B74CST
Installation Instructions
SELF-TESTING EMERGENCY BALLAST
U.S. Patent No.s 5,666,029 and 6,339,296

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

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

1. To prevent high voltage from being present on red and yellow output leads prior to installation, inverter connector must be open. Do not join inverter connector until installation is complete and AC power is supplied to the emergency ballast.
2. This product is for use with most 16 W through 55 W 4-pin fluorescent including rapid-start long compact and 4-pin compact lamps without integral starters and most 17 W through 215 W fluorescent lamps including T8, T12 and standard, energy saving, HO, VHO, circline, U-shaped (see Table 1).
3. Make sure all connections are in accordance with the National Electrical Code and any local regulations.
4. To reduce the risk of electric shock, disconnect both normal and emergency power supplies and inverter connector of the emergency ballast before servicing.
5. This emergency ballast is for factory or field installation.
6. This product is suitable for damp locations where the ambient temperature for fixture is 0°C minimum, +50°C maximum. Product is not suitable for heated air outlets and wet or hazardous locations.
7. An unswitched AC power source is required (120 or 277 VAC, 60 Hz).
8. Do not install near gas or electric heaters.
9. Do not attempt to service the battery. A sealed, no maintenance battery is used that is not field replaceable. Contact the manufacturer for information on service.
10. The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
11. Do not use this product for other than intended use.
12. Servicing should be performed by qualified service personnel.

SAVE THESE INSTRUCTIONS

THIS PRODUCT CONTAINS A RECHARGEABLE NICKEL-CADMIUM BATTERY. THE BATTERY MUST BE RECYCLED OR DISPOSED OF PROPERLY.
WARNING: TO PREVENT HIGH VOLTAGE FROM BEING PRESENT ON RED & YELLOW OUTPUT LEADS PRIOR TO INSTALLATION, INVERTER CONNECTOR MUST BE OPEN. DO NOT JOIN INVERTER CONNECTOR UNTIL INSTALLATION IS COMPLETE AND AC POWER IS SUPPLIED TO THE EMERGENCY BALLAST.

NOTE: Make sure the necessary branch circuit wiring is available. An unswitched source of power is required. The emergency ballast must be fed from the same branch circuit as the AC ballast.

STEP #1 INSTALLING THE EMERGENCY BALLAST

- Disconnect AC power from the fixture. Remote mounting distance must be less than half the maximum remote mounting distance for the AC ballast. Consult AC ballast manufacturer before remote installation.

- Depending on the type of fixture in use install emergency ballast using one of the methods illustrated below.

STEP #2 INSTALLING THE TEST SWITCH

- Refer to the illustrations above and install the test switch through the ballast channel cover of a troffer or through the side of a strip fixture.

- Drill a 1/2” hole and install the switch as shown.

- Wire the test switch so that it removes AC power from both the emergency ballast and the AC ballast at the same time. (see wiring diagrams)

STEP #3 INSTALLING THE CHARGING INDICATOR LIGHT

- Install the CHARGING INDICATOR LIGHT as shown in the illustration on the following page so that it will be visible after the fixture is installed.
**STEP #4 WIRING THE EMERGENCY BALLAST**

> Determine the type of AC ballast installed in the fixture.

> Select the appropriate wiring diagram in the wiring diagrams section to connect the emergency ballast to the AC ballast and lamp(s). Make sure all connections are in accordance with the National Electrical Code and any local regulations.

> To disable audible alarm, cut red/white wire loop. CAP ENDS.

> After installation is complete, supply AC power to the emergency ballast and join the inverter connector. It is normal for the indicator light to remain off for a few minutes on initial start-up, as the battery voltage rises to normal range. Refer to Troubleshooting Guide if this condition persists.

> At this point, power should be connected to both the AC ballast and the emergency ballast, and the Charging Indicator Light should illuminate indicating the battery is charging.

> A short-term discharge test may be conducted after the emergency ballast has been charging for one hour. Charge for 24 hours before conducting a long-term discharge test. Refer to OPERATION.

> In a readily visible location, attach the label “CAUTION - This Unit Has More Than One Power Connection Point. To Reduce The Risk Of Electric Shock, Disconnect Both The Branch Circuit-Breakers Or Fuses And Emergency Power Supplies Before Servicing.”

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**CHARGING INDICATOR LIGHT INSTALLATION**

**TROFFER STYLE FIXTURE**

**STRIP STYLE FIXTURE**

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**OPERATION**

During normal operation, AC power is applied and the self-testing emergency ballast charges the battery. Connecting the (red and white) battery connector wires enables the emergency circuit, and supplies power to the control/monitor circuit and charging indicator light. The self-testing emergency ballast continually monitors the charging current and battery voltage, comparing them to preset limits. Should the unit detect an unusual current or voltage condition, the indicator light will flash and the internal audible alarm will sound.

When AC power fails, the self-testing emergency ballast automatically switches to emergency mode, keeping either one or two lamps illuminated at a reduced lumen output for a minimum of 90 minutes. When AC power is restored, the self-testing emergency ballast returns to charging mode and delays AC ballast operation for approximately three seconds to prevent false tripping of AC ballast (end-of-lamp life) shutdown circuits.

**SELF-TESTING OPERATION**

This unit contains a control/monitor circuit that automatically performs a 30-second discharge test every 30 days, and a full 90-minute discharge test once a year. During routine testing, the self-testing emergency ballast simulates an AC power failure causing the unit to automatically switch to emergency mode. The unit will monitor the operation of the lamps, battery voltage, discharge current, and emergency duration. If the emergency system functions properly, then the unit will return to normal mode. Should the unit detect any problems, the indicator light will flash continually and the audible alarm will sound 4 times every 30 seconds until the condition has been corrected or the unit passes the next test.

To reset a failure indication, push and hold the test switch for a minimum of 15 seconds. If the condition has not been corrected by the next scheduled test, the unit will once again detect the failure and signal the failure indicator.

To cancel a test, turn the wall switch ON (or OFF if switch is already on), wait 5 seconds, then turn it OFF (ON).
MAINTENANCE

This self-testing emergency ballast automatically performs required routine testing. Results are reported to maintenance personnel via the indicator light and audible alarm.

**Note:** If optional audible alarm is disabled, maintenance personnel should periodically check the indicator light. If the indicator light is flashing, go through all steps of Troubleshooting Guide.

### TROUBLESHOOTING GUIDE

<table>
<thead>
<tr>
<th>STATUS INDICATORS</th>
<th>PROBLEM</th>
<th>CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDICATOR LIGHT</strong></td>
<td><strong>AUDIBLE ALARM</strong></td>
<td></td>
</tr>
<tr>
<td>Light on steady, not flashing</td>
<td>No beeping</td>
<td>None</td>
</tr>
<tr>
<td>Flasing 1/2 Second Intervals</td>
<td>Beeping 1/2 Second Intervals</td>
<td>Line voltage; incorrect installation</td>
</tr>
<tr>
<td>Flasing 1/2 Second Intervals</td>
<td>Beeping 4 times every 30 seconds</td>
<td>Battery voltage is outside limits.</td>
</tr>
<tr>
<td>Any other erroneous status indications</td>
<td>Corrupted chip memory</td>
<td>Open inverter connector (red and white wires) and push manual test switch for 15 seconds minimum, then reconnect battery connector.</td>
</tr>
</tbody>
</table>

**Failure Status will be reset when the unit passes:**

- The next automatic test, or
- A manual test exceeding 15 seconds, or
- An actual power failure exceeding 15 seconds.

**NOTE:** It is normal for the indicator light to remain off for a few minutes on initial start-up or after a very long power outage (discharge), as the battery voltage rises to normal range. Refer to the Troubleshooting Guide if this condition persists.
WIRING DIAGRAMS

Table 1

<table>
<thead>
<tr>
<th>LAMP (DIAMETER)</th>
<th>BASE TYPE</th>
<th>WATTAGE (Length)</th>
<th>NO. OF LAMPS (EMERGENCY MODE)</th>
<th>BROWN CONNECTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>T8,T10.1/2</td>
<td>Single or Bipin</td>
<td>17 - 40 W (2’ - 9')</td>
<td>1</td>
<td>CLOSED</td>
</tr>
<tr>
<td>T12,12”</td>
<td></td>
<td>40 - 215 W (5’ - 8')</td>
<td>1</td>
<td>OPEN</td>
</tr>
<tr>
<td>COMPACT</td>
<td>4-PIN (DG11)</td>
<td>18 - 39 W</td>
<td>1</td>
<td>CLOSED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>40 - 55 W</td>
<td>2</td>
<td>OPEN</td>
</tr>
<tr>
<td>TWIN/QUAD</td>
<td>4-PIN (G24q)</td>
<td>18 - 32 W</td>
<td>1</td>
<td>CLOSED</td>
</tr>
<tr>
<td>TRIPLE TWIN/QUADRUPLE TWIN-TUBE COMPACT</td>
<td>4-PIN (G24q,GX24q)</td>
<td>42 W</td>
<td>1</td>
<td>CLOSED</td>
</tr>
<tr>
<td>2D</td>
<td>4-PIN (GR10q)</td>
<td>16 - 38 W</td>
<td>1</td>
<td>CLOSED</td>
</tr>
<tr>
<td></td>
<td></td>
<td>55 W</td>
<td>2</td>
<td>OPEN</td>
</tr>
</tbody>
</table>

WIRING DIAGRAMS for 1-LAMP emergency operation

RAPID START AC BALLASTS

FIG 148. ONE (1) LAMP RAPID START BALLAST

FIG 147. TWO (2) LAMP RAPID START BALLAST

FIG 150. TWO (2) LAMP INSTANT START BALLAST

INSTANT START AC BALLASTS

FIG 149. ONE (1) LAMP INSTANT START BALLAST

FIG 152. ONE (1) LAMP COMPACT RAPID START BALLAST

FIG 153. TWO (2) LAMP COMPACT RAPID START BALLAST

WARNING: Refer to Table 1 before connecting.
WIRING DIAGRAMS for 2-LAMP emergency operation

Two-lamp emergency operation is not possible with all ballasts. Consult the factory for any ballast other than those shown.

FIG 157. TWO (2) LAMP RAPID START BALLAST

WARNING: Refer to Table 1 before connecting

WIRING DIAGRAMS for Emergency-Only fixtures

FIG 154 ONE (1) 4-PIN COMPACT LAMP WITHOUT AC BALLAST

FIG 155 ONE (1) LAMP WITHOUT AC BALLAST

WARNING: Refer to Table 1 before connecting

FIG 156 TWO (2) 4-PIN COMPACT LAMP WITHOUT AC BALLAST

FIG 157 TWO (2) LAMP RAPID START BALLAST

WARNING: Refer to Table 1 before connecting

FIG 158 TWO (2) LAMP WITHOUT AC BALLAST

WARNING: Refer to Table 1 before connecting