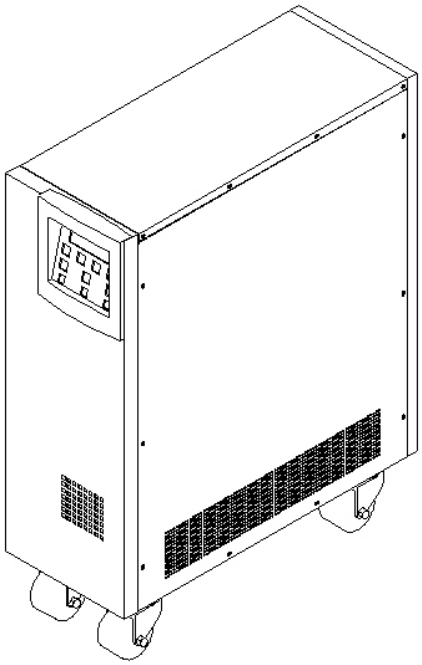
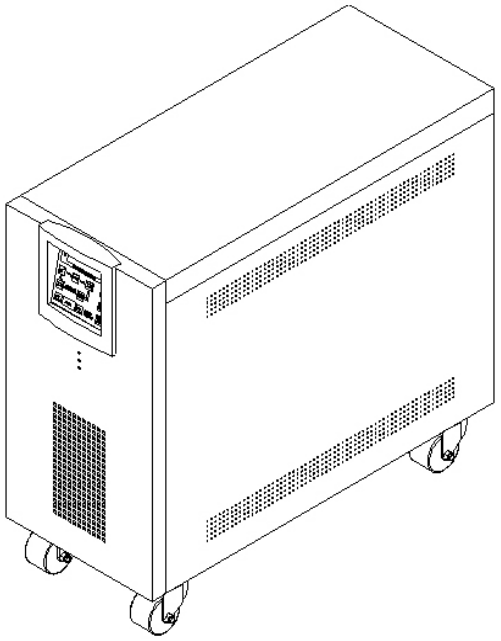
Industrial Single Phase On Line UPS





LUV - 50 / 60 / 80 / 100 / 150 / 200

User Manual

LONGTIME
Power Solution Provider

Save This Manual

Please read this manual carefully prior to storage, installation, wiring, operation and maintenance of the UPS.

This manual contains important instructions and warnings that you should follow during the storage, installation, wiring, operation and maintenance of the UPS. Failure to follow these instructions and warnings will void the warranty.

Please note that only qualified and trained technician can do installation, wiring, operation and maintenance of the UPS.

Important Safety Instructions

If the UPS needs to be stored prior to installation, it should be placed in a dry area. The allowable storage temperature is between -10 ° C - 50 ° C.

Install the UPS in a well-ventilated indoor area, away from excess moisture, heat, dust, flammable gas or explosives.

Leave adequate space around all sides of the UPS for proper ventilation. Please refer to ***4-2 Installation Environment***.

The wiring must be performed by qualified and trained technician. If you want to wire by yourself, wiring must be under the supervision of qualified and trained technician.

Before wiring or making any electrical connection, make sure two N.F.B.s at rear panel of the UPS ***(see Figure 6 & Figure 7)*** and external battery bank N.F.B. ***(see Figure 15)*** are at off position.

Before wiring or making any electrical connection, make sure the utility AC power voltage, frequency, phase and wire accord with your ordered UPS.

Before wiring or making any electrical connection, make sure the utility AC power supplied to the input of the UPS is completely cut off.

When connecting with the external battery cabinet, please confirm the polarity. Do not reverse the polarity.

If the UPS needs to be connected to a motor load, it must be confirmed by qualified and trained technician.

The external slits and openings of the UPS are provided for ventilation. To ensure reliable operation of the UPS and to protect the UPS from overheating, these slits and openings must not be blocked or covered. Do not insert any object into the slits and openings that may hinder ventilation.

In a low temperature environment (below 0 ° C), you must allow the UPS to adjust to room temperature for at least one hour to avoid moisture condensing inside the UPS before usage.

Do not put beverage containers on the UPS, battery cabinet or any other accessory associated with the UPS.

The risk of dangerous high voltage is possible when the batteries are still connected to the UPS even though the UPS is disconnected from the utility AC power. Do not forget to pull out the battery cable to completely cut off the battery source.

Do not open or mutilate the battery. The released electrolyte is harmful to the skin and eyes and may be toxic.

Do not dispose of the battery in a fire. The battery may explode.

All maintenance services must be performed by qualified and trained technician. Forbid opening or removing the cover of the UPS to avoid high voltage electric shock.

Contents

Section 1: Introduction

1-1 Product Introduction

The LUV Series UPS is a 1 phase 2 wire industrial online uninterruptible power system which provides reliable and stable pure sine wave power to your critical loads. With advanced technology of Rectifier, IGBT, PWM and CPU control, the LUV Series UPS is extremely high reliable. Besides, the LUV Series UPS applied true galvanic isolation design to solve the problem of utility AC power such as noise, lighting, leakage current etc. Furthermore, the LUV Series UPS has output inverter transformer to support the UPS connected with any kinds of loads. With its outstanding features, the LUV Series UPS provides safe, reliable and uninterrupted power to your sensitive electronic equipments at all times.

1-2 Functions and Features

- Industrial on line UPS (Low Frequency UPS) which can operate under harsh environment.
- Input true galvanic isolation transformer to solve the utility AC power problem such as noise, lighting, etc.
- Output with inverter transformer to support the UPS connected with any kinds of loads.
- Intelligent battery test to prolong battery life.
- DC start-up function.
- No battery start-up: in case the battery is broken or external battery cabinet is not connected, the UPS can still start-up normally with AC.
- Intelligent boost and floating charging voltage control to protect battery.
- Wide AC input range: ±20%.
- The operating conditions such as loads, input and output voltage, input and output frequency, battery voltage of the UPS can be seen on LCD.
- Built-in RS232 communication port which allows you to monitor and manage the UPS.
- Overload and over temperature protection: transfer to bypass.
- Short circuit protection: no output.

Section 2: Appearance and Mechanism

2-1 Appearance and Dimension

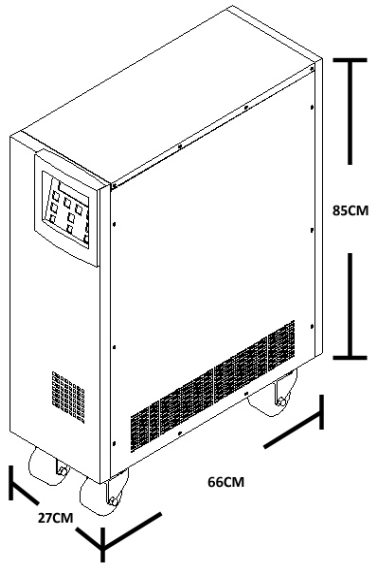


Figure 1 : 5KVA – 6KVA UPS Appearance

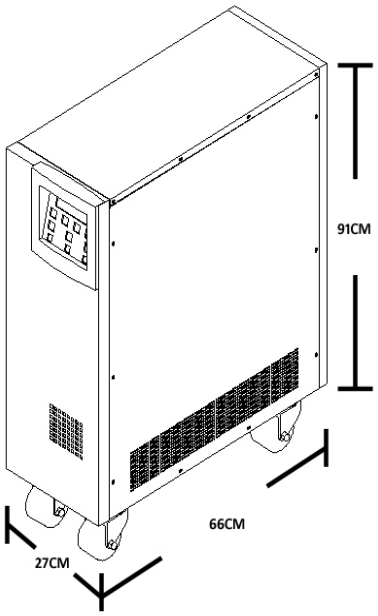


Figure 2 : 5KVA – 6KVA UPS Appearance

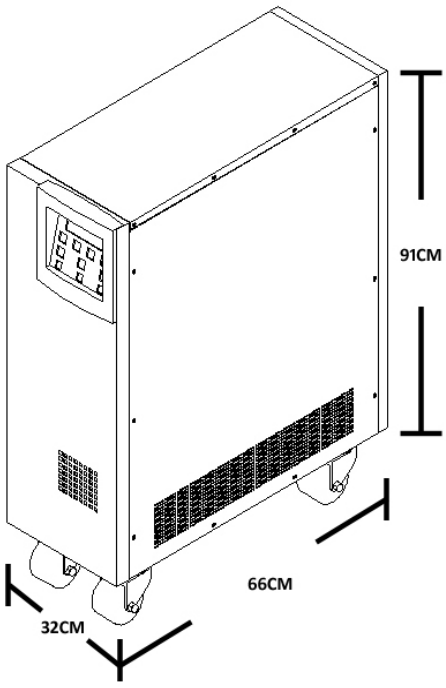


Figure 3 : 8KVA – 10KVA UPS Appearance

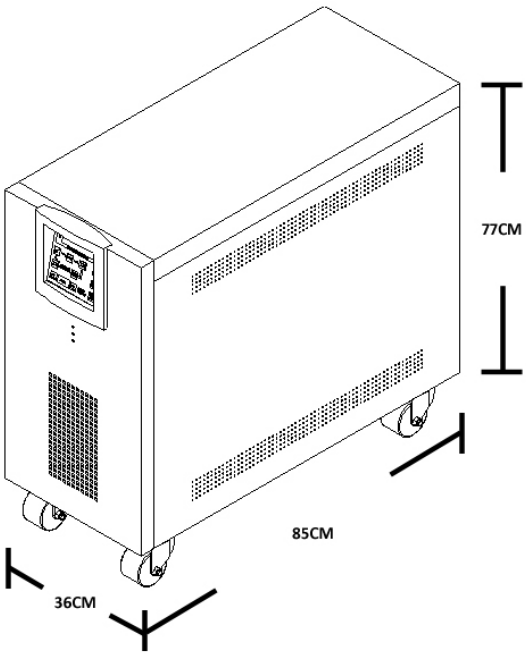


Figure 4 : 15KVA – 20KVA UPS Rear View

2-2 Front Panel

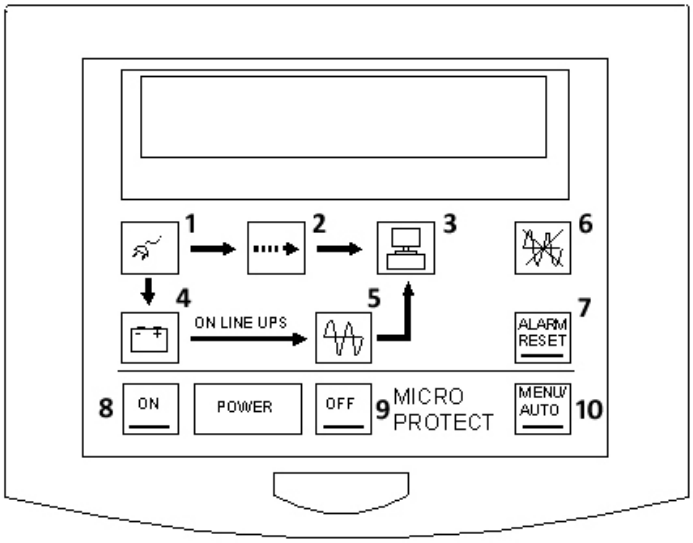


Figure 5 : Front Panel

No.	Light Color	Description
1.	Green	The indicator is on means the utility AC power is normal.
2.	Red	The indicator is on means the output power is supplied from bypass.
3.	Green	The indicator is on means the load is in using.
4.	Green	The indicator is on means the battery is normal.
5.	Green	The indicator is on means the IGBT and inverter is operating normal.
6.	Red	The indicator is on means the UPS is abnormal.
7.	N/A	Press this button to mute alarm.
8.	N/A	Press this button to turn on the UPS.
9.	N/A	Press this button to turn off the UPS.
10.	N/A	Press this button to change the UPS status pages.

2-3 Rear Panel (5KVA – 10KVA)

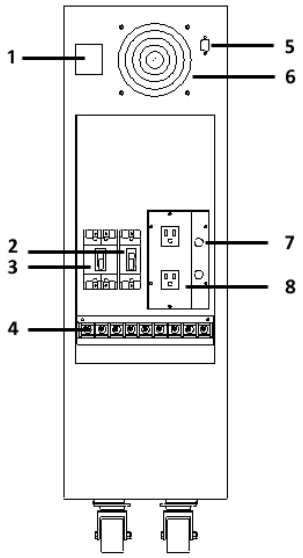


Figure 6 : 5KVA – 10KVA Rear Panel

No.	Description
1.	Maintenance bypass N.F.B. protective cover. ***For maintenance only! Only qualified and trained technician can open the cover of maintenance bypass N.F.B. and operate it.***
2.	Battery N.F.B.
3.	Mains input N.F.B.
4.	Input / External Battery / Output terminal block.
5.	RS232 communication port.
6.	Fan.
7.	Fuse.
8.	Output sockets.

2-4 Rear Panel (15KVA – 20KVA)

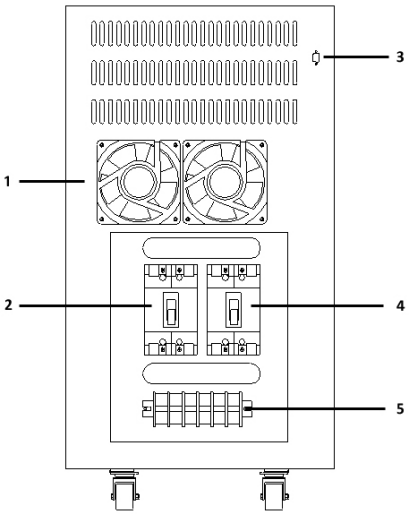


Figure 7 : 15KVA – 20KVA Rear Panel

No.	Description
1.	Fan.
2.	Mains input N.F.B.
3.	RS232 communication port.
4.	Bypass N.F.B.
5.	Input / External Battery / Output terminal block.

Section 3: System Description

3-1 UPS Block Diagram

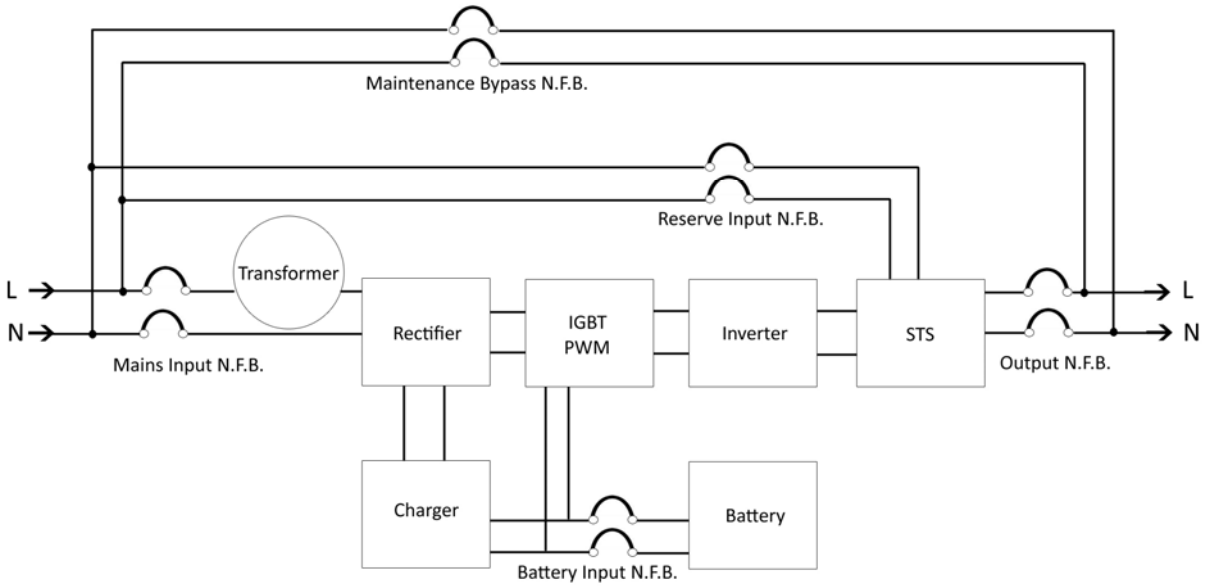


Figure 8 : UPS Block Diagram

Figure 8: UPS Block Diagram demonstrates the UPS working principle briefly. The utility AC power pass through the Input Transformer to eliminate noise, leakage current, surge, etc, then the Rectifier converts AC to DC to provide DC power for Charger to charge the battery and provide DC power for IGBT to trigger PWM to convert DC to AC. After PWM converts DC to AC, then AC will pass through the Inverter and provides reliable and stable pure sine wave power for the loads. In the event of overload or the UPS failure, the STS will work and allows the utility AC power provides power for loads directly.

3-2 Input Transformer Block Diagram

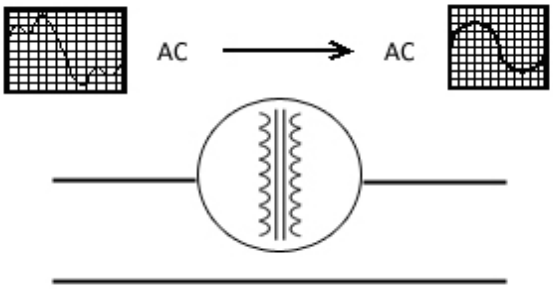


Figure 9 : Input Transformer Block Diagram

Figure 9: Input Transformer Block Diagram demonstrates the Input Transformer working principle briefly. The Input Transformer is designed to eliminate noise, surge, leakage current of the utility AC power to protect the components of the UPS and provide clean AC power for the Rectifier.

3-3 Rectifier Block Diagram

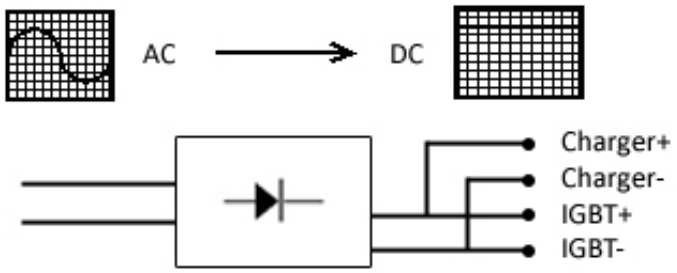


Figure 10 : Rectifier Block Diagram

Figure 10: Rectifier Block Diagram demonstrates the Rectifier working principle briefly. The Rectifier is designed to convert AC to DC to provide DC power for Charger to charge the battery and provide DC power for IGBT to trigger PWM to convert DC to AC.

3-4 IGBT and PWM Block Diagram

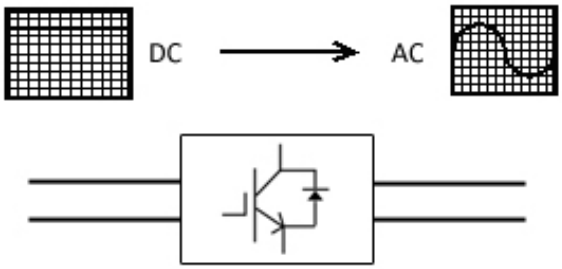


Figure 11 : IGBT and PWM Block Diagram

Figure 11: IGBT and PWM Block Diagram demonstrates the IGBT and PWM working principle briefly. The IGBT and PWM are designed to convert DC power to AC power. The DC power converted by Rectifier powers the IGBT to trigger the PWM to convert DC power to AC power.

3-5 Inverter Block Diagram

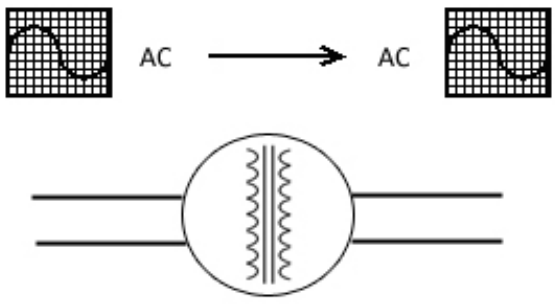


Figure 12 : Inverter Block Diagram

Figure 12: Inverter Block Diagram demonstrates the Inverter working principle briefly. The AC power converted by PWM passes through the Inverter then goes through the STS to the loads.

3-6 STS Block Diagram

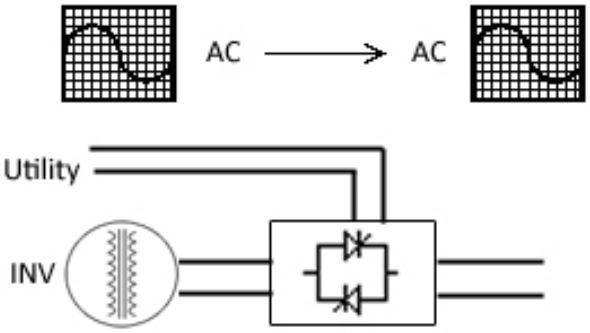


Figure 13 : STS Block Diagram

Figure 13: STS Block Diagram demonstrates the STS working principle briefly. The STS is designed to control the output AC power whether goes through the Inverter or directly from the utility AC power. If the UPS is normal, the output AC power will go through the Inverter and provide power for loads. If the UPS is failure or overload or over temperature, the loads will be provided by the utility AC power.

Section 4: Installation and Wiring

4-1 Prior to Installation

Only a qualified and trained technician can do the installation. If you want to install by yourself, installation must be under the supervision of qualified and trained technician.

During the transportation, some unpredictable situations might occur. It is recommended that you inspect the UPS exterior packaging. If you notice any damage, please immediately contact the dealer from whom you purchased the UPS.

Check the rating label on the UPS and make sure the model number, capacity and specification of the UPS match what you purchased.

During the transportation, some unpredictable situations might occur. It is recommended that you check the UPS can be turned on normally or not. Please follow below procedures:

1. Check two N.F.B.s at rear panel (see Figure 6 & Figure 7) are at「OFF」position.
2. Switch on「2. Battery N.F.B.」(see Figure 6).

**** Note: If check 15KVA or 20KVA UPS, please connects external battery bank first. Please refer to 4-6 External Battery Bank Wiring.***

3. Then press「8. On」button (see Figure 5) to turn on the UPS.
4. If the UPS is fault,「6. Fault」indicator (see Figure 5) will light and alarm continuously. Please immediately contact the dealer from whom you purchased the UPS.
5. If the UPS is normal, then press「9. Off」 button (see Figure 5) to turn OFF the UPS.
6. Switch off 「Battery N.F.B.」 and check again two N.F.B.s at rear panel (see Figure 6 & Figure 7) are at「OFF」position then start to install the UPS.

4-2 Installation Environment

Install the UPS indoors. Do not place the UPS outdoors.

Make sure the installation area can accommodate and bear the weight of the UPS and external battery cabinets.

The installation place must be kept clean and tidy at all times.

Make sure the installation area is big enough for maintenance and ventilation. Since the fans of the UPS ventilate to rear and it is recommended that you place the external battery cabinet next the UPS. We suggest you:

- Keep a distance of 50cm from the front of the UPS and the external battery cabinet for maintenance and ventilation.
- Keep a distance of 100cm from the back of the UPS and the external battery cabinet

for maintenance and ventilation.

- Keep a distance of 100cm from the both sides of the UPS and the external battery cabinet for maintenance and ventilation.

Keep the installation area temperature around 15 ° C - 25 ° C to prolong the battery life.

4-3 Prior to Wiring

Only a qualified and trained technician can do the wiring. If you want to wire by yourself, wiring must be under the supervision of qualified and trained technician.

Please make sure the two N.F.B.s at rear panel (see Figure 6 & Figure 7) are at 「OFF」 position.

Please check whether the utility AC power voltage, frequency, phase and wire match the UPS that you purchased or not.

If the external battery bank needs to be connected to the UPS, please make sure the number of batteries of the external battery bank must meet UPS specification. Please refer to ***4-6 External Battery Bank Wiring.***

A battery can present a risk of electric shock and high short circuit current. Servicing of batteries and external battery bank must be performed or supervised by qualified and trained technician knowledgeable in batteries and external battery bank. Keep unauthorized personnel away from batteries and the external battery bank.

Please make sure the power that will be supplied to the external battery terminal block and input terminal block (see Figure 6 & Figure 7) of the UPS are completely cut off.

Please check whether the loads connected to the UPS exceed the capacity of the UPS or not.

If the UPS needs to be connected to a motor load, it must be confirmed by qualified and trained technician.

4-4 Cables Size

Please check cables size that will be connected to the UPS. For the specifications of AC input cable, output cable and external battery input cable, please see below *Table 1 and Table 2*.

UPS Capacity	5KVA	6KVA	8KVA	10KVA	15KVA	20KVA
AC Input Cable	22mm	30mm	50mm	60mm	125mm	200mm
Output Cable	8mm	14mm	22mm	30mm	50mm	80mm
External Battery Bank Input Cable	8mm	14mm	14mm	22mm	38mm	60mm

Table 1 : Suggested Cables Size (based on input and output 110VAC)

UPS Capacity	5KVA	6KVA	8KVA	10KVA	15KVA	20KVA
AC Input Cable	8mm	8mm	14mm	22mm	38mm	60mm
Output Cable	3.5mm	5.5mm	8mm	14mm	22mm	30mm
External Battery Bank Input Cable	8mm	14mm	14mm	22mm	38mm	60mm

Table 2 : Suggested Cables Size (based on input and output 220VAC)

**** Note:***

- ***In accordance with National Electrical Codes (NEC), please install a suitable conduit and bushing.***
- ***Cables with PVC material and with temperature resistance up to 105 ˚ C are suggested.***

4-5 Wiring

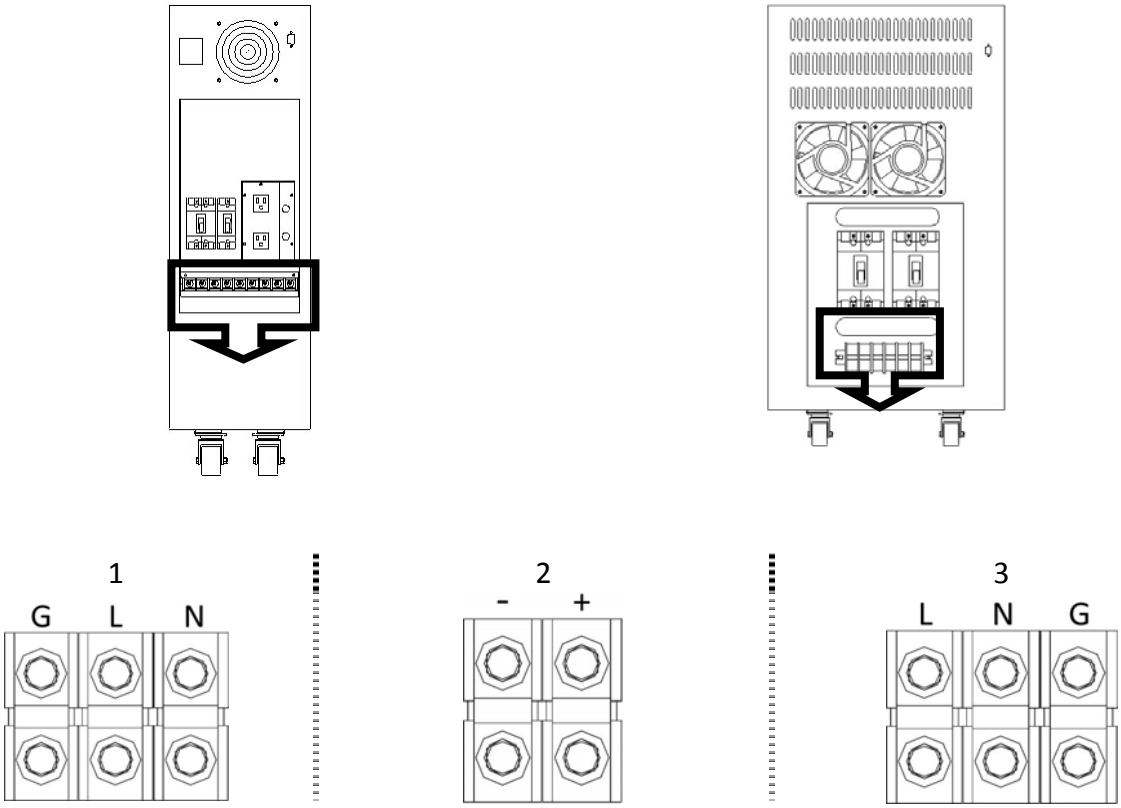


Figure 14 : Wiring Terminal Blocks

No.	Description	Function
1	Mains input terminal block.	Connects the mains AC source.
2	External battery bank input terminal block.	Connects an external battery bank.
3	Output terminal block.	Connects the loads.

**** Note:***

- ***Incorrect wiring will lead to severe electric shock and damage to the UPS.***
- ***The utility AC power must be one phase (L/N) and meet the specification specified on the UPS rating label.***
- ***When connecting the external battery bank to the UPS, do not reverse the polarity.***
- ***Make sure that all the cables are screwed tightly.***

4-6 External Battery Bank Wiring

Our standard 5KVA / 6KVA / 8KVA / 10KVA UPS can be installed 12VDC * 16pcs batteries internal (Max. 12VDC 12Ah * 16pcs can be placed). Our standard 15KVA / 20KVA UPS can not be installed 12VDC * 16pcs batteries internal. The 15KVA / 20KVA UPS must have external battery bank. If you want to extend battery backup time for 5KVA / 6KVA / 8KVA / 10KVA UPS or connect external battery bank to 15KVA / 20KVA UPS, please make sure:

- The number of batteries of the external battery bank must be 12VDC * 16pcs.
- Only use the same type of batteries from the same supplier. Never use old, new and different Ah batteries at the same time.
- Do not connect the batteries in reverse.
- Please contact the dealer from whom you purchased the UPS to confirm whether the charging current of the battery charger is sufficient or not.
- The external battery bank must have N.F.B.

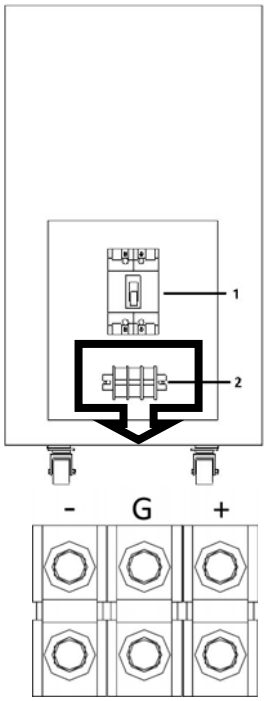


Figure 15 : External Battery Bank

No.	Description
1	External battery bank N.F.B.
2	External battery bank terminal block (connects the UPS).

Section 5: RS232 Communication Port

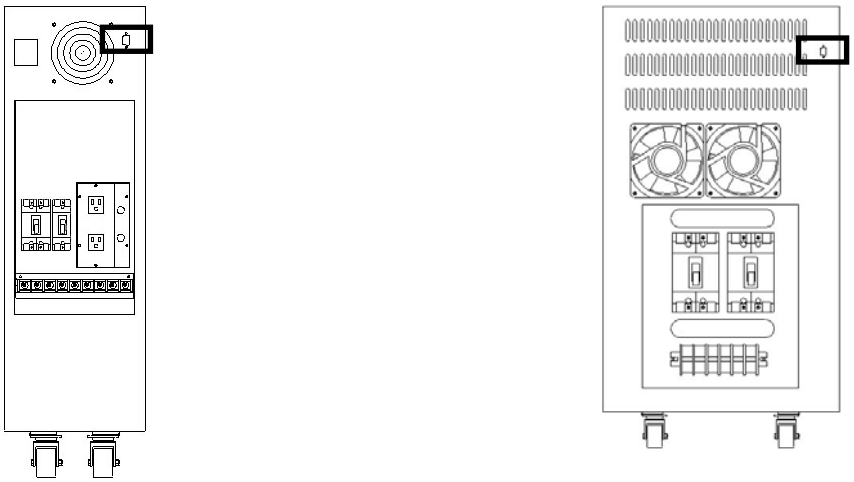
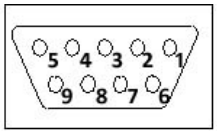


Figure 16 : RS232 Communication Port



Hardware

Baud Rate: 2400bps
Data Length: 8 bit
Stop Bit: 1 bit
Parity: None

Pin Assignment

PIN 2: RXD (Receiving Data)
PIN 3: TXD (Transmitting Data)
PIN 5: GND (Ground)

RS232 port is to provide communication between the UPS and a computer. The UPS will provide information such as the UPS operation mode, battery capacity, battery voltage, UPS input/output voltage, UPS input/output frequency, etc… for you to check and monitor the UPS status via a computer. An option accessory: RS232-SNMP Adapter (Please refer to ***Section 11: RS232-SNMP Adapter***) is available as well for you to monitor the UPS via Internet.

Section 6: Operation and Operation Modes

6-1 Turn ON the UPS (5KVA – 10KVA)

After you finished UPS installation and wiring, please see below procedures to turn ON the UPS:

1. Make sure the loads connected to the UPS are turn OFF.

2. Check two N.F.B.s at rear panel (see Figure 6) are at「OFF」position.

3. Switch ON「2. Battery N.F.B.」(see Figure 6) and you will hear a short beep, the LCD will show "WELCOME TO UPS WORLD" and "UPS LOOP CHECKED" at beginning then indicators will light and LCD will show as Figure 17.

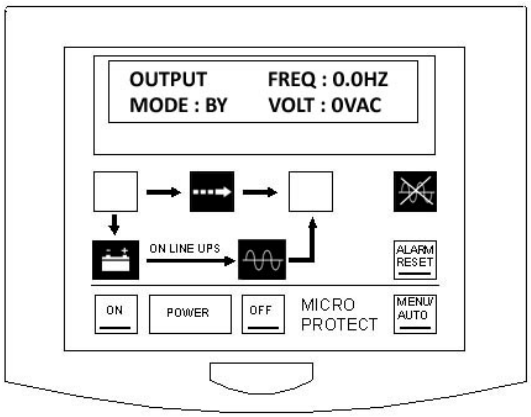


Figure 17 : LCD and Indicators - 1

4. Switch ON「3. Mains Input N.F.B.」(see Figure 6). The indicators will light and LCD will show as Figure 18.

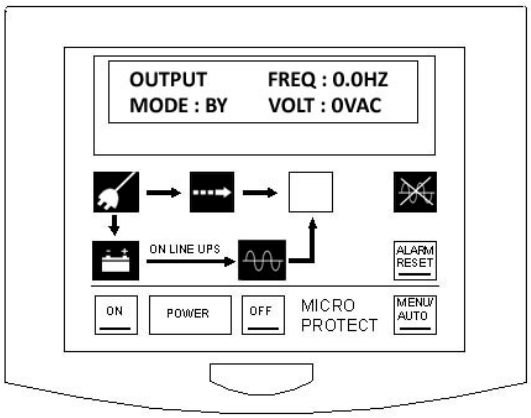


Figure 18 : LCD and Indicators - 2

5. Press 「8. On」 button (see Figure 5) to turn ON the UPS. The indicators will light and LCD will show as Figure 19.

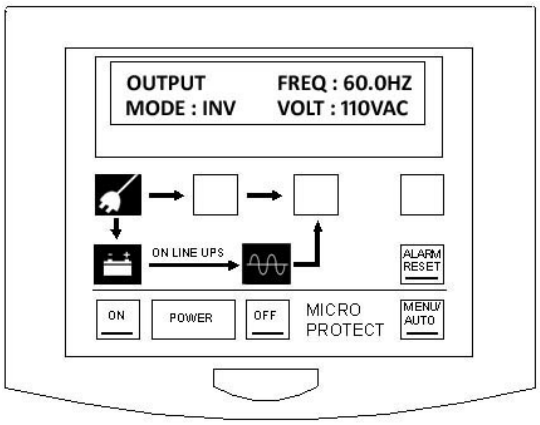


Figure 19 : LCD and Indicators - 3

6. The UPS is working now and you can turn ON your loads.

6-2 Turn ON the UPS (15KVA – 20KVA)

1. Make sure the loads connected to the UPS are turn OFF.

2. Check two N.F.B.s at rear panel (see Figure 7) and 「1. External Battery Bank N.F.B.」 (see Figure 15) are at「OFF」position.

3. Switch ON「1. External Battery Bank N.F.B.」(see Figure 15) and you will hear a short beep, the LCD will show "WELCOME TO UPS WORLD" and "UPS LOOP CHECKED" at beginning then indicators will light and LCD will show as Figure 17.

4. Switch ON「2. Mains Input N.F.B.」(see Figure 7). The indicators will light and LCD will show as Figure 18.

5. Switch ON「4. Bypass N.F.B.」(see Figure 7). The indicators will light and LCD will show as Figure 18.

6. Press 「8. On」 button (see Figure 5) to turn ON the UPS. The indicators will light and LCD will show as Figure 19.

7. The UPS is working now and you can turn ON your loads.

6-3 Turn OFF the UPS

If you want to turn OFF the UPS, please see below procedures to turn OFF the UPS:

1. Make sure the loads connected to the UPS are turn OFF.

2. Press 「9. Off」 button (see Figure 5) to turn OFF the UPS. ***Be careful that the output still has power from the utility AC power.***

3. Switch OFF two N.F.B.s at rear panel (see Figure 6 & Figure 7) and switch OFF 「1. External Battery Bank N.F.B.」(see Figure 15).

4. The UPS is completely turn OFF now.

6-4 Operation Modes

There are four operation modes of the UPS. Please see below figures to demonstrate each mode.

6-4-1 Online Mode

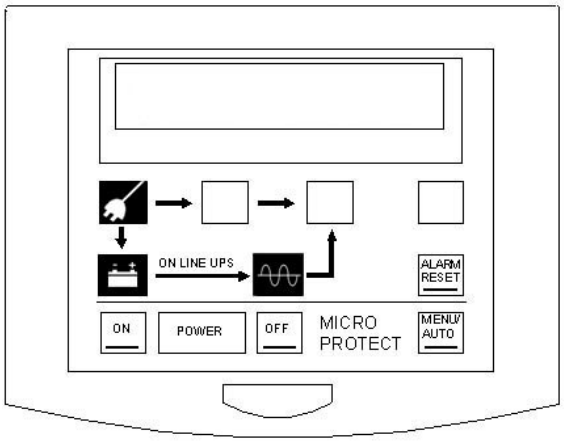


Figure 20 : Online Mode

Condition: the utility AC power source is normal.

Figure 20: Online Mode demonstrates that the load is supplied by the inverter which derives its power from the utility AC power and the UPS charges the batteries as needed and provides power protection to the equipment.

6-4-2 Battery Mode

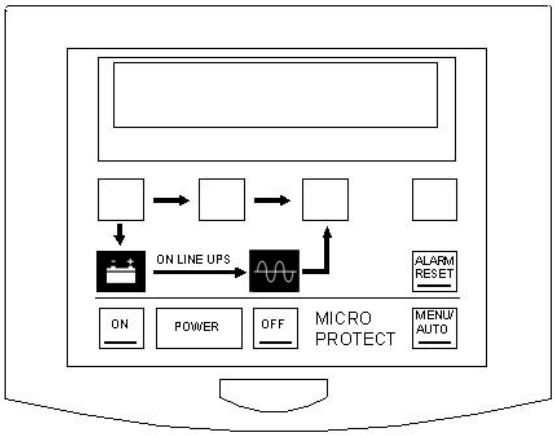


Figure 21 : Battery Mode

Condition: the utility AC power source is outage.

Figure 21: Battery Mode demonstrates that the load is supplied by the inverter which derives its power from the battery.

6-4-3 Bypass Mode

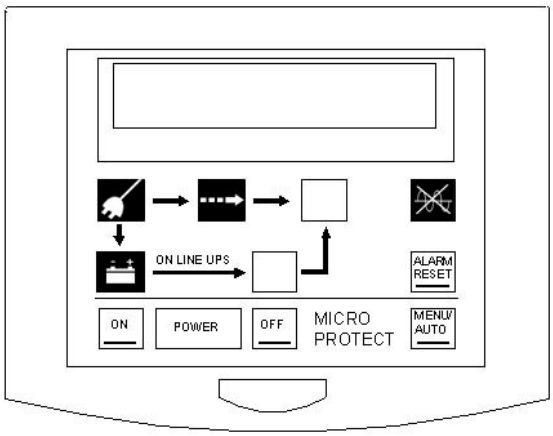


Figure 22 : Bypass Mode

Condition: over temperature or overload or UPS shutdown or UPS failure.

Figure 22: Bypass Mode demonstrates that the load is supplied by the utility AC power, not the inverter, and the batteries are charged.

6-4-4 Maintenance Bypass Mode

Condition: the UPS needed to be repaired by a qualified and trained technician.

Maintenance bypass is designed to supply the utility AC power to the loads directly when there is a fault condition on the UPS and maintenance work needs to be carried out. This operation must only be carried out by a qualified and trained technician who is familiar with the LUV series UPS. Incorrect use of the Maintenance Bypass N.F.B. can cause severe damage to the UPS.

Section 7: LCD Display

After you turn ON the UPS, the LCD will show status of the UPS. There are four pages and you can press「10. MENU/AUTO」button (see Figure 5) to change the page. Each page is as below figure:

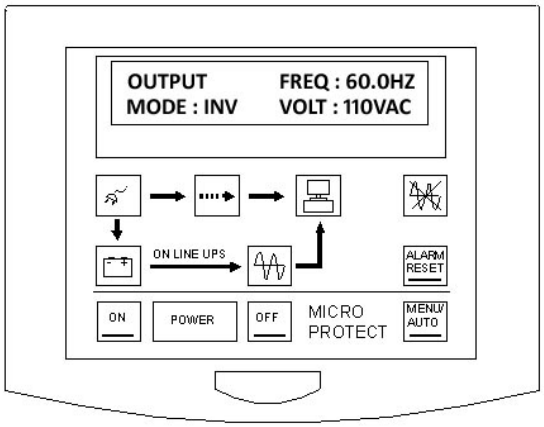


Figure 23 : Output Status Screen - 1

Figure 23: Output Status Screen - 1 demonstrates the UPS mode, output voltage and frequency.

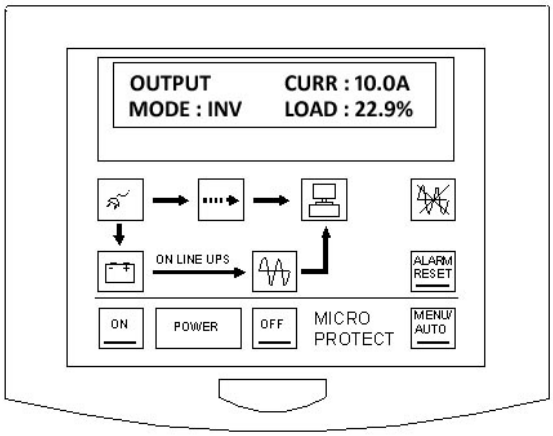


Figure 24 : Output Status Screen - 2

Figure 24: Output Status Screen - 2 demonstrates the UPS mode, output current and load percentage.

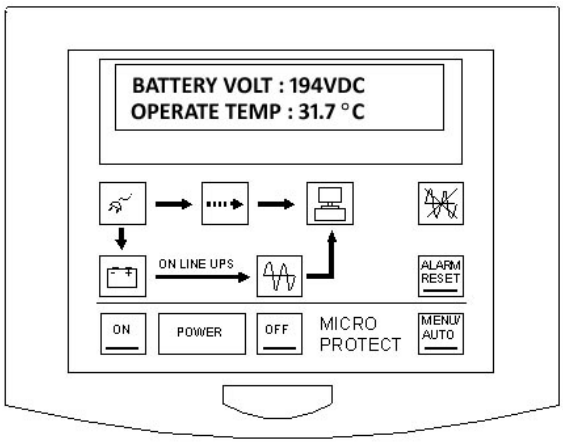


Figure 25 : Battery Status Screen

Figure 25: Battery Status Screen demonstrates the UPS battery voltage and UPS interior temperature.

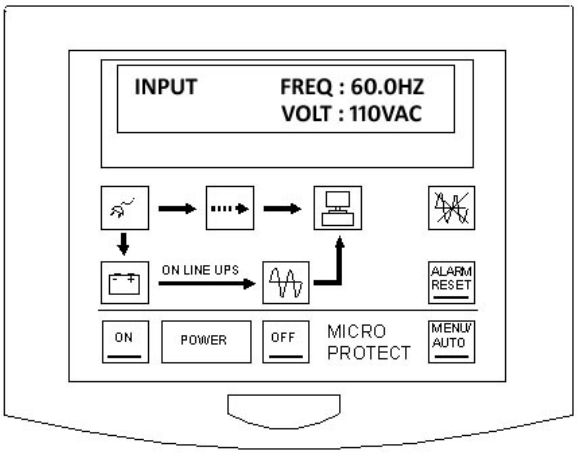


Figure 26 : Input Status Screen

Figure 26: Input Status Screen demonstrates the utility AC power input voltage and frequency.

Section 8: Abnormal Events LCD Display

8-1 Utility AC Power Source Outage Screen

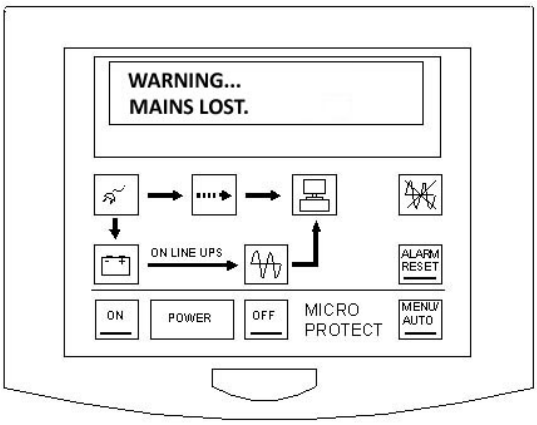


Figure 27 : Utility AC Power Source Outage Screen

If the utility AC power source is failure, the UPS will beep, indicator 4 (see Figure 5) will flash and the screen will have warning message as Figure 27 shown.

8-2 Utility AC Power Voltage too High Screen

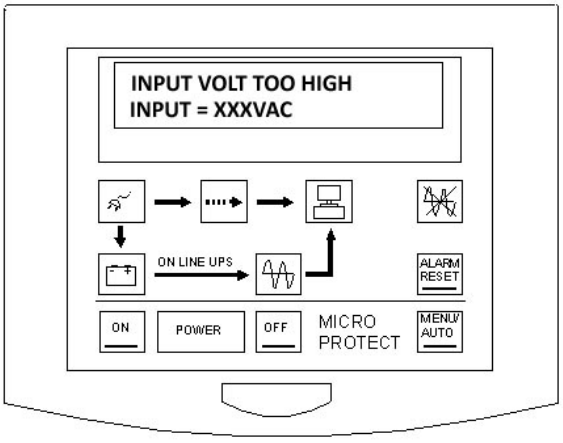


Figure 28 : Utility AC Power Voltage too High Screen

If the utility AC power source voltage is too high, the UPS will beep continuously and the screen will have warning message as Figure 28 shown.

8-3 Overload Screen (125% - 134%)

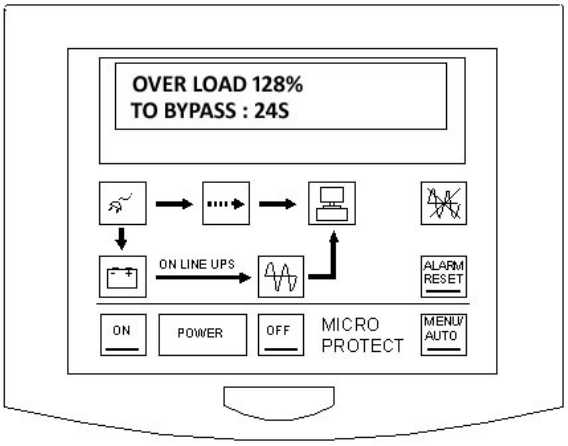


Figure 30 : Overload Screen (Above 125%)

If overload 125% - 134%, the UPS will beep continuously and the screen will show as Figure 30. After 25 seconds, the UPS will transfer to bypass mode.

8-4 Overload Screen (Above 135%)

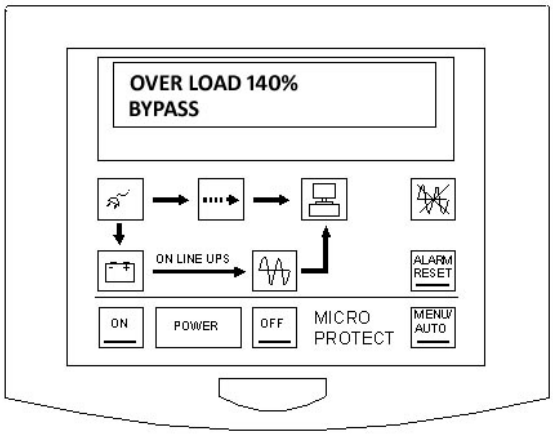


Figure 31 : Overload Screen (Above 135%)

If overload above 135%, the UPS will beep continuously and the screen will show as Figure 31. After 1 second, the UPS will transfer to bypass mode.

8-5 Battery Voltage too Low Screen

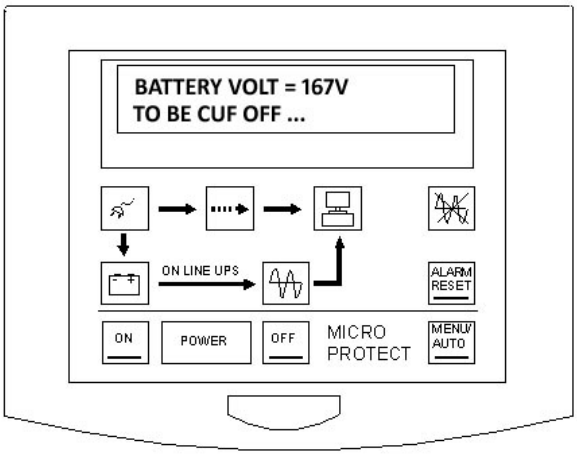


Figure 32 : Battery Voltage too Low Screen

In battery mode, if battery voltage is too low, the UPS will beep hurriedly and the screen will have warning message as Figure 32 shown.

8-6 Over Temperature Screen

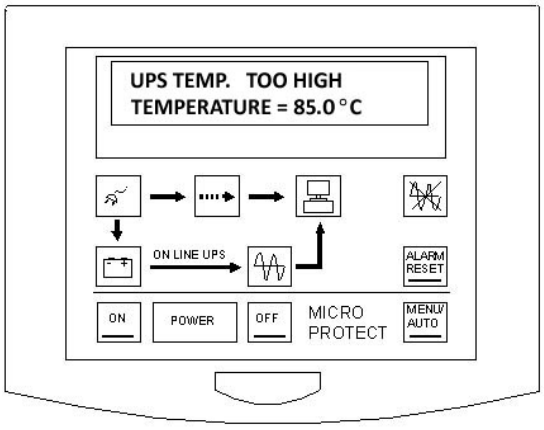


Figure 33 : Over Temperature Screen

If over temperature (over 80 ° C), the UPS will transfer to bypass mode and beep continuously. The screen will have warning message as Figure 33 shown.

8-7 Battery Bad Screen

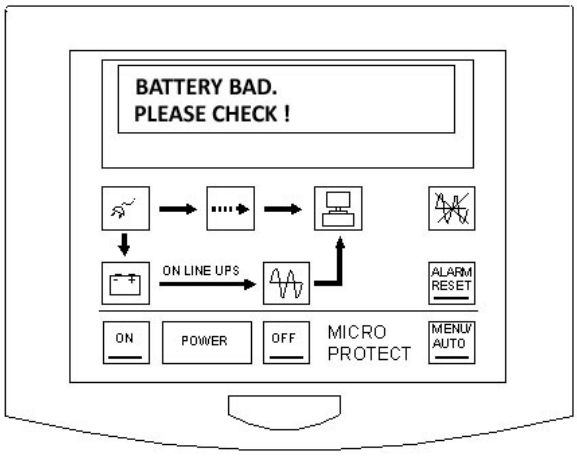


Figure 34 : Battery Bad Screen

If battery is failure, the UPS will beep hurriedly and the screen will have warning message as Figure 34 shown.

Section 9: Trouble Shooting

When you see the following problems on the LCD, please follow the solutions shown below.

No.	Warning Message	Possible Cause	Solution
1.	Input volt too high	Utility AC power input voltage is too high	Contact service personnel
2.	UPS output short	Output has a short circuit issue	Contact service personnel
3.	Overload XXX%	The UPS is overload	Remove some loads
4.	Battery volt = XXXV To be cut off	Battery voltage is low	Charge the batteries
5.	UPS temp. too high	The UPS temperature is too high	1. Choose a well-ventilated area 2. Decrease some loads 3. Check if fans run normally
6.	Battery bad	Battery is failure	Contact service personnel

Section 10: Maintenance

10-1 UPS

Check the UPS quarterly and inspect:

- Whether the UPS, LCD, LED and alarm function are operating normally.
- Whether the UPS works in bypass mode (normally the UPS will work in online mode). If yes, check if any error, overload, internal fault, etc. occurs.
- Whether battery voltage is normal. If the battery voltage is too high or too low, find the root cause.

UPS Cleaning:

Regularly clean the UPS, especially the slits and openings, to ensure that the air freely flows into the UPS to avoid overheating. If necessary, use an air-gun to clean the slits and openings to prevent any object from blocking or covering these areas.

10-2 Battery

The LUV Series UPS uses sealed lead acid batteries. The battery life depends on the temperature, the usage, and the charging/discharging frequency. High temperature environments and high charging/discharging frequency will quickly shorten the battery life. Please follow the suggestions below to ensure a normal battery lifetime.

- Keep usage temperature between 15 ° C - 25 ° C
- When the UPS needs to be stored for an extended period of time, the batteries must be recharged once every three months and the charging time must be less than 24 hours each time.

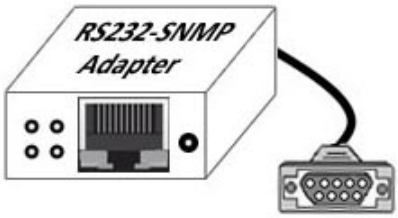
10-3 Fan

Higher temperatures shorten fan life. When the UPS is running, please check if all fans work normally and make sure if the ventilation air can move freely around and through the UPS. If not, replace the fans.

**** Note:***

- ***Please ask your local dealer for more maintenance information. Do not perform maintenance if you are not trained for it.***

Section 11: RS232-SNMP Adapter (Optional)



RS232-SNMP Adapter let you monitor the UPS status via Internet, such as operation mode, battery capacity, battery voltage, UPS input/output voltage, UPS input/output frequency, etc.

Section 12: Specification

Model		LUV-50	LUV-60	LUV-80	LUV-100	LUV-150	LUV-200
Capacity		5KVA	6KVA	8KVA	10KVA	15KVA	20KVA
Input	Voltage	1 Phase 2 Wire + G 100VAC, 110VAC, 120VAC, 220VAC, 230VAC, 240VAC					
	Voltage Range	± 20% (option : >20%)					
	Frequency	50Hz or 60Hz					
	Frequency Range	± 5%					
Output	Voltage	1 Phase 2 Wire + G 100VAC, 110VAC, 120VAC, 220VAC, 230VAC, 240VAC					
	Frequency	50Hz or 60Hz ± 0.5%					
	Static Regulation	± 1% at linear load					
	THD Distortion	<=3% at linear load					
	Crest Factor	3:1					
	Power Factor	0.8					
Battery	Voltage	192VDC (12VDC * 16pcs)					
	Charge Current	As customer demand					
	Float Charging Voltage	216VDC					
	Boost Charging Voltage	227VDC					
	Recharge Time	4 ~ 8 hours to 90% after fully discharge					
Static Switch	Main <-> Inverter	No break					
Indicator	LCD Display	Input / Output Voltage, Input / Output Frequency, Output Loading Status, Battery Voltage, Operate Temperature					
	LED Display	Mimic display					
Protection	Overload	100% ~124% continuous, >125% for 25 seconds, >135% to bypass					
	Over Temperature	Yes					
	Lighting & Surge	Yes					
Environment	Temperature	0 ° C ~ 40 ° C					
	Humidity	0% ~ 95%, non-condensing					
	Noise Level	<50dB at 1 meter					
Communication	Interface Port	RS232, RS232-SNMP Adapter (optional)					
Dimension (W * D * H)	UPS Only (cm)	27*66*85 or 27*66*91		32*66*91		36*85*77	
Net Weight	UPS Only (kgs)	140	160	180	210	240	270

Section 13: Warranty

Seller warrants this product for a period of **1 YEAR** from the date of shipment, if used in accordance with all applicable instruction, to be free from original defects in material and workmanship within the warranty period. If the product has any failure problem within the warranty period, Seller will repair or replace the product as its sole discretion according to the failure situation.

This warranty does not apply to normal wear or to damage resulting from importer installation, operation, usage, maintenance or irresistible force (i.e. war, fire, natural disaster, etc.), and this warranty also expressly excludes all incidental and consequential damages.

Maintenance service for a fee is provided for any damage out of the warranty period. If any maintenance is required, please directly contact with the supplier or Seller.