



EMERGENCY LIGHTING for **2-HOUR FEMA OPERATION**

TORNADO SAFE ROOM
120 MINUTE EMERGENCY MODE
ENCLOSED AND GASKETED
7 WATT POWER
UL AND CUL
ZERO LIGHT DEGRADATION



The nature of an emergency situation can take many forms and the requisite demands for emergency lighting can also change based on both federal and local requirements. While the Life Safety Code dictates an emergency egress lighting duration of 90 minutes, some requirements supersede that standard. Such is the case with the **FEMA** (Federal Emergency Management Agency) guidelines for Community Safe Rooms, particularly in regard to Tornado Safe Rooms. This document is intended as a convenient reference detailing available IOTA® emergency lighting solutions for these applications. Complete FEMA criteria regarding safe room occupancy can be found in Chapter 8 of FEMA's **Design and Construction Guidance for Community Safe Rooms** Section 8.2.1, Section 8.8, and Section 8.10.

The Importance of Proper Illumination

FEMA requires operation of emergency lighting for a minimum of 120 minutes. Adequate illumination not only provides safety for occupants in assembly areas, but a reliable lighting system will help calm occupants during a disaster, reduce agitation and stress, and make the duties of owners/operators less difficult during a critical time. Natural light is not an allowable alternative to emergency lighting, as it is not required by the IBC (International Building Code) and may not be present at the time an emergency occurs. Since main power is often disrupted during a disaster, a standby power source is required. FEMA recommends a battery-powered standby system for applications like a Tornado Safe Room, due to the relative ease of implementation and the protection that is afforded by it being installed within the specific area (ie. not susceptible to dangers or interference outside the designated shelter.)

Know Your Options

IOTA's commitment as a solutions provider means we consider all relevant life safety options based on codes and standards and offer products designed or configured to meet these needs. IOTA battery-powered standby solutions for achieving the required 120-minute emergency lighting performance include emergency inverter equipment and integral battery packs for both LED and fluorescent fixtures. Selecting the emergency solution that is best for you will depend on the lamp technology, desired lumen output, and fixture specifications of your application.



IIS Series Inverter Systems

IOTA IIS Series Inverters are stand-alone unit inverter systems that provide AC power to designated light fixtures from an integral battery supply. Standard 90-minute load ratings range from 25W to 750W and are designed to work in conjunction with LED, fluorescent, incandescent fixture types. Model selection is dependent on the size and type of lighting intended for operation. The typical load rating is based on a 90-minute emergency operation. To achieve a longer two-hour runtime, the load rating is reduced to compensate. Refer to the chart below for de-rated load sizes:



The IIS Series
IOTA Inverter Systems use an integral battery supply to provide emergency power to multiple fixtures during a power loss.

	IOTA IIS Model	Operable Load Types	Standard 90-Min Load Size	2-Hour De-rated Load Size
Micro-Inverters (Fixture-Level Solutions)	IIS 25	LED, Fluorescent, Incandescent	25W	18W
	IIS 35	LED, Fluorescent, Incandescent	35W	25W
	IIS 50	LED, Fluorescent, Incandescent	50W	35W
Mini-Inverters (Circuit-Level Solutions)	IIS 125	LED, Fluorescent, Incandescent	125W	90W
	IIS 375	LED, Fluorescent, Incandescent	375W	280W
	IIS 550	LED, Fluorescent, Incandescent	550W	410W
	IIS 750	LED, Fluorescent, Incandescent	750W	560W

IIS Inverter Features and Benefits

An inverter solution is beneficial in that it provides **a single solution for single or multiple fixtures** in the safe room space. If the designated safe room features several lighting fixtures, and if the load is comprised of **different lamp types**, an IIS Inverter might be an optimal choice. Additionally, the IIS Series delivers AC voltage to the load - the benefit being that fixtures will operate at **full light output** just as if it were running on normal power, eliminating any concerns of low light levels.

Most IOTA IIS Inverters feature a surface mount design for installation on the wall, while other units (the IIS 125 CG and IIS 35 I) are designed for installation within the ceiling space. For complete product specifications, visit the IOTA website at www.iotaengineering.com.



Micro-Inverters:
IOTA Micro-Inverters (<100W) typically provide AC power to single fixtures within a space.

Additional Features

- Full light output for the entire 120 minute runtime
- Can be used with switched or unswitched fixtures
- Dimming Relay models for bypassing dimming controls when needed
- Uses a maintenance-free, long-life Valve Regulated Lead Acid (VRLA) battery*
- Allows mounting of emergency fixtures at distances of 500 to 1000 feet
- UL 924 Listed

*IOTA micro-Inverter units utilize a long-life, maintenance free nickel-cadmium battery

The ILB CP07 2H Emergency LED Driver

The IOTA **ILB CP07 2H** is an emergency LED driver specifically designed to achieve a full 120-minute runtime for a single LED fixture. The ILB CP07 2H combines the patented Class 2 output, constant power output performance of the IOTA ILB CP Series with an increased battery capacity to accommodate an extended run-time. Like IOTA's other ILB CP products, the ILB CP07 2H is UL and cUL Classified for both field and factory installation. The unit **wires in conjunction with an existing LED driver** and provides **7 watts of emergency power** to the LED fixture.



The ILB CP07 2H:
The IOTA ILB CP07 2H features an increased battery size to achieve the extended 2-hour runtime.

Universal Input and Class 2 Output

The ILB CP07 2H features **Universal 120-277VAC input** and delivers a **Class 2 output of 10-60VDC**. The unit is designed to automatically detect the required DC voltage of the LED array, and maintains the appropriate voltage for the entire run-time. The auto-sense Class 2 output not only **ensures proper operation** regardless of voltage fluctuations caused by temperature, age, or component variances, but also allows for **wider compatibility** with today's LED array specifications.

Constant Power Output

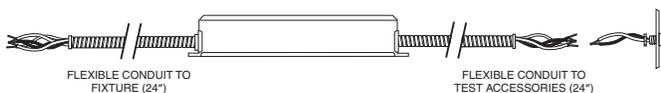
The unique and innovative **Constant Power design** of the ILB CP Series delivers constant wattage to the LED array, resulting in **predictable and consistent performance while in the emergency mode**. The ILB CP07 2H delivers a constant **7 watts** to the LED array for the entire 120 minute runtime. If you know your **luminaire efficacy** (lumens per watt or lm/w), you can easily calculate your emergency lumen output by multiplying the value by '7' (example: if the luminaire efficacy is 112 lumens per watt, the 7W output in emergency mode will provide 784 lumens). Other LED emergency drivers may claim to be suitable for field installation, but if they are *constant current* emergency drivers instead of constant power (wattage), then the lumen output will not be consistent or predictable. This is a result of not knowing the specific LED array voltage required to operate the lighting load. In a application such as a tornado safe room that requires occupants to remain in a designated safe area, the benefits of non-diminishing illumination (ie. constant power) cannot be dismissed. For more information regarding Constant Power performance and IOTA's UL Classified ILB CP Series, visit www.iotaengineering.com

ILB CP07 2H Features and Benefits

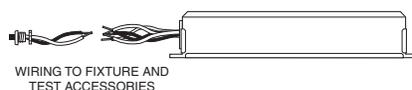
The ILB CP07 2H is well-suited for installations that consist of a smaller number of LED fixtures. The unit is a cost-effective and predictable solution for LED fixtures utilizing Class 2 drivers. In most scenarios, the 7W output of the unit provides sufficient illumination, and since it utilizes constant power output, safe room occupants will not experience a degradation of light levels for the entire two-hour runtime.

The ILB CP07 2H is available in two mounting styles: the -A and the -B configurations.

(ILB CP07 2H A) Dual Flex



(ILB CP07 2H A) Integral Non-Flex



Additional Features

- Constant Power provides consistent illumination for the entire runtime
- UL Classified for both field and factory installation
- Universal 120VAC to 277VAC input
- Class 2 10-60VDC auto-adjusting output
- Uses a maintenance-free, long-life nickel-cadmium battery
- IC rated and suitable for use in damp location and enclosed and gasketed fixtures

Emergency Ballasts for Fluorescent and LED Retrofit

IOTA manufactures a wide selection of emergency ballasts that are tailored to work in conjunction with various fluorescent and LED tube lamps and fixture designs. Refer to the chart below for a listing of lamp wattages that can be operated by the emergency ballast for the extended two-hour runtime.

Emergency ballasts that feature AC output are UL Listed to work with select LED tube lamp models. Due to the low voltage design of these lamps, operating times are generally exceed 120 minutes. For a complete list of operable LED retrofit lamp options, visit

www.iotaengineering.com/resources/emergency-solutions-for-led-retrofit.



Lamp Type	IOTA Ballast	Special Features	EM Operation	Lamp Selector Leads*
28W T8	ISD 80	Self-Diagnostics, AC output	One Lamp	Connect VIOLET Leads
32W T8	I 48		One Lamp	Disconnect VIOLET Leads
	I 320	Reduced Profile, AC output	One Lamp	Disconnect VIOLET Leads
	I 160	High Lumen Output, AC output	One Lamp	Connect BRN/WHT and VIO
	ISD 80	Self-Diagnostics, AC output	One Lamp	Connect VIOLET Leads
28W T5	ISD 80	Self-Diagnostics, AC output	One Lamp	Disconnect VIOLET Leads
54W T5	I 160	High Lumen Output, AC output	One Lamp	Connect BRN/WHT and VIO
	ISD 80	Self-Diagnostics, AC output	One Lamp	Disconnect VIOLET Leads
32W 4-Pin CFL	I 420	AC output	One Lamp	Disconnect VIOLET Leads

*IOTA Emergency Ballasts are equipped with Lamp Selector Leads for optimizing performance when operating specific lamps. Connect or disconnect the Lamp Selector Leads as required for your application. Cap any unused leads separately.

Benefits and Features of IOTA Ballasts

If the designated Tornado Safe Room uses fluorescent or LED tube lighting, then an emergency ballast is a cost-effective solution with several options to meet your individual application requirements. For complete product details regarding IOTA's emergency ballasts, visit

www.iotaengineering.com.

Additional Features

- UL 924 Listed
- Can be used with switched or unswitched fixtures.
- Time Delay Enhancement and Open Circuit Isolation features
- Long-life high temperature recyclable Ni-Cad battery
- Models suitable for use in damp locations and in enclosed and gasketed fixtures.

