

# Barksdale

## Installation And Maintenance Instructions

OTS-1A

### HEAT TRACING TEMPERATURE SWITCH FOR ORDINARY AREAS

#### Model THR Series

Line sensing bulb and capillary type

#### Model THL Series

Ambient sensing probe type

#### Description

The remote bulb and capillary types are used to sense the fluid media temperature.

The local mount types are used to sense ambient temperatures for freeze protection applications.

**Caution:** Do not use these switches for hazardous environments. Sensing bulb and probe must not exceed specified proof temperatures.

#### Installation

**Caution:** This switch should be installed by a trained service person.

Switch

Mounting: Switch may be mounted in any position.

Sensors: Install bulb toward the bottom of pipe or vessel, away from heat sinks and approximately 90° from the heat tracing cable. Always secure both bulb and capillary and wrap with proper insulating tape.

Orient the local mount probe for optimal ambient temperature sensing, away from heat sources or heat sinks.

Enclosure: Type NEMA 4X.  
Enclosure temperature limits:  
-40 °F TO 160 °F (-40 °C TO 71 °C).

#### Wiring

All electrical wiring must comply with local and national electrical codes.

**Caution:** Electrical rating must be within range stated on switch nameplate. Failure to stay within rating may result in damage to, or failure of electrical contacts.

Electrical Rating: 22A at 125, 250, 480 VAC.

Electrical Connection: Clamping screw terminals on insulated terminal block via 3/4 NPT (female) conduit connection. Use copper conductors only. Switch may be wired normally open or normally closed.

#### Wiring (continued)

Contact positions (C, NO, NC) are clearly identified next to terminal block.

Wire code for built-in jumper wire to terminal block:

Purple= Common  
Blue= Normally Closed  
Red= Normally Open

Grounding: Ground screw is provided on every switch.

#### Testing of the Switch

Testing of the switch may be done before or after final installation. If bench tested, the switch should be re-tested when installed in the final application. Be sure switch can be tested without affecting other equipment. Check nameplates for electrical rating and circuitry (normally closed or normally open) of switch. Cycle switch a few times to check operation.

#### Set-Point Adjustment

Turn adjustment knob counter-clockwise to increase set-point.

#### Agency Approvals



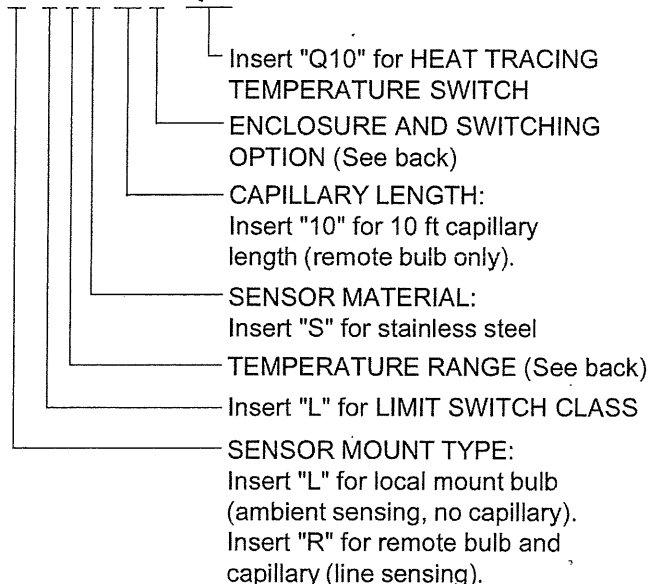
Underwriters Laboratories, Inc.  
Temperature Indicating and Regulating Equipment  
File No. E56247, Guide No. XAPX.



Canadian Standards Association listed for  
Temperature Indicating and Regulating Equipment  
File No. LR34555, Guide No. 400-E-O, Class 4813.

#### Switch Number Coding (Example Only)

##### THR-L2S-10X-Q10



## Troubleshooting

**Warning:** Disconnect electrical power supply to switch before removal or inspection. Failure to observe this warning could result in serious injury or switch damage.

**Important:** The switch is not field-repairable. In case of damage, replace entire switch.

### Causes of improper operation:

1. Incorrect electrical connection: check leads to switch. Be sure they are properly connected. See "Wiring" section for circuitry color code.
2. Faulty control circuit: check electrical power supply to switch. Check for loose or blown fuses, open-circuited or grounded wires, loose connections at switch.
3. Incorrect temperature: check temperature in system. Temperature must be within range specified on nameplate.
4. Excessive vibration: check for temperature fluctuations in system. Check switch mounting and be sure there is no excessive vibration.

If the operation of the switch cannot be corrected by the above means, consult factory or authorized factory representative.

## For service or ordering information

Consult factory or authorized factory representative. Specify full catalog number (with any optional modifications or factory set-point) as shown on part number code.

## Warranty

All products of the company are sold and all services are offered subject to the company's standard conditions of sale.

### TEMPERATURE RANGE

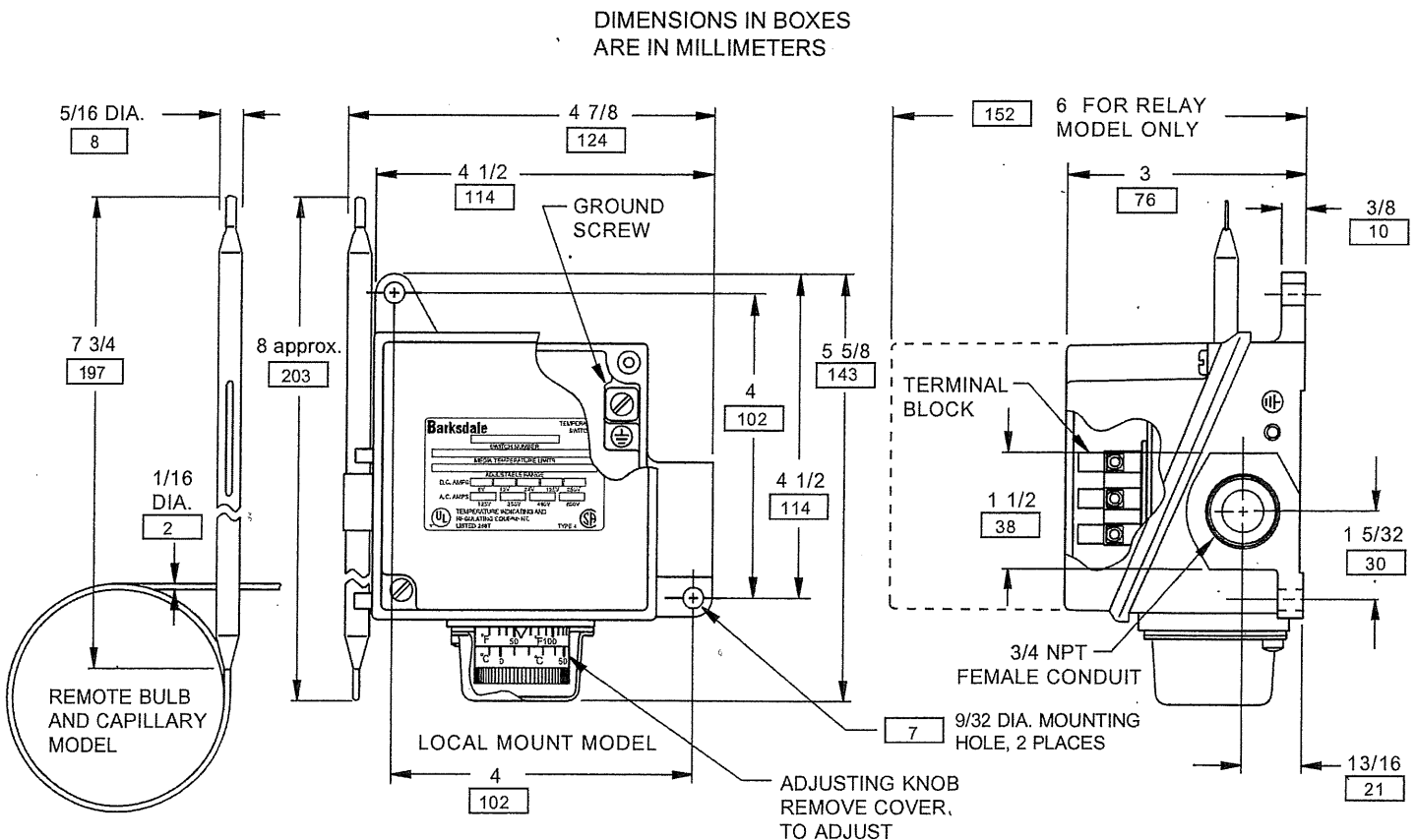
INSERT IN PART NO.	ADJUSTABLE RANGE	BULB SENSOR EXPOSURE LIMITS (PROOF)
1*	15 TO 140 °F (-9 TO 60 °C)	-40 TO 160 °F (-40 TO 71 °C)
2**	25 TO 325 °F (-4 TO 163 °C)	-40 TO 420 °F (-40 TO 215 °C)

\* FOR AMBIENT SENSING ONLY.

\*\* FOR LINE SENSING ONLY

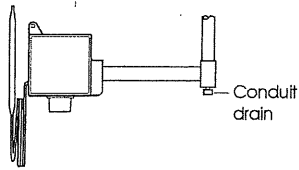
### ENCLOSURE AND SWITCHING OPTIONS

X	STD. OPTION WITH NEMA 4X ENCLOSURE
R	STD. OPTION WITH 22A DPST RELAY (22A AT 120, 240, 277 VAC) CONTACTS CLOSE ON FALLING TEMPERATURE RELAY COIL: 120 VAC, 4VA



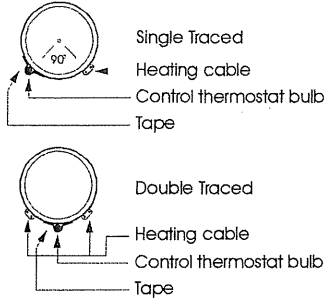
# Installation Instructions

## Installing the Thermostat



1. Verify that the thermostat is suitable for the area where it is to be installed.
2. Check the line voltage and the heat-tracing load to ensure that the thermostat ratings are not exceeded.
3. Mount the unit in a position that prevents condensation from draining into the enclosure from the connecting conduit, (see diagram at left).

## Positioning the Sensor Bulb



4. Position the bulb in the lower quadrant of the pipe as shown in the diagrams to the left. Place the bulb at least three feet from pipe supports, valves, or other heat sinks; protect the capillary from kinks or bends less than 1/2 inch in radius.
5. Tape the bulb firmly to the pipe with aluminum tape, making sure there is no air space between the bulb and pipe. Do not overlap the bulb and heating cable with the same piece of tape.

## Setting the Thermostat

6. Set the thermostat dial to the desired temperature, then finish wiring.
7. Complete insulating. Do not turn the system on until the bulb is covered with thermal insulation.
8. Fill the piping or tank. Once the thermostat has begun to cycle, check the fluid temperature with an immersed thermostat (best for plastic systems) or an accurate temperature indicator. Adjust the dial setting, if necessary.

## Wiring

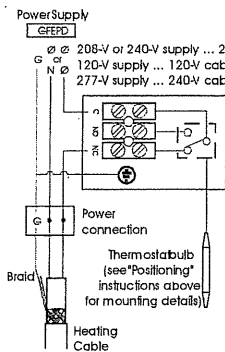


Figure 1. Pipe-sensing

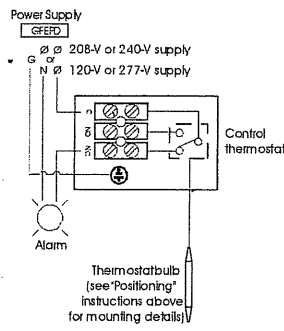


Figure 2. Low-temperature alarm

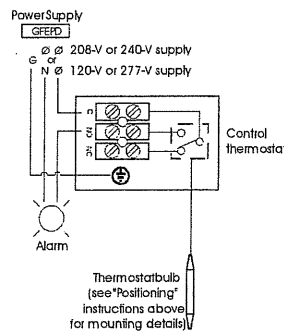


Figure 3. High-temperature alarm

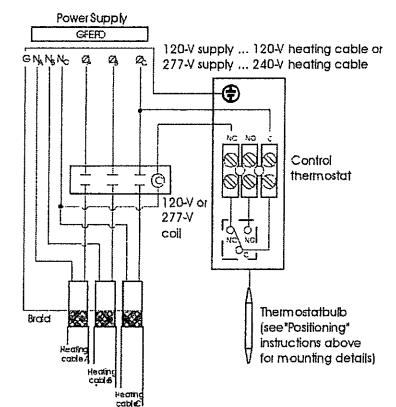


Figure 4. Contactor control  
For switching heat-tracing loads greater than 22 A or switching multiple heat-tracing circuits.

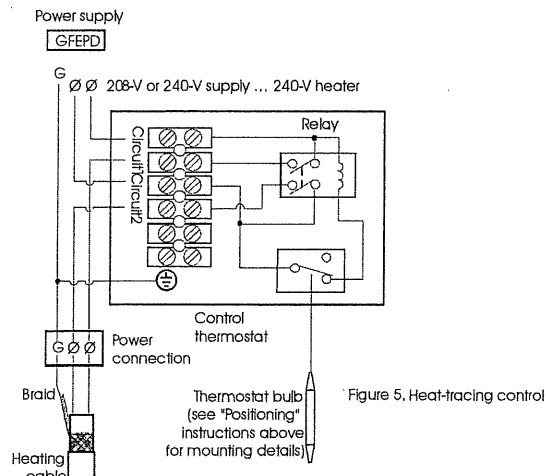


Figure 5. Heat-tracing control

**Important:** All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their particular application.