System 450 Series C450CCU Condensing Unit Control System Catalog Page

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Introduction

The System 450™ Series condensing unit control module controls space temperature, scheduled defrost cycles, evaporator fans, and optional pump down compressor control on walk-in coolers, freezers, and refrigerated display cases with remote condensing units.

You can use the C450CCU-4 control module, in conjunction with optional System 450 relay output expansion modules, to build a variety of custom condensing unit control systems for small and medium capacity refrigeration applications.

The C450CCU-4 condensing unit control system provides passive, off-cycle defrost control or active, electric heat defrost control. Depending on the application, you can terminate defrost cycles based on time or based on the sensed evaporator temperature. You can use a menu option to manually initiate or terminate a defrost cycle at any time.

You can also control single-speed or two-speed evaporator fans, and add an optional pressure transducer for pump down pressure control of the compressor.

Refer to the following resources for detailed information about how to set up, operate, and troubleshoot a System 450 condensing unit control system:

- *System 450 Series C450CCU Condensing Unit Control System Technical Bulletin (LIT-12013266)*
- *System 450 Series C450CCU Condensing Unit Control Module Installation Guide (Part No. 24-7664-03809)*

Features

The condensing unit control module provides the following features:

- Temperature control of a refrigerated space
- Defrost control
    - Passive, off-cycle defrost control for medium-temperature applications
    - Active, electric heat defrost control for low-temperature applications
    - Defrost termination sensor or optional defrost termination switch
    - One to eight daily scheduled defrost cycle times
    - Manual start and stop capability of defrost cycles
- Evaporator fan control
    - Control single or two-speed evaporator fans
- Pump-down control
    - Initiate and terminate a pump-down cycle, and minimize compressor failure due to liquid slugging

Repair information

If the C450CCU condensing unit control module fails to operate within its specifications, replace the unit. For a replacement condensing unit control module, contact the nearest Johnson Controls® or PENN® representative. See C450CCU condensing unit control module technical specifications for contact information.

Ordering information

Table 1: System 450 modules

Product code	Description
C450CCU-4C	Condensing unit control module with LCD, four-button touchpad, UI, and two single-pole, double-throw (SPDT) line-voltage relay outputs Included in the box: quantity of two A99BB-500C temperature sensors with 5.00 m (16 3/8 ft) cable length Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
C450YNN-1C	Power module; provides 24 V to System 450 module assembly; 120 VAC or 240 VAC supply power input terminals
C450SBN-4C	Relay expansion module with one SPDT relay output
C450SCN-4C	Relay expansion module with two SPDT relay outputs

Table 2: Mounting accessories

Product code	Description
BKT287-1R	DIN rail; 0.30 m (12.00 in.)
BKT287-4R	DIN rail; 0.36 m (14.00 in.)
PLT344-1R	2 DIN rail with end clamps

Table 3: A99 Series temperature sensors

Product code	Description
A99BA-200C	Positive temperature coefficient (PTC) silicon sensor with shielded cable; cable length 2.00 m (6.50 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
A99BB-25C	PTC silicon sensor with polyvinyl chloride (PVC) cable; cable length 0.25 m (9.75 in.) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
A99BB-200C	PTC silicon sensor with PVC cable; cable length 2.00 m (6.50 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
A99BB-300C	PTC silicon sensor with PVC cable; cable length 3.00 m (9.75 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
A99BB-500C	PTC silicon sensor with PVC cable; cable length 5.00 m (16.38 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
A99BB-600C	PTC silicon sensor with PVC cable; cable length 6.00 m (19.50 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket temperature range: -40°C to 100°C (-40°F to 212°F)
A99BC-25C	PTC silicon sensor with high temperature silicon cable; cable length 0.25 m (9.75 in.) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket rated for full sensor temperature range
A99BC-300C	PTC silicon sensor with high temperature silicon cable; cable length 3.00 m (9.75 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket rated for full sensor temperature range
A99BC-1500C	PTC silicon sensor with high temperature silicon cable; cable length 15.00 m (49 ft) Sensor temperature range: -40°C to 120°C (-40°F to 250°F) Cable jacket rated for full sensor temperature range
A99-CLP-1	Mounting clip for A99 temperature sensor

Note: Refer to the *A99B Series Temperature Sensors Product/Technical Bulletin (LIT-125186)* for more information.

Table 4: P499 Series transducers with 1/4 in. SAE 45 flare internal thread with depressor (Style 47)

Product code	Description
P499RCPS100C	-10 psis to 100 psis, sealed for wet and freeze and thaw applications; order WHA-PKD3 type wire harness separately.
P499RCPS100K	-10 psis to 100 psis, sealed for wet and freeze and thaw applications; WHA-PKD3-200C wire harness included.
P499RCPS102C	0 psis to 200 psis, sealed for wet and freeze and thaw applications; order a WHA-PKD3 type wire harness separately.
P499RCPS102K	0 psis to 200 psis, sealed for wet and freeze and thaw applications; WHA-PKD3-200C wire harness included.
P499RCP-101C	0 psig to 100 psig; order a WHA-PKD3 type wire harness separately.
P499RCP-101K	0 psig to 100 psig; WHA-PKD3-200C wire harness included.

Table 5: P499 Series transducers with 1/8 in. 27 NPT external thread (Style 49)

Product code	Description
P499RAP-101C	0 psig to 100 psig; order a WHA-PKD3 type wire harness separately.
P499RAP-101K	0 psig to 100 psig; WHA-PKD3-200C wire harness included.
P499RAP-102C	0 psig to 200 psig; order a WHA-PKD3 type wire harness separately.

Note: P499 Series transducers are 0.5 VDC to 4.5 VDC ratiometric transducers. Refer to the *P499 Series Electronic Pressure Transducers Product/Technical Bulletin (LIT-12011190)* for more information.

Table 6: WHA-PKD3 wire harnesses

Product code	Description
WHA-PKD3-200C	Plug and 3-wire harness for P499 electronic pressure transducers: 2.00 m (6.50 ft) cable
WHA-PKD3-400C	Plug and 3-wire harness for P499 electronic pressure transducers: 4.00 m (13.00 ft) cable
WHA-PKD3-600C	Plug and 3-wire harness for P499 electronic pressure transducers: 6.00 m (19.60 ft) cable

C450CCU condensing unit control module technical specifications

Table 7: C450CCU condensing unit control module technical specifications

Specification	Description
Product	System 450 Series C450CCU condensing unit control module
Power supply	Use one of the following power supplies: C450YNN power supply module 24 (20-30) VAC safety extra-low voltage (SELV) (Europe) Class 2 (North America), 50/60 Hz, 10 VA minimum 20 VDC–30 VDC, 2 watts minimum for control, and then 1 additional watt for each output you attach **Note:** Connect a System 450 control module to only one power supply.
Ambient operating conditions	Temperature: -40°C to 66°C (-40°F to 150°F) Humidity: Up to 95% RH noncondensing; maximum dew point 29°C (85°F)
Ambient shipping and storage conditions	Temperature: -40°C to 80°C (-40°F to 176°F) Humidity: Up to 95% RH noncondensing; maximum dew point 29°C (85°F)
Output relay contacts	General: 1/2 HP at 120/240 VAC, SPDT
	Specific: **120 VAC:** AC full-load amperes: 9.8 A AC locked-rotor amperes: 58.8 A **208/240 VAC:** AC full-load amperes: 4.9 A AC locked-rotor amperes: 29.4 A 10 amperes AC non-inductive at 24/240 VAC Pilot duty: 125 VA at 24/240 VAC
Enclosure	Type 1 (NEMA), IP20 high-impact thermoplastic
Dimensions (H x W x D)	127 mm x 61 mm x 61 mm (5 in. x 2 3/8 in. x 2 3/8 in.)
Weight	C450CCU: 222 g (0.49 lb)
Compliance	United States: ULus Listed; UL 60730-1, File E27734; FCC Compliant to CFR47, Part 15, Subpart B, Class B
	Canada: cUL Listed; CAN/CSA-E60730-1, File E27734; Industry Canada (IC) Compliant to Canadian ICES-003, Class B limits
CE	Europe: CE Mark – Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and RoHS 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.

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.

Single point of contact

APAC	Europe	NA/SA
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Contact information

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