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# ILB-CP20-HE-SD-A

HIGH EFFICIENCY SELF-DIAGNOSTIC  
EMERGENCY LIGHTING EQUIPMENT  
FOR LED

Patented. See [iotaengineering.com/patents](http://iotaengineering.com/patents) for more details

## INSTRUCTION MANUAL

### 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. The **ILB-CP20-HE-SD-A** is for use with grounded LED luminaires listed to UL standards. Not for use in heated air outlets or hazardous locations.
6. The **ILB-CP20-HE-SD-A** requires an unswitched A.C. power source of 120 to 277 volts AC, 50/60Hz.
7. The **ILB-CP20-HE-SD-A** and A.C. driver **must** be on the same branch circuit.
8. Do not mount near gas or electric heaters.
9. The **ILB-CP20-HE-SD-A** should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
10. The **ILB-CP20-HE-SD-A** will supply 20-60VDC output at the individual rated specification for 90 minutes. See individual units for output specifications.
11. The **ILB-CP20-HE-SD-A** is certified in the CA Title 20 Modernized Appliance Efficiency Database System (MAEDBS) as a small battery charger.
12. Suitable for use in damp locations and plenum.
13. Suitable for luminaires, recessed Type IC (intended for insulation contact).
14. For use in 0° C minimum, 55° C maximum ambient temperatures.
15. 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.
16. Do not use this equipment for other than intended use.
17. Install in accordance with the National Electrical Code and local regulations.
18. Lighting fixture manufacturers, electricians, and end-users need to ensure product system compatibility before final installation. See addendum for compatibility and covered luminaire requirements.

### SAVE THESE INSTRUCTIONS



EMERGENCY LED DRIVER FOR USE  
WITH LED LUMINAIRES IDENTIFIED  
IN THE MANUFACTURER'S  
INSTALLATION INSTRUCTIONS  
E473237



HIGH EFFICIENCY PERFORMANCE  
MEETS CA T20 BATTERY CHARGER  
EFFICIENCY STANDARDS



THIS UNIT CONTAINS A  
RECHARGEABLE NICKEL-CADMIUM BATTERY.  
PLEASE RECYCLE OR DISPOSE OF PROPERLY.

# INSTALLATION INSTRUCTIONS

**CAUTION:** Before installing, make certain the A.C. power is off and the ILB-CP20-HE-SD-A unit connector is disconnected.

## 1. FIXTURE

The **ILB-CP20-HE-SD-A** can be used with most LED loads that operate at 20-60 VDC.

1. The **ILB-CP20-HE-SD-A** series 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 11042014 for detailed specifications and methods to calculate emergency light levels.

## 2. MOUNTING THE ILB-CP-HE

Mount the **ILB-CP20-HE-SD-A** on or adjacent to the fixture in a position that does not interfere with the existing A.C. driver or any other hardware. Extend the flex conduit marked "A" to the junction box or wireway channel and punch a 7/8" hole. Feed the wires and flex connector down through the hole in the fixture and secure in place with the flex connector nut. An optional T-bar mounting kit is available to mount the **ILB-CP20-HE-SD-A** above the ceiling tile adjacent to the fixture. To order the optional T-bar mounting kit (part number TBMK) contact Customer Service.

When battery packs are remote mounted, the maximum distance between the unit and the LED Load must not exceed 50 ft.

## 3. WIRING

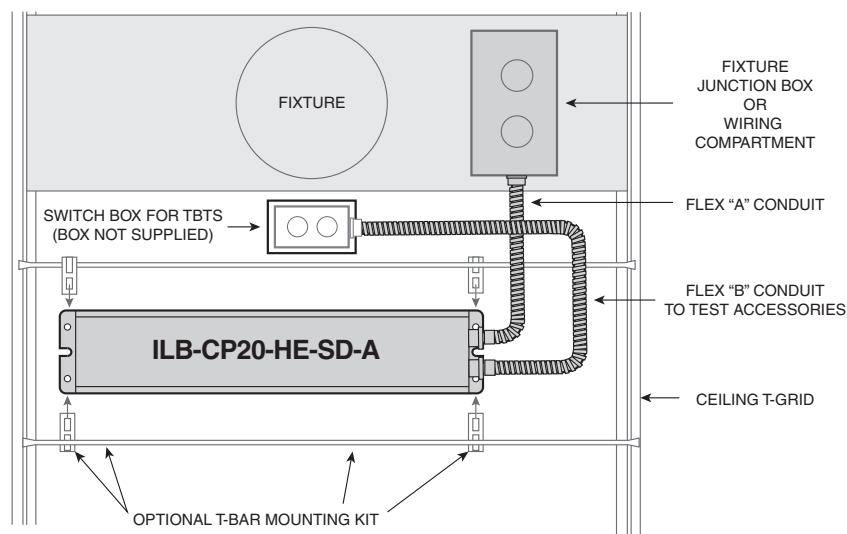
Refer to Illustration 3 for the appropriate wiring of the LED load and driver. Install in accordance with the National Electrical Code and local regulations. For additional wiring diagrams consult Customer Service.

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

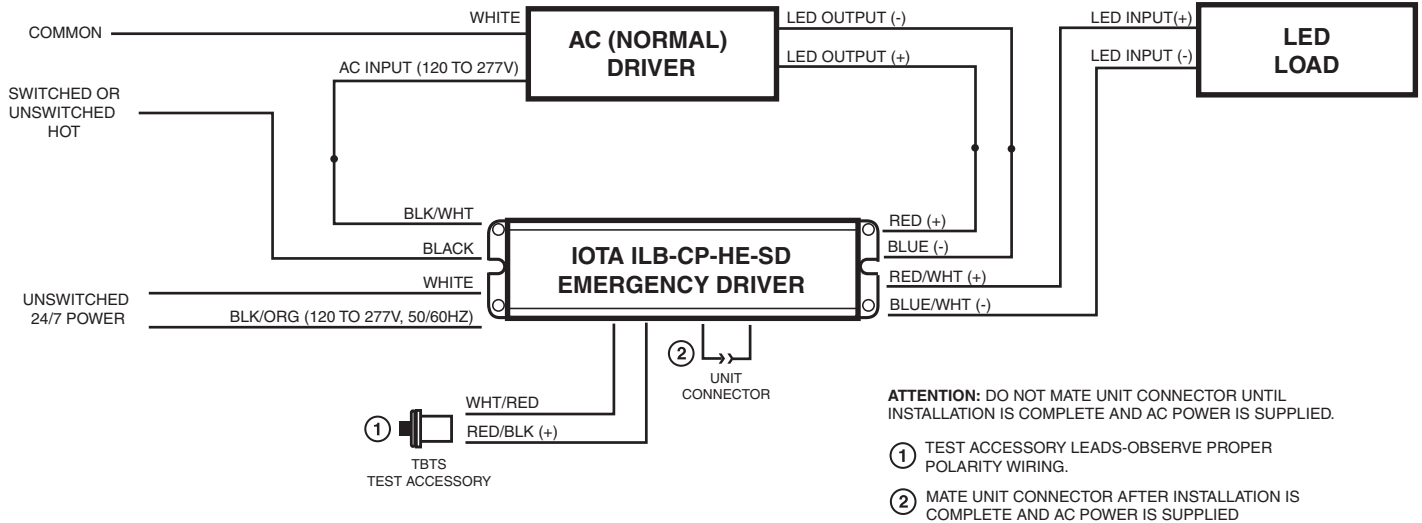
For installation of the **TBTS** (Threaded Body Test Switch), cut a single gang switch box into the ceiling tile adjacent to the fixture within reach of the **ILB-CP20-HE-SD-A** flex conduit marked "B". After mounting the switch box, connect flex to the box and route all leads inside the box. Refer to *Illustration 1* for typical mounting. For proper operation, use only the accessory components provided with the unit. See *Page 1 of the Instruction Manual*.

**Note:** The **TBTS** may be remote mounted up to a distance of 50 ft. Additional mounting accessories may be required. Install in accordance with national and local safety codes, and only mount in locations and heights where the unit will not be subjected to tampering by unauthorized personnel. Contact Customer Service for more details.

**Illustration 1: Typical Installation (top view)**



### Illustration 3: Typical Wiring Diagram



## 5. LABELS

Attach the appropriate labels adjacent to the **TBTS**. 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

- The **ILB-CP20-HE-SD-A** and A.C. driver **MUST** be on the same branch circuit.
- The **ILB-CP20-HE-SD-A** requires an **unswitched** A.C. power source of 120 to 277 VAC, 50/60Hz; therefore when used with switched fixtures, the ILB input must be wired ahead of the switch.
- Refer to the wiring diagram for 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 **ILB-CP20-HE-SD-A** unit connector (remove the protective red boot, if present). NOTE: If the battery has been fully discharged, the TBTS indicator may remain OFF for a few minutes until the battery has achieved sufficient charge for functional testing.

## OPERATION

**Normal Mode** – A.C. power is present. The A.C. driver operates the LED load as intended. The **ILB-CP20-HE-SD-A** is in the standby charging mode. The **TBTS** will be **flashing green** providing a visual indication that the battery is being charged, or **solid green** if the battery is fully charged.

**Emergency Mode** – The A.C. power fails. The **ILB-CP20-HE-SD-A** senses the A.C. power failure and automatically switches to the **Emergency Mode**. The designated LED arrays are illuminated, for a minimum of 90 minutes. When the A.C. power is restored, the **ILB-CP20-HE-SD-A** switches the system back to the **Normal Mode** and resumes battery charging. See page 1 of the Instruction Manual.

## TESTING & MAINTENANCE

The **ILB-CP20-HE-SD-A** is designed to automatically conduct 30-second tests at regular intervals every 28 to 30 days, and a 90 minute test annually. Automatic testing will **not** begin until at least 24 hours after the **ILB-CP20-HE-SD-A** unit connector is joined.

**Load Calibration** - 48 hours after the unit connector is joined, the **ILB-CP20-HE-SD-A** will conduct a *Load Calibration*. Note: after the Load Calibration is complete, any changes to the LED load that will affect its nominal input voltage will necessitate a new Load Calibration (see table below for the sequence of button presses to conduct a manual Load Calibration). Automatic Testing will proceed in the following schedule:

**Automatic Monthly Testing** – The **ILB-CP20-HE-SD-A** will automatically conduct a 30 second test once every month. If the **ILB-CP20-HE-SD-A** encounters a problem, the **TBTS** will flash **RED**. See the Table A below for diagnosis.

**Automatic Annual Testing** – The **ILB-CP20-HE-SD-A** will automatically conduct a 90 minute test every twelve months. If the **ILB-CP20-HE-SD-A** encounters a problem, the **TBTS** will flash **RED**. See the Table A below for diagnosis.

To insure accurate testing, the **ILB-CP20-HE-SD-A** will not conduct any scheduled automatic tests or allow for manual testing or calibration for a period of up to 24 hours after the unit has discharged, regardless of reason. This period is easily indicated by the **TBTS** flashing **green**.

**Failure Diagnosis** - The **ILB-CP20-HE-SD-A** is designed to provide a general indication of where a fault in the emergency lighting circuit may be located, based on the flashing failure code indicated by the **TBTS**.

**Charge Failure** - A fault is preventing the **ILB-CP20-HE-SD-A** from charging correctly. Please contact Customer Service.

**Battery Failure** - The **ILB-CP20-HE-SD-A** battery is unable to fully charge, or was not able to supply sufficient voltage to the LED load during a test. Please contact Customer Service.

**Load Failure** - The **ILB-CP20-HE-SD-A** has detected an issue with your LED load or the **ILB-CP20-HE-SD-A** internal load transfer. If it can be verified that the LED load is operating correctly, please contact Customer Service.

Note: in cases of multiple failures only the highest priority failure will be indicated. Charge Failure is the highest priority failure, followed by Battery Failure, followed by Load Failure.

**Table A: TBTS Self-Diagnostic codes**

LED IS FLASHING <b>GREEN</b> WHEN CHARGING, SOLID <b>GREEN</b> WHEN READY. FAILURE CODES ARE INDICATED BY THE <b>RED</b> LED			
<b>CHARGE FAILURE</b>	1 FLASH	FAILURE CODES OCCUR ONCE EVERY 15 SECONDS. ONLY HIGHEST PRIORITY FAILURE IS INDICATED.	
<b>BATTERY FAILURE</b>	2 FLASHES		
<b>LOAD FAILURE</b>	3 FLASHES		

For more information on diagnosing **ILB-CP20-HE-SD-A** failure codes, contact Customer Service.

**Manual Testing** - Manual Testing can be performed on the **ILB-CP20-HE-SD-A**, provided the unit is fully charged, by pressing and releasing the **TBTS** or engaging the wall switch that controls the emergency luminaire. Manual Testing cannot be initiated until the unit has received a full 24 hour charge. Manual Testing will not interfere with the automatic testing schedule of the **ILB-CP20-HE-SD-A** and will display the same diagnosis indicators as automatic testing. Activate the desired test using the sequences in Table B below:

**Table B: Manual Test Sequences**

ILB-CP-HE-SD MANUAL TESTING SEQUENCES			
TEST TYPE <sup>4</sup>	TBTS	WALL SWITCH <sup>2</sup>	MINIMUM BATTERY CHARGE REQUIREMENTS
QUICK TEST	PRESS AND HOLD	N/A	2 HOURS
30-SECOND TEST	2 X PRESS AND RELEASE	6 TOGGLES <sup>3</sup>	24 HOURS
90-MINUTE TEST	3 X PRESS AND RELEASE	8 TOGGLES	24 HOURS
LOAD CALIBRATION <sup>1</sup>	4 X PRESS AND RELEASE	N/A	24 HOURS

<sup>1</sup> A LOAD CALIBRATION CAN ALSO BE PERFORMED BY DISCONNECTING AND RECONNECTING THE UNIT CONNECTOR

<sup>2</sup> TOGGLE = SWITCHING TO ON STATE OR OFF STATE

<sup>3</sup> WALL SWITCH TESTING IS NOT RECOMMENDED FOR PHASE-DIMMING APPLICATIONS

<sup>4</sup> UNIT CONNECTOR MUST BE CONNECTED

**Table C: Cancel a Test**

ILB-CP-HE-SD MANUAL TESTING SEQUENCES - CANCELLING TEST			
TEST TYPE	TBTS	WALL SWITCH	MINIMUM BATTERY CHARGE REQUIREMENTS
CANCEL 90-MINUTE TEST	1 X PRESS AND RELEASE	4 TOGGLES	UNIT MUST BE IN SELF-TEST MODE

**SERVICING SHOULD BE PERFORMED BY QUALIFIED PERSONNEL.**  
 Consult Customer Service or visit [www.iotaengineering.com](http://www.iotaengineering.com) for current warranty information.

## CP Series Compatibility and Suitability of Use Guidelines Addendum (Rev.11042014)

The purpose of this addendum is to sufficiently identify electrical compatibility and predictable emergency light output of the LED luminaire when used with the IOTA ILB-CP Series LED emergency drivers. Verification of these operating traits does not constitute a code-compliant, as-installed emergency egress system. It is still the responsibility of the Designer/Specifier to assure appropriate light levels are achieved during emergency operation of the luminaire in accordance with Federal, state and local municipal codes regarding path of egress illumination.

### 1. Determining Electrical Compatibility

- 1.1 Verify Class 2 compliant driver per driver manufacture specifications.
- 1.2 Verify that the Emergency Driver (ILB-CP Series) selected does not exceed the power delivered to the LED array (voltage and current) of the normal driver.

### 2. Calculating Lumen Output During Emergency Operation

#### 2.1 Assess luminaire/fixture data.

##### 2.1.1 DESIGNLIGHTS CONSORTIUM

- Log onto the DesignLights Consortium website ([www.designlights.org](http://www.designlights.org)).
- Click on “search the DLC Qualified Product List” button on the DLC homepage.
- In the “search by keyword” text window enter: luminaire manufacturer name and part number.
- Click on “Search” tab to open the “Qualified Products List.”
- Determine per “RATED DATA” efficacy shown in lumens per watt - (lm/w).
- Multiply lumens per watt by ILB-CP rated output (example: lm/w x 5 watts). Refer to table “ILB MODEL SPECIFICATION CHART” below for the wattage of the specific ILB-CP model to be used in the luminaire. (lm/w) x (ILB-CP Watts) = Minimum emergency lumens of fixture.
- Determine per “RATED DATA” the “wattage of the luminaire”.

ILB MODEL SPECIFICATION CHART

MODEL #	OUTPUT POWER (CONSTANT)
ILB-CP05	5 WATTS
ILB-CP07	7 WATTS
ILB-CP10	10 WATTS
ILB-CP12	12 WATTS
ILB-CP20	20 WATTS
ILB-SL-CP05	5 WATTS
ILB-SL-CP07	7 WATTS
ILB-SL-CP08	8 WATTS
ILB-SL-CP10	10 WATTS
ILB-SL-CP12	12 WATTS

### 3. Determining Adequacy of Means-of-Egress Lighting Levels

- 3.1 Follow industry standards by utilizing available .ies files and lighting design software for your dedicated emergency luminaires, with the above calculated emergency lumens, and validate your as-installed plans in accordance with the applicable life safety codes governing your project.

While the ILB-CP series 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.