



Digital Temperature Controller

TC140 Series

FEATURES

- Compact design
- Easy-to-read 4-digit LED display
- Time displays in hr./min.
- Temperature display in Fahrenheit or Celsius
- Non-volatile storage of programmed parameters
- Watchdog timer ensures reliability
- 4-button, moisture-resistant keyboard using snap-action sealed switches
- Diagnostic messages for fault conditions
- Front panel keyboard programming of time and temperature
- HEAT ON indicator
- Accurate and durable thermocouple temperature sensing
- Convenient operating voltage ranges
- Heavy duty stainless steel front panel
-   File #E104595

The Model TC140 is a Digital Temperature Controller which features an independent count-up timer. The controller uses a Type K thermocouple and is microprocessor controlled. The regulation temperature can be set in one degree increments within specified limits. Hysteresis, Offset and Fahrenheit or Celsius are selected via front panel switches. The HEAT ON light indicates output relay activation. Actual sensed temperature is normally shown on the digital display. The control has diagnostic messages for open probe and memory failure.

Operating Logic: The timer function is started by pressing the TIME START button. The digital display will then alternate between probe temperature and elapsed time in hours and minutes. The timer function is cancelled by pressing the TIME START button again.

Setting Regulation Point: Press the TEMP button momentarily. The display will flash SET and PNT briefly then flash the setpoint value. The ▲ and ▼ buttons can now be used to adjust the temperature regulating setpoint. Press the TEMP button again to cause the control to regulate to the new setpoint.

Setting Hysteresis: The turn-on and turn-off temperature around a setpoint can be

separately adjusted to $\pm 20^{\circ}\text{F}$. Press and hold the ▲, ▼ and TEMP buttons for .5 second. The display will alternate between ON and the turn-on value. The ▲ and ▼ buttons can now be used to change this value. Press the TEMP button again and the OFF value will be displayed. The ▲ and ▼ buttons can now be used to change the OFF value. Pressing the TEMP button again will return the control to normal operation and will store the new settings. The hysteresis is set to -1°F , $+0^{\circ}\text{F}$ as shipped from the factory.

Setting Offset: The displayed value can be changed by $\pm 20^{\circ}\text{F}$ relative to actual sensed temperature value. This feature corrects for disparity of location of the probe and the volumetric center of the heating chamber. Press and hold the TIME and TEMP buttons, then also press and hold the ▲ and ▼ buttons. After one second the display will flash OFF and SET briefly then will flash the offset value. At this point, the ▲ and ▼ buttons can be used to adjust the offset. Pressing the TEMP button programs the control for the new value. The offset is set to 0 as shipped from the factory.



Diagnostic Messages: An open probe will cause the digital display to show PROB and will disable the output until input voltage is removed and re-applied. If a memory loss or failure occurs, the digital display will show FAIL and the output will be disabled. Input voltage should be removed and re-applied. If the FAIL message is gone, recheck programmed parameters and resume operation. If the FAIL message reappears, contact the factory for service.

ORDERING INFORMATION

INPUT VOLTAGE	PART NUMBER
18 to 28 VAC	TNC-TC140-A010
90 to 135 VAC	TNC-TC140-A120
198 to 242 VAC	TNC-TC140-A220

ACCESSORY	PART NUMBER
Type K Thermocouple, Bead Tip Probe, 6'	ASP-CH/AL-011
Type K Thermocouple, Perforated Probe, 24"	ASP-CH/AL-013
Type K Thermocouple, Probe with 6' Lead	ASP-CH/AL-016
Type Ke Thermocouple, Probe with 10' Lead	ASP-CH/AL-017
Type K Thermocouple, Perforated Probe, 48"	ASP-CH/AL-018
Type K Thermocouple, Perforated Probe, 72"	ASP-CH/AL-019
Type K Thermocouple, Probe with Flange	ASP-CH/AL-020
Type K Thermocouple, Ring Lug Mount	ASP-CH/AL-021

*All transformer wires are 8" long: 120V Primary Black/White; 220V Primary Black/Black

SPECIFICATIONS

CONTROL/TIMING

Temperature Control Mode: ON/OFF with hysteresis

Temperature Sensor: Type K thermocouple with special limits of error is recommended for max. accuracy

Maximum Timing Interval: 99 hr.: 99 min.

Minimum Timing Accuracy: $\pm 2\%$

INPUT

Operating Voltage:

TNC-TC140-010: 18-28 VAC, 60Hz

TNC-TC140-120: 95-135 VAC, 60Hz

TNC-TC140-220: 198-242 VAC, 60Hz

Power Consumption:

TNC-TC140-010: 10 VA max.

TNC-TC140-120/220: 30 VA max.

Resolution: $\pm 1^\circ\text{F}$

Temperature Sensing Range: 50°F to 700°F
(10°C to 371°C)

Temperature Range Display Accuracy: $\pm 5.4^\circ\text{F}$
($\pm 3.0^\circ\text{C}$) max. over operating voltage and ambient temperature range

Temperature Regulating Range: 100°F to 601°F
(38°C to 316°C)

Selecting for °F or °C: Press and hold both ▲ and ▼ buttons until temperature scale changes; release buttons

OUTPUT

Heater Output Rating: SPST normally open isolated contact 1 A at 24 to 250 VAC

ENVIRONMENTAL

Ambient Operating Range: 5°C to 65°C

Ambient Storage Range: -40°C to 85°C

MECHANICAL

Termination Type: Input voltage and heater output contacts 1/4" x .032" PC mount fast-ons

Probe: #6 screw with clamp

Mounting: Two center mountings (.187 dia.)

Front Panel Material: 18 gauge stainless steel

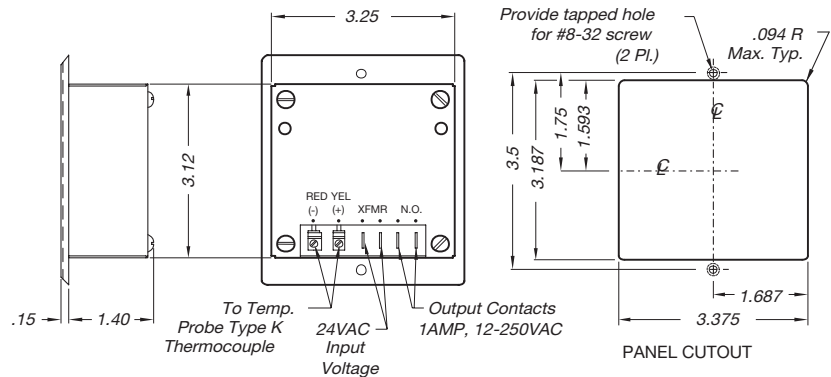
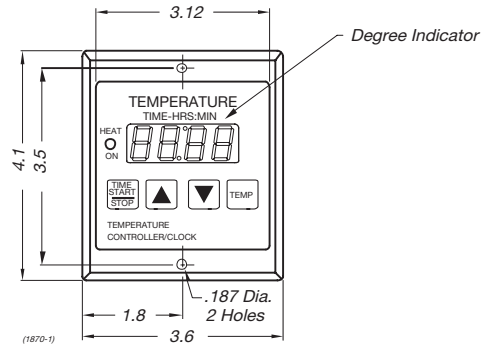
Keyboard: 4-button moisture resistant using snap action sealed switches behind a polyester graphic overlay for maximum reliability

Display: 4-digit, seven segment red LED

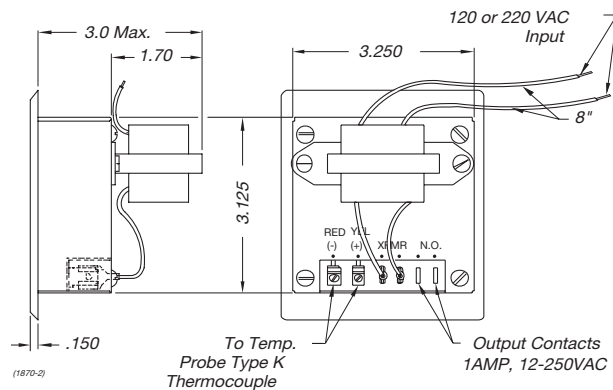
Digit Height: .56 inches

ELECTRICAL

Simple wire hook-up



TNC-TC140-010



TNC-TC140-120 AND TNC-TC140-220