Types A19AUC, A19BUC Fixed Differential Thermostat For Hazardous Location

Application

The A19AUC and A19BUC thermostats are designed for use in locations where flammable and explosive mixtures of vapors and gases with air or combustible dust in air are present. Listed at UL for "Hazardous Locations, Class I, Group D (NEMA 7) and Class II, Groups E, F and G (NEMA 9)" as defined in the National Electrical Code. The SPDT contact unit provides open high or close high action for either heating or cooling applications.

The thermostats are available to cover sensed temperatures from -30 to 475°F (-34 to 246°C). Closed tank fittings and bulb wells are available for immersion applications.

All Series A19 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) or systems (alarm, supervisory systems) that protect against, or warn of, control failure.

Features

- Dependable and precise snap-acting contacts enclosed in a dust protected case and the liquid filled sensing element are field proven.
- Unaffected by barometric pressure and cross ambient temperature problems for "repeat" accuracy.
- SPDT contacts for use on either heating or cooling applications.
- UL Listed, CSA Certified for "Hazardous Locations."

General Description

The temperature sensing elements are liquid filled, providing uniform differential throughout the selected adjustment range. Remote bulb elements are regularly supplied with a 6 foot. (1.8 m) capillary. Requests for other construction variations should be sent to Customer Service.

The range adjustment changes the cut-in and cutout points alike. The differential is nonadjustable.

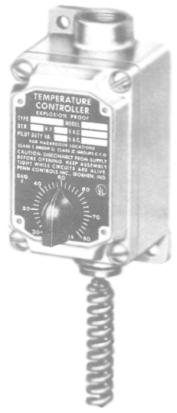


Fig. 1 -- A19BUC thermostat with air bulb.

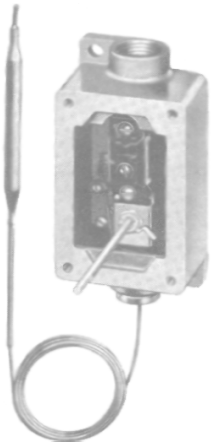


Fig. 2 -- Interior view of the A19AUC with clamp on bulb.

Specifications

Type Number	**A19AUC**	SPDT Contact Action, Remote Sensing Element
	A19BUC	SPDT Contact Action, Coiled Bulb
Range, Differential and Maximum Temperature		See Selection and Range Table
Enclosure		UL Listed for Hazardous Locations
Switch		Snap-Acting Contacts in Dust Protected Enclosure
Capillary	**A19AUC**	6 ft (1.8 m) Standard Length
Finish		Natural Aluminum
Conduit Opening		½" Female, NPT
Mounting		Two ⅜" Diameter Holes
Wiring Connections		Screw Type Terminals
Shipping Weight		2.6 lb (1.2 kg)

These thermostats are suitable for installation in hazardous locations as defined in the National Electrical Code, where the atmosphere may contain the following:

1. Certain vapors and gases.
2. Dust such as aluminum, magnesium or their commercial alloys.
3. Carbon black, coal or coke dusts.
4. Flour, starch or grain dusts.

Code No. LIT-121035
Part No. 3544, Rev. J

Optional Constructions

Packing Nut

Part FTG13A-600R is available for closed tank applications where the temperature does not fall below -35°F (-37°C) or exceed 250°F (121°C). Maximum liquid pressure limit is 150 PSIG (1034 kPa). For applications where the temperature or liquid pressure exceeds these limits, specify Style 4 element with all metal packing nut as an integral part of the control.

Ordering Information

To order, specify the Product Number only. If the Product Number is not available, specify:

1. Type Number.
2. Range required.
3. Type of bulb, clamp-on or coiled.
4. Capillary length, if other than 6 feet.
5. Specify bulb well part number if required.
6. Specify Part Number FTG13A-600R packing nut assembly, if required.

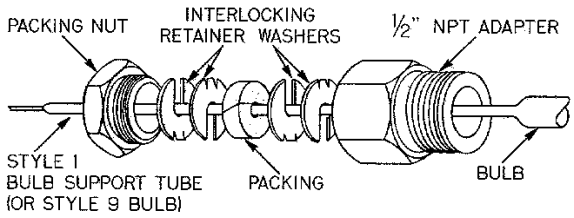
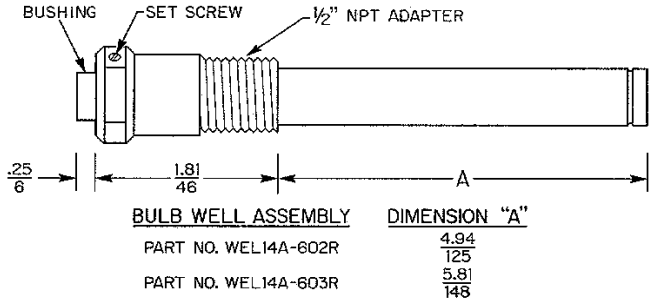


Fig. 3 — Part Number FTG13A-600R Packing Nut Assembly. (Use with clamp-on bulb for direct immersion application.)



Dimensions in./mm

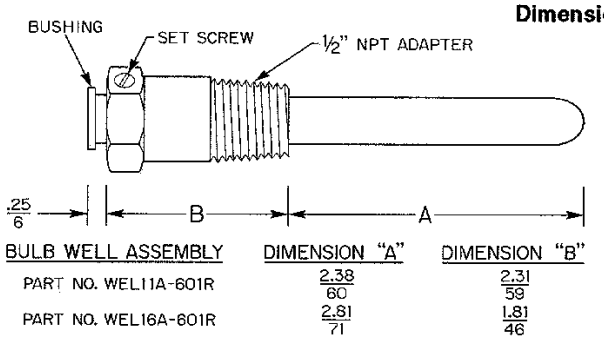


Fig. 4 — Bulb Well for liquid immersion applications where a temperature bulb may be removed without draining tank.

Installation

Mounting

Controls are normally mounted to a flat surface by two mounting holes 3/8 in. in diameter. (See Dimension Drawing.) For closed tank applications without a bulb well assembly, Part FTG13A-600R packing nut assembly may be supplied on -30 to 50°F and 20 to 80°F ranges only. See Fig. 3 for sequence of installation.

⚠ CAUTION: Turn off liquid supply and relieve pressure before installing or removing the bulb or bulb well.

Place parts over support tube section of the element, placing bulb into tank (be sure tank is first drained so liquid level is below tank opening). Screw packing nut into the adapter with the retaining washers and packing in place as shown.

To install models with bulb well, first install bulb well into tank. Remove bushing from bulb well and slide over capillary. (See Fig. 4.) Replace bushing into bulb well, gently pushing bulb into position in bottom of well.

Tighten set screw in end of adapter to hold bulb in position.

⚠ CAUTION: Do not dent or deform the sensitive bulb of this control. A dent of deformation will change the calibration and cause the control to cycle at a temperature lower than the dial setting.

Wiring

> ⚠ CAUTION: Disconnect the power supply before connecting the wiring or removing the cover to avoid possible electrical shock or damage to the equipment. On multipole units, more than one circuit may have to be disconnected. Keep the assembly tightly closed while circuits are alive.

Note: Use terminal screws furnished (8-32 x 1/4 in. binder head). Substitution of other screws may cause problems in making proper connections.

Follow the equipment manufacturer's wiring diagrams when supplied. The knob and cover must be removed to make wiring connections. Make all wiring connections using copper conductors only, and in accordance with the National Electrical Code and local regulations.

Electrical Ratings

Motor Ratings	120 V	208 V	240 V	277 V
Horsepower	1	1	1	—
AC Full Load Amp	16.0	9.2	8.0	—
AC Locked Rotor Amp	96.0	55.2	48.0	—
Non-Inductive Amp	22.0	22.0	22.0	22.0
Pilot Duty — 125 VA, 24/600 VAC				

Wiring terminals are color coded to simplify wiring. The red terminal is common. The red to yellow circuit closes on temperature increase, and the red to blue circuit opens on temperature increase. Use copper conductors only. Do not bind the adjusting knob when the cover is replaced.

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. For a replacement thermostat, contact the nearest Johnson Controls distributor.

Product Selection

Selection Chart for Stock Thermostats

Product Number	Range °F (°C)	Differential F° (C°)	Maximum Bulb(1) Temperature °F (°C)	Type of Bulb	Bulb Size and Finish	Bulb Well if Required Specify	Capillary Length	Range Adjuster
A19AUC-1	–30 to 50 (–34 to10)	5 (2.8)	140 (60)	Clamp On*	3/8" x 4" Tin Plated	WEL14A-602R	6'	External Knob
A19AUC-2	20 to 80 (–7 to 27)	3 1/2 (1.9)	140 (60)	Clamp On*	3/8" x 5" Tin Plated	WEL14A-603R	6'	External Knob
A19BUC-1	–30 to 50 (–34 to 10)	5 (2.8)	140 (60)	Air	Coiled	—	—	External Knob
A19BUC-2	20 to 80 (–7 to 27)	3 1/2 (1.9)	140 (60)	Air	Coiled	—	—	External Knob

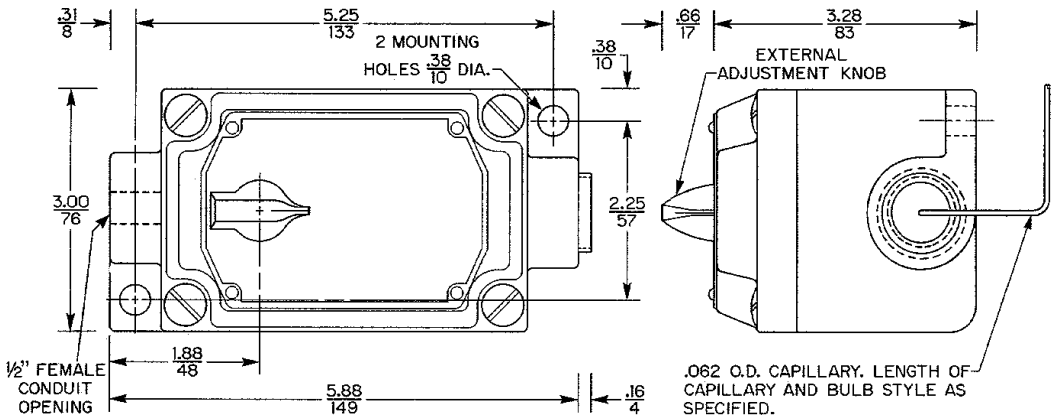
(1)Maximum bulb temperature which the element can withstand several times during the life of the control. This is not the temperature that the control can withstand each cycle.

* Closed tank bulb obtained by using clamp on bulb and adding Part No. FTG13A-600R packing nut assembly for ½" NPT tapping, –30 to 50°F and 20 to 80°F ranges only.

Additional Ranges(1)

Range °F (°C)	Differential F° (C°)	Maximum Bulb Temperature °F (°C)	Bulb Size	Bulb Style	Bulb Well if Required
0 to 150 (–18 to 66)	6 (3.3)	190 (88)	0.290 x 2½"	Clamp on Only	WEL11A-601R
100 to 250 (38 to 121)	6 (3.3)	290 (143)	0.290 x 2½"	Clamp on Only	WEL11A-601R
200 to 350 (93 to 177)	6 (3.3)	390 (199)	0.366 x 2¼"	Clamp on Only	WEL16A-601R
325 to 475 (163 to 246)	6 (3.3)	515 (268)	0.366 x 2¼"	Clamp on Only	WEL16A-601R

(1)Available on quantity orders.



Performance specifications appearing herein are nominal and are subject to accepted manufacturing tolerances and application variables.

JOHNSON CONTROLS

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