



# A19D Series Surface Mounted Temperature Controls Product/Technical Bulletin

A19Dxx-xxx

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Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

## Application

**IMPORTANT:** Use these A19D Series Surface Mounted Temperature Controls only as an operating control. Where failure or malfunction of the A19D Temperature 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 A19D Temperature Control.

The A19D Series Surface Mounted Temperature Controls (Figure 1) are reliable, durable On/Off temperature controls with line-voltage Single Pole, Double Throw (SPDT) switches. The A19D Series controls are designed primarily for fluid piping applications and include two adjustable mounting straps for mounting the control directly to a pipe.

The sensing element has a liquid charge and provides fast response to a change in temperature. A range adjustment knob and a visible temperature scale are standard. Models are also available with a snap-in plug in the cover for concealed screwdriver slot adjustment.



**Figure 1: A19D Series Surface Mounted Temperature Control and Mounting Straps**

Typical A19D control applications include high temperature detection on boiler applications and low temperature detection on unit heaters coil applications.

**Table 1: Features and Benefits**

Features	Benefits
<b>SPDT Switch Action</b>	Provides either high or low temperature detection.
<b>Sealed, Dust-Protected Switch</b>	Provides reliable and durable On/Off control for commercial and industrial applications.
<b>Color Coded Electrical Terminals</b>	Simplify wiring the control.
<b>Sensing Element Insulated From the Control Case</b>	Minimizes the effects of ambient temperature on the control setpoint.
<b>Convertible Range Adjuster Kit</b>	Provides knob, screwdriver, or concealed adjustment options.
<b>Multi-Position Mounting Capability</b>	Allows you to mount the control in any position on horizontal, vertical, or angled pipes.
<b>NEMA 1 Enclosure</b>	Provides protection against contact with the control's electrical components and protects the switch and electrical terminals from incidental contact.

## Mounting

### Location Guidelines

Observe the following guidelines when mounting an A19D control.

**IMPORTANT:** Do not install the A19D control where the control housing temperature exceeds 140°F (60°C) or the temperature at the sensing element exceeds 250°F (121°C).

**IMPORTANT:** Do not install the A19D control on a riser pipe that has a flow control device. Flow control devices may prevent circulation of fluid in the pipe and provide a false temperature to the control.

The A19D control is **not** position sensitive and may be mounted on a pipe in any position.

For typical boiler applications, mount the control on a vertical supply riser approximately 2 ft (0.6 m) above the boiler.

For typical unit heater applications, mount the control on the horizontal return adjacent to the unit heater.

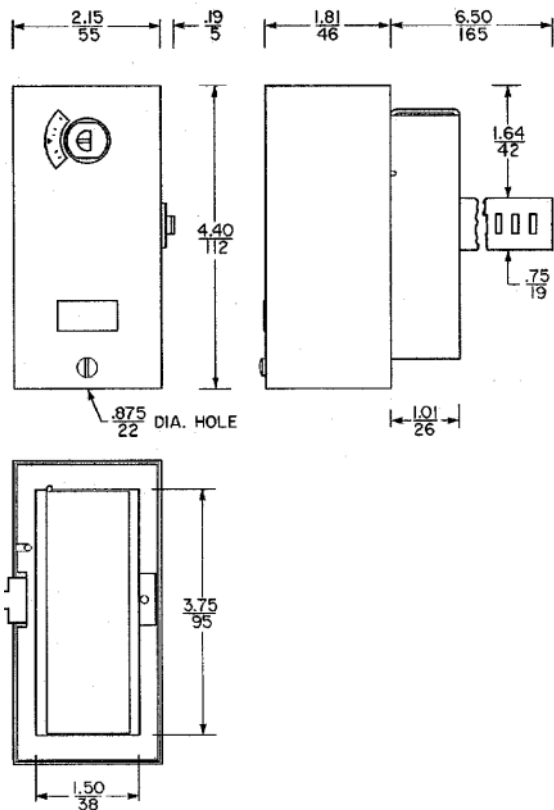


Figure 2: A19D Dimensions, in/mm

### Mounting the A19D Control

1. Prepare the pipe for mounting. If the pipe is insulated, remove a 5 in. (127 mm) section of insulation. Clean the pipe surface to remove all insulating material, scale, and rust where the control is mounted.
2. Remove the control cover and fasten the threaded flange of the strap to the control case using only three or four clamp screw threads (Figure 3).
3. Place the control on the pipe, wrap the strap around the pipe and place the slot in the strap over the tab on the right side of the case.
4. Tighten the clamp screw to a snug fit.
5. Clip off or fold back the excess strap outside the cover of the control.



#### **WARNING: Risk of Electric Shock.**

Do not enclose any excess strap inside the enclosure when installing the cover. Doing so may result in the metal strap contacting the wiring terminals and cover, and may result in severe personal injury or death.

6. If insulation was removed to mount the control, trim and replace the insulation on the pipe in back of the control to minimize the effect of ambient air temperature on the sensing element.

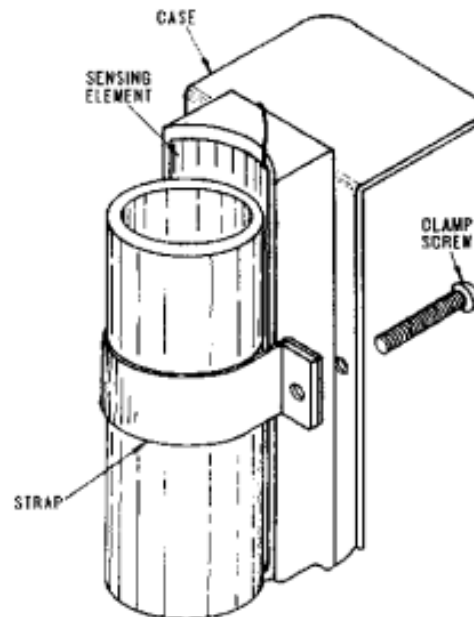


Figure 3: Mounting the A19D Control

## Wiring



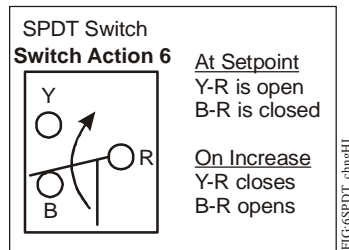
### **WARNING: Risk of Electric Shock.**

Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

**IMPORTANT:** Use copper conductors only. Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the A19D control's electrical ratings.

The terminals of the SPDT switch are color coded. The red terminal is common. The red to blue contacts open on temperature increase and the red to yellow contacts close on temperature increase (Figure 4).

**IMPORTANT:** Use only terminal screws furnished (8-32 x 1/4 in.). Do not substitute screws of a different size.



**Figure 4: A19D SPDT Switch Contacts, Switch Action, and Terminal Designations**

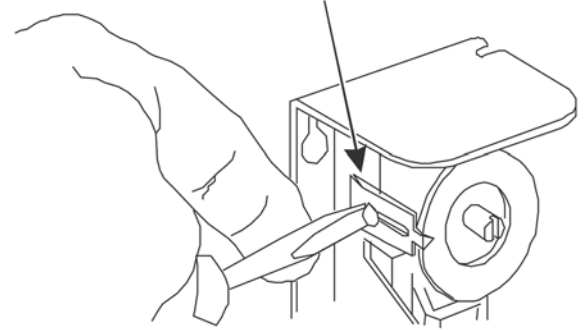
## Setup and Adjustment

### **Temperature Setpoint Stop**

The temperature setpoint stop is an integral part of these controls and is field adjustable. To set the stop:

1. Set dial to temperature at desired stop.
2. Remove the control cover.
3. Loosen the stop screw, slide the screw to the front of the control against the plastic step behind the dial, and tighten the screw (Figure 5). Sometimes an exact stop setting is not possible and the stop must be set to the closest step corresponding to the dial setting required.

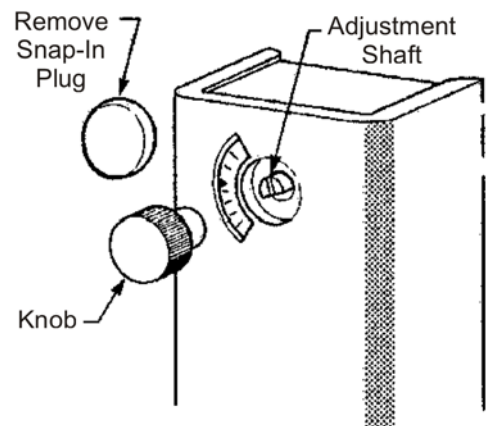
### Setpoint Stop Bracket with Slot and Screw



**Figure 5: Setpoint Stop Adjustment Screw**

### **Range Adjuster**

A screwdriver slot with visible scale or screwdriver slot with concealed scale and solid cover are optional at no extra cost (quantity orders only). Models are available with field-convertible adjustment kit, which provides conversion to knob, concealed screwdriver slot or external screwdriver slot adjustment (Figure 6).



**Figure 6: Range Adjuster Options**

### **Checkout Procedure**

Before leaving the installation, observe at least three complete operating cycles to ensure that all components function correctly.

### **Repairs and Replacement**

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

**Table 2: Ordering Information**

Product Code Number	Description
<b>A19DAC-1C</b>	100 to 240°F Temperature Range and Scale, 10 F° (+/- 2.8 F°) Differential, Visible Range Scale
<b>A19DAC-9C</b>	40 to 120°C Temperature Range and Scale, 6 C° (+/- 1.0 C°) Differential, Visible Range Scale
<b>A19DAC-10C</b>	40 to 120°C Temperature Range and Scale, 6 C° (+/- 1.0 C°) Differential, Concealed Range Scale
<b>A19DAC-12C</b>	100 to 240°F Temperature Range and Scale, 10 F° (+/- 2.8 F°) Differential, Concealed Range Scale
<b>A19DAF-2C</b>	200 to 240°F Temperature Range and Scale, 3.5 F° (+/- 2.0 F°) Differential, Concealed Range Scale

## Technical Specifications

### A19DAx-x Surface Mount Temperature Controls

<b>Product Code Number</b>	<b>A19DAC:</b> SPDT Switch, Standard Differential <b>A19DAF:</b> SPDT Switch, Narrow Differential																														
<b>Adjustable Temperature Range</b>	<b>A19DAC:</b> 100 to 240°F or 40 to 120°C <b>A19DAF:</b> 200 to 240°F (95 to 120°C)																														
<b>Fixed Temperature Differential</b>	<b>A19DAC:</b> 10 F° or 6.0 C° <b>A19DAF:</b> 3.5 F° (1.9 C°)																														
<b>Maximum Ambient Operating Temperature</b>	Controller Housing: 140°F (60°C) Sensor Element: 250°F (121°C)																														
<b>Switch Contact Action</b>	Snap Acting, Enclosed Dust Protected Pennswitch Red to Yellow Terminal Contacts Close on Temperature Increase Red to Blue Terminal Contacts Open on Temperature Increase																														
<b>Terminal Screws</b>	No. 8-32 x 1/4 in. Binder Head with Cup Washers																														
<b>Electrical Ratings</b>	<table border="1"> <thead> <tr> <th></th> <th colspan="2"><b>A19DAC: Standard Differential</b></th> <th colspan="2"><b>A19DAF: Narrow Differential</b></th> </tr> <tr> <th><b>Motor Rating VAC</b></th> <th><b>120</b></th> <th><b>240</b></th> <th><b>120</b></th> <th><b>240</b></th> </tr> </thead> <tbody> <tr> <td><b>Full Load Amperes</b></td> <td>10.0</td> <td>6.0</td> <td>6.0</td> <td>3.4</td> </tr> <tr> <td><b>Locked Rotor Amperes</b></td> <td>60.0</td> <td>36.0</td> <td>36.0</td> <td>20.4</td> </tr> <tr> <td><b>Non-Inductive Amperes</b></td> <td>10.0</td> <td>6.0</td> <td>6.0</td> <td>3.4</td> </tr> <tr> <td><b>Pilot Duty</b></td> <td colspan="2">125 VA, 24 to 277 VAC</td> <td colspan="2">125 VA, 24 to 277 VAC</td> </tr> </tbody> </table>		<b>A19DAC: Standard Differential</b>		<b>A19DAF: Narrow Differential</b>		<b>Motor Rating VAC</b>	<b>120</b>	<b>240</b>	<b>120</b>	<b>240</b>	<b>Full Load Amperes</b>	10.0	6.0	6.0	3.4	<b>Locked Rotor Amperes</b>	60.0	36.0	36.0	20.4	<b>Non-Inductive Amperes</b>	10.0	6.0	6.0	3.4	<b>Pilot Duty</b>	125 VA, 24 to 277 VAC		125 VA, 24 to 277 VAC	
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<b>Enclosure</b>	NEMA Type 1 General Purpose; Cold Rolled Steel, Gray Baked Enamel																														
<b>Mounting</b>	Clamp-On (Strap Included)																														
<b>Shipping Weight</b>	1.2 lb (.54 kg)																														
<b>Compliance</b>	UL Guide No. XAPX, File E6688 CSA Class No. 4813 02, File LR948 C-Tick																														



### Building Efficiency

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