



## A421 Series Electronic Temperature Controls with Off-Cycle Defrost Catalog Page

LIT-1900935

2020-04-14

### Description

The A421 Series Standard Electronic Temperature Controls are single stage, electronic temperature controls with a single-pole, double-throw (SPDT) output relay. The controls feature an adjustable backlit LCD for viewing the temperature and status of other functions, and a three-button touchpad for setup and adjustment. An LED indicates the On/Off status of the output relay. The A421 Controls are available in 120 VAC and 240 VAC models.

The A421 Control with Defrost allows you to set up regular, passive defrost periods of 1 minute to 99 minutes. The defrost interval can range from 2 hours to 24 hours, or be set to 0 for no defrost interval. You can also start or stop a defrost off-cycle in two ways: press the three-button touchpad on the Advanced Menu or connect a momentary switch to the Binary Input (BIN).

The A421 also provides sensor offset, temperature setback, adjustable anti-short cycle delay, and a restricted user adjustment mode. The temperature units can be displayed in °F or °C. The temperature adjustment range is -40°F to 212°F or -40°C to 100°C.

The A421 Controls are available in Type 1, IP20 high-impact plastic enclosures suitable for surface or DIN rail mounting and Type 4X, IP66 watertight, corrosion-resistant surface mount enclosures.

Refer to the *A421 Series Electronic Temperature Controls Product Bulletin (LIT-12012219)* for important product application information.



A421ABD, A421AED, A421AED

## Applications

You can use the A421 Control to manage a wide range of single-stage refrigeration or HVAC equipment. Sample temperature control applications include:

- On/off control chillers
- Chiller pump control
- Cooling control

## Features and benefits

### Control front panel LCD

Displays the temperature, parameters, and status. You can adjust the backlight intensity for ambient light conditions. Custom icons display the system and control status.

### Basic and Advanced programming menu

Provides two levels of parameter adjustment and control. You can set up advanced features in one menu and adjust basic parameters in the other menu.

### Off-Cycle defrost

Shut off the refrigeration system for defined defrost time interval and frequency. You can also start or stop a manual only defrost off-cycle.

### On/Off temperature adjustment

Select the temperature values at which the relay turns on and off and automatically define the mode of operation.

### Switch-activated temperature setback

Shift the On/Off temperature by an adjustable setback. When a user-supplied switch closes the binary input control circuit, temperature setback is enabled.

### Adjustable anti-short cycle delay (ASd)

Select the minimum time the output relay remains off before the next on-cycle. By selecting this minimal time, you can avoid short cycling, hard starts, and nuisance overload outages on compressors and other inductive applications.

### Adjustable sensor offset

Adjust the displayed temperature to the actual sensed temperature.

### Optional restricted adjustment mode

Restrict the On/Off adjustment to your defined temperature range.

### Sensor failure mode

Run the control continuously in the event of a sensor or sensor wire failure or to shut it down.

### Backlight brightness level

Adjust the brightness of the backlighting of the LCD screen. The backlight brightness level is applied during normal operation. When you set up or adjust the parameters, the LCD automatically goes to the brightest level.

## Repair information

Do not attempt to repair or recalibrate the A421 Series Electronic Temperature Control. In case of a defective or improperly functioning control, contact your nearest authorized Johnson Controls® or PENN® distributor or sales representative. When contacting your Johnson Controls or PENN distributor, have the model number of the control available. This number can be found on the label inside the cover of the control.

## Ordering information

Contact your nearest Johnson Controls or PENN distributor or sales representative to order sensors, mounting hardware, and other accessories to install the A421 Controls. Contact your local Johnson Controls or PENN representative for more information on options available for high-volume purchase models with specific application requirements.

## Selection charts

**Table 1: A421 Series Standard Electronic Temperature Control**

| Product code | Description   |
|--------------|---|
| A421ABD-02C  | Line -Voltage Type 1 Electronic Temperature Control with Off-Cycle Defrost Timer: Type 1 (NEMA), IP20 standard enclosure for DIN rail and surface-mount applications. Rated for 120/240 VAC. Includes timer for On/Off defrost cycle control. Includes A99BB-200C temperature sensor with 6.6 ft (2.0 m) cable. |
| A421AED-01C  | Line -Voltage Type 4X Electronic Temperature Control with Off-Cycle Defrost Timer: Type 4X (NEMA), IP66 standard enclosure for surface-mount applications. Rated for 120/240 VAC. Includes timer for On/Off defrost cycle control. Includes A99BB-25C temperature sensor with 9 7/8 in. (0.25 m) cable.         |
| A421AED-02C  | Line -Voltage Type 4X Electronic Temperature Control with Off-Cycle Defrost Timer: Type 4X (NEMA), IP66 standard enclosure for surface-mount applications. Rated for 120/240 VAC. Includes timer for On/Off defrost cycle control. Includes A99BB-200C temperature sensor with 6.6 ft (2.0 m) cable.            |

**Table 2: A99 Temperature Sensors**

| Product code <sup>1</sup> | Description  |
|---------------------------|--|
| A99BA-200C                | Positive temperature coefficient (PTC) Temperature Sensor: Standard probe 2 in. (5.1 cm) with 6.6 ft (2.0 m) shielded polyvinyl chloride (PVC) cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C) |
| A99BB-25C                 | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 9 7/8 in. (0.25 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)  |
| A99BB-200C                | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 6.6 ft (2.0 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)  |
| A99BB-300C                | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 9.8 ft (3.0 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)  |
| A99BB-400C                | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 13.1 ft (4.0 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)   |
| A99BB-600C                | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 19.7 ft (6.0 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)   |

**Table 2: A99 Temperature Sensors**

| Product code <sup>1</sup> | Description  |
|---------------------------|--|
| A99BC-25C <sup>1</sup>    | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 9 7/8 in. (0.25 m) high-temperature silicon cable; ambient operating temperature range: -40°F to 248°F (-40°C to 120°C) |
| A99BC-100C <sup>1</sup>   | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 3.3 ft (1.0 m) high-temperature silicon cable; ambient operating temperature range: -40°F to 248°F (-40°C to 120°C)     |
| A99BC-300C <sup>1</sup>   | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 9.8 ft (3.0 m) high-temperature silicon cable; ambient operating temperature range: -40°F to 248°F (-40°C to 120°C)     |
| A99BC-500C <sup>1</sup>   | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 16.4 ft (5.0 m) high-temperature silicon cable; ambient operating temperature range: -40°F to 248°F (-40°C to 120°C)    |
| A99BC-1500C <sup>1</sup>  | PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 49.2 ft (15.0 m) high-temperature silicon cable; ambient operating temperature range: -40°F to 248°F (-40°C to 120°C)   |
| A99CB-200C                | PTC Temperature Sensor: Extended probe 6 in. (15.2 cm) with 6.6 ft (2.0 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)                         |
| A99CB-600C                | PTC Temperature Sensor: Extended probe 6 in. (15.2 cm) with 19.7 ft (6.0 m) PVC cable; ambient operating temperature range: -40°F to 212°F (-40°C to 100°C)                        |


<sup>1</sup> When any A99 Series Temperature Sensor is connected to a standard A421 Control model, the range of displayed temperature values is -40°F to 212°F or -40°C to 100°C.

**Table 3: Accessories for the A421 Controls**

| Product code | Description  |
|--------------|--|
| BKT287-1R    | 12 in. (305 mm) long DIN rail section                              |
| BKT287-2R    | 36 in. (914 mm) long DIN rail section                              |
| PLT344-1R    | Two end clamps for DIN rail sections                               |
| A99-CLP-1    | Surface mounting clip for A99B and A99C Series Temperature Sensors |
| SHL10-603R   | Sun shield for A99B and A99C Series Temperature Sensors            |
| BOX10A-603R  | PVC enclosure for A99B and A99C Series Temperature Sensors         |
| WEL11A-601R  | Immersion well for applying sensor in fluid applications           |

## Technical specifications

**Table 4: A421 Series Electronic Temperature Control Technical Specifications**

| Specification   | Description   |
|---|---|
| Power consumption   | 1.8 VA maximum  |
| Supply power  | Class 2: 108/110/115/120 or 208/230/240 VAC, 50/60 Hz   |
| Ambient conditions  | Type 1/IP20:<br>Operating: -40°F to 150°F (-40°C to 66°C), 0% to 95% RH noncondensing<br>Shipping and storage: -40°F to 185°F (-40°C to 85°C), 0% to 95% RH noncondensing<br>Type 4X/IP66:<br>Operating: -40°F to 140°F (-40°C to 60°C)<br>Shipping and storage: -40°F to 140°F (-40°C to 60°C) |
| Temperature control range   | -40°F to 212°F or (-40°C to 100°C)  |
| Sensor type   | A99 PTC temperature sensor, 1,035 ohm at 77°F (25°C)  |
| Sensor offset range   | ±5°F or ±3°C  |
| Enclosure material  | Type 1: IP20 high-impact thermoplastic or<br>Type 4X: IP66 watertight, corrosion-resistant, high-impact thermoplastic   |
| Compliance  | <b>North America:</b> cULus Listed; UL 60730, File E27734, Vol. 1; FCC Compliant to CFR47, Part 15, Subpart B, Class B Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits  |
|  | <b>Europe:</b> CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive; Low Voltage Directive.  |
|   | <b>Australia:</b> Regulatory Compliant Mark (RCM)   |

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

## Product warranty

This product is covered by a limited warranty, details of which can be found at [www.johnsoncontrols.com/buildingswarranty](http://www.johnsoncontrols.com/buildingswarranty).

## Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable terms set forth at [www.johnsoncontrols.com/techterms](http://www.johnsoncontrols.com/techterms). Your use of this product constitutes an agreement to such terms.

## Single point of contact

| APAC  | Europe   | NA/SA  |
|---|--|--|
| JOHNSON CONTROLS<br>C/O CONTROLS PRODUCT<br>MANAGEMENT<br>NO. 32 CHANGJIJIANG RD NEW<br>DISTRICT<br>WUXI JIANGSU PROVINCE 214028<br>CHINA | JOHNSON CONTROLS<br>WESTENDHOF 3<br>45143 ESSEN<br>GERMANY | JOHNSON CONTROLS<br>507 E MICHIGAN ST<br>MILWAUKEE WI 53202<br>USA |

## Contact information

Contact your local branch office:  
[www.johnsoncontrols.com/locations](http://www.johnsoncontrols.com/locations)

Contact Johnson Controls:  
[www.johnsoncontrols.com/contact-us](http://www.johnsoncontrols.com/contact-us)