

Installation Instructions

PIT Non-Indicating Temperature Controller



PK428-6
161-048628-001
January, 2020

PIT Non-Indicating Temperature Controller Installation Instructions

Specifications

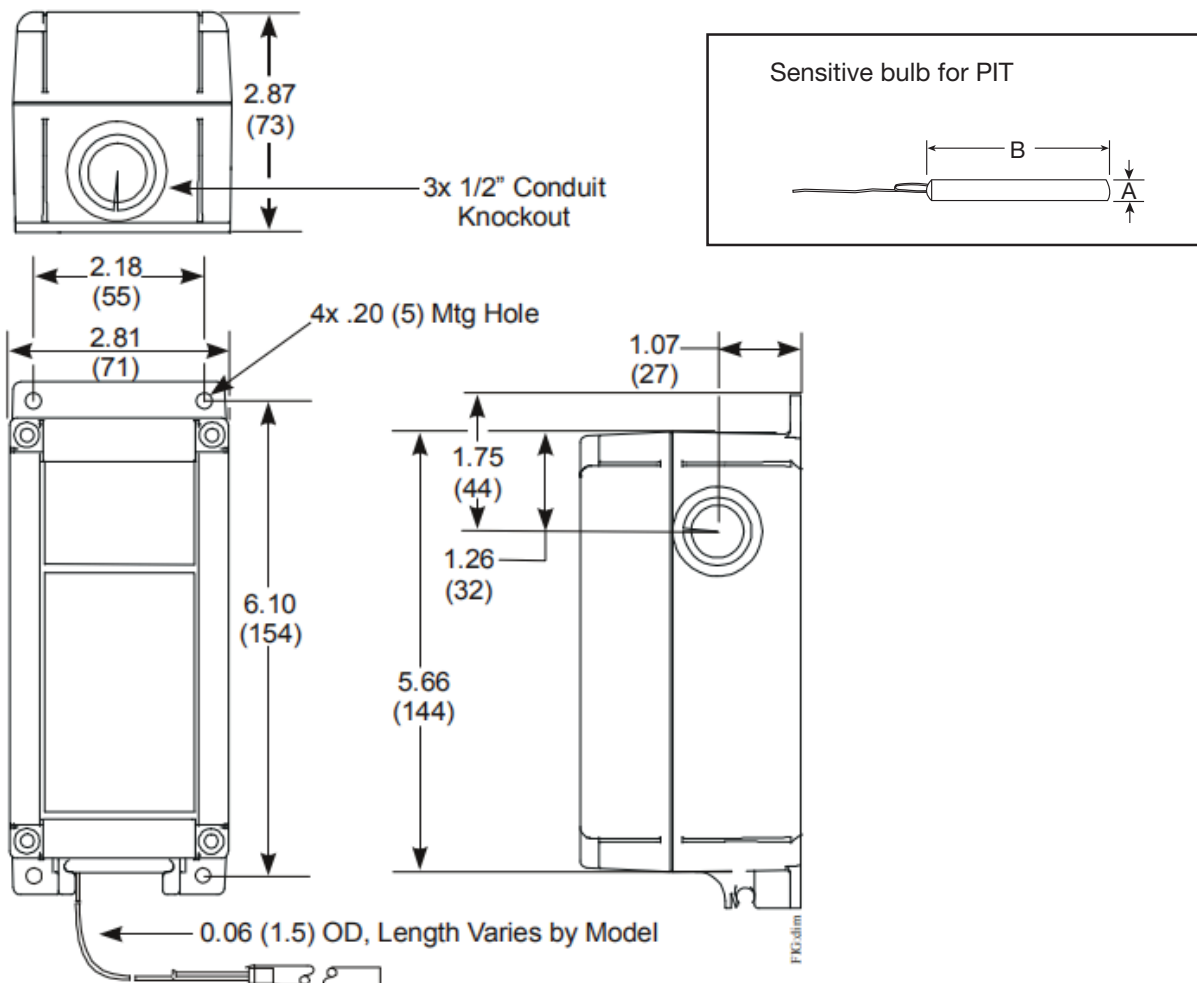
Model Number	Temp. Range	Sensitive Bulb with 10' Capillary 1/16" dia.		Nominal Differential* (°F)
		"A" Dia.	"B" Length	
PIT-15	0 to 150°F	0.30	2-1/2	5
PIT-25	100 to 250°F	0.30	2-3/8	6

*Differential based on direct bulb Immersion in liquid at 1° per minute rate of change. In a bulb well, differential will widen. When clamped to a surface such as a pipe, differential may be wider or narrower depending on several variables.

Electrical Ratings

Voltage, A.C. Only	120	208	240	277
Full Load Amperes	16	9.2	8	-
Locked Rotor Amperes	96	55.2	48	-
Non-Inductive or Resistance Load Amperes (Not Lamp Loads)	22	22	22	22
Pilot Duty - 125 VA, 24/600V. A.C.				

*S.P.S.T. Rating



General Information

⚠ CAUTION

Type PIT controls are designed for temperature control service only. Because they do not fail safe, they should not be used for temperature limiting duty.

APPLICATION - Chromalox Type PIT SPDT thermostats are designed for a variety of applications where Rain-tight enclosure are necessary or desirable. Typical use is to control the temperature of fluids conveyed through pipes (commonly termed pipe tracing), also used in snow melting applications with electric heating cable. An alarm or signal circuit can be operated by the auxiliary contacts.

⚠ CAUTION

Rain-Tight models are not for use in hazardous environments as described in National Electrical Code. Failure to comply can result in explosion or fire.

⚠ CAUTION

Users should install adequate controls and safety devices with their electric heating equipment. Where consequences of failure may be severe, back-up controls are essential. Although the safety of the installation is the responsibility of the user, Chromalox will be glad to make equipment recommendations.

Type PIT - Rain-tight, gasketed enclosure is 0.062" steel. Simple mounting on 3 rubber-cushioned feet. Has adjustable high limit stop. Plain copper bulb and capillary.

Can either open or close a circuit on temperature rise. SPOT, snap-acting switch.

Principle of Operation

Control action of these thermostats is provided through the principle of liquid volume change. With a variation in temperature, the liquid in the sensing bulb expands or contracts, causing a bellows to actuate the switching mechanism.

Power Supply

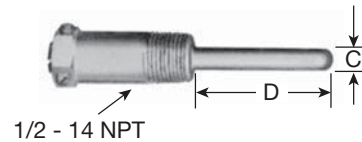
⚠ WARNING

Use on AC only. Thermostat is not DC rated.

OPTIONAL ACCESSORY

Bulb Well - Copper bulb wells with 1/2" NPT brass connectors are supplied when specified. See Specifications for Catalog Numbers and Bulb Wells Table.

Bulb Wells



For Bulb Dia.	Model Number	"C" Dia.	"D" Length
.290	CPWC-C	3/8"	2-3/8"

Mounting

CAUTION

Do not mount control where it will be subject to vibration, shock, grease, or corrosive vapors. Do not mount adjacent to a large magnetic contactor, as vibration and shock will cause thermostat to interact erratically - resulting in chattering of the contactor.

The air temperature in and around the control enclosure should be kept as near to normal room temperature as possible. NEVER above 140°F.

Indoors, the thermostats may be mounted in any position.

RAIN-TIGHT ENCLOSURE TYPE PIT - Outdoors, where exposed directly to weather, the electrical connection and capillary should be on the lower horizontal surface.

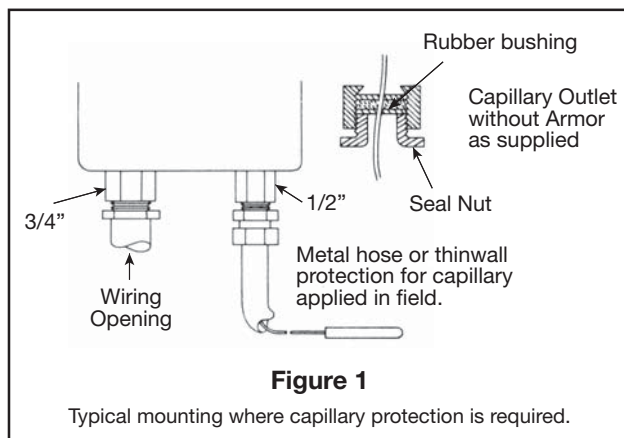
Adjustments

The setting may be changed to meet the requirements of the installation. To change setting, remove the cover and rotate dial with a screwdriver.

Where the capillary is exposed and subject to possible mechanical damage, some means of protection should be provided. The capillary outlet is designed to permit the capillary to run through 1/2" thin wall conduit or through metal hose such as 3/8" Anaconda "Sealtite" or equivalent.

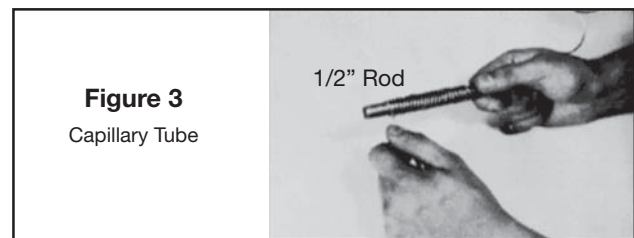
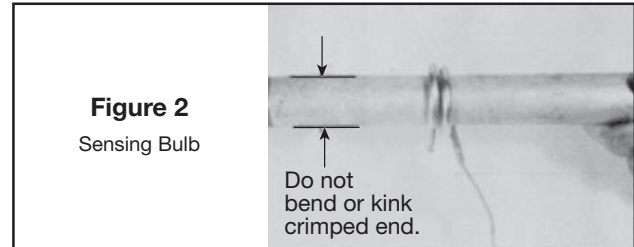
Remove the capillary outlet seal nut only, see Figure 1. Push the bulb and capillary through a conduit coupling or suitable hose fitting and on through the conduit or hose. By tightening the conduit coupling or hose fitting to the 1/2" female capillary outlet fitting, the seal around the capillary will be maintained and the conduit or hose will be rigidly attached to the enclosure.

The end of the conduit or hose away from the control should be clamped and bushed and the capillary should be taped to prevent cutting or wear from sharp edges and any strain on the capillary.



NOTE:

- Bending or deforming sensing bulb will alter control calibration.
- Do not kink capillary tube. The resulting constrictions in fluid flow can destroy control function or broaden temperature differential. Minimum capillary tube bending diameter is 1/2" I.D. (See Figure 3)
- Any deformations of bulb or capillary that result in leakage of fluid from control renders control inoperative.



- Avoid passing control capillary tube through zones whose temperature is in excess of controlled process temperature. Erratic control or destruction of control function may result.

Wiring

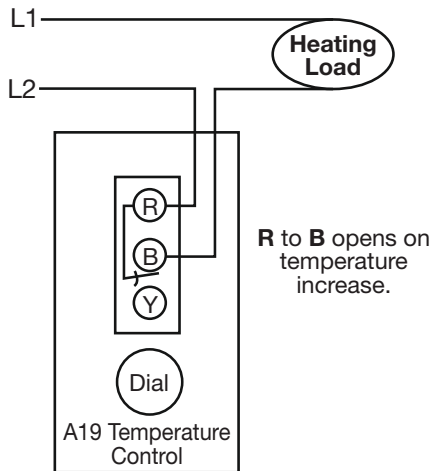
⚠ WARNING

HAZARD OF ELECTRIC SHOCK. Disconnect all power before wiring or servicing this control. Failure to comply can result in electrical shock or electrocution.

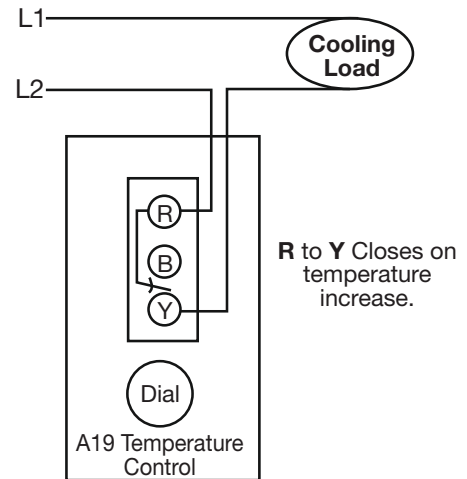
There are three 1 1/2 in. (trade-size) conduit knockouts on the NEMA 4X enclosure. To make wiring connections, proceed as follows:

1. Loosen the four cover screws and remove the cover. 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.

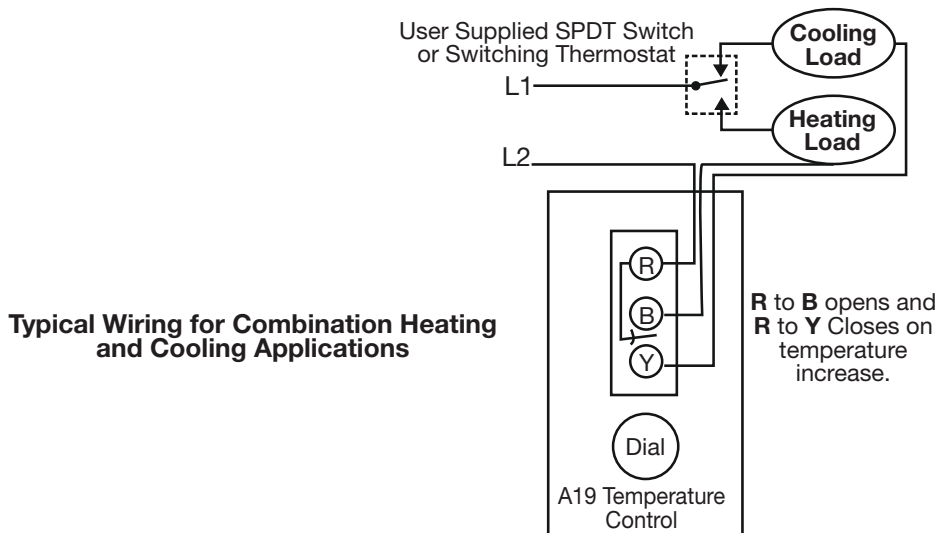
3. For watertight connection to rigid conduit, connect an approved watertight conduit fitting to the conduit first, and then connect the fitting to the A 19QC control enclosure.
4. Insert wire through conduit opening.
5. Make wiring connections to the screw terminals. See Figure 2, Figure 3, and Figure 4.
6. Verify the O-ring seal is properly seated.
7. Replace the cover and tighten the screws.



Typical Wiring for Heating Applications



Typical Wiring for Cooling Applications



Typical Wiring for Combination Heating and Cooling Applications

Setup and Adjustments

Turn the knob under the temperature control cover to adjust the setpoint.

Before leaving the installation, observe at least three complete operating cycles of the controlled equipment to ensure that all components are functioning correctly.

For heating applications:

1. Turn the dial clockwise to a setpoint greater than the sensed temperature. The heating system should cycle on.
2. Turn the dial counterclockwise to a setpoint less than the sensed temperature and the heating system should cycle off.

For cooling or ventilating applications:

1. Turn the dial clockwise to a setpoint greater than the sensed temperature and the ventilating or cooling system should cycle off.
2. Turn the dial counterclockwise to a setpoint less than the sensed temperature and the ventilating or cooling system should cycle on.

If the temperature does not operate in the manner described previously, check the wiring and tightness of wiring connections.

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 SPOT models. See Figure 1, Figure 2 and Figure 3.

Technical Specifications

PIT 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, Single-Pole, Single-Throw (SPST) Amperes	-	22	22	22	22	22	-
Non-inductive, Single-Pole, Double-Throw (SPOT) Amperes	-	16	16	16	16	16	-
Pilot Duty Volt-Amperes		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)						