A19 Series Temperature Controls For Low Energy Circuits

Application

These temperature controls are used for low energy electrical loads to operate small relays, solenoid valves, and electronic control circuits. The controls have special "dry circuit" switches with gold plated contacts for improved contact characteristics required in low voltage, low current circuits.

Various control ranges are available to cover sensed temperatures from -30 to 225°F (-35 to 105°C). Closed tank fittings and bulb wells are available for immersion applications. Controls are also available without an enclosure. For further information, contact the nearest Johnson Controls field sales office or contact Customer Service.

All Series A19 controls 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

- Compact, general purpose temperature controls with a wide selection of models.
- Dependability . . . precision enclosed snap-acting contacts and liquid filled sensing element are field proven.
- Precision "repeat" accuracy which is unaffected by barometric pressure and cross ambient temperature problems.
- Concealed differential adjustment discourages unauthorized adjustment changes.
- "Trip-free" manual reset . . . reset must be pressed and released before operation will resume. Contacts cannot be blocked in the closed position.

General Description

These compact controls are supplied with fixed or adjustable differential. Controls supplied with adjustable differential have an internal scale plate indicating the differential in Fahrenheit degrees.

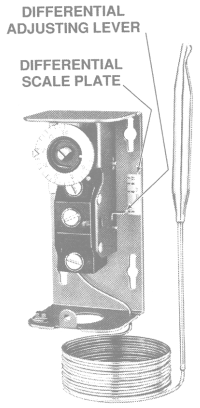


Fig. 1 -- Interior of an A19 with differential adjustment. Differential adjustment is concealed when cover is on control.

Ranges of 20 to 80°F (-5 to 28°C), -30 to 50°F (-35 to 10°C), or -30 to 100°F (-35 to 40°C) have direct reading differential scale plate. Other ranges require a scale plate with multiplier. Example: X2 setting means when minimum differential is 5°F (2.8°C) then X2 differential is 10°F (5.6°C). Knob range adjustment and visible scale are standard.

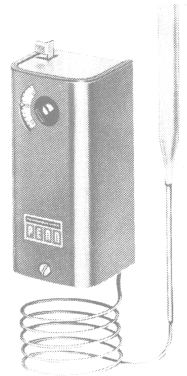


Fig. 2 -- The A19ACA with external range adjustment and manual reset.

Specifications

Type Number	**A19AAJ**	Remote Bulb, Open Low, Fixed Differential
	A19AAK	Remote Bulb, Open High, Fixed Differential
	A19AAL	Remote Bulb, SPDT, Fixed Differential
	A19ABL	Remote Bulb, SPDT, Adjustable Differential
	A19BBL	Style 3 Bulb, SPDT, Adjustable Differential
Material	**Case**	.062" (1.6 mm) Cold Rolled Steel
	Cover	.025" (0.6 mm) Cold Rolled Steel
Conduit Opening		⅞" Diameter Hole for ½" Conduit
Contact Unit		Enclosed Snap-Acting Pennswitch
Enclosure		NEMA 1
Finish		Gray Baked
Shipping Weight	**Individual Pack**	1 lb (0.45 kg)
	Overpack of 50	55 lb (25 kg)
Terminal Screws		8–32 x ¼" Binder Head with Cup Washers

Code No. LIT-125040

Fig. 3 -- The A19 with external range adjustment.

Models are available with a knob assembly for field convertible adjustment. These models are supplied with a snap-in plug in the cover for concealed screwdriver slot adjustment. A bulb mounting clip with sheet metal screw is supplied with remote bulb models. A field proven liquid filled sensing element provides precision "repeat" accuracy which is unaffected by barometric pressure and cross ambient temperature problems.

Electrical Rating

Volts, AC	120
Full Load Amp	1.0
Locked Rotor Amp	6.0
Non-Inductive Amp	2.0
Pilot Duty — 125 VA, 120 VAC 50 Millivolts Minimum	

Optional Constructions

Ambient Compensation

Available on fixed differential and manual reset models at additional cost, if required. Write Customer Service.

Capillary Length

Standard is 6 ft. (1.8 m). Optional lengths are 10 ft. (3 m), 15 ft. (4.6 m), and 20 ft. (6.1 m), quantity orders only.

Enclosure

Available without an enclosure on quantity orders only.

Mounting Brackets

Optional at additional cost.

Packing Nut

Part No. 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 an all metal packing nut as an integral part of the control. (See Figs. 9, 11 and 12.)

Range Adjuster

Screwdriver slot with visible scale and solid cover, are optional at no additional cost (quantity orders only). Models are available with knob and remote bulb mounting clip for field convertible adjustment.

This provides conversion to knob, concealed screwdriver slot, or external screwdriver slot adjustment.

Repairs and Replacement

Field repairs must not be made except for replacement cover and knob (convertible adjustment models only). For replacement control, cover or knob contact the nearest Johnson Controls distributor.

Replacement Parts

Part Number	Description
CVR28A-611R	Cover Assembly for Standard Models with Visible Scale
CVR28A-613R	Cover Assembly for Convertible Adjustment Models
KNB20A-601R	Knob Kit for Convertible Adjustment Models

Range and Differential Specifications

Range °F / °C	Differential F° / C°		Bulb Size in. / mm	*Maximum Ambient °F / °C
	Adjustable	Standard (Fixed)		
–30 to 50 / –35 to 10	5 to 20 / 2.8 to 11.1	5 / 2.8	.375 x 4 / 9.5 x 102	140 / 60
–30 to100 / 35 to 40	3 to12 / 1.7 to 6.7	3 / 1.7	.375 x 4 / 9.5 x 102	140 / 60
–20 to 60 / –6 to 15	5 to 20 / 2.8 to 11.1	5 / 2.8	.375 x 4 / 9.5 x 102	140 / 60
–20 to 80 / –5 to 28	3.5 to 14 / 1.9 to 7.8	3.5 / 1.9	.375 x 5 / 9.5 x 127	140 / 60
25 to 225 / –3 to 105	7 to 28 / 3.9 to 15.6	7 / 3.9	.375 x 3 / 9.5 x 76	275 / 135
30 to 50 / 0 to 10	4 to 16 / 2.2 to 8.9	4 / 2.2	.375 x 2.625 / 9.5 x 67	190 / 88
30 to 110 / 0 to 43	3.5 to 14 / 1.9 to 7.8	3.5 / 1.9	.375 x 5 / 9.5 x 127	140 / 60
40 to 90 / 5 to 32	3.5 to 14 / 1.9 to 7.8	3.5 / 1.9	.375 x 6 / 9.5 x 152	140 / 60
50 to130 / 10 to 55	3.5 to 14 / 1.9 to 7.8	3.5 / 1.9	.375 x 5 / 9.5 x 127	170 / 77

* Maximum bulb temperature which the element can withstand at infrequent intervals during life of control, such as shipping conditions.
This is not the temperature which the control can withstand on repeat cycles. Maximum ambient temperature around control case is 140°F (60°C).

Ordering Information

1. To order, specify Product Number if available.
2. When the Product Number is not available, specify Type Number and the following:
   a. Range required.
   b. Style of element.
   c. Manual reset, if needed.
   d. Length of capillary, 6 ft. (1.8 m) is standard.
   e. Ambient compensation, if required.
   f. Type of adjustment; knob, screwdriver slot, concealed or factory sealed.
   g. Fixed or adjustable differential.
3. Specify bulb well, if required, by Part Number.
4. Specify packing nut, Part Number FTG13A-600R, if required for Style 1 bulb with support tube. (See Figs. 9 and 11.)

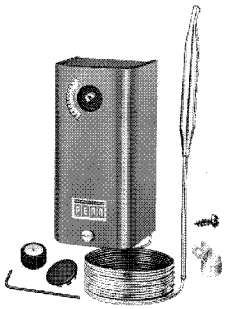


Fig. 4 -- The A19 with remote bulb and convertible adjustment has a snap-in plug in the cover, a knob for field installation, and a bulb mounting clip with sheet metal screw.

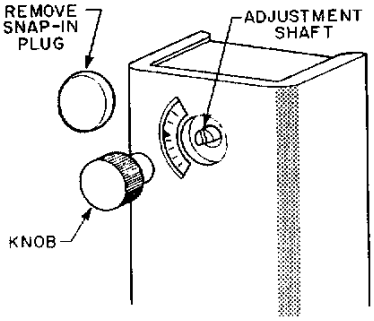


Fig. 5 — Drawing showing snap-in plug removed and the knob in line to assemble. Press the knob onto the slotted shaft.

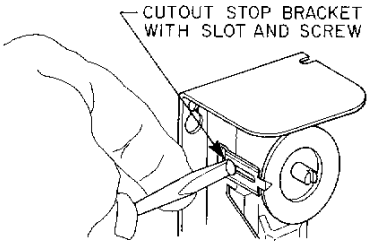


Fig. 6 — The convertible adjustment controls have a screw type cutout stop. The stop screw must be loosened and moved to the stop setting desired. Tighten screw after setting is made.

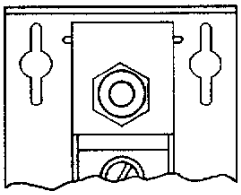


Fig. 7 — Factory sealed setting — optional at no extra cost on quantity orders.

Fig. 8 — Style 1 drawn bulb.

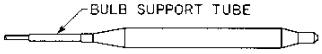


Fig. 9 — Style 1 swaged bulb with support tube. (Add FTG13A-600R packing nut to Style 1 swaged bulb when used in closed tank.)

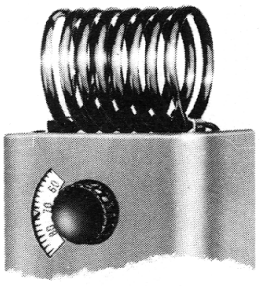


Fig. 10 -- Style 3 element attached to the case.

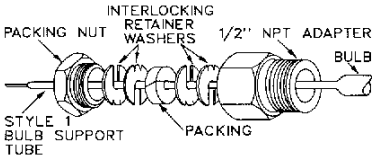


Fig. 11 — Part No. FTG13A-600R packing nut assembly. (Use with Style 1 bulb with support tube for direct immersion application.

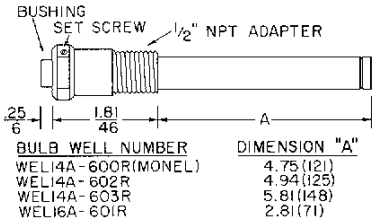
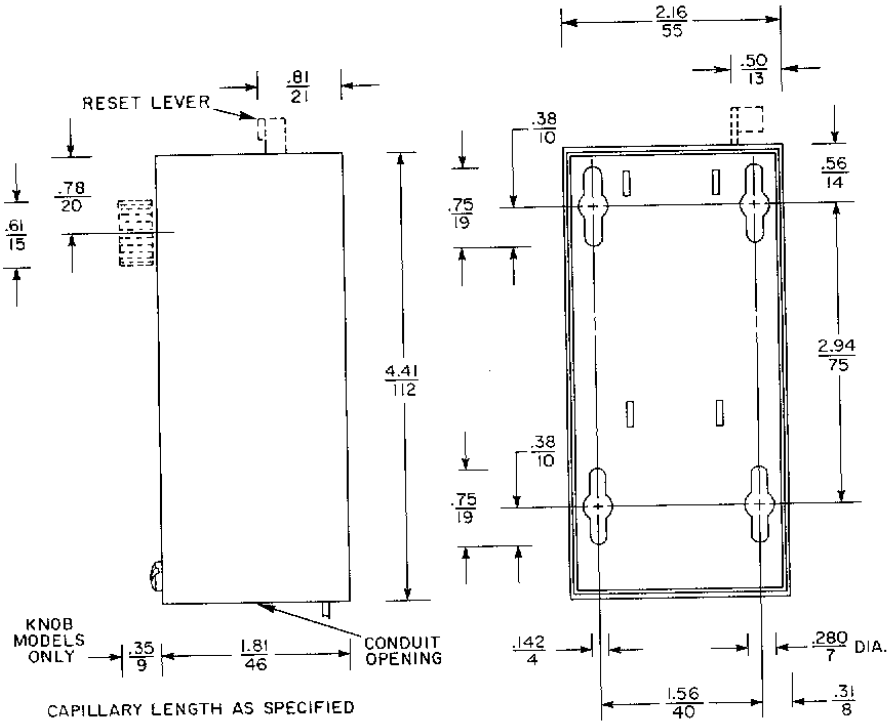
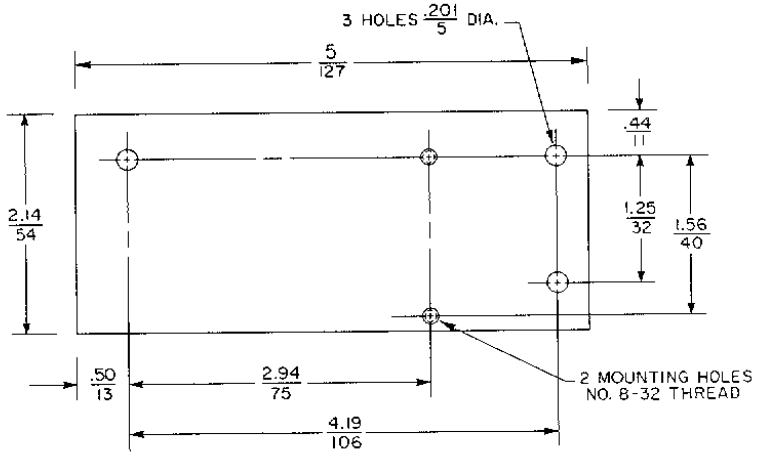


Fig. 12 — Bulb well for liquid immersion applications where a temperature bulb may be removed without draining tank.



A19 Dimensions $\frac{\text{in.}}{\text{mm}}$



Optional Mounting Bracket
Dimensions $\frac{\text{in.}}{\text{mm}}$

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

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