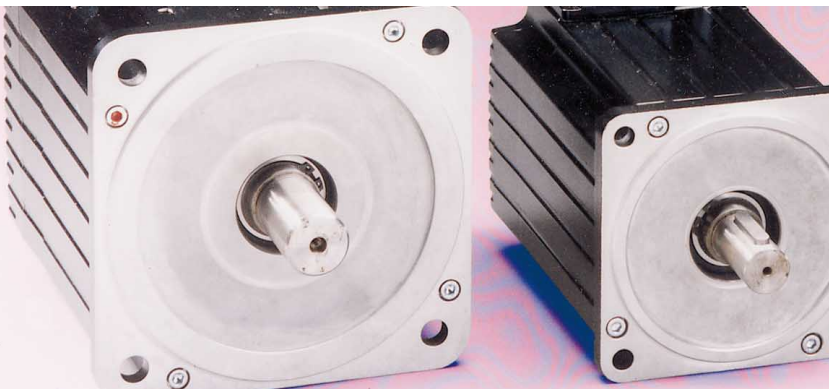


# MOOG

## T164 Series

### Panel Mount Digital Brushless Motor Controllers



CE

#### CONTROLLER FEATURES

- Microprocessor Based
- Sinusoidal Three Phase Drive
- Programmable Position, Velocity or Current Control
- Simple Set-up via 'WinDrive' Graphical User Interface
- Panel Mount Construction
- Integral Heat Sink and Cooling Fan(s)
- Pluggable Solderless Connections
- Diagnostic LEDs
- Resolver Based System
- Digitally Tuned Current Loop (No Personality Modules)
- Programmable Analog Test Points
- Internal Logic Switchmode Supply
- 24 VDC Control Power Input
- Extended I/O (Option Card or Inputs Bracket)
- Encoder Simulation (Option Card)
- "Point" -Single Axis Motion Control (Option Card)
- 'Can Bus' Interface Card for Multi-Axis Motion Control
- CE marked



#### CONTROLLER PROTECTION

- Watchdog Timer
- Logic Undervoltage
- I-T Current Foldback
- Short Circuit
- Motor Overtemperature
- Controller Overtemperature
- Resolver Loss

## TI 64-90X DIGITAL MOTOR CONTROLLER SPECIFICATIONS

D-C Input Voltage  
130 VDC -350 VDC (310 VDC Nominal)

D-C Output Voltage  
350 Volts Peak

Current Ratings

Model	Output RMS Amps Per Phase		Input RMS Amps
	Continuous	Peak (5 Sec)	Continuous
TI 64-901	5	10	5
TI 64-903	10	20	10
TI 64-905	20	40	20
TI 64-907	40	80	40
TI 64-909	60	140	60

Output Current Ripple Frequency

TI 64-901 thru -905 – 20KHz  
TI 64-907 and -909 – 10 KHz

Analog Input Command (Differential)

±10 Volts = CW/CCW Max Speed (Velocity Mode)  
±10 Volts = +/- Peak Current (Torque Mode)  
Input Impedance – 20KΩ

Enable Input

Supply Voltage Range<sup>1</sup> - 4.5 - 35 VDC  
Input Impedance - 2.3 KΩ Min  
Polarity - Current Activated.  
Configurable as Source or Sink.

Controller Fault (System Ready) Output<sup>4</sup>

Max Supply Voltage<sup>2</sup> – 35 VDC  
Max Source or Sink Current<sup>3</sup> – 50 mA

D-C Bus Overvoltage Fault Trip Level

415 VDC ±4%

Serial Interface

Type – RS232 or RS485  
Baud Rate – 9600  
Parity – None  
Data word – 10 bit (7 data, 1 start, 2 stop)

Resolver Interface

Excitation Frequency – 4.9 KHz  
Excitation Output – 4.0 V RMS  
100 mA Max  
Sine/Cosine Return – 2.0 V RMS  
30KΩ input impedance (differential)

Efficiency – >95%<sup>5</sup>

Velocity Loop Update Rate – 2.5 KHz

24 VDC Control Power Input<sup>6</sup> – 21 - 35 VDC, 1.5 Amp Max

Altitude – 3300 feet<sup>7</sup>

Baseplate Overtemperature Trip Point – 90°C±5°C

Operating Temperature Range – 0 - 55°C ambient

Humidity – 5% to 95% non-condensing

Weight

TI 64-901 thru -905 – 10.5 lb (4.8 kg)  
TI 64-907 and -909 – 13 lb (5.9 kg)

Diagnostic LEDs

SYSTEM ENABLE (Green)  
POWER SUPPLY OK (Green)  
FOLDBACK (Yellow)  
SYSTEM FAULT (Yellow)  
BUS OVERVOLTAGE (Yellow)  
SHORT CIRCUIT (Yellow)  
RESOLVER LOSS (Yellow)  
BRIDGE OVERTEMP (Yellow)  
MOTOR OVERTEMP (Yellow)

<sup>1,2</sup>User must supply isolated power source.

<sup>3</sup>Output sources or sinks current with maximum 1.0 VDC drop under normal operation.

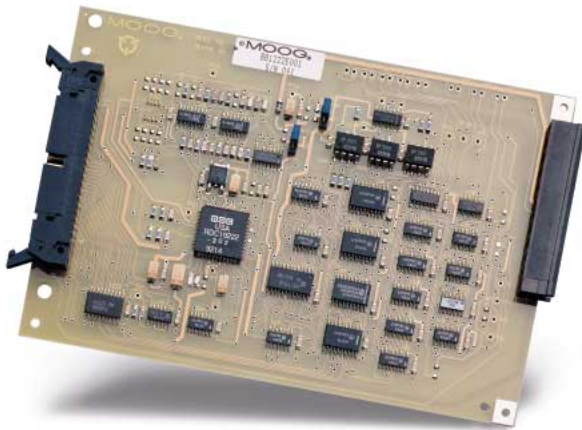
<sup>4</sup>Output open circuits to indicate controller fault.

<sup>5</sup>Rated Continuous Current, 50% Rated Output Voltage.

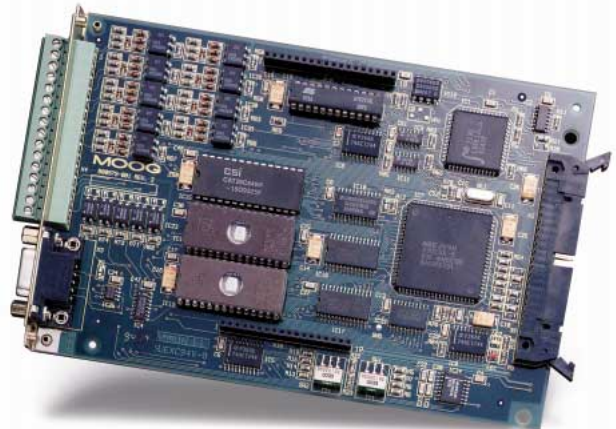
<sup>6</sup>User Supplied Unregulated D-C Power Source.

<sup>7</sup>Derate output 2% per 1000 feet above 3300 feet.

## Optional Extended Function Cards

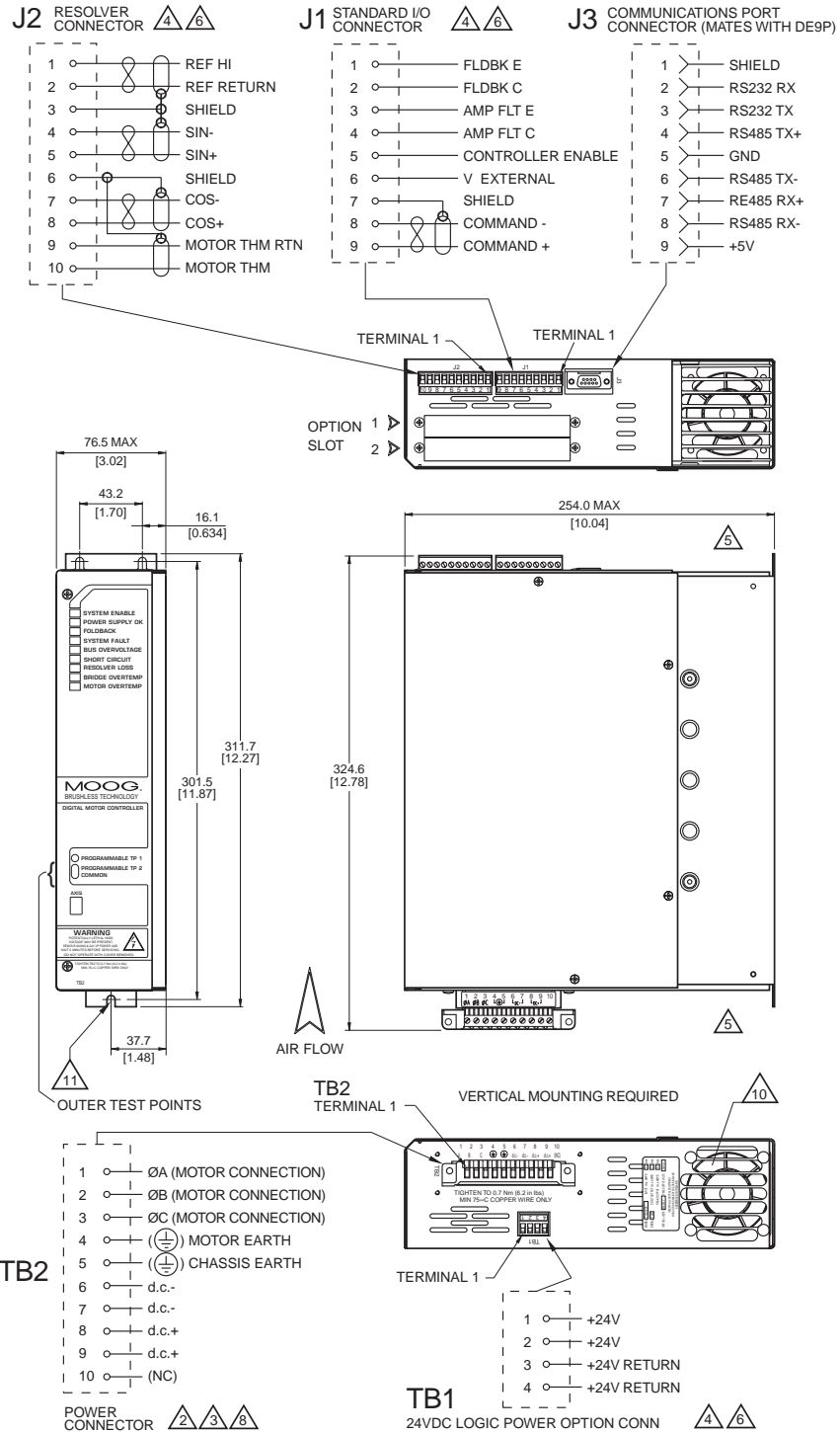


Encoder Simulator Module



“POINT” Single Axis Motion Control Card

# T164-901 THROUGH -905 DIGITAL MOTOR CONTROLLER



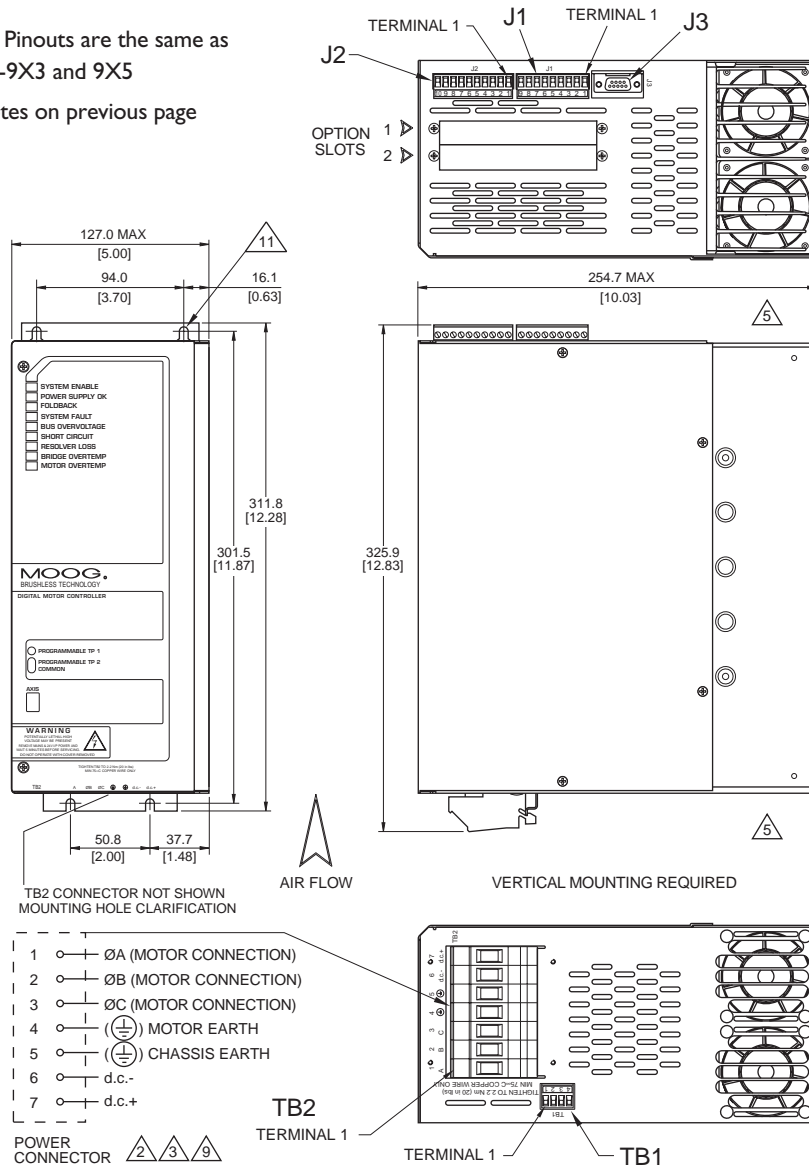
## NOTES:

- All dimensions are in millimeters, dimensions in brackets are in inches
- TB2** Maximum wire size:  
 CSA 3.25mm<sup>2</sup> (12AWG) on models T164-9X1, -9X3 and -9X5  
 CSA 8.4mm<sup>2</sup> (8AWG) on models T164-9X7 and -9X9
- Size wire for load (do not fuse or switch d.e. bus for proper regeneration protection)
- Recommended terminal screw torque:  
 0.55 ± 0.05 Nm [5.0 ± 0.5 in lbs]
- Top and bottom must remain unobstructed by minimum distance of 75 mm [3 inches] to provide adequate air flow for cooling.
- Wire range: CSA 2.08mm<sup>2</sup> to 0.128mm<sup>2</sup> (14AWG to 26AWG).
- Internal assembly contains electrostatic sensitive components. Proper handling procedures must be used with cover removed. (MIL-STD-1686, Class 1)
- Recommended terminal screw torque:  
 0.7 ± 0.06 Nm [6.2 ± 0.5 in lbs]
- Recommended terminal screw torque:  
 2.2 ± 0.06 Nm [20 ± 0.5 in lbs]
- Fan assembly not used on model T164-9X1.
- M5 or #10 mounting screws 3 places (4 places on T164-9X7 and -9X9)

# T164-907 THROUGH -909 DIGITAL MOTOR CONTROLLER

J1, J2, J3 & TB1 Pinouts are the same as for T164-9X1, -9X3 and 9X5

△ Refer to Notes on previous page



## T164 SERIES MODEL NUMBER SYSTEM

