L¹ legrand®

Wattstopper®
Lighting Integrator Panel

Installation Instructions • Instructions d'Installation • Instrucciones de Instalación

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Catalog Numbers • Les Numéros de Catalogue • Números de Catálogo: LI8/LI24/LI48

Country of Origin: Made in China • Pays d'origine: Fabriqué en Chine • País de origen: Hecho en China

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INTERIORS   **ENCLOSURES**

Figure 1: Panel interiors and enclosures

SPECIFICATIONS

Supply Voltages...per selected power supply
    P115/277 Power Supply... 120 or 277VAC
    P240 Power Supply... 240VAC
    P115/347 Power Supply... 120 or 347VAC
Accessory Power Output...800mA@24VDC/VAC/ACR
Relay Load Ratings.......................................@120VAC .....@277VAC .....@347VAC

	@120VAC	@277VAC	@347VAC
Ballast	N/A	30 Amp	20 Amp
Tungsten	20 Amp	N/A	N/A
Resistive	N/A	30 Amp	20 Amp
Motor	1 1/2 HP	N/A	N/A
Duplex Receptacle	20 Amp	N/A	N/A

Environmental
    Maximum Ambient Temperature .... 60°C
    Maximum Humidity .... 5% to 90% RH, non-condensing
UL & CUL Listed

INTRODUCTION

The Lighting Integrator (LI) is a relay-based automatic lighting control panel. The LI controls lighting through scenarios, time schedules, occupancy sensors, daylighting sensors, photocells, and occupant controlled switches. A network of LI panels can also be controlled from a clock, or a building management system, or by a central computer.

> ⚡ **WARNING:**
> **RISK OF ELECTRIC SHOCK.** ⚡

As a minimum, each panel requires an interior assembly and an enclosure. These components may have shipped separately.

The panel interior assembly provides isolation between the line- and low-voltage sections of the panel, as well as the mounting frame for relays, the power supply, and the circuit board assemblies.

Inside the low voltage area are LEDs for visual indication of relay status, plus manual push-buttons to turn individual relays on or off, and to perform smartwiring.

Smartwiring is a Wattstopper innovation that enables easy push-button relay grouping for convenient group control. Smartwiring offers flexible grouping of lighting loads for control of individual relays, groups of relays, or channels.

After installation and setup, a secure outer cover, when closed, offers protection from the high voltage area.
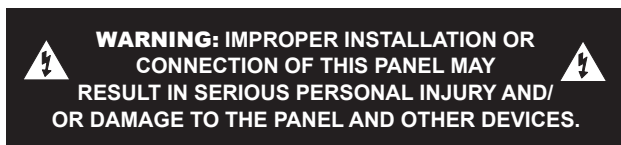
The following page shows a photograph of a fully assembled 24-relay Lighting Integrator panel that shows installed components for reference. The illustrations show component locations for 8-relay and 48-relay LI panels. Note that not all of the components shown may be fitted in every Lighting Integrator panel, depending on the application.

Before installing the LIC, read the instructions completely. If you have any questions, call our Technical Support team at: 800.879.8585.

Important Installation Notices

- All power must be turned off prior to wiring, installation, or service.
- More than one disconnect may be required to de-energize power to the LI.
- External circuit protection to the LI is required (for example, the circuit breaker).
- Installation shall be in accordance with all applicable regulations, wiring practices, and codes.
- Care should be taken to separate high voltage power from low voltage (Class 2) control wiring.
- Do not energize wiring until the unit is fully assembled and connected circuits have been tested and found to be free of electrical shorts.

> ⚡ **WARNING: IMPROPER INSTALLATION OR CONNECTION OF THIS PANEL MAY RESULT IN SERIOUS PERSONAL INJURY AND/OR DAMAGE TO THE PANEL AND OTHER DEVICES.** ⚡

COMPONENT LOCATIONS

The illustration below shows a Lighting Integrator panel installed inside an enclosure with the cover removed. Note the location of components when the panel is fully assembled.
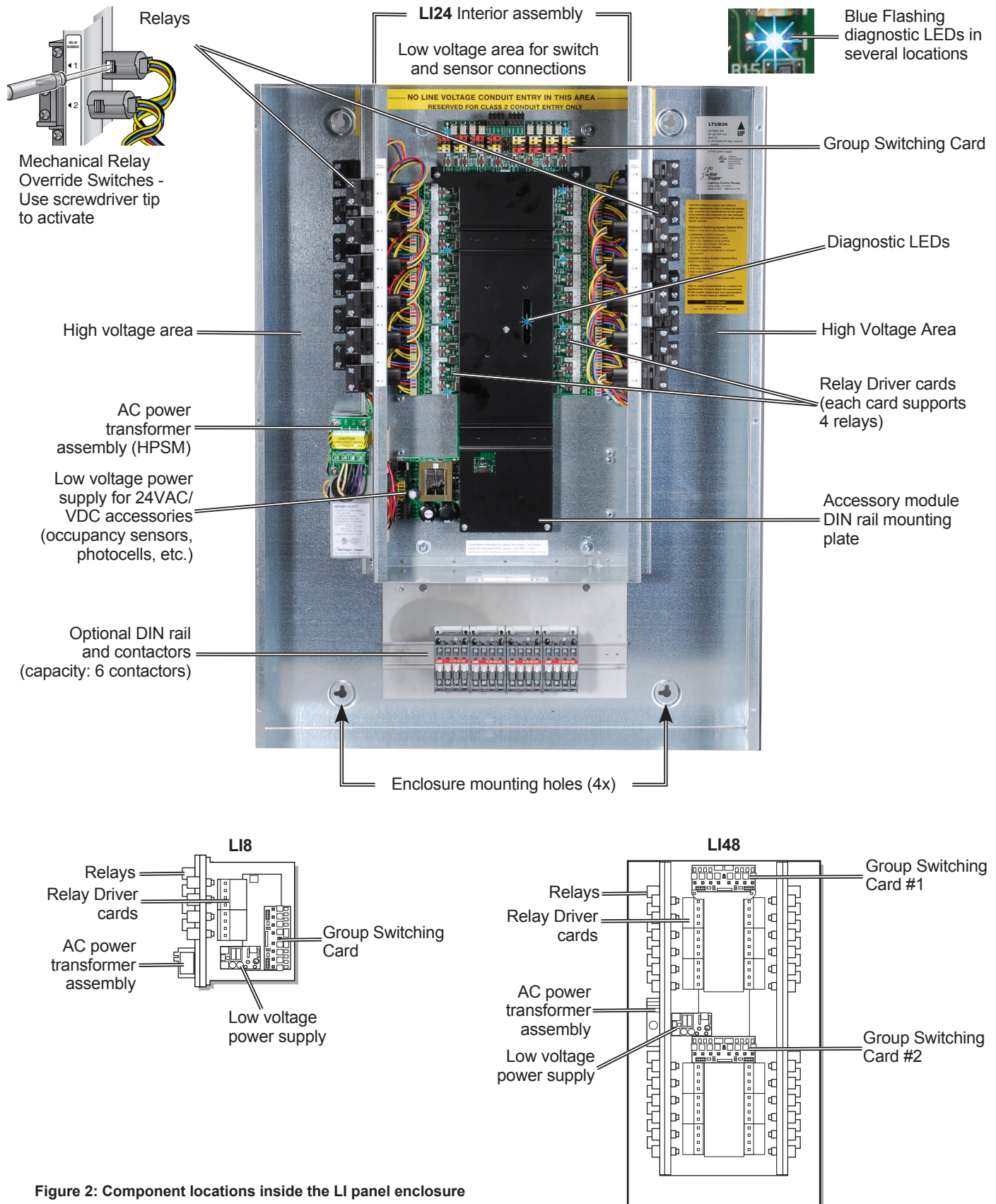

Figure 2: Component locations inside the LI panel enclosure

INSTALLATION AND SETUP

A. Mount the LI Enclosure

1. Attach the enclosure to the wall.

    The enclosure should be level, plumb and rigidly installed. Refer to the instructions provided with the enclosure for flush or surface mounting procedures.

2. Determine the appropriate wire entry locations.

    Make sure that all line and low voltage wiring entry locations are confined to the appropriate compartments as shown in the figure below.

    Do not run low voltage wiring with line voltage or power wiring.

3. Drill or knock out openings to bring wiring conduit into the enclosure.

> ⚡ **WARNING: OBSERVE LINE AND LOW VOLTAGE SEPARATION WHEN ROUTING CONDUIT AND WIRE.** ⚡

B. Install the LI Interior

Do not install the interior assembly until after the LI enclosure has been securely mounted to the wall and the conduit/wiring holes have been drilled or knocked out.

NOTE: If this enclosure includes the optional DMP-1 Din Rail Mounting Plate, place DMP Plate over lower studs before installing the interior.

1. Place the interior in the enclosure and align the interior with the studs provided in the enclosure.
2. Attach the interior assembly to the back of the enclosure using the four sets of nuts and washers provided.
3. After all wiring is completed, attach the cover according to the instructions provided with the enclosure.
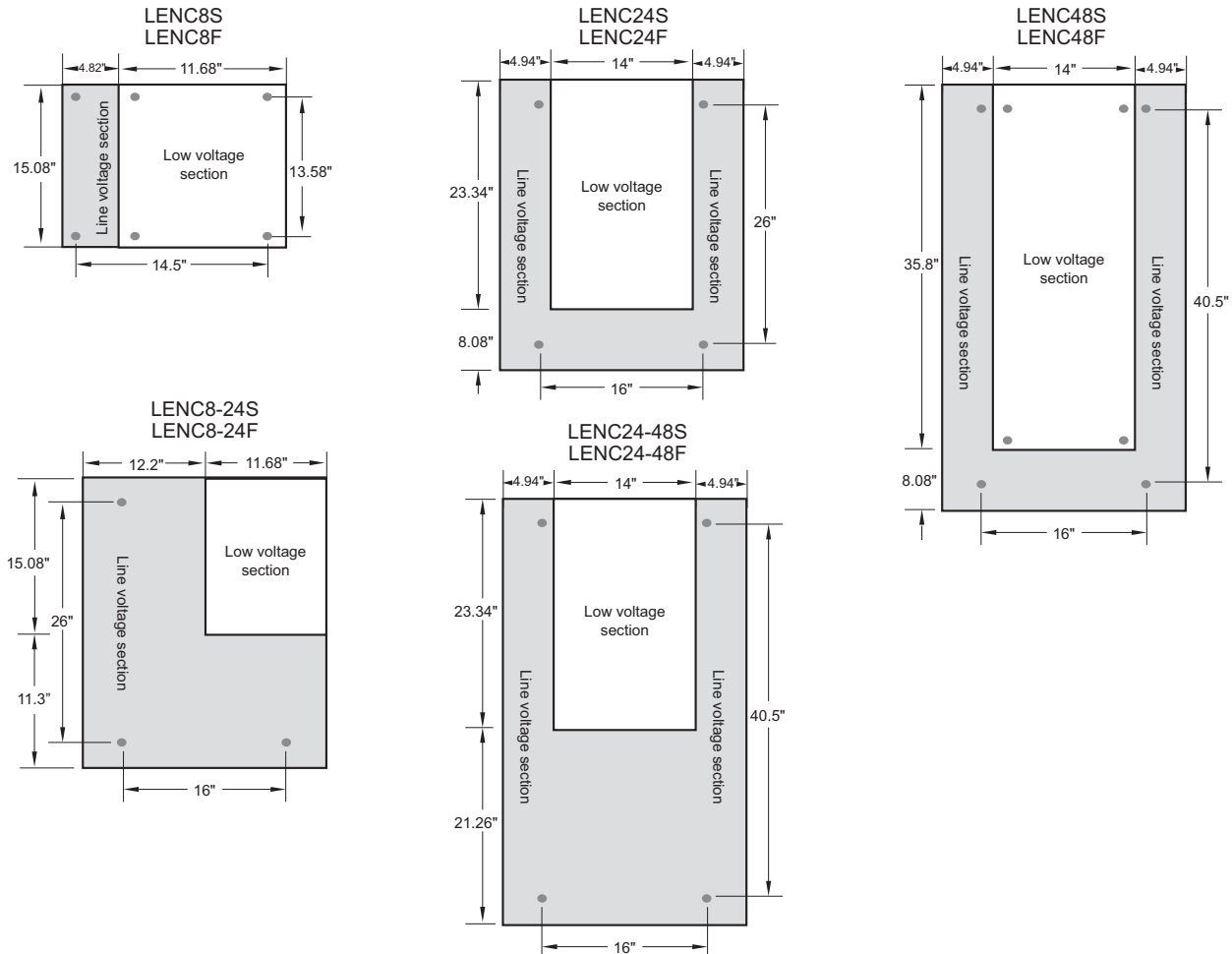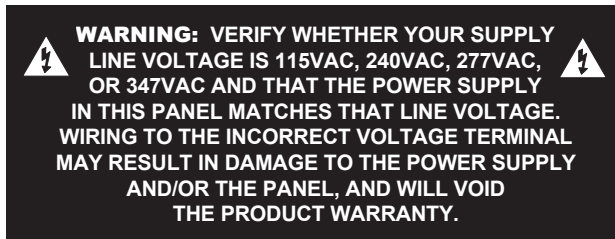

Figure 3: Enclosure dimensions

C. Connect the AC Power Supply to Power Source

The LI has several power supply options that allow it to operate with 115VAC, 240VAC, 277VAC or 347VAC line voltage. These power supplies function with either 50 or 60 Hz. They have internal overcurrent protection. The transformer automatically turns off when overloaded and resets when the fault is removed. The power supply contains MOVs to protect all downstream electronics from transient powerline voltage surges.

1. Read and remove the **WARNING** label covering the terminals.

> ⚠ **WARNING:** VERIFY WHETHER YOUR SUPPLY LINE VOLTAGE IS 115VAC, 240VAC, 277VAC, OR 347VAC AND THAT THE POWER SUPPLY IN THIS PANEL MATCHES THAT LINE VOLTAGE. WIRING TO THE INCORRECT VOLTAGE TERMINAL MAY RESULT IN DAMAGE TO THE POWER SUPPLY AND/OR THE PANEL, AND WILL VOID THE PRODUCT WARRANTY. ⚠

2. Note that there are different terminals for supply voltage input.
   Wire to **ONLY ONE** of these terminals. Match your input voltage to the correct terminal.
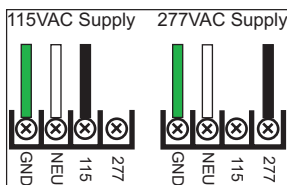
Figure 4: P115/277 wiring
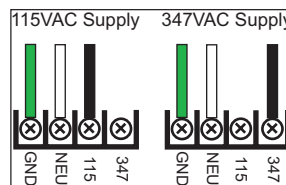
Figure 5: P115/347 wiring

Figure 6: P240 wiring

D. Connect Load and Line Voltage to Relays

Before making any connections to the relays, make sure that none of the load circuits are shorted. Route conductors from the circuit breaker through each relay's SPST output terminals, and from there to the loads. Confirm that each circuit is wired to the relay specified in the electrical construction drawings and relay schedule forms provided with the panel.

Figure 7: Relay Schedule Form

Power Up and Test Relays

1. Apply power to the LI power supply ONLY.
   Do NOT apply power to the controlled circuit loads.
2. As shown in the illustration, locate the relay control buttons on the Relay Driver card next to each relay's 5-wire plug-in termination.
3. Press the relay control button to toggle it ON/OFF.

   The relay clicks, the relay's mechanical override switch moves, and the LED status indicator changes.
4. Confirm the operation by measuring the continuity at the line voltage terminations of each relay.
5. Apply power to the relays.
6. Being careful not to touch any line voltage wiring, toggle each relay ON/OFF again and confirm that each relay controls the appropriate load.
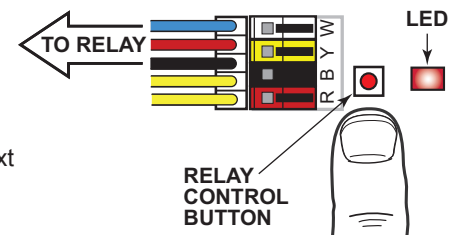

Figure 8: Relay Control Button

E. Low Voltage (Class 2) Wiring

The low voltage (Class 2) section of the panel provides terminal connections for a variety of optional switches and other devices. See Figure 3 for location of the low voltage section. All wire entering this section must be Class 2 only. Do not allow line voltage conductors to pass through the Class 2 section for any reason.

An individual relay can be controlled from a switch or sensor by hardwiring it to the corresponding connector on the Relay Driver card (see Figure 2 for locations). Alternatively, several relays can be grouped together so that they can be controlled from a single switch or sensor that is hardwired to the Group Switching card (see **Optional Group Switching Card** and **Smartwire Procedure** sections). A group of relays is assigned to a group channel via smartwiring. Up to 8 groups labeled A through H are available with a single Group Switching card (refer to Figure 10). A 48-relay panel can support two Group Switching cards, for up to 16 group channels.

Hardwire Low Voltage Switch Wiring

Two-wire momentary

Operates as push ON/push OFF in an alternate action. This type of control is recommended for applications where the user can clearly see the lighting being controlled. This switch cannot be hardwired to multiple inputs. If multiple relays need to be controlled by this type of switch, use a Group Switch card input.
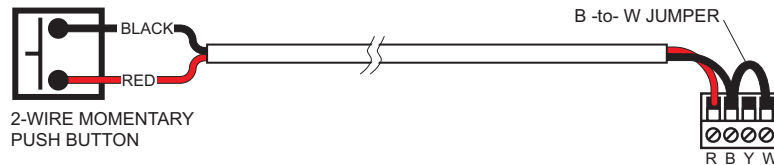

Two-wire maintained

Operates as a standard ON/OFF toggle switch. This type of control should not be used where the lighting is being controlled by scheduled or other automatic means. If the lighting is turned off by automatic means, the switch must be moved through the OFF position before it once again synchronizes with the status of the lighting.
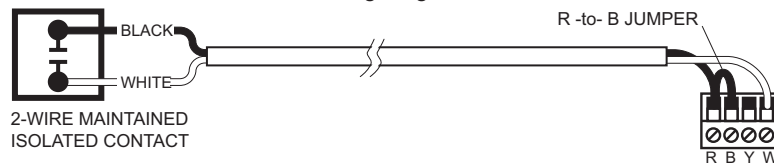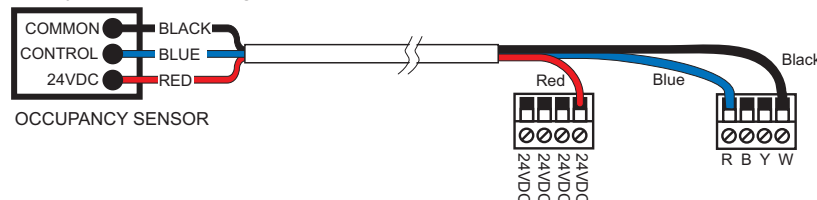

Three-wire momentary

Operates in a dual momentary action mode with an independent contact for the ON and OFF signals. This operation can be provided by a SPDT momentary toggle switch or a variety of Wattstopper low voltage switch options. This is the most common type of direct wired switch option used with LI relay panels.
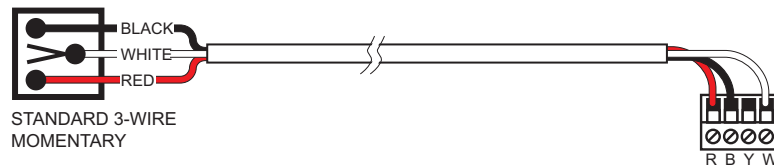

Occupancy Sensor

LIC switch inputs are designed to automatically sense the connection of a Wattstopper occupancy sensor. The operation of the input configures for proper operation as soon as the sensor activates the input for the first time. Operation of the relay is determined by motion detection in the space and the scheduled occupancy state of the relay or channel it is controlling. During scheduled occupied periods, the sensor turns lighting ON when motion is detected, but does not turn the lighting OFF. During unoccupied periods, the sensor turns the lighting ON and OFF based only on motion being detected.

Manual ON/OFF with Occupancy Sensor

Allows a two-wire momentary switch to have manual ON/OFF control of the lighting in conjunction with occupancy sensor control. Unlike the occupancy sensor, this switch turns the lighting ON or OFF regardless of the status of the sensor or scheduled occupancy status relay or channel it is controlling.
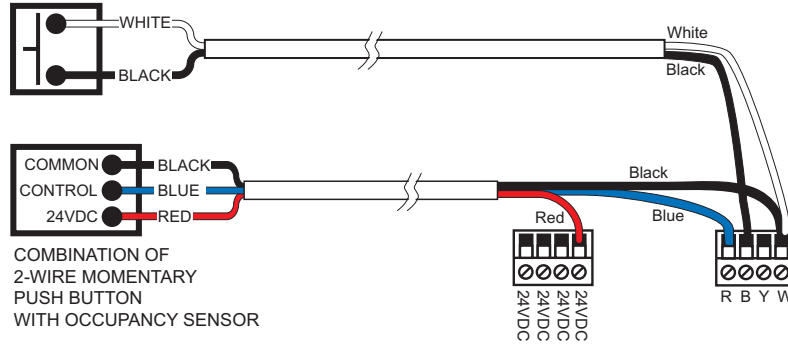
Switches with Pilot Lights

The "Y" (yellow) terminal on the Switch Input Terminal Blocks supplies 24V rectified for use with pilot light switches.

To power a pilot light from the "Y" (yellow) terminal of a Group Switching (GS) card, install a jumper wire from 24VR to Yelcom on the GS card.

Voltage is present when the associated relay is ON.

Contact the Factory for configuring the panel for use with switch pilots requiring other voltages.

F. Optional group switching and smartwire procedure

A Group Switching card (Figure 10) provides eight channels that may be smartwired to relays within the panel. Channels are used to group relays for common control

When an LI panel includes an automation module (HCLK8SS Network Clock or HBMS8SS BMS Interface Module), turn to the installation instructions for that automation module and complete the documentation before smartwiring any relay to channels.

However, if automation is to be provided by an interface to another system, or by using manual switches only, the channels may be used simply for grouping relays. See instructions 1, 2 and 3.
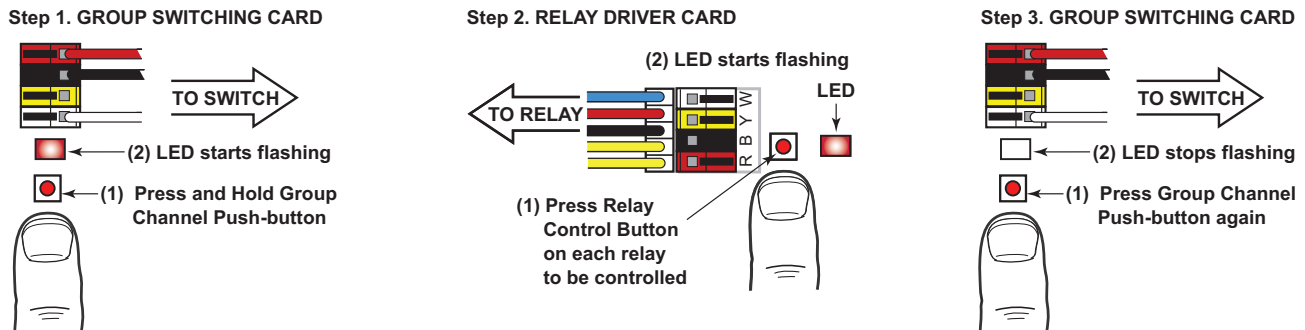

Figure 9: Manual relay channel setup for the Group Switching Card

1. On the Group Switching card, press and hold the Group channel push button for several seconds.
2. Release the button when the red channel LED and the LEDs for relays currently controlled by that input begin to flash.
3. On each Relay card, select the relays to be controlled.
    If a relay was previously "smartwired" to the channel input selected, the LED flashes; otherwise the LED is off.
4. Press the associated Relay Control Button to add/delete that relay to/from the group.
    The LED for each relay included in the group flashes.
5. On the Group Switching card, press the Group Channel Push-button again for several seconds.
6. Release the button when all LEDs stop flashing.
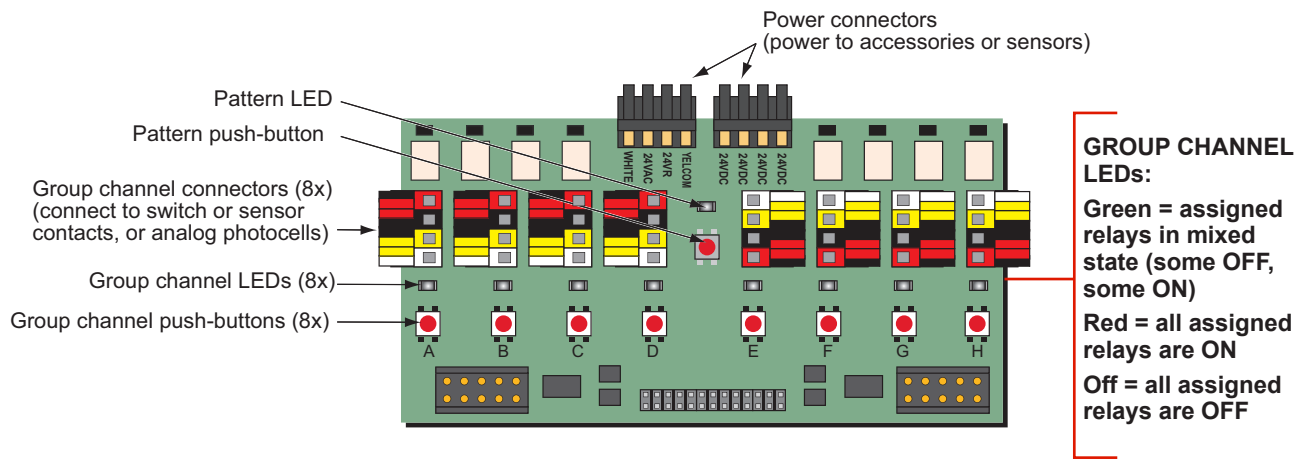   The input switch now controls the relays selected.

Figure 10: Group Switching card connections and components

Test Smartwired Relay Group Channels

1. Press the Group channel Push-button ON/OFF/ON to toggle the group ON/OFF/ON.

   The Group channel LED tracks the last action. With all relays in the group ON, the Group channel LED is Red.

2. Turn OFF each relay in the group using the individual Relay Control Buttons.

   The Group channel LED turns Green to indicate that the relays assigned to that channel are in mixed states – some are OFF, some are ON.

   When the last relay is turned OFF, the Group Channel LED should also go OFF.

TESTING

Basic Power-up Testing

Test	Response	What next? If the panel continues to fail a test, call Technical Support
Observe Blue LEDS on the C8 or C24 board.	Blue LED blinks at a regular tempo.	Go to next Test.
	Blue LED off or continuously lit.	Reset panel power. Check LED again.
Observe Blue LEDs (at DS6) on RD boards (and on GS card if installed).	Blue LED flashes at regular intervals on both boards.	Go to next Test.
	Blue LED off or continuously lit.	Reset panel power. Check LED again.
Observe the Green Status LEDs on the C8 or C24 board.	All 6 Green Status LEDs are continuously lit.	Go to next Test.
	Any Green Status LED is off.	Reset panel power. Check LEDs again.
Observe the two green Power LEDs at DS1 & DS2 on the PS board.	Both green Power LEDs are continuously lit.	Go to next Test.
	Either Green Power LED is off.	Turn off power to panel and check red and black wire connections to the J2 terminal block on the PS board. Reset panel power. Check LEDs again.
Look for any lit Amber LEDs on the RD (and GS if installed).	No Amber LEDs observed.	Go to next Test.
	An Amber LED is lit or blinking.	Reset panel power. Check for Amber LEDs again.
Relay Operation: Press each Relay control push-button.	Red LED for each relay lights and relay clicks. Press button again, relay clicks and Red LED goes off.	Ok to wire low voltage devices to relay card terminals.
	Red LED doesn't light and/or relay doesn't click.	Make sure a jumper is installed on PS board between YELCOM and 24VR terminals.

TROUBLESHOOTING

#	Problem	Test Steps	Next
1.	The LV switch does not control the relay or group.	Are the wires routed and terminated correctly in the panel?	No – Correct terminations.
			Yes – Go to next step.
		Is the 12VDC indicating LED on the C8 or C24 motherboard solid Green?	No – Cycle power to panel; recheck.
			Yes – Go to next step.
		Does the board mounted override pushbutton control the relay or group?	No – Call tech support.
			Yes – Go to next step.
		Disconnect input terminals.	No – Call tech support.
		Does jumping the Red to White input terminals turn the relay on and does Black to White turn it off?	Yes - Verify the LV wiring is not shorted and that the switch is operating correctly.
		If using a Group switch, have the relays been assigned to the particular group using the GS card?	No – Make the necessary assignments (refer to page 8).
			Yes – Go to next step.
2.	When I try to turn the relay off it goes off for a second then comes back on.	Remove any LV switching that is landed at the relay input and attempt to turn relay ON using the board override buttons.	No change in status - Go to next step.
			Relay functions normally - Verify the LV wiring is not shorted and that the switch is operating correctly.
		Move LV relay connection to a different point on the RD board and attempt to override the relay on.	No change in status - relay needs to be replaced - call tech support.
			Relay functions properly – circuit board needs to be replaced - call tech support.
3.	When I try to turn the relay on it comes on for a second then goes off again.	Remove any LV switching that is landed at the relay input and attempt to turn relay ON using the board override buttons.	No change in status - Go to next step.
			Relay functions normally – Verify the LV wiring is not shorted and that the switch is operating correctly.
		Move LV relay connection to a different point on the RD board and attempt to override the relay on.	No change in status - relay needs to be replaced - call tech support.
			Relay functions properly – circuit board needs to be replaced - call tech support.
4.	I need to remove a sensor from the system.	Once a sensor has been connected to a relay driver or group switch card low voltage input, the input remains in the sensor mode even if the sensor is removed. **To restore normal operation:** Remove the sensor wiring from the panel input. Turn the associated relay or group off using the red override button corresponding to the input where the sensor had been connected. Momentarily jumper the white and red terminals. **Does the relay/group turn on?**	No – Call tech support.
			Yes – Normal operation is restored. The input is configured for standard low voltage switches.

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