



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 enovationcontrols.com.

Warranty - A limited warranty on materials and workmanship is given with this Murphy product. A copy of the warranty may be viewed or printed by going to www.enovationcontrols.com/warranty



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:

support.enovationcontrols.com

Then search for TEC-10. Download the latest manual by clicking the link under the Manuals section of the page.

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:
 - 4 Shockmount Isolators
 - 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

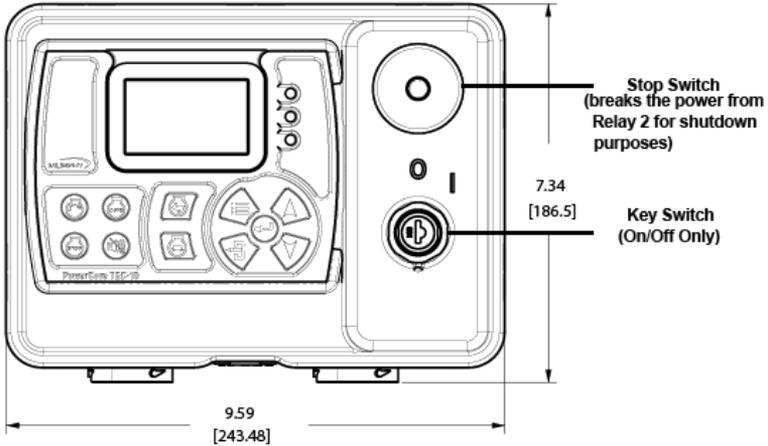
Determine the location of the TEC-10 Panel on the customer-supplied mounting bracket or plate. The suitability of the location is subject to investigation by the local authority having jurisdiction at the time of the installation.

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.

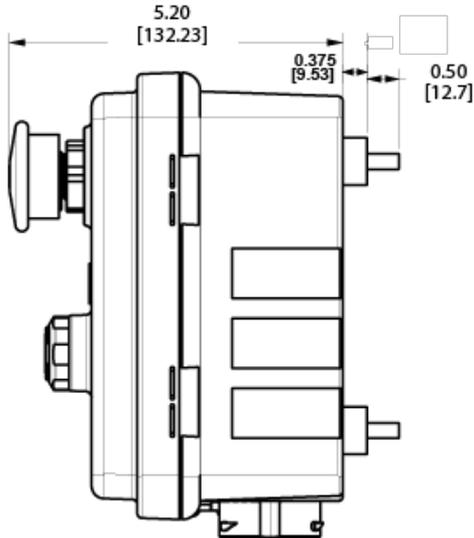
Dimensions for Installation

Front

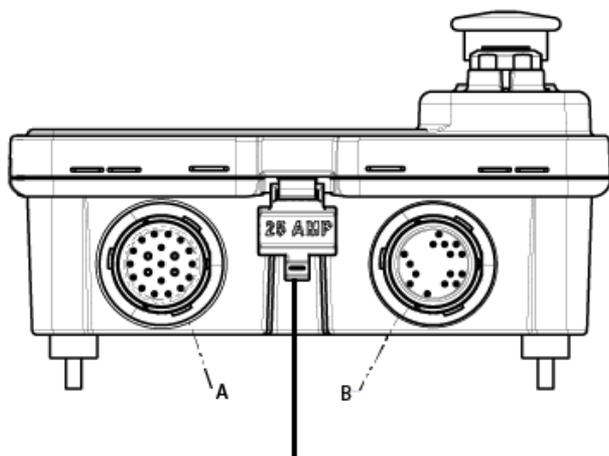
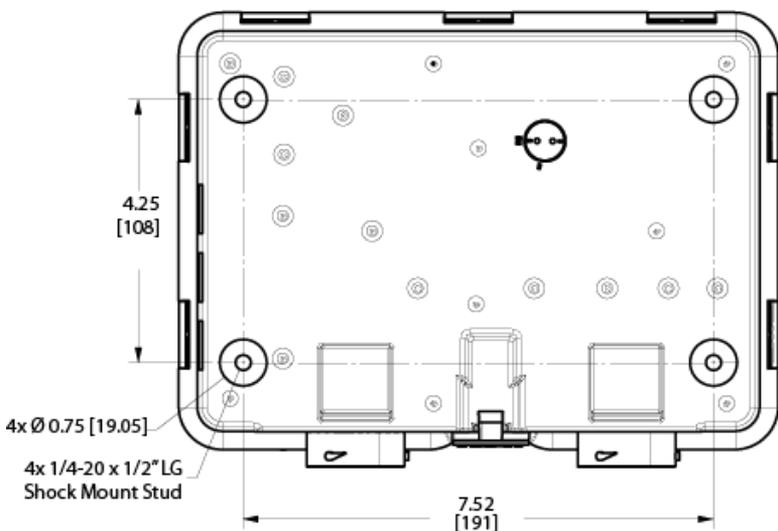
Inches
[mm]



Side View



Back View



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
NOTE: Wiring of this device must meet all applicable electrical codes.		22	Unavailable
		23	Digital Input 2, Default Setting: Dual Contact Start, B-
		24	Digital Output 2, +DC, (1A), Default Setting: Engine Running)
		25	Unavailable
		26	Battery (negative)
		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
40051073	Replacement Fuse Door
40051143	Replacement Fuse Door Pad
40000601	Replacement Shock Mount Kit
40000636	Replacement Key Set
40000625	TEC-10 Programming Kit

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) **Analogue:** 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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