CE

PowerCore®
Model TEC-10
Installation Manual

Products covered in this document comply with European Council electromagnetic compatibility directive 2014/30/EU and electrical safety directive 2014/35/EU.

In order to consistently bring you the highest quality, full-featured products, we reserve the right to change our specifications and designs at any time. The latest version of this manual can be found at www.fwmurphy.com.

WARNING

BEFORE BEGINNING INSTALLATION OF THIS MURPHY PRODUCT:

- Read and follow all installation instructions.
- Visually inspect this product before installation for any damage during shipping.
- Disconnect all electrical power to the machine. Failure to do this before welding can result in damage to the panel and/or its components.
- It is your responsibility to have a qualified technician install the unit and make sure the installation conforms to local codes including, but not limited to, double insulation and fire containment.
- Observe all Warnings and Cautions in each section of these instructions.
- The TEC-10 is designed for use in industrial environments for monitoring and control which include engine driven pumps, compressors, grinders, chippers and rock crushers. Potential difficulties may exist when ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbances.

Contact Enovation Controls Technical Service if you have any questions or concerns at: +1 918-317-4100.

IMPORTANT! Improper use and operation of electronic products can be dangerous. It is required that point-of-operation guarding devices be installed and maintained. All such devices must meet OSHA and ANSI Machine safety standards. The manufacturer shall not accept any responsibility for installation, application or safety of systems.

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WARNING

AUTOMATIC START

Keep hands clear at all times.

The TEC-10 can be set as an AutoStart Controller. Please be cognizant at all times of hands and other objects that are in close proximity to the machine(s) being controlled as they may commence operation suddenly and without warning.

LENS CLEANING PROCEDURES

The lens on the TEC-10 is composed of Polycarbonate materials. Use only mild soap and water to clean the lens/display window. Evidence of improper cleaning techniques or chemicals includes cracks, smear marks, scratches, or fogged/hazy lenses.

Operations Manual Location

After installation, please review the TEC-10 Operations Manual prior to placing the controller into service. In order to access the TEC-10 Operation Manual, please visit the TEC-10 product page to download or print a copy located under the literature tab.

www.fwmurphy.com/tec-10

Hardware Installation

Inspecting Package Contents

Before attempting to install the product, it is recommended that you ensure all parts are accounted for and inspect each item for damage (which sometimes occurs during shipping). The items included in the box are:

TEC-10 Controller kit – P/N 40-70-0495 includes:

- TEC-10 Control Panel
- Mounting Kit:
    - o 4 Shockmount Isolators
    - o 4 ¼ x 20 Hex Keps Nuts
- TEC-10 Installation Manual – P/N 00-02-0977

Tools Needed

Use a 9/32 or 7.5mm drill bit to make the approximately sized 0.28125" or 7.5mm mounting holes.

Use a 7/16" or 11mm torque wrench for shockmount nut installation.
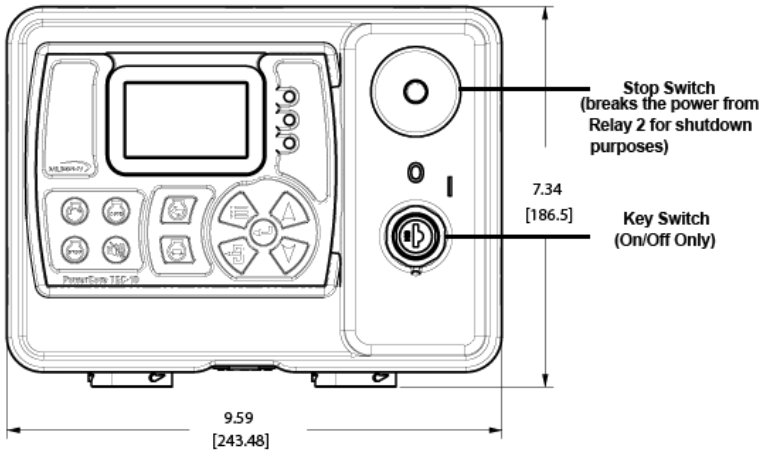
Installation

Preparing the Enclosed Panel
Determine the location of the TEC-10 Panel on the customer-supplied mounting bracket or plate. The suitability of the location is subject to investigation by the local authority having jurisdiction at the time of the installation.

Recommended torque for tightening both the shockmounts into the panel and the nuts on the shockmounts is 78 inch-pounds or 8.8 Nm (Newton Meters). Although thread lock is not required, only blue polycarbonate compatible thread lock should be used for the TEC-10 mounting screws.
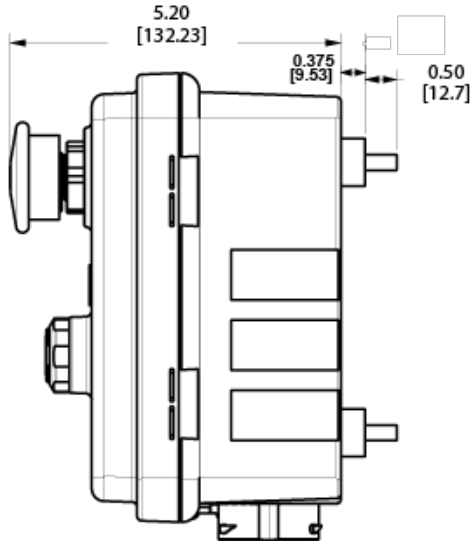
Dimensions for Installation

Front   **Inches**
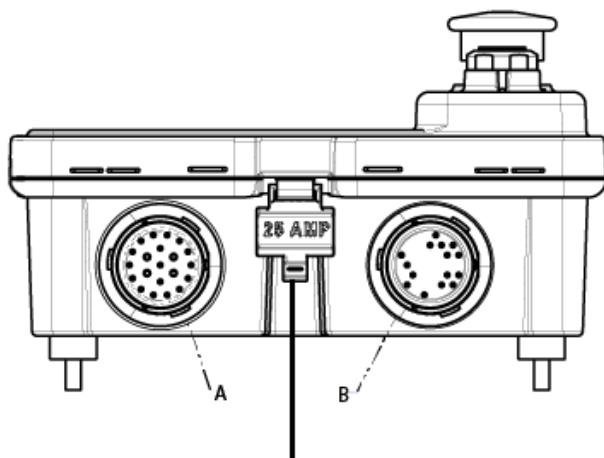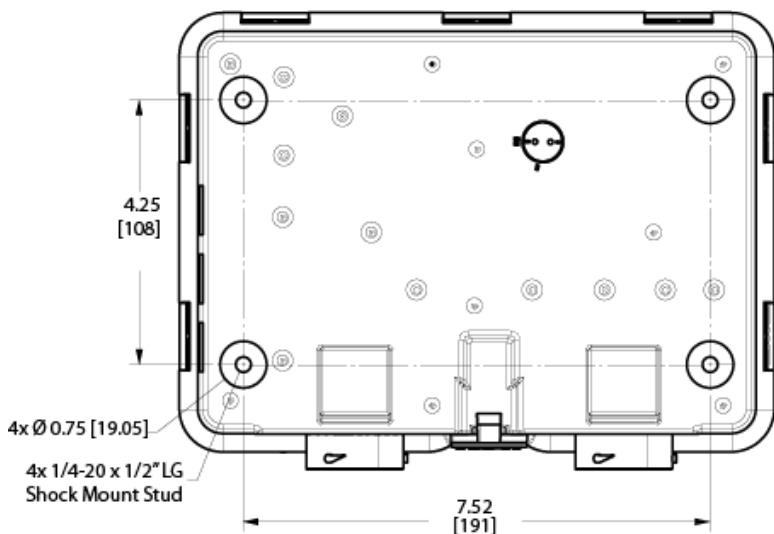   **[mm]**

Stop Switch
(breaks the power from
Relay 2 for shutdown
purposes)

7.34
[186.5]

Key Switch
(On/Off Only)

9.59
[243.48]

Side View

5.20
[132.23]

0.375
[9.53]

0.50
[12.7]

Back View

4.25
[108]

4x Ø 0.75 [19.05]

4x 1/4-20 x 1/2" LG
Shock Mount Stud

7.52
[191]

25 AMP

A   B

ATC-25 Amp Blade type Fuse
The fuse powers the entire panel. If the display does
not light upon turning on the ignition switch, check
the fuse for over current damage.

PIN Specifications

PIN	21 Pin Connector (A)	PIN	31 Pin Connector (B)
A	Unavailable	1	Unavailable
B	Battery (positive)	2	Unavailable
C	Unavailable	3	Unavailable
D	Relay 1, +DC (10A), Default Setting: Crank	4	Unavailable
E	Battery (negative)	5	Unavailable
F	J1939 CAN Shield	6	Unavailable
G	Relay 2, +DC (10A), Default Setting: ECU Enable	7	Unavailable
H	Unavailable	8	Unavailable
J	Alternator Excite Output, +DC (1A)	9	Analog Input 3, Default Setting: Not Used
K	Unavailable	10	Unavailable
L	Unavailable	11	Unavailable
M	Unavailable	12	Unavailable
N	Unavailable	13	Digital Output 1, +DC, (1A), Default Setting: Not in Auto)
P	Unavailable	14	Digital Input 3, Default Setting: Dual Contact Stop, B-
R	Digital Output 3, -DC, (1A), Default Setting: Throttle Decrease)	15	Unavailable
S	Digital Output 4, -DC, (1A), Default Setting: Throttle Increase	16	Unavailable
T	Frequency Input	17	Relay 3 Common (RLY 3 Defaulted to Not Used) **10A Max**
U	J1939 CAN Low (includes terminating resistor, Default to ON)	18	Relay 3 NC (RLY 3 Defaulted to Not Used) **10A Max**
V	J1939 CAN High, (includes terminating resistor, Default to ON)	19	Relay 3 NO (RLY 3 Defaulted to Not Used) **10A Max**
W	Analog Input 2, Default Setting: Not Used	20	Digital Input 5, Default Setting: Low Lube Oil Level B-
X	Analog Input 1, Default Setting: Not Used	21	Digital Input 1, Default Setting: Not Used
		22	Unavailable
		23	Digital Input 2, Default Setting: Dual Contact Start, B-
		24	Digital Output 2, +DC, (1A), Default Setting: Engine Running)
	NOTE: Wiring of this device must meet all applicable electrical codes.	25	Unavailable
		26	Unavailable
		27	Unavailable
		28	Unavailable
		29	Digital Input 4, Default Setting: Low Coolant Level, B-
		30	RS485 (positive)
		31	RS485 (negative)

Accessories

Part Number	Description
40000602	Engine Harness, 21 Position Connector 10' Whip Harness (3m approx.)
40000603	I/O Harness, 31 Position Connector 10' Whip Harness (3m approx.)
40000479	Deutsch Connector Kit, 21-pin and 31-pin, Panel Connector Kit
40000531	Deutsch Connector Kit, 21-pin, Panel Connector Kit, Engine Only
78700046	Deutsch Connector Kit, 31-pin, Panel Connector Kit, I/O Only

Specifications

Interface

Display:
        Monochrome HR-TFT with backlight
        2.7" / 68 mm, WQVGA (400 x 240 pixels)
        Languages: English, Spanish, German, French, Italian
(3) LEDs: Green (mode), Yellow (warning) and Red (shutdown)
Operator Controls:
        (11) Raised silicone keypads, tactile feedback
        (1) Rotary key switch, power on/off
        (1) Push switch (red), engine stop

Power Supply

Operating Voltage: 8-32 VDC, reverse battery polarity and load-dump protected
Cranking Power Holdup: 0 VDC up to 50mS (also good for brownout / blackout instances)
Current Consumption:
        Power on in stopped state; 117 mA at 12 VDC.
        Power on in standby mode; 52 mA at 12 VDC

Inputs (9)

(5) Digital: configurable (active on High, Low, Open)
(3) Analog: configurable (4-20 mA, 0-5V, resistive or digital ground)
(1) Frequency: supporting:
        Magnetic Pickup (30 Hz – 10 kHz, 2.0 VAC – 120 VAC) and
        Engine Alternator (30 Hz – 10 kHz, 4.5 VRMS – 90 VRMS)

Outputs (8)

(2) Relay: switched +DC, 10A
(1) Relay: Form C (dry / volt-free), 10A
(2) Low-side FET: (-DC), 1A
(2) High-side FET: (+DC), 1A
(1) Dedicated Alternator Excitation: +DC, 1A

Communications

(1) CAN: J1939
(1) RS485: Modbus RTU

Mating Connectors

21 Position, Deutsch HDP26-24-21SE
31 Position, Deutsch HDP26-24-31SE

Physical / Environmental

Enclosure material: Polycarbonate
Dimensions (WxHxD): 9.59 x 7.34 x 5.20 in. (243.48 x 186.5 x 132.23 mm)
Weight: 4 lbs (1.8 kg)
IP Rating: IP67
Operating and Storage Temperature: -40° to +85° C (-40° to 185° F)
Vibration: 7.86 G_{rms} (5-2000 Hz), 3-axes random
Shock: ±50G, 3-axes

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TULSA, OK 74146

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ROSENBERG, TX 77471

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FAX: 281 633 4588
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RM 38235 (Tulsa, OK - USA)
RM 626847 (San Antonio, TX - USA)
RM 38235 (Rosenberg, TX - USA)
RM 29422 (UK)

ISO 9001 Quality Management

ISO 9001 Quality Management

TS 16949 Automotive Quality Management

RM 523851 (China)

TS 539322 (China)