APPLICATION
The TC 202a is a microprocessor-based temperature control and monitoring module developed specifically for heat tracing. The unit provides control and monitoring capabilities via digital information display for two heat tracing circuits with input from two RTDs.

RATINGS
Control and monitoring capacity.....2 heat tracing circuits
Module supply voltages..............110-120 or 208-240 Vac
Controlled output voltages.............110-480 Vac
Power consumption.........................6 watts
Operating ambient 1..................-40°F to 140°F (-40°C to 60°C)
Maximum storage ambient.............158°F (70°C)
Data retention..........................nonvolatile EEPROM
Power clamp function..................programmable from 20% to 100%
Temperature input.....................two 3-wire platinum 100 Ω RTDs
Temperature control range.............-40°F to 932°F (-40°C to 500°C)
Control band ........programmable in increments of 1 degree
High operating current alarm ..........1.0 to 30.0 amps
Low operating current alarm ...........0.0 to 30.0 amps
Ground leakage alarm/trip ............30 to 150 mA (in 1 mA increments)
Alarm relay ..................AC only, rated @ 1-amp resistive
                          (110-120 or 208-240 Vac)
Self-test frequency...... programmable from 2 to 99 hours
Communication ......................Modbus ASCII via RS 485 port

Notes
1. LCD display heater is recommended for ambients below -4°F (-20°C).

PRODUCT FEATURES
Real time data for:
• Temperature
• Heater current
• Ground leakage current

Stored data for:
• Highest temperature encountered
• Lowest temperature encountered

Alarm information for:
• Low temperature
• High temperature
• Low heater current
• High heater current
• Ground leakage current
• Damaged RTD sensor

CERTIFICATIONS/APPROVALS
When housed in a NEMA 4X enclosure and equipped with solid-state relays, the TC 202a is approved for use in ordinary (non-classified) and hazardous (classified) areas.

Refer to HOW TO SPECIFY on reverse to specify module type.
CONTROL METHODS

Heat tracing circuits are controlled with the TC 202a via zero crossing solid-state relays which will allow four different modes of operation:

- **On-Off Control**—User input for maintain temperature and control band provides the on-off limits for the controlled heater.
- **On-Off Control with Soft Start**—Adds a three-minute 0% to 100% ramp-up feature to the on-off control function to minimize the effects of start-up power.
- **Proportional**—Adjusts the amount of heat generated through time sequencing of the heater. Reduces energy consumption for ambient-controlled systems and provides precise control of temperatures when line sensing control is used.
- **Self-adjust**—The user inputs the setpoint and the control band (maximum on temperature); the controller adjusts the heat generated to stay within the limits imposed.

The ambient conditions and heat sink style determine the amperage rating of a solid-state relay. The chart indicates the amperage ratings (at the temperatures indicated) using the standard enclosures and heat sinks. The 40°F (4°C) ratings should be used with freeze protection applications as the controlled circuit would not be energized above this temperature.

**ENCLOSURES**

Thermon offers both metallic and nonmetallic enclosures to meet a variety of application environments. Each enclosure includes a 3” x 3” (76 x 76 mm) clear polycarbonate viewing window.

**Metallic:** NEMA 4X stainless steel with a hinged cover held in place by screw closures. A quick release latch option is available.

**Nonmetallic:** NEMA 4X fiberglass reinforced polyester with a hinged cover held in place with quick release latches.