

## T19PC Type Temperature Controls with NEMA 4X Raintight Enclosures

### Application

**IMPORTANT:** The T19PC Type Temperature Controls are intended to control equipment under normal operating conditions. Where failure or malfunction of a T19 control could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory) intended to warn of or protect against failure or malfunction of the T19 control must be incorporated into and maintained as part of the control system.

The T19PC type electromechanical temperature controls are designed for use in many agricultural applications. The T19PC controls have rugged Noryl® plastic enclosures and are (UL) Listed as NEMA Type 4X and for use in National Electrical Code (NEC) Article 547 Agricultural Environments (ANSI/NFPA 70). See Figure 1 and *Technical Specifications*.

The adjustable T19PC type 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 per Article 547 of the NEC.

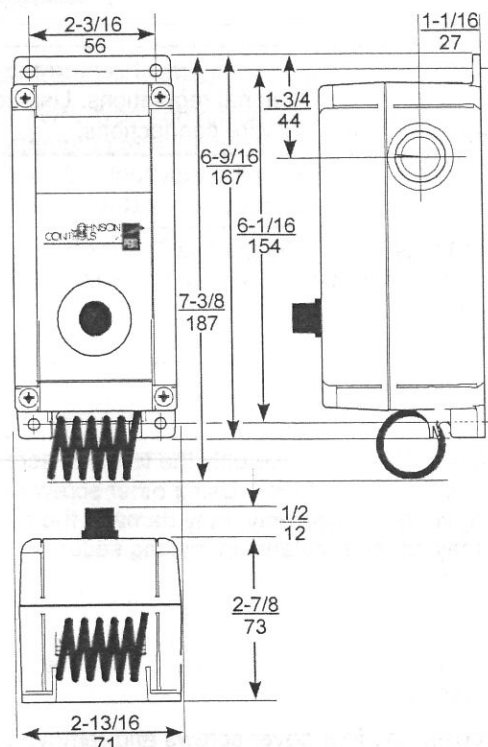
**IMPORTANT:** Do not dent, bend, uncoil, or otherwise alter the position of the sensing element (coil) mounted on the base of the T19PC type controls. Damaging the sensing element (coil) may change the control calibration and void any warranties on the control.

### Operation

When the temperature at the sensing element rises to the setpoint (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

#### Dimensions



**Figure 1: Dimensions for T19PC Temperature Controls with NEMA 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 it will be affected by unusual heat or cold, 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 (coil) exceeds 140°F (60°C).

Mount the temperature control to a flat surface with screws through the holes in the mounting ears on the back of the case. 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.

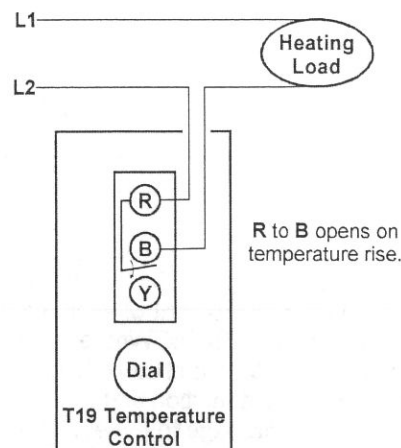
**IMPORTANT:** All wiring must conform to all local, national, and regional regulations. Use copper conductors only for all wire connections.

**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.

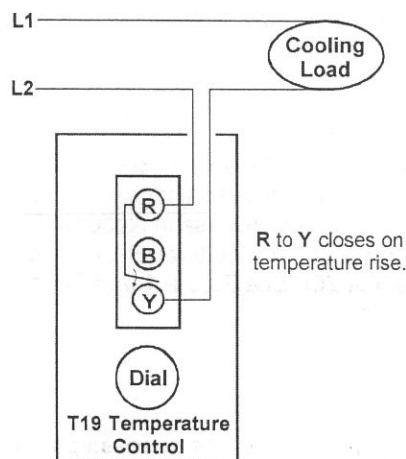
**IMPORTANT:** Use only the terminal screws furnished with the switch. Using other screws in the switch voids the warranty, may damage the switch, and may cause problems in making secure connections.

There are three 1/2 in. (Trade-size) conduit knockouts on the T19PC NEMA 4X enclosure. To make wiring connections:

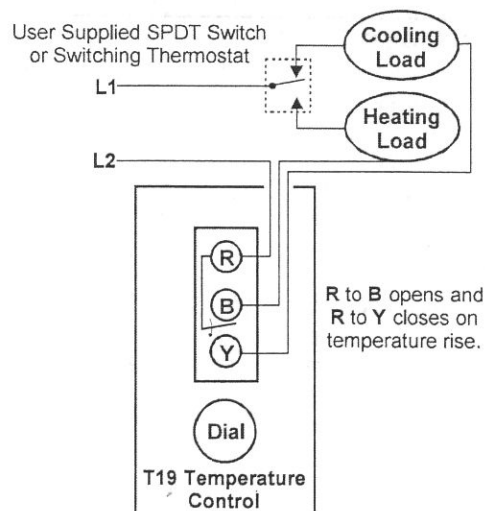
1. Loosen the four cover screws and remove the cover and knob assembly. The knob is secured in the cover and must not be removed. Do not damage the O-ring seal.
2. Select the knockout to be removed. Place a screwdriver blade on the knockout near the edge. Apply a sharp blow to the screwdriver handle to loosen the knockout.
3. For watertight connection to rigid conduit, connect an approved watertight conduit fitting to the conduit first, and then connect the fitting to the T19PC control enclosure.
4. Insert the wire through conduit opening.
5. Make wiring connections to the screw terminals. See Figures 2, 3, and 4.
6. Ensure that the O-ring seal is properly seated. Replace the cover and knob assembly. Check the alignment of the range adjustment knob.



**Figure 2: Typical Wiring for Heating Applications**



**Figure 3: Typical Wiring for Cooling Applications**



**Figure 4: Typical 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 leaving the installation, observe at least three complete operating cycles of the controlled equipment to ensure that all components are functioning correctly.

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

For Heating applications: Turn the dial clockwise to a setpoint greater than the space temperature, and the heating system should cycle on. Turn the dial counterclockwise to a setpoint less than the space temperature, and the heating system should cycle off.

For Cooling or Ventilating applications: Turn the dial clockwise to a setpoint greater than the space temperature, and the ventilating or cooling system should cycle off. Turn the dial counterclockwise to a setpoint less than the space temperature, and the ventilating or cooling system should cycle on.

If the temperature control does not operate in the manner described above, check the wiring for short circuits. Ensure all wiring connections are tight.

### Repairs and Replacement

The T19PC type controls are not field-reparable. Do not attempt to repair a control that is not functioning properly. Contact your Johnson Controls/PENN® sales representative or authorized distributor for a replacement control.

## Technical Specifications

Product		T19PC Type Temperature Controls with NEMA 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 to 140°F; (-32 to 60°C)					
Ambient Storage Conditions		-40 to 140°F; (-40 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, contact Johnson Controls Application Engineering at 1-800-275-5676. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*

JOHNSON  
CONTROLS

Controls Group  
507 E. Michigan Street  
P.O. Box 423  
Milwaukee, WI 53201

Published in U.S.A.  
[www.johnsoncontrols.com](http://www.johnsoncontrols.com)