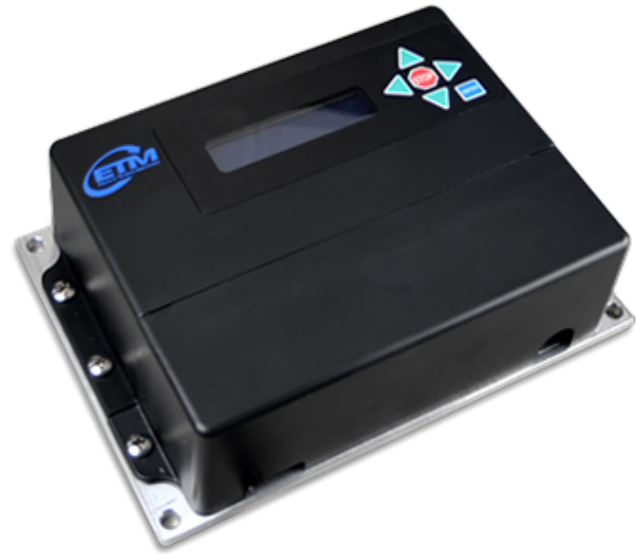




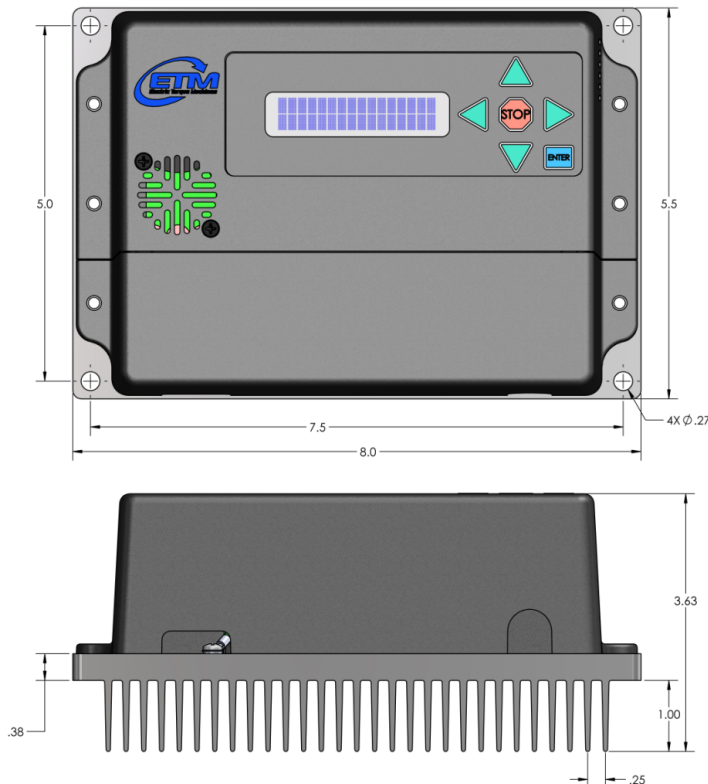
# MD165 Drive

## Drive Features:

- Optimizes performance of ETM's M165 Direct Drive Motor
- Sinusoidal current control for smooth quiet motor operation
- 110-240VAC Supply
- Variable speed cooling fan with integral heat sink
- High efficiency
- Simple analog controls and RS-485 digital interface
- Internal protection
  - Motor regeneration effects
  - Motor and controller over-temp
  - Locked rotor



## Drive Dimensions





# MD165 Drive

**Table 1: General Specifications**

ETM drives provide a Safe Torque Off (STO) compliant function. Two inputs are provided which, when de-energized, prevent the upper and lower devices in the PWM outputs from being operated by the digital control core. This provides a positive OFF capability that cannot be overridden by the control firmware, or associated hardware components. When the inputs are energized, the control core will be able to control the on/off state of the PWM outputs.

Specifications	
<b>Model</b>	ETM-MD165
<b>Input Power</b>	
AC Input Range	120 - 240VAC, +/- 10%, 1Ø
AC Input Frequency	47Hz – 63Hz
<b>Outputs</b>	
Motor	U, V, W 3 phase motor drive
DC Bus Voltage	170V (115VAC mains), 340V (230VAC mains)
Output Current, Continuous	14.1A <sub>rms</sub>
<b>Inputs/Outputs</b>	
Front Panel	FWD/STOP/REV, Speed Control (UP/DOWN Arrows)
Analog/Digital Signals	See Table 2 below (Terminal Strip Signals)
<b>Communications</b>	
RS-485	ASCII serial commands, MODBUS
<b>Motor Feedback</b>	
Encoder	Absolute digital encoder, isolated
Motor Temp	Thermistor, isolated
<b>Display</b>	
LCD	16X2 character LCD display
<b>Protections</b>	
Motor Over Temperature	Current limit and LCD status enable >90°C, Drive disable >110°C
Drive Over Temperature	Current limiting when drive temp exceeds 90°C
Protective Earth	External ground connection marked per IEC60417
Safe Torque Off	See NOTE 1 below
Regeneration	Drive protected in overvoltage state
<b>Mechanical and Environmental</b>	
Size	8.0in (203mm) X 5.5in (140mm) X 3.6in (91mm)
Weight	4Lbs (1.8 kg)
Ambient Temperature	0 to +30°C operating, -40 to +85°C storage
<b>Agency Conformance</b>	
	ROHS Compliant
<b>Enclosure</b>	
	NEMA 1, IP 20, Black ABS (UL 94 5VA Compliant)
<b>Test Conditions</b>	Wye connected load: Ambient temperature = 25°C, Power input = 115VAC, 60Hz, 1Ø



# MD165 Drive

**Table 2: Terminal Strip - Remote Control Signals (Isolated)**

Terminal	Description	Notes
1	Start/Stop	
2	Analog Common	
3	Analog Input (Potentiometer)	Speed Control
4	DC Supply	5VDC, 10ma (Speed Control)
5	FWD/REV	
6	Digital Common	0VDC
7	Digital Output	Fault
8	Analog Output	0..5, max 20ma (Speed Reference)
9	TXA (RS485+)	
10	TXB (RS485-)	
11	AUX_IN1	Customer defined inputs 0-5V I/O
12	AUX_IN2	Customer defined inputs 0-5V I/O
13	AUX_OUT1	Customer defined outputs 0-5V I/O
14	AUX_OUT2	Customer defined outputs 0-5V I/O
15	Drive Enable	
16	Ground (Isolated)	

## NOTE 1: Safe Torque Off

ETM drives provide a Safe Torque Off (STO) compliant function. Two inputs are provided which, when de-energized, prevent the upper and lower devices in the PWM outputs from being operated by the digital control core. This provides a positive OFF capability that cannot be overridden by the control firmware, or associated hardware components. When the inputs are energized, the control core will be able to control the on/off state of the PWM outputs.