A19 Series Temperature Controls SPST and SPDT Models with Type 1 (NEMA) Enclosure Installation Guide

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Application

The A19 series covers a broad range of refrigeration, cooling, and heating temperature control applications. Standard applications include refrigerated display cases, beverage coolers, and milk coolers. Various control ranges are available.

The controls feature an adjustable range, except for models with factory sealed settings. You can order adjustable or nonadjustable differential models.

Important: Use the A19 control only as an operating control. Where failure or malfunction of the control could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the control.

WARNING

Risk

This product is made of a copper alloy, which contains lead. The product is therefore not to be used on drinking water.

Installation

To install the A19 control, complete the following tasks:

Mounting

In standard applications, you mount the control to a surface through holes in the back of the case.

Important: On rough mounting surfaces use the top two mounting holes only. When these controls are mounted on an uneven surface using screws in all four holes, the case can be twisted enough to affect the control's calibration and operation.

NOTICE

Risk of Property Damage.

Do not dent or deform the sensing bulb. Dents or deformations in the sensing bulb can change the calibration, may cause the control to operate at temperatures other than the set point, and may result in other property damage. When the bulb mounting clip is used to mount the bulb near the refrigerant tubing, ensure the sheet metal screw does not pierce the tubing.

You can install the control with or without a bulb well assembly. For closed tank applications without a well assembly, order the Part No. FTG13A-600R packing nut assembly.

Mounting with a bulb well

About this task:

Use the bulb well with a remote bulb and support tube, for direct immersion applications. To mount the control with a supplied bulb well assembly, complete the following steps:

1. Install the bulb well into the tank.
2. Remove the bushing from the bulb well, and slide the bushing over the capillary.
3. Place the bulb and bushing into the well.
4. Push the bulb into position at the bottom of the well.
5. Tighten the set screw at the end of the adapter to hold the bulb in position. See the following figure.

Figure 1: Bulb well for liquid immersion applications

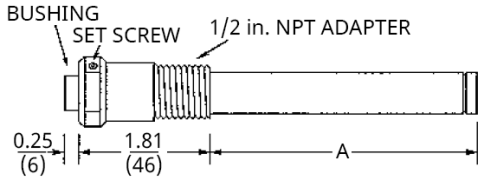


Table 1: Bulb well assembly dimensions

Part number	Dimensions	
	A, in. (mm)	
WEL14A-602R	4.94	121
WEL14A-603R	5.81	148
WEL16A-601R	2.81	71

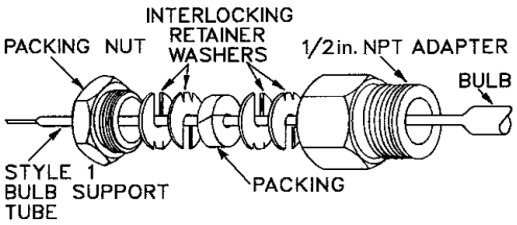
Mounting with a packing nut assembly

About this task:

To mount the control with an FTG13A-600R assembly, complete the following steps:

1. Slide the packing nut assembly over the support tube section of the element, and place the bulb into the tank.
2. Tighten the 1/2 in. NPT adapter.
3. Screw the packing nut into the adapter with the retaining washers and packing in place. See the following figure.

Figure 2: FTG13A-600R packing nut assembly

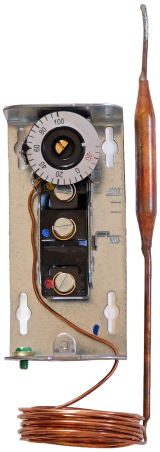


Note: Use the packing nut with a swaged bulb for direct immersion applications.

Adjustments

A19 series temperature controls may come with an external range adjustment and screwdriver slot as shown in the following figure, a range adjustment knob, or a solid cover.

Figure 3: A19 control with external range adjustment and screwdriver slot



To adjust the set point on solid cover models with a calibrated dial, remove the cover and rotate the set point dial so that the setting you want is in line with the dial pointer on the stop bracket. See Figure 5.

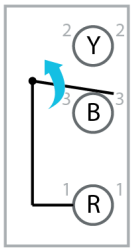
On convertible adjustment models, in the field, you can change the controls from concealed screwdriver slot adjustment to knob adjustment or external screwdriver slot adjustment.

- For concealed screwdriver slot adjustment, convertible adjustment models come with a snap-in plug in the cover.
- For knob adjustment, remove the snap-in plug and press the knob onto the slotted shaft.
- For external screwdriver slot adjustment, remove the snap-in plug.

The convertible adjustment models with remote bulb include a bulb mounting clip.

In standard controls, dial settings indicate the cutout setting unless otherwise specified by the equipment manufacturer. In standard controls, models with single-pole, double-throw (SPDT) contacts are set so the red (common) to yellow contacts open at the dial setting.

Figure 4: A19 SPDT basic terminal configuration



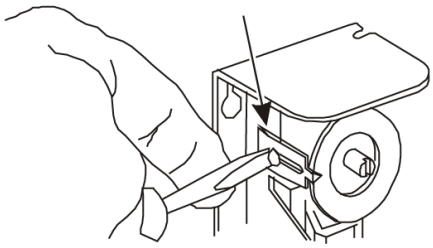
Note: On an increase in temperature, R (red) to B (blue) opens, and simultaneously R (red) to Y (yellow) closes.

Models with an adjustable differential and ranges of 20°F to 80°F (-5°C to 28°C), -30°F to 50°F (-35°C to 10°C), and -30°F to 100°F (-35°C to 40°C) have a differential scale plate showing increments of differential. Other ranges have a scale plate with a multiplier. For example, when the minimum differential is 5°F (2.8°C) then the multiplier x2 is 10°F (5.6°C), x3 is 15°F (8.3°C), and so on. The controls come with an adjusting lever at the minimum differential stamped on the control. To adjust the differential, move the lever to the differential that you want.

Adjusting the high or low temperature cutout stop

About this task:

Figure 5: Setpoint stop adjustment screw



Certain models come with a high or low temperature cutout stop, specified by the equipment manufacturer. To adjust the high or low cutout stop, complete the following steps:

1. Set the dial to the temperature that you want the stop at.
2. Remove the cover of the control.
3. Loosen the cutout stop screw, slide the screw to the front of the temperature control against the plastic step behind the dial, and tighten the screw.

   Note: Sometimes an exact stop setting is not possible and you must set the stop to the closest available stop.
4. Replace the cover.

Wiring

CAUTION

Risk of Electric Shock.

Disconnect the power supply before making electrical connections to avoid electric shock.

NOTICE

Risk of Property Damage.

Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

Make all wiring to conform to the National Electrical Code and local codes. Wire SPDT models as shown in Figure 4. Use copper conductor only.

Before you apply power, ensure that the installation and wiring connections are according to job specifications.

Important: Use the supplied 8-32 x 1/4 in. binder head terminal screws. Substitution of other screws could cause problems with making connections.

Leaving the installation

After you make the necessary mechanical adjustment and electrical connections, adjust the control set point to put the system in operation and observe at least three complete operating cycles to ensure that all components function correctly.

If the system fails to operate, check the wiring and components again.

Repairs and replacements

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

All models have a screw type cutout stop. The stop screw must be loosened and moved to the stop setting that you want. Tighten the screw after you adjust the setting.

Conformity declaration information

Table 2: A19 conformity information

Information	Description
Purpose of the control	Temperature control
Method of mounting the control	Surface-mounted. Permanently attached through holes in the back of the case.
Method of grounding the control	Wiring binding screw terminal
Type 1 or Type 2 action	Standard models: Type 1.B micro-disconnection 600 V rating models: Type 1.C micro-interruption
External pollution situation	Pollution degree 3
Rated impulse voltage	6,000 VAC
Conformity	UL Guide No. XAPX File No. E6688 cUL Guide No. XAPX7 File No. E6688

Electrical ratings

Table 3: A19ADC cULus electrical ratings

VAC 60 Hz	120	208	240	277
Full load amperes	16.0	9.2	12.0	—
Locked rotor amperes	96.0	55.2	72.0	—
Resistive amperes, SPST (SPDT)	26.1 (16.0)			22.0 (16.0)
Pilot duty	125 VA, at 24 VAC to 600 VAC			

Table 4: A19ACA and A19ADB cULus electrical ratings

VAC 60 Hz	120	208	240	277
Full load amperes	16.0	9.2	12.0	—
Locked rotor amperes	96.0	55.2	72.0	—
Resistive amperes, SPST	26.1			22.0
Pilot duty	125 VA, at 24 VAC to 600 VAC			

Table 5: A19AAC, A19ABC, A19BAC, and A19BBC cULus electrical ratings

VAC 60 Hz	120	208	240	277
Full load amperes	16.0	9.2	12.0	—
Locked rotor amperes	96.0	55.2	72.0	—
Resistive amperes, SPST (SPDT)	22.0 (16.0)			
Pilot duty	125 VA, at 24 VAC to 600 VAC			

Table 6: A19AAA, A19AAB, A19ABA, A19ABB, A19BAA, and A19BAB cULus electrical ratings

VAC 60 Hz	120	208	240	277
Full load amperes	16.0	9.2	12.0	—
Locked rotor amperes	96.0	55.2	72.0	—
Resistive amperes, SPST	22.0			
Pilot duty	125 VA, at 24 VAC to 600 VAC			

Table 7: A19AAF and A19BAF cULus electrical ratings

VAC 60 Hz	120	208	240	277
Full load amperes	6.0	3.4	3.0	—
Locked rotor amperes	36.0	20.4	18.0	—
Resistive amperes, SPST or SPDT	15.0			
Pilot duty	125 VA, at 24 VAC to 277 VAC			

Table 8: A19AAD and A19BAE cULus electrical ratings

VAC 60 Hz	120	208	240	277
Full load amperes	6.0	3.4	3.0	—
Locked rotor amperes	36.0	20.4	18.0	—
Resistive amperes, SPST	15.0			
Pilot duty	125 VA, at 24 VAC to 277 VAC			

Single point of contact

APAC	EU	UK	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS VOLTAWEG 20 6101 XK ECHT THE NETHERLANDS	JOHNSON CONTROLS TYCO PARK GRIMSHAW LANE MANCHESTER M40 2WL UNITED KINGDOM	JOHNSON CONTROLS 5757 N GREEN BAY AVE. GLENDALE, WI 53209 USA

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Contact information

Contact your local Johnson Controls representative: www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us

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