

## Submittal Data #151 E

### **Electronic Thermostat** **Model No. UTC-2030 program code #** **and** **Model No. UTC-2230 program code #** **(with circuit breaker)**



This state-of-the-art electronic thermostat is designed to control one or more heating cables operating between 120 and 240 Vac having a total current draw that does not exceed 30A. It can be fitted with up to three temperature sensors as required by the application. Because separate temperature sensors are used, they may be installed on the pipe during the initial installation phase while the controller itself may be installed at a later date.

#### Features include:

- Universal power supply allowing operation at 120 to 240 Vac without wiring modifications (no neutral required).
- 2-pole, 30A, 240 Vac circuit breaker that allows operation from 120 to 240 Vac provides a local means of disconnect (on model 2230 only).
- Internal ground fault detection circuitry eliminating the need for an external ground fault device. "Alarm only" or "alarm and trip" is activated when ground fault condition is present.
- Three temperature sensor inputs: TS1 for pipe temperature control, TS2 (when enabled) for pipe temperature control at second location on the piping system and TS3 (when enabled) to serve as a high temperature limit for plastic piping protection. An alarm is activated when an enabled "open" or "shorted" sensor is detected.
- Low temperature alarm on both controlling sensors TS1 and TS2. Alarm level is factory set at dedicated level for each sensor. Feature is enabled at customer request.
- On-off control with a  $1^{\circ}\text{C}$  ( $1.8^{\circ}\text{F}$ ) temperature dead band for accurate control of piping systems. This close tolerance control can save thousands of kilowatt hours of power consumption and is ideal to control electric tracing systems in locations where power is costly.

- Override input (factory programmable): timed between 1-48 hours or non-timed. This feature forces the output "on" or "off" to suit the application.
- Auto-cycle function (when enabled) momentarily turns heating cable "on" at 24 hour interval to monitor ground fault condition of the load.
- One three-color LED indicator lamp mounted on the door of the controller operates as follows:
  - ❖ Green: When illuminated, the power supply to the controller is "on" and the pipe temperature at the sensor is above the set point. When extinguished, the power supply is "off".
  - ❖ Amber: When illuminated, the temperature controller is calling for heat.
  - ❖ Red: When illuminated, this indicates that one of the alarms has been triggered. Controller is not calling for heat.
  - ❖ Amber and Red (alternating): This indicates that one of the alarms has been triggered. Controller is calling for heat.
- Non-volatile memory retains all programmed parameters in the event of a power outage.

#### Sensor type:

This temperature controller can be factory programmed to operate with one of two different types of temperature sensor. By default the controller is programmed for 100 ohms Platinum RTD sensor(s). It can also be programmed for 2252 ohms thermistor(s) on special request. The last two digits of the controller's catalog number indicate the programming code. Control program codes from 01 to 49 are for use with RTDs and codes from 51 to 99 are for thermistors. Ensure that the proper type

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of temperature sensor is used with the controller. Program codes are listed in tables 5 and 6.

URTD Temperature sensor:  
100 ohms RTD temperature sensor for use with the UTC line of electronic thermostats. Available with 6 m (20 ft), 15 m (50 ft) or 30 m (100 ft) of grey or red PVC extension lead wire for ease of identification.

UTC-2030 specifications:

Alarm output:  
1A max, 240 Vac max., 50/60 Hz, SPDT (form C) relay output configured for "fail safe" operation.

Approvals:  
CSA "C" – "US" for ordinary locations.

Enclosure:  
Nema 4, grey painted steel with ¼ turn latch.

Terminal blocks:

Power terminals for #22 to #8 AWG		Spring loaded signal terminals for #28 to #12 AWG	
Power in	L1, N or L2	Sensors: TS1	#1 – 2 – 3 - 4
Heater out	H1, N or H2	TS2	#5 – 6 – 7 - 8
		TS3	#12 – 13 – 14 – 15
		Alarm relay	#9 – 10 – 11
		Alarm reset	#16 – 17
		Override input	#18 - 19

Indicator light:  
Nema 4 multi-function three color LED.

Input voltage range:  
120-240 Vac, 50/60 Hz.

Monitoring and alarming:  
The electronics monitor low temperature, ground fault current, open / shorted temperature sensor(s) and high cable temperature.

Operating ambient:  
-40 to +40°C (-40 to + 104°F).

Power output:  
2-pole relay output rated 30A - 240 Vac.

Factory programmable:  
Note: You can use the default settings of the following features by selecting the appropriate program code.

Auto cycle:  
When the temperature controller is energized, and then at 24 hours intervals, the controller performs an auto-cycle test by turning on the load to measure the ground fault leakage current. If the measured ground fault current is above the set level, the ground fault current alarm is activated. Can be disabled at the factory upon special request  
Ground fault detection

Factory adjustable to trip and alarm or alarm only.  
Setting @ 30 or 100 ma.

Remote override:  
The user may force the unit on/off via a remote dry contact. Factory adjustable to operate in timed (1 – 48 hours) or continuous mode.

Temperature control: Three 3-wire 100 Ω @ 0°C Platinum RTD.(alpha = 0,00385 Ω/Ω/°C0, lead compensated to 20 Ω per lead.  
or  
three 2-wire 2 252 Ω @ 25 °C NTC Thermistor.

Dead band:  
1 to 5 °C (1.8 to 9 °F).

Control temperature set point range:  
-5 to 75 °C (23 to 167 °F).

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Low temperature alarm:  
Feature can be enabled to provide low temperature alarm on TS1 and TS2.

Low temperature set point range:  
-10 to 75 °C (14 to 167 °F).

High cable temperature:  
The third temperature sensor (referred to as TS3) is used as a high cable temperature limit for plastic piping system protection. When TS3 is enabled the high limit feature will override demand for heat and shut off the load when a high cable temperature condition is reached.

High temperature set point range:  
25 to + 100 °C (77 to +212 °F).

UTC-2230 specifications:  
Same as the UTC-2030 except for the following:  
Circuit breaker: 2-pole, 30 A, 240 Vac, pre-wired to the temperature control board.

Terminal blocks:  
Incoming power lugs at the circuit breaker for #14 to #4 AWG.

Enclosure:  
Nema 4, grey painted steel with clips.

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