



Building Automation, Inc.

CX Commercial Lighting Control Panels – 16 and 24 Relay Installation Instructions

Hubbell Building Automation

9601 Dessau Road • Building One • Suite 100 • Austin, TX 78754

Toll Free: 888-698-3242 • Fax: 512-450-1215

www.hubbell-automation.com

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PRECAUTIONS

- **READ AND FOLLOW ALL SAFETY INSTRUCTIONS.**
- **CAUTION - RISK OF ELECTRICAL SHOCK.** To prevent electrical shock, turn off power at the circuit breaker before installing or servicing unit. Never wire energized electrical components.
- **NOTICE:** For installation by a licensed electrician in accordance with National and/or local Electrical Codes and the following instructions.
- **CAUTION: USE COPPER CONDUCTOR ONLY, MINIMUM 75°C INSULATION.**
- Be sure to read and understand all instructions before installing or servicing unit
- Do not operate unit with panel door assembly or relay guard covers removed.
- For Indoor use only. Do not use outdoors.
- Do not mount near gas or electric heaters.
- Disconnect switch or a circuit breaker must be provided and marked as the disconnecting device.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Confirm that device ratings are suitable for application prior to installation.
- No user serviceable parts contained inside unit. Refer all service related questions to the factory. All servicing shall be performed by qualified service personnel.
- Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- Use only approved materials and components (i.e. twist on connectors, electrical box, etc.) as appropriate for installation.
- **NOTICE:** Do not install if product appears to be damaged.
- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
- Do not use this equipment for other than intended use.

SAVE THESE INSTRUCTIONS!

DESCRIPTION

The CX Panel is shipped in one package. Panels are configured with all 16 or 24 relays of the same type installed or with space only for relays to be installed in the field. The relays are mounted with lighting circuit terminals in the high voltage area. The low voltage control inputs are located in the low voltage area of the panel. The following information describes the CX 16 and 24 relay panel installation. For programming information, refer to the “CX Panel Quick Start Guide” provided as a separate document with the Panel.

PRODUCT CONFIGURATIONS

Panel Model	Relay Spaces	Input Voltage	Housing	Relay Quantity	Relay Type	Options
CX	16 16 Relay Spaces	2 120-277VAC Universal	S Surface NEMA 1	00 No relays	2N 20A, 1P, N/O Elect Held 3L 30A, 1P, Latching TN 20A, 2P, N/O Elect Held 2C 20A, 1P, N/C Elect Held TC 20A, 2P, N/C Elect Held SP Space Only	M Master S Secondary
	24 24 Relay Spaces	3 347-480VAC Universal		16 16 Relays Installed		
				24 24 Relays Installed		

Example: CX162S162NM - CX 16 Relay Panel, 120-277VAC universal input, with 16 20A/1P N/O Electrically Held Relays installed in NEMA 1 Surface Mount Master Panel.

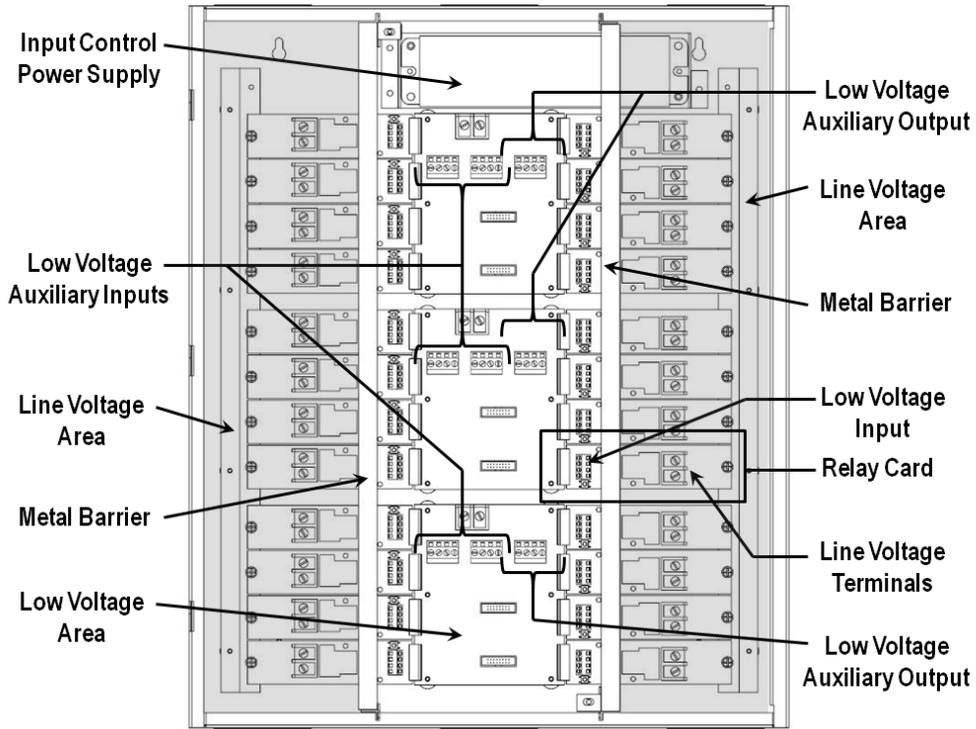
Panels are available fully populated with a single relay type or with SP option (Space Only) to allow for field installation of individual relays. This is the methodology to provide for panels with a mix of more than one type of relay. Relays can be ordered separately as follows:

Relay Model	Relay Type
CXR	2N 20A, 1P, N/O Elect Held, 120/277VAC
	3L 30A, 1P, Latching, 120/277V, 20A 347VAC
	TN 20A, 2P, N/O Elect Held, 208/240/480VAC
	2C 20A, 1P, N/C Elect Held, 120/277VAC
	TC 20A, 2P, N/C Elect Held, 208/240/480VAC

ENCLOSURE MOUNTING

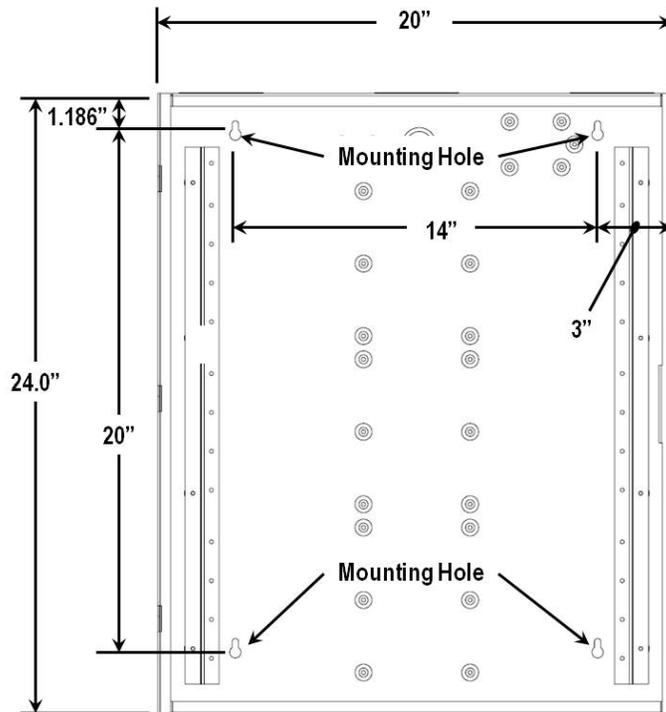
Typically the CX panel is installed near the circuit breaker panel or in the ceiling of the room containing the lighting circuits to be controlled. Select an appropriate location that meets the environmental conditions listed in the specification section of this document. The panel interior is divided into high voltage and low voltage areas as shown in Figure 1. Select an appropriate location for incoming line voltage panel power, branch circuits to be controlled and low voltage input wiring. The housing is supplied with conduit knock-outs labeled to indicate line or low voltage wiring use. All terminations within the panel enclosure require installation by a licensed electrician in accordance with National and/or local Electrical Codes

Figure 1 – CX Panel Interior



Locate the enclosure on the mounting surface and use a level to ensure that it is properly oriented and aligned. Secure the enclosure to the mounting surface with hardware as appropriate for the application using the four keyed mounting holes located near the top corners and in the center bottom of the enclosure as shown in Figure 2.

Figure 2 - Enclosure Mounting Holes



INSTALLING INDIVIDUAL RELAY CARDS

Relay PANELS ARE MOST COMMONLY SHIPPED WITH ALL RELAY CARDS INSTALLED. If the project requires different types of relays installed in the same panel then the relays are supplied separately and they will require field installation. In this application reference the applicable Relay Installation Instructions supplied with the individual Relay Cards on how to install relays.

Caution: ALWAYS remove supply power to the Panel Electronic Power Supply prior to making any connections between relay boards and panel processor board. Failure to do so may result in personnel injury, damage to the panel, and void its warranty

CONNECTING PANEL POWER

The panel is designed to operate on 120 to 277VAC universal input voltage for “2” designator or 347 to 480VAC universal input voltage for “3” designator. Panel input power is supplied to the electronic power supply located in the upper center of the panel as shown in Figure 1. With the **power turned off**, route the dedicated panel power supply leads to the power supply and connect them to incoming power leads. A voltage range requirement label is located on electronic power supply. Connect the power supply ground lead to the panel chassis grounding lug. A label indicating this ground lug is located adjacent to the connection location.

CONNECTING LIGHTING LOADS

With the power turned off, route the lighting system line and load leads through the high voltage area of the panel shown in Figure 1. Connect line and load leads for each lighting load to the output terminals of the appropriate relay as delineated in the project plans and/or Panel Load Schedule.

Notice: As a general rule, the panel is shipped with relays installed and electrically connected at their input control side. If, however, relays must be installed, reference the applicable Relay Installation Instructions supplied with the individual Relay Cards on how to install relays.

Caution: Prior to making any connections to the relay outputs, verify that none of the loads are shorted. Failure to do so may result in personnel injury, damage to the panel, and void its warranty

Notice: If no Panel Load Schedule exists, use the Panel Load Schedule Form supplied in the clear plastic pocket inside the Panel Door to record the lighting circuit relay assignments while connecting the relays

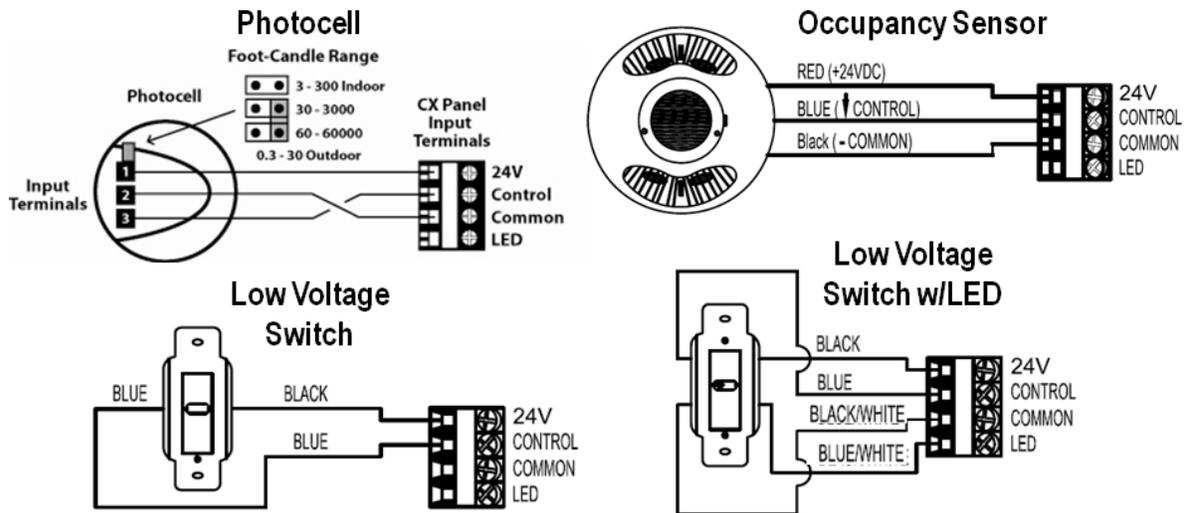
CONNECTING LOW VOLTAGE INPUTS

Bring the low voltage wiring for the contact inputs in through the knockouts in the low voltage wiring area where indicated in Figure 1. The CX 16 Relay Panel supports 20 inputs and the CX 24 Relay Panel supports 30 inputs. Inputs are software configurable through programming to support momentary switches, maintained switches (latching), motion sensors, or photocells. Each Relay Card includes one low voltage input. The panel mother boards include 4 Auxiliary Inputs for the CX 16 Relay Panel and 6 Auxiliary Inputs for the CX 24 Relay Panel. These inputs may be connected prior to programming. Inputs may be connected to any terminal location regardless of final control programming. Connect contact closure input devices to the input terminals using 18 AWG wire.

Notice: Use the Panel Load Schedule Form supplied in the clear plastic pocket inside the Panel Door to record the low voltage input types while making connections.

Low Voltage Control Diagrams shown in Figure 3 below are for use with Hubbell Building Automation Input Devices ONLY. Diagrams may not apply to input devices from other manufacturers.

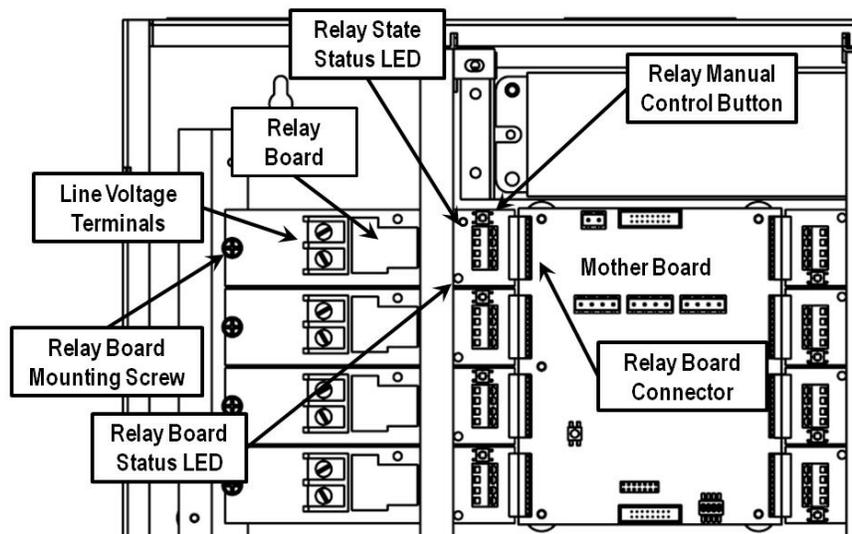
Figure 3 - Low Voltage Input Wiring Diagrams



OPERATING THE PANEL

The User Interface control ribbon cable is supplied connected between the User Interface Ribbon Cable Connector on the Mother Board and the User Interface Module that is attached to the panel door. The red indicator in the cable should align with the Pin 1 designation. The green ground jumper is supplied connected between the panel door and the panel housing ground lug, labeled “GND”. Provide control power to the panel and restore power to the lighting circuits at the source circuit breakers. The panel will take a few moments to initialize during which time the User Interface screen on the front of the panel door will initiate and display the clock, date, and time zone un-programmed factory defaults. Inside the panel the Mother board power status LED will show continuous “green”. The Relay board status LED will turn on “green” for approximately 2 seconds and then go off. Push, but do not hold the Relay Manual Control button on each relay card to operate each relay to test functionality. The Relay State Status LED will turn on “red” when the relay is energized and be off when the relay is un-energized. The panel is now fully functional and ready to control the lighting loads.

Figure 4 - Panel Start-Up Controls



TROUBLESHOOTING

A blinking “green” Relay board status LED indicates that communication has not been properly established for this card. Contact Hubbell Building Automation Technical Service at (888) 698-3242 for assistance and replacement as required. A complete Troubleshooting Guide is contained in the “CX Panel User Manual” provided as a downloadable document at www.hubbell-automation.com.

CX PANEL SPECIFICATIONS

- Panel Input Power Requirements:
 - Input Voltage “2” designator – 100VA, 120-277VAC universal
 - Input Voltage “3” designator – 100VA, 347-480VAC universal
- Overall Dimensions:
 - Surface mount, 20” W x 24” H x 3.5” D.
- Relay Load Ratings:
 - CXR2N – 120/277VAC, Electrically Held, N/O, 20Amps, HID and Fluorescent Ballast 15Amps, Fluorescent Electronic Ballast 16 Amps, Tungsten (120V only) 15 Amps, 3/4HP at 120V and 277V,
 - CXR3L – 120/277/347VAC, Latching, 30Amps, HID and Fluorescent Ballast at 120/277 VAC, Fluorescent Electronic Ballast 16 Amps, and 20Amps Tungsten at 120VAC, 1HP at 120V, and 20Amps, HID and Fluorescent Ballast at 347V
 - CXRTN – 208/240/480VAC, Electrically Held, N/O, 20Amps, HID, Ballast, 2HP
 - CXR2C – 120/277VAC, Electrically Held, N/C, 20Amps, HID and Fluorescent Ballast 15Amps Fluorescent Electronic Ballast 16 Amps, Tungsten (120V only) 15 Amps, 3/4HP at 120V and 277V,
 - CXRTC – 208/240/480VAC, Electrically Held, N/C, 20Amps, HID, Ballast, 2HP
- Low Voltage Inputs:
 - CX 16-Relay Panel – 20 available inputs
 - CX 24-Relay panel – 30 available inputs.
 - Low Voltage Switches – 2 or 3 wire momentary or maintained style, with or without LED indication. LED indication support is LED – “ON” when switch is active and LED – “OFF” when switch is inactive. Green “ON” with Red “OFF” indication is not supported.
 - Motion Sensor Input – Three wire 24 VDC, Maximum of 4 sensors can be connected to 4-Relay Panel and 8 sensors for 8-Relay Panel
 - Photocell – Three wire 24VDC power, 0-10V DC control input.
- Output Relay Contacts
 - Two each for 16-Relay panel only – Dry Contact Output, NO/NC, 24V AC/DC, 50mA
 - Three each for 24-Relay panel only – Dry Contact Output, NO/NC, 24V AC/DC, 50mA
- Operating Environment:
 - Indoor Use Only; 0 to 50°C; Relative Humidity: 0 – 90% non-condensing.

PANEL LOAD SCHEDULE FORM

A Panel Load Schedule Form is supplied in the clear plastic pocket inside the Panel Door to record the lighting circuit relay assignments while connecting the relays. Low voltage input types and assignments should also be recorded on the form.