C550CCN and C550CQN System 550 Control Module Catalog Page

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Overview

Figure 1: C550CCN module

The System 550 is a modular electronic control system that provides single or multi-stage on/off, proportional or proportional-plus-integral control of temperature, humidity, pressure, or a combination. The modularity enables customers to only buy the modules that they need for their unique application.

System 550 control modules support up to three sensor inputs in any combination of temperature, pressure, or humidity sensors. The C550CCN control module comes with two relay outputs and the C550CQN comes with two analog outputs. You can add expansion modules to provide additional relay and analog outputs up to the maximum of ten outputs. Outputs can provide either on/off control or a proportional analog signal of 0 VDC to 5 VDC, 0 VDC to 10 VDC, or 4 mA to 20 mA.

The C550CCN control module supports A2L refrigerant leak detection and mitigation. The control module features advanced alarming and mitigation features in the event that an A2L refrigerant leak is detected. The C550CCN control module includes a plug-in connector that supports connection of up to two PENN GM200 series A2L refrigerant sensors. In the event that you need more than two A2L refigerant sensors, use the C550SJN junction module which supports up to six A2L refrigerant sensors. The C550CCN control module control is certified under UL 60335-2-40 and 60335-2-89.

Select the System 550 control module that you need for your application and add the following modules to provide the necessary power supply, outputs, and A2L refrigerant sensor wiring connections:

- An optional C550YNN power module.
- Optional expansion modules for additional outputs. See Expansion modules.
- An optional C550SJN junction module for additional refrigerant leak detection sensors.

Control module

Every System 550 assembly must contain one control module. The C550CCN and C550CQN control modules can read temperature, pressure, or humidity sensor inputs.

Table 1: System 550 control modules

Model	Number of sensor inputs	Outputs	Special features
C550CCN	3	2 relay outputs	• Includes a backplane terminal adapter for A2L refrigerant leak detection sensors • Features a lower flammability limit (LFL) output for non-mitigation purposes • Supports expansion modules
C550CQN	3	2 analog outputs	• Supports expansion modules

Features and benefits

Proportional-plus-integral control

For analog outputs, choose from proportional or proportional-plus-integral control

Multi-stage controller

Supports staged on/off control of temperature, humidity, and pressure

Full-character user interface display

Provides clear and concise menus and the ability for users to customize sensor and output names

Rotary dial

Use simple rotate and press actions to navigate the menu, designed for increased usability and accessibility

Quick access menu

Quickly press the dial to access the quick access menu and edit key parameters such as setpoint and differential

Two-way wireless cloud connectivity

Authorized users can monitor system performance and receive SMS text and email alerts. Configure the cloud dashboard to display all System 550 devices by location or enterprise. Quickly determine if equipment is operating correctly. Service companies can utilize data available through the cloud to determine if they need to dispach a technician.

Fault and alarm indicators

Features LEDs, on-screen icons, and text that indicate alarms, and also supports optional SMS and email alerts through the cloud

USB-C port

Facilitates quick transfer of configuration files and simple commissioning of C550 control modules

C550CCN features and benefits

A2L leak detection and mitigation

Complies with UL standards 60335-2-40 and 60335-2-89 for A2L refrigerant leak detection and mitigation

A2L leak detection and mitigation test mode

Facilitates OEMs and service technicians to simulate an A2L refrigerant leak to determine if refrigerant mitigation functionality is operating correctly

Fast-acting A2L leak detection sensors

Supports the GM200 Series A2L refrigerant leak detection sensors. The total time from leak detection to mitigation response is less than 30 seconds.

0 VDC to 10 VDC LFL output

Outputs the percentage of the lower flammability limit (LFL) of A2L refrigerant detected by the A2L sensor that detects the highest quantity. Use this output to communicate with a supervisory device.

Power module

You can power the system through the control module with an external 24 VAC or 24 VDC supply. If you need to power the system with line voltage, you can add the C550YNN power module which supports a 120 VAC or 240 VAC supply.

Expansion modules

Use up to four expansion modules to increase the system's outputs up to a total of ten outputs in any combination of analog or relay. The following expansion modules are available:

- C550SCN: Two additional relay outputs
- C550SQN: Two additional analog outputs

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Junction module

The C550SJN junction module provides support for wiring up to six refrigerant leak detection sensors.

Technical specifications

Table 2: C550CCN control module with relay outputs

Specification	Description
Product	C550CCN digital electronic control module with A2L refrigerant leak sensing and mitigation. See Overview.
Wireless cloud connectivity	Available with a subscription
Sensor inputs	Any combination of up to three temperature, humidity, or pressure sensor inputs
Number of relay outputs	Two
Maximum number of outputs including expansion modules	Ten. Any combination of relay and analog ouputs.
A2L refrigerant leak detection and mitigation functionality	Supported
Compatible modules	C550YNN power module, output expansion modules, and C550SJN junction module. See Expansion modules.
Display	Dot-matrix full-character LCD display with adjustable backlight
Power consumption	3 VA maximum
Supply power	A maximum of one wired power supply from the following options: Internal supply power: C550YNN-1C Power Supply Module with line voltage connections External supply power: • 24 VAC (20 VAC to 30 VAC) Class 2 (North America), 50/60 Hz, safety extra-low voltage (SELV) (Europe), 10 VA minimum • 24 VDC ±10%, 10 W minimum
Ambient operating conditions	Temperature: -40°F to 150°F (-40°C to 66°C) Humidity: Up to 95% RH non-condensing. Maximum dew point 85°F (29°C)
Ambient shipping and storage conditions	Temperature: -40°F to 150°F (-40°C to 66°C) Humidity: Up to 95% RH non-condensing. Maximum dew point 85°F (29°C)
Input signal	0 VDC to 10 VDC for active sensors of any type, or any range within 0 VDC to 10 VDC 0 VDC to 5 VDC for static pressure transducers 0.5 VDC to 4.5 VDC for ratiometric pressure transducers 500 Ω to 2,100 Ω for PTC sensors 300 Ω to 500,000 Ω for NTC sensors

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Table 2: C550CCN control module with relay outputs

Specification		Description
Output relay contacts		General: 1/2 HP at 120/240 VAC, SPDT
		Specific: AC motor ratings 120 VAC: • AC full-load amperes: 9.8 A • Locked-rotor amperes: 58.8 A AC motor ratings 208/240 VAC: • AC full-load amperes: 4.9 A • Locked-rotor amperes: 29.4 A 10 amperes AC non-inductive at 24/240 VAC Pilot duty: 125 VA at 24/240 VAC
5V ratiometric output for ratiometric pressure sensors		5 V +/- 1%, current limited at 30 mA
Refrigerant leak detection LFL output		1 V to 9 V output with a minimum resistive load of 5,000 Ω. Faults in the module or wiring cause outputs outside the range.
Enclosure		Type 1, IP 20 high-impact thermoplastic
Dimensions (H x W x D)		5.09 in. x 2.4 in. x 2.7 in. (129 mm x 61 mm x 69 mm)
Weight		0.50 lb (225 g)
Compliance	United States	ULus Listed; UL 60730-1, File XAPX.E27734. Evaluated according to UL 60335-2-40 and 60335-2-89 as a refrigerant detection system (RDS). Evaluated according to UL 60335-2-40 as arcing or sparking parts and hot surfaces for specific A2L and A3 refrigerants. FCC Compliant to CFR47, Part 15, Subpart B, Class B limits and FCC Part 15, Subpart C, KDB 996369 D04 Module Integration Guide.
	Canada	cUL Listed; CAN/CSA-E60730-1, File XAPX7.E27734. Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits.
	Europe CE	CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the RED Directive and EMC Directive.

Table 3: C550CQN control module with analog outputs

Specification	Description
Product	C550CQN digital electronic control module. See Overview.
Wireless cloud connectivity	Available with a subscription
Sensor inputs	Any combination of up to three temperature, humidity, or pressure sensor inputs
Number of analog outputs	Two
Maximum number of outputs including expansion modules	Ten. Any combination of relay and analog ouputs.
A2L refrigerant leak detection and mitigation functionality	Not supported
Compatible modules	C550YNN power module and output expansion modules See Expansion modules
Display	Dot-matrix full-character LCD display with adjustable backlight

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Table 3: C550CQN control module with analog outputs

Specification		Description
Power consumption		3 VA maximum
Supply power		A maximum of one wired power supply from the following options: Internal supply power: C550YNN-1C Power Supply Module with line voltage connection External supply power: • 24 VAC (20 VAC to 30 VAC) Class 2 (North America), 50/60 Hz, safety extra-low voltage (SELV) (Europe), 10 VA minimum • 24 VDC ±10%, 10 W minimum
Ambient operating conditions		Temperature: -40°F to 150°F (-40°C to 66°C) Humidity: Up to 95% RH non-condensing. Maximum dew point 85°F (29°C)
Ambient shipping and storage conditions		Temperature: -40°F to 150°F (-40°C to 66°C) Humidity: Up to 95% RH non-condensing. Maximum dew point 85°F (29°C)
Input signal		0 VDC to 10 VDC for active sensors of any type, or any range within 0 VDC to 10 VDC 0 VDC to 5 VDC for static pressure transducers 0.5 VDC to 4.5 VDC for ratiometric pressure transducers 500 Ω to 2,100 Ω for PTC sensors 300 Ω to 500,000 Ω for NTC sensors
Analog output		Voltage Mode (0–10 VDC): 10 VDC maximum output voltage 10 mA maximum output current Requires an external load of 1,000 Ω or more The analog output operates in Voltage Mode when connected to devices with impedance greater than 1,000 Ω. Devices that fall below 1,000 Ω may not operate as intended with Voltage Mode applications.
		Current Mode (4 mA to 20 mA): Requires an external load less than 300 Ω The analog output operates in Current Mode when connected to devices with impedance less than 300 Ω. Devices that rise above 300 Ω may not operate as intended with Current Mode applications.
5V ratiometric output for ratiometric pressure sensors		5 V +/- 1%, current limited at 30 mA
Enclosure		Type 1, IP 20 high-impact thermoplastic
Dimensions (H x W x D)		5.09 in. x 2.4 in. x 2.7 in. (129 mm x 61 mm x 69 mm)
Weight		0.50 lb (225 g)
Compliance	United States	ULus Listed; UL 60730-1, File XAPX.E27734. FCC Compliant to CFR47, Part 15, Subpart B, Class B limits and FCC Part 15, Subpart C, KDB 996369 D04 Module Integration Guide.
	Canada	cUL Listed; CAN/CSA-E60730-1, File XAPX7.E27734. Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits.
	Europe CE	CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the RED Directive and EMC Directive.

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Repair information

Do not make field repairs. For a replacement control contact the nearest Johnson Controls® wholesaler.

North American emissions compliance

United States

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This Class (B) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la Classe (B) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Industry Canada Statement(s)

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage, et
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Product warranty

This product is covered by a limited warranty, details of which can be found at 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 end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

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Patents

Patents: https://jcipat.com

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