T19PC Series Temperature Controls with Type 4X Raintight Enclosures

Installation Guide

Part No. 996-536, Rev. E
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Application

Important: Use the T19PC series temperature control only to control equipment under normal operating conditions. Where failure or malfunction of the T19PC could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the T19PC.

T19PC series electromechanical temperature controls are designed for use in many agricultural applications. T19PC controls have rugged polycarbonate enclosures and are UL listed as Type 4X and for use in National Electrical Code (NEC) Article 547 Agricultural Environments (ANSI/NFPA 70). See Figure 1 and Technical Specifications.

Adjustable T19PC series temperature controls have O-ring sealed external setpoint adjustment knobs and range scales with oversized markings for easy readability in low light. The exposed portion of the liquid expansion sensing elements has been tested to the standard of Article 547 of the NEC.

Important: Do not dent, bend, uncoil, or otherwise alter the position of the sensing element, also known as the coil, mounted on the base of the control. If you damage the sensing element, you could change the control calibration and you void any warranties on the control.

Operation

When the temperature at the sensing element rises to the setpoint, which you can view as the dial setting, the switch between R and Y closes, and the switch between R and B opens on single-pole double-throw (SPDT) models. See Figures 2, 3, and 4.

Installation

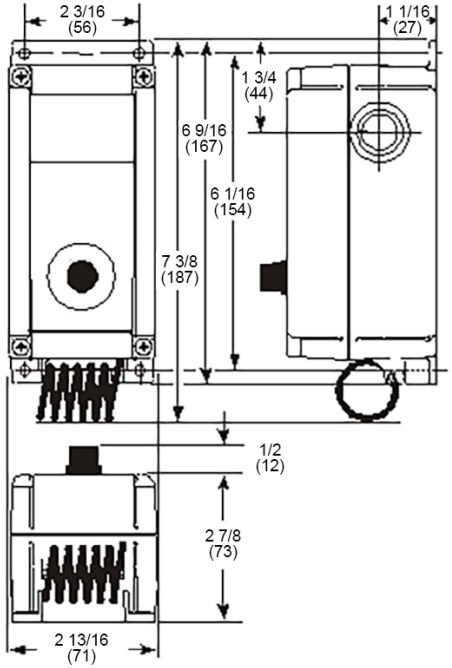

Figure 1: Dimensions for T19PC temperature controls with Type 4X enclosures, in. (mm)

Mounting

Mount the temperature control on a wall where it is exposed to the average temperature of the controlled space. Do not mount the control where unusual heat or cold can affect it, such as directly over an animal stall or in sunlight. Avoid locations near a door, window, or other sources of non-ambient air drafts. Do not mount the control on an outside wall or where temperature at the sensing element exceeds 140°F (60°C).

To mount the temperature control to a flat surface, insert screws through the holes in the T19PC's mounting tabs. See Figure 1.

Wiring

⚠ WARNING **Risk of Electrical Shock.**
To avoid the risk of electrical shock, disconnect all power sources to the control before wiring any connections. More than one disconnect may be required to completely de-energize the control and equipment.

Important: All wiring must conform to all local, national, and regional regulations. Use copper conductors only for all wire connections.

Important: Do not use T19 temperature controls on applications where the electrical load across the control's switch may exceed the electrical ratings shown on the temperature control's label.

Important: Use only the terminal screws supplied with the switch. Using other screws in the switch voids the warranty, could damage the switch, and could cause problems with making secure connections.

The T19PC Type 4X enclosure features three 1/2 in. trade-size conduit knockouts. To make wiring connections:

1. Loosen the four cover screws and remove the cover and knob assembly. Do not remove the knob: it is secured in the cover. Do not damage the O-ring seal.
2. Select the knockout that you want to remove.
3. Place a screwdriver blade on the knockout near the edge.
4. Apply a sharp blow to the screwdriver handle to loosen the knockout.
5. Connect an approved watertight conduit fitting to the conduit.
6. Connect the fitting to the T19PC control enclosure.
   Note: For flexible conduits, you can reverse Step 5 and Step 6.
7. Insert the wire through the conduit opening.
8. Make the wiring connections to the screw terminals. See Figures 2, 3, and 4.
9. Ensure that the enclosure O-ring is securely seated in the groove so that it forms a correct seal between the cover and case.
10. Replace the cover and knob assembly.
11. Check the alignment of the range adjustment knob.

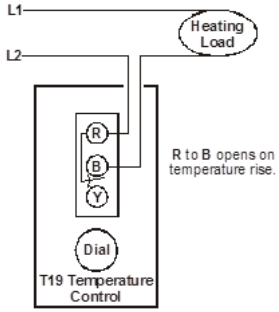

Figure 2: Standard wiring for heating applications

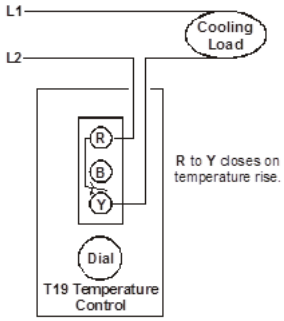

Figure 3: Standard wiring for cooling applications

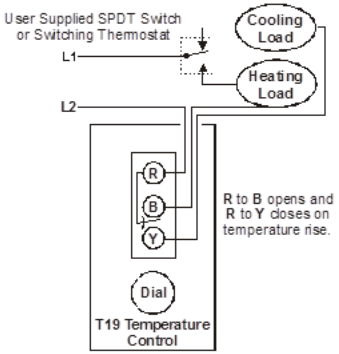

Figure 4: Standard wiring for combination heating and cooling applications

Setup and adjustments

Turn the knob on the front of the temperature control to adjust the control temperature setpoint.

Checkout

Before you leave the installation, observe at least three complete operating cycles of the controlled equipment to ensure that all components function correctly.

Follow the guidelines below to check for correct T19PC temperature control operation.

For heating applications:

1. Turn the dial clockwise to a setpoint greater than the space temperature.
2. Check that the heating system cycles on.
3. Turn the dial counterclockwise to a setpoint less than the space temperature.
4. Check that the heating system cycles off.

For cooling or ventilating applications:

1. Turn the dial clockwise to a setpoint greater than the space temperature.
2. Check that the ventilating or cooling system cycles off.
3. Turn the dial counterclockwise to a setpoint less than the space temperature.
4. Check that the ventilating or cooling system cycles on.

If the temperature control does not operate correctly, check the wiring for short circuits. Ensure all wiring connections are tight.

Repairs and replacement

Do not repair T19PC series controls in the field. Contact your Johnson Controls® or PENN sales representative or authorized distributor for a replacement control.

Table 1: Technical specifications

Specification	Description						
Product	T19PC Series Temperature Controls with Type 4X Raintight Enclosures						
Switch contact ratings	**Applied VAC**	**24**	**120**	**208**	**240**	**277**	**600**
	Motor, full load amperes	–	16	9.2	8	–	–
	Motor, locked rotor amperes	–	96	55.2	48	–	–
	Non-inductive, SPST amperes	–	22	22	22	22	–
	Non-inductive, SPDT amperes	–	16	16	16	16	–
	Pilot duty VA	125	125	125	125	125	125
Ambient operating conditions	-26°F to 140°F (-32°C to 60°C)						
Ambient storage conditions	-40°F to 140°F (-40°C to 60°C)						
Shipping weight	1.2 lb (0.54 kg)						
Agency listings	UL Listed; File E6688, CCN XAPX (US) and XAPX7 (Canada) UL Listed as Type 4X and for NEC Article 547 Agricultural Environments						

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult Johnson Controls/Penn Application Engineering. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

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