

## **USER MANUAL For Central Battery Systems | INV-BP 220V Series**



# Table of Contents

---

<b>Part 1 : Overview Central Battery Systems</b>	<b>Page</b>
1.1 Features	1
1.2 Technical Specifications	2
1.3 Indicators	3
1.4 Electrical Connector	4
 <b>Part 2 : Installation and Operation</b>	
2.1 Battery Connection	5
2.2 Steps for Connecting the Input and Output	6
2.3 Device Initialization	7-9
2.4 Testing the Unit's Operability	10-11
 <b>Part 3 : Maintenance</b>	
3.1 Device Maintenance	12
3.2 Initial Trouble Shooting	12
3.3 Important Note on Using the Unit	12
 <b>Part 4 : Terms for Warranty and Service</b>	
4.1 Terms for Warranty and Service	13

# Part 1

## Overview Central Battery Systems

---

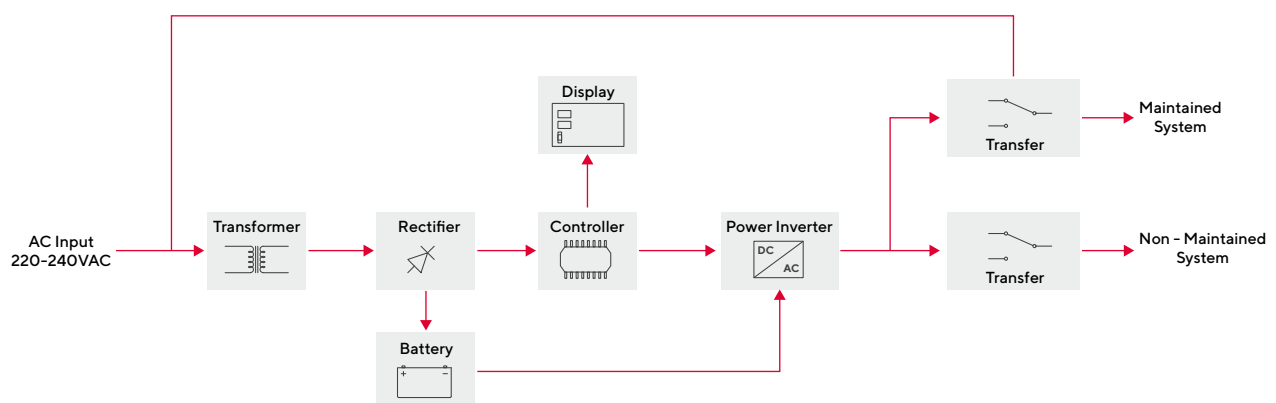
## 1.1 Features

Central Battery Systems by INV-BP 220V Series or central control units have the function of monitoring abnormalities in the main power supply system. In case of a malfunction or emergency, the device will take the battery voltage, which is direct current, and convert it into 220-volt alternating current electrical power with an inverter system, in order to supply power to emergency lighting loads.

The device uses Lithium Iron Phosphate (LiFePO<sub>4</sub>) batteries which are lightweight, long-lasting, and provide high power output while generating low pollution. It also includes a new innovative battery charging system called the 3 Steps Charger System (Patent No. 15955) which is superior to other charging systems and provides complete protection for the battery charging process.

**Central Battery Systems by INV-BP 220V Series has 2 function modes of operation.**

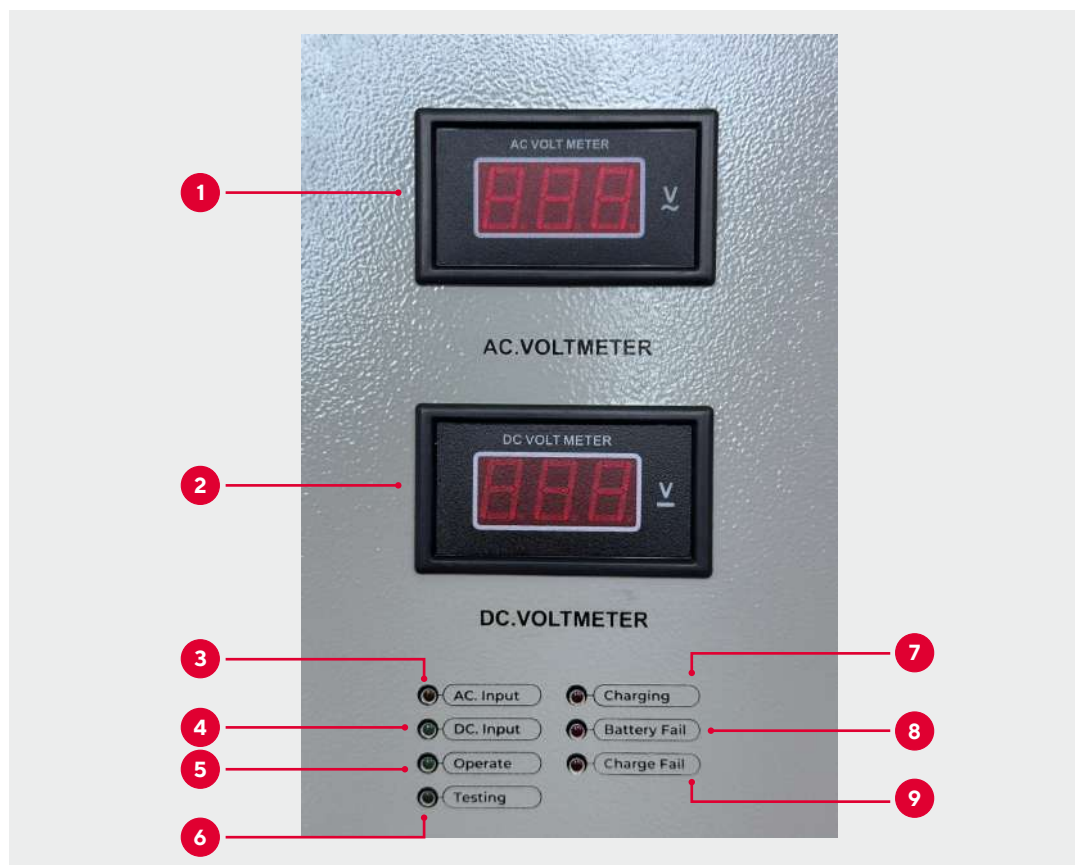
1. MAINTAINED (Providing lighting constantly throughout the period when the AC line lights are in the normal status and when the AC Line lights are off.)
2. NON-MAINTAINED (Providing emergency lighting only when the AC line lights are off.)



## 1.2 Technical Specifications

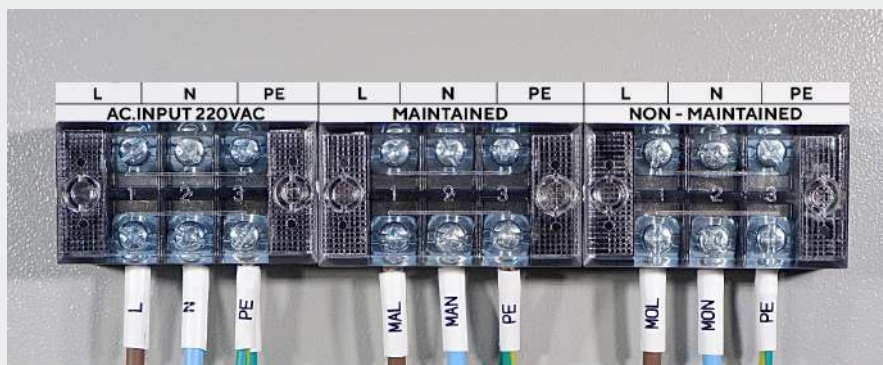
Model		INV-BP 220 Series				
Rated Capacity (Wattage)		200	350	500	700	1000
Mode of Operations		Maintained and Non - Maintained				
Input	Voltage	220 -240VAC				
	Frequency	50Hz				
Output	Voltage	AC220V $\pm$ 2% (Battery Mode)				
	Frequency	50Hz $\pm$ 1% (Battery Mode)				
Output Waveform		Pure Sine Wave				
Terminal Output		2 Output				
Maximum Load @ PF=1 (Wattage)		200	350	500	700	1000
Efficiency		>80%				
Battery Type		Lithium Iron Phosphate (LiFePO <sub>4</sub> )				
Battery Rated Voltage		25.6V				
Protections		<ul style="list-style-type: none"> <li>- AC. Input &amp; Output Circuit Breaker</li> <li>- DC. Circuit Breaker</li> <li>- AC. Input Under Voltage Protection</li> <li>- Battery Low Voltage Cut-Off</li> </ul>				
Operate of Temperature		10°C to 50°C				
Size L x W x H (mm)		440x230x660			600x250x810	600x350x810

## 1.3 Indicators

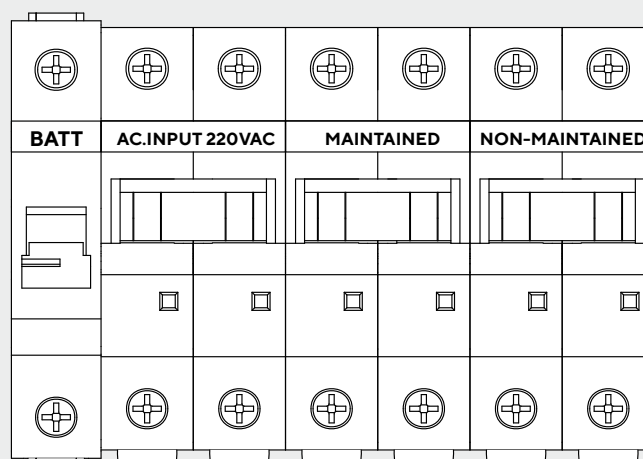


No.	Symbol	Description
1	AC.VOLTMETER	Indicating the input and output voltage.
2	DC.VOLTMETER	Indicating the battery voltage.
3	LED AC. Input	Indicating the status of the input voltage of 220-240VAC.
4	LED DC. Input	Indicating the status of the battery power into the device.
5	LED Operate	Indicating the operation status of the inverter unit.
6	LED Testing	Indicating automatic battery discharge status.
7	LED Charging	Indicating charging status.
8	LED Battery Fail	Indicating the failure status of the battery.
9	LED Charge Fail	Indicating the failure status of the battery charging.

## 1.4 Electrical Connector



No.	Symbol	Description
1	AC.INPUT 220VAC	Terminal for connecting power to the device
2	MAINTAINED	Terminal Maintained for Continuous Power Supply Mode
3	NON - MAINTAINED	Terminal Non-Maintained for Use in Emergency Power Supply Mode



No.	Symbol	Description
1	BATT	Circuit Breaker for Battery Operation On/Off
2	AC.INPUT 220VAC	Circuit Breaker for On/Off Power Supply to the Device
3	MAINTAINED	Circuit Breaker for On/Off Output Power
4	NON - MAINTAINED	Circuit Breaker for On/Off Output Power

## Part 2

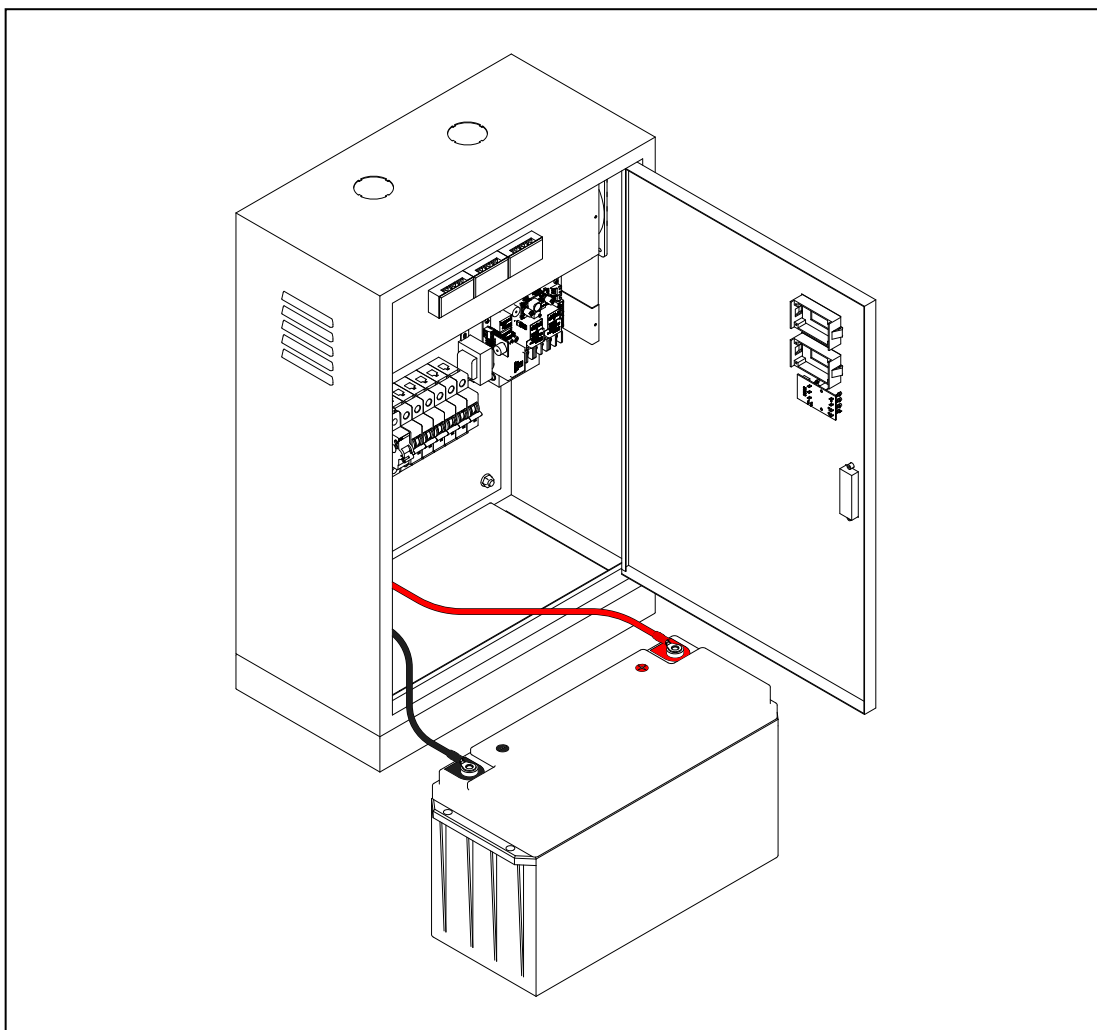
# Installation and Operation





## 2.1 Battery Connection

Connect the battery cables according to the diagram.

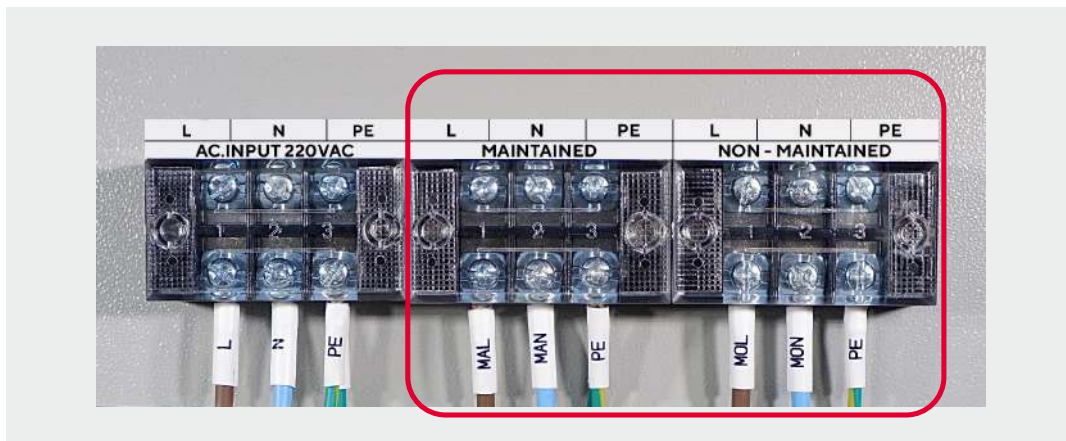


### **Warning**

1. Set all the breakers to Off prior to connecting the batteries.
2. Connect the cables to the correct battery terminal following the wiring diagram.
3. Do not short-circuit the battery terminals.
4. Check the Voltage of the battery after the connection to make sure if it is the desired 25.6 Volts.

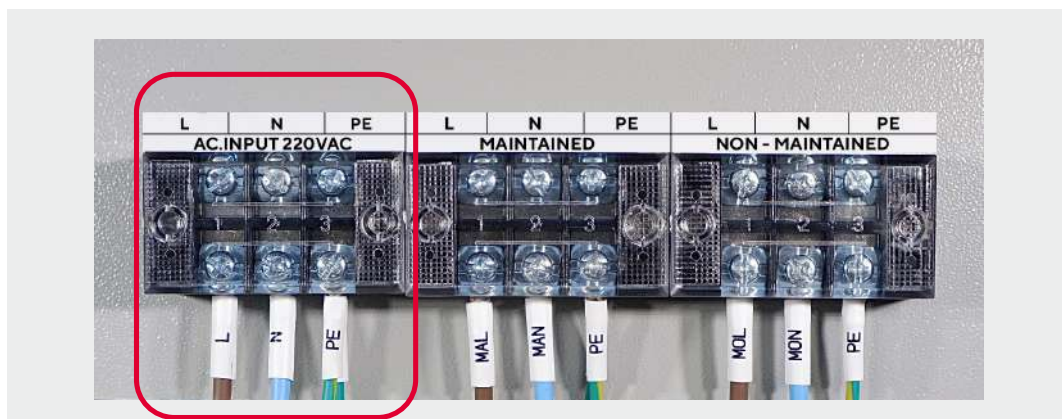
## 2.2 Steps for Connecting the Input and Output

- 1.) Test the readiness of the output load, for example, check for any short-circuits or if the total wattage exceeds the acceptable load. (Caution: The Output Line and Neutral circuit should be independent from other circuits otherwise damage could occur to the inverter.)
- 2.) When connecting to the Load Output in the circuit box there will be 2 outputs to choose from, which are
  - 2.1 Output Maintained. This connection will provide a constant 220VAC 50Hz current. This is suitable for uses that requires a constant current both during normal conditions and during power outages, for example, providing power for emergency exit signs without a built-in battery or lights that need to be constantly on such as lights installed in fire escapes or in parking lots.
  - 2.2 Output Non-Maintained. This connection will not provide a 220VAC 50Hz during normal conditions. The connection will only provide power during power outages. This connection is suitable for things such as emergency illumination lamps.



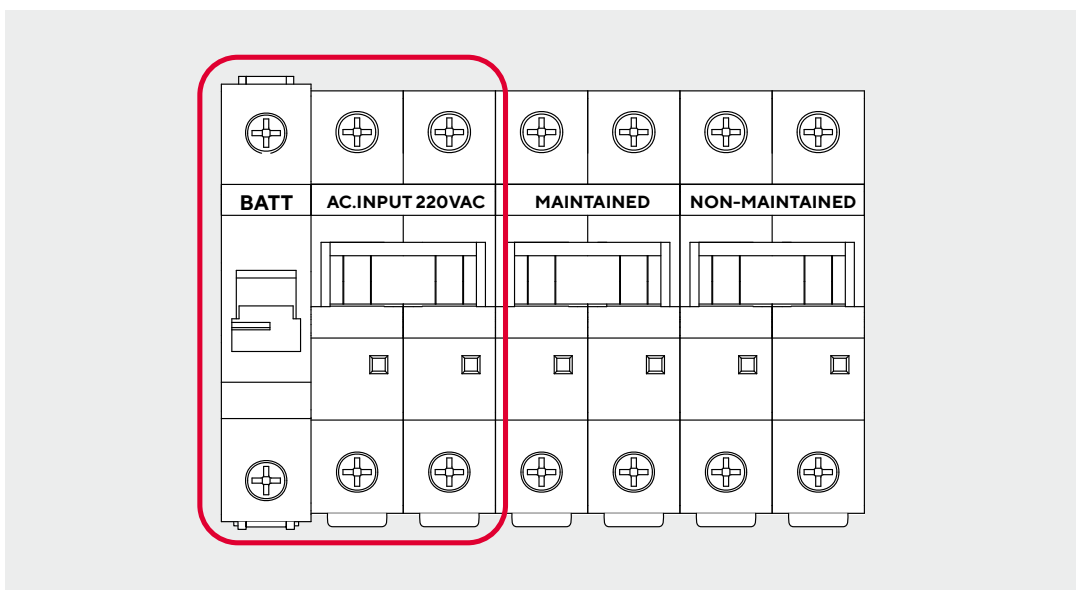
Caution: For the correct connection the Line should be connected into L, Neutral should be connected to N and Ground should be connected to PE. The cables should be connected securely and no foreign objects should be in the circuit box that could potentially cause a short-circuit.

- 3.) Connect the Input cables to the Input 220VAC terminal inside the red frame inside the circuit box. The Line cable should be connected to the L terminal, the Neutral cable to the N terminal and the Ground cable to the PE terminal. The cables should be connected securely and no foreign objects should be in the circuit box that could potentially cause a short-circuit.



## 2.3 Device Initialization

- 1.) Turn on the Circuit Breaker BATT and the Circuit Breaker AC INPUT 220VAC (Show in the red markings). The device will begin charging the battery and enter a ready-to-use state. The front of the device will display the following status:



### The display of device operation

#### AC. VOLTMETER

Shows the current level at the Input to be about 220-240VAC.

#### DC. VOLTMETER

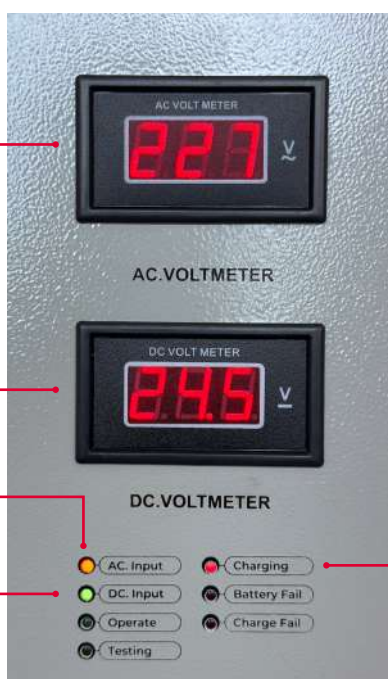
Shows a battery Voltage at 24V.

#### LED AC. Input

The indicator showing that the unit is receiving a 220-240VAC current should be on.

#### LED DC. Input

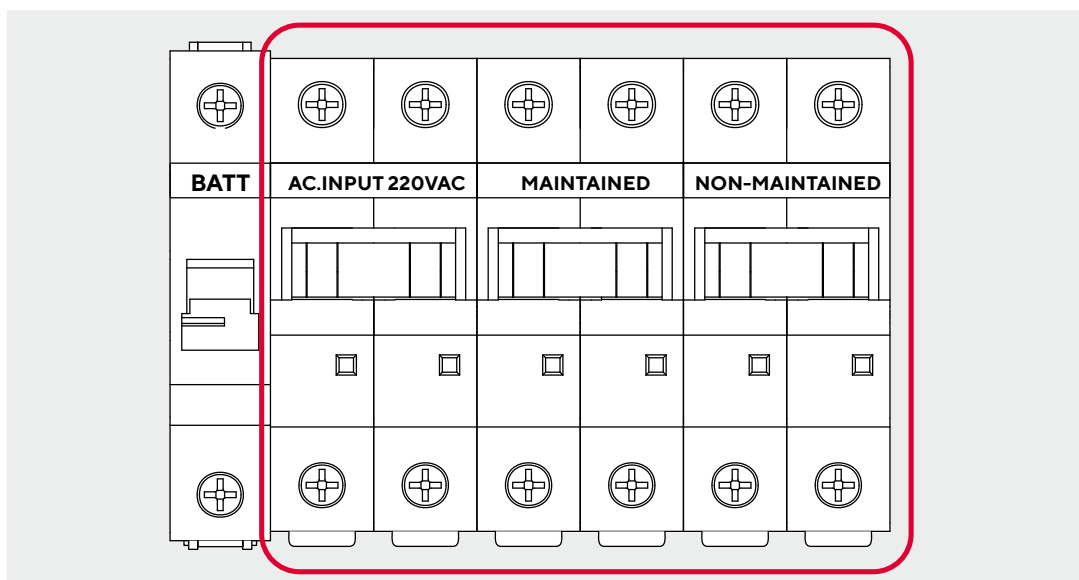
The indicator showing that the battery has been connected to the unit should be on.



#### LED Charging

The indicator showing that the battery is charging.

2.) Set the Breaker AC.Input 220VAC to Off, the inverter will start operation as the same time set the Breaker MAINTAINED, NON-MAINTAINED to On (shown in the red marking), the unit should now be providing power to the load.



### The display of device operation

#### AC. VOLTMETER

Shows the current level at the Output to be about 220VAC.

#### DC. VOLTMETER

Shows a battery Voltage at 24V.

#### LED DC. Input

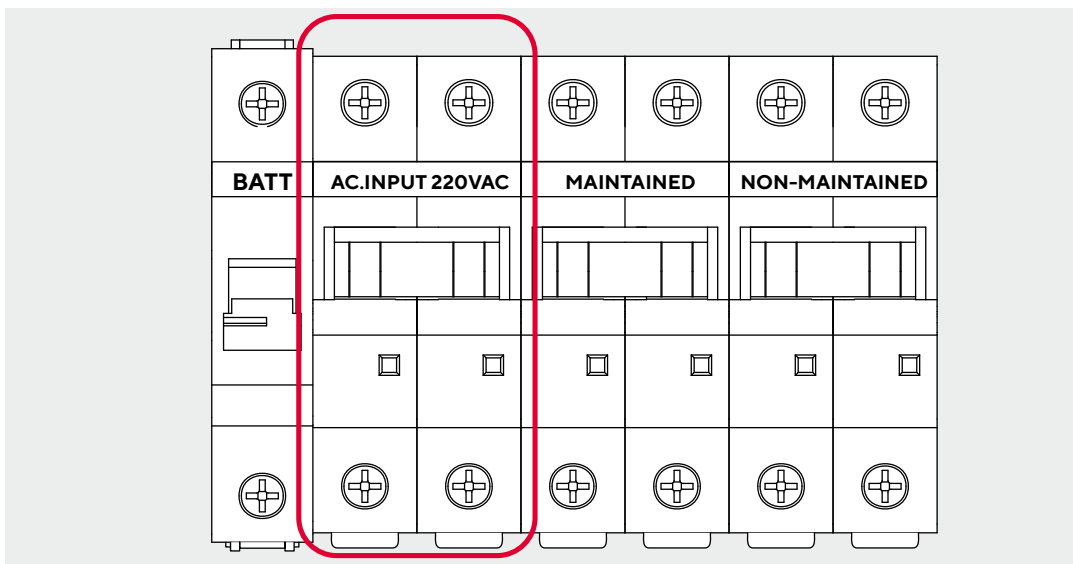
The indicator showing that the battery has been connected to the unit should be on.

#### LED Operate

The indicator showing that the inverter is operational should be on.



- 3.) Test to see if the overall current level and load stability is at a normal level.
- 4.) Set the Breaker AC.Input to ON (shown in the red marking), after the unit should stop using the inverter and use the main power supply to provide power instead.



### The display of device operation

#### AC. VOLTMETER

Shows the current level at the Input to be about 220-240VAC.

#### DC. VOLTMETER

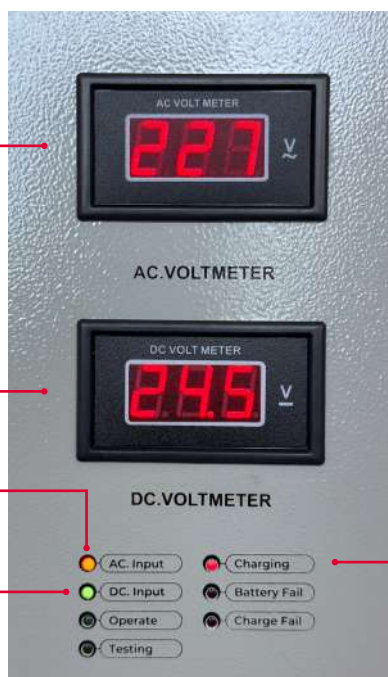
Shows a battery Voltage at 24V.

#### LED AC. Input

The indicator showing that the unit is receiving a 220-240VAC current should be on.

#### LED DC. Input

The indicator showing that the battery has been connected to the unit should be on.

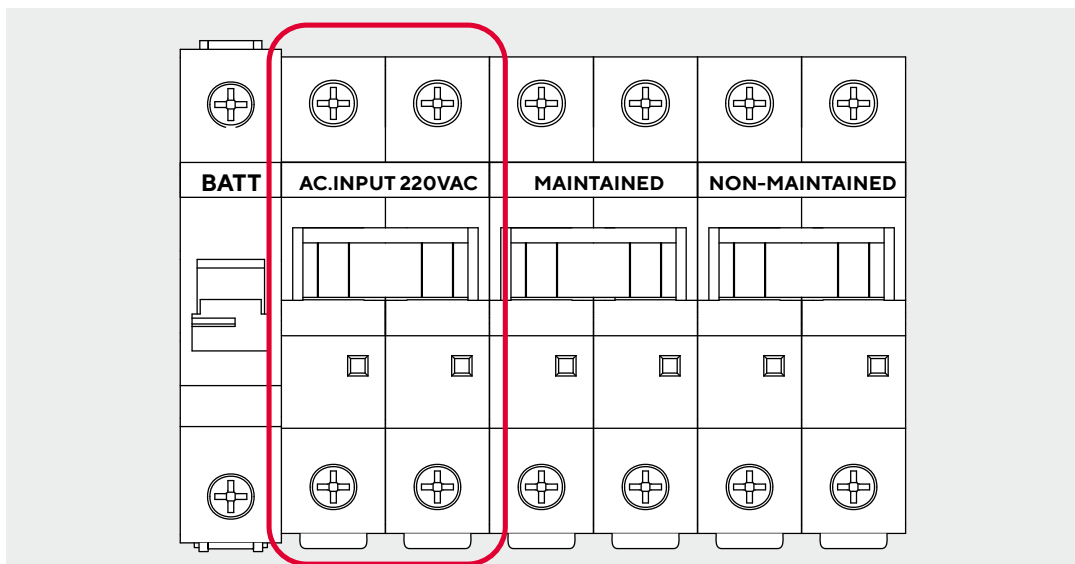


#### LED Charging

The indicator showing that the battery is charging.

## 2.4 Testing the Unit's Operability

- 1.) To test the unit, the user can set the Circuit Breaker AC Input 220VAC to OFF (shown in the red markings), the unit should start providing backup power to the emergency lights immediately.



- 2.) To stop the test, the user can set the Circuit Breaker AC Input 220VAC back to ON. The inverter should stop operating and the unit should return to standby mode.
- 3.) The unit has a built-in self-testing system that will perform 30 minutes self-tests every 30 days. This self-test system should start working once a current from AC. Input is provided to the unit.

### The display of device operation

#### AC. VOLTMETER

Shows the current level at the Input to be about 220-240VAC.

#### DC. VOLTMETER

Shows a battery Voltage at 24V.

#### LED AC. Input

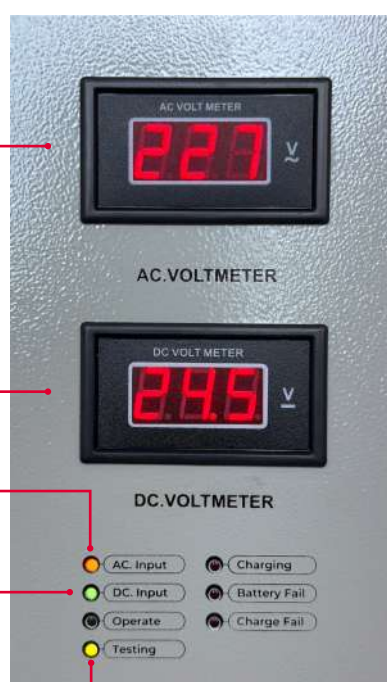
The indicator showing that the unit is receiving a 220-240VAC current should be on.

#### LED DC. Input

The indicator showing that the battery has been connected to the unit should be on.

#### LED Testing

The indicator showing that the unit automatically testing itself.





- 4.) If during the self-tests the battery is found to be faulty and cannot hold a charge or less charge that normal the unit will show a "Battery Fail" warning.

### The display of device operation

#### AC. VOLTMETER

Shows the current level at the Input to be about 220-240VAC.

#### DC. VOLTMETER

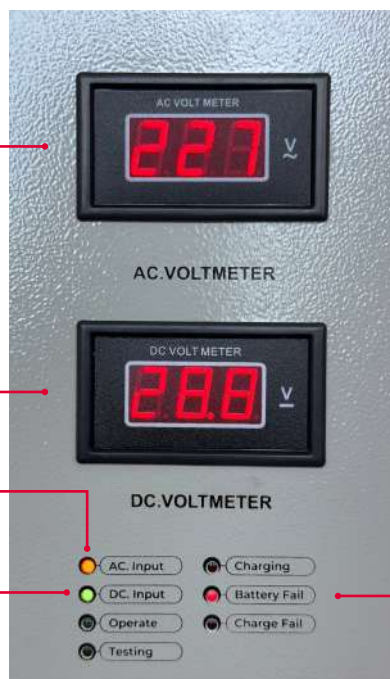
Shows a battery Voltage at 24V.

#### LED AC. Input

The indicator showing that the unit is receiving a 220-240VAC current should be on.

#### LED DC. Input

The indicator showing that the battery has been connected to the unit should be on.



#### LED Battery Fail

An LED will blink 3 times every 15 seconds to indicate that the fail battery.

Note: You can reset the alert by turning off and on the Circuit Breaker AC INPUT 220VAC and Circuit Breaker BATT.

- 5.) In the event that there is an abnormality in the battery charging system, such as over-charging voltage, inability to charge, and charging for more than 24 hours, the unit will display the "Charging Fail" status.

### The display of device operation

#### AC. VOLTMETER

Shows the current level at the Input to be about 220-240VAC.

#### DC. VOLTMETER

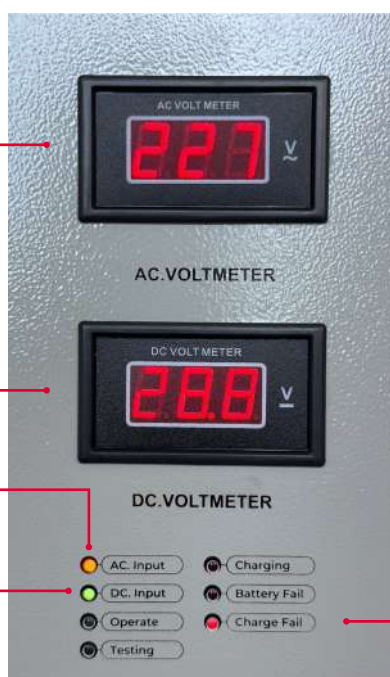
Shows a battery Voltage at 24V.

#### LED AC. Input

The indicator showing that the unit is receiving a 220-240VAC current should be on.

#### LED DC. Input

The indicator showing that the battery has been connected to the unit should be on.



#### LED Charge Fail

An LED will blink 4 times every 15 seconds to indicate that there is a problem charging the battery

Note: You can reset the alert by turning off and on the Circuit Breaker AC INPUT 220VAC and Circuit Breaker BATT.

## Part 3

# Maintenance





### 3.1 Device Maintenance

- 1.) Keep ventilation fan of the unit clean.
- 2.) The unit has an Automatic testing system, automatically enabling 30 minute test every 30 days. If your unit does not have a self-test system you should manually test the unit once a month for 30 minutes to make sure the unit is fully operational and to help extend the life of the battery.

### 3.2 Initial Trouble Shooting

Cause	Problem	What to do
- 220-240 VAC Power not getting to the unit.	- The power socket might not have any power. - Circuit Breaker AC. Input is in the OFF status.	- Check to make sure that the power socket of the home or building is providing a 220VAC current. - Check to make sure that the Circuit Breaker AC. Input is in the ON position.
- The Backup power supply of the unit has failed.	- Circuit Breaker DC. Battery is in the OFF status. - Circuit Breaker AC. Output is in the OFF status.	- Check to make sure that the Circuit Breaker DC. Battery is in the ON position. - Check to make sure that the Circuit Breaker AC. Output is in the ON position.
- Emergency light only turns on for a short time after the power went out.	- The battery is not fully charged. - The battery has degraded.	- Fully charge the battery. - Contact customer service to replace the battery.

### 3.3 Important Note on Using the Unit

- 1.) Please read the manual carefully before installation and operation
- 2.) Installation area should be good ventilation.
- 3.) Do not connect the battery in reverse polarity.
- 4.) Check the power load before installing the unit.
- 5.) Do not use with the power load when it is in an unstable condition.
- 6.) The power load must be an emergency light only. Do not use with the other power load that is not approved by the manufacturer.
- 7.) The unit should be stored in temperatures under 25 Degree Celsius and the battery should be charged every 3 month to maintain its operational life.

## Part 4

# Terms for Warranty and Service

---

## 4.1 Terms for Warranty and Service

1. The Warranty will only be covered if the customer fills in the “warranty registration form” and mail the return part back to the company within 7 days from the day of purchase. If this is not carried out the warranty will be considered void.
2. The warranty only covers the unit’s internal parts. The conditions and durations for the warranty of each part is as specified and the duration of the warranty is calculated from the date of purchase.
3. Please show your warranty card every time you contact our service center or the dealer you purchased the product from.
4. Products that fall into the following category are considered not covered by the warranty.
  - 4.1 The product was used in a way not specified in the manual.
  - 4.2 The product was used with accessories not meeting the required specifications specified in the manual.
  - 4.3 The product seems to have been damaged from being dropped or from strong impact, for example, the parts are loose, dented, scrapped or misshapen.
  - 4.4 The product has been repaired or modified by personnel not authorized by our company.
  - 4.5 The Warranty Void sticker is torn or removed.
  - 4.6 The product is damaged from careless use or incorrect maintenance, for example, the battery is swollen from overcharging, quick charging was used on the battery, the battery terminals have been short-circuited, the unit was used until the battery was completely discharged and not recharged immediately, the product was stored for long periods until the Battery Checker warning activates and still it is not plugged-in to charge or taking the battery to normal temperature conditions and not recharging it every 1 month.
  - 4.7 The product was stored in an unsuitable environment, for example, a location with moisture or water vapor.
  - 4.8 The product was supplied with a faulty AC power supply such as electrical overvoltage, electrical current surges, or lightning strikes entering the AC power line.
  - 4.9 Damages from natural causes such as fire, being summered in fluids, humidity, chemicals or force majeure.
  - 4.10 Damages from insects or animals.

**Note :** Please read the manual carefully before installation and operation to understand how to properly operate the unit.

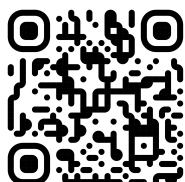
## Contact us

### ISON IMPORT-EXPORT CO., LTD.

**Head Office** 2915-2917 Ladprao Road,  
Klongjan, Bangkok, Bangkok 10240

phone 02 378 1034-5

fax 02 370 1672



[www.sunnyemergencylight.com](http://www.sunnyemergencylight.com)