

# Load Control Panels 4 and 8 Relays Installation Instructions



## Installation Overview

The installation instructions contained in this document are provided as a guide for proper and reliable installation. The mounting location should be selected and prepared based on the application. All electrical wiring and mounting hardware (i.e. electrical mounting box, conduit, etc.) should be prepared with consideration of the requirements outlined in the wiring and mounting diagrams contained in these instructions.

These instructions include information as follows:

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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.**
- Be sure to read and understand all instructions before installing or servicing unit
- 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 materials and components approved for electrical installations.
- **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 surface mounted panel is configured with either 4 or 8 spaces for relays to be installed in the field. The relays are ordered separately. The relays are mounted with circuit terminals in the line voltage side. The low voltage control inputs are located in the low voltage side of the panel. The following information describes the 4 and 8 relay panel installation. For programming information, refer to the "Load Control Panel Quick Start Guide" provided as a separate document with the panel.

## Product Configuration

Relay Spaces		Input Voltage	RRR - Available Relays for Field Installation	Options
04	4 Relay Spaces	2	120-208-220-277V AC	3 Stand Alone (4-Relay ONLY)
08	8 Relay Spaces			<ul style="list-style-type: none"> <li>✓ Electrically held, 20A/1P, 120/277V AC, 14kSCCR, N/O</li> <li>✓ Latching relay, 30A/1P, 120/277V AC, 18kSCCR</li> <li>✓ Electrically held, 20A/2P, 480V AC, 14kSCCR, N/O</li> <li>✓ Electrically held, 20A/2P, 480V AC, 14kSCCR, N/C</li> </ul>

Space Only panels 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:

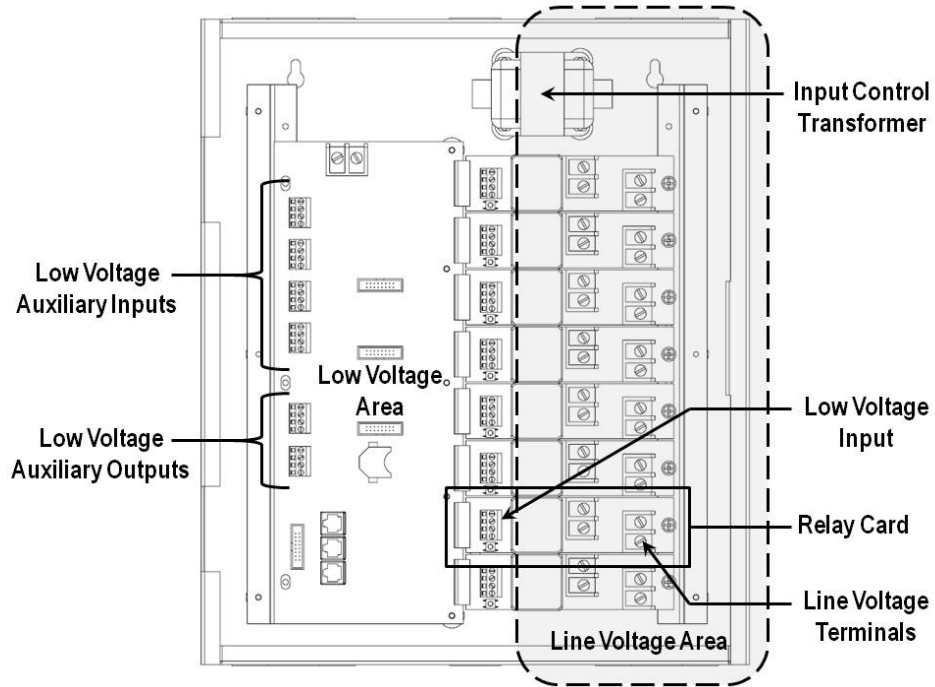
Relay Model	Relay Type
R21HN	20A, 1P, N/O, Elect Held 120/277V AC
R31LX	30A, 1P, Latching, 120/277V AC
R202HN	20A, 2P, N/O Elect Held, 208/240/480V AC
R202HC	20A, 2P, N/C Elect Held, 208/240/480V AC

NOTE: *R202HC cannot be used in emergency circuits.*

## Enclosure Mounting

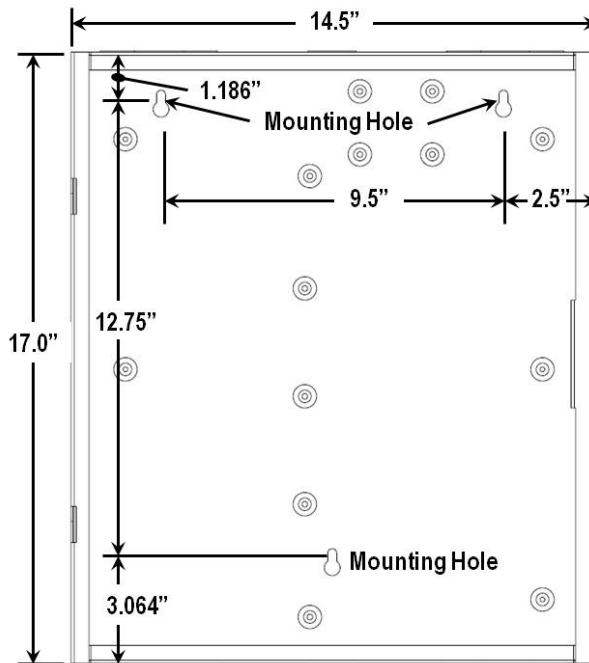
Typically the load control panel is installed near the circuit breaker panel or in the ceiling of the room containing the circuits to be controlled. Select an appropriate location that meets the environmental conditions listed in the specification section of this document. The panel interior is divided into high (line) voltage and low voltage areas as shown in **Figure 1** on **page 3**. 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 - 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 three keyed mounting holes located near the top corners and in the center bottom of the enclosure as shown below in **Figure 2**.

**Figure 2 - Enclosure Mounting Holes**



## Installing Individual Relay Cards

The relays are ordered separately and they will require field installation due to various requirements for different types of relays installed in the same panel. 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 control transformer 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 Power to the Panel

The panel is designed to operate on 120, 208, 240, or 277V AC. Panel input power is supplied to the multi-tap transformer located in the upper center of the panel as shown in **Figure 1** on **page 3**. With the power turned OFF, route the dedicated panel power supply leads to the transformer and connect them to the appropriate system voltage specific leads of the transformer. A voltage lead color label is located on or adjacent to the transformer. 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.

**Caution: When power is applied to the transformer, the unused transformer leads become electrified. Cap unused transformer leads with wire nuts to prevent electrical shorting.**

## Connecting Loads

With the power turned OFF, route the electrical system line and load leads through the high voltage area of the panel shown in **Figure 1** on **page 3**. 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: 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: Use the Panel Load Schedule Form supplied in the clear plastic pocket inside the panel door to record the circuit relay assignments while connecting the relays.**

## Connecting Low Voltage Inputs

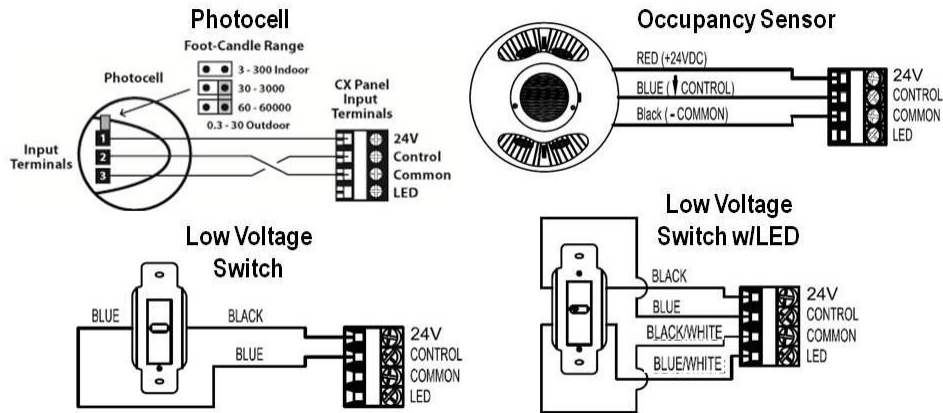
Bring the low voltage wiring for the contact inputs in through the knockouts in the low voltage wiring area where indicated in **Figure 1** on **page 3**. The 4-relay panel supports six inputs and the 8-relay panel supports twelve (12) inputs. Each relay card includes one low voltage input. The panel motherboard includes 2 auxiliary inputs for the 4-relay panel and four (4) auxiliary inputs for the 8-relay panel. Inputs are software configurable through programming to support momentary switches, maintained switches (latching), occupancy sensors, or photocells. 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 Input Wiring Diagrams shown in **Figure 3** below are for use with Hubbell Wiring Device-Kellems input devices ONLY. Diagrams may not apply to input devices from other manufacturers.

**Figure 3 - Low Voltage Input Wiring Diagrams**

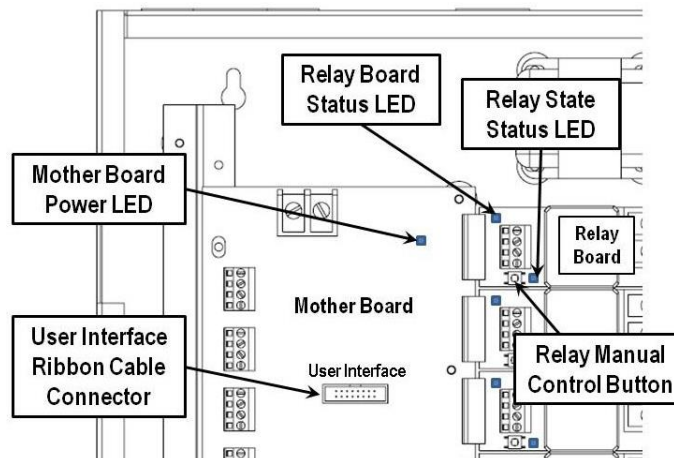


**Energizing the Panel**

A user interface control ribbon cable is supplied connected between the user interface ribbon cable connector on the motherboard and the User Interface Module that is attached to the panel door. **See Figure 4.** The red indicator (tracer) in the cable should be on the same side as the PIN 1 designation at the connection marked User Interface in the panel's motherboard. 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 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 motherboard 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 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 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 Wiring Device-Kellems Technical Service at (800) 288-6000 for assistance and replacement as required. A complete Troubleshooting Guide is contained in the “Load Control Panel User Manual” provided as a downloadable document at [www.hubbell-wiring.com](http://www.hubbell-wiring.com).

## Panel Specifications

- Panel Input Power Requirements:
  - Input Voltage - 120, 208, 240, or 277V AC – (40VA)
- Overall Dimensions:
  - Surface Mount: 14.5” W x 17” H x 3.5” D
- Relay Load Ratings:
  - **R21HN** - 120/277V AC, Electrically Held, N/O - 20Amps - HID and Fluorescent Standard Ballast; 16Amps - Fluorescent Electronic Ballast/LED Driver; 15 Amps - Tungsten (120VAC only), 1HP - 120VAC; 3/4HP 277V AC
  - **R31LX** - 120/277V AC, Latching - 30Amps - HID and Fluorescent Standard Ballast at 120/277 V AC; 16 Amps - Fluorescent Electronic Ballast/LED Driver at 120/277 V AC; 20Amps - Tungsten at 120V AC; 1HP - 120V AC; 3/4HP 277V AC
  - **R202HN** - 208/240/480V AC, Electrically Held, N/O - 16Amps - HID Ballast; 2HP
  - **R202HC** - 208/240/480V AC, Electrically Held, N/C - 16Amps - HID Ballast; 2HP
- Low Voltage Inputs:
  - 4-Relay Panel - Six (6) available inputs
  - 8-Relay Panel - Twelve (12) available inputs.
  - Low Voltage Switches: **DSM30 or DSL30 Series** - 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.
  - Occupancy Sensor Input: **ATD, ATP and ATU 24V DC Series** - Three-wire 24 VDC, maximum of eight (8) sensors can be connected to 4- or 8-relay panels.
  - Photocells: **DHIP, DHOP, DHAP and DHSP**: Three wire 24VDC power. **DHADC**: 0-10V DC control input.
- Output Relay Contacts:
  - Two (2) each for 8-relay panel only - Dry Contact Output, NO/NC, 24V AC/DC, 50mA
- Operating Environment:
  - Indoor Use Only; 0 to 50°C; Relative Humidity: 0 to 90% non-condensing.
- Line Voltage Terminal Torque Ratings:
  - **R21HN** and **R31LX** maximum torque = 16 lb-in.
  - **R202HN** and **R202HC** maximum torque = 12 lb-in.

## 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.

## Panel Maintenance

The only replaceable part that will require maintenance is the battery that serves to back-up the clock during power outages. This battery is designed for 10 years of service and can be checked in the System Tools menu: Select Diagnostics then Battery Back-up. The battery is located in the controller. Disconnect power to the panel. Disconnect the controller ribbon cable from the motherboard. Remove the controller from the door by removing three screws located on the back of the door behind the controller and replace the battery.

