



A19A, A19K, A28K Series Industrial Controls Remote Bulb

Application

These controls are for refrigeration, air conditioning and heating applications. Control ranges are available to cover sensed working temperatures from -30 to 550°F (-35 to 288°C). Controls have a NEMA 4 watertight or NEMA 3R rainproof enclosure for a broad range of industrial and general purpose applications.

Series A19 single stage controls are available with open low, open high or SPDT contact action. Series A28 two stage controls have SPDT contact action on both switches.

All series A19A, A19K and A28K 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

- Liquid-filled sensing element provides uniform control.
- Concealed differential adjustment when supplied.
- Wide selection of temperature ranges.
- "Repeat" accuracy which is unaffected by barometric pressure and cross ambient temperature problems.
- External adjusting knob and visible scale.



Fig. 1: Industrial control with remote bulb, NEMA 4 watertight enclosure.

- Dependable snap-acting contacts in dust protected enclosure.
- NEMA 4 watertight and dusttight gasketed enclosure with gray UL Listed outdoor finish.

Specifications

Type Number	Single Stage	A19ANC	Concealed Screwdriver Adjustment and Dial, SPDT, Standard Fixed Differential, NEMA 3R
		A19KNC	Knob Adjustment with Visible Scale, SPDT, Standard Fixed Differential, NEMA 4
		A19KNF	Knob Adjustment with Visible Scale, SPDT, Close Fixed Differential, NEMA 4
	Two Stage	A19KPC	Knob Adjustment with Visible Scale, SPDT, Standard Adjustable Differential, NEMA 4
		A19KPF	Knob Adjustment with Visible Scale, SPDT, Close Adjustable Differential, NEMA 4
		A28KA	Knob Adjustment with Visible Scale, SPDT, Standard Differential, NEMA 4
	A28KJ	Knob Adjustment with Visible Scale, SPDT, Close Differential, NEMA 4	
Conduit Connection			One Welded Female Connection for Conduit in Bottom of Case
Switch Action for SPDT Switch			Red to Yellow Closes on Temperature Rise Red to Blue Opens on Temperature Rise
Switch			Snap-Acting Contacts in Dust Protected Enclosure
Enclosure	Material		.070" (1.8 mm) Cold Drawn Steel
	Finish		Gray Baked Enamel
Shipping Weight (Individual Pack)	A19		2.3 lb (1.0 kg)
	A28		2.4 lb (1.1 kg)
Wiring Connections			Screw Type Terminals, No. 8-32 x 1/4" Binder Head Screws with Cup Washers

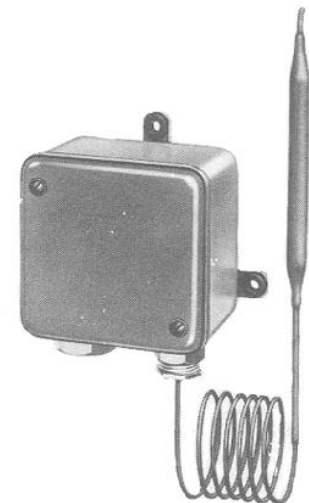


Fig. 2: Control with NEMA 3R rainproof enclosure.

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Range and Differential Specifications

Range 'F (°C)	Differential F' (C°)			Bulb Size in. (mm)	Maximum Ambient 'F (°C)
	Adjustable	Standard (Fixed)	Close (Fixed)		
-30 to 50 (-35 to 10)	5 to 20 (2.8 to 11.1)	5 (2.8)	2.5 (1.4)	3/8 x 4 (9.5 x 102)	140 (60)
-30 to 100 (-35 to 40)	3 to 12 (1.7 to 6.7)	3 (1.7)	1.5 (0.8)	3/8 x 4 (9.5 to 102)	140 (60)
-20 to 60 (-6 to 15)	5 to 20 (2.8 to 11.1)	5 (2.8)	2.5 (1.4)	3/8 x 4 (9.5 x 102)	140 (60)
0 to 150 (-15 to 65)	6 to 24 (3.3 to 13.3)	6 (3.3)	3 (1.7)	0.290 x 2 1/2 (7.4 x 64)	190 (88)
20 to 80 (-5 to 28)	3.5 to 14 (1.9 to 7.8)	3.5 (1.9)	1.75 (0.97)	3/8 x 5 (9.5 x 127)	140 (60)
20 to 90 (-5 to 30)	3.5 to 14 (1.9 to 7.8)	3.5 (1.9)	1.75 (0.97)	3/8 x 5 (9.5 x 127)	140 (60)
25 to 225 (-3 to 105)	7 to 28 (3.9 to 15.5)	7 (3.9)	3.5 (1.9)	3/8 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)	2 (1.1)	3/8 x 2 5/8 (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)	1.75 (0.97)	3/8 x 5 (9.5 x 127)	140 (60)
30 to 110 (0 to 43)	3.5 to 14 (1.9 to 7.8)	3.5 (1.9)	1.75 (0.97)	Coil Bulb	140 (60)
35 to 95 (0 to 35)	3 to 12 (1.7 to 6.7)	3 (1.7)	1.5 (0.8)	Coil Bulb	140 (60)
40 to 90 (5 to 32)	3.5 to 14 (1.9 to 7.8)	3.5 (1.9)	1.75 (0.97)	3/8 x 6 (9.5 x 152)	140 (60)
40 to 120 (5 to 50)	5 to 20 (2.8 to 11.1)	5 (2.8)	2.5 (1.4)	3/8 x 3 1/2 (9.5 x 89)	200 (93)
50 to 130 (10 to 55)	3.5 to 14 (1.9 to 7.8)	3.5 (1.9)	1.75 (0.97)	3/8 x 5 (9.5 x 127)	170 (77)
100 to 250 (40 to 120)	6 to 24 (3.3 to 13.3)	6 (3.3)	3 (1.7)	0.290 x 2 1/2 (7.4 x 64)	290 (143)
200 to 350 (93 to 177)	6 to 24 (3.3 to 13.3)	6 (3.3)	3 (1.7)	0.366 x 2 1/4 (9.3 x 57)	390 (199)
325 to 475 (163 to 246)	6 to 24 (3.3 to 13.3)	6 (3.3)	3 (1.7)	0.366 x 2 1/4 (9.3 x 57)	515 (268)
200 to 550 (93 to 288)	5 to 20 (1.8 to 11.1)	5 (2.8)	2.5 (1.4)	3/16 x 6 (4.8 x 152)	620 (327)

(1) 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).

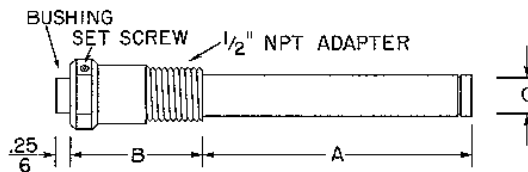


Fig. 3 — Bulb Well for liquid immersion applications where temperature bulb may be removed without draining tank.

Bulb Well Assembly

Part Number	Dimensions					
	A		B		C (Inside)	
	in.	mm	in.	mm	in.	mm
WEL11A-601R	2.38	60	2.31	59	.299	7.6
WEL14A-600R (Monel)	4.75	121	1.81	46	.444	11.3
WEL14A-602R	4.94	125	1.81	46	.430	10.9
WEL14A-603R	5.81	148	1.81	46	.430	10.9
WEL16A-601R	2.81	71	1.81	46	.375	9.5

General Description

Controls are available with NEMA 4 enclosure. They have neoprene gasketed cover. Standard models with adjustable differential have an internal scale plate indicating the differential in degrees. 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 plates. Other ranges require a scale plate with multiplier. Example X2 setting means when minimum differential is 5F° (2.8C°) then X2 differential is 10F° (5.6C°).

Optional Constructions

Capillary Length

Standard length 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.)

Switch Action

Available with open low, open high and SPDT contact action, as required.

Differential (A28)

Each switch has a fixed differential. Available with fixed or adjustable interstage as required.

Element

Remote elements have drawn or swaged bulb (Style 1) or averaging element (Style 9).

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 using a control with NEMA 4 enclosure where the temperature or liquid exceeds these limits specify Style 4 element with all metal packing nut as an integral part of the control. (Quantity orders only.)

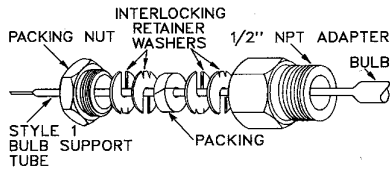


Fig. 4 — Part No. FTG13A-600R packing nut assembly. (Use with Style 1 bulb with support tube for direct immersion application.)

Bulb Wells

Bulb wells with 1/2 in. NPT connectors are supplied when required at extra cost.

Repairs and Replacement

Field repairs must not be made. For replacement control, contact the nearest Johnson Controls wholesaler.

Ordering Information

1. To order, specify Product Number if available.
2. Where Product Number is not available, specify Type Number and the following:
 - a. Range required.
 - b. Style of element.
 - c. Length of capillary, 6 ft (1.8 m) is standard.
 - d. When ordering a Type A28KA, or A28KJ, specify fixed or adjustable interstage.
 - e. Switch action, open low, open high or SPDT.
3. Order bulb well or packing nut assembly when closed tank application is required.

Electrical Ratings

A19 Controls

Standard Differential

Volts, AC	120	208	240	277
Full Load Amp	16.0	9.2	8.0	—
Locked Rotor Amp	96.0	55.2	48.0	—
Non-Inductive or Resistance Load Amp † (Not Lamp Loads)	22.0	22.0	22.0	22.0

Pilot Duty — 125 VA, 24 to 600 VAC

† SPST Rating.

Close Differential

Volts, AC	120	208	240
Full Load Amp	6.0	3.4	3.0
Locked Rotor Amp	36.0	20.4	18.0
Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10 Amp, 24 to 277 VAC		

Pilot Duty — 125 VA, 24 to 277 VAC

A28 Controls

Standard Differential

Volts, AC	120	208	240	277
Full Load Amp	16.0	9.2	8.0	—
Locked Rotor Amp	96.0	55.2	48.0	—
Non-Inductive or Resistance Load Amp (Not Lamp Loads)	16.0	9.2	8.0	7.2

Pilot Duty — 125 VA, 24 to 277 VAC

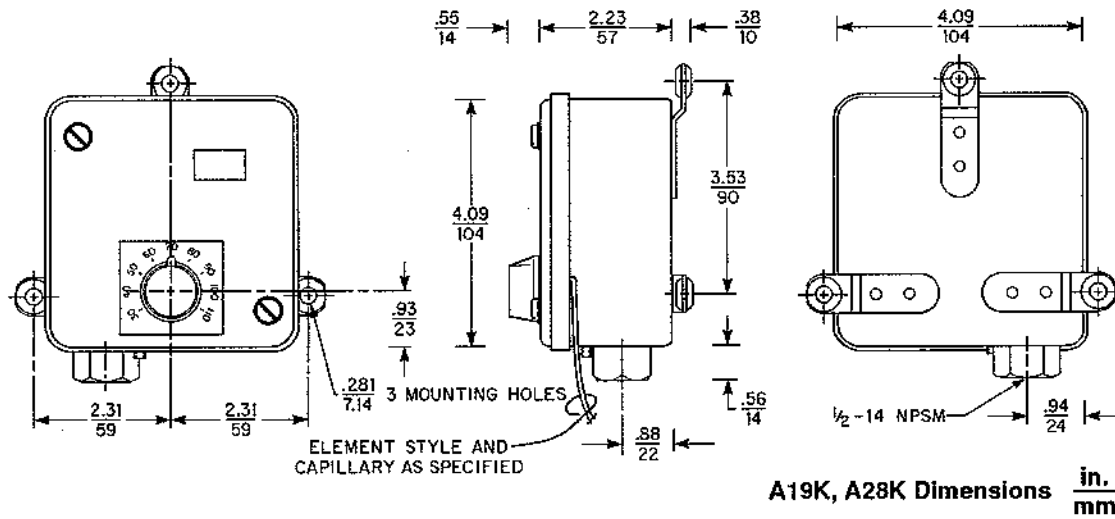
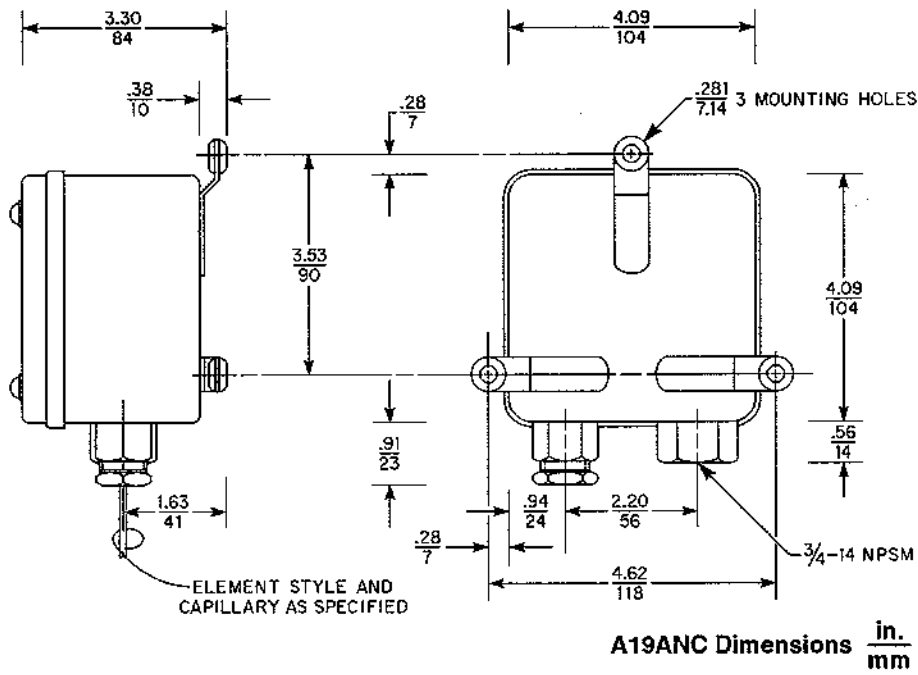
NOTE: When used as a two circuit switch, the total connected load must not exceed 2000 VA.

Close Differential

Volts, AC	120	208	240	277
Full Load Amp	6.0	3.4	3.0	—
Locked Rotor Amp	36.0	20.4	18.0	—
Non-Inductive or Resistance Load Amp (Not Lamp Loads)	10.0	9.2	8.0	7.2

Pilot Duty — 125 VA, 24 to 277 VAC

NOTE: When used as a two circuit switch, the total connected load must not exceed 2000 VA.



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



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