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LITEMINDER LMi

CENTRAL EMERGENCY LIGHTING POWER INVERTER SYSTEM

INSTALLATION AND OPERATING INSTRUCTION

IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed including the following:

READ AND FOLLOW ALL SAFETY INSTRUCTIONS.

A. Do not use outdoors
B. Do not mount near gas or electric heaters.
C. Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
D. The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
E. Do not use this equipment for other than intended use.

This unit contains lethal voltages. There are no user serviceable parts inside. Only authorized service personnel are to be used for service.

SAVE THESE INSTRUCTIONS

The installation and use of this product must comply with all applicable national, state, municipal, and local codes. Read this manual thoroughly before installing, operating, or servicing the Central Inverter System.

For assistance, contact Technical Support at 800-967-5573 and speak to a technician during normal business hours (EST).

SAVE THESE INSTRUCTIONS

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1.0 PRODUCT OVERVIEW

The central inverter system combines advanced inverter and microprocessor technology to deliver a clean, pure sine wave output compatible with all emergency lighting loads, including LED, fluorescent and incandescent.

Engineered for high efficiency it maintains steady-state losses of 3% or less at full load in normal operation, reducing energy consumption and supporting sustainable building goals.

Designed for emergency egress and life safety applications, the LMi Series delivers reliable centralized backup power while meeting key requirements for load compatibility, efficiency cost-effectiveness, and long-term reliability.

1.1 Mechanical Design Features

The Central Inverter System integrates the battery pack and electronics into a compact cabinet to simplify installation and minimize the overall footprint. Four 1/4-inch mounting holes are provided for wall mounting. Electrical knockouts on three sides of the cabinet provide flexibl conduit entry options.

The front cover is secured by two screws and can be removed for inspection and service access. The primary electronic components are housed in a removable module to simplify service and replacement.

1.2 Electrical Design Features

The Central Inverter utilizes Pulse Width Modulation (PWM) and advanced MOSFET technology to produce a pure sine-wave output compatible with all lighting loads. User-selectable 120 VAC or 277 VAC output simplifie installation and provides application flexibility A crest factor of up to 4× accommodates high inrush currents, making it ideal for energizing Normally-Off lighting loads from a cold start while maintaining excellent dynamic response.

Active PWM regulation produces a low Total Harmonic Distortion (THD) waveform for reliable operation with demanding loads. The inverter supports power factors from 0.5 leading to 0.5 lagging and offers Normally-On and dual-purpose Normally-Off/ Switched outputs. All outputs deliver full rated power without derating.

The battery pack is charged through an intelligent Battery Management System (BMS). Once fully charged, charging automatically terminates, eliminating the need for continuous floa charging. This optimized charging method maximizes battery life, reduces cell stress, and enhances long-term reliability. The high-efficienc charging architecture also meets California Energy Commission (CEC) Title 20 energy efficienc requirements, minimizing standby power consumption and overall energy usage.

2.0 RECEIVING AND STORAGE

2.1 Inspection

The Central Inverter System and battery pack are shipped separately. The battery pack may be damaged if subjected to impact, crushing, or improper handling during shipping. A damaged $LiFePO_4$ battery pack presents a risk of fire electric shock, or leakage. Upon receipt, carefully inspect the packaging and battery for any signs of damage, including dents, cracks, deformation, or flui leakage. Do not use or install a battery pack that appears damaged.

WARNING

Do not operate the system with a damaged $LiFePO_4$ battery pack, as this may create an unsafe condition, including the risk of thermal runaway, fire or electrical shock.

2.2 Storage

Proper storage before installation is important to battery life and warranty coverage. Store the battery pack in a clean, dry, well-ventilated area away from direct sunlight, heat sources, and flammabl materials.

$LiFePO_4$ Battery Storage Guidelines			
Storage Duration	**Recommended SOC**	**Temperature Range**	**Notes**
Short-term (≤ 1 month)	30–60%	–20°C to 45°C (–4°F to 113°F)	Suitable for shipping and temporary storage.
Medium-term (1–6 months)	30–60%	–5°C to 35°C (23°F to 95°F)	Store in cool, dry, ventilated area.
Long-term (> 6 months)	30–60%	15°C to 25°C (59°F to 77°F)	Recharge battery every 12 months.

WARNING: Storage at high temperatures can accelerate self-discharge and cause degradation of battery performance and service life. Extended storage beyond the recommended durations may result in capacity loss and reduced electrical performance. Proper storage conditions must be maintained to maximize battery reliability and expected life.

Failure to store, install, and maintain the battery pack as specified may VOID the battery warranty.

NOTE

The LMi Series $LiFePO_4$ battery is **UL2054** and **UN38.3** certified meeting recognized safety, performance, and transportation standards for lithium battery systems. These certification verify compliance with electrical, mechanical, environmental, and shipping safety requirements.

3.0 SAFETY

Qualified Personnel

Installation, startup, maintenance, and service must be performed only by quali. ed personnel familiar with AC and DC electrical systems, battery systems, and all applicable codes and safety practices.

Electrical Hazard

WARNING

The Central Inverter System contains hazardous AC and DC voltages. Before installation or service, shut down the system and disconnect all AC power sources. Verify the absence of voltage using properly rated test equipment before touching conductors or components.

Battery Safety

WARNING

$LiFePO_4$ batteries store significant energy and can deliver high fault current. Prevent short circuits. Remove rings, watches, and other conductive jewelry, use insulated tools, and wear appropriate PPE, including eye protection. Do not install, use, or service a battery pack that is damaged, swollen, leaking, or otherwise abnormal.

General Safety

Follow all warnings and instructions in this manual. Use the Central Inverter System only for its intended purpose. Do not obstruct ventilation openings, modify the enclosure without authorization, or use accessories not recommended by the manufacturer.

4.0 INSTALLATION

4.1 Location

Refer to NEC Article 700, Emergency Systems, and all applicable local codes for installation requirements. Install the Central Inverter System in a permanent location that is cool, dry, and adequately ventilated, with sufficient access for testing and maintenance. Select a location that limits unauthorized access or tampering and allows the front-panel status indicators to remain visible.

4.2 Operating Environment

Select an installation location where the temperature is maintained between 20°C and 40°C (68°F to 104°F). Do not install the Central Inverter System in wet or damp locations or in areas exposed to excessive heat. Elevated temperatures can reduce battery performance and service life. For best battery performance, the manufacturer recommends maintaining the ambient temperature as close as practical to 25°C (77°F).

4.3 Ventilation

Choose a clean, dust-free mounting location. Avoid areas with excessive airborne particulates, corrosive chemicals, or industrial contaminants, including locations near heavy machinery, welding, or plasma cutting operations.

4.4 Mounting Guidelines

4.4.1 Clearance

The Central Inverter System utilizes convection cooling during standby operation, with airflo entering through the sides and exhausting through the top of the unit. To ensure proper ventilation and maintain optimal operating conditions, a minimum clearance of 6 inches must be maintained on both sides and above the unit.

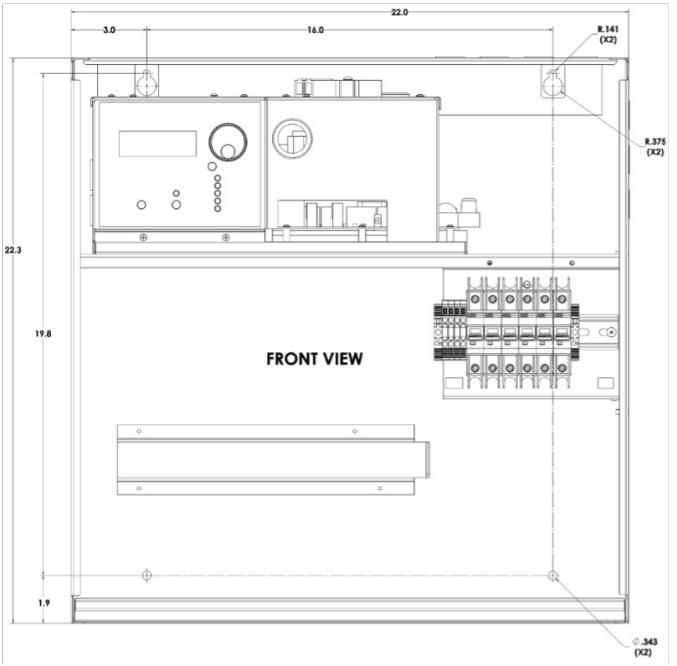
WARNING

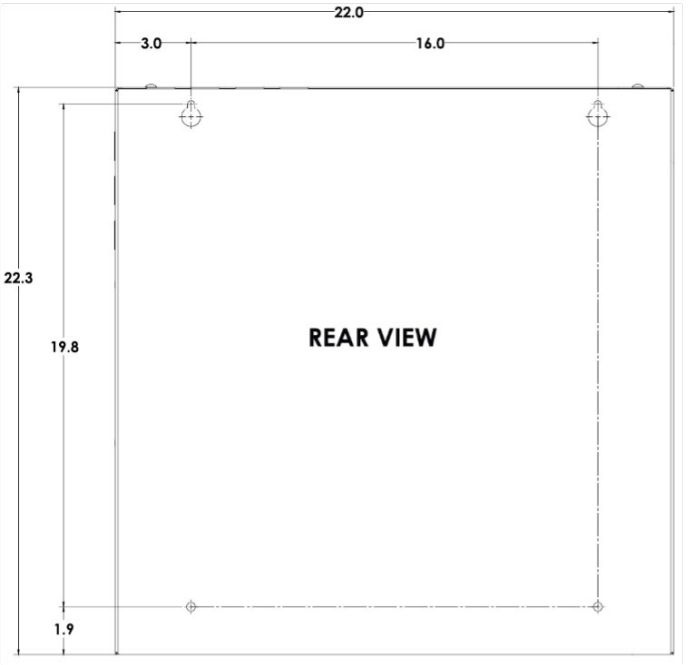
Never place objects on top of the unit that may obstruct airflow Restricting air circulation can prevent proper heat dissipation and may result in an over-temperature fault during Charging Mode or Inverter Mode, particularly in high ambient temperature conditions.

4.4.2 Wall Mounting Holes

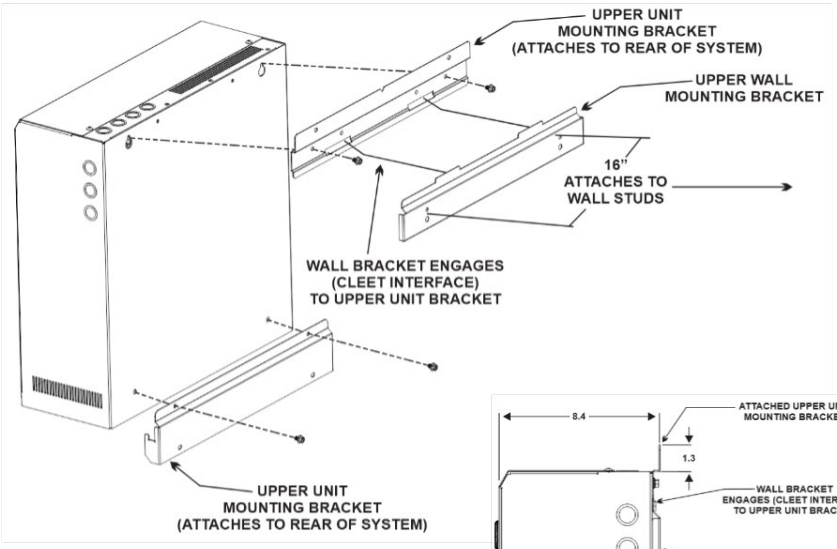
Four mounting holes are provided on the rear of the cabinet for wall mounting and accommodate 1/4-inch mounting hardware. Use all four mounting points and appropriate hardware suitable for the wall construction and installed equipment weight.

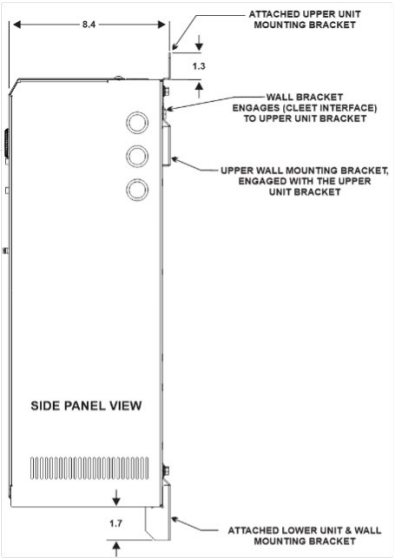
Wall-Mount Hole Locations – All LMi Series Units

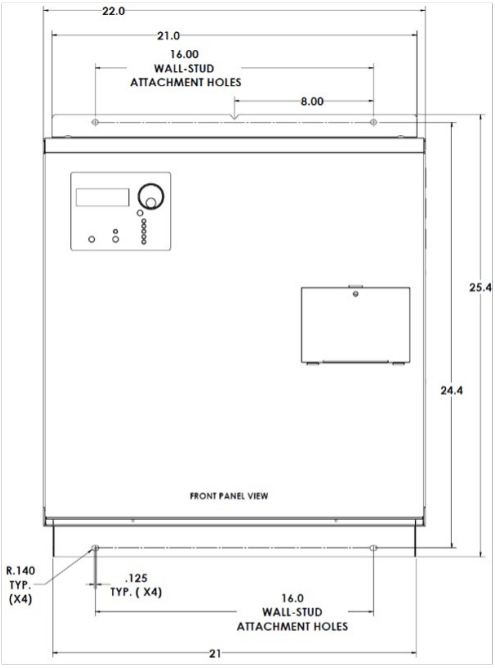




Optional Wall Mounting Bracket





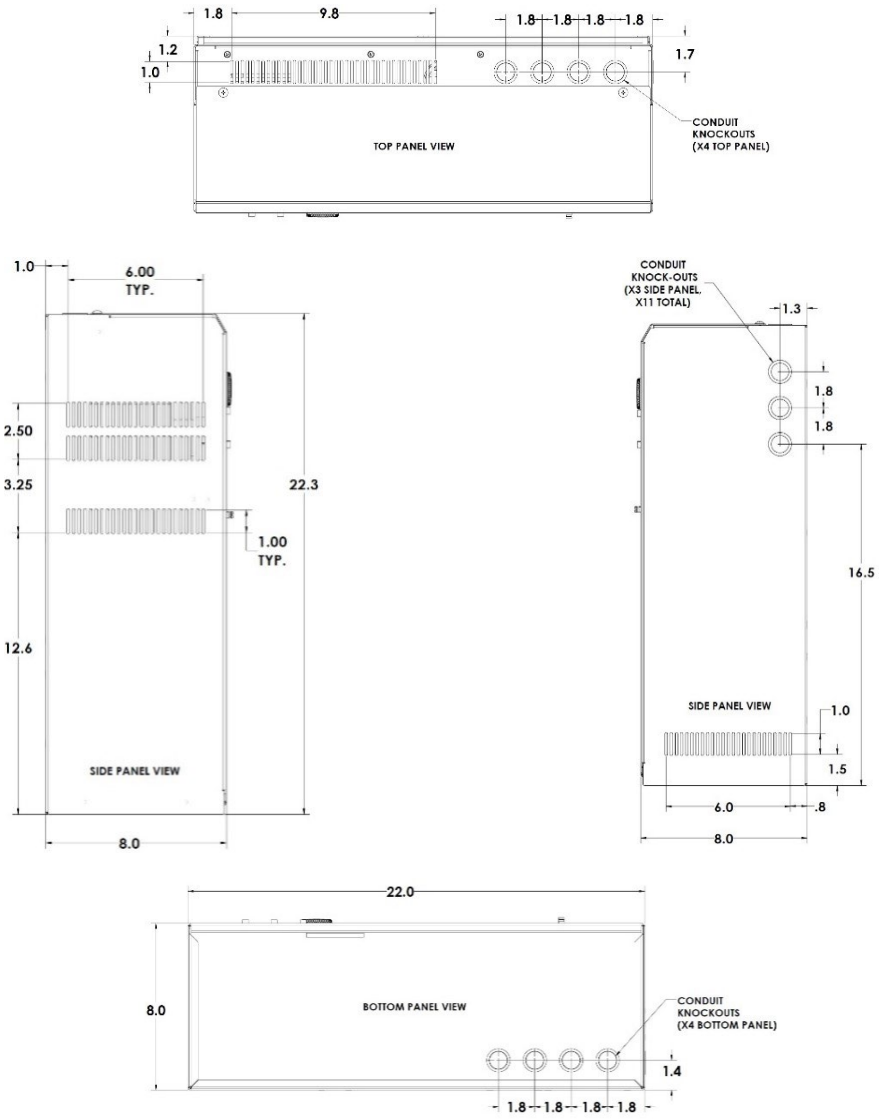


4.4.3 Knockout Locations

Electrical knockouts (EKOs) are provided on three surfaces of the Central Inverter System. Ensure all metal conduits are securely fastened to establish a proper connection to earth ground. Verify continuity between the conduit and protective earth ground using an ohmmeter.

WARNING

Do not drill into the cabinet, metal filing can damage internal components and may void the warranty.



5.0 AC CONNECTIONS

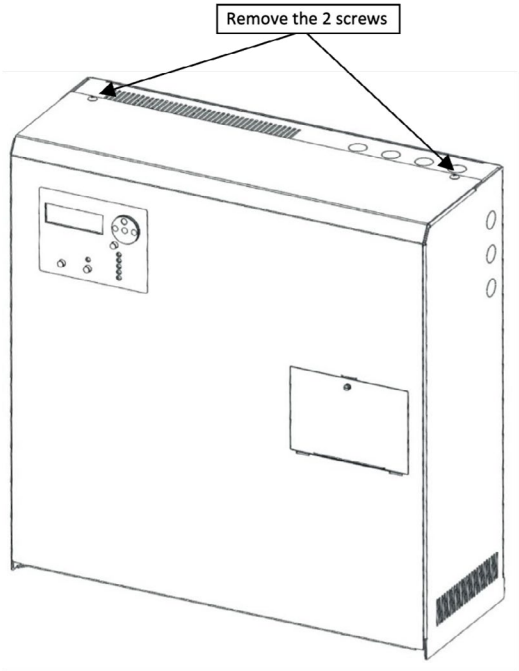
WARNING
Installation must be performed only by qualifie personnel, such as a licensed electrician, who is familiar with AC and DC installation practices and applicable codes.

WARNING
The LMi Series contains lethal AC voltages. To prevent the risk of electrocution, always shut down all power sources before installing, maintaining, or servicing the unit.

WARNING
Remove all rings, watches, and other jewelry before performing any electrical service or installation. Always wear protective clothing and appropriate personal protective equipment (PPE), including eye protection, when working near batteries.

5.1 Removing the Front Cover

All AC input and output connections are located on the right side of the enclosure. To access the wiring area, remove the two screws securing the front cover. Slide the cover forward, then tilt downward, to release the lower flang from the cabinet.

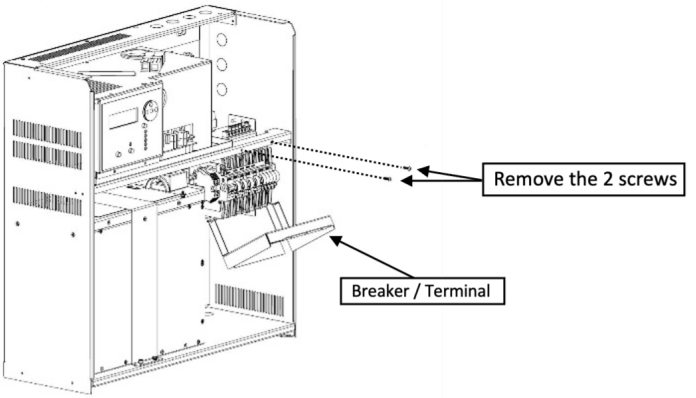


5.2 Removing the AC Breaker/Terminal Block Cover

Two screws secure the AC Breaker/Terminal Block Cover to the chassis. This cover conceals the wiring area and prevents inadvertent contact with live parts after installation. To remove the cover, firs remove the screws, then tilt the cover until it is perpendicular and slide it forward to disengage the two flange from the mating slots on the chassis.

WARNING

Always reinstall the AC Breaker/Terminal Block Cover to prevent accidental contact with live wires during maintenance.



5.3 Installing the Input Wires

Once the front cover and AC Breaker/Terminal Block Cover are removed:

1. Verify that the incoming AC voltage matches the setting of the VOLTAGE SELECT JUMPER. If necessary, remove and reposition the jumper to the correct voltage.
2. Confir that the feed breaker from the panel has sufficien ampacity to support the full rating of the load connected to the LMi Series.

After ensuring the feed voltage and VOLTAGE SELECT JUMPER match and the breaker size is correct, connect the utility feed line voltage to the input circuit breaker (UL489 rated for direct connection). Connect Neutral and Ground to their dedicated terminals. Verify that all connections are tight by gently pulling on each wire and confirmin that they are securely fastened.

NOTE

AC input and AC output conductors must be routed in separate conduit or raceways in accordance with NEC Article 700. Ensure all applicable codes and standards are followed.

NOTE
The LMi Series requires that the potential difference between Neutral and Ground does not exceed 5 VAC for proper operation. A reading above 5 VAC may indicate a grounding issue or inadequate conductor size or continuity. This condition should be addressed immediately, as it could create a safety hazard.

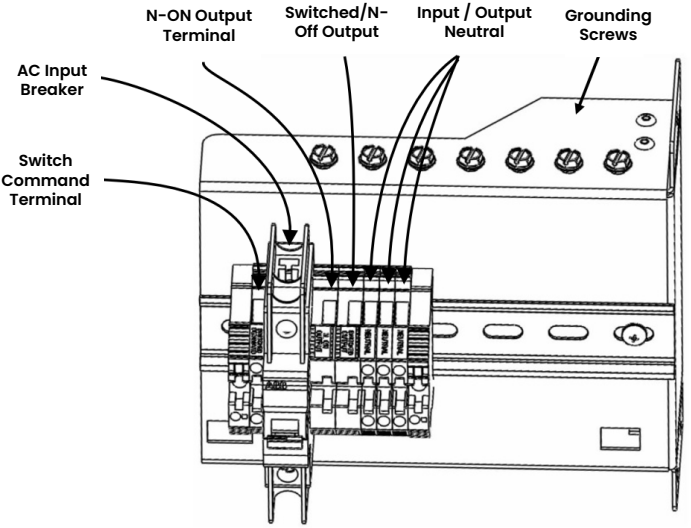
NOTE
Neutral and Ground must never be tied together within the LMi Series. Always keep Neutral and Ground conductors separate and ensure that no shorts occur.

NOTE
The Neutral (NEU) in the LMi Series is common to both input and output. Do not mix building (Non-Emergency) neutrals with Emergency wiring. Dedicated wiring is required in accordance with NEC Article 700.

5.4 Installing the Output Wires

Connect the load conductors to the Normally-On or Switched output terminals, or to the optional circuit breakers labeled “N-ON” or “Switched” (UL489 rated for direct connection). Each terminal is clearly marked for Line, Neutral, and Ground, consistent with the AC input section. After making all connections, gently tug each wire to confir it is securely fastened to the terminal block or circuit breaker.

5.5 AC Input(s) / Output(s) Diagram



Standard AC Configuration
Optional Breakers Are Available

5.6 Options

Construction may differ from standard models.

Output Circuit Breakers – Normally On (Cn)

Provides continuous power to the connected load whenever the system is ON. The output remains energized during both Normal Mode (Charge Mode) and Emergency Mode (Inverter Mode).

Output Circuit Breakers – Switched / Normally Off S(n)

Dual-purpose Switched / Normally Off output. During Normal Mode (Charge Mode), the output remains de-energized when no switch command is present and energizes when the switch command is active. All S(n) output breakers are tied to the same switch command and therefore operate together as a single switched group.

During Emergency Mode (Inverter Mode), all S(n) outputs are automatically energized regardless of the switch command state.

Output Circuit Breakers – Independently Switched SD(n)

Provides four independent switch command zones. During Normal Mode (Charge Mode), each SD(n) output is controlled by its assigned switch command, allowing each zone to operate independently.

During Emergency Mode (Inverter Mode), all SD(n) outputs are automatically energized regardless of the individual switch command states.

Trip Alarms (TA)

This option utilizes an auxiliary contact on the side of the breakers to signal the control system when a circuit breaker has tripped.

Terminal Block (TB)

Provides one Form C dry contact, labeled Fault Summary, for remote fault monitoring. The contact changes state whenever an alarm is present on the inverter and returns to its normal state once the alarm condition is cleared.

Fire Alarm (FA)

Provides a 2-position connection for a 12–24 VAC/VDC fir alarm signal. When the fir alarm signal is present, all controlled outputs are energized regardless of the individual switch command states.

4-Zone Dimming (4FD)

Provides four independent 0–10V dimming and switched zones, allowing each zone to be controlled separately during Normal Mode (Charge Mode). The option board also includes Fault Summary and Fire Alarm contacts.

During Emergency Mode (Inverter Mode), all four zones are energized regardless of the individual switch command states.

Seismic Certified (Z4)

OSHPD Seismic Approved for installations requiring seismic qualification The Z4 option includes the necessary construction and mounting provisions to meet applicable seismic requirements.

Wall Mounting Bracket (WB)
Provides a secure and convenient method for mounting the Central Inverter System cabinet to a wall, simplifying installation and ensuring proper cabinet positioning. Refer to Section 4.4.2 – Wall Mount Hole Locations for mounting instructions.

Factory Phone Startup (PS)
Provides a factory-assisted phone startup to verify proper system installation and operation. Upon successful completion of the startup, the electronics warranty is extended from 3 years to 5 years.

Extended Electronics Warranty (EW)
Extends the standard 3-year electronics warranty to 10 years. A successful factory-assisted phone startup is required to activate the extended warranty.

6.0 Battery Installation & DC Connections

WARNING
Only qualifie personnel, such as a licensed electrician, with knowledge of AC and DC installation practices and applicable codes shall perform the installation.

WARNING
Remove all rings, watches, and other jewelry before performing any electrical service or installation. Always wear protective clothing and appropriate personal protective equipment (PPE), including eye protection, when working near batteries.

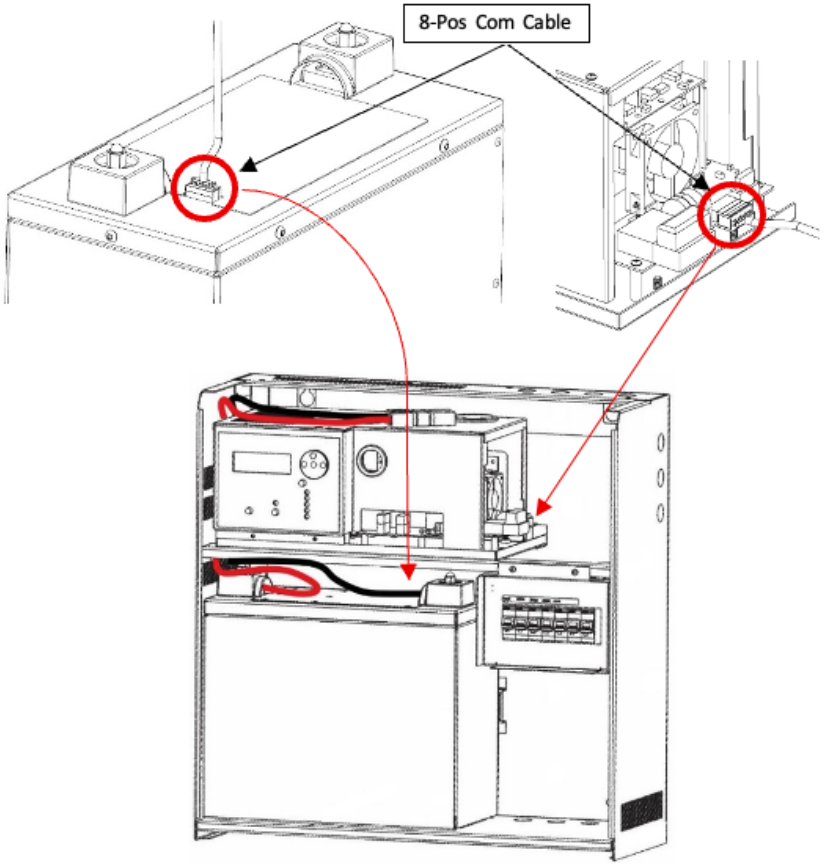
CAUTION
The batteries used in this device may present a risk of fir or chemical burn if mistreated. DO NOT disassemble, heat above 40 Deg. C, or incinerate.

WARNING / DANGER
$LiFePO_4$ batteries are high-energy storage devices capable of delivering very high currents. Improper handling can result in sparks, fire explosion, or personal injury. To prevent short circuits, never place conductive objects across battery terminals, and always use insulated tools. Do not install batteries until the unit is securely mounted in its permanent location with all conduit and AC wiring properly connected. All installation and service work must be performed while wearing appropriate personal protective equipment (PPE).

The LMi Series battery pack is pre-wired with conductors rated for system current and equipped with quick-connect terminals. These terminals mate directly with the inverter's pre-terminated leads to ensure a reliable connection. Install the battery on the inverter's bottom shelf, route the cable harness along the left wall, and connect it to the mating connector at the top of the inverter module.

CAUTION

The 8-position communication cable must be connected for the system to energize. Failure to connect this cable will result in a Battery Cable fault at startup, and the system will not initialize.



Replace only with battery type:

500 – 600 - Watt Inverter – B410007 (12.8V 105Ah)

750 – 900 - Watt Inverter – B410006 (19.2V 105Ah)

1000 – 1200 - Watt Inverter – B410005 (25.6v 105Ah)

6.1 DC Voltage of System

The LMi Series utilizes a single battery pack to supply the system's DC voltage. The specifi voltage is model-dependent. Please refer to the specification above to ensure the correct DC voltage is matched with the appropriate inverter size. All necessary cables are supplied by the manufacturer and come pre-installed on the battery pack. The battery connects to a wiring harness designed for a fail-safe configuration ensuring the system achieves the required DC voltage safely and reliably.

7.0 Specifications

The LMi Series Central Inverter System is designed to support its rated output power (model dependent) during normal utility operation (Charge Mode) and emergency operation (Inverter Mode).

However, when equipped with the optional 4-Zone Dimming (4FD) feature, the system can accommodate an increased pass-through load of up to 2,400 watts during normal utility operation (Charge Mode), regardless of the inverter's rated output capacity.

Important: The increased pass-through capacity does **NOT** increase the inverter's rated emergency output power. The system must be tested in Inverter Mode to verify that the connected load does not exceed the inverter's rated capacity.

LMi Series	LMi-500	LMi-600	LMi-750	LMi-900	LMi-1000	LMi-1200
Power Output W/VA	500	600	750	900	1000	1200
Typical Standby Efficiency (%)	99.7%	99.7%	99.7%	99.7%	99.7%	99.7%
Power Factor Load Range (Lead/Lag)	0.5 / 0.5	0.5 / 0.5	0.5 / 0.5	0.5 / 0.5	0.5 / 0.5	0.5/ 0.5
Voltage Output (VAC)	120 /277	120 /277	120 /277	120 /277	120 /277	120 /277
Current Output (IAC)	4.2 / 1.8	5.0 / 2.2	6.3 / 2.7	7.5 / 3.3	8.3 / 3.6	10.0 / 4.4
Voltage Output THD Max (%)	3%	3%	3%	3%	3%	3%
Battery Nominal (VDC)	12.8	12.8	19.2	19.2	25.6	25.6
Battery Qty	1	1	1	1	1	1
Battery Current (IDC)	44	53	44	53	44	53
Battery Type (PN)	B410007	B410007	B410006	B410006	B410005	B410005
System Weight (lbs.)	108	108	115	115	118	118
Power Input (Full Output, Max Charge)	650	780	975	1170	1300	1560
Voltage Input	120 /277	120 /277	120 /277	120 /277	120 /277	120 /277
Current Input (Full Output, Max Charge)	5.4 / 2.3	6.5 / 2.9	8.1 / 3.5	9.8 / 4.2	10.8 / 4.7	13.0 / 5.6
Suggested Circuit Breaker Feeder Rating (AAC) with Dimming Option / Without Dimming Option	30 / 10	30 / 10	30 / 10	30 / 20	30 / 20	30 / 20
Emergency Runtime at Full Load (Minutes)	120	90	120	90	120	90
Maximum BTU Losses During Standby	10	10	10	10	10	10
Maximum BTU Losses During Emergency Discharge	255	306	382	459	510	612

Table 7.0

Maximum Connected Load Wattage With 4FD Option 2,400 Watts

7.1 Specifications (continued)

Input

Voltage	120 or 277 VAC – User Selectable
Current	Model and Voltage Dependent (Table 7.0)
Frequency	60Hz +/- 2 Hz
Protection	30 Amp circuit breaker
Power Factor	0.5 lead to 0.5 lag

Output

Voltage	120 or 277 VAC – User Selectable
Current	Model and Voltage Dependent (Table 7.0)
Frequency	60Hz +/- 0.02 Hz crystal controlled during emergency
Overload	110 percent will generate overload fault 125% will generate overload shutdown
Transfer Time	50ms, 250ms, 1s, 2s, 5s User programmable
Output Distortion	Less than 3% THD
Crest Factor	4X on all models
Load Power Factor	0.5 lead to 0.5 lag
Output Types	Normally-On, Multipurpose Normally-Off/Switched

Battery

Type	Lithium Iron Phosphate ($LiFePO_4$)
Charger	BMS Controlled
Recharge Time	24 Hour Recharge Standard
Protection	Automatic Low Voltage Disconnect (LVD) set to 2.5VDC Per Cell (Automatic restart upon utility return)
Runtime	Model Dependent (Table 7.0)
DC Voltage	Model Dependent (Table 7.0)
DC Current	Model Dependent (Table 7.0)

Environmental

Operating Temp	20 to 40 °C
Storage Temp	-20 to 70 °C (Electronics) 0 to 45 °C (Batteries)
Relative Humidity	<95 % (non-condensing)

Physical

Cabinet	NEMA Type 1 enclosure, 16 AWG powder painted CRS
Cooling	Natural Convection – no fan operation in standby mode Forced Convection – The fan operates only in Inverter Mode and cycles on and off automatically during high-charge conditions.

8.0 STARTUP AND SHUTDOWN

8.1 Startup

After the AC input and output wiring is complete, the Voltage Select Jumper is installed, and both the DC Voltage connector and communication cable are properly connected, the unit is ready to be started up. Ensure that the incoming AC voltage is reaching the unit by turning on all feed circuit breakers. Once AC input is verified simply turn on the System ON/OFF switch. The unit will go through a series of diagnostics to verify proper connections and then will go into charge mode. The unit is now on-line and ready. Verify that all loads connected are operating within the specification of the unit by measuring AC currents on both the line and load and measure all neutral currents to ensure line and neutral currents are the same.

Press the Test button on the front panel to verify that the multipurpose Normally-Off/ Switched outputs are all operational and ensure there are no overloads by measuring the currents. If alarms occur during start-up, see Sections 9.5 through 9.7 for possible explanations. Also see Section 10.1 for Start-Up Mode explanations.

8.2 Shutdown

To shut the system down, simply switch the System ON/OFF switch to the off position. If the system will be shut down for an extended period, refer to Section 2.2 – storage to prevent battery damage due to self-discharge and high ambient temperatures.

9.0 USER INTERFACE

The User Interface consists of buttons and rotary dial for menu navigation, along with a 4x20 character backlit LCD display. During normal operation the LCD scrolls between unit information and system status. There are 5 heads-up LED display indicators for quick diagnosis of system conditions. Additionally. The interface includes a dedicated System Test push button and Alarm Silence On/Off push button, which features an integrated status LED to indicate when the alarm silence function is active.

9.1 System Test Button

Pressing the System Test push button initiates a 30 second test of the system. This test complies with the UL924 self-testing and self-diagnostics requirements by analyzing battery voltages and output loads. During the test, all switched loads are energized to verify proper operation.

9.2 Alarm Silence Button

Pressing the Alarm Silence button will silence the audible alarm and turn on the Alarm On/Off LED. The Alarm Silence is equipped with a “ring-back” feature so that if an alarm is still present 24 hours after the alarm is silenced, the audible alarm will re-activate. During a System Test and during a power outage when the system is on Inverter Power, the audible alarm will beep momentarily once every 3 seconds.

9.3 Rotary Dial and Display Features

The Rotary dial and 4x20 Display provide access to system operating information, settings, alarms, and logs. The Home Menu automatically scrolls between two pages: one displaying Company and Product information, and the other displaying the Date and Time and any active Alarms. To leave the Home Menu, press or rotate the rotary dial.

9.4 Main Menu

The Main Menu provides access to the Meter Menu, Alarms, Battery Menu, Event Log, Test Log, Alarm Log, User Setup, Factory Setup, and System Information. From the Home Menu, press or rotate the rotary dial to access the Main Menu. Rotate the dial clockwise to scroll through the available sub-menus. When the desired sub-menu is highlighted, press the rotary dial to enter that section.

9.5 Meter Menu

The Meter Menu provides access to 9 system monitoring functions, offering real-time feedback on key electrical and operational parameters. The available functions include Input Voltage, Output Voltage, Output Current, Output VA, Battery Voltage, Temperature, System Days, Inverter Minutes, and Inverter Events. Output Voltage and Output Current are measured using True-RMS techniques, ensuring accuracy even with distorted waveforms. These measurements are updated on the MMI (Man-Machine Interface) screen approximately every half second and are presented with high resolution and near instrument-level quality. All system parameters are factory calibrated at full scale to ensure accuracy and reliability throughout the operating range.

9.6 Alarm Menu

If alarms are present, they will be displayed in the Alarm Menu. If no alarms are active, the display will read **Alarms (0)**. The system can diagnose a wide range of alarm conditions, which are categorized as either **fixed** or **user-programmable** alarms.

Fixed alarms are not adjustable by the user and cannot be enabled or disabled. These alarms are always active and are essential for the proper operation and protection of the system. Fixed alarms are organized into three operational modes: **Startup, Charger, and Inverter**.

Startup Alarms include – Over-Temperature, Volt Select Connector, No Charge, Overcharge, AC Fuse/Wiring, Battery Pack Type, and Battery Cable.

Charger Alarms include – Over-Temperature, Volt Select Connector, Back Feed, No Charge, Over Charge, AC Fuse/Wiring, Battery Pack, Battery Cable, Overload, Overload Shutdown, and CB Trip.

Inverter Alarms include – Over-Temperature, Volt Select Connector, Back Feed, Overload, V-Out Low, V-Out High, Low Batt Disconnect, Battery Pack, Battery Cable, Inverter Shutdown, and CB Trip

In addition to the fixe alarms, the system provides several **user-programmable alarms** that can be enabled, disabled, or adjusted through the User Menu. These alarms include Low Battery, Near Low Battery, High Temperature, Utility Failure, Low VAC, High VAC, and Load Reduction. The system also includes a dedicated Inrush Alarm designed to detect high inrush current commonly associated with modern lighting loads. Additional explanation of alarms and their possible causes will be provided throughout this document.

9.7 Battery Menu

The Battery Menu provides detailed operating information for the $LiFePO_4$ battery pack and Battery Management System (BMS). This menu allows the user to monitor the individual cell voltages and temperature information reported by the BMS.

The Battery Menu displays the voltage of each individual cell within the battery pack. The number of cells displayed will vary depending on the system model and battery pack configuration Monitoring individual cell voltage allows the user to verify that the cells are operating within their expected voltage range and helps identify potential cell imbalance or battery-related conditions.

The Battery Menu also displays temperature readings for the battery cells and the BMS board, providing additional information about the operating condition of the battery pack.

9.8 Event Log

An Event occurs when the system transitions from Battery Charging mode—where it operates for approximately 99.9% of its service life—to Emergency Power mode, during which the battery begins to discharge. This transition is triggered either by a user-initiated system test or automatically during a power outage. During an Event, the system records critical operating parameters, including the time and date of the event, output voltage, output current, output VA, and battery voltage. Because the system continuously monitors these values, it captures and stores both the beginning and end of each Event. The system is capable of storing up to 256 Events in memory. Once this limit is reached, new entries will overwrite the oldest data, following a First-In, First-Out (FIFO) method. As a result, Event #1 will always represent the most recent Event recorded.

9.9 Test Log

The Test Log is similar in structure and content to the Event Log but records information only when a system test is performed. A Test Log entry is generated when:

a) A test is manually initiated by pressing the Test button on the front panel

b) The system automatically performs a scheduled Monthly or Yearly test.

For each test, the system records the same operating parameters captured in the Event Log, including the time, date, output voltage, output current, and battery data. This information is stored in the Test Log for future reference.

9.10 Alarm Log

The **Alarm Log** provides a historical record of all alarms detected by the system. When an alarm occurs, it is automatically recorded and stored in system memory, providing valuable information for troubleshooting and identifying previous system conditions. The Alarm Log can store up to **256 alarm** entries and uses a **First-In, First-Out (FIFO)** storage method. Once the log reaches capacity, the oldest alarm entry is automatically overwritten as each new alarm is recorded.

9.11 User Menu

From the Scrolling Home Pages, press or rotate the rotary dial, then rotate clockwise to select the **User Menu**. Press the dial to access the password screen. Enter the User Password: **Left, Right, Left, Right, then press Enter**. Once accepted, the User Menu allows the user to enable or disable applicable alarms and adjust their threshold levels. If the password is entered incorrectly, the system will return to the **Main Menu**. Press the **Back** key at any time to return to the previous screen.

9.11.1 Date and Time

The Date and Time are factory preset to Eastern Time (EST) and can be adjusted by the user. The system clock is highly accurate, with a gain or loss of only a few seconds per year. All Test, Event, and Alarm Logs are time-stamped using the system's Date and Time settings, and all scheduled Monthly and Yearly Tests are based on these settings.

Therefore, maintaining the correct Date and Time is essential. Daylight Saving Time is not adjusted automatically; if observed in your area, the system time must be updated manually.

9.11.2 Month Test

In accordance with **NFPA and UL requirements**, a system test of the emergency lighting equipment should be performed once per month. Both the **day of the month** and **time of day** are adjustable by the user. The factory default is set to perform the Monthly Test on the **first day of each month at 8:30 AM**.

9.11.3 Year Test

In addition to the Month Test requirements outlined by NFPA and UL, a 90-minute discharge test is mandated to be performed once per year. The Month, Day and Time of this test are fully adjustable by the user. By default, the yearly test is disabled at the Factory. If the Yearly test is enabled, the system will automatically perform a full 90-minute discharge test based on the configured date and time settings.

9.11.4 Low VAC Alarm

The User can enable or disable the Low VAC Alarm by rotating the dial selecting "On" or "Off," and then pressing the rotary dial to confirm the selection. If the alarm is enabled, the default activation point is set to 85% of nominal AC line voltage; however, this value is fully adjustable. To adjust the threshold, use the rotary dial to set desired voltage level. The allowable adjustment range is from 100% to 60% of nominal voltage. By default, the Low VAC Alarm is disabled at the factory.

9.11.5 High VAC Alarm

The High VAC Alarm functions in the same manner as the Low VAC alarm. It can be enabled or disabled by rotating the rotary dial to select “On” or “Off,” followed by pressing the rotary dial to confirm. When enabled, the default activation point is set to 115% of nominal AC line voltage. This threshold is fully adjustable within a range of 100% to 140% of nominal voltage. By default, the High VAC Alarm is disabled at the factory.

9.11.6 Low Battery Alarm

The Low Battery alarm is enabled by default at the factory and is set to trigger at 85% of battery’s This alarm threshold is user adjustable and can set anywhere from Nominal to 85 percent of nominal.

9.11.7 Near Low Battery Alarm

The Near Low Battery alarm is enabled by default at the Factory and is set to trigger at 90% of the battery’s nominal DC Voltage. The alarm threshold is user adjustable and can be set anywhere between Nominal voltage to 90% of nominal.

9.11.8 Utility Failure Alarm

The Utility Failure Alarm can be enabled or disabled by the user; however, it does not have any adjustable threshold levels. The factory default setting for this alarm is off.

9.11.9 High Temperature Alarm

The system includes an internal temperature sensor. Note that internal system temperature may be slightly higher than the ambient room temperature, which should be considered when configuring the High Temperature Alarm. This alarm is adjustable within a range of 0 °C - 60 °C and is triggered when the internal temperature exceeds the set threshold. The High Temperature Alarm is enabled by default at the factory and, when active, is initially set to 45 °C (about 113 °F.).

9.11.10 Load Reduction Alarm

The Load Reduction Alarm is designed to help detect significant changes in load behavior. When this alarm is enabled, the system compares the actual output current to a user-defined load current setting—but only during an event. This design avoids false alarms due to normal fluctuations caused by modern lighting management systems, such as motion sensors or occupancy sensors, which can cause frequent changes in load. If the actual output current deviates by more than ±10% from the user-defined setting during an event, the alarm will be triggered. The factory default for this alarm is off. When enabled, the load current setting can be adjusted from 0 amps to the system’s full-scale current, in 0.1 amp increments.

9.11.11 Contact Name

A Contact Name can be entered into the system and is stored for reference. Once entered, the Contact Name can be viewed under the System Info screen. To enter or edit the name, use the rotary dial to scroll through alphanumeric characters. When the desired character is selected, press the dial to progress to the next character. Press the back key when the entry is complete.

9.11.12 Contact Phone

A Contact Phone Number can be entered into the system and is stored for reference. Once entered, the Contact Phone Number can be viewed under the System Info screen.

To enter or edit the phone number, use the rotary dial to scroll through alphanumeric characters. When the desired character is selected, press the dial to progress to the next character. Press the back key when the entry is complete.

10.0 SYSTEM OPERATION

10.1 Startup Mode

When the LMi Series is firs turned on using the System ON/OFF switch, it goes through a sequence of self-tests which ensures proper connections are made and it also checks for faults that may be present. The inverter must qualify several things before advancing to the Battery Charging mode. There will be three distinct clicks of relays as it goes through the self-check sequence. After all the Start-Up diagnostics are performed, the LMi Series is OK to proceed to the Battery Charging mode.

10.2 Battery Charging Mode

The Battery Charging Mode is the system's normal operating mode and is where the system will remain for most of its service life. In this mode, utility power is passed from the AC Input to the AC Output to supply the connected loads, while the internal charger maintains the $LiFePO_4$ battery pack.

$LiFePO_4$ batteries do not require temperature-compensated floa charging. The charger uses a constant-current/constant-voltage (CC/CV) charging profil and reduces charging current as the battery approaches full charge. For example, the LMi-1200 uses a 25.6 VDC nominal battery pack with a charge voltage of approximately 28.4–29.2 VDC (3.55–3.65 VPC). Once the battery pack is fully charged, the charger shuts off and continuously monitors the battery voltage. When the battery voltage decreases to the programmed recharge threshold, the charger automatically resumes charging as required.

The Low Voltage Disconnect (LVD) is set at approximately 20.0 VDC (2.50 VPC) to protect the battery pack from excessive discharge.

10.3 Inverter Mode

Inverter Mode can have several other names such as Emergency Power and Battery Power Mode. This terminology may be used throughout this document.

During Inverter Mode, the inverter is producing a pure sine wave for the output loads and the batteries are being discharged. The output current is limited by an active pulse by pulse current limit technique and prevents the inverter from failure.

In the event of an overload there are several ways that the inverter will protect itself. First is the pulse by pulse limit and second is by average sensing.

The pulse by pulse is a transient protection and occurs in the micro-second time scale, the average sensing looks at a heavily filtere signal and occurs in the seconds time scale.

Since the crest factor is very high on the LMi Series, loads that have high inrush currents are quickly up and running. This is very beneficia with Switched or Normally-Off loads. The Normally-On and multipurpose Normally-Off/Switched outputs all produce voltage during Inverter Power mode.

10.4 AC Output(s) Types

10.4.1 Normally-On Output

There is one **Normally-On Output**, labeled **N-ON**, located on the terminal block. The N-ON Output remains continuously energized as long as the system is powered on. **Optional output circuit breakers may be ordered in place of the standard N-ON terminal block**.

10.4.2 Normally-Off/ Switched Output

The system is provided with one **Normally-Off/Switched** Output terminal block as standard configuratio and may be ordered with up to four switched outputs. During Charging Mode, each output is controlled by applying an AC voltage to its corresponding **Switched Command Input (CMD)**, allowing the connected load to be switched on or off. These outputs can interface with energy-saving controls such as time clocks, daylight harvesting systems, photo-sensors, and occupancy sensors. Terminal block connections are standard for each output; optional output circuit breakers may be ordered in place of the terminal blocks.

NOTE

When the LMi Series transfers from Charging Mode to Inverter Mode, ALL outputs automatically energize, regardless of the state of the Switched Command Inputs.

11.0 WARRANTY

There are two separate warranty periods for the LMi Series Central Inverter System.

Electronics/Cabinet Warranty: The electronics and cabinet are warranted against defects in materials and workmanship under normal and proper use for a period of three (3) years from the date of shipment. Extended warranty options of five (5) and ten (10) years are also available.

Battery Warranty: Batteries are covered under a separate warranty, with coverage periods varying by battery type. Refer to the warranty documentation supplied with the product for complete terms, conditions, and coverage details.

11.1 Technical Support

Technical Support is available to assist with installation, operation, troubleshooting, and service questions.

Contact Technical Support at (800)967-5573 for assistance.

11.2 Return Material Authorization (RMA)

At no time will material be accepted as returned goods without an RMA number issued from the factory. If parts are deemed defective by our Technical Service group and are troubleshot at the site to be defective they can be exchanged at no cost during the warranty period with an RMA.

When returning defective parts back to the factory, the RMA number must be written on the packaging, bill of lading, or shipping labels so it can be properly identified.

Technical Service will make every effort to troubleshoot the problem over the phone before an RMA will be issued. Phone troubleshooting may save both the customer and manufacturer added time and expense. Cooperation is greatly appreciated.

12.0 MAINTENANCE AND SERVICE

CAUTION

When performing maintenance or service, it may be advisable to shut down the unit. Refer to the Start-Up and Shut-Down procedures for details.

CAUTION

Always assume AC and DC voltages are present at the LMi Series terminals. The inverter can supply output voltage from the batteries even when AC input is absent. Additionally, the unit can pass AC voltage from input to output without batteries connected if the installation switch is on.

Routine Maintenance

Routine Maintenance should be considered any maintenance that does not require removing the Inverters' front cover panel. This maintenance includes periodic cleaning of dust from the cover and cabinet base to ensure proper convection air flow. Since no fans are required on this system, air flow moves by convection. Convection air circulation is from bottom to top as heat naturally rises. Keep all foreign objects off the top and away from the sides of the unit as these may impede convection air flow.

A quick test by manually pressing the test button will transfer the system to the Inverter Mode and will turn on all the connected loads such as the multipurpose Normally-Off/Switched load.

Ensure there are no faults present. If there are faults, please refer to the User Interface section for a complete detail of what this fault may indicate.

Monthly Test

Pressing the TEST button on the front panel transfers the unit to Inverter Mode. This test will run for a minimum of 30 seconds and will automatically return to Battery Charging mode once synchronized with utility power.

Yearly Test

NFPA code requires that a yearly 90-minute test be performed. During this test, the system must operate for the full 90 minutes without triggering a Low Voltage Disconnect (LVD) fault.

A yearly 90-minute test may be initiated by pressing and holding the TEST button for 5 seconds. As an alternative, the test can be performed by turning off the input feed breaker for 90 minutes and then restoring power. The test can also be programmed to run automatically via the User Setup Menu.

12.1 Battery Maintenance

The LMi Series utilizes a lithium iron phosphate ($LiFePO_4$) battery pack designed to be maintenance-free. The battery pack must never be opened, disassembled, modified or internally serviced for any reason. All inspection and maintenance activities are limited to an external visual inspection of the battery pack and its accessible connections.

The manufacturer recommends performing a visual inspection every six months. Inspect the exterior of the battery pack for signs of physical damage, including cracks, leakage, swelling, deformation, damaged wiring or connectors, corrosion at accessible connections, or any other visible abnormal conditions.

If any damage or abnormal condition is identified do not open or attempt to repair the battery pack. Remove the system from service as appropriate and contact Technical Support for further instructions.

12.2 Battery Replacement

The Central Inverter System is evaluated for use with the specified $LiFePO_4$ battery pack. Do not substitute another battery type or an unapproved battery pack. For replacement battery information, contact Technical Support.

To remove the battery pack, firs shut down the unit completely by turning off the System ON/OFF switch and disconnecting AC power by turning off the input circuit breaker. Next, disconnect the 8-position communication cable and the battery connector from the wiring harness on top of the gear tray.

Route the cables down while sliding the battery pack out and carefully unbolt and remove the cables from the batteries.

TIP

If the batteries are to be replaced, discharging them by operating the system in Inverter Mode can be beneficial This helps verify whether the batteries require replacement if they cannot sustain a 90-minute discharge and deplete the battery to reduce available fault current. Running the battery to Low Voltage Disconnect (LVD) significantl lowers the fault current, making removal and transportation safer in the event of an inadvertent short circuit.

WARNING

Battery replacement must be performed only by qualifie personnel, such as a licensed electrician, who are familiar with AC and DC installation practices and applicable codes.

WARNING

Always remove rings, watches, and other jewelry before performing any electrical service or installation, and wear protective clothing and appropriate PPE, including eye protection, when working near batteries.

WARNING

$LiFePO_4$ batteries store high energy and can deliver high currents. Precautions must be taken to prevent short circuits, which could result in sparks, fire or injury.

WARNING

$LiFePO_4$ batteries must be disposed of according to all local and state regulations. Always recycle used batteries at an approved facility.

WARNING

Always use the correct tools with insulated handles and wear appropriate PPE when performing battery work.

DO NOT TOUCH BATTERIES UNLESS TRAINED OR KNOWLEDGEABLE!

If the system has been properly shut down and the 8-position communication cable disconnected, the battery's positive and negative terminals are de-energized by the internal Battery Management System (BMS). To install a new battery pack, refer to Section 6.0 – Battery and DC Connections.

13.0 Fire Alarm/Dimming Option

13.1 Overview

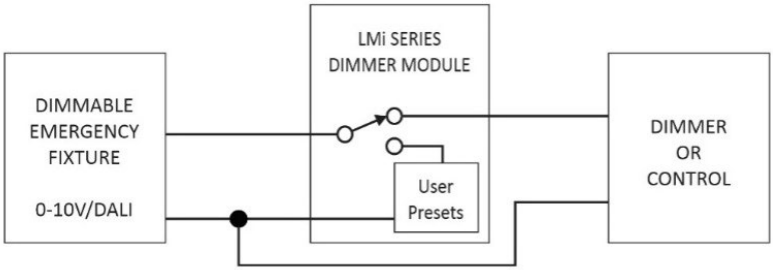
When provided, the optional Fire Alarm/Dimming interface accepts a 12-24 VAC/VDC fire alarm signal and provides four independent low-voltage dimming zones for 0-10V/DALI applications. The option allows emergency-mode light levels to differ from normal-mode levels.

When used with the Central Inverter System switched outputs, the dimming interface transfers the low-voltage control signals to the configured user preset during emergency operation.

When the fire alarm input is active, Zones 1-4 transfer to their configured user preset levels.

13.2 Operation

The 4FD option provides 4 independent channels of 0-10V/DALI control signals for use in Emergency Lighting. A simplified block diagram of one channel is as follows:



During normal operation, the DIMMABLE EMERGENCY FIXTURE is connected directly to the DIMMER OR CONTROL through the DIMMER MODULE's internal signal relay. Upon loss of power or during a system test, the DIMMER MODULE's internal relay changes state so that the User Presets (5 presets 100% - 20%) will assume control of the dimming level for the DIMMABLE EMERGENCY FIXTURE.

The Dimmer Module is for low-voltage control signals only and must not be connected to line voltage. Maximum control signal rating is 20 VDC, 200 mA. The user preset circuits are reverse-polarity protected and sink current only; they do not source current.

Zone 1 and SW1 output all work together as a zone on the options board. SW CMD 1 controls SW OUT 1 to turn on and off with a line voltage signal during normal operation (charge mode). Also, during this time, the DIMMABLE EMERGENCY FIXTURE is connected directly to the DIMMER OR CONTROL through the DIM 1 control relay.

During Emergency or Inverter mode of operation, the SW OUT 1 automatically energizes from the Inverter and the DIM 1 internal relay transfers to the DIM 1 USER SETTINGS. The DIMMABLE EMERGENCY FIXTURE will automatically change light levels during Emergency or Inverter Mode to USER PRESET value.

DIM 2, SW OUT 2, SW CMD 2 through DIM 4, SW OUT 4, SW CMD 4 also work as independent zones.

13.3 User Presets (DIM ADJ)

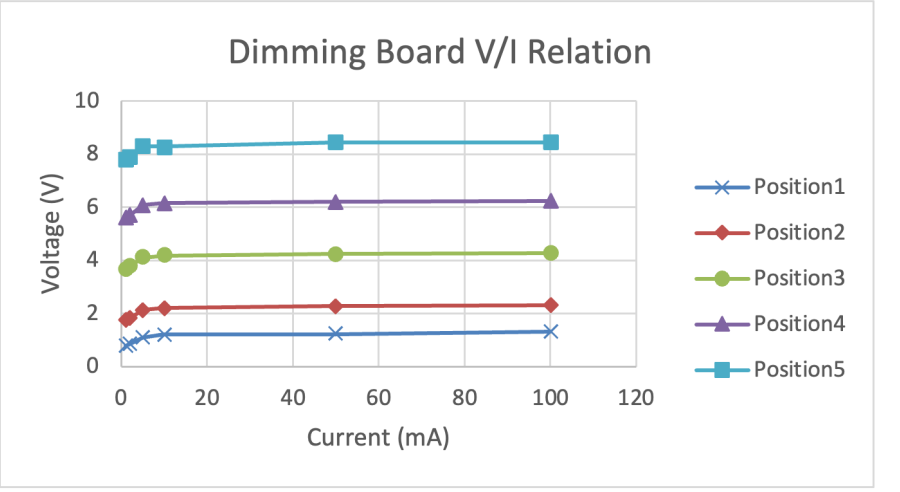
There are 5 user presets (when using 0-10V interface) which can be changed by rotating the DIM ADJ. either clockwise (CW) for brighter and counter clockwise (CCW) for dimmer. The furthest CW rotation is an Open Circuit or 100% light level, and the furthest CCW rotation is about 1V or 10% dimming level. The User Presets are current dependent, which means that the values will change depending upon how much current the Dimmer Module has to sink. Provided below is a typical V/I Relation curve for the different USER PRESET positions with various LED driver current levels. 100% levels are not shown (open circuit) as these are only Position 1-5 dimming levels.

TIP

If the DIM ADJ. is set to provide 100% light output to the fixture the gray (common) wire is not required. The gray wire serves as the current return path for the driver and is only necessary when dimming to levels below 100%.

TIP

Pressing the TEST button on the DIM 1 through DIM 4 circuits causes the internal signal relay to switch to the USER PRESET value. This feature is useful for adjusting the DIM1–4 signals and verifying illumination and power consumption levels.



13.4 Fire Alarm/Dimming Connections

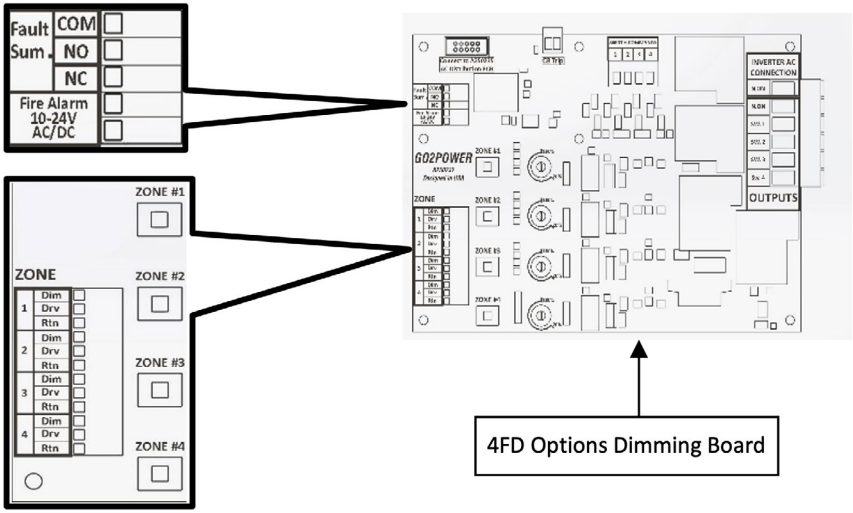
For installation convenience, the manufacturer provides removable connectors for both the Dimming Interface and Fire Alarm Interface. These connectors allow the field wiring to be terminated outside the equipment and then plugged into the appropriate connector.

For the Fire Alarm Interface, apply 12–24 VAC/DC to the 5-position connector J5.

For the Dimming Interface, connect the DALI/0–10V violet wires to connectors J1, J6, J8, and J9. Observe the DRIVER and DIMMER designations on the terminal blocks, as proper connection is required when using any dimming level other than 100%.

- DRIVER – Connects to the dimmable emergency fixtures.
- DIMMER – Connects to the dimming or control signal.

Refer to Section 13.2 for detailed dimming signal flow and connection information.



NOTE

DALI interface requires the DIM ADJ. to be in the furthest Clockwise (CW) so that the relay opens during Inverter Mode of operation. Dimming requires a DALI signal which the LMi Series does not provide.

13.5 Testing the Dimmer Option:

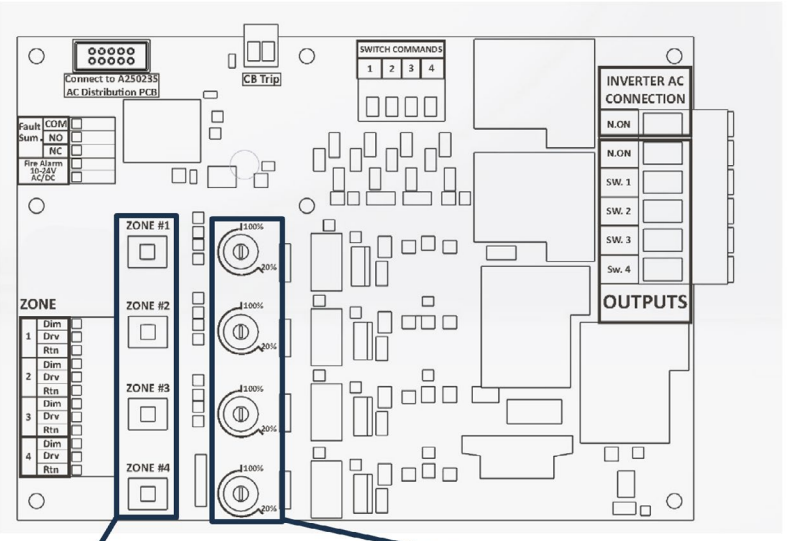
Once the system is completely wired, a full operational test should be performed to verify the proper dimming levels and ensure the system is not overloaded during Inverter Mode. A clamp-on current meter is recommended for measuring the current on Zones 1–4.

During Charging Mode, the emergency lighting fixture are controlled by the external dimmer because the 0–10V signal is passed through the small-signal control relay contacts. Measure the current on Zones 1–4 and verify that the combined load does not exceed the inverter's rated capacity.

Press each zone's respective TEST button to transfer control of the emergency lighting fixture to the Dimming Option. The emergency dimming level can be adjusted using the DIM ADJ. control. Rotate the adjustment fully clockwise (CW) for full brightness or counterclockwise (CCW) to reduce the light output.

Measure the current on Zones 1–4 at the selected emergency dimming level and verify that the combined load does not exceed the inverter's rated capacity.

Finally, press the SYSTEM TEST button to place the system into Inverter Mode. Verify that all emergency lighting fixture illuminate at their intended emergency levels and confir that no overloads, faults, or other alarms occur during operation.



TEST

Pressing this TEST button in the Charge Mode will transfer DIM 1 signal to its pre-set value determined by DIM ADJ.

TEST button does not function in Inverter Mode.

DIM ADJ.

There are 5 preset dim levels in addition to full brightness. Adjust the DIM ADJ. clockwise (CW) for brighter Emergency Lights and counterclockwise (CCW) for dimmer Emergency Lights.

Charger Mode Operation

While utility power is present, the Inverter is in charging mode. DIM 1 DRIVER is connected directly to DIM 1 DIMMER through a small signal relay – this allows for the Normal Lights and the Emergency Lights to be controlled from the Dimmer. SW CMD 1 instructs the SW OUT 1 to turn on/off.

Inverter Mode Operation:

When the Inverter senses a utility power loss, it transfers to the Inverter Mode. DIM 1 DRIVER is disconnected/isolated from DIM 1 DIMMER by a small signal relay – this allows the Normal Lights to be disconnected/isolated from the Emergency Lights. The Emergency Lights will go to full brightness or to a preset level adjusted internally in the Inverter. AC Output SW OUT 1 is energized regardless of the state of the SW CMD 1.

Terminology

Charger Mode:

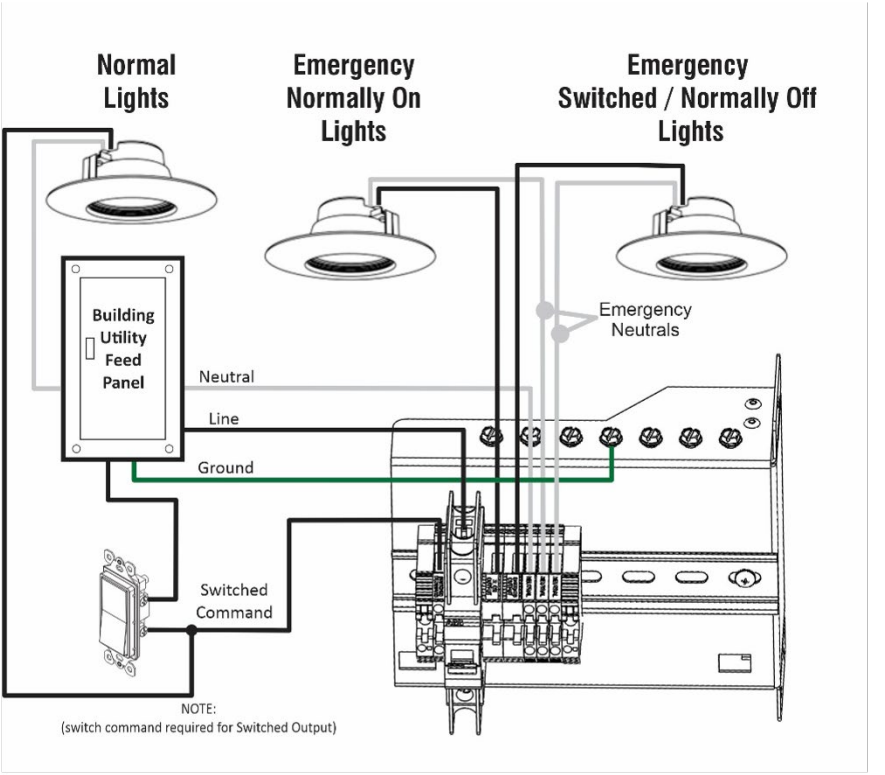
Utility Power is present and Inverter is charging the batteries.

Inverter Mode:

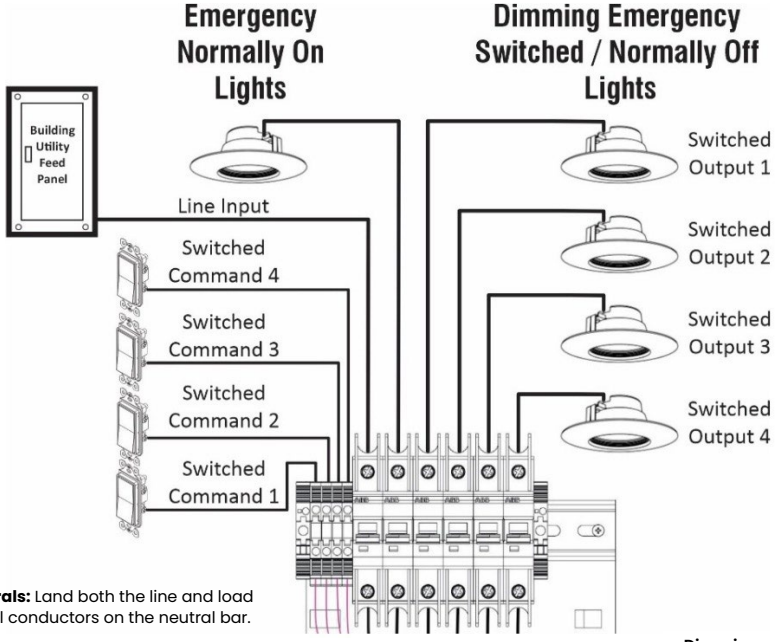
Utility Power is not present (Emergency) which signals the inverter to provide output power and discharges the batteries.

14.0 Typical Wiring Diagrams

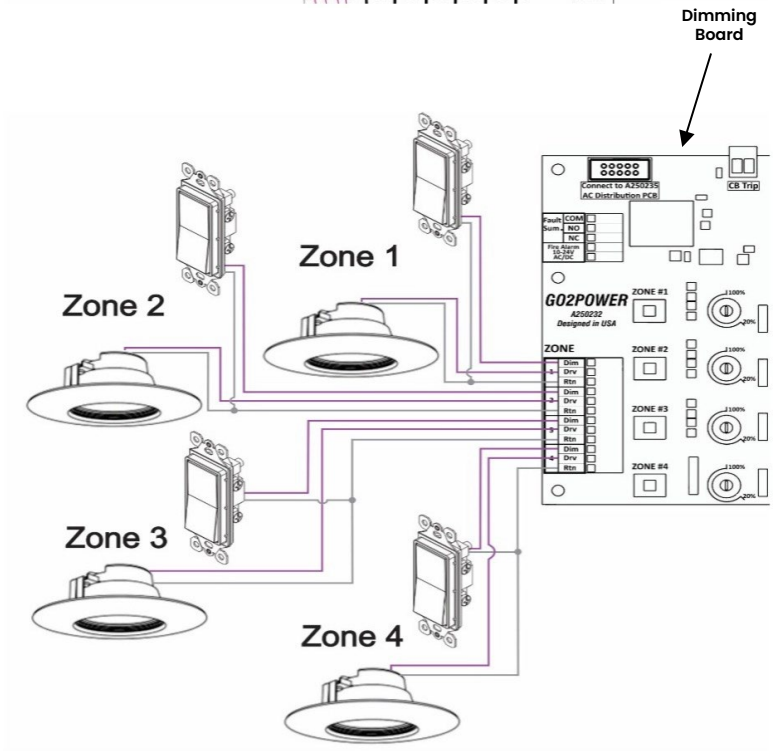
Normally On & Switched / Normally Off



4FD – Four Zone Dimming



***Neutrals:** Land both the line and load neutral conductors on the neutral bar.



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