System 450™ Series Expansion Modules with Relay Outputs

Installation Instructions

C450SBN-3, C450SCN-3
C450SBG-3, C450SCG-3

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Refer to the QuickLIT website for the most up-to-date version of this document.

Application

IMPORTANT: Use this System 450™ Series Expansion Module with Relay Output only as an operating control. Where failure or malfunction of the System 450™ Series Control Module 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 450™ Series Control Module.

IMPORTANT: Utiliser ce System 450™ Series Expansion Module with Relay Output uniquement en tant que dispositif de régulation. Lorsqu'une défaillance ou un dysfonctionnement du System 450™ expansion module 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 450™ expansion module.

The System 450™ Series is a family of electronic control, expansion, and power modules that is easily assembled and set up to provide reliable digital temperature, pressure, and humidity control for a wide variety of HVACR and commercial and industrial process applications.

C450Sxx-3 models are SPDT (single-pole, double-throw) relay expansion modules: C450SBN-3 and C450SBG-3 models provide one SPDT relay, and C450SCN-3 and C450SCG-3 models provide two SPDT relays.

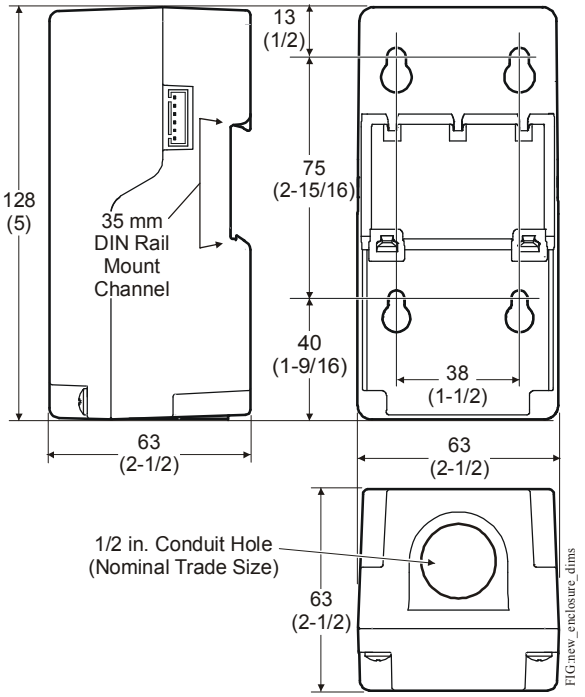
Installation

Location Considerations

Observe the following System 450 location guidelines:

- Ensure the mounting surface can support the module assembly, mounting hardware, and any (user-supplied) panel or enclosure.
- Mount the modules horizontally, in an upright orientation wherever possible. DIN rail mount is recommended.
- Mount the modules on hard, even surfaces.
- Mount the modules in locations free of corrosive vapors, and observe the operating conditions in the *Technical Specifications* on page 5.

Figure 1: System 450 Module, Dimensions, mm (in.)



- Allow sufficient space for wires and connections.
- 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 the modules in airtight enclosures.
- Do not install heat-generating devices in an enclosure with the modules that may cause the temperature to exceed the ambient operating conditions.

Mounting

Mount System 450 modules on 35 mm DIN rail (recommended) or directly to a hard, even surface. To mount the modules on DIN rail:

1. Provide a section of 35 mm DIN rail that is longer than the module assembly width, and mount the DIN rail horizontally in a suitable location using appropriate mounting hardware/fasteners.
2. Clip the control module on the rail, position the upper DIN rail clips on the top rail, and gently snap the lower clips on to the rail.
3. Clip the remaining modules to the right of the control module on to the DIN rail and plug together.

To direct mount modules to wall surfaces:

1. Plug the modules together, remove the module covers, place the assembly against wall surface horizontally in a suitable location, and mark the mount hole locations on the surface.
2. Install appropriate screw fasteners, leaving screw heads approximately one to two turns away from flush to the surface.
3. Place the assembly over screw heads and on the mounting slots, and carefully tighten mount screws.

   Note: If you mount the modules on an uneven surface, do not damage the housings when tightening mounting screws. Use shims/washers to mount module assembly evenly on the surface.

Refer to the control sensor installation instructions for information on locating and mounting control sensors.

Wiring

See Figure 2 and Table 1 for electrical termination locations, wiring information, and electrical ratings.

Note: The System 450 Output Relay terminals connect to an internal SPDT relay and **do not** supply any power to the control application. See Figure 2.

⚠ 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.

IMPORTANT: Use copper conductors only. Make all wiring in accordance with local, national, and regional regulations.

IMPORTANT: Do not exceed the System 450 module electrical ratings. Exceeding module electrical ratings can result in permanent damage to the modules and void any warranty.

IMPORTANT: Run all low-voltage wiring and cables separate from all high-voltage wiring. Shielded cable is strongly recommended for input (sensor) as are analog output cables that are exposed to high electromagnetic or radio frequency noise.

IMPORTANT: Electrostatic discharge can damage System 450 modules. Use proper Electrostatic Discharge (ESD) precautions during installation and servicing to avoid damaging System 450 modules.

IMPORTANT: Do not connect 24 VAC supply power to the System 450 modules before finishing wiring and checking all wiring connections. Short circuits or improperly connected wires can result in damage to the modules and void any warranty.

Figure 2: C450Sxx-3 Wiring Terminals

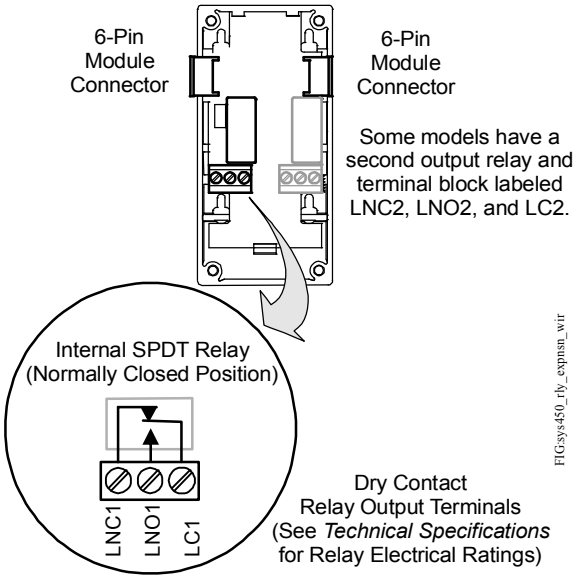


Table 1: System 450 Terminal Wiring Information

Label	Terminal Function	Wire Sizes
LNC1, LNC2	Connects equipment control circuit to the Normally Closed contact on the SPDT output relay.	(0.3 mm^2 to 1.5 mm^2) 28 AWG to 14 AWG
LNO1, LNO2	Connects equipment control circuit to the Normally Open contact on the SPDT output relay.	
LC1, LC2	Connects line (power) to Common (C) on the SPDT relay.	

Technical Specifications

C450Sxx-3 Series Expansion Modules with Relay Outputs

Product	C450SBN-3: System 450 Expansion Module with one SPDT output relay C450SCN-3: System 450 Expansion Module with two SPDT output relays C450SBG-3: System 450 Expansion Module with one SPDT low current/voltage output relay C450SCG-3: System 450 Expansion module with two SPDT low current/voltage output relays
Supply Power	C450YNN-1 Power Supply Module -or- Separately supplied: 24 (20-30) VAC, 50/60 Hz, 10 VA minimum Class 2 (North America), Safety Extra-Low Voltage (SELV) (Europe)
Ambient Operating Conditions	Temperature: -40 to 66°C (-40 to 150°F) Humidity: Up to 95% RH non-condensing; maximum dew point 29°C (85°F)
Ambient Shipping and Storage Conditions	Temperature: -40 to 80°C (-40 to 176°F) Humidity: Up to 95% RH non-condensing; maximum dew point 29°C (85°F)
Output Relay Contacts	C450SxN-3 **General:** 1/2 HP at 120/240 VAC, SPDT **Specific:** AC Motor Ratings — 120 VAC — 208/240 VAC AC Full-load amperes: 9.8 A 4.9 A AC Locked-rotor amperes: 58.8 A 29.4 A 10 amperes AC non-inductive at 24/240 VAC Pilot Duty: 125 VA at 24/240 VAC
	C450SxG-3 **General:** 2 amperes resistive at 48 VDC Pilot Duty: 360 VA at 120 VAC **Maximum Dry Circuit Rating:** Resistive only, 400 mW at 28 VAC/VDC **Note:** Once a relay has been used at the General Rating level, the Dry Circuit Rating is no longer valid.
Control Construction	Independently mounted control, surface mounted with Lexan® 950 enclosure suitable for DIN rail mounting or direct mounting to a hard, even surface.
Dimensions (H x W x D)	127 x 61 x 61 mm (5 x 2-3/8 x 2-3/8 in.)
Weight	C450SBx-3: 172 g (0.38 lb) C450SCx-3: 186 g (0.41 lb)
Compliance CE	**United States:** cULus Listed; UL 60730-1, File E27734; FCC Compliant to CFR47, Part 15, Subpart B, Class B
	Canada: cULus Listed; CAN/CSA-E60730-1, File E27734; Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits
	Europe: CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
	Australia and New Zealand: RCM Mark, Australia/NZ Emissions Compliant

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult Johnson Controls Application Engineering at (414) 524-5535. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

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.

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.

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