



System 550 User Guide

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Overview

The System 550 is a modular electronic control system that consists of control, power, and expansion modules. The assembled system monitors inputs and controls relay outputs, analog outputs or both. The system supports a wide variety of HVACR applications.

The System 550 supports up to three sensor inputs in any combination of temperature, pressure, or humidity sensors. C550C control modules feature two relay or analog outputs. On C550C control modules, you can add expansion modules to provide additional outputs up to the maximum of ten outputs in any combination of relay or analog modules. 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.

In addition, the C550CCN control module supports A2L refrigerant leak detection and mitigation functionality. The C550CCN control module comes with advanced alarming and mitigation features in the event that an A2L refrigerant leak is detected. The C550CCN supports up to two A2L refrigerant leak detection sensors. You can increase this to support up to six refrigerant leak detection sensors with the addition of a junction module. System 550 assemblies that use the C550CCN module control are certified under UL 60335-2-40 and 60335-2-89.

You assemble each system from the following modules:

- One control module
- An optional power module
- Optional expansion modules for additional outputs
- An optional junction module for additional refrigerant leak detection sensors

Control module

Every System 550 assembly must contain exactly one control module. The following control modules are available:

Note:

- The C550C control modules can read up to three temperature, pressure, or humidity sensor inputs in any combination.

Table 1. System 550 control modules

Model	Number of sensor inputs	Outputs	Special features
C550CCN	3	2 relay outputs	<ul style="list-style-type: none"> • Includes a backplane terminal adapter for A2L refrigerant leak detection sensors • Features an LFL output for non-mitigation purposes • Supports expansion modules
C550CQN	3	2 analog outputs	Supports expansion modules

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

Junction module

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

Sensor and transducer types

The system treats temperature sensors as passive sensors and all other sensors as active sensors. Use the custom sensor configuration if you use an active temperature sensor. The System 550 supports the following sensor types:

- Temperature sensors
- Humidity sensors
- Pressure transducers
- Differential pressure sensors
- A2L refrigerant leak detection sensors
- Any voltage sensor of any range from 0 VDC to 10 VDC

For more information, see [System 550 compatible sensors](#).

Common applications

You can use the System 550 for a wide variety of HVACR applications that require relay outputs, analog outputs, or a combination of both. Common applications include the following items.

Important: Use this System 550 Series Control Module only as an operating control. Where failure or malfunction of the System 550 could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the System 550 Module.

Important : Utiliser ce System 550 Series Control Module uniquement en tant que dispositif de contrôle de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du System 550 risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du System 550 Module.

A2L refrigerant leak detection and mitigation

Configure the C550 control and expansion modules to put all outputs in a defined mitigation state in the event of an A2L refrigerant leak. For example, the mitigation state could turn on exhaust fans, shut off compressors, close isolation valves, or take many other actions. The C550CCN control module together with up to six GM200 series A2L sensors are fully compliant with UL and EN standards 60335-2-40 and 60335-2-89 which require HVACR systems that use A2L refrigerants to include leak detection and mitigation.

Heating control

Control electric heat pumps, fans, or heating elements when the temperature is above or below a given setpoint.

Cooling control

Control compressors or fans when the temperature is above or below a given setpoint.

Defrost control

Control the initiation and termination of a defrost cycle based on time, temperature, or both.

Pressure control

Control the temperature of a refrigeration system based on the pressure of the refrigerant. Cycle condenser fans based on the refrigeration system's condensing pressure. Turn compressors on or off based on the refrigeration system's high or low side pressure.

Boiler control

Control boiler loop water temperature based on the heating demand. Use the C550CCN's reset control function to adjust the boiler loop water temperature based on the outdoor temperature. Boiler staging and run-time optimization functions are also available.

Dehumidification control

Control humidity with compressors or fans when the humidity is above or below a given setpoint.

Variable speed evaporator fan control

Vary the speed of electronically commutated (EC) evaporator fan motors with a 0 VDC to 10 VDC analog output. Use the evaporator return air temperature as the input.

System monitoring and alerts

Use System 550's optional wireless cloud-based remote connectivity to monitor actual sensor values for one or multiple C550 control modules. Set SMS text message or email alerts for A2L refrigerant leaks, high or low sensor values, sensor failures, and more. Remotely view or change setpoints and defrost schedules in Controls System Cloud.

Advanced control features

For detailed information on how to configure an application with the following features, see [Configuring applications](#).

The following features are available for both output types:

Control based on a highest, lowest, or average input value

Control an output based on the combined result of two or three input sensor measurements.

Differential control

Use the difference in temperature, pressure, or humidity between two sensors as an input value to determine an output. On the appropriate idle screen, the difference value displays.

Sensor failure response

Control an output's status or value in the event of a sensor failure.

Reset control

Create a reset control application to adjust a setpoint dynamically. A common example is temperature setpoint control which uses an algorithm to calculate and adjust the setpoint for a temperature control loop based on changes in outdoor temperature.

The following features are available for relay outputs:

Minimum on and off times

Prevent the output from cycling on and off quickly, for example in the event of rapidly fluctuating measurements.

On/off delays

Configure an on delay between the time that a setpoint trips and a relay energizes, and an off delay between the time that a setpoint trips and a relay de-energizes.

On/off staging

Control the on/off status of a series of devices, such as fans, one by one as the input measurement passes a series of setpoints. You can control all the stages as one group.

The following features are available for analog outputs:

Hybrid analog output control

Set the control to transition from a constant analog output to a pulsed output if the output signal is below a certain threshold value. For example, use this to drive an electronically commutated variable speed motor at low speeds in condenser fan applications.

Proportional-integral (PI) control

Enable proportional-integral (PI) control to eliminate offset errors in the system. If the load is predictable, the system drives much closer to the ideal setpoint with PI control, even under large constant loads.

Customizable update rate

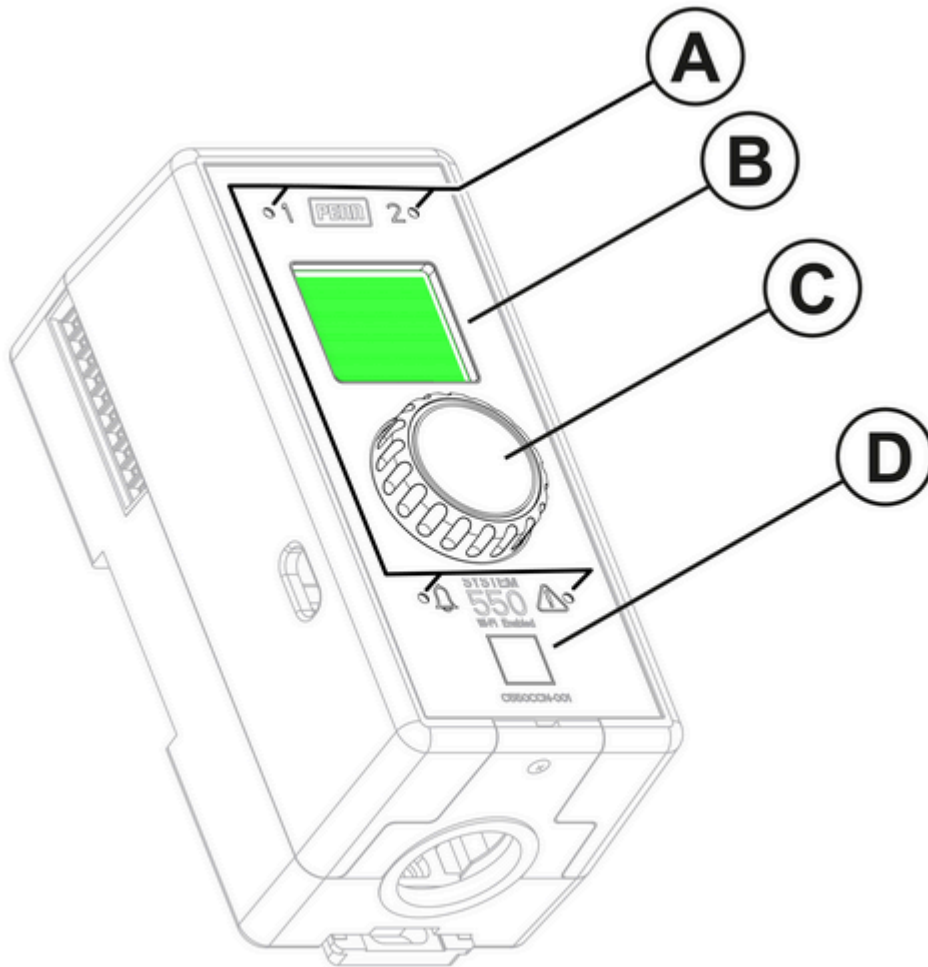
Set how frequently an analog output value can update.

Analog output deadband

Set a custom deadband for analog outputs to ignore small fluctuations in the output.

The front of the control module

Figure 1. The front of the C550CCN control module



Callout	Description
A	<p data-bbox="496 1312 564 1346">LEDs</p> <ul data-bbox="536 1503 1390 1951" style="list-style-type: none"> <li data-bbox="536 1503 1390 1581">• 1: Lights if the first relay or analog output on the module is energized. <li data-bbox="536 1626 1390 1704">• 2: Lights if the second relay or analog output on the module is energized. <li data-bbox="536 1749 1390 1827">• Notification bell: Indicates that an alarm state is ongoing and needs to be acknowledged. <li data-bbox="536 1872 1390 1951">• Exclamation mark: Indicates that a warning level has been exceeded.

Callout	Description
	<p>Note: If the outputs are analog outputs, the LEDs 1 and 2 blink if the output is partially energized. The higher the signal, the longer the LED is on between blinks.</p>
B	User interface (UI) screen
C	Rotary encoder dial. See System 550 user interface (UI) controls .
D	<p>Literature QR code</p> <p>Note: The QR code on the front of the control module points to literature. Access other QR codes that assist with Wi-Fi functionality or Controls System Cloud registration through the main menu.</p>

Installation

In the following sections, you can find details about how to install the System 550 hardware.

Location considerations

Observe the following System 550 location guidelines:

- Ensure that the mounting surface can support the module assembly, mounting hardware, and any user-supplied panel or enclosure.
- Mount the modules upright and plugged together in a horizontal row. Where possible, it is best practice to mount the modules with a DIN rail.
- Mount the modules on flat, even surfaces.
- Allow sufficient space for wires and connections.
- Mount the modules in locations free of corrosive vapors. Observe the ambient operating conditions listed in the technical specifications.
- Do not mount the modules on surfaces that are prone to vibration or in locations where radio frequency or electromagnetic emissions may cause interference.
- Do not install heat-generating devices in an enclosure with the modules that may cause the temperature to exceed the ambient operating limit.

- Do not install the control in a location where water is likely to spray on the control. The control is not rated for water resistance and you must keep it in a dry location.

Removing the cover

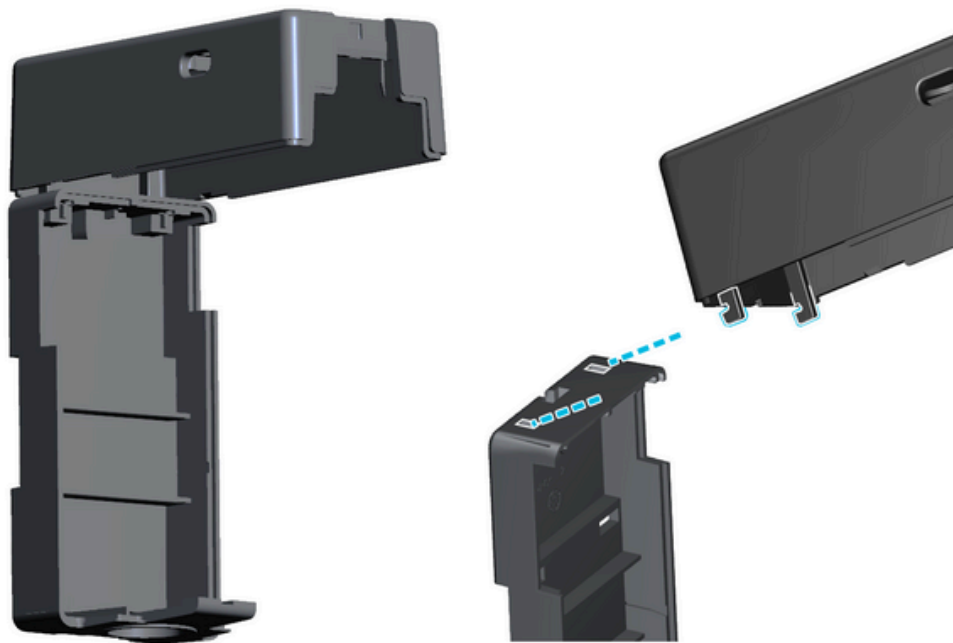
Procedure

1. Disconnect the modules from power.
2. With a #1 Phillips-head screwdriver, unscrew the captive latch screw at the bottom of the case as far as it can go. Do not fully remove the captive screw.
3. From the front, insert the head of the screwdriver at the bottom of the case, between the top of the latch and the front of the case.
4. To pop open the cover, rotate the screwdriver a quarter turn.
5. Remove the cover.
6. Slot the two hooks at the top of the cover into the two holes at the top of the module to keep the cover in place during wiring.

Note:

- Do not allow the cover to hang from the wiring harness.
- When you finish and you close the cover, ensure that you do not pinch the internal wiring between the cover and the case.

Figure 1. Resting the cover on top of the module



Connecting a new module to the assembly

About this task

Always connect modules in the correct order from left to right. To connect a new module, complete the following steps:

Procedure

1. Use the following order to determine which module goes next in your assembly from left to right:
 - a. First: Control module
 - b. Second: Optional power module
 - c. Optional expansion modules
 - d. Last: Optional A2L sensor wiring junction module
2. Line up the new module next to the current System 550 assembly.
3. Plug the six pins on the top left of the new module into the six ports on the top right of the current assembly.

Mounting the system with screws

Before you begin

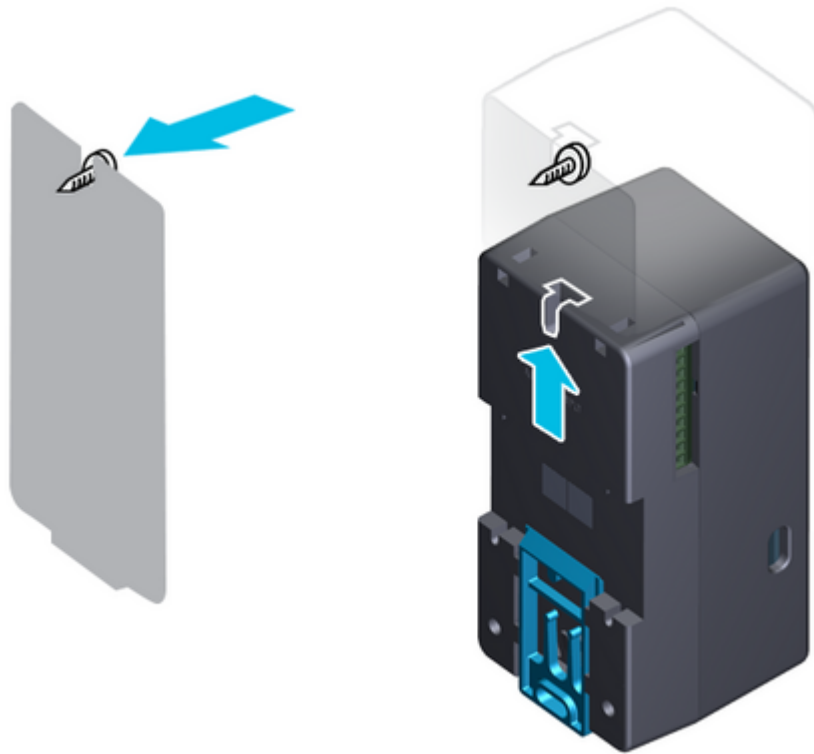
Find a location that meets the requirements in [Location considerations](#). For this procedure you need the following items:

- A minimum of two screws for each module, one of which must be a #8 pan head screw
- A screwdriver
- A level
- A drill, if necessary for your surface

Procedure

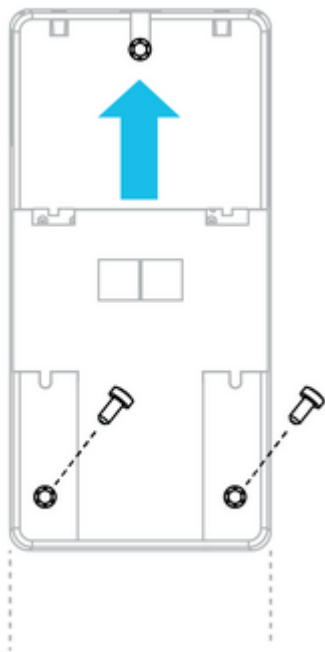
1. Mark a level line on your surface for the top screws. Ensure that you leave enough space above and below for the modules to slot upwards into position.
2. Mark the intended horizontal centerpoint of each module on the line. Make the centerpoints 2.4 in. (61.0 mm) apart.
3. Screw a #8 pan head screw into each marked point. Do not drive the screw fully in to the surface: leave enough space for the modules to slot underneath the head.
4. Connect your modules in the correct order. See [Connecting a new module to the assembly](#).
5. Slot the modules upwards onto the pan head screws.

Figure 1. Slotting the modules onto the pan head screws



6. Remove the covers of the modules.
7. Screw one or both of the bottom screws through the modules into your surface.

Figure 2. Securing the modules to a surface with screws



DIN rail mounting

Before you begin

To mount a module, you must supply the following items:

- A section of 1 3/8 in. (35 mm) DIN rail that is longer than the module assembly width.
- Mounting hardware or fasteners for mounting a DIN rail.

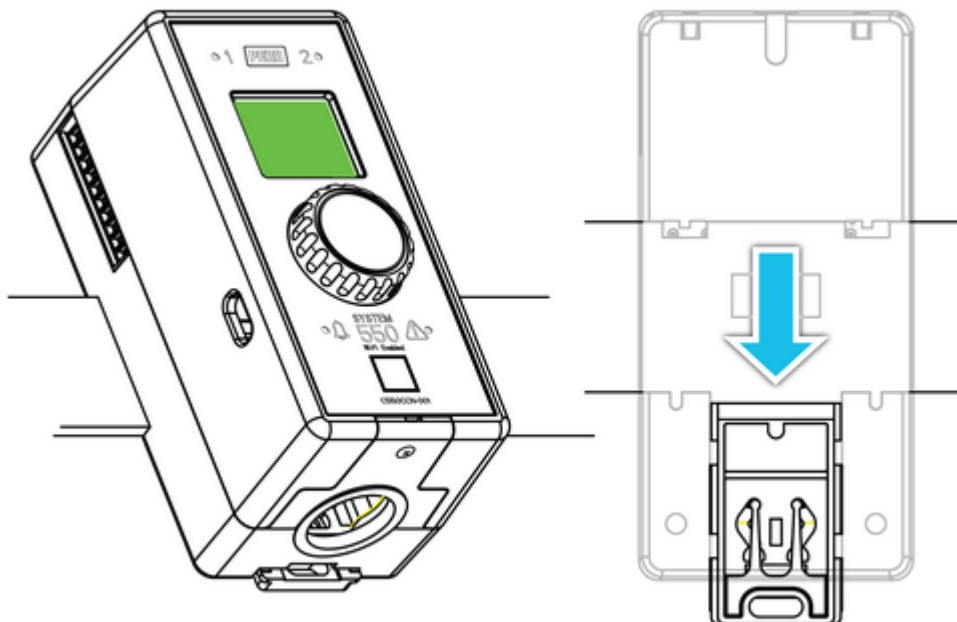
Procedure

1. Mount the DIN rail horizontally in a location that meets the requirements in [Location considerations](#).
2. Position the control module's upper DIN rail ridge on the top of the rail, and gently snap the lower clip onto the bottom of the rail.
3. Position each module in the correct order directly to the right of the previous module and clip the module to the DIN rail in the same way. For the correct order, see [Connecting a new module to the assembly](#).
4. Plug the 6-pin module connectors together.

Note:

- You can use DIN rail end clamps to prevent the module assembly from sliding off the DIN rail.
- To unclip a module, pull down the plastic tab under the module, and lift the module away from the DIN rail.

Figure 1. Unclipping a module from a DIN rail



Wiring

To wire the System 550, observe the following guidelines and procedures.

Safety guidelines for wiring

WARNING

Risk of Electric Shock

Disconnect or isolate all power supplies before making electrical connections. More than one disconnection or isolation may be required to completely de-energize equipment. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

AVERTISSEMENT

Risque de décharge électrique

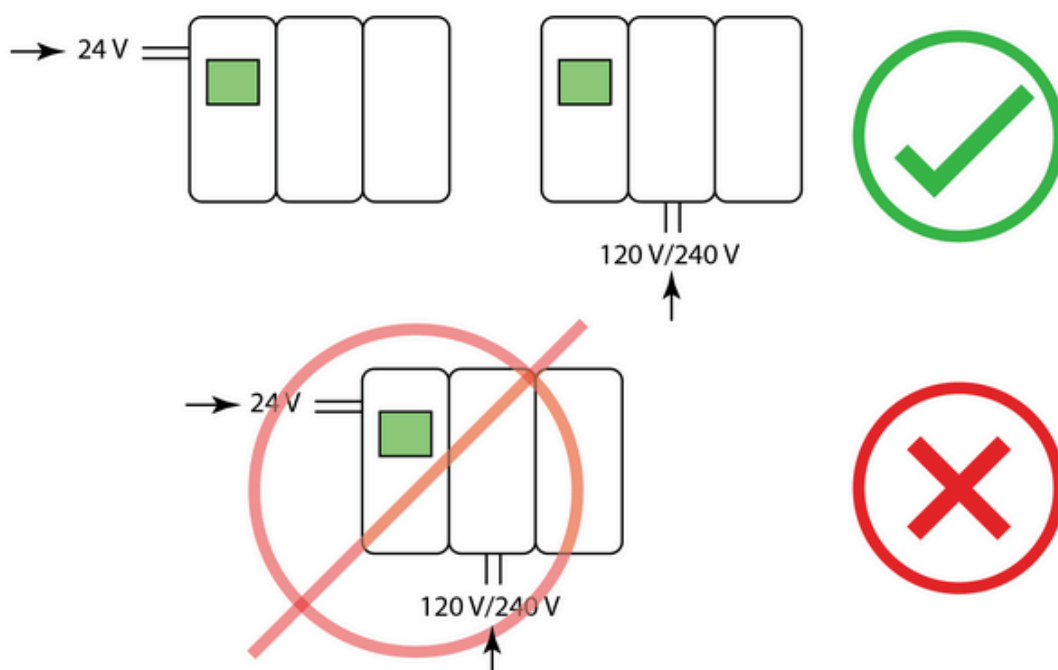
Débrancher ou isoler toute alimentation avant de réaliser un branchement électrique. Plusieurs isolations et débranchements sont peut-être nécessaires pour -couper entièrement l'alimentation de l'équipement. Tout contact avec des composants conducteurs de tensions dangereuses risque d'entraîner une décharge électrique et de provoquer des blessures graves, voire mortelles.

NOTICE

Risk to equipment

Do not wire more than one power source to the System 550 control module. Wiring to more than one power source may damage the modules and may void your warranty.

Figure 1. Connection to only one power source



Important:

- Use copper conductors only. Make all wiring connections in accordance with local, national, and regional regulations.
- Do not exceed the System 550 module electrical ratings. Exceeding module electrical ratings can result in permanent damage to the modules and void any warranty.
- Run all low-voltage wiring and cables separate from all high-voltage wiring. Use shielded cabling for sensor input and analog output cables that are exposed to high electromagnetic or radio frequency noise.
- Electrostatic discharge (ESD) can damage System 550 modules. Use the correct ESD precautions during installation and servicing to avoid damage to the System 550 modules.
- Do not apply power to the power module or the control module's power input terminal before you finish wiring and checking all of the wiring connections. Short circuits or incorrectly connected wires can result in damage to the modules and void any warranty.
- When you use a shield cable with a sensor, connect only one end of the cable to a nearby earth ground connection that is separate from the System 550. Do not connect the cable shield drain lead to any common terminal on the System 550. Isolate and insulate the shield drain at the sensor end of the cable.

Terminals on the control module

Figure 1. C550CCN and C550CQN control module wiring terminals

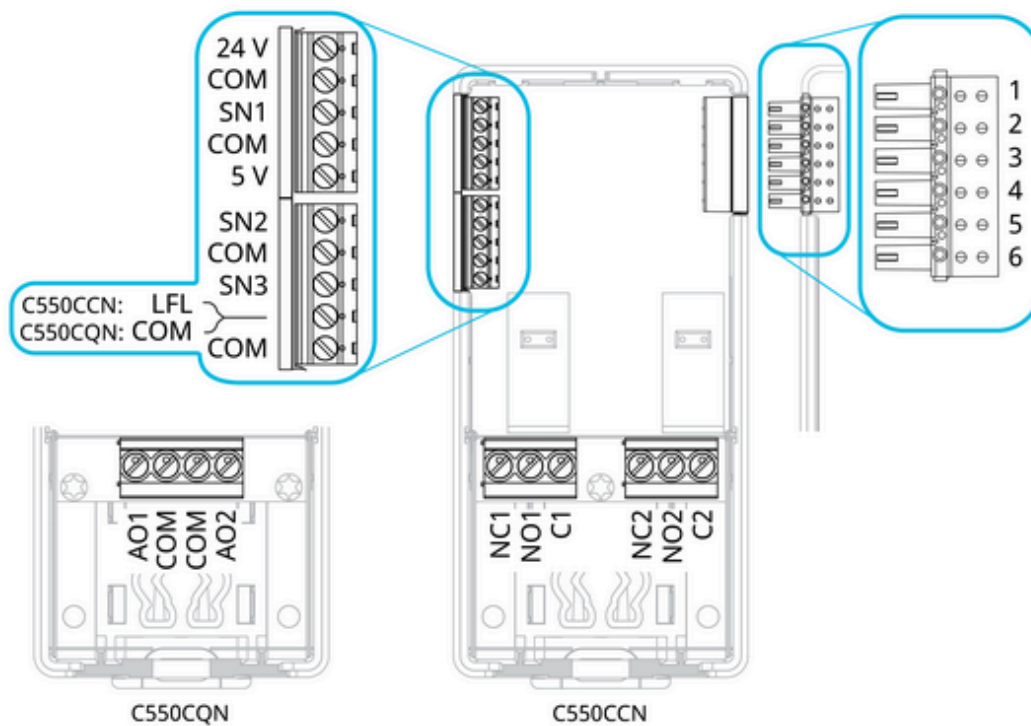


Table 1. Sensor, control module power, and LFL wiring terminals

Label	Terminal function
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Label	Terminal function
24 V	Receives 24 VAC/VDC supply power when a power module is not connected, or provides a power terminal for 24 VAC/VDC humidity sensors when a power module is connected.
COM	<p>Common input for the 24 V terminal and all terminals in the same terminal block.</p> <p>Note: All the common terminals in the terminal block are internally connected.</p>
SN1, SN2, SN3	Receives passive or active input signals from control sensors. The control automatically selects a passive or active sensor circuit for each input based on the sensors selected in the setup screens.
5 V	Provides 5 VDC power for ratiometric pressure sensors.
LFL	<p>Outputs the highest A2L refrigerant concentration level measured by any of the wired A2L refrigerant leak detection sensors, expressed as a percentage of the lower flammability limit (LFL). Use this terminal to transmit information to a supervisory controller.</p> <p>The output signal is in the range of 1.0 V to 9.0 V, where 1.0 V corresponds to 0% of the LFL, and 9.0 V corresponds to 25% of the LFL. Values outside the 1.0 V to 9.0 V range indicate a fault in the module or wiring.</p> <p>Important: Use the LFL terminal only to transfer information to a supervisory controller. Regulatory agencies require that you do not use the LFL output for mitigation control purposes. Use the dedicated System 550 refrigerant leak mitigation features to ensure regulatory compliance. Do not use the LFL output to drive a circuit.</p>

Label	Terminal function
	Note: LFL output is available on the C550CCN model only.

Table 2. Relay wiring terminals

Label	Terminal function
NC1, NC2	Normally closed outputs
NO1, NO2	Normally open outputs
C1, C2	Common input for the nearest terminal.

Table 3. Analog wiring terminals

Label	Terminal function
AO1, AO2	Provides a self-adjusting analog output signal: of any voltage range from 0 VDC to 10 VDC, or any current range from 4 mA to 20 mA.
COM	Common input for the analog outputs. Note: All the common terminals are internally connected.

Table 4. Backplane wiring terminals for refrigerant leak detection sensors

Pin	Terminal function	Sensor wire color
1	24 V	Red
2	Common or ground	Black
3	RS485+	White
4	RS485-	Green

Table 5. Wire sizes

Terminal block	Single conductor	Dual solid core conductor	Dual stranded conductor
Sensor, control module power, and LFL	26 AWG to 16 AWG (0.14 mm ² to 1.5 mm ²)	26 AWG to 20 AWG (0.14 mm ² to 0.5 mm ²)	26 AWG to 22 AWG (0.14 mm ² to 0.34 mm ²)
Relay outputs and power module input	24 AWG to 10 AWG (0.2 mm ² to 6.0 mm ²)	24 AWG to 16 AWG (0.2 mm ² to 1.5 mm ²)	24 AWG to 16 AWG (0.2 mm ² to 1.5 mm ²)

Terminal block	Single conductor	Dual solid core conductor	Dual stranded conductor
Analog outputs	26 AWG to 14 AWG (0.14 mm ² to 2.5 mm ²)	26 AWG to 18 AWG (0.14 mm ² to 1 mm ²)	26 AWG to 20 AWG (0.14 mm ² to 0.75 mm ²)
Refrigerant leak detection sensor connection	28 AWG to 16 AWG (0.08 mm ² to 1.5 mm ²)	28 AWG to 20 AWG (0.08 mm ² to 0.5 mm ²)	28 AWG to 18 AWG (0.08 mm ² to 0.75 mm ²)

Wiring a temperature sensor

About this task

Use a two-wire temperature sensor.

Procedure

1. Connect one wire to a sensor input terminal (SN).
2. Connect the other wire to a common terminal (COM).

Note: PENN A99 temperature sensors and other Johnson Controls passive resistance sensors are not sensitive to polarity.

Wiring a humidity transmitter

About this task

Use a three-wire humidity transmitter.

Procedure

1. Connect the sensor's voltage out signal to a sensor input terminal (SN).
2. Connect the sensor's common wire to a common terminal (COM).
3. Connect the sensor's voltage supply wire to the 24 V terminal.

Note: If you power the System 550 and a humidity transmitter from an external 24 VAC source, ensure you keep the same polarity between the humidity transmitter and the System 550 power supply. All common wires must tie together.

Wiring a pressure transducer

About this task

Use a three-wire ratiometric 0.5 VDC to 4.5 VDC output pressure transducer.

Procedure

1. Connect the sensor's voltage out or current out signal to a sensor input terminal (SN).
2. For sensors that use voltage out, connect the common wire to a common terminal (COM).
3. Connect the sensor to the 5 V terminal or the 24 V terminal depending on the specifications of your sensor.

Wiring A2L refrigerant leak detection sensors

About this task

Important: Use only PENN GM200 series A2L refrigeration leak detection sensors with the C550CCN.

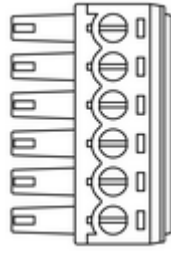
Note: If you use the C550SJM junction module with multiple sensors, ensure each A2L refrigeration leak detection sensor's cable length is a maximum of 50 ft.

Connect up to six A2L refrigerant sensors. If you use one or two A2L refrigerant sensors, wire the sensors to the backplane terminal adapter. If you use more than two A2L refrigerant sensors, attach a C550SJM A2L sensor wiring junction module to your assembly.

Procedure

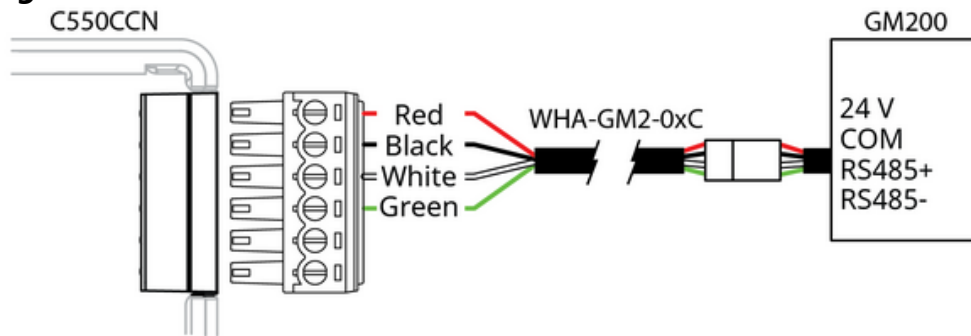
1. Check the front of your A2L refrigerant sensor or sensors. Ensure that all the sensors are calibrated for the type of A2L refrigerant that your HVACR equipment uses. Do not use sensors that are calibrated for different A2L refrigerants.
2. Power off your C550CCN control module.
3. Identify where to connect the first sensor. Choose from the following actions:
 - If you plan to use one or two A2L refrigerant sensors, attach the included backplane terminal adapter to the backplane port of your rightmost System 550 module, similar to how you connect a new module.

Figure 1. Backplane adapter for up to two refrigerant leak detection sensors



- If you plan to use more than two A2L refrigerant sensors, choose any terminal block on the C550SJM A2L sensor wiring junction module for your first sensor.
4. Wire the first A2L refrigerant leak detection sensor.
- Connect the red wire for 24 V power to the top terminal.
 - Connect the black wire for common voltage to the second terminal.
 - Connect the white RS485+ wire to the third terminal.
 - Connect the green RS485- wire to the fourth terminal.

Figure 2. A2L sensor wired to a C550CCN control module with an adapter



Note: The C550CCN module includes the plug-in backplane terminal adapter in [Figure 2](#). Purchase the extension cable and GM200 series A2L refrigerant leak detection sensor separately.

5. Power on the C550CCN control module. The screen on the control module indicates that the new sensor is detected and commissioned.
6. Power off the C550CCN control module. This facilitates connecting more A2L sensors or performing further installation.
7. If you have another A2L refrigerant leak detection sensor to connect, repeat the process. For an installation with two sensors, you can wire the second sensor to the same adapter. For an installation with the C550SJM A2L sensor wiring junction module, choose a different terminal block on the C550SJM for each new sensor.

Note: Ensure that you fully and securely connect the relevant A2L plug-in terminal adapter to the System 550 backplane or the C550SJM junction module terminals, and securely connect all A2L sensor wires, before you use the System 550 for A2L leak mitigation.

Important:

- To avoid creating an error, keep all previous sensors connected, and connect only one new sensor at a time. Power on and off the control

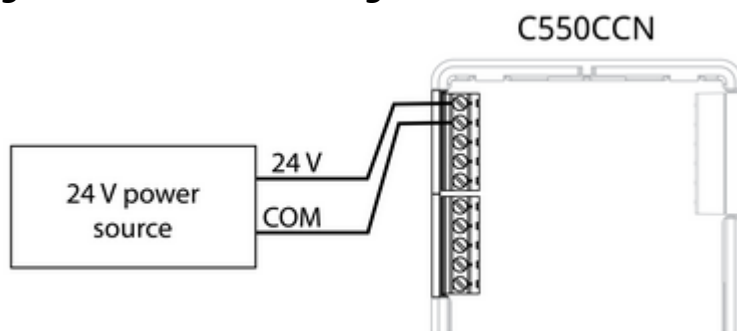
module between the installation of each sensor.

- Follow these instructions exactly. If you connect an A2L sensor incorrectly and the System 550 does not detect it, see [Manually setting A2L sensor addresses with a command line](#).

Wiring the control module to a 24 VAC/DC power source

To power your System 550 assembly with a 24 VAC/DC power source, connect the 24 V and COM terminals on the main control module to the power source. Do not combine this with a System 550 power module, even if one or both are unpowered. This can damage both the C550YNN power module and the 24 VAC external power supply or transformer.

Figure 1. 24 VAC/DC wiring connection to a control module



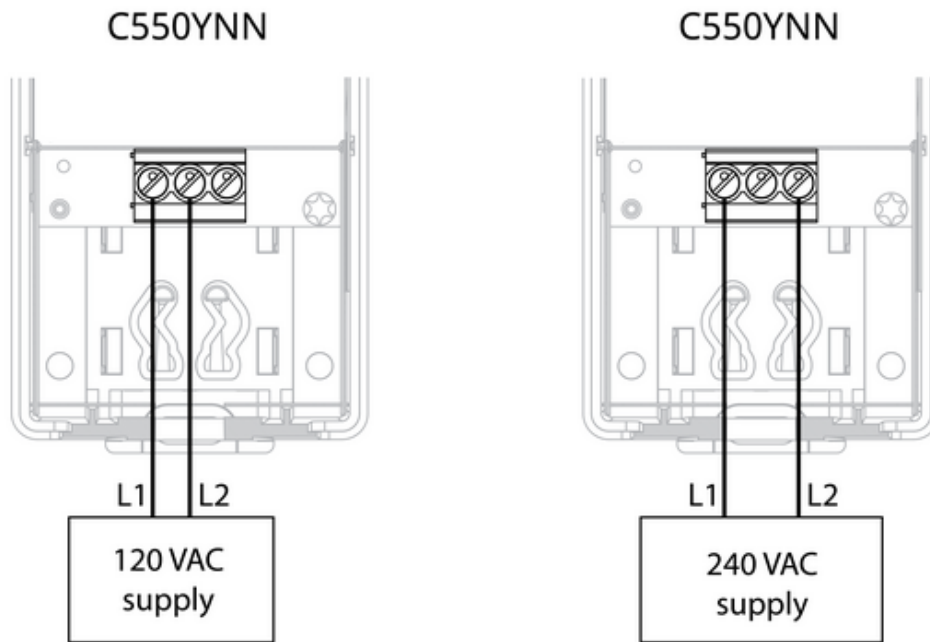
Wiring a C550YNN power module to a line voltage power source

Procedure

1. Disconnect your System 550 control module from all other power sources. Fully remove any power wiring.
2. Identify if the power source is 120 V or 240 V.
3. For 240 V, connect to terminals 1 and 3 on the C550YNN power module. For 120 V, connect to terminals 1 and 2.

Note: The system operates with both 50 Hz and 60 Hz.

Figure 1. C550YNN power module line voltage wiring



Examples of wiring a System 550 assembly

Important: If you use a cable shield for your pressure transducers, ground the cable shield on only one end to an earth grounded connection point or building frame in accordance with standard electrical practices and local codes. Do not wire the cable shield to the common terminals of the System 550 modules. The common terminals do not provide a path to ground.

Figure 1. Example of wiring for controlling heating, cooling, and a condenser fan

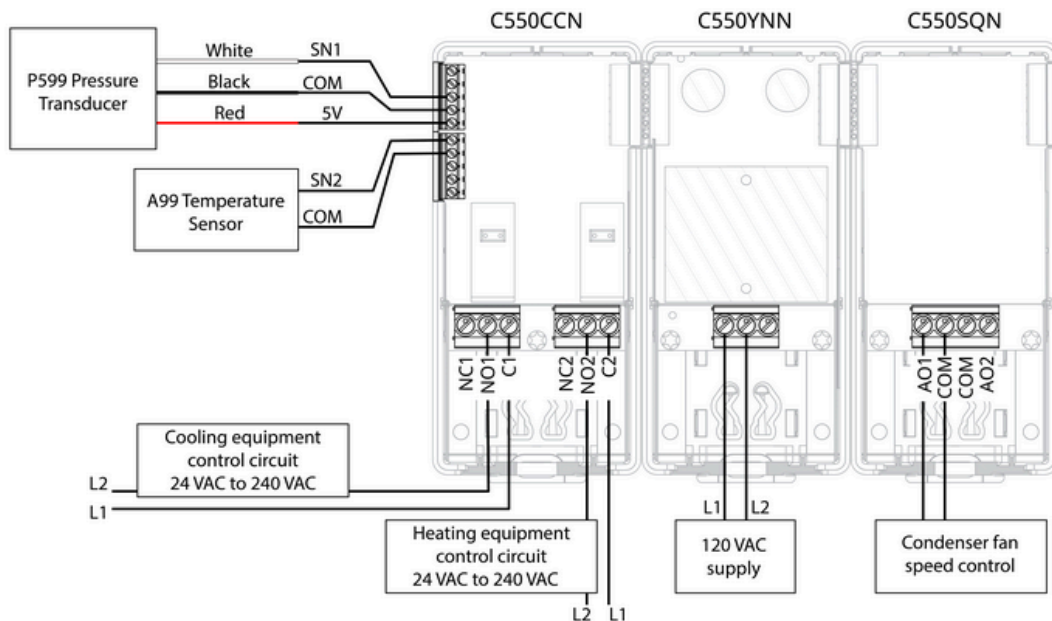
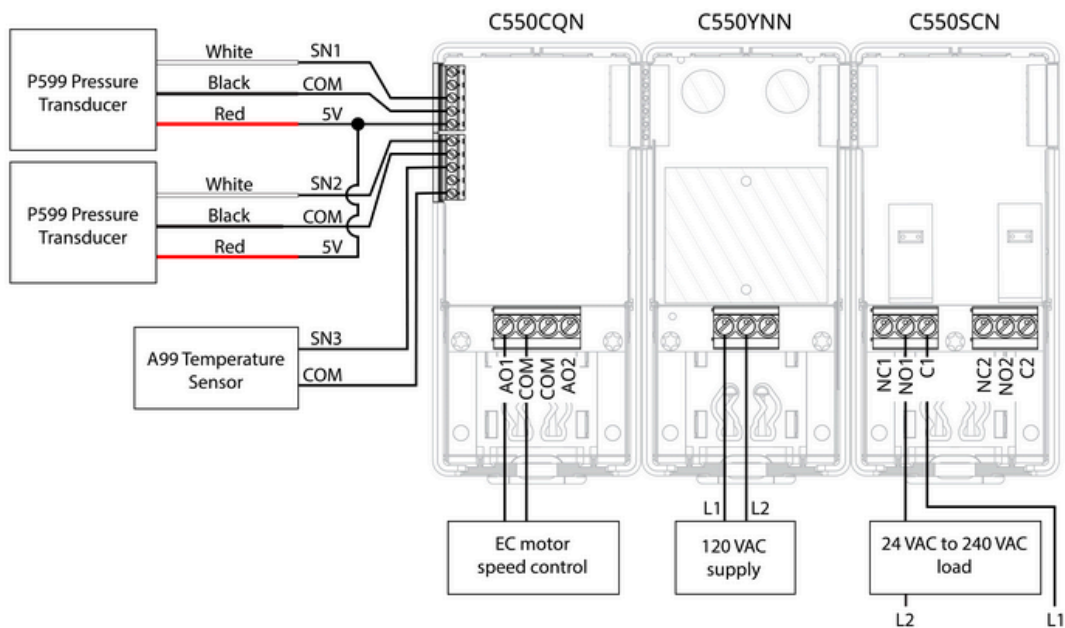


Figure 2. Example of wiring for controlling hybrid analog output for an EC motor



Note: The EC motor speed control is based on 0 VDC to 10 VDC control.

System 550 user interface (UI) basics

The System 550 features a dot matrix screen for intuitive navigation.

System 550 user interface (UI) controls

You can control the UI of the System 550 in three main ways:

Table 1. System 550 UI controls

Action	Main reason
Quickly press and release the dial	<ul style="list-style-type: none"> Select menu item On the idle screen, quickly access the parameter edit screen for the current parameter displayed. See Quickly viewing key information.
Press and hold the dial for five seconds	Access the main menu
Rotate the dial clockwise or counterclockwise	<ul style="list-style-type: none"> Navigate up and down a menu

Action	Main reason
	<ul style="list-style-type: none"> • Change the value of a parameter

Figure 1. Controlling the UI



Quickly viewing key information

About this task

When the control module's screen is idle, the screen cycles to display the following information:

- Each active alarm and warning
- The A2L mitigation application, if enabled
- Each application that you define

Procedure

1. To move quickly between the different screens, rotate the dial clockwise or counterclockwise.
2. To select an application and edit the setpoint, on the screen for that application, quickly press and release the dial.
3. To edit the setpoint, rotate the dial clockwise or counterclockwise.
4. To confirm the new setpoint, quickly press and release the dial.

Note: If you allow a timeout to occur, the screen becomes idle again, and cycles through all of the idle screens. If you do not confirm a new setpoint value before the timeout, the control module does not save the new setpoint value.

Main menu

To open the main menu, press and hold the dial for five seconds. When you enter the main menu, the following submenus are available:

- APPLICATION
- SENSORS
- OUTPUTS
- LEAK DETECT
- ADVANCED

Navigating a menu

Procedure

1. To cycle through the menu options, rotate the dial.

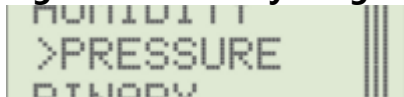
When you highlight a menu option, the black and white pixels of the highlighted menu option invert.

Figure 1. Highlighted menu option



2. To open a submenu, quickly press and release the dial.
3. Continue this process until you find the parameter or list of options that you need. If you view a list of options, the option preceded by the > character is the currently assigned option.

Figure 2. Currently assigned parameter option



4. To select a parameter or option, quickly press and release the dial.

Changing a parameter value

Procedure

1. Highlight the parameter in the menu. Additional information about that parameter may appear indented on the line directly below.
2. To navigate to the parameter's editing screen, quickly press and release the dial.
3. To adjust the value, rotate the dial clockwise or counterclockwise.
4. To confirm the new value, quickly press and release the dial.

Note: If you do not confirm the new value, a timeout occurs after 60 seconds. The value reverts to the previous value and the control module screen reverts to the idle screen.

Entering a text string value

About this task

If a parameter requires a text string value, such as the name of a sensor, complete the following steps:

Procedure

1. To erase the default characters, rotate the dial to select the backspace character and quickly press and release the dial for each character that you want to erase.

Figure 1. The backspace character



2. To select the first character, rotate the dial clockwise or counterclockwise.
3. To confirm the character, quickly press and release the dial. The input advances to the next character.
4. Repeat this process for every character in the text string.
5. To save your new text value, press and hold the dial for two seconds, but less than five seconds. A check mark appears after the final character to indicate that it is the correct time to release the dial.

Note: If you instead press and hold the dial for five seconds the control module navigates back to the previous menu and the control module does not save any changes to the text string.

Figure 2. Entering a text string value



First-time setup

The first time that you power on the control module, the quick access idle screen is not available. The idle screen becomes available when you either set up one application, or enable leak detection.

The first time that you power on the control module, if an OEM has not customized the configuration, leak detection is unlocked and disabled. If you enable leak

detection, you must wire, configure, test, and lock your leak detection setup before you complete the installation of the control module. This ensures regulatory compliance.

Setting up and configuring the system

Use the main menu to complete the system setup.

Setting up the sensors

About this task

To set up temperature, humidity, or pressure sensors, complete the following steps. To set up refrigerant leak detection sensors, see [Setting up A2L refrigerant leak detection](#). By default, the sensor type is set to None.

Procedure

1. Wire the sensors to the control module. See [Wiring](#).
2. In the main menu, select SENSORS. The control module displays a list of sensors corresponding to terminals SN1, SN2, and SN3, depending on how many sensor terminals your control module comes with.
3. Select the sensor that you want to edit, for example SENSOR 1.
4. Configure the name, type, and sub-type of the sensors. See [Changing a parameter value](#).
For example, you could configure a temperature sensor of the subtype A99 temperature sensor, called FREEZER_TEMP.
5. Configure the unit of measurement if applicable.

Setting up pressure sensors that measure negative pressure

During the configuration workflow for a sensor, you select a sensor type and units. If you select pressure sensor as the type, several of the options available include measurements in negative pressure, for example -10 psi to 100 psi, -1 psi to 8 psi, and -1 bar to 15 bar.

If you select a pressure sensor type that measures negative pressure the workflow contains two units screens. In UNITS, assign the unit of measurement that you want for positive pressures. In VACUUM UNITS, assign the unit of measurement that you want for negative pressures.

Note: Differential pressure sensors do not measure vacuum, so the control module does not present the vacuum units option to you for differential pressure sensors.

Table 1. Conversion table between pressure in a vacuum and negative psi

in. Hg in a vacuum	psi setup value	in. Hg in a vacuum	psi setup value
1	-0.5	11	-5.5
2	-1.0	12	-6.0
3	-1.5	13	-6.5
4	-2.0	14	-7.0
5	-2.5	15	-7.5
6	-3.0	16	-8.0
7	-3.5	17	-8.5
8	-4.0	18	-9.0
9	-4.5	19	-9.5
10	-5.0	20	-10.0

Setting up sensor alarms

About this task

By default, sensor alarms are off. To enable and set a sensor alarm, complete the following steps:

Procedure

1. In the main menu, navigate to SENSORS.
2. Navigate to the sensor that you want to set an alarm for.
3. Select HIGH ALARM or LOW ALARM
4. If the alarm is currently off, on the alarm status screen that displays, select ON.
If the alarm is already on, this screen does not display.
5. In the high or low alarm menu that displays, edit the alarm value parameter.

Results

When an alarm is on, the control module enters an alarm state if the measured value passes the alarm value.

Setting up the outputs

Procedure

1. Wire the outputs to the control module or an expansion module. See [Wiring](#).
2. Configure an application. See [Configuring applications](#).

3. In the application that you configure, select OUTPUTS. The control module displays a list of outputs. By default, the names of the outputs are RELAY 1, RELAY 2, ANALOG 1, ANALOG 2 and so on.
4. Select the output you want to set for your application.
5. If you want to change advanced parameters, such as the name of the output, return to the main menu, and navigate to OUTPUTS.
6. Select the output that you want to edit.
7. Change the parameter values.

For relay outputs, you can change the following parameters:

- Name
- Minimum on time
- Minimum off time
- On delay time
- Off delay time

For analog outputs, you can change the following parameters:

- Name
- Minimum output
- Maximum output
- Update rate
- Deadband

The digital name of a physical output

The control modules automatically assigns a default name to each output in your assembly, starting from the left of the assembly and proceeding sequentially to the right. The control module also specifies whether each output is relay or analog in the default name. However, you can change the name of each output to something more meaningful for your application.

Setting up A2L refrigerant leak detection

About this task

A2L refrigerant leak detection and mitigation is available on the C550CCN.

By default, refrigerant leak detection is disabled. If you enable refrigerant leak detection the level of refrigerant detected is measured as a percentage of the lower flammability limit (LFL).

Note: If leak detection is enabled, the alarm always triggers at an LFL level of 20%. You can configure a warning and a shutdown alarm. These alarms trigger at lower LFL levels, to facilitate early detection and reduce the occurrence of mitigation events.

To set up refrigerant leak detection, complete the following steps:

Procedure

1. Wire the refrigerant leak detection sensor.

Note: If you want to wire multiple leak detection sensors, connect them to the system one at a time to avoid an error. See [Wiring A2L refrigerant leak detection sensors](#).

2. Wire all the outputs.
3. In the main menu, navigate to LEAK DETECT.
4. In A2L STATUS, select ENABLE.
5. In NUM OF SENSORS, set the number of sensors.
6. To set an LFL at which a warning triggers, set the parameter A2L WARN LVL. The warning level is informational only and does not put the system into mitigation.
7. To set the LFL at which an alarm triggers, set the parameter LEAK ALARM. The C550CCN has a non-adjustable alarm that triggers and sends the system into mitigation at 20% of the LFL. You can use the adjustable leak alarm to trigger mitigation at a level below 20%.
8. Set the parameter GAS TYPE.

Setting up A2L refrigerant leak mitigation

About this task

To mitigate the flammability risk in the event of a refrigerant leak, you must configure a refrigerant leak mitigation state. The control module enters this state when a refrigerant leak is detected. The control module can only return to normal operation if you manually acknowledge the alarm.

Procedure

1. In the main menu, navigate to LEAK DETECT > OUTPUTS.
2. Configure the mitigation state of each output. You can configure an analog output to 0% or 100%, a relay output to off or on, and either type of output to no effect.
3. Test the refrigeration leak configuration and when you are satisfied that it functions as intended, lock the configuration. See [Locking the refrigerant leak parameters](#) and [Testing the refrigerant leak parameters](#).

Identifying a leak detection sensor by serial number

Procedure

1. In the main menu, navigate to LEAK DETECT > A2L SENSORS.
2. Select a sensor.
3. Select STATUS. The serial number of the sensor displays along with other information.
4. To identify the physical sensor associated with the sensor object in the control module, compare the displayed serial number with the printed serial number on your physical leak detection sensors.

Testing the refrigerant leak parameters

About this task

Test mode simulates a refrigerant leak detection that causes the system to enter mitigation mode. The outputs enter their mitigation state. If the device is licensed on Controls System Cloud, the cloud also sends email and text notifications to the relevant recipients.

Procedure

1. Navigate to LEAK DETECT > CONFIG LOCK and select TEST LOCK.
2. To simulate a mitigation event, navigate to LEAK DETECT > TEST MODE and select MITIGATE.
3. Check that every aspect of the system responds as expected to the mitigation state. The LED and idle screen also behave as if the control module is in mitigation mode.
4. If the device is licensed on Controls System Cloud, check that Controls System Cloud sent the expected notifications. This usually takes less than five minutes, but may take longer in rare cases.
5. To exit the test mitigation mode, set the test mode to NORMAL.
6. To end the test, navigate to LEAK DETECT > CONFIG LOCK and select UNLOCKED.

Locking the refrigerant leak parameters

About this task

If you are an OEM customer, or if you buy the System 550 control module directly from Johnson Controls, you must lock the refrigerant leak parameters when you set up the control module.

To test and lock the refrigerant leak detection parameters, complete the following steps:

Procedure

1. Perform a test of the parameters. See [Testing the refrigerant leak parameters](#). Repeat the test as many times as you need.
2. When you are satisfied that the system responds to a leak as expected, navigate to LEAK DETECT > CONFIG LOCK.
3. Set the configuration lock to TEST LOCK.
4. Perform any further tests that you require.
5. Set the configuration lock to LOCKED.
6. If you are ready to permanently lock the refrigerant leak detection and mitigation parameters, select YES to confirm.

Important: Do not lock the configuration until you are completely confident that your configuration is correct. Mistakes cannot be corrected unless you previously saved a temporary reset backup. Do not permanently store a backup that could undo locking the refrigerant leak parameters.

Replacing an A2L refrigerant leak detection sensor

Procedure

1. Disconnect the old A2L refrigerant leak detection sensor.
2. Wire the new A2L refrigerant leak detection sensor.
If the new sensor is not previously addressed, the control module automatically addresses the new sensor so that it replaces the previous sensor.
3. If the sensor is incorrectly addressed, change the address manually. This could happen if you reuse a sensor. See [Performing advanced tasks with the command line interface](#) and [Manually setting A2L sensor addresses with a command line](#).

Configuring applications

Before you configure an application, ensure that all sensors and outputs are wired and set up.

The System 550 uses an intermediary concept between inputs and outputs called applications. Applications guide you to input only the parameters relevant to the application you are configuring, and are pre-programmed with logical responses to alarm states such as attempting to maintain cooling in the event of overheating on a defrost application. The following application types are available:

- ON/OFF SINGL: Basic on/off control
- ON/OFF STAGE: Staged on/off control
- ANALOG: Analog output control from 0% to 100%
- DEFROST-TIME: Cooling control with time-terminated defrost
- DEFROST-TEMP: Cooling control with temperature-terminated defrost
- DEFROST-ADAP: Cooling control with adaptive defrost

- RESET CTRL: Adjust a setpoint dynamically based on the outdoor air temperature

When you configure the System 550, you define one or more applications. In each application, you define the following:

- The application name
- The application type
- The input sensor or combination of sensors, if applicable
- The output or outputs
- Other parameters specific to the application type

Note: At any time, in the main menu, you can navigate to APPLICATION, select the name of an application that you created, and select a parameter to make changes.

Creating a single on/off application

Procedure

1. Navigate to APPLICATION > NEW APP > ON/OFF SINGL.
2. Select the input sensor or sensors.
3. Select the output.
4. Select the output state that occurs on a sensor fault. See [Setting sensor failure detection](#).
5. Select direct or reverse action.
6. Select the differential or hysteresis. See [Setting a differential or hysteresis](#).
7. Select the setpoint, minimum setpoint, and maximum setpoint.

Creating a staged on/off application

Procedure

1. Navigate to APPLICATION > NEW APP > ON/OFF STAGE.
2. Select the input sensor or sensors.
3. Select the relay output state that occurs on a sensor fault. See [Setting sensor failure detection](#).
4. Select direct or reverse action.
5. Select the number of stages.
6. Navigate to STAGES. For each stage complete the following steps:
 - a. Select the output.
 - b. Select the differential or hysteresis. See [Setting a differential or hysteresis](#).
 - c. If it is the first stage, select the setpoint, minimum setpoint, and maximum setpoint. If it is a subsequent stage, assign an offset, minimum offset, and maximum offset.

Creating an analog application

Procedure

1. Navigate to APPLICATION > NEW APP > ANALOG.
2. Select the input sensor or sensors.
3. Select the output.
4. Select the output state that occurs on a sensor fault. See [Setting sensor failure detection](#).
5. Select the in and out start and end points. See [Setting analog custom input and output start and end points](#).
6. If necessary, set the integration constant. See [Setting up proportional-integral \(PI\) control](#).
7. If necessary, set hybrid control. See [Setting hybrid analog output control](#).

Setting analog custom input and output start and end points

About this task

To set analog input and output parameters, you must first create an analog application.

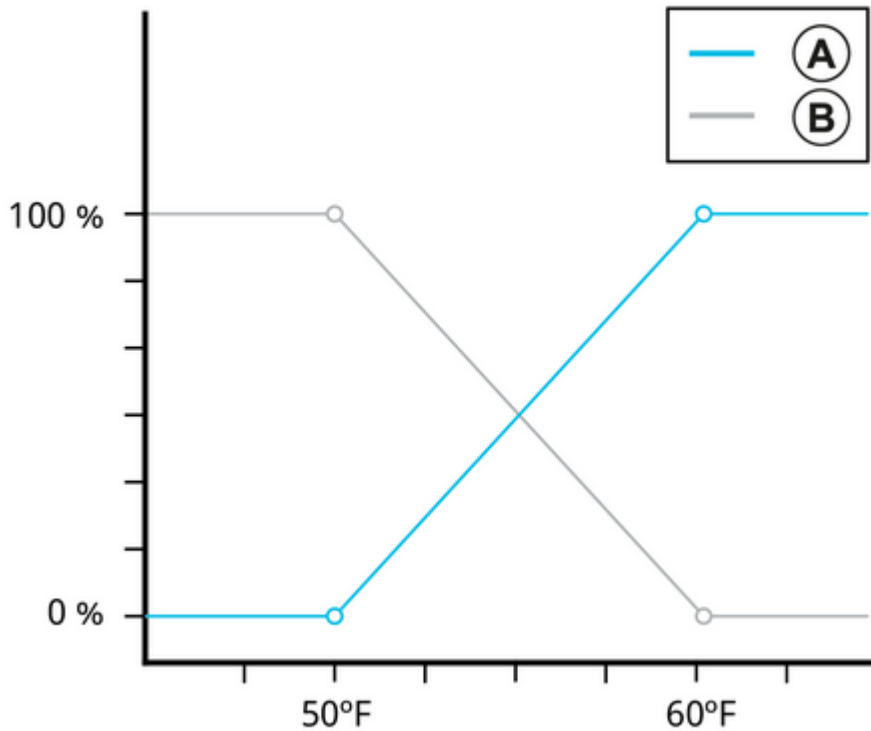
Procedure

1. In your application, set the parameters IN START and IN END.
 - For direct action, set IN START to the low setpoint and IN END to the high setpoint.
 - For reverse action, set IN END to the low setpoint and IN START to the high setpoint.
2. Set the parameter OUT START as the minimum output signal that you want.
3. Set the parameter OUT END as the maximum output signal that you want.

Results

The output corresponds to the configured range of input values. Between the input start and end values, the output interpolates linearly between the output start and end values.

Figure 1. Custom input and output start and end points



Parameter	A	B
	Direct acting	Reverse acting
Input start parameter	50°F	60°F
Input end parameter	60°F	50°F
Output start parameter	0%	0%
Output end parameter	100%	100%

Setting analog reverse action outputs

To set the analog reverse action outputs, reverse the input start and end times described in [Setting analog custom input and output start and end points](#).

Setting hybrid analog output control

About this task

Some 0 VDC to 10 VDC controlled EC motors have trouble when the output signal is low. For EC motors that have trouble when you try to run them at low speeds, for example at less than 30% of their nominal RPM, you can use a hybrid analog output. Below a configured minimum value such as 30%, hybrid analog output pulses the output on and off at a fixed low speed to achieve the same result as directly decreasing the speed below 30%.

To enable a hybrid analog output, you must first create an analog application.

Procedure

1. In your application, set all the other parameters in your analog application as normal, such as the output signal start and end points.
2. Set the parameter HYBRID to on. The HYBRID ON menu displays.
3. In the HYBRID ON menu, set the minimum value and period parameters.
4. In the HYBRID ON menu, select BACK.

Setting the analog output update rate

See [Setting up the outputs](#).

Setting up proportional-integral (PI) control

About this task

When the integration constant is zero, integral control is not enabled and the output is proportional only. By default, integral control is not enabled. Setting the integration constant to a value higher than zero makes the application a PI control application. In some cases, PI control prevents overshoot and undershoot so that the control is closer to the setpoint.

Note:

- PI control is not suitable for every application. If you use PI control other than as intended, the control module can overshoot the setpoint and cause the output to oscillate or undershoot and fail to reach the setpoint in time.
- If you enable PI control, closely observe the operation of the controlled equipment for several cycles before you leave the installation.

For applications with a large, constant load, use PI control so that the control is closer to the setpoint. To set integral control, complete the following steps.

Procedure

1. In your application, set the application type to ANALOG.
2. Set the parameter INT CONSTANT to the required value.
3. Refine your integration constant to prevent overshoot and undershoot. See [Determining an integration constant by trial and error](#) and [Determining an integration constant using the response time to a step change](#).

Determining an integration constant by trial and error

About this task

In this task you determine the best integration constant for an analog output by testing the slowest to fastest time integrals until you find the right one. You add to the integral constant one by one until it is too much, then you subtract from it to achieve the correct value.

Procedure

1. Set the integration constant to zero.
2. Power on the controlled system under standard conditions.
3. Allow the system to stabilize at a control point between the start and end points of your analog application.
4. Set the integration constant to one.
 - If the control point overshoots the setpoint, proceed to the next step.
 - If the control point stabilizes closer to the setpoint but does not overshoot, set the integration constant to the next value. Keep testing integration constants incrementally until a value overshoots the setpoint.
5. Continue to observe the control point after it overshoots. Ideally, the control point drifts past the setpoint a little, then drifts back to the setpoint. If the control point drives significantly beyond the setpoint, reverses quickly and overshoots again, and begins to oscillate significantly above and below the setpoint, set the integration constant to the previous value.
6. Operate the control application under a variety of different conditions, including the maximum load condition. If the control point oscillates significantly at any point, set the integration constant to the previous value and continue testing.

Results

If the control point reliably drifts past the setpoint slowly, but reverses and drifts slowly to the setpoint without any significant oscillation, your integration constant is correct.

Determining an integration constant using the response time to a step change

Before you begin

To perform this procedure, you need a voltmeter set to VDC.

Procedure

1. Set the integration constant to zero.
2. Power on the controlled system under standard conditions.

3. Allow the system to stabilize at a control point between the start and end points of your analog application.
4. Connect the voltmeter across the analog output terminals.
5. Measure and record the signal strength voltage at this original stable control point.
6. Calculate the difference between the input start and end points for the analog application. This is the size of the proportional band.
7. Increase the input start and end points by 25% of the size of the proportional band.
 For example, if the input start point is 60°F and the end point is 72°F, then the size would be 72°F - 60°F = 12°F. Twenty-five percent of 12°F would be 3°F. Therefore, you would increase the input start and end points to 63°F and 75°F. Decreasing both by the same amount also works.
8. Time the response of the VDC signal immediately as it responds.
9. Record the time that it takes for the measured VDC signal to stabilize at the new control point.
10. Return the input start and end points to their original values and time the response until the VDC signal stabilizes again.
11. Compare the slower of the two times that you recorded against the following table to determine a likely integration constant.

Table 1. Response times and integration constants

Recorded response time	Likely integration constant	Estimated response time with an integration constant
N/A	0	N/A
10 min to 15 min	1	26 min
6 min to 10 min	2	13 min
3 min to 6 min	3	6.5 min

12. Set the integration constant to the likely value. Observe the controlled system at a variety of load conditions and adjust your integration constant as needed. See [Determining an integration constant by trial and error](#).

Creating a defrost application

Before you begin

Before you create a defrost application, set the time and the clock type in the ADVANCED menu. See [Setting the time](#).

Procedure

1. Navigate to APPLICATION > NEW APP and choose the type DEFROST TIME, DEFROST TEMP, or DEFROST ADAP, depending on whether your application uses timed defrost, temperature-based defrost, or adaptive defrost.

2. Set COMP OUTPUT to the compressor output relay.
3. Set HEAT OUTPUT to the heater output relay.
4. If you need an evaporator fan or fans, set FAN OUTPUT to the fan output. By default this is set to None.
5. Set the appropriate values from the following table, depending on whether your application uses timed defrost, temperature-based defrost, or adaptive defrost.

Table 1. Defrost parameters

Parameter	Timed	Temperature	Adaptive
Defrost type	x	x	x
Space sensor The sensor for cooling.	x	x	x
Space setpoint The setpoint for cooling.	x	x	x
Sensor fault The output state that occurs on a sensor fault.	x	x	x
Compressor output	x	x	x
Heater output	x	x	x
Fan output	x	x	x
Differential See Setting a differential or hysteresis .	x	x	x

Parameter	Timed	Temperature	Adaptive
Fan delay	x	x	x
Drip time	x	x	x
Number of cycles	x	x	—
Cycles	x	x	—
Defrost time The defrost time for each defrost cycle.	x	—	—
Termination sensor The temperature sensor for defrost termination.	—	x	x
Termination temperature The temperature at which defrost termination occurs.	—	x	x
Minimum setpoint	—	x	x
Maximum setpoint	—	x	x
Maximum time	—	x	—
Adaptive interval The default interval between defrost cycles, in hours.	—	—	x
	—	—	x

Parameter	Timed	Temperature	Adaptive
Blackout time The start time of a blackout period during which a defrost cannot occur regardless of adaptive defrost functionality.			
Blackout span The duration of a blackout period	—	—	x
Minimum time between defrost cycles	—	—	x
Maximum time between defrost cycles	—	—	x
Maximum duration	—	—	x

Results

In an electric defrost phase, the heater is always on. In a defrost phase and drip time phase, the evaporator fan or fans are always off.

Creating a reset control application

Before you begin

First, create the application that you want to apply reset control to. Then create the reset control application.

Procedure

1. Navigate to APPLICATION > NEW APP > RESET.
2. Select the minimum and maximum input and output temperatures.
3. Choose the application that you want to apply reset control functionality to.

Setting control based on a highest, lowest, or average sensor input

About this task

You can control an output based on the combined measurements of multiple sensors.

Note: You must use an identical model of sensor for all the sensors that you want to combine.

Procedure

1. Set your application to a type that supports a combination of sensors.
2. In your application, select SENSOR > COMBINATION.
3. To use the highest measurement, select MAXIMUM. To use the lowest point, select MINIMUM. To use the average of measurements, select AVERAGE.
4. To assign the multiple sensors, highlight the sensors that you want to combine, and quickly press and release the dial on each one to assign the sensors.
5. Select BACK.

Examples of controlling an output based on a highest input value

The following procedure is an example that uses a C550C control module to control a multi-circuit condensing unit to turn on and off fans based on the highest refrigerant pressure sensed at the coils.

Note: Only C550C models support two pressure sensors.

To control a system with single-speed fan motors, use relay outputs and complete the following steps:

1. Install the System 550 assembly. See [Installation](#).
2. Install two identical pressure sensors, one on each of the condenser circuit pressure ports.
3. Configure the pressure sensors in the System 550 as pressure sensors.
4. Wire the System 550 relay outputs to turn on and off the fans.
5. Configure a staged on/off application to control the fans based on the highest input value from the two pressure sensors.

To control a similar system with variable speed fan motors, modify the example to use analog outputs and an analog application instead of relay outputs and a staged on/off application.

Setting control based on the difference between sensor inputs

About this task

You can control an output based on the combined measurements of a number of sensors. For differential control, use analog outputs.

Note: You must use an identical model of sensor for all the sensors that you want to combine.

Procedure

1. Set your application to a type that supports a combination of sensors, see [Setting up the sensors](#).
2. Select SENSOR > COMBINATION > DIFFERENCE.
3. In + SELECT, configure the sensor measurement that the application uses as the positive measurement.
4. In - SELECT, configure the sensor measurement that the application subtracts from the positive measurement.

Setting sensor failure detection

Procedure

1. In your application, select SENSOR FAULT.
2. From the list of options, select the output state that you want if a fault is detected with any of the configured sensors.

Setting relay direct and reverse action outputs

About this task

You can set up your applications for direct or reverse action. In direct action, an increase in the measured value results in a positive action such as turning on a compressor to start cooling. In reverse action, a decrease in the measured value results in a positive action, such as turning on a heating element. Direct action is often used for cooling. Reverse action is often used for heating.

Procedure

1. Set your application type to a type that supports relay outputs.
2. In OUTPUT, assign at least one relay output.
3. In ACTION, select DIRECT or REVERSE.

Setting a differential or hysteresis

About this task

For on/off applications you must set a differential value to keep the controlled measurement within that distance of the setpoint. To set a differential, also known as a hysteresis, complete the following steps:

Procedure

1. Ensure your application type is on/off single, on/off staged, or defrost.
2. Navigate to your application.
3. In your application, select DIFFERENTIAL.
If your application type is on/off staged, navigate to STAGES, select each stage, and select DIFFERENTIAL. Repeat the procedure for each stage.
4. Rotate the dial to select a new differential value.
5. To assign the new value, quickly press and release the dial.

Setting the time

About this task

Note: You must set the time if you create a defrost application.

Procedure

1. In the main menu, navigate to ADVANCED > SET TIME.
2. Choose 12 hour or 24 hour.
3. Set the hours and minutes.
4. If you use a 12 hour clock, set A for AM or P for PM.

Setting the screen brightness

About this task

The backlight displays brightly in the active state. When you do not interact with the control module for 60 seconds, it enters the standby state. To change the brightness of the active or standby state, complete the following steps:

Procedure

1. In the main menu, navigate to ADVANCED > BACKLIGHT.
2. Select ACTIVE and change the value to a number from 1 to 10. This is the level of brightness when you interact with the control module. A preview of the brightness occurs when you change the value.
3. To save the new brightness value, quickly press and release the dial.
4. Select STANDBY and change the value to a number from 1 to 10, or off. This is the level of brightness when the control module has been idle. A preview of the brightness occurs when you change the value.
5. To save the new brightness value, quickly press and release the dial.

Accessing the local web page

About this task

The control module is a Wi-Fi access point that can serve a local web page to your laptop or phone. The control module's local web page facilitates you to import and export configurations, view A2L leak detection sensor information, view diagnostics, and connect to the cloud.

Procedure

1. On the control module, navigate to the main menu.
2. Navigate to ADVANCED > CONNECTIVITY > WIFI > WIFI AP.
3. Choose from the following options:
 - Select QR CODE and with your phone, scan the QR code that displays on the control module screen.
 - Select WIFI INFO and connect your laptop or phone to the Wi-Fi SSID on the control module screen. On your laptop or phone, enter the password that the screen displays.

Note: The character for the number zero contains a slash. The character for the letter O does not contain a slash.

4. In your laptop or phone's internet browser, navigate to <http://192.168.142.1>. Alternatively, scan the QR code at WIFI AP > WEBPAGE > QR CODE.

Results

The control module's local web page opens on your laptop or phone.

Importing and exporting configuration files

About this task

You can import and export configurations to and from control modules to quickly duplicate the same configuration to many different control modules. To import and export configuration files through the local web page, complete the following steps on a laptop. If you have sufficient storage space, you can also use a phone.

Procedure

1. Access the local web page on your laptop. See [Accessing the local web page](#).
2. Complete one of the following steps:

- To export the control module's existing configuration, on the web page in the Config File Transfer tab, click Download Configuration and save the file.
- To import a configuration file to the control module and override its current configuration, on the web page in the Config File Transfer tab, click Choose File and select the file from your laptop's file storage.

Creating a configuration and firmware backup

About this task

Important: Johnson Controls strongly recommends that you create a configuration and firmware backup as soon as your configuration and testing of the System 550 assembly is complete.

This backup also functions as your reset point, instead of a factory reset.

Procedure

1. Export your configuration.
2. Save your configuration file in a permanent and easily accessible location on your company's computing network.

Results

In the event of an issue with your System 550, you can import your reset backup to serve as your factory reset. The import also restores your configuration.

Performing advanced tasks with the command line interface

About this task

OEM installers, or installers with experience in command line prompts, can perform advanced tasks with the command line interface. These tasks make mass configuration updates easier.

Note:

- The following instructions are for a PC running Windows®.

Procedure

1. Connect a USB-A to USB-C cable between your PC and the control module.

2. On your PC, in the taskbar, in the search box, search for and open Device Manager.
3. In Device Manager, expand the Ports section.
4. Determine the COM port of your control module from the list of devices. Each device displays its COM port in parentheses after the name of the port.
5. Open a terminal emulator such as PuTTY. Many terminal emulators are available for download on the Internet.
6. Open a terminal with the control module's COM port. Enter the following details:
 - Serial line: COM plus the number of your COM port, with no spaces
 - Speed: 9600
 - Connection type: Serial
7. Click Open.
8. Press enter. The prompt `cmd>` appears.
9. Complete one of the following tasks.

Exporting configuration files with a command line

Procedure

1. After you set up the command line interface, in the terminal command prompt, type `config`.
2. Press enter.
3. Copy the text string that the command returns.
4. Paste the text string into a plain text application such as Notepad.
5. Save the plain text file.

Importing configuration files with a command line

Procedure

1. After you set up the command line interface, open your configuration file in a plain text application such as Notepad.
2. Copy the full text string.
3. In the terminal command prompt, type `config <pasted text>`. Substitute `<pasted text>` with the full text string of the configuration file.
4. Press enter.

Manually setting A2L sensor addresses with a command line

About this task

If you encounter issues commissioning an A2L sensor, the issue may be that the address is incorrect. This may occur if you incorrectly install your A2L sensors, or if you reuse a GM200 A2L refrigerant leak detection sensor that has already been addressed. Complete the follow steps to reset an A2L sensor's address for any reason, including if you want to reset a used A2L sensor to its default address.

Procedure

1. Ensure that only one GM200 A2L refrigerant leak detection sensor is connected. This procedure does not work with more than one A2L sensor connected.
2. After you set up the command line interface, type `a2l-adr`.
3. Press enter.

The control responds with a list of currently connected A2L sensors that it recognizes. The address with the status `ONLINE` is the connected sensor.

Figure 1. Command line A2L sensor readout

```
CLI> a2l-adr
A2L num detected: 1 config: 1
Adr: 0x40, Status: ONLINE, Gas Type: R454B, Age: 0, LFL: 0, SN: 500000289405, Reads: 1, RFAILs: 0, EN: 1, LE: 0
Adr: 0x41, Status: NO DATA, Gas Type: NO DATA, Age: 0, LFL: 0, SN: NO DATA, Reads: 0, RFAILs: 1, EN: 0, LE: 263
Adr: 0x42, Status: NO DATA, Gas Type: NO DATA, Age: 0, LFL: 0, SN: NO DATA, Reads: 0, RFAILs: 1, EN: 0, LE: 263
Adr: 0x43, Status: NO DATA, Gas Type: NO DATA, Age: 0, LFL: 0, SN: NO DATA, Reads: 0, RFAILs: 1, EN: 0, LE: 263
Adr: 0x44, Status: NO DATA, Gas Type: NO DATA, Age: 0, LFL: 0, SN: NO DATA, Reads: 0, RFAILs: 1, EN: 0, LE: 263
Adr: 0x45, Status: NO DATA, Gas Type: NO DATA, Age: 0, LFL: 0, SN: NO DATA, Reads: 0, RFAILs: 1, EN: 0, LE: 263
```

4. To set the sensor to a new address, type `a2l-adr --old <old decimal address> --new <new decimal address>`. Replace the angle brackets with the appropriate addresses.

For example, to set the sensor at address 0x40 back to the factory default address, type `a2l-adr --old 64 --new 85`. This changes the sensor at address 64 (0x40 hex) to 85 (0x55 hex).

Table 1. A2L sensor address conversion table

Sensor	Hex address	Decimal address
Factory default	0x55 hex	85
Assigned as Sensor 1	0x40 hex	64
Assigned as Sensor 2	0x41 hex	65
Assigned as Sensor 3	0x42 hex	66
Assigned as Sensor 4	0x43 hex	67
Assigned as Sensor 5	0x44 hex	68
Assigned as Sensor 6	0x45 hex	69

5. Press enter.
6. If you reset an A2L sensor to the default address, power off the control module and disconnect the A2L sensor. You can now install the A2L sensor with the

default address by the normal method. During installation, the control module automatically assigns the correct new address to the sensor.

Alarms and warnings

The System 550 comes with a variety of alarms. Sensor failure alarms are non-adjustable, and occur if the sensor is outside of the expected measurement range for the type of sensor that you define. High and low alarms are disabled by default. You can enable and adjust high and low alarms. See [Setting up sensor alarms](#) and [Setting up A2L refrigerant leak detection](#).

Table 1. System 550 alarms and warnings

Type	Alarm	Warning
Temperature	<ul style="list-style-type: none"> • High temperature alarm • Low temperature alarm • Sensor failure alarm 	—
Pressure	<ul style="list-style-type: none"> • High pressure alarm • Low pressure alarm • Sensor failure alarm 	—
Humidity	<ul style="list-style-type: none"> • High humidity alarm • Low humidity alarm • Sensor failure alarm 	—

Type	Alarm	Warning
<p>A2L refrigerant leak detection sensor</p> <p>C550CCN only</p>	<ul style="list-style-type: none"> • Leak detect alarm • Sensor fault alarm • Sensor end of life alarm • Sensor communication failure alarm • Sensor gas type mismatch alarm 	<ul style="list-style-type: none"> • LFL warning • Near end of life warning • A2L configuration unlocked • A2L configuration test-locked
Defrost	<ul style="list-style-type: none"> • Defrost termination error • <p>The defrost termination error triggers if a temperature-based defrost cycle is terminated by maximum duration.</p>	<ul style="list-style-type: none"> • Defrost notice <p>The defrost termination warning triggers if the sensed temperature is already at the termination temperature when a scheduled defrost cycle is due to start.</p>
System level	<ul style="list-style-type: none"> • Bus alarm <p>The bus alarm triggers if a communication failure occurs between the configured modules.</p>	—

If a warning triggers, the warning LED turns on. A warning screen is added to the cycling screens on the idle screen. When the warning condition ends, the warning screen automatically disappears from the idle screen.

If an alarm triggers, the alarm LED turns on for as long as the alarm condition persists. An alarm screen is added to the cycling screens on the idle screen. For temperature, pressure, humidity, and A2L refrigerant leak detection alarms, you can configure the override output signal that the outputs are set to in response to an alarm. After an alarm condition ends, the alarm LED stays on and the alarm screen remains until you acknowledge the alarm.

For defrost, the alarm clears automatically when the next defrost cycle triggers, unless the alarm condition persists.

For leak detection, you can lower the leak detection alarm level, but not raise it from the default setting. If the leak detection alarm triggers, the system enters a state of refrigerant leak mitigation. The outputs are set to their configured mitigation state signal. An alarm screen is added to the cycling screens on the idle screen. The alarm screen displays the name of the sensor with the highest LFL reading.

If your control module is subscribed and registered for Controls System Cloud, when an alarm or warning triggers, the control module notifies the cloud. Controls System Cloud automatically sends an SMS message or email to all defined recipients.

Acknowledging an alarm

To clear an alarm you must both resolve the alarm condition and also acknowledge the alarm.

Acknowledging a normal alarm

Procedure

1. To view the alarm, on the idle screen, rotate the dial left or right.
2. To access the acknowledgment screen for the alarm, quickly press and release the dial.
3. To acknowledge the event, select CONFIRM.

Results

If the alarm condition is no longer true, the acknowledgment clears the alarm screen and the alarm LED immediately. If the alarm condition is still true, the acknowledgment clears the alarm screen and the alarm LED when the alarm condition ends.

Alternatively, you can acknowledge normal alarms in Controls System Cloud. See [Viewing live event details](#).

Acknowledging an A2L refrigerant leak detection alarm

After the LFL returns below the alarm trip point, the mitigation state of operation remains for a minimum of five minutes. After five minutes below the alarm trip point, the RESUME PROCESS screen appears.

1. Respond to the prompt.
 - To resume the control module's normal functionality, select YES.
 - To maintain mitigation operation for another five minutes, select NO.
2. Acknowledge the alarm on the idle screen as normal.

Alarm example

The following information is an example of how an installer might set up alarms.

In a cooling application for a refrigerator, the installer wants to use the System 550's defined on/off temperature control application to keep the refrigerator at 35°F. The installer sets a high temperature alarm at 40°F to indicate if there is a problem with the control system that causes the temperature to rise. If the high alarm triggers, the end customer can fix the system or move their refrigerated product out of the inadequately cooled space before it becomes an issue.

The installer also wants to protect against the product freezing. The installer sets the low temperature alarm to 32°F. If the compressor becomes stuck on, or some other failure happens, the low alarm triggers.

Controls System Cloud

Controls System Cloud is an optional subscription-based service. Some of the key benefits of using Controls System Cloud include the following features:

- Receive notifications by email or SMS, see [Changing the notification settings for a site](#).
- View and download the telemetry data for up to the last 30 days.
- Remotely modify application values such as setpoint values.
- Remote defrost functionality.

Subscription

To enable cloud connectivity for your device, you need a paid subscription. Work with your field service company to set up cloud connectivity.

Your field service company

To set up Controls System Cloud functionality, ask your field service company to register as a System 550 field service company, if they are not already registered. Work with your field service company to perform the installation and to register the C550 control module with the cloud while the field service technician is on site. It is also possible to register with Johnson Controls as your own field service company for the purposes of using Controls System Cloud. This requires you to create a field service account first, and then to create an end customer account with a second email address.

When you partner with a registered field service company, you can access their contact information through Controls System Cloud. They can access a dashboard for all telemetry data for every site that they service.

Controls System Cloud terminology

Persona

The user's role and permissions

Site

Your C550 control module's location

Device

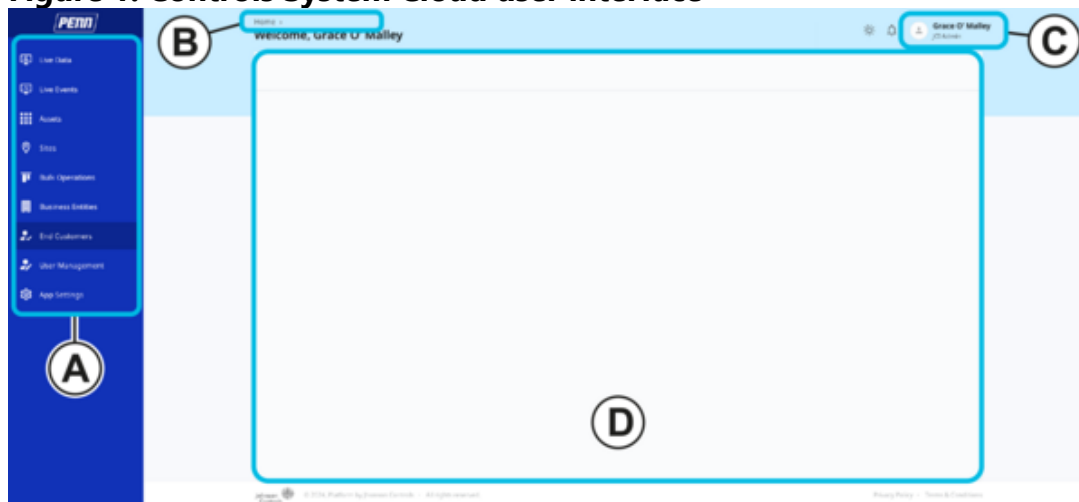
The C550 control module

Device Control Panel

A menu in Controls System Cloud that contains device-specific tabs and actions.

The Controls System Cloud user interface

Figure 1. Controls System Cloud user interface



Callout	Description
A	Sidebar
B	Path to the currently displayed page
C	Your username and persona

Callout	Description
D	Page content

Cloud personas and permissions

Controls System Cloud accounts are classified by persona. Depending on the persona of your account, you may or may not have permission to perform different tasks. Field service companies only have access to the sites that an end customer assigns to them.

Table 1. Cloud personas and permissions

Task	Field service		Facility		
	Manager	Technician	Admin	Manager	User
Creating an end customer account for a customer	x	x	—	—	—
Creating a site	—	—	x	x	—
Viewing the information for a site	x	x	x	x	x
Viewing live telemetry data	x	x	x	x	x
Viewing historical trends	x	x	—	—	—
Downloading telemetry data	x	x	—	—	—
Viewing live event details	x	x	x	x	x
Changing the notification settings for a site	—	—	x	x	—
Changing the notification settings for a control module	x	x	x	x	—
Registering a control module in Controls System Cloud	x	x	—	—	—
Remotely registering a control module in Controls System Cloud	x	x	—	—	—
Purchasing a subscription of licenses	x	x	—	—	—
Licensing a control module	x	x	—	—	—
Sending remote OTA operations	x	x	—	—	—
Sending remote ping operations	x	x	—	—	—
Sending remote defrost operations	x	x	—	—	—
Sending remote reboot operations	x	x	—	—	—

Task	Field service		Facility		
	Manager	Technician	Admin	Manager	User
Sending remote device diagnostics operations	x	x	—	—	—
Modifying a device name	x	x	—	—	—
Remotely modifying C550 control module setpoint values	x	x	—	—	—
Viewing the contact details of your field service company	—	—	x	x	x
Re-mapping a control module to a new site	—	—	x	—	—
Re-mapping a user to a new site	—	—	x	x	—
Assigning and revoking a user's access to an individual C550 control module for a site that you have access to	x	x	x	x	—
Changing to a new field service company	—	—	x	x	—

Table 2. Permissions to create a new user

New user	Field service		Facility		
	Manager	Technician	Admin	Manager	User
New field service manager	—	—	—	—	—
New field service technician	Manage Users tab	—	—	—	—
New facility admin	End Customers tab	End Customers tab	—	—	—
New facility manager	—	—	Manage Users tab	—	—
New facility user	—	—	Manage Users tab	Manage Users tab	—

Logging on with new logon credentials

Procedure

1. If it is your company's first time logging on, contact your field service company and request logon credentials. You receive an email.
2. Click the link the email to activate your account. Follow the steps to set up your password and authentication.
3. In your internet browser, navigate to <https://controlssystemcloud.jci.com>.
4. Click Sign in.
5. In the username field, enter the same email address that your field service company sent the activation email to.
6. Click Next.
7. On the verification screen, click Send me an email.
8. Enter the one-time verification code and click Verify.
9. Complete any other verification steps that you set up.

Results

The Controls System Cloud home page displays.

Changing the password

Procedure

1. Log on to the Controls System Cloud.
2. Click on your username in the upper-right corner.
3. Click My Account.
4. Click Reset Password.
5. On the authorization platform that opens, update your account settings.
6. After you change your password, to return to the Controls System Cloud, in the My Apps category, click C550.

Creating a field service company account

About this task

This is a field service company task.

Procedure

1. If it is your company's first time logging on as a field service company, navigate to <https://controlssystemcloud.jci.com>
2. Click FSC Sign-Up.
3. Complete the information in the Sign Up form.
4. Click the I'm not a robot check box and complete the verification if prompted.
5. Click Submit. You navigate to a verification screen.

6. Check your emails. and on the verification screen, enter the authentication code. Click Verify.
7. Click Sign in.

Creating an end customer account for a customer

About this task

This is a field service company task.

Procedure

1. In Controls System Cloud, on the sidebar, click the End Customers tab.
2. Click the magnifying glass icon and search for the customer's email address.
3. If the customer account does not exist, click +.
4. Complete the customer registration form, and click Save.

Creating a new user for your facility or field service company

Procedure

1. In Controls System Cloud, on the sidebar, click the Manage Users tab.
2. To open the Add User pop-up window, click the + button.
3. Enter the user's details in the required fields. The role that you can assign them depends on your own role.
4. Click Save.

Results

The new user gets an email. After they create logon credentials they can access Controls System Cloud.

Creating a site

About this task

This is an end customer task.

Procedure

1. In Controls System Cloud, on the sidebar, click the Sites tab.

2. Click the + button.
3. In the Add New Site window, complete the appropriate fields.
4. In the final field, type the name of your field service company and click the correct auto-completed result.
5. Click Save.

Viewing the information for a site

Procedure

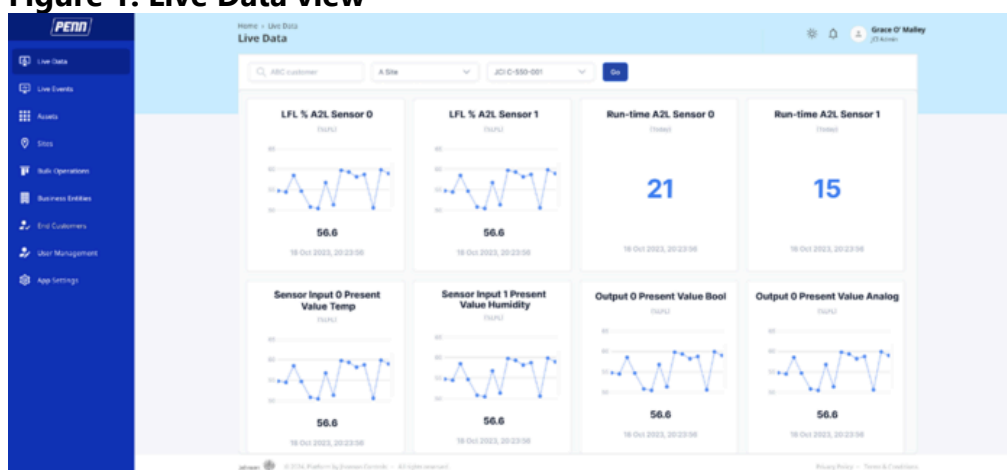
1. In Controls System Cloud, on the sidebar, click the Sites tab.
2. To view details about the site, click the eye icon in the column that you want information about. For example, to see a list of the control modules at a site, click the eye icon in the Assets column.

Viewing live telemetry data

Procedure

1. To view live telemetry data, in Controls System Cloud, on the sidebar, click the Live Data tab.
2. If you have a field service company persona, search for the end customer in the drop-down list.
3. Search for the site in the drop-down list.
4. Search for the device in the drop-down list.
5. To view telemetry data and force an update of the telemetry data, click Go. By default, the live telemetry data updates every ten minutes.

Figure 1. Live Data view



Accessing the Device Control Panel

About this task

The device control panel is a menu in Controls System Cloud that contains device-specific tabs and actions. To access the device control panel, complete the following steps:

Procedure

1. In Controls System Cloud, on the sidebar, click Devices.
2. If you have a field service company persona, search for the end customer in the drop-down list.
3. If you have a persona that manages multiple sites, search for the site in the drop-down list.
4. Click Go. Your assets render as a table.
5. For the asset that corresponds to the C550 control module you want to view, click Launch.

Viewing historical trends

About this task

You can view up to the last 30 days of telemetry data history.

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. In the expanded sidebar, navigate to Monitor > Telemetry.
3. Click between the following tabs to view telemetry data for the asset:
 - Latest Trend Analysis: The single most recent point of telemetry data.
 - Recent Trend Analysis: The latest 15 points of telemetry data.
 - Historical Trend Analysis: One to seven days' worth of telemetry data from the last 30 days.
4. For Recent Trend Analysis and Historical Trend Analysis, click the filter button in the top right corner, select the widgets that you want from the drop-down list, and click Apply. For Historical Trend Analysis, also select a start and end date.

Downloading telemetry data

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. In the expanded sidebar, navigate to Monitor > Telemetry.
3. Click the Download tab.

4. In the drop-down lists, select the duration and input-output point details that you want to capture.
5. Click the download icon next to the drop-down lists.

Viewing live event details

To view live event details, in Controls System Cloud, on the sidebar, click the Live Events tab. To force an update of the event data, click Go at any time.

- To access a customer's live event data as a field service company, search for the end customer in the first drop-down list at the top, and click Go. For each site, an information tile displays. For end customers, this step is not necessary.
- To see an overview of alarms for all the control modules registered at a site, choose from the following options:
 - Select a site from the site drop-down list at the top and click Go.
 - In the customer overview, on a site tile, click View Detail.
- To view a detailed alarm history for a particular control module, choose from the following options:
 - Select the site and control module from the drop-down lists at the top and click Go.
 - In the site information, on a control module's tile, click View Detail.
- To acknowledge an alarm, in the detailed view for the control module, in the list of events, click the thumbs up icon next to the alarm that you want to acknowledge.

Notifications

Controls System Cloud notifies any users listed in the notifications settings when an event occurs. The following events are some of the events that trigger notifications:

- A device goes offline.
- A critical or alarm event occurs.
- A new user is created.
- An account is updated.

Changing the notification settings for a site

Procedure

1. In Controls System Cloud, on the sidebar, click the Sites tab.
2. If you are a field service company, in the drop-down list at the top, select the end customer.
3. Next to the site that you want to change, click the Eye icon under Site wise notification settings.
4. In the pop-up window, Click Edit.

5. In the SMS field, from the drop-down list, select the end user that you want to assign.
6. In the Email field, from the drop-down list, select the end user that you want to assign.
7. Click the X next to an assigned user if you want to remove them from that type of notification.
8. Click Save.

Changing the notification settings for a control module

About this task

This is an end customer task.

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. Scroll to the bottom of the Device Info page.
3. Next to Notification Settings, click the Edit button.
4. In the email or SMS rows, from the drop-down list, choose the people that you want to add to the notification settings. Click the X to remove notifications for an existing person.

Connecting the control module to your location's Wi-Fi router

Procedure

1. Access the local web page on your phone or laptop. See [Accessing the local web page](#).
2. On the local web page, in the Wi-Fi Settings tab, in the External Access Point Name field, enter the SSID for your location's Wi-Fi network.
3. In the External Access Point Password field, enter the password for your location's Wi-Fi network.
4. Scroll to the bottom of the page. Tap or click Save.
5. Tap or click Restart.

Note:

- To check your C550 control module's internet connectivity, in the main menu navigate to ADVANCED > CONNECTIVITY > WIFI > WIFI CLIENT and check the status.

- If you place the System 550 in an enclosure with a metal door or metal cover, test that the C550 control module is still connected to the Wi-Fi router with the door closed or the cover on.

Setting up a C550 control module in Controls System Cloud

About this task

The end customer and the field service company work together to set up a control module in Controls System Cloud.

Procedure

1. The end customer contacts the field service company.
2. If this is the end customer's first time accessing Controls System Cloud, the field service company creates the end customer's account. See [Creating an end customer account for a customer](#).
The end customer logs on to the app with new logon credentials. See [Logging on with new logon credentials](#).
3. If the control module is at a location that does not correspond to a site in Controls System Cloud, the end customer creates the site in Controls System Cloud. See [Creating a site](#).
If the site is a new site, the end customer assigns the field service company to the site as part of creating the site.
4. The field service company registers the control module in Controls System Cloud. See [Registering a C550 control module with Controls System Cloud](#).

Registering a C550 control module with Controls System Cloud

Before you begin

This is a field service company task. An end customer that is not a System 550 field service company cannot perform every step in this task. You need to ensure the following prerequisites:

- You must be on site, or have access to the C550 control module's device ID.
- You must be able to access Controls System Cloud while on site.

Procedure

1. If the C550 control module's location does not correspond to a site in Controls System Cloud, the end customer must set up the site. See [Creating a site](#). Ensure that the site is associated with your field service company.
2. On the C550 control module, navigate to ADVANCED > CONNECTIVITY > CLOUD > REGISTER QR.
3. With your phone or laptop, scan the QR code that displays on the control module screen. A Controls System Cloud web page opens on your phone or laptop.
If you experience difficulty scanning the QR code, in your phone or laptop's browser, manually enter the URL <https://controlssystemcloud.jci.com/apps/jci550/device-onboarding> and confirm.
4. If the page on your phone or laptop prompts you to log on, log on with your field service company credentials.
5. If the page on your phone or laptop prompts you for the control module's Device ID, on the control module navigate to ADVANCED > CONNECTIVITY > CLOUD > REGISTER INFO and on your phone or laptop enter the unique ID that displays on the screen.
6. In the Device Name text field, enter a name for the control module.
7. To register the new control module with your site in Controls System Cloud, complete the steps in Device Onboarding. This is similar to remotely registering a control module in Controls System Cloud, except that Controls System Cloud populates the device information for you.

Note: If you are unable to register the control module in the field, make a note of the ID, and remotely register the control module later. See [Remotely registering a control module in Controls System Cloud](#).

Purchasing a subscription of licenses

Procedure

1. Log on to Controls System Cloud with your account.
2. In the sidebar, click the Buy Subscriptions tab. Choose your subscription package and click Subscribe.
3. If you want to purchase multiple of the same type of subscription package, on the payment page click the Qty drop-down list on the left, and select your quantity.
4. Complete the payment form and click Subscribe.

In Controls System Cloud, in the sidebar, you can click the View Subscriptions tab to view active subscriptions and next renewal dates. In the License details row of the table, click the eye icon to view details.

Important: Assign every license in your subscription immediately. Johnson Controls takes no responsibility for licenses that expire or partially expire

before you assign the license to a control module.

Licensing an individual control module

Procedure

1. In the sidebar, click the View Subscriptions tab, and identify the short code for the subscription package that you want to use.
In Controls System Cloud, a single subscription is a pool of licenses. You assign the same subscription to multiple control modules if there is more than one license in the subscription, until all licenses in the subscription are assigned. Assign every license in your subscription immediately, to avoid partial expiry.
2. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
3. Navigate to Manage > License Tagging.
4. In the Select Subscription drop-down list, choose the short code for the subscription package. If a license from the package is available, this action instantly applies a license to the control module.

Assigning and revoking control module licenses in bulk

Procedure

1. In the sidebar, click the Manage Licenses tab, and search for the end customer and site where the control module is located.
2. In the list of devices, select the checkbox for every device that you want to change the license for.
3. To assign licenses click Apply License, or to revoke licenses click Revoke.
4. Review the summary of affected control modules in the pop-up window.
5. To revoke licenses, click Revoke, or to assign licenses, select the subscription short code from the Select Subscription drop-down list and click Apply.

Remotely registering a control module in Controls System Cloud

Procedure

1. Log on to Controls System Cloud with your account.
2. In the sidebar, click the Device Onboarding tab.
3. In the Device ID text field, enter the device ID.
4. In the Device Name text field, enter a name for the control module.
5. Click Next.

6. In the drop-down list, select the end customer.
7. Click Next.
8. In the drop-down list, select the site where the device is located.
9. Click Next.
10. In the drop-down list, select the short code for a license subscription.
11. Click Confirm.

Remote C550 operations

About this task

You can perform a number of remote operations that send commands to the C550 control module.

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. In the expanded sidebar, navigate to Manage > Device Operations.
3. Click between the following tabs to set up an operation to send to the device:
 - OTA: Over-the-air upgrades. Only available to field service companies.
 - Ping: Check that the control module is receiving and sending data.
 - Manual defrost: Perform an overriding defrost procedure, if the control module can enter a defrost state. You can choose from time-terminated defrost, or temperature-terminated defrost.
 - Reboot: Restart the control module.
 - Device diagnostics: Information about the device.

Remotely modifying C550 control module setpoint values

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. In the expanded sidebar, navigate to Control > Set Configurations.
3. Adjust the configuration values that you want to change.
4. Scroll to the bottom of the page and click Update.

Changing the name of a control module

About this task

In Controls System Cloud, you can give a control module an identifiable name when you register it. To change that name later, complete the following steps:

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. In the expanded sidebar, navigate to Manage > Set Device Name.
3. In the Device Name text field, enter the name that you want to give the control module.
4. Click Update.

Viewing the contact details of your field service company

After you assign a site to a field service company, and the field service company confirms, you can view their details in Controls System Cloud.

- In Controls System Cloud, on the sidebar, click the Settings tab.

The details are available in the Contract with Field Service Company tab.

Re-mapping a control module to a new site

Before you begin

This is a field service company task.

- If the end customer does not have an account, create a new end customer account for the customer.
- Ensure that the target customer site exists. If the site does not exist, ask the customer to create it.
- Ensure that your field service company account is associated with the site. If not, ask the customer to associate your company with the site.

Procedure

1. Log on to Controls System Cloud.
2. Revoke all permissions for all end customer accounts associated with the asset. See [Assigning and revoking a user's access to an individual C550 control module](#).
3. In the sidebar, click Sites.
4. If you are not an end customer, search for the end customer in the drop-down list.
5. Click the settings cog icon.

6. Click the Site-Device Mapping tab.
7. Select the current site from the drop-down list.
8. Click the device name.
9. In the pop-up window, in the drop-down list, select the new site.
10. Click Update.

Re-mapping a user to a new site

Procedure

1. Log on to Controls System Cloud.
2. In the sidebar, click Sites.
3. If you are not an end customer, search for the end customer in the drop-down list.
4. Click the settings cog icon.
5. Click the Site-User Mapping tab.
6. The user display in a table. Next to the user that you want to change, click the site name.
7. In the pop-up window, in the drop-down list, select the new site.
8. Click Update.

Assigning and revoking a user's access to an individual C550 control module

About this task

You cannot perform this task if you are an end customer single-facility persona.

Procedure

1. In Controls System Cloud, on the sidebar, click the Sites tab.
2. If you are not an end customer, search for the end customer in the drop-down list.
3. For the site that the C550 control module is located at, click the eye icon in the Devices column.
4. Choose from the following actions:
 - To assign a user to a C550 control module, click Assign.
 - To revoke a user's access, click Revoke.
5. A window pops up. Choose from the following actions:
 - If you chose Assign, select the new user from the drop-down list.
 - If you chose Revoke, click the X next to a user to revoke that user's access.
6. Click Update.

Changing to a new field service company

About this task

This is a facility customer task. When you change your field service company, you must update Controls System Cloud to grant access to the new company and revoke access from the old company.

Procedure

1. In Controls System Cloud, on the sidebar, click the Sites tab.
2. In the row of the site that you want to change, in the Actions column, click the Edit icon.
3. In the Edit Site window, in the Field Service Company field, type the name of your field service company and click the correct auto-completed result.
4. Click Save.

Performing a control module reset

Important: Johnson Controls strongly recommends that you create a configuration and firmware backup as soon as your configuration and testing of the System 550 assembly is complete.

To perform a control module reset, you import a backup configuration file to the control module. See [Importing and exporting configuration files](#) and [Creating a configuration and firmware backup](#).

Updating the firmware

You can update the firmware for a single control module or perform a bulk update.

Updating the firmware for a single control module

Procedure

1. In Controls System Cloud, access the Device Control Panel. See [Accessing the Device Control Panel](#).
2. In the expanded sidebar, navigate to Manage > Device Operations.
3. Click the OTA tab.
4. If an update is available, click Update.
5. For the firmware image that you require, click (C2D) Upgrade Now.

Updating the firmware for a control module offline

Before you begin

Download the OTA firmware image binary file that you require on your laptop or phone.

Procedure

1. On your laptop or phone, access the control module's local web page. See [Accessing the local web page](#).
2. Click or tap Firmware Update.
3. Click Choose File and select the OTA file that you require.

Results

The Status readout on the local web page indicates the progress of the firmware update. When the firmware update completes, the C550 control module restarts.

Updating the firmware in bulk

About this task

To update the firmware in bulk, complete the steps.

Note: A bulk firmware update is an operation that always applies to an entire site.

Procedure

1. In Controls System Cloud, on the sidebar, click Bulk Operations.
2. Click Add New Campaign.
3. Select the end customer and site that you require.
4. Click Next.
5. Select the date and time for the scheduled updates.
6. Select the software package to load.
7. Click Confirm.

Technical specifications

Table 1. C550CCN-001C control modules with relay outputs

Specification	Description
Product	Digital electronic control module with A2L refrigerant leak sensing and mitigation

Specification	Description
	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 outputs.
A2L refrigerant leak detection and mitigation functionality	Supported
Compatible modules	<p>C550YNN power module, output expansion modules, and C550SJN junction module.</p> <p>See Expansion modules.</p>
Display	Dot-matrix full-character LCD display with adjustable backlight
Power consumption	3 VA maximum
Supply power	<p>A maximum of one wired power supply from the following options:</p> <p>Internal supply power: C550YNN-1C Power Supply Module with line voltage connections</p> <p>External supply power:</p>

Specification	Description
	<ul style="list-style-type: none"> • 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 \pm10%, 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)
Purpose of control	Operating control
Mounting method	Independent surface mounting
Type action	Type 1.B
External pollution	Pollution degree 2
Rated impulse voltage	4,000 V
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
Output relay contacts	General: 1/2 HP at 120/240 VAC, SPDT

Specification	Description
	<p>Specific:</p> <p>AC motor ratings 120 VAC:</p> <ul style="list-style-type: none"> • AC full-load amperes: 9.8 A • Locked-rotor amperes: 58.8 A <p>AC motor ratings 208/240 VAC:</p> <ul style="list-style-type: none"> • AC full-load amperes: 4.9 A • Locked-rotor amperes: 29.4 A <p>10 amperes AC non-inductive at 24/240 VAC</p> <p>Pilot duty: 125 VA at 24/240 VAC</p>
5V ratiometric output for ratiometric pressure sensors	5 VDC +/- 1%, current limited at 30 mA
Refrigerant leak detection LFL output	C550CCN: 1 V to 9 V output with a minimum resistive load of 5,000 Ω . See Terminals on the control module .
Factory-set LFL trip point	20% of the LFL. You can also configure a lower custom alarm and warning.
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)

Specification		Description
Compliance	United States	<p>ULus Listed; UL 60730-1, File XAPX.E27734.</p> <p>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.</p> <p>FCC Compliant to CFR47, Part 15, Subpart B, Class B limits and FCC Part 15, Subpart C, KDB 996369 D04 Module Integration Guide.</p>
	Canada	<p>cUL Listed; CAN/CSA-E60730-1, File XAPX7.E27734.</p> <p>Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits.</p>
	Europe	<p>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.</p>
	CE	

Table 2. C550CQN-001C control modules with analog outputs

Specification	Description
Product	Digital electronic control module

Specification	Description
	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 outputs.
A2L refrigerant leak detection and mitigation functionality	Not supported
Compatible modules	<p>C550YNN power module and output expansion modules</p> <p>See Expansion modules.</p>
Display	Dot-matrix full-character LCD display with adjustable backlight
Power consumption	3 VA maximum
Supply power	<p>A maximum of one wired power supply from the following options:</p> <p>Internal supply power: C550YNN-1C Power Supply Module with line voltage connection</p> <p>External supply power:</p>

Specification	Description
	<ul style="list-style-type: none"> • 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 \pm10%, 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)
Purpose of control	Operating control
Mounting method	Independent surface mounting
Type action	Type 1
External pollution	Pollution degree 2
Rated impulse voltage	4,000 V
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

Specification		Description
Analog output		<p>Voltage Mode (0–10 VDC):</p> <p>10 VDC maximum output voltage</p> <p>10 mA maximum output current</p> <p>Requires an external load of 1,000 Ω or more</p> <p>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.</p>
		<p>Current Mode (4 mA to 20 mA):</p> <p>Requires an external load between 0 Ω and 300 Ω</p> <p>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.</p>
5V ratiometric output for ratiometric pressure sensors		5 VDC +/- 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	<p>ULus Listed; UL 60730-1, File XAPX.E27734.</p> <p>FCC Compliant to CFR47, Part 15, Subpart B, Class B limits and FCC Part 15, Subpart C, KDB 996369 D04 Module</p>



Specification		Description
		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 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. C550SCN-1C relay output expansion module

Specification	Description
Product	System 550 expansion module with two SPDT output relays
Power consumption	1 VA maximum
Supply power	A maximum of one wired power supply from the following options: Internal supply power: C550YNN-1C Power Supply Module External supply power:

Specification	Description
	<ul style="list-style-type: none"> • 24 VAC (20–30 VAC) Safety Extra-Low Voltage (SELV) (Europe), Class 2 (North America), 50/60 Hz, 10 VA minimum • 24 VDC \pm10%, 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)
Purpose of control	Operating control
Mounting method	Independent surface mounting
Type action	Type 1.B
External pollution	Pollution degree 2
Rated impulse voltage	4,000 V
Output relay contacts	General: 1/2 HP at 120/240 VAC, SPDT Specific: AC motor ratings 120 VAC: <ul style="list-style-type: none"> • AC full-load amperes: 9.8 A • AC locked-rotor amperes: 58.8 A AC motor ratings 208/240 VAC: <ul style="list-style-type: none"> • AC full-load amperes: 4.9 A

Specification		Description
		<ul style="list-style-type: none"> AC locked-rotor amperes: 29.4 A <p>10 amperes AC non-inductive at 24/240 VAC</p> <p>Pilot duty: 125 VA at 24/240 VAC</p>
Enclosure		Type 1, IP 20 high-impact thermoplastic
Dimensions (H x W x D)		5.09 in. x 2.4 in. x 2.4 in. (129 mm x 61 mm x 61 mm)
Weight		0.39 lb (179 g)
Compliance	United States	<p>ULus Listed; UL 60730-1, File XAPX.E27734.</p> <p>FCC Compliant to CFR47, Part 15, Subpart B, Class B limits and FCC Part 15, Subpart C, KDB 996369 D04 Module Integration Guide.</p>
	Canada	<p>cUL Listed; CAN/CSA-E60730-1, File XAPX7.E27734.</p> <p>Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits.</p>
	Europe	<p>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.</p>
		

Specification	Description

Table 4. C550SQN-1C analog output expansion module

Specification	Description
Product	System 550 expansion module with two analog outputs
Power consumption	1 VA maximum
Supply power	<p>A maximum of one wired power supply from the following options:</p> <p>Internal supply power: C550YNN-1C Power Supply Module</p> <p>External supply power:</p> <ul style="list-style-type: none"> • 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 \pm10%, 10 W minimum
Ambient operating conditions	<p>Temperature: -40°F to 150°F (-40°C to 66°C) when using 0–10 VDC outputs; -40°F to 104°F (-40°C to 40°C) when using 4 mA to 20 mA outputs.</p> <p>Humidity: Up to 95% RH non-condensing; maximum dew point 85°F (29°C)</p>
Ambient shipping and storage conditions	<p>Temperature: -40°F to 150°F (-40°C to 66°C)</p> <p>Humidity: Up to 95% RH non-condensing; Maximum Dew Point 85°F (29°C)</p>
Purpose of control	Operating control
Mounting method	Independent surface mounting

Specification		Description
Type action		Type 1
External pollution		Pollution degree 2
Rated impulse voltage		4,000 V
Analog output		<p>Voltage Mode (0–10 VDC):</p> <p>10 VDC maximum output voltage</p> <p>10 mA maximum output current</p> <p>Requires an external load of 1,000 Ω or more</p> <p>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.</p> <p>Current Mode (4 mA to 20 mA):</p> <p>Requires an external load between 0 Ω and 300 Ω</p> <p>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.</p>
Enclosure		Type 1, IP 20 high-impact thermoplastic
Dimensions (H x W x D)		5.09 in. x 2.4 in. x 2.4 in. (129 mm x 61 mm x 61 mm)
Weight		0.39 lb (179 g)
Compliance	United States	<p>ULus Listed; UL 60730-1, File XAPX.E27734.</p> <p>FCC Compliant to CFR47, Part 15, Subpart B, Class B limits and FCC Part 15, Subpart C, KDB 996369 D04 Module</p>


Specification		Description
		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 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 5. C550YNN-1C power supply module

Specification	Description
Product	System 550 power supply module with 120 VAC or 240 VAC stepdown to 24 VAC Class 2 (North America) or SELV (Europe)
Supply power	110/120 VAC or 220/240 VAC at 50/60 Hz
Secondary power	24 VDC nominal unregulated, 28 VDC – 48 VDC typical, 10 W
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)

Specification		Description
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)
Purpose of control		Operating control
Mounting method		Independent surface mounting
Type action		Type 1
External pollution		Pollution degree 2
Rated impulse voltage		4,000 V
Enclosure		Type 1, IP 20 high-impact thermoplastic
Dimensions (H x W x D)		5.09 in. x 2.4 in. x 2.4 in. (129 mm x 61 mm x 61 mm)
Weight		0.91 lb (415 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 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.

Specification	Description
CE	

Table 6. C550SJN-1C A2L sensor wiring junction module

Specification	Description
Product	System 550 junction module with support to wire up to six A2L refrigerant leak detection sensors
Power consumption	None
Supply power	System power
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)
Purpose of control	Operating control
Mounting method	Independent surface mounting
External pollution	Pollution degree 2
Rated impulse voltage	4,000 V
Enclosure	Type 1, IP 20 high-impact thermoplastic
Dimensions (H x W x D)	5.09 in. x 2.4 in. x 2.4 in. (129 mm x 61 mm x 61 mm)
Weight	0.39 lb (179 g)

Table 7. A2L refrigerant leak detection sensors

Specification	Description
Product	R32, R454A, R454B, R454C, or R455A refrigerant leak detection sensor
Target refrigerant	R32, R454A, R454B, R454C, or R455A, depending on the model
Current consumption	40 mA maximum

Specification		Description
Supply power		24 VAC/DC
Detection threshold limit value		Accuracy of $\pm 3\%$ LFL within the range of 7% to 20% of the lower flammability limit (LFL).
Sampling		5 Hz
Compensation		Temperature and humidity
Fault detection		Detects a fault if the sensor is out of range
Warm up time		Less than 5 s
Ambient operating conditions		<p>Temperature: -40°F to 221°F (-40°C to 105°C)</p> <p>Humidity: 5% to 95% RH, noncondensing</p> <p>Pressure: 70 kPa to 120 kPa</p>
Ambient storage conditions		Temperature: -40°F to 221°F (-40°C to 105°C)
Short term temperature exposure		221°F (105°C) for 30 minutes
Enclosure		IP 54 (EN 60529). Not evaluated by UL.
Material		<p>Housing: 33% glass-reinforced PPA resin, UL 94 V0 rated</p> <p>Cable: 600 V, 22 AWG, PVC, UV C tolerant</p>
Cable length		6 ft (1.82 m)
Lifetime		15 years. Not evaluated by UL.
Dimensions (H x W x D)		2.80 in. x 3.11 in. x 0.71 in. (71 mm x 79 mm x 18 mm)
Compliance	United States	ULus Recognized, FTAM2.E544062:

Specification		Description
		<ul style="list-style-type: none"> Annex LL.DV of the 4th edition of UL 60335-2-40 Annex 101.DVP of the 2nd edition of UL 60335-2-89
	Canada	ULus Recognized, FTAM8.E544062: <ul style="list-style-type: none"> Annex LL.DV of the 4th edition of CSA 22.2 No. 60335-2-40

System 550 compatible sensors

Table 1. Resistive sensors

Type	Code number	Default unit	Sensing range	Setpoint range	Sensor fail limits, Ω	
					Low	High
A99 sensors	A99x	°F	-40°F to 248°F (-40°C to 120°C)	-40°F to 248°F (-40°C to 120°C)	550	2,050
	HE-69Sx					
1,000 Ω nickel sensors	TE-6000-6	°F	-50°F to 360°F (-45°C to 182°C)	-50°F to 350°F (-45°C to 176°C)	600	2,200
	TE-631x		-50°F to 220°F (-45°C to 104°C)			
	TS-631x					
	HE-68Nx					
	HE-691x					
1,000 Ω platinum sensors	TE-632x	°F	-50°F to 220°F (-45°C to 104°C)	-50°F to 220°F (-45°C to 104°C)	700	1,600
	TE-635x					
	TS-636x					
	HE-68Px					

Type	Code number	Default unit	Sensing range	Setpoint range	Sensor fail limits, Ω	
					Low	High
	HE-695x					
2,252 Ω NTC temperature sensors	TE-634x	$^{\circ}\text{F}$	-50 $^{\circ}\text{F}$ to 220 $^{\circ}\text{F}$ (-45 $^{\circ}\text{C}$ to 104 $^{\circ}\text{C}$)	-50 $^{\circ}\text{F}$ to 220 $^{\circ}\text{F}$ (-45 $^{\circ}\text{C}$ to 104 $^{\circ}\text{C}$)	100	120,000
	TS-633x					
10,000 Ω NTC Type 2 sensors	TE-636x	$^{\circ}\text{F}$	-50 $^{\circ}\text{F}$ to 220 $^{\circ}\text{F}$ (-45 $^{\circ}\text{C}$ to 104 $^{\circ}\text{C}$)	-50 $^{\circ}\text{F}$ to 220 $^{\circ}\text{F}$ (-45 $^{\circ}\text{C}$ to 104 $^{\circ}\text{C}$)	500	550,000
	TS-634x					
	HE-686x					

Table 2. Humidity transmitters

Type	Code number	Default unit	Sensing range	Setpoint range	Sensor fail limits, V	
					Low	High
0 V to 5 V RH sensors	HE-68xx	%	1% to 100%	10% to 95%	0.05	5.025
	HE-69xx					
0 V to 10 V RH sensors	HE-68xx	%	1% to 100%	10% to 95%	0.1	10.05
	HE-69xx					

Table 3. Differential pressure sensors

Type	Code number	Default units, default vacuum units	Sensing range	Setpoint range	Sensor fail limits	
					Low	High
-0.25 in. WC to 0.25 in. WC differential pressure sensor	DPT2650- R25B-AB	in. WC	-0.25 in. WC to 0.25 in. WC	-0.25 in. WC to 0.25 in. WC	N/A	5.025

Type	Code number	Default units, default vacuum units	Sensing range	Setpoint range	Sensor fail limits	
					Low	High
0 in. WC to 0.5 in. WC differential pressure sensor	DPT2650-0R5D-AB	in. WC	0 in. WC to 0.5 in. WC	0 in. WC to 0.5 in. WC	N/A	5.025
0 in. WC to 2.5 in. WC differential pressure sensor	DPT2650-2R5D-AB	in. WC	0 in. WC to 2.5 in. WC	0 in. WC to 2.5 in. WC	N/A	5.025
0 in. WC to 5 in. WC differential pressure sensor	DPT2650-005D-AB	in. WC	0 in. WC to 5 in. WC	0 in. WC to 5 in. WC	N/A	5.025
0 in. WC to 10 in. WC differential pressure sensor	DPT2650-10D-AB	in. WC	0 in. WC to 10 in. WC	0 in. WC to 10 in. WC	N/A	5.025

Only the sensors that can read below zero in the following table can be configured in the System 550 with vacuum units for negative pressure.

Table 4. Pressure transducers

Type	Code number	Default units, default vacuum units	Sensing range	Setpoint range	Sensor fail limits	
					Low	High
-10 psi to 100 psi sensor	P599RxxS100	psi	-10 psi to 100 psi	-10 psi to 100 psi	0.25	4.75
0 psi to 100 psi sensor	P599RxxS101	psi	0 psi to 100 psi	0 psi to 100 psi	0.25	4.75
0 psi to 200 psi sensor	P599RxxS102	psi	0 psi to 200 psi	0 psi to 200 psi	0.25	4.75
0 psi to 250 psi sensor	P599RxxS108	psi	0 psi to 250 psi	0 psi to 250 psi	0.25	4.75
0 psi to 500 psi sensor	P599ExxS105	psi	0 psi to 500 psi	0 psi to 500 psi	0.25	4.75
0 psi to 750 psi sensor	P599RxxS107	psi	0 psi to 750 psi	0 psi to 750 psi	0.25	4.75
-1 bar to 8 bar sensor	P599RxxS401	bar	-1,000 mbar to 8 bar	-1 bar to 8 bar	0.25	4.75
-1 bar to 15 bar sensor	P599RxxS402	bar	-1,000 mbar to 15 bar	-1 bar to 15 bar	0.25	4.75
0 bar to 30 bar sensor	P599RxxS404	bar	0 bar to 30 bar	0 bar to 30 bar	0.25	4.75
0 bar to 50 bar sensor	P599RxxS405	bar	0 bar to 50 bar	0 bar to 50 bar	0.25	4.75

Table 5. Custom sensor, 0 V to 10 V

Type	Default units	Sensing range	Sensor fail high limit
Custom	V	0 to 10	10.05

Table 6. A2L refrigerant leak sensors

Part number	Description	Refrigerant	Pack
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Part number	Description	Refrigerant	Pack
GM200-MH00C	A2L refrigerant sensor, RS485 Modbus output, 19.7 in. (0.5 m) cable with male connector. Requires a 24 V supply voltage.	R32	Individual pack
GM200-MH00D			Bulk pack: 48 pieces
GM202-MH00C		R454B	Individual pack
GM202-MH00D			Bulk pack: 48 pieces
GM203-MH00C		R454C	Individual pack
GM203-MH00D			Bulk pack: 48 pieces
GM204-MH00C		R454A	Individual pack
GM204-MH00D			Bulk pack: 48 pieces
GM210-MH00C		R455A	Individual pack
GM210-MH00D			Bulk pack: 48 pieces

System 550 accessories

Table 1. System 550 accessories

Part number	Description
A99-CLP-1	Mounting clip for the A99 temperature sensor
ADP11A-600R	Conduit adapter, 1/2 in. snap-fit EMT conduit adapter, quantity of 10
BKT287-1R	DIN rail; 12 in. (0.30 m) length
BKT287-2R	DIN rail; 39 1/3 in. (1.0 m) length
BKT287-3R	DIN rail; 24 in. (0.61 m) length
BKT287-4R	DIN rail; 14 in. (0.36 m) length
BOX10A-600R	PVC enclosure for the A99 temperature sensor. Includes wire nuts and conduit connector for an outdoor sensor
PLT344-1R	DIN rail end clamps, quantity of 2

Part number	Description
SHL10A-603R	Sun shield, for an A99 temperature sensor that is mounted outside or in a sunny location
TE-6001-1	Duct mounting hardware with box for the A99 temperature sensor
TE-6001-11	Duct mounting hardware without box for the A99 temperature sensor
WEL11A-601R	Immersion well for the A99 temperature sensor
WHA-GM2-03C	A2L sensor extension cable: 10 ft (3 m) cable, individual pack
WHA-GM2-03D	A2L sensor extension cable: 10 ft (3 m) cable, bulk pack: 48 pieces
WHA-GM2-05C	A2L sensor extension cable: 16.4 ft (5 m) cable, individual pack
WHA-GM2-05D	A2L sensor extension cable: 16.4 ft (5 m) cable, bulk pack: 24 pieces
WHA-GM2-08C	A2L sensor extension cable: 26.2 ft (8 m) cable, individual pack
WHA-GM2-08D	A2L sensor extension cable: 26.2 ft (8 m) cable, bulk pack: 16 pieces

Note: All WHA-GM2 series extension cables come with a mating connector, for compatibility with the GM200 series A2L refrigerant leak detection sensors.

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.

Patents

Patents: <https://jcipat.com>

Single point of contact

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