



Installation Instructions

DTC-40

Single Point Thermostat device with 30mA Ground Fault Protection



OVERVIEW

The DTC-40 Freeze Protection Thermostat can sense either ambient air temperature or pipe temperature. It is designed for single circuit applications where Ground Fault and Freeze Protection are required. The device is factory set at 40°F, but other temperatures can be requested. The DTC-40 contains a UL Listed Class 2 Transformer, a UL Recognized contactor, and a low voltage circuit board.

PRECAUTIONS

- Installation must comply with local electrical codes.
- All related components and this control should be properly rated for the specified location classification.
- The control must be installed by a qualified electrician.

COMPONENTS

DTC-40 Thermostat
DTC-40 Temperature Sensor

REPLACEMENT PARTS

DTC-40TS Temperature Sensor with 6' lead wire

OPERATION

The DTC-40 is intended to control heating cable in Pipe Freeze Protection applications. The DTC-40 provides low voltage for an external temperature sensor. The thermostat will activate when temperature falls below 40°F. The thermostat will remain on until the temperature seen at the sensor rises above 42°F.

The thermostat can provide a low temperature alarm when used as a line-sensing thermostat. This means the temperature sensor is attached to the pipe being heat traced. The low temperature alarm is factory set at 35°F. A jumper pin on the circuit board is used to select this function. In ambient air sensing a temperature alarm is not provided.

The thermostat will switch up to a 40 Amp load. The specified voltage is factory preset per order information.

The thermostat provides alarm indicator for Ground Fault, Loss of Power, Low Temperature, and Sensor Wire Fault. The enclosure cover provides visual indication of Power, Activation and Alarm along with Ground Fault Test and Reset buttons.

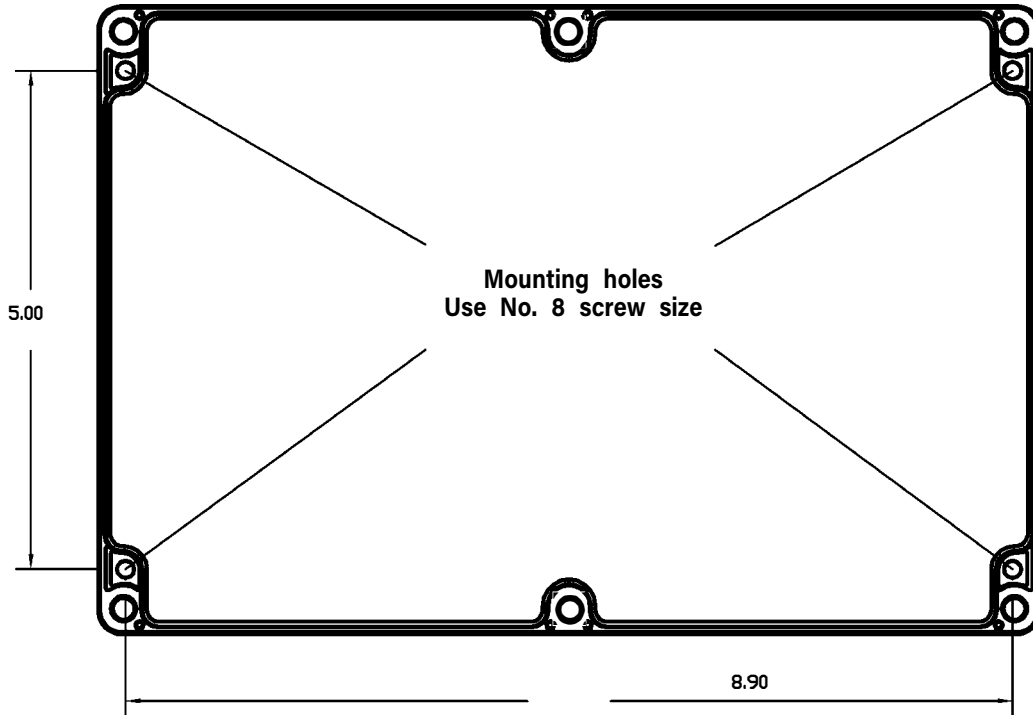


INSTALLATION begins on the next page

Section 2. Installation

2.1 INSTALLING THE DTC-40 CONTROL PANEL

The DTC-40 thermostat can be installed outdoors or indoors. Mount the DTC-40 as shown in Detail 1.

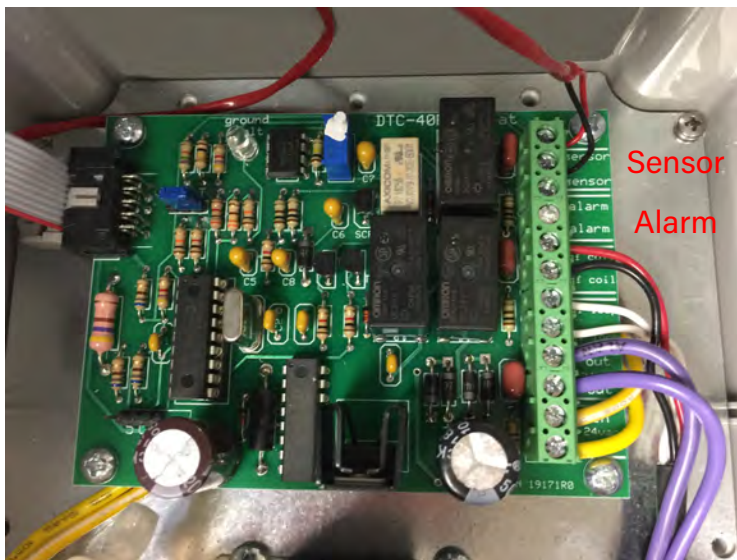


Detail 1. Installing DTC-40

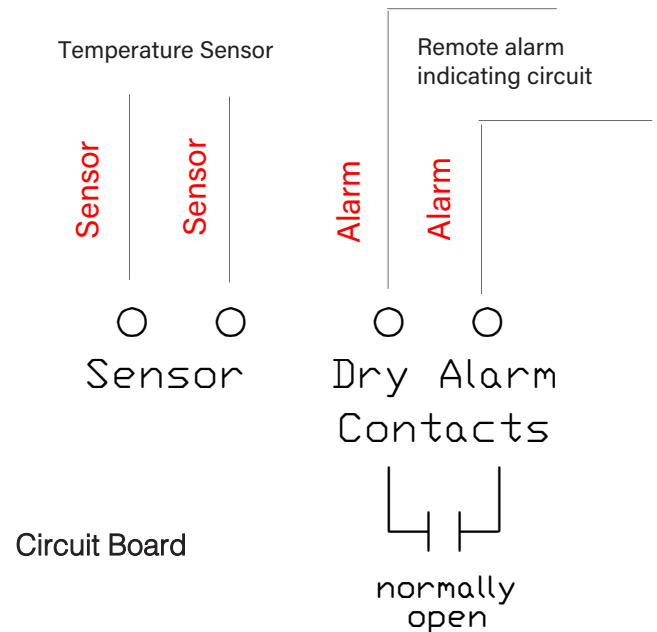
NOTE: Remove back panel from enclosure prior to drilling any additional holes.

2.2 ELECTRICAL CONNECTIONS

1. Connect 1/2" (13mm) conduit for wiring to the DTC-40.
2. Connect 1/2" (13mm) gland fitting in the pre-punched hole on the bottom left and route sensor wire to the sensor terminals on the circuit board.



Detail 2. Electrical connections.

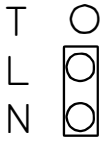


Section 2. Installation

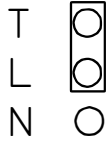
2.2 ELECTRICAL CONNECTIONS

3. Set Jumper pin for ambient or line sensing. See Detail 3.

Jumper pin placement for low temperature alarm function



Sensor in air
No Low Temp Alarm



Sensor on pipe
Low Temp Alarm
set at 35°F

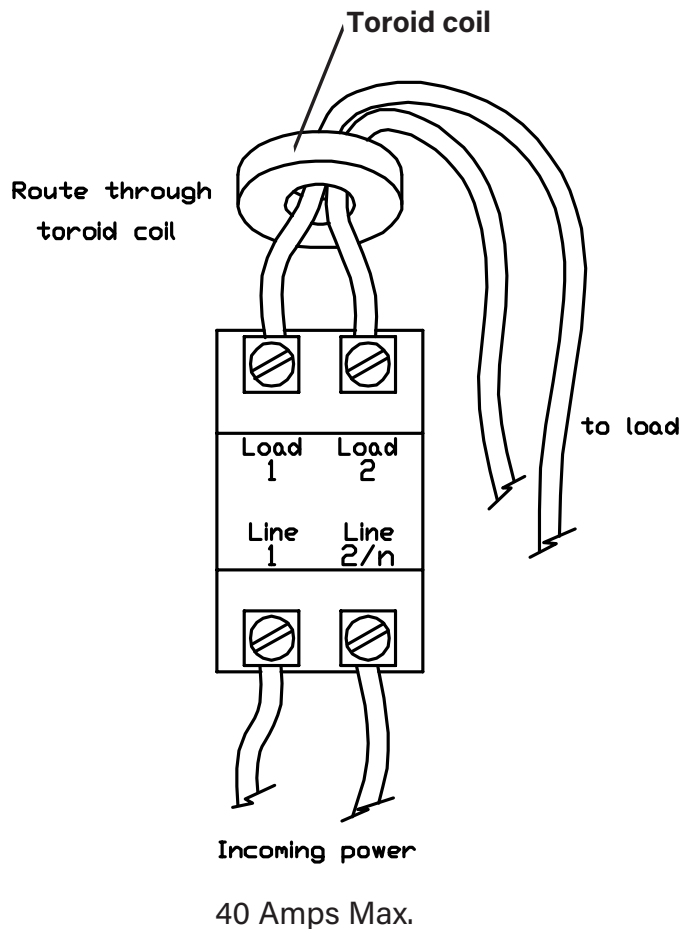
Detail 3. Jumper pin settings located on circuit board

POWER WIRING

NOTE: Make sure BOTH load wires pass through the toroid (donut) coil as shown for Ground Fault Protection. Your wiring should look like Detail 4.



Detail 4. Note: ONLY the 2 lead wires are going through the toroid.



NOTE: Confirm incoming voltage matches the voltage shown on the label inside of the DTC-40 cover. Use CU75C wire. Torque screws 22 IN LBS.

Section 3. Check list and Troubleshooting

3.1 CHECKLIST:

1. Before applying power, confirm voltage matches the voltage noted on the part number inside the enclosure cover.
2. Ensure all load wiring is properly terminated.
3. Ensure ONLY the 2 load wires pass through the toroid (donut) coil as shown on the diagram inside the enclosure cover.
4. Confirm the temperature sensor is connected and any splices are complete if the sensor length is extended.
5. Confirm the low temp alarm jumper pin is selected properly.
6. For ambient temperature sensing ensure the sensor is not in direct sunlight or near any source of heat.

3.2 TROUBLESHOOTING:

PROBLEM	INDICATION
Ten short alarm LED flashes and repeats Six slow LED flashes	The sensor wire is shorted or open. The system is in low temperature alarm.
Constant alarm LED slow flashes LED cover lights are out.	Ground Fault alarm. Check ribbon cable connection for proper seating.
GF Test and Reset buttons do not function. GF Reset button causes loud chatter and doesn't reset.	Check ribbon cable connection for proper seating. Ensure incoming voltage matches voltage noted on inside cover. The cable load is in ground fault. Contact electrician to locate damaged cable, improper cable connections, and cable end termination.
DTC-40 will not turn off DTC-40 will not turn on	The sensor must be 43°F or above. Ensure the sensor is not in direct sunlight. If the sensor is on the pipe and under insulation, the pipe may well be above 40°F.

**NOTE: To prevent nuisance tripping, do not use 2-way radios or cell phones within 3 feet of device.
The GF Test and Reset Buttons only test the Ground Fault function.**

Quick Sensor Check with an Ohmmeter

Disconnect the sensor leads from the circuit board and take the resistance measurement across the lead wires.

- Greater than 8,000 Ohms is a temperature less than 40°F
- Less than 8,000 Ohms is a temperature greater than 40°F.

Temporary activation for System Test:

- Connect 10k resistor across sensor terminals.
- Remove after test.
- Connect sensor wiring.

Section 2. Specifications

General

Area of use: Indoor or outdoor
Transformer: UL Listed Class 2
Contactor: UL Recognized

Enclosure

Protection: 9.5" x 6.25" x 4.75" NEMA 4X, Polycarbonate
Cover attachment: Polycarbonate cover, machine screws
Mounting: Wall mounted

Front Panel Interface

Status Indicator: POWER - Green
SYSTEM ON - Red
ALARM - Yellow

Control

Input voltage: 120, 208, 240 or 277VAC
Maximum rating: 40 Amps
Activation: Factory set at 40°F (non-adjustable)
Low temp alarm: Factory set at 35°F (non-adjustable)
Sensor: 6' Thermistor, field length extendable
Extension wire: 2-conductor 0-200' = #22AWG
Temperature differential: 3°F

Alarms

Low Temperature, Ground Fault, Temperature Sensor Fault, Power Loss
2A rated Dry Alarm Contacts (120 VAC Max) for remote alarm indication

Model Numbers:

DTC-40-120	120 VAC
DTC-40-208	208 VAC
DTC-40-240	240 VAC
DTC-40-277	277 VAC

Custom Temperature Request:

DTC-40 / XXX / YYY - ZZZ

XXX = Temperature Set Point Request

YYY = Low Temperature Alarm

ZZZ = Voltage