

ELI-S-100

WITH DIMMING CAPABILITIES

PHILIPS
bodine

Installation and Operation Instructions

ELI SERIES EMERGENCY LIGHTING INVERTERS



! IMPORTANT SAFEGUARDS !

WHEN USING ELECTRICAL EQUIPMENT, BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED, INCLUDING THE FOLLOWING:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

- 1. Caution:**
 - High voltage will be present on the output wires and terminals if batteries are installed and inverter connector is joined or if AC power is supplied to the switched and unswitched terminal.
 - Ensure input and output primary wiring connections are made to the proper terminals. Damage to product may occur if miswired.
 - Ensure load voltage requirements (120 or 277 Vac) match the output ratings of this product or damage to the load devices may occur.
 - The batteries should be installed and charged within 8 months of manufacture's date code. See step #6 for date code information.
- 2.** This product is suitable for use in damp locations where the ambient temperature is 0°C through 40°C, depending on load. See output ratings on product label for details. This product is not suitable for heated air outlets and wet or hazardous locations.
- 3.** Make sure all connections are in accordance with the National Electrical Code or Canadian Electrical Code and any local regulations.
- 4.** To reduce the risk of electric shock, disconnect both the normal and emergency power supplies and the inverter connector of the emergency lighting inverter before servicing.
- 5.** Do not install near gas or electric heaters.
- 6.** An unswitched AC power source is required. The AC voltage rating of this equipment is specified on the product label. Do not connect equipment to any other voltage.
- 7.** Equipment should be mounted securely in locations and at heights where it will not be readily subjected to tampering by unauthorized personnel.
- 8.** The use of accessory equipment and replacement parts not recommended by the manufacturer may cause an unsafe condition.
- 9.** Do not use this equipment for other than its intended purposes.
- 10.** The battery is field replaceable. Contact manufacturer for information on replacement. Use caution when replacing battery. Dispose of the battery properly. Do not incinerate.

SAVE THESE INSTRUCTIONS



**THIS PRODUCT INCLUDES RECHARGEABLE LEAD-ACID BATTERIES.
THE BATTERIES MUST BE RECYCLED OR DISPOSED OF PROPERLY.**

06/21/17

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INSTALLATION



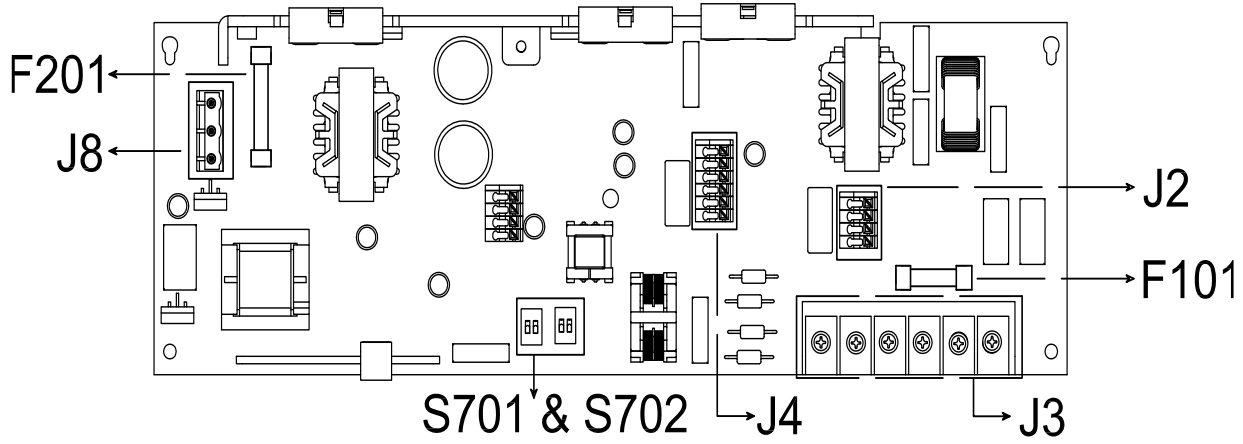
WARNING: TO PREVENT HIGH VOLTAGE FROM BEING PRESENT ON THE COMMON OUTPUT AND HOT OUTPUT LEADS PRIOR TO INSTALLATION, INVERTER CONNECTOR MUST BE OPEN. JOIN INVERTER CONNECTOR INSIDE THE CASE AFTER INSTALLATION IS COMPLETE AND AC POWER IS SUPPLIED.

NOTE: Make sure the inverter connector is closed before screwing the front cover to the case.

STEP #1 **INSTALLING THE EMERGENCY LIGHTING INVERTER**

- > Remove front cover and any packing material inside the unit housing that may have been used for shipping purposes.
- > Secure housing to the mounting surface through the keyhole knockouts using mounting hardware (not supplied). This hardware must be appropriate to hold the unit weight of 25 lbs with the batteries installed.
- > Remove the knockouts to install input and output wiring conduit fittings.
- > Extend AC supply, output load wiring, and optional control wiring into the equipment enclosure using appropriate wiring hardware and methods.
- > Illustration 1 details the locations of the various wiring terminals and switch locations needed for the remainder of the installation. Reference Illustration 1 for steps through 2 through 5

**ILLUSTRATION 1
INSTALLATION QUICK REFERENCE GUIDE**



STEP #2 **WIRING THE EMERGENCY LIGHTING INVERTER'S PRIMARY POWER CONNECTIONS**

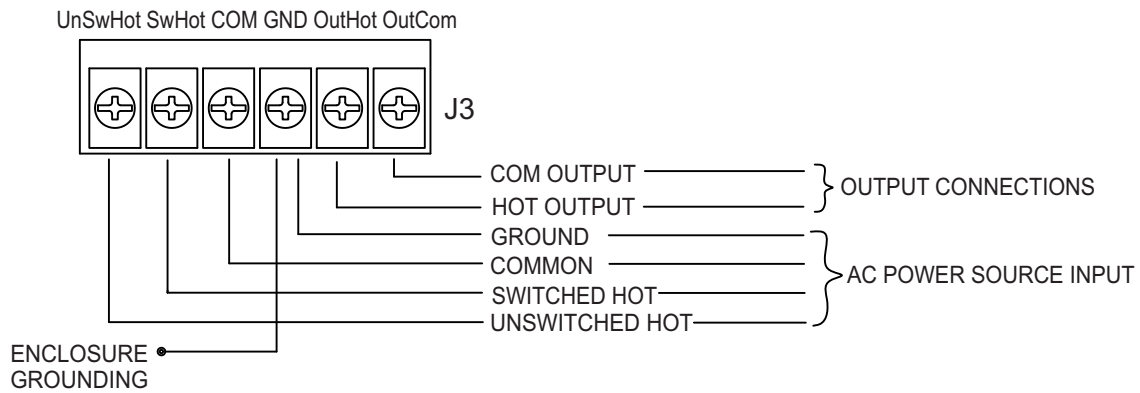
NOTE: Make sure all connections are in accordance with the National Electrical Code, Canadian Electrical Code and any local regulations.

Reference Illustration 2 when making the following wiring connections.

- > Connect the Load Common lead to screw terminal "J3 -Out Com"
- > Connect the Load Hot lead to screw terminal "J3 -Out Hot"
- > Connect the Emergency Lighting Inverter to ground using screw terminal "J3 -GND"
- > Connect the AC Power Source Common to screw terminal "J3 -COM"
- > Connect the Unswitched Hot to screw terminal "J3 -UnSwHot"

Screw terminal "J3 -SwHot" is the means of powering the load luminaires in Normal Mode. If a wall switch is the local control means, this switched hot must be connected in order to power the load when AC power is present. If no wall switch is used, and the load luminaires are controlled by the same circuit breaker that is powering the unswitched hot, "J3SwHot" can be jumpered to "J3 -UnSwHot".

ILLUSTRATION 2 PRIMARY WIRING CONNECTIONS



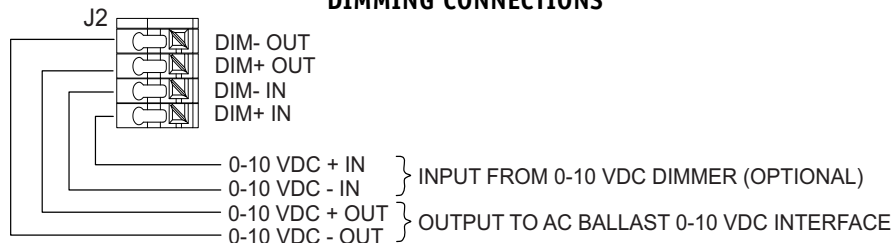
CAUTION:

- Ensure input and output primary wiring connections are made to the proper terminals. Damage to product may occur if miss wired.
- Ensure load voltage requirements match the output ratings of this product or damage to the load devices may occur.

STEP #3 ► WIRING THE EMERGENCY LIGHTING INVERTER'S DIMMING CONNECTIONS (OPTIONAL)

The ELI-S-100 features an industry-standard 0-10 VDC dimming voltage output which allows Emergency operation of one or more luminaires that consume a total of more than 100 Watts when operating in the Normal mode, (operating from the AC mains). These luminaires must have AC Drivers (or Ballasts) that are compatible with industry standard 0-10 VDC dimming operation. The emergency mode output dimming voltage is selectable in 5 steps to provide nominally 20%, 40%, 60%, 80% and 100% light output. Existing area dimming controls can be wired through the ELI-S-100 dimming relay to allow for normal dimming by occupants of the area during Normal mode operation. Refer to Illustration 3 below to wire the dimming output voltage to the load and the input connections from a dimming control device, if utilized. See Illustration 1 for the location of the dimming connector J2 on the product. This dimming voltage level is set by the installer by operating the switches S701 and S702, which are located at the lower center section of the circuit board (see Illustration 1). See Step 4 for switch settings.

ILLUSTRATION 3 DIMMING CONNECTIONS



STEP #4 ► SETTING THE OUTPUT DIMMING LEVEL (OPTIONAL)

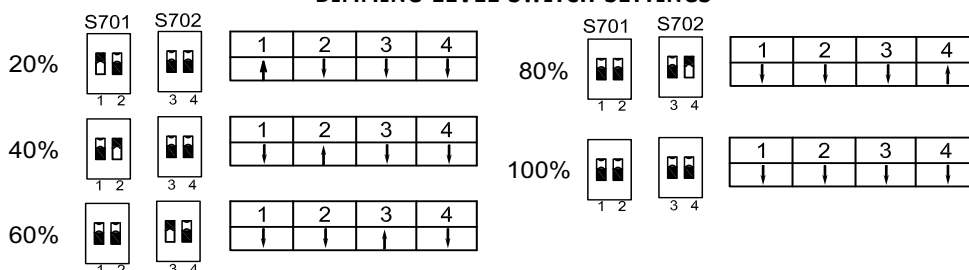
Upon loss of normal AC power, the Emergency Lighting Inverter's internal 0-10 VDC circuit will output a dimming voltage to the luminaires. PCB Switches S701 and S702 are used to set the 0-10 VDC dimming level. See Illustration 4 which details the switch positions for the desired level of dimming. Refer to Illustration 1 for the switch locations on the product. It may be necessary to measure the output power of the Emergency Lighting Inverter, in the emergency run mode, to ensure the product's maximum output ratings are not exceeded. It is suggested the installer start with the maximum dim level (20%), increasing the dim level ONLY if the maximum output ratings are not exceeded. See unit label for output ratings.



CAUTION:

The installer must ensure the total output power of the Emergency Lighting Inverter does not exceed 100 Watts, in emergency mode.

ILLUSTRATION 4 DIMMING LEVEL SWITCH SETTINGS



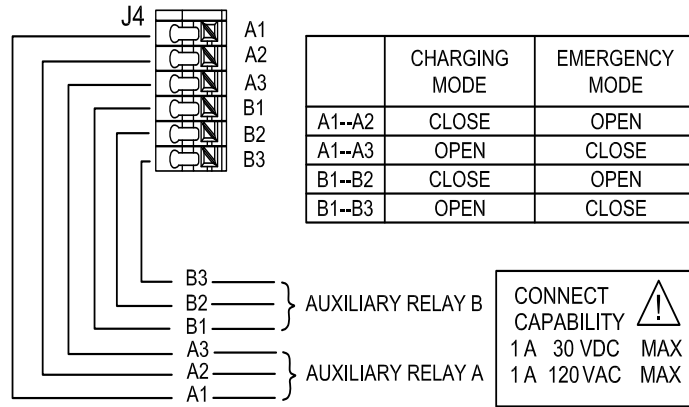
INSTALLATION

STEP #5 ► WIRING THE AUXILIARY RELAY CONNECTIONS (OPTIONAL)

This product also provides 2 additional isolated, auxiliary output relays to allow additional or alternate dimming operation from other dimming sources, or to provide a means of control or signaling to alternate equipment. See Illustration 1 for the location of these auxiliary contacts on the product.

Refer to Illustration 5 for connections to these auxiliary relay contacts. Ensure the ratings of the contacts are not exceeded. The relay contacts are rated for 1 A at 30 VDC or 1 A at 120 VAC.

ILLUSTRATION 5 AUXILIARY RELAY CONTACT WIRING



STEP #6 ► BATTERY INSTALLATION

This product is provided with two lead-acid batteries, which must be mechanically secured inside the enclosure using the provided battery bracket. They must then be wired using the provided battery connection wires. Refer to Illustration 6a and 6b for installation.



CAUTION:

- The batteries should be installed and charged within 8 months of manufacture's date code.
- The battery date code is made up of 5 characters which represent the month, day and year of manufacture (MM/DD/Y). For example, 08023 means the battery was made August 2, 2013. There may be additional alpha-numeric characters at the end of the date code. The date code is located on the battery carton and additionally engraved into the battery.
- DO NOT CONNECT the battery cable connector to the Circuit Board connector J8 until the unit is ready for use as the batteries may be discharged after long periods of unit inactivity.

Install the batteries as shown. With the unit secured to the mounting surface, place the batteries into the enclosure as illustrated in Illustration 6a. Insert the battery bracket on the battery bracket stud, ensuring the bracket is placed against the batteries. Slide the ring terminal of the grounding wire over the battery bracket stud. Securely fasten the grounding wire and battery bracket against the batteries using the external toothed washer and nut. Once the batteries are secure, attach the battery harnesses as shown in Illustration 6b.

ILLUSTRATION 6a BATTERY MECHANICAL INSTALLATION

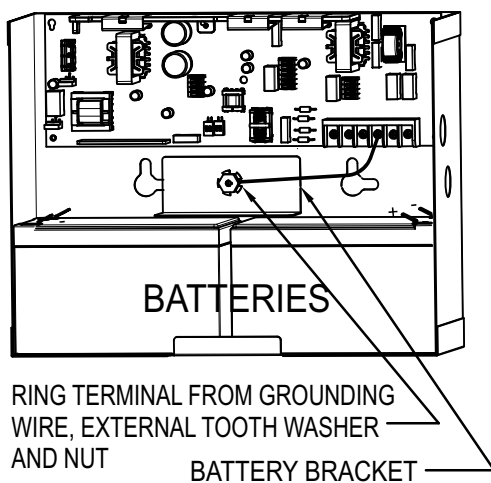
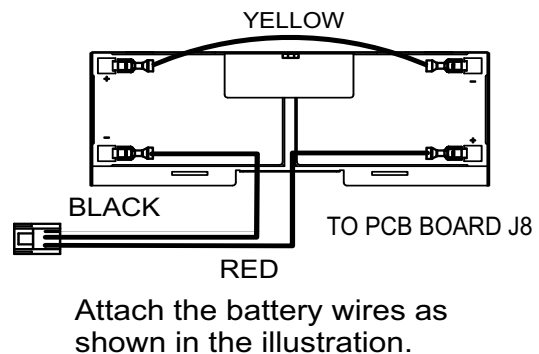


ILLUSTRATION 6b BATTERY WIRING CONNECTIONS



BATTERY REPLACEMENT

To replace the batteries, disconnect both switched and unswitched AC power to the Emergency Lighting Inverter. Remove the two screws securing the lid to the enclosure base and remove the lid. Open the inverter connector wires and then unplug and remove the old batteries. Reverse this process to install the new batteries. Remember to join the inverter connector prior to reinstalling the lid. The charging indicator light should be illuminated once unswitched AC power is restored. Use only Philips Bodine part number PRT00133 as replacement batteries.

STEP #7 ► JOIN THE INVERTER CONNECTOR & APPLY POWER

- > After installation is complete, apply AC power and join the inverter connector inside the case then screw the front cover to the case.
- > At this point, power should be connected to both the AC ballast and the ELI-S-100, and the Charging Indicator Light on the test switch should illuminate indicating the battery is charging.
- > A short-term discharge test may be conducted after the Emergency Lighting Inverter has been charging for 1 hour. Charge for 24 hours before conducting a long-term discharge test. Refer to OPERATION.

Operation

During normal operation, AC power is supplied to the AC ballast/driver through the ELI-S-100 and the batteries charge. Connecting the inverter connector wires (red and white) enables the emergency circuit and supplies power to the control /monitor circuit. When AC power fails, the ELI-S-100 automatically switches to emergency mode, keeping the load illuminated for a minimum of 90 minutes. When AC power is restored, the ELI-S-100 returns to charging mode. The unit can also detect an abnormal load condition (open or shorted load) during emergency mode operation and will protect the inverter from damage.

Maintenance

CAUTION:



Always turn off AC power to the equipment and open the inverter connector inside the case before servicing. Servicing should be performed only by qualified service technicians. Use only manufacturer supplied replacement parts.

Although no routine maintenance is required to keep the emergency Lighting Inverter functional, it should be checked periodically to ensure that it is working.

Testing: The following schedule is recommended

1. Visually inspect the charging indicator light monthly. It should be illuminated.
2. Test the emergency operation at 30-day intervals for a minimum of 30 seconds by pushing the illuminated test switch located at the top of the unit.
3. Conduct a 90-minute discharge test once a year.

Battery: The Battery supplied with this equipment requires no maintenance. However, it should be tested periodically and replaced whenever it will no longer operate the connected fixtures for the duration of a 90-minute test. The battery supplied has a life expectancy of 4 years when used in normal ambient temperature of 72 degrees F.

Fuse: The fuses contained within this product are field replaceable. For fuse locations see illustration 1. To replace fuses, remove AC Power from the product and disconnect the inverter connector. Ensure fuse F201 is replaced by Little Fuse 0314015.MXP or equivalent 15 A, 125 VDC. Ensure fuse F101 is replaced by Little Fuse 0209005.MXP or equivalent 5 A, 350 VAC.

! REFER ANY SERVICING TO QUALIFIED PERSONNEL !

WIRING DIAGRAM

Figure 7

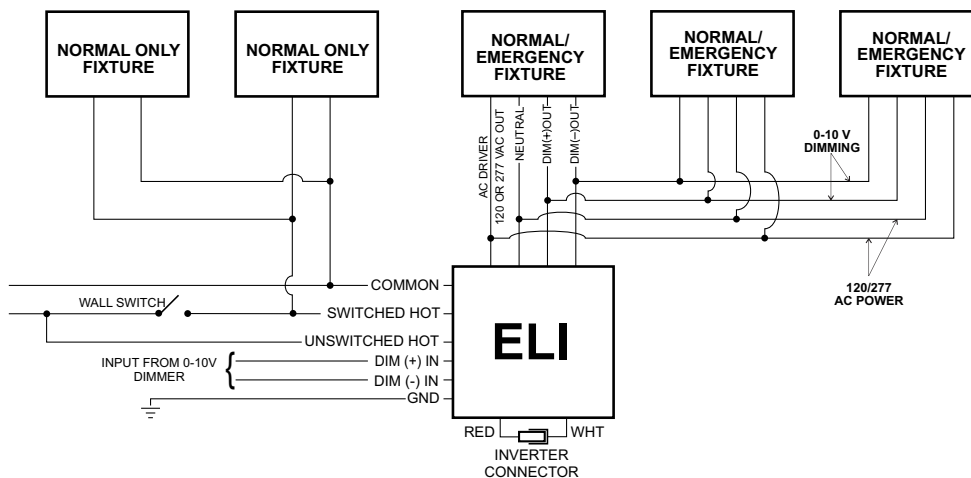


Figure 7 shows an example of a branch circuit containing 5 luminaires, 3 of which are powered through an Emergency Lighting Inverter. During normal AC run mode, the power from the switched hot and dimmer voltage is passed through to the three "Emergency" fixtures. The unswitched hot charges the battery. During a power failure, the Emergency Lighting Inverter powers the "Emergency" fixtures for a minimum of 90 minutes, at a power level set by the Emergency Lighting Inverter's dimming output level. In this example, each luminaire can draw a maximum of 33 Watts, to total no more than 100 Watts.

Note: Mark each designated emergency fixture with provided warning labels, 10 provided.