performance. The drive controls the failsafe brake and thermal sensing from the servomotor. Servomotor feedback is a determining factor in performance of a servo system. The M Series comes standard with BiSS and EnDAT 2.2 serial encoder or SSI interface.

The M Series supports EtherCAT, [www.ethercat.org](http://www.ethercat.org) and CANopen, [www.canopen.org](http://www.canopen.org). Other networks are available on request.



### Setup and Commissioning

A USB port on the servo drive is used for communication between the servo drive and PC (personal computer). DSP Automation provides easy to use Window™ software for setup and commission.

Setup requires setting the parameters for the **servo drive** and the **servomotor**. These parameters are easily set by the user or DSP Automation will preset for the customer if requested.

Commissioning the system for optimum performance is a challenge for most users. DSP Automation provides standard and advanced control adjustments for the optimum performance required for the application. An integrated two channel oscilloscope provides instantaneous feedback for visually viewing the dynamic performance of the system.

DSP Automation does not leave the task of commissioning the servo system to the experience of our customers. We provide full support to guarantee success. To qualified customers, a DSP Automation engineer will be at the customer’s location for commissioning and training for the first system.

### Technical Specifications

M Series (120 VAC, 1 Ø)								
Input Voltage	17 - 135 VAC, 1 Ø, 50/60 Hz							
Output Current	Continuous current @ 40° C (A rms)	1	2	4	6	8	12	15
	Peak (A rms)	3	6	12	18	24	30	30
	Peak Current Time (sec.)	3						

M Series (240 VAC, 1/3 Ø)								
Input Voltage	180 VAC - 260 VAC, 1/3 Ø, 50/60 Hz							
Output Current	Continuous current @ 40° C (A rms)	1	2	4	6	8	12	15
	Peak (A rms)	3	6	12	18	24	30	30
	Peak Current Time (sec.)	3						



## Performance Specifications

Control Logic Voltage	Internal DC/DC converter	
Current Loop BW	3.0kHz	
Velocity Loop BW	600Hz	
PWM Frequency	20kHz	
Emulated Encoder Max Output Frequency	2.5 MHz	
Commissioning/ Diagnostics	Software (USB port), LEDs	
Encoder Feedback	Incremental Encoder / Halls Absolute Serial: Single / Multiturn, 17-25bit, BiSS / EnDAT 2.2 / SSI Tachometer: (+/-50V max.) 16-bit A/D Resolution	
Operating Modes	Torque, Velocity, Pulse & Direction, Encoder Follower, Sensorless (Brushed only)	
Motor Temperature Sensor	NTC, PTC, Thermostat	
Motor Current Waveform	Sinusoidal	
Analog Input	+/-10V, 16-bit A/D Resolution, software scalable	
Analog Output	+/-10V, Software Selectable/scalable	
Digital Inputs	3 Inputs, 5-28VDC control voltage	
Digital Outputs	2 Software Selectable Outputs, 5-28VDC, 100mA max.	
Servomotor Brake Control	Software Selectable Output, 24-28VDC, 3A max. (user supplied power)	
Operating Ambient Temperature	0 °C to 50 °C	
Relative Humidity	5 - 95% non-condensing	
Regen Capability	Internal Resistor 30W cont., 1kW peak	External Resistor Up to 100% of Drive Capacity



## SERVO DRIVE MODEL NUMBER

**M - 240 - 2 - RS - NEC - 24 - Cxxx**

**M Family**  
(AC Power Input)

**Voltage Rating**  
70: 17-70 VDC  
120: 80-135 VDC  
240: 140-260 VDC

**Current Rating (RMS)**  
1: 1A      8: 8A  
2: 2A      12: 12A  
4: 4A      15: 15A  
6: 6A

**Motor Feedback Option**  
N/A: Standard  
RS: Resolver  
BS: BiSS  
ED: EnDAT 2.2  
EN: EnDAT 2.1  
SC: Sine/Cosine  
HP: Hiperface  
SS: SSI

CUSTOM:  
C000 - C999  
N/A:  
STANDARD

N/A: DC Bus Powered  
24: 24 VDC PS Option

**Network / Com Options**  
N/A: No network /Com  
NEC: Ethercat  
NEP: Ethernet Powerlink  
NSE: SERCOS III  
NPB: Profibus  
NCO: CanOpen  
NDN: DeviceNet  
NIP: EtherNet/IP  
RS2: RS-232  
RS4: RS-485  
DIO: IO Extension Module

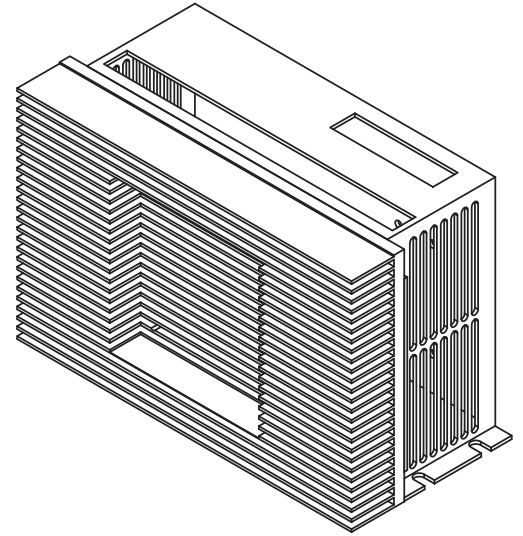
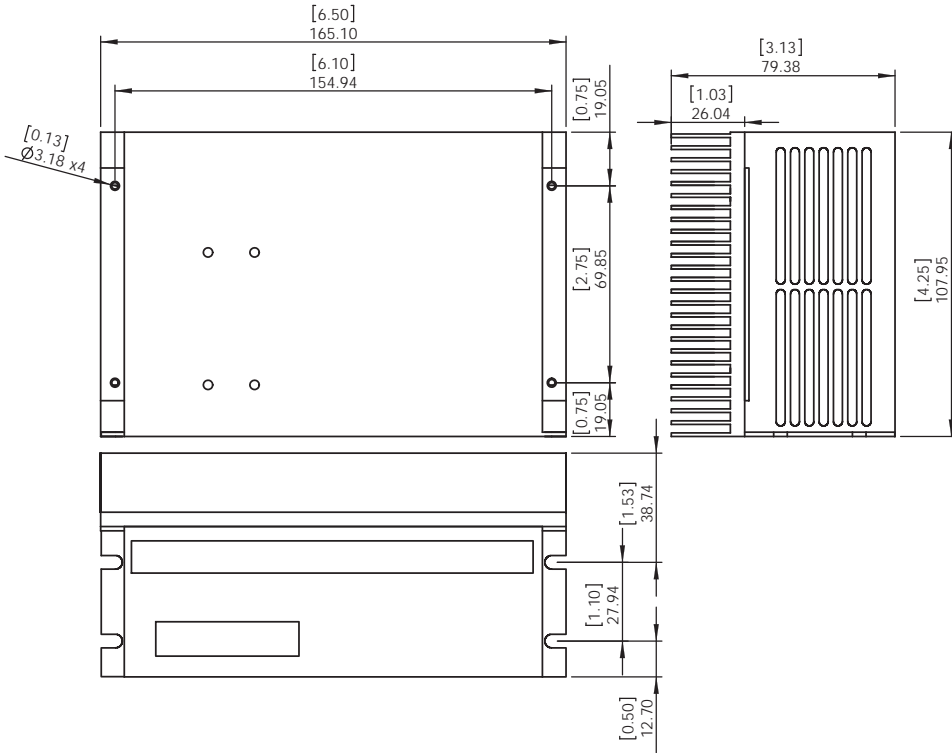
M Series Model Number

### Examples:

- 45 VAC bus, 8 amps continuous with standard incremental encoder input \_ **M-120-8**
- 220 VAC bus, 1 or 3 Ø, 4 amps continuous with standard incremental encoder input \_ **M-240-4**
- 120 VAC bus, 6 amps continuous with resolver \_ **M-120-6-RS**
- 240 VAC bus, 1 or 3 Ø, 12 amps continuous with BiSS serial encoder and EtherCAT \_ **M-240-12-BS-NEC**



M SERIES HIGH (8-15 amps cont.)  
MOUNTING DRAWING, UNITS: MM (INCH)



M SERIES (1-6 amps cont.)  
MOUNTING DRAWING, UNITS: MM (INCH)

