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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 low voltage 24 VAC and high voltage 120 or 240 VAC models, which provide options for most refrigeration and HVAC applications.

The A421 controls provide heating or cooling control, 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.

The factory-equipped power cords provide convenient plug-in connection and control of 120 VAC heating and cooling equipment.

Refer to the *A421 Series Electronic Temperature Controls Product Bulletin (LIT-12011972)* 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:

- temperature monitoring and alarming
- on/off control of boilers and chillers
- boiler and chiller pump control
- heating and cooling control

- cooling tower fan control based on water temperature
- supply, makeup, and mixed air temperature control
- temperature actuated valve control
- supply and makeup air damper and fan control
- condenser fan control based on condenser temperature.

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.
- **On/Off Temperature Adjustment** – allows you to select the temperature values at which the relay turns On and Off, which automatically defines the Heating or Cooling mode of operation.
- **Switch-Activated Temperature Setback** – allows you to shift the On/Off temperature by an adjustable setback value. When a user-supplied switch closes the binary input control circuit, the control operates at the defined setback temperatures.
- **Adjustable Anti-Short Cycle Delay** – allows you to select the minimum time the output relay remains off before the next on cycle; avoiding 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.

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- **Sensor Failure Mode** – allows you to select the relay On/Off state in the event of a sensor or sensor wire failure.
- **Backlight Brightness Level** – allows you to adjust the LCD backlight intensity.

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 with Power Cords

Product Code	Description
A421ABG-02C	**120 VAC Type 1 Electronic Temperature Control with Dual Power Cords:** Type 1 (NEMA), IP20 enclosure for DIN rail and surface-mount applications, with 6 ft (1.8 m) cord with 120 VAC grounded male plug and 6 ft (1.8 m) cord with 120 VAC grounded female outlet. Rated for 120 VAC. Includes an A99BB-200C temperature sensor with 6.6 ft (2.0 m) cable.
A421ABJ-02C	**120 VAC Type 1 Electronic Temperature Control with Piggyback Power Cord:** Type 1 (NEMA), IP20 enclosure for DIN rail and surface-mount applications, with 6 ft (1.8 m) single power cord with 120 VAC combination male/female grounded piggyback plug. Rated for 120 VAC. Includes an A99BB-200C temperature sensor with 6.6 ft (2.0 m) cable.
A421AEJ-01C	**120 VAC Type 4X Electronic Temperature Control with Piggyback Power Cord:** Type 4X (NEMA), IP66 watertight enclosure for surface-mount applications, with 6 ft (1.8 m) single power cord with 120 VAC combination male/female grounded piggyback plug. Rated for 120 VAC. Includes an A99BB-25C temperature sensor with 9-7/8 in. (0.25 m) cable.
A421AEJ-02C	**120 VAC Type 4X Electronic Temperature Control with Piggyback Power Cord:** Type 4X (NEMA), IP66 watertight enclosure for surface-mount applications, with 6 ft (1.8 m) single power cord with 120 VAC combination male/female grounded piggyback plug. Rated for 120 VAC. Includes an A99BB-200C temperature sensor with 6.6 ft (2.0 m) cable.

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A99 Temperature Sensors[1]

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 212ºF (-40 to 100ºC)
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 212ºF (-40 to 100ºC)
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 212ºF (-40 to 100ºC)
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 212ºF (-40 to 100ºC)
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 212ºF (-40 to 100ºC)
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 212ºF (-40 to 100ºC)
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 248ºF (-40 to 100ºC)
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 248ºF (-40 to 120ºC)
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 248ºF (-40 to 120ºC)
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 248ºF (-40 to 120ºC)
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 248ºF (-40 to 120ºC)
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 212ºF (-40 to 100ºC)
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 212ºF (-40 to 100ºC)

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

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

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Technical Specifications

A421 Series Electronic Temperature Controls	
Power Consumption	1.8 VA Maximum
Supply Power	110/120 VAC, 50/60 Hz
Ambient Conditions	**Operating:** Type 1 Models: -40 to 150°F (-40 to 66°C), 0 to 95% RH Non-condensing Type 4X Models: -40 to 140°F (-40 to 60°C), 0 to 95% RH Non-condensing **Shipping and Storage:** All Models: -40 to 185°F (-40 to 85°C), 0 to 95% RH Non-condensing
Temperature Control Range	-40 to 212°F or -40 to 100°C
Input Signal	1,035 ohm at 77°F (25°C) for A99 PTC temperature sensors
Sensor Offset Range	±5ºF or ±3ºC
Enclosure Material	Type 1, IP20 High-Impact Thermoplastic or Type 4X, IP66 Watertight, Corrosion-Resistant, High-Impact Thermoplastic **Note:** On the Type 4x enclosures, the cover screws must be torqued to 10 to 12 in·lbs (1.1 to 1.4 N·m) to achieve Type 4X rating.
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