

# INSTRUCTION MANUAL

## Emergency LED Driver

### **! IMPORTANT SAFEGUARDS !**

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

#### Read and follow all safety instructions

1. **CAUTION-** To prevent electrical shock, do not mate unit connector until installation is complete and A.C. power is supplied to the unit.
2. **CAUTION-**This fixture provides more than one power supply output source. To reduce the risk of electrical shock, disconnect both normal and emergency sources by turning off the A.C. branch circuit and by disconnecting the unit connector.
3. **CAUTION-**This is a sealed unit. Components are not replaceable. Replace the entire unit when necessary.
4. **CAUTION-**Installation and servicing should be performed by qualified personnel only. De-energize before opening.
5. Do not use outdoors
6. Do not mount near gas or electric heaters
7. Equipment should be mounted in locations that heights where it will not be subjected to tampering by unauthorized personnel
8. The use of this accessory equipment not recommended by the manufacture may cause an unsafe condition
9. Do not use this equipment for other than its intended use
10. Use with grounded, UL Listed, damp location rated fixtures
11. An unswitched A.C. power source of 120 to 277volts AC, 50/60Hz is required.
12. The **EMB45-10-UNV** and A.C. driver **must** be on the same branch circuit.
13. Do not mount near gas or electric heaters.
14. The **EMB45-10-UNV** should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
15. The **EMB45-10-UNV** will supply 3-60VDC output at the individual rated specification for 90 minutes.
16. This product is suitable for use in damp locations where the ambient temperature is 0°C minimum, +50°C maximum. Product is also suitable for installation in sealed and gasketed fixtures. Product is not suitable for heated air outlets and wet or hazardous locations.
17. The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition, void warranty, and result in non-compliance with UL specifications.
18. Do not use this equipment for other than intended use.
19. Install in accordance with the National Electrical Code and local regulations.
20. The emergency LED driver is for use with grounded, UL listed LED luminaire, shall be enclosed by the LED luminaire and bonded to the grounding of LED luminaire.
21. Lighting fixture manufacturers, electricians, and end-users need to ensure product system compatibility before final installation.

# SAVE THESE INSTRUCTIONS

## INSTALLATION INSTRUCTIONS

**WARNING: TO PREVENT HIGH VOLTAGE FROM BEING PRESENT ON YELLOW & YELLOW/BLACK OUTPUT LEADS PRIOR TO INSTALLATION, CONVERTER CONNECTOR MUST BE OPEN. DO NOT JOIN CONVERTER CONNECTOR UNTIL INSTALLATION IS COMPLETE AND AC POWER IS SUPPLIED TO THE EMERGENCY DRIVER.**

**CAUTION: Before installing, make certain the A.C. power is off and the EMB45-10-UNV unit connector is disconnected.**

### 1. FIXTURE

The **EMB45-10-UNV** can be used with most LED loads that operate at 3-60VDC, supplies up to **4W** of power.

1. The EMB45-10-UNV has been evaluated to and found compliant to UL standard 924. The as-installed performance of system must meet or exceed all federal, State and local code requirements.

2. Refer to Addendum A for detailed specifications and methods to calculate emergency light levels.

Model	Output Power (CONSTANT)
EMB45-10-UNV	4 Watts

### 2. MOUNTING THE EMB

Mount the **EMB45-10-UNV** in the driver/lamp compartment or enclosed wireway so the wire leads are not exposed at least 1/2away from the driver. Refer to illustration 1 and 2.

When battery packs are remote mounted, consult Customer Service for the maximum allowable distance between the battery pack and the load.

### 3. WIRING

Refer to the wiring diagram on the back page for the appropriate wiring of LED load and driver. Install in accordance with the National Electrical Code and local regulations. For additional wiring diagrams consult Customer Service.

### 4. INSTALLING THE THREADED BODY TEST SWITCH(TEST SWITCH)

**Recessed Troffer Fixture**-Select a convenient location with proper clearance in the channel cover and drill or punch a ½ hole(½ knockout). Insert the 7/8" bushing into the hole. Push the plastic tube through the bushing. Route the leads of the **TEST SWITCH** through the plastic tube. Connect the LED wires from the unit to the **TEST SWITCH**(Red/Black or Red wag to Red, White/Red to White). Push the entire assembly back into the tube until the lens collar rests against the plastic tube. The plastic tube should be adjusted so that the **TEST SWITCH** is within ¼ of the fixture lens. The **TEST SWITCH** must be visible after installation. Refer to illustration1.

Illustration 1

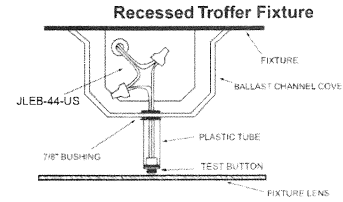
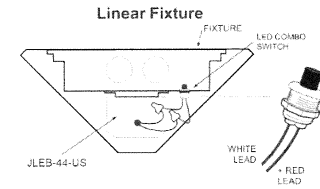


Illustration 2



**Linear Fixture**-Select a convenient location on the fixture so the **TEST SWITCH** can be seen after installation. Allow for proper clearance inside the fixture and drill or punch a ½ hole. Remove the nut from the **TEST SWITCH**. Push the Test switch housing into the ½ hole and secure with the nut. Connect the LED wires from the unit to the Test switch (Red/Black or Red w/tag to Red. White/Red to White). Refer to illustration 2.

**NOTE:** To ensure proper operation, use only the test accessories provided with the unit(See Page 1 of the Instruction Manual)

### 5. LABELS

Attach the appropriate labels adjacent to the **TEST SWITCH**. Annotate Replacement Label with identical manufacturer part number(s). The Caution and the Replacement labels must be on the fixture in a readily visible location to anyone attempting to service the fixture.

### 6. WIRING THE A.C. INPUT

- A. The EMB45-10-UNV and A.C. driver **MUST** be on the same branch circuit.
- B. The EMB45-10-UNV requires an unswitched A.C. power source of 120 to 277VAC, 50/60Hz, therefore when used with switched fixtures, the **EMB** input must be wired ahead of the switch.
- C. Refer to the wiring diagrams on the back page for the proper wiring. For wiring diagrams not shown, consult our customer service.

### 7. COMPLETING INSTALLATION

When the installation is complete, switch the A.C. power on and join the EMB45-10-UNV unit connector.

### OPERATION

**Normal Mode**-A.C. power is present. The A.C. driver operates the LED load as intended. The **EMB45-10-UNV** is in the standby charging mode. The **TEST SWITCH** will be lit providing a visual indication that the battery is being charged.

**Emergency Mode**- The A.C. power fails. The **EMB45-10-UNV** senses the A.C. power failure and automatically switched to the Emergency Mode. One or multiple LED are illuminated for a minimum of 90 minutes. When the A.C. power is restricted, the **EMB45-10-UNV** switched the system back to the Normal Mode and resumes battery charging. See Page 1 of the instruction Manual.

### TESTING& MAINTENANCE

Pressing the **TEST SWITCH** turns off the **light** and forces the unit into emergency mode, interrupting power to the designated A.C. driver. The LED load is now being lit by the **EMB45-10-UNV** unit. After releasing the **TEST SWITCH**, the fixture returns to normal operation after a momentary delay. To simulate a "BLACK OUT" use the circuit breaker to turn off A.C.

power.

**Initial Testing**-Allow the unit to charge approximately 1 hour, then conduct a short discharge test. Allow a 24 hour charge before conducting a one hour test.

The **EMB45-10-UNV** is a maintenance free unit, however, periodic inspection and testing is required. NFPA 101, Life Safety Code, outlines the following schedule.

**Monthly**-Insure that the **TEST SWITCH** light is illuminated. Conduct a 30 second discharge test by depressing the **TEST SWITCH**. At least one LED should operate at reduced output.

**Annually**-Insure that the **Charge Indicator** is illuminated conduct a full 90 minute discharge test. The unit should operate as intended for the duration of the test.

**SERVICING SHOULD BE PERFORMED BY QUALIFIED PERSONNEL**

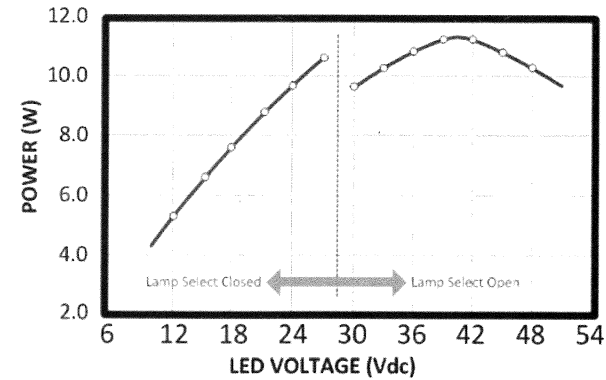
**EMB Series Compatibility and Suitability of Use Guidelines  
Addendum(Rev.A)**

This product is suitable for field installation with suitable LED loads including LED luminaires, DC voltage driven LED replacements for fluorescent lamps and others. There are 4 checks to determine if your luminaire is eligible for field installation.

1. Ensure the LED load's rated power is greater than or equal to the power output of this emergency LED driver. This is to ensure that this emergency product will not produce more power than the LED load can handle, thus ensuring that the LED load will not be damaged when the system is in the emergency mode.
  2. Verify that the forward voltage of the luminaire's LED array is within the limits of this emergency LED driver. The forward voltage of the LED array is commonly designated as Vf and should be found on the luminaire markings, in the luminaire specifications, or imprinted directly on the LED arrays. If multiple LED arrays are to be driven, verify that the total forward voltage is within the limits of this product. Using a voltage meter, it may be possible to directly measure the voltage across the LED arrays when operating from the AC driver.
  3. UL Classified Emergency products can be paired with LED luminaires or retrofit kits if found in the Design Lights Consortium database. Go to the Design Lights Consortium website (<http://www.designlights.org>) and search for your LED system by model name or model number. If found in the database, these products are preapproved by UL to be installed together in the field or at a luminaire manufacturer, provided steps are taken to ensure there will be sufficient light output in the end application.
- You can estimate the egress lighting illumination levels by doing the following:

- a. Find the efficacy of the LED load, which will be found in the Design Lights Consortium database. This number will be given in lumens per watt (lm/w).
- b. Determine the initial power output of the emergency LED driver. This is given in Figure 1 below.

**Figure 1 OUTPUT POWER**



c. Lumens can be calculated by multiplying the output power of the emergency LED driver by the efficacy of the LED load. In many cases the actual lumen output in emergency mode will be greater than this calculation gives, however it will provide a good estimate for beginning the lighting design of the system.

**Lumens In Emergency Mode = Lumens per Watt of Fixture \* Output Power of Chosen Product**

$$\text{(Lumens)} = \text{(lm/W)} * \text{W}$$

d. Using the results of this calculation and industry standard lighting design tools, calculate the anticipated illumination levels in the path of egress.

**5. Determining Adequacy of Means-of-Egress Lighting Levels**

5.1 While this model has been found compliant with the requirements of UL standard 924, it is ultimately the responsibility of the Designer/Specifier to assure the as-installed system delivers code-compliant path of egress illumination in accordance with Federal, State or local municipal requirements.

**Wiring diagram**

