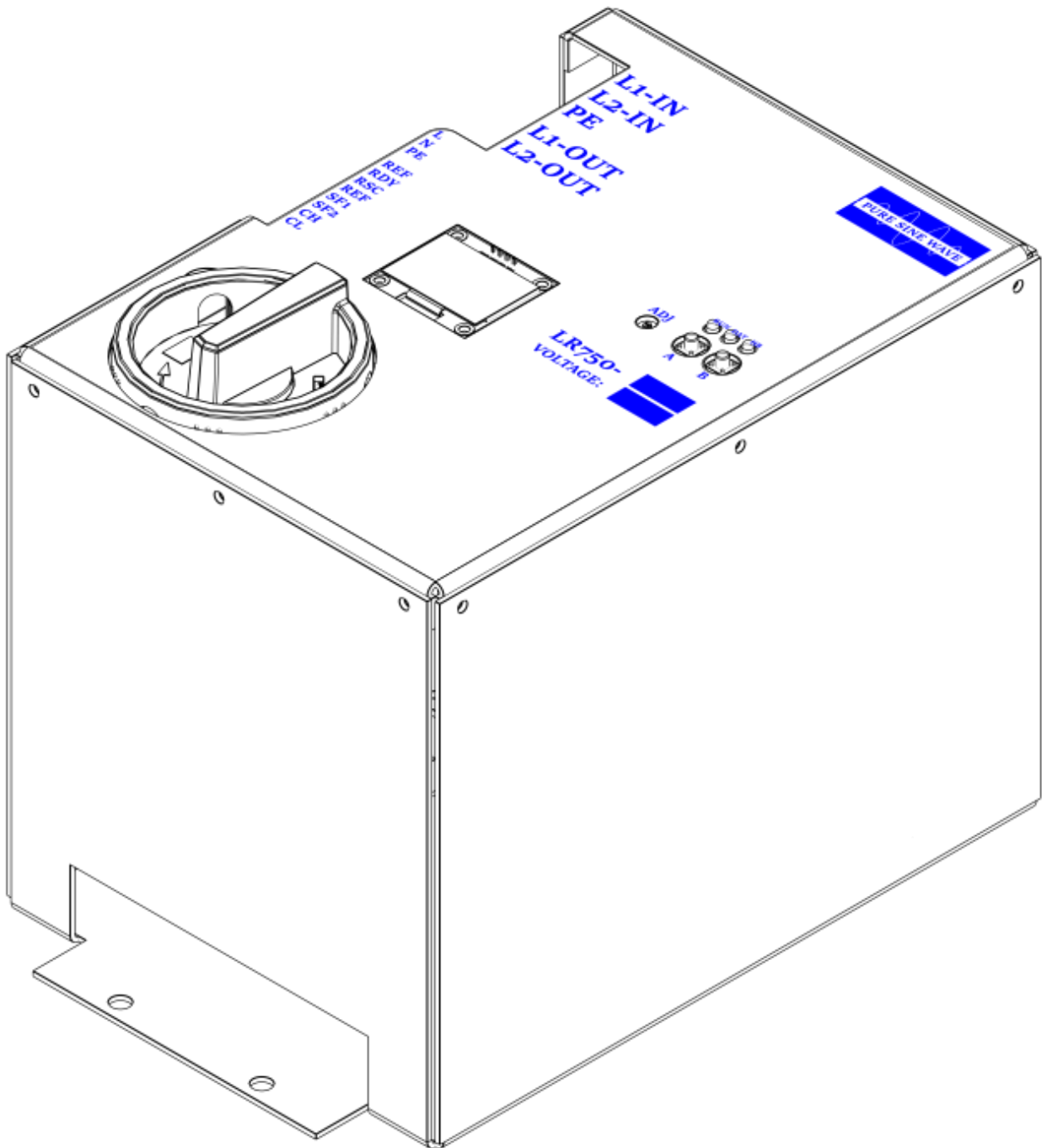

LR750 Emergency Power Device

(For Hydraulic and Traction elevators – For Automatic and Manual rescue modes)



DESCRIPTION:

The *LR750* is a sophisticated and compact inverter engineered to seamlessly integrate with elevator controllers, enabling uninterrupted monitoring of the mainline and generating an AC voltage equivalent to the mainline in the event of a mainline failure. With a robust power rating of 500 watts, this reliable device is available in two distinct classes: ***LR750-2*** and ***LR750-4***. The -2 class delivers a fully sine-wave versatile output, ranging from 200V AC to 240V AC, while the -4 class provides a fully sine-wave output ranging from 400V AC to 480V AC.

To ensure optimal performance, the *LR750* depends on a UL Certified, high-quality 24V, 3.7AH battery pack that remains maintenance-free throughout the device's lifespan and is perpetually prepared for operation during critical times. The battery pack undergoes vigilant monitoring and efficient charging via an intelligent 0.7A, 28V battery charging circuit, assuring a constant and dependable power supply.

When it comes to providing an emergency power source for elevator controllers, the *LR750* sets a new standard, offering exceptional performance, reliability, and versatility. With its compact form factor and advanced features, this inverter is an indispensable component for elevators, ensuring uninterrupted operation and enhanced safety for passengers.

SPECIFICATIONS:

- **Power Output:** 500 Watts
- **Total Runtime:**
 - 9 minutes at maximum power output.
 - After 3 minutes of operation, the device automatically ceases power generation. To resume, simply press Button B to restart. Maximum run time can be adjusted upon request.
- **Output Voltage:**
 - Adjustable between 200V and 240V AC for the LR750-2 model.
 - Adjustable between 400V and 480V AC for the LR750-4 model.
- **Output Waveform:** Pure sine wave, 60Hz frequency
- **Battery Charging Circuit:** 0.7A at 28V
- **Battery Testing Method:**
 - The device performs an automatic battery test every 24 hours by applying a known load and monitoring the resulting voltage drop.
- **Output terminals:**
 - **RDY (Ready):** Dry relay contact (normally open). Closes to indicate the device is ready for operation. Corresponding green LED indicator provided.
 - **RSC (Rescue):** Dry relay contact (normally open). Closes to indicate the device is actively generating voltage. Corresponding blue LED indicator provided.
- **Input Terminals:** Equipped with two safety contact terminals mainline disconnect switch monitoring.
- **OLED Display:** Displays detailed information on inputs, outputs, and battery status.
- **Battery Disconnect Switch:** Lockable switch, fully compliant with ASME 17.5 standards.
- **Current Measurement Circuit:** Accurately measures battery current, with negative values indicating charging and positive values indicating power generation.
- **Overcurrent Protection:** Automatically shuts down the unit in the event of an overcurrent situation.
- **Overvoltage Protection:** Protects the system by shutting it down when the output voltage exceeds safe limits. This feature is triggered when the user adjusts the voltage beyond the preset safety threshold.
- **Battery Fuses:** A non-replaceable 30A fuse is installed in series with the battery for protection.
- **Output Fuse:**
 - 500VAC, 1.6A fuse for LR750-4 model.
 - 500VAC, 3.15A fuse for LR750-2 model.
- **Enclosure:** Robust metal enclosure designed to protect internal circuits, electrical connections, and the battery pack.
- **Compact Design & Easy Installation:**
 - The unit is designed for minimal wiring, simplifying integration into the main input line.
 - It can be easily installed within the controller, making it suitable for space-constrained environments.

DIMENSIONS:

Height: 7.3 inches

Width: 6 inches

Depth: 8.5 inches

WEIGHT:

Unit weight: 18 pounds

Shipping weight: 20 pounds

OPERATING CONDITIONS:

Temperature range: -10°C to 40°C

Humidity: 95% non-condensing

Altitude: Up to 1000 meters

SAFETY AND COMPLIANCE:

CSA Certified

CSA B44.1 ASME 17.5

PACKAGE CONTENTS:

LR750 Battery Emergency Power Device

User Manual

WARRANTY

3-year warranty

THEORY OF OPERATION:

The operation of this device is governed by four key circuits: the **battery charging circuit**, **battery test circuit**, **main-line monitoring circuit**, and **AC generation circuit**. These circuits are all managed by a central processor board, which oversees various input/output signals, controls the OLED display, and generates two programmable outputs to ensure the device operates efficiently and reliably.

Battery Charging Circuit

The **battery charging circuit** utilizes a 36V, 35W power supply, which is powered by an external 120VAC input connected to terminal **J3**. This power supply is regulated to produce a stable 28V DC output at 0.7A, which is used to charge the battery. The battery voltage is continuously monitored, and if the voltage exceeds 28V, the charging circuit automatically disconnects from the battery to prevent overcharging. Additionally, when the unit is generating AC output, the charging circuit is automatically disconnected from the battery.

Battery Test Circuit

The **battery test circuit** monitors the battery's discharge rate by applying a known load to the battery and monitoring the resulting voltage change. If the battery can no longer hold an adequate charge, the unit triggers a fault notification through one of its output signals, alerting the elevator controller to the issue. The battery test is performed automatically every 24 hours.

Main-Line Monitoring Circuit

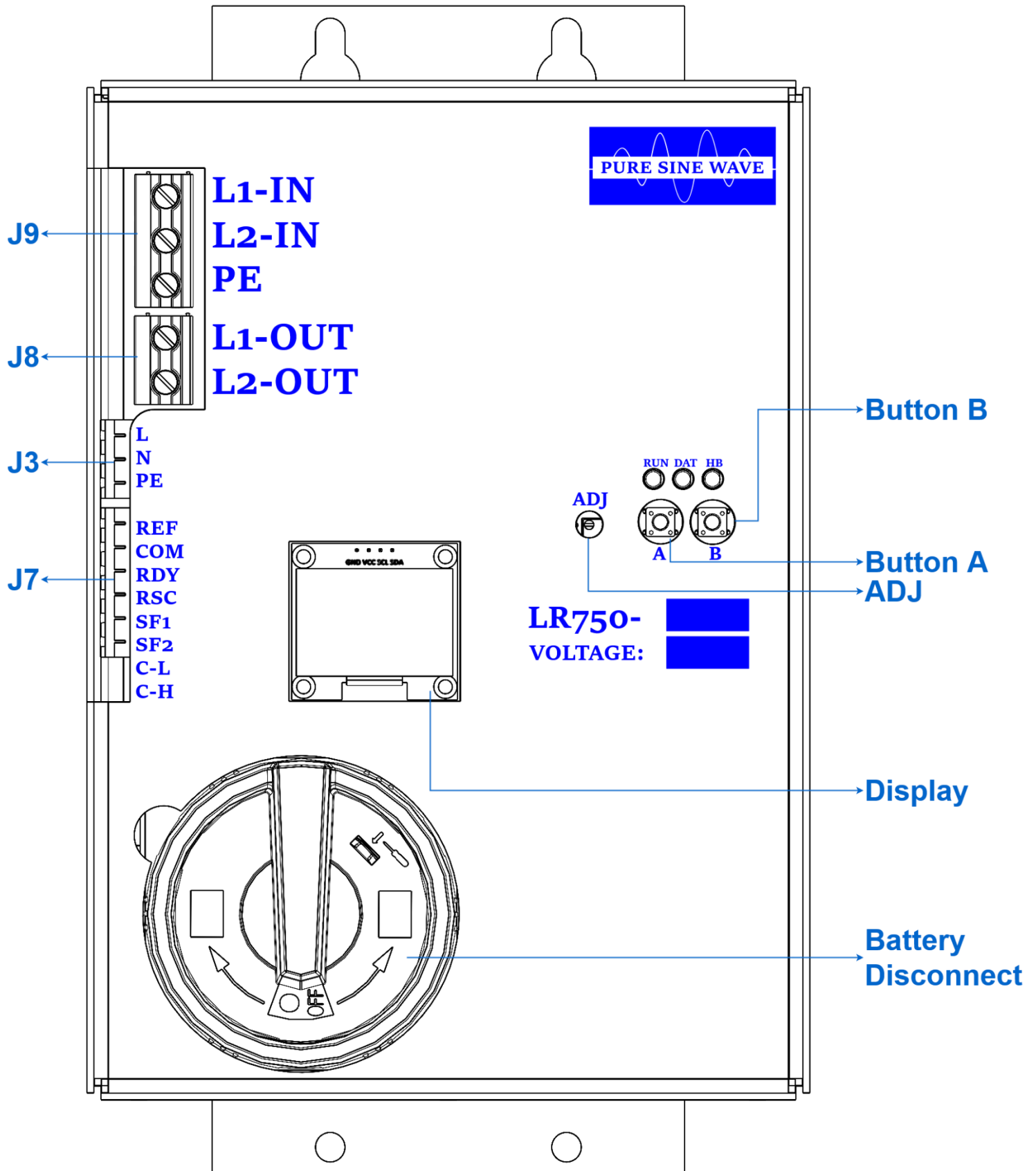
The **main-line monitoring circuit** constantly monitors the incoming mainline voltage. If the voltage drops below 90VAC, the processor board is notified and triggers the output relays to isolate the mainline from the device's output. This ensures that only valid and stable power is used for operation of elevator controller.

AC Generation Circuit

The device generates a **pure sine-wave** AC output using an internal inverter and step-up transformer. The output voltage is regulated automatically and can be adjusted using a built-in potentiometer. The system ensures stable and accurate AC output suitable for elevator controller operation.

Processor Board Control

The **processor board** plays a central role in managing all the device's circuits and functions. It continuously monitors the battery voltage and current, controls the charging process, and verifies the presence of the mainline input. The processor also manages the AC output generation, ensuring the voltage is stable and within the required specifications. Additionally, the processor board monitors the status of the pushbuttons and LED indicators, and is responsible for controlling the OLED display.



J9: Input from Main-Line

L1-IN: Phase 1

L2-IN: Phase 2

PE: Earth Ground

J8: Output to the elevator controller

L1-OUT: Phase 1

L2-OUT: Phase 2

J3: Input 120V AC from elevator controller. Used to charge the batteries.

L: 120V AC Line

N: Neutral

PE: Earth Ground

J7: Logic IOs

REF: Connect to the elevator controller's REF terminal. This connection is only required if CAN-BUS communication is use.

RDY: Dry relay contact (normally open) that closes when the LR750 is ready to operate. This indicates normal system conditions (battery charged, battery switch ON, no hardware faults). The contact opens in the event of any issue that would prevent operation. A green LED indicator is provided.

RSC: Dry relay contact (normally open) that closes only when the LR750 is actively generating AC output. This signal can be used by the elevator controller to detect Emergency Power Mode. A blue LED indicator is provided.

REF: Connect to the elevator controller's REF terminal only if CAN-BUS communication is used.

SF1 – SF2: These inputs are safety contact inputs and should be connected to the auxiliary contact of the main line disconnect switch. When these inputs are opened, it indicates that the main line disconnect switch is manually off, and as a result, the inverter will not generate any output.

ADJ: The potentiometer is utilized to adjust the output voltage to the desired value.

DISP: The 1.3-inch OLED display provides information regarding the status of the inverter. It displays important details such as battery voltage, current, output voltage, and the status of various input/output connections.

SW: Lockable battery disconnect switch.

Push Button A: The left push button, used to manually test the battery health. The system automatically performs a battery test every 24 hours.

Push Button B: This is the right push button and is used to restart the rescue unit after its first 3min is expired.

DISPLAY OVERVIEW:

The display provides real-time information about the operational status of the Battery Rescue Unit. Below are the key indicators and their meanings:

STATUS: [GENERATING]	
IBAT: 12A	VBAT: 26V
VOUT: 480V	SAFE: ON
MAIN: OFF	. 480

Status:

[IDLE] – The unit is in standby mode; it is neither generating output nor charging the battery.

[CHARGING] – The battery is actively charging.

[GENERATING] – The unit is supplying AC output voltage.

[BAT FULL] – The battery is fully charged.

IBAT (Battery Current) – Displays the battery current. A negative value indicates the battery is charging.

VBAT (Battery Voltage) – Shows the battery voltage. A fully charged battery will display 27V and above.

VOUT (Output Voltage) – Displays the AC output voltage when the unit is generating power. The output voltage can be adjusted using the ADJ potentiometer on the device.

SAFE: ON – Indicates that SF1-SF2 is connected.

OFF – Indicates that SF1-SF2 is not connected.

MAIN:

OFF – The main line is unavailable, and the unit can start generating if the SAFE signal is active

ON – The main power supply is present, and the unit will not generate power.

480 – Displays either 240V or 480V, indicating the voltage class of the unit

Battery Disconnect Warning



If the battery disconnect switch is turned OFF, the unit will neither generate power nor charge the battery.

To enable battery charging, ensure that:

The main battery disconnect switch is set to ON and the display does not show the "SWITCH OFF" message.

Failure to turn the battery disconnect switch ON will prevent the unit from functioning properly.

Screen Saver

The OLED screen will enter screen saver mode after 1 hour of inactivity to prolong the display's lifespan. It will exit screen saver mode when any activity is detected.

