

A70 Series Low Temperature Cutout Thermostat Remote Bulb -- Line Voltage

Application

These thermostats have electrical contacts operated by a temperature sensing element. The switching mechanism on the single-pole, single-throw models opens the circuit on a drop in temperature. On the 4-wire, two-circuit models the main load contacts (LINE-M2) open on a temperature drop and simultaneously the auxiliary or alarm contacts (LINE-M1) close.

This thermostat is used as a low temperature cutout device on hot water systems. Installed with the element located to sense the return water temperature of the coil, the thermostat is usually set at approximately 40°F (4°C). If the temperature of water drops to the thermostat setting the circuit will open and the unit fans will stop running. The outdoor air damper will also close when the fans stop. Thermostats supplied with manual reset, if specified.

A separable bulb well assembly is available for use where it may be necessary to remove the bulb without draining the system.

A packing nut assembly is also available for installing the bulb into a closed tank. It would be necessary to drain the system before removing the bulb.

All Series A70 thermostats are designed for use only as operating controls. Where an operating control failure would result in personal injury and/or loss of property, it is the responsibility of the installer to add devices (safety, limit controls) that protect against, or systems (alarm, supervisory systems) that warn of, control failure.

Installation

Mounting

The thermostat may be mounted in any position. It may be mounted to a wall surface or panel board by two mounting holes provided in the back of the case. Install the measuring bulb in the return water line in the heating system.

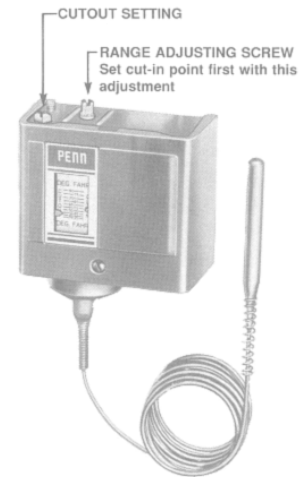


Fig. 1 -- Series A70 electric thermostat.



Fig. 2 -- Bulb Well Assembly and 1/2 in. NPT Packing Nut.

Specifications

Type Number	A70AA	SPST, Open on Temperature Drop
	A70BA	SPST, Open on Temperature Drop, Manual Reset
	A70GA	4-Wire, 2-Circuit, Main (LINE-M2) Contacts Open on Temperature Drop, Simultaneously Auxiliary Contacts Close
	A70HA	4-Wire, 2-Circuit, Main (LINE-M2) Contacts Open on Temperature Drop, Simultaneously Auxiliary Contacts Close, Manual Reset
Conduit Opening	7/8" (22 mm) Diameter for 1/2" Conduit	
Differential	Adjustable, Minimum 3°F (1.7°C), Maximum 30°F (17°C), Factory Set at 12°F (7°C)	
Element	Vapor Pressure, 6 ft (1.8 m) Capillary	
Maximum Overrun Temperature on Bulb	250°F (121°C)	
Range	35 to 80°F (1.7 to 27°C)	

CAUTION: Locate vapor pressure thermostats with refrigeration charge (gas) where the ambient temperature at the case and capillary is always warmer than the bulb temperature (the thermostat operates from the coldest spot in the temperature element system). Normally these thermostats have 3/8 in. diameter and smaller bulbs or bulbs 11/16 in. diameter and less than 3-1/2 in. long.

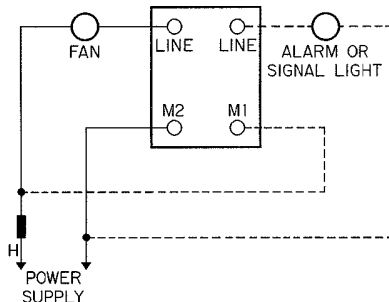


Fig. 3 — Typical wiring diagram for 4-wire, 2-circuit thermostat.

When installing, avoid sharp bends or kinks in the capillary tubing; bulb may be securely clamped in place by means of an adapter nut which will be supplied, on order. Bulb should be located where there is free circulation making sure it does not contact any surface. Coil and secure excess capillary length. Do not allow tubing to rest against metal surfaces.

Wiring

WARNING: Disconnect power supply before wiring connections are made to avoid possible electrical shock or damage to equipment.

Make all wiring connections using copper conductors only, and in accordance with the National Electrical Code and local regulations. Make sure the control is not installed on equipment to handle loads in excess of its electrical rating. Follow equipment manufacturer's recommendations for wiring hookup.

CAUTION: Use terminal screws furnished in the switch (8-32 × 1/4 in.). Longer terminal screws can interfere with switch mechanism and damage the switch.

Checkout Procedure

Before leaving the installation, observe at least three complete operating cycles to be sure that all components are functioning correctly.

Repairs and Replacement

Field repairs must not be made except for replacement of the cover, bulb well and closed tank connector. For a replacement thermostat, bulb well or closed tank connector contact the nearest Johnson Controls distributor.

SPST Electrical Ratings

Motor Ratings	120 V	208/240 V	240 V*
AC Full Load Amp	20.0	17.0	20.0
AC Locked Rotor Amp	120.0	102.0	102.0
Non-Inductive Amp	22.0	22.0	22.0

Pilot Duty — 125 VA, 120 to 600 VAC
57.5 VA, 120 to 300 VDC

*Ratings apply to hermetic compressors.

4-Wire, 2-Circuit

Pole Number	LINE-M2 (Main)				LINE-M1 (Auxiliary)			
Motor Rating	120 V	208 V	240 V	277 V	120 V	208 V	240 V	277 V
AC Full Load Amp	16.0	9.2	8.0	—	6.0	3.3	3.0	—
AC Locked Rotor Amp	96.0	55.2	48.0	—	36.0	19.8	18.0	—
AC Non-Inductive Amp	16.0	9.2	8.0	7.2	6.0	6.0	6.0	6.0
Pilot Duty — Both Poles	125 VA, 120 to 600 VAC 57.5 VA, 120 to 300 VDC							

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CONTROLS**

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