# TC-4600 | Temperature Controller

PWM Temperature Control
RS-232 Comms.

Pulse Width Modulating Temperature Controller

## OVERVIEW

The TC-4600 is a bi-directional (heat/cool), H-bridge controller designed to control thermoelectric cooling/heating units with the option to set as unidirectional. The controller accepts an input voltage of 12-36VDC. The output voltage can range from 0 to 36VDC if a split supply is used. The load circuit is pulse width modulated at 2.7KHz and delivers a load of 0.1 to 25 Amps. Temperature resolution for this controller is 0.01°C, providing exceptional control stability in a well designed thermal system.

The H-bridge configuration allows for a seamless transition between heating and cooling. Using a PC with an RS232 interface, the controller can be set for any of the following control configurations: On/Off control, differential temperature control, manual control or any combination of PID control. The user friendly software requires no programming experience to set up the controller. The RS232 interface has 1500 VAC isolation from all the electronic circuitry minimizing the interference from noise or errant signals. Once the controller is set up, the computer may be disconnected and the controller becomes a stand alone unit. If the computer is left connected, it can be used for data acquisition in a half duplex mode.

The temperature may also be set through the optional display or through a remote potentiometer.The PC software also provides for several alarm types and the controller has 3 ou puts for alarms with a 5VDC output rated for 25mA of current. In the set up menu the alarm function may be set as no alarm, tracking alarm, fixed value alarm or computer controlled alarm. The menu also offers selections for latching and for maintaining or cutting the power during an alarm. The alarm sensor may by the control temperature sensor or a secondary sensor.

## FEATURES

- Full H-Bridge Control
- Fully PC Programmable
- P,I,D or On/Off Control
- PC Configurable Alarm Circuit
- 0-36VDC Output Using Split Power Supply
- RS232 Communications
- RoHS Compliant
- Set Temperature range of -40°C to 250°C dependent on sensor selection

## ACCESSORIES

- Model TC-4600D Display: 4 Digit temperature readout for displaying set temperature or actual temperature with capability to adjust the set temperature.
- HS optional Heat Sink: Recommended for applications using 15A of load or greater.
- Thermistor-K: 2000 Ω +/- 2% at 25 °C, best for (-20 °C to 30 °C) range
- Thermistor-Z: 10000 Ω +/- 2% at 25 °C, best for (0 °C to 50 °C) range

## SPECIFICATIONS

- Input Voltage: 12VDC to 36VDC
- Output Voltage: 0 to 36VDC with split supply
- Load Current: 0.1A to 25A
- Bandwidth: 0.1°C to50°C
- Integral: 0 to 10 repeats per minute
- Derivative: 0 to 10 minutes
- PWM Base Frequency: 2.7 KHz
- Ambient Temperature range: -20°C to 70°C
- Power Dissipation: <10 Watts
- Process Control Rate: 90 times per second
- Output Power Resolution: ±0.2%

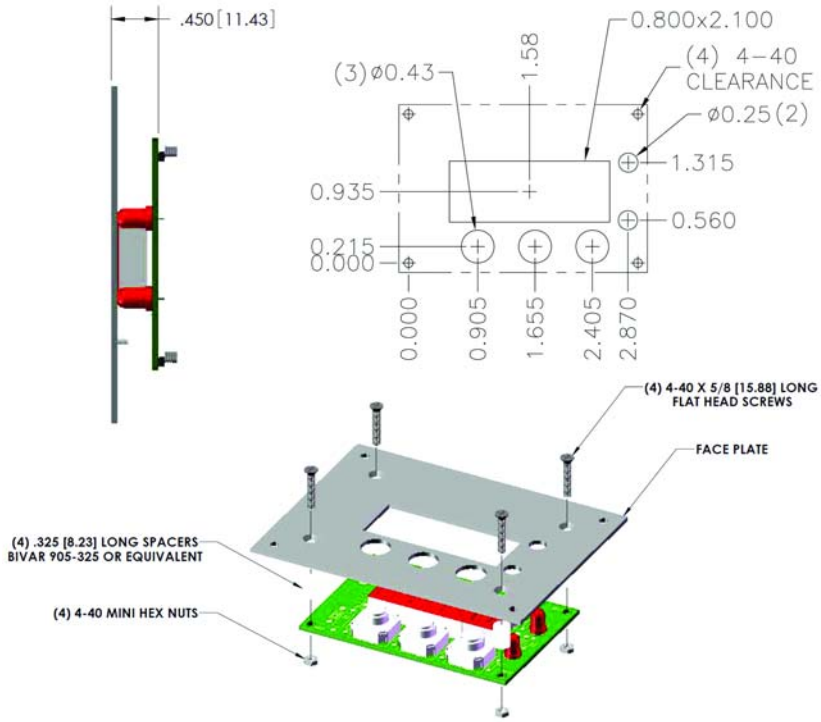
## PART NUMBER AND ORDERING

| MODEL NUMBER | PART NUMBER | COMMS | OPERATING VOLTAGE VDC | SWITCHING VOLTAGE VDC | MAX. SWITCHING CURRENT AMPS. | HEAT SINK | SENSOR | SENSOR RANGE (°C) | DISPLAY |
|---|---|---|---|---|---|---|---|---|---|
| TC-4600 | 46-44O-41-000 | RS-232 | 12-36 | 0-36 | 15* | none | Thermistor-K | -20 to 30 | none |
| TC-4600 | 46-44O-41-001 | RS-232 | 12-36 | 0-36 | 15* | none | Thermistor-K | -20 to 30 | included |
| TC-4600 | 46-44O-51-000 | RS-232 | 12-36 | 0-36 | 15* | none | Thermistor-Z | 0 to 50 | none |
| TC-4600 | 46-44O-51-001 | RS-232 | 12-36 | 0-36 | 15* | none | Thermistor-Z | 0 to 50 | included |
| TC-4600 | 46-44P-41-000 | RS-232 | 12-36 | 0-36 | 25 | included | Thermistor-K | -20 to 30 | none |
| TC-4600 | 46-44P-41-001 | RS-232 | 12-36 | 0-36 | 25 | included | Thermistor-K | -20 to 30 | included |
| TC-4600 | 46-44P-51-000 | RS-232 | 12-36 | 0-36 | 25 | included | Thermistor-Z | 0 to 50 | none |
| TC-4600 | 46-44P-51-001 | RS-232 | 12-36 | 0-36 | 25 | included | Thermistor-Z | 0 to 50 | included |

* Can switch up to 25 AMPS if used with heat sink

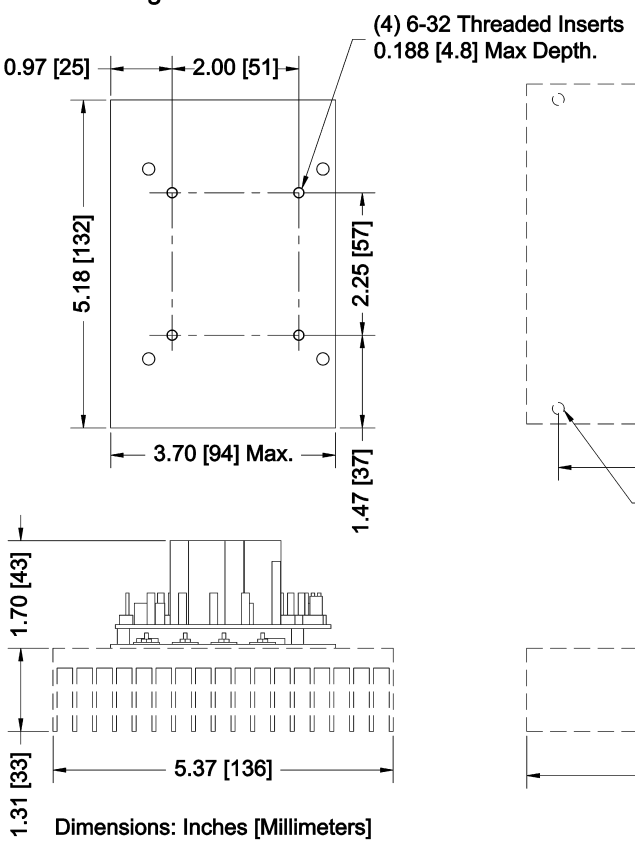
# TC-4600

## DISPLAY

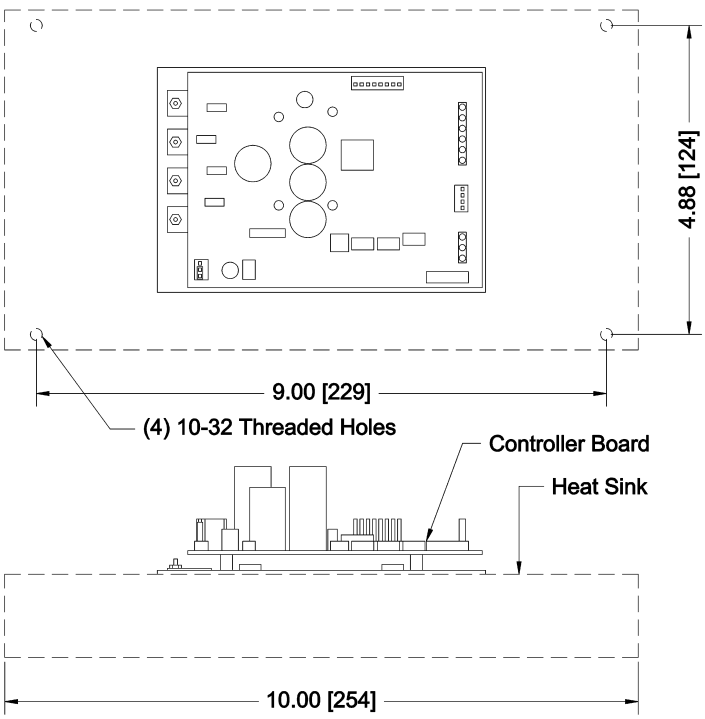



## DIMENSIONS

### Mounting Without Heat Sink




### Mounting With Heat Sink




Dimensions: Inches [Millimeters]