System 450 Control Module with Network Communications Catalog Page

LIT-1900861

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Description

System 450™ is a family of modular, digital electronic controls that is easily assembled and set up to provide reliable temperature, pressure, and humidity control for a wide variety of HVAC/R applications, commercial process applications, and industrial process applications.

The System 450 control system is designed to replace System 350™ and System 27 control systems and to provide many additional features and benefits with fewer than twenty model variations.

System 450 control modules provide a field-configurable out-of-the-box solution. Most System 450 control modules can control temperature, pressure, and humidity systems simultaneously.

A single C450 control module can be set up as a stand-alone control or connected to expansion modules to control up to ten On/Off relay and proportional analog outputs, based on any of the three available inputs.

System 450 Control Modules with Communications enable you to connect System 450 control systems to Modbus® or Ethernet networks for remote monitoring and setup. The Modbus communications control module is an RS485, RTU-compliant subordinate device. The Ethernet communications control module has an integral web server that can deliver web pages through a direct connection, on your LAN, or across the Internet.

Refer to the following documents for important product application information, as well as detailed information on designing, installing, setting up, and troubleshooting:

- *System 450™ Series Modular Controls Product Bulletin (LIT-12011458)*
- *System 450™ Series Modular Control Systems with Communications Control Modules Technical Bulletin (LIT-12011826)*

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- *System 450™ Series Control Module with RS485 Modbus® Communications Installation Instructions (Part No. 24-7664-2926)*
- *System 450™ Series Control Module with Ethernet Communications Installation Instructions (Part No. 24-7664-2934)*

Features and Benefits

Durable, Compact, Interchangeable Modular Components with Plug-Together Connectors and DIN Rail or Direct Wall Mount Capability

Eliminate field wiring between modules and allow you to quickly and easily design, assemble, install, and upgrade your control systems.

Versatile, Multipurpose, Field-Configurable Control Modules and Expansion Modules Designed for Global Use

Allow you to create a wide variety of application-specific control systems capable of controlling temperature, pressure, or humidity, or all three conditions simultaneously, with only a small suite of module models.

Control Modules with Bright Backlit LCDs and Four-Button Touchpad User Interfaces, Up to Three Hard-Wired Input Sensors and Up to Ten Relay or Analog Outputs (In Any Combination) per Control System

Provide quick, clear, visual status of your System 450 control system inputs and outputs with the touch of a button and enable you to quickly and easily set up and adjust your control system.

Multipurpose, All-in-One Control Modules

Enable simple stand-alone, single-module control systems that are temperature, pressure, and humidity capable out of the box and easy to set up in the field to replace a wide variety of OEM HVAC/R and process controls.

An Extensive Suite of Compatible Temperature and Humidity Sensors and Pressure Transducers

Allows you to monitor and control a wide range of HVACR and process conditions in a variety of standard and global units of measurement.

High Input Signal Selection

Enables your control system to monitor a temperature, pressure, or humidity condition with two or three sensors (of the same type) and control your system outputs based on the highest condition value sensed by the referenced sensors.

Differential Control

Enables your control system to monitor and maintain a temperature, pressure, or humidity differential between two sensor points within a system, process, or space.

Repair Information

If the System 450™ Control Module with Ethernet or RS485 Modbus Communication fails to operate within its specifications, replace the unit. For a replacement System 450™ Control Module, contact a Johnson Controls® representative.

Communication Control Features

- Ethernet communication capability through a built-in web server (Ethernet control modules only) allows you to monitor your control system status and set up or change the parameters by means of a direct Ethernet cable connection, through a LAN connection, or over the Internet. The built in web server delivers user-friendly web pages to client browsers on a desktop, laptop, tablet, or smart device.
- The web page server on Ethernet communication modules provides a simple, intuitive web interface for easy remote monitoring, setup, adjustment and remote monitoring of your control systems across Ethernet networks.
- RS485, RTU-compliant Modbus® network communication capability (Modbus control modules only) enables a head-end RS485 Modbus master controller to read and write control system status and setup parameters to the System 450 Modbus communication control module.

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- Password protection for local access (Ethernet and Modbus control modules only) and password protection for remote access (Ethernet control module only) deters unauthorized changes to the control system settings, but allows local and remote monitoring of your control system status.
- Analog output signal limiting features (communication control modules only) allow you to select the rate and condition range at which the control updates the analog output signal, potentially reducing wear on the controlled equipment.
- Binary input with time delay (communication control modules only) allows you to use an external set of dry contacts and selectable time delays to control relay outputs.

Selection Chart

Refer to the *System 450 Compatible Sensors, Transducers, and Accessories Catalog Page (LIT-1900662)* for temperature sensors, humidity sensors, and pressure transducers compatible with the System 450 Control Modules.

Table 1: Communications System 450 Modules and Accessories Ordering Information

Product Code Number	Product Description
C450CEN-1C	Control Module with Ethernet Communications, LCD, and Four-Button Touchpad UI. (No onboard outputs available on control modules with network communications capabilities.)
C450CRN-1C	Control Module with RS485 Modbus Communications, LCD, and Four-Button Touchpad UI. (No onboard outputs available on control modules with network communications capabilities.)
BKT287-1R	DIN Rail; 0.30 m (12 in.) long
BKT287-2R	DIN Rail; 1 m (39-1/3 in.) long
BKT287-3R	DIN Rail; 0.61 m (24 in.) long
BKT287-4R	DIN Rail; 0.36 m (14 in.) long
PLT344-1R	DIN Rail End Clamps (Two clamps)
WHA-C450-100C	System 450 module connection extension cable, 100 cm (3.3 ft) long

Technical Specifications

Table 2: C450CEN-1C Control Module with Ethernet Communications Technical Specifications

Specification	Description
Product	C450CEN-1: System 450 control modules are sensing controls and operating controls with LCD and four-button touchpad UI, Ethernet communications capability, and no outputs. C450CEN-1C: Control module with Ethernet communications capability
Supply Power	Internal Supply Power: C450YNN-1C Power Supply Module External Supply Power: 24 VAC (20 to 30 VAC) Safety Extra-Low Voltage (SELV) (Europe), Class 2 (North America), 50/60 Hz, 10 VA minimum ⓘ **Note:** A System 450 control module or module assembly can use an internal or an external supply power source, but must not be connected to both simultaneously.
Ambient Operating Conditions	Temperature: -40 to 66°C (-40 to 150°F) Humidity: Up to 95% RH noncondensing; maximum dew point 29°C (85°F)
Ambient Shipping and Storage Conditions	Temperature: -40 to 80°C (-40 to 176°F) Humidity: Up to 95% RH noncondensing; maximum dew point 29°C (85°F)
Input Signal	0 to 5 VDC; 1,035 ohms at 25°C (77°F) for an A99 PTC Temperature Sensor
Analog Input Accuracy	Resolution: 16 bits
Control Construction	Independently mounted control, surface mounted with Lexan® 950 enclosure suitable for DIN rail mounting or direct mounting to a hard, even surface.
Dimensions (H x W x D)	127 x 63 x 63 mm (5 x 2-3/8 x 2-3/8 in.)
Weight	C450CEN-1C: 207 g (0.46 lb)
Compliance	**United States:** cULus Listed; UL 60730-1, File E27734; FCC Compliant to CFR47, Part 15, Subpart B, Class B
	Canada: cULus Listed; CAN/CSA-E60730-1, File E27734; Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits
CE	**Europe:** CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
	Australia and New Zealand: RCM mark, Australia/NZ Emissions Compliant

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Table 3: C450CRN-1C Control Module with RS485 Modbus Communications Technical Specifications

Specification	Description
Product	C450CRN-1C: System 450 control modules are sensing controls and operating controls with LCD and four-button touchpad UI and no outputs. This control module is an RS485, RTU compliant Modbus subordinate device.
Supply Power	Internal Supply Power: C450YNN-1C Power Supply Module External Supply Power: 24 VAC (20 to 30 VAC) Safety Extra-Low Voltage (SELV) (Europe), Class 2 (North America), 50/60 Hz, 10 VA minimum ⓘ **Note:** A System 450 control module or module assembly can use an internal or an external supply power source, but must not be connected to both simultaneously.
Ambient Operating Conditions	Temperature: -40 to 66°C (-40 to 150°F) Humidity: Up to 95% RH noncondensing; maximum dew point 29°C (85°F)
Ambient Shipping and Storage Conditions	Temperature: -40 to 80°C (-40 to 176°F) Humidity: Up to 95% RH noncondensing; maximum dew point 29°C (85°F)
Input Signal	0 to 5 VDC; 1,035 ohm at 25°C (77°F) for an A99 PTC Temperature Sensor
Analog Input Accuracy	Resolution: 16 bit
Control Construction	Independently mounted control, surface mounted with Lexan® 950 enclosure suitable for DIN rail mounting or direct mounting to a hard, even surface.
Dimensions (H x W x D)	127 x 63 x 63 mm (5 x 2-3/8 x 2-3/8 in.)
Weight	C450CRN-1C: 207 g (0.46 lb)
Compliance	**United States:** cULus Listed; UL 60730-1, File E27734; FCC Compliant to CFR47, Part 15, Subpart B, Class B
	Canada: cULus Listed; CAN/CSA-E60730-1, File E27734; Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits
CE	**Europe:** CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
	Australia and New Zealand: RCM mark, Australia/NZ Emissions Compliant

Product warranty

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

Single point of contact

APAC	Europe	NA/SA
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Contact information

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