

A421 Series Electronic Temperature Controls with Off-Cycle Defrost

Description

The A421 Series 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 to 99 minutes. The defrost interval can range from 2 to 24 hours, or be set to 0 (no defrost interval). You can also start or stop a defrost off-cycle in two ways: using 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 to 212°F or -40 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.

Applications

The A421 Electronic Temperature Control can be used to control a wide variety 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 and allows you to 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 setup, allowing you to set up advanced features in one menu and easily adjust basic parameters in the other menu.
- **Off-Cycle Defrost** – allows you to 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** – allows you to select the temperature values at which the relay turns On and Off, which automatically defines the mode of operation.
- **Switch-Activated Temperature Setback** – allows you to 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** – allows you to 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** – allows you to adjust the displayed temperature to the actual sensed temperature.
- **Optional Restricted Adjustment Mode** – allows you to restrict the On/Off adjustment to your defined temperature range.
- **Sensor Failure Mode** – allows you to run the control continuously in the event of a sensor or sensor wire failure or to shut it down.



A421 Series Electronic Temperature Control

- **Backlight Brightness Level** – allows you to 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/PENN® Distributor or Sales Representative.

When contacting your Johnson Controls/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/PENN Distributor or Sales Representative to order sensors, mounting hardware, and other accessories used to install A421 controls.

Contact your local Johnson Controls/PENN representative for more information on options available for high-volume purchase models with specific application requirements.

Selection Charts

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.



A421 Series Electronic Temperature Controls with Off-Cycle Defrost (Continued)

A99 Temperature Sensors¹

Product Code	Description
A99BA-200C	PTC Temperature Sensor: Standard probe 2 in. (5.1 cm) with 6.6 ft (2.0 m) shielded PVC cable; Ambient operating temperature range: -40 to 212°F (-40 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 to 212°F (-40 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 to 212°F (-40 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 to 212°F (-40 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 to 212°F (-40 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 to 212°F (-40 to 100°C)
A99BC-25C ¹	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 to 248°F (-40 to 120°C)
A99BC-100C ¹	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 to 248°F (-40 to 120°C)
A99BC-300C ¹	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 to 248°F (-40 to 120°C)
A99BC-500C ¹	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 to 248°F (-40 to 120°C)
A99BC-1500C ¹	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 to 248°F (-40 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 to 212°F (-40 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 to 212°F (-40 to 100°C)

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

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

A421 Series Electronic Temperature Control	
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: Operating: -40 to 150°F (-40 to 66°C), 0 to 95% RH Non-condensing Shipping and Storage: -40 to 185°F (-40 to 85°C), 0 to 95% RH Non-condensing Type 4X/IP66: Operating: -40 to 140°F (-40 to 60°C) Shipping and Storage: -40 to 140°F (-40 to 60°C)
Temperature Control Range	-40 to 212°F or (-40 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 Type 4X: IP66 Watertight, Corrosion-Resistant, High-Impact Thermoplastic
Compliance	North America: 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 Europe: CE Mark – Johnson Controls, Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive; Low Voltage Directive. Australia: Regulatory Compliant Mark (RCM)



The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products. © 2015 Johnson Controls, Inc. www.johnsoncontrols.com