NXT POWER®

Intelligent True On-Line UPS
For Corporate and IT Users

User Manual

NPTU800-OR-N
NPTU1100-OR-N
NPTU1500-OR-N

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1. Safety Instructions and Storage/ Battery Care

1.1 Safety Instructions

SAVE THESE INSTRUCTIONS.

This manual contains important instructions that should be followed during installation and maintenance of the UPS and batteries.

1. Do not open the case as there are no serviceable parts inside. Opening the case will void your warranty and introduces the risk of electric shock.
2. Do not try to repair the unit yourself. Doing so will void your warranty. Contact your local supplier for repairs.
3. If liquids spill onto the UPS or foreign objects drops into the unit the UPS could be damaged, users could be subject to electric stock, and the warranty will become void.
4. Do not install the UPS in an environment with excessive heat, smoke, or hazardous or flammable gas.
5. This UPS is equipped with an EMI filter. To prevent potential leakage of current hazards, ensure that the AC mains supply is securely grounded. Small leakage currents are generated by the EMI filter in the UPS it is necessary to double check that the ground wire of the UPS is properly grounded before connecting the UPS to the AC mains
6. This UPS is designed to be installed and commissioned in an, controlled environment as follows:
   - Ensure that the UPS is installed within the proper environmental range. (0-40°C and 0-90% non-condensing humidity). High ambient temperature will reduce battery life.
   - Do not install the UPS in direct sunlight. Your battery warranty may be void if the batteries fail due to excessive heat.
   - Do not install the UPS in an inflammable or otherwise hazardous environment.
   - Avoid vibration and areas subject to physical impact.
   - Avoid any area with sparks.
   - Dusty, corrosive, and salty environments can damage any UPS.
   - Install the UPS indoors as it is not designed for installation outdoors.
7. To prevent overheating of the UPS, keep all ventilation openings free from obstruction, and do not place anything on top of the UPS. Keep the UPS rear panel 20 cm (8 inches) away from the wall or other obstructions.
8. Install the UPS in a ventilated area, ideally exchanging 5 m^3 of air per hour, because the chemical reaction during battery charging causes trace gas

production. If the batteries suffer breakage electrical arcing could occur in the UPS interior.

9. If the product emits a strange noise or smell please immediately stop using the product and contact your dealer for maintenance.
10. Always switch off the UPS and disconnect the batteries when relocating the UPS. Be aware that, even when disconnected, charged batteries present a possible electric shock hazard.
11. The UPS should be recharged every 3 months if unused. If this is not done, then the warranty will be null and void. When installed and being used the batteries will be automatically recharged and kept in top condition.
12 Make sure that the AC utility outlet is correctly grounded.
13. Ensure that the input voltage of the UPS matches the utility supply voltage. Use a certified input power cable with the correct plugs and sockets for the system voltage.
14. To ensure safety in all applications where a UPS is hard wired to the electrical supply, ensure that the system is installed by a qualified electrical contractor.
15. The UPS has its own internal energy source (battery). Should the battery be switched on when no AC power is available there could be voltage at the output terminals.
16. Make sure that the AC utility outlet is correctly grounded
17. Install the UPS away from objects that give off excessive heat and areas that are excessively wet.
18. The battery will discharge naturally if the system is unused for a long time

19. This UPS supports electronic equipment in office, telecommunication, process-control, and security applications. Non-authorized technicians are not allowed to install the UPS in the following areas.
    a. Medical equipment directly related to human life
    b. Elevators, subway systems, or any other equipment related to human safety.
    c. Public systems or critical computer systems.

20. The UPS offers a CVCF (Constant Voltage Constant Frequency) setting function.
    a. For correct setting and wiring please contact with your local utility agent.
    b. Do not set it yourself or your warranty will be void.

21. This UPS has been designed and constructed to protect your assets from the wide range of power disturbances experienced on utility power lines today. It is your insurance for a reliable, clean, and stable voltage supply. It is worth taking care to install the system correctly and to have it maintained correctly by your local dealer.

22. Do not try to replace the battery yourself. Doing so will void your warranty. Contact your local supplier for repairs.

23. The UPS is intended for installation in a controlled environment.
24. Install the UPS so that it is not likely to be contacted by people.

25. The maximum ambient operating temperature is 40°C or equivalent.

26. Units are considered acceptable for use in a maximum ambient 40°C

27. CAUTION - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

28. CAUTION - Do not dispose of batteries in a fire. The batteries may explode.

29. CAUTION – Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.

30. CAUTION– A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:
    1) Remove watches, rings, or other metal objects.
    2) Use tools with insulated handles.
    3) Wear rubber gloves and boots.
    4) Do not lay tools or metal parts on top of batteries.
    5) Disconnect charging source prior to connecting or disconnecting battery terminals.
    6) Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).
31. External battery cabinet installation instructions, please refer to " Battery Bank Installation User's MANUAL"
32. This UPS may be provided with maximum three extension battery cabinets or equivalent.
33. For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.

1.2 Storage / Battery Care

If the UPS is unused for an extended period, it must be stored in a moderate climate. The batteries should be charged for 12 hours every three months by connecting the UPS to the utility supply and switching on the input breaker located on the UPS rear panel. Repeat this procedure every two months if the storage ambient temperature is above 25°C.

2. Product Introduction

2.1 General Characteristics

1. True on-line technology continuously supplies your critical device with stable, regulated, transient-free, pure-sine-wave AC power.

2. High-efficiency PWM sine-wave topology yields excellent overall performance.

3. The high crest factor of the inverter handles all high in-rush current loads without the need to upsize the power rating.

4. User-friendly plug-and-play design allows hassle-free installation.

5. Built-in maintenance-free, sealed batteries minimize the need for after-sales service.

6. To protect the unit from overloading, the UPS will automatically switch to bypass mode in 30 seconds if loading is at 105% of rated capacity. It will automatically switch back to inverter mode once the overload condition ceases.

7. Should the output become short-circuited the UPS puts the system in stand-by mode, provides visible and audible alarms, and cuts the output supply automatically until the short circuit situation is resolved manually.

2.2 Special Features

1. This UPS is equipped with fully digital control logic for greater functionality and enhanced power protection. Digital signal processing (DSP) also provides the UPS with powerful communication capability, which simplifies remote control and monitoring.

2. Our wide input voltage tolerance of 55-150 V allows under-voltage or over-voltage correction without unnecessary battery drain and helps extend battery life.

3. Our DC-start function ensures the start-up of the UPS even during power outages.

4. Our smart battery management system extends the batteries' life span.

5. Our Active Power Factor Correction control function constantly maintains the UPS input power factor at > 0.98 for superb energy efficiency.

6. Our Selectable Bypass input voltage tolerance (sensitivity low/high) prevents under- or over-voltage being supplied to the loads in Bypass mode. The selectable voltage ranges are (i) Bypass Sensitivity Low: many selectable output voltages ±15% and (ii) Bypass Sensitivity High: many selectable output voltages ±10%. For example, if the output voltage setting is 120 V the Bypass Sensitivity Low range is 120 V ±15%, i.e., 102-138 VAC.

7. The UPS provides numerous configurable output voltages to match various system voltages.

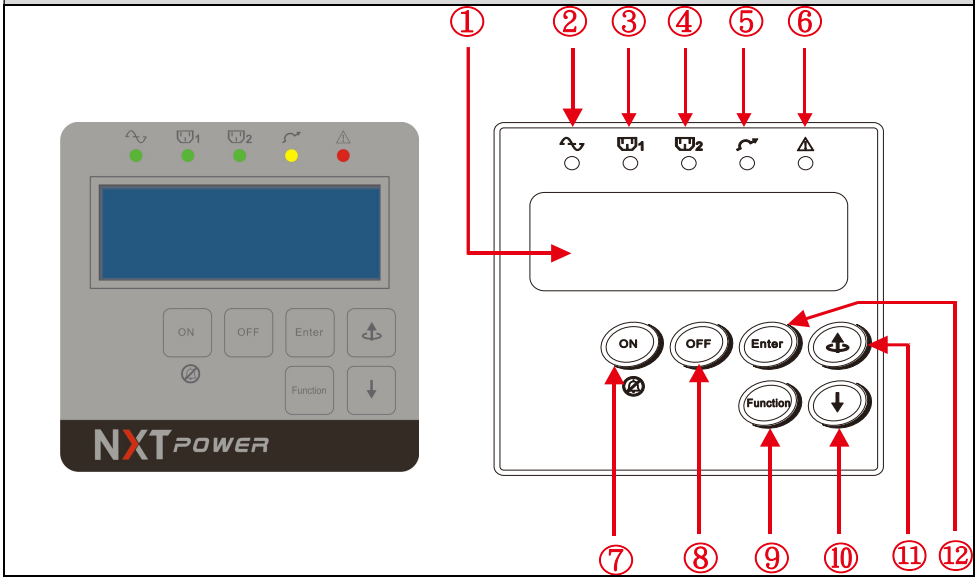
8. The UPS is designed to comply with various stringent international standards for electromagnetic interference compatibility (EMC).

3. UPS Functional Descriptions

3.1 Front Panel Display

3.1.1 NXT 1.5K < Convertible Type (Rack / Tower)> LCD panel

6 Button LCD Panel

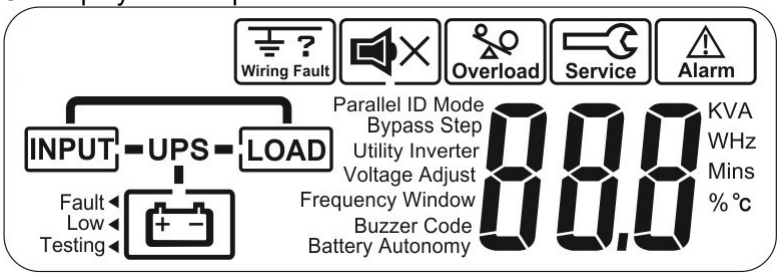


Item	Sign	Description
①		LCD Display
②	∿	Green LED lights up to indicate that the utility input voltage is within nominal range (90Vac~145Vac); the LED flashes quickly to indicate that the utility input voltage is within the acceptable window (60Vac~90Vac).
③④	⏻1 ⏻2	Green LED lights up to indicate there is an output available at the Programmable Outlet 1 & Programmable Outlet 2.
⑤	⤳	Amber LED lights up to indicate the Bypass Input is normal.
⑥	⚠	UPS Fault LED
⑦	ON	UPS On/Alarm Silence

⑧		UPS OFF Switch
⑨		Special functions log in/out
⑩		Go to next display page
⑪		Go to previous display page or change the setting of the UPS.
⑫		To re-confirm the change to the UPS Setting

◎ Manual Bypass: Press "⑦ON-KEY" and "⑪Up-KEY" key simultaneously for approx. 3 seconds to transfer from "Inverter to Bypass" (the bypass LED will continuously “flash “and the buzzer will beep intermediately on "Bypass to Inverter", when the UPS is online Mode, and the Bypass Voltage Window is Normal.

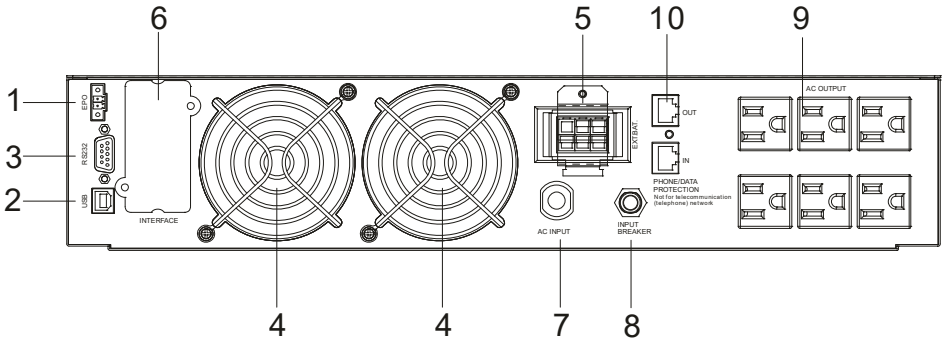
3.1.2 LCD displayer description



Item	Sign	Description
1	Wiring Fault	Site Wiring Fault
2		Buzzer Silent
3	Overload	UPS Overloaded
4	Service	UPS Working in specified mode*
5	Alarm	UPS Fault or Abnormal Warning
6	INPUT UPS LOAD	UPS Flow Chart
7	KVA WHz Mins % ℃	3-Digit Measurement Display
8		Indicates the item being measured
9	Fault ◄	Battery Abnormal
10	Low ◄	Battery Low
11	Testing	Testing

3.2 Rear Panel

800VA/1100VA/1440VA 120V



1. Emergency Power Off (EPO) / Remote ON/OFF (ROO)
   Dry contact signal inputs
2. USB port
3. RS-232 port
4. Fan
5. External battery connector
6. Slot for optional communication cards*
7. Utility input power cord
8. Utility input circuit breaker
9. AC outlets (Program Relay)
10. Communication surge protection

3.3 Communication Port Explanation

The UPS is equipped with a true RS-232 and USB communication port as standard to provide communication with bundled UPS monitoring software for remote monitoring of the UPS using a PC.

In addition, there are six optional interface cards available to meet various communication needs: USB, EPO/ROO, DCE (dry contact relay card), R2E, USE, and an SNMP/Web card. (Please see Chapter 8.)

All communication ports including optional cards can be active and used simultaneously to monitor the UPS status. However, only one communication interface at a time (the one with the highest priority) can control the UPS. The priorities of these communication interfaces are as follows (highest priority first).

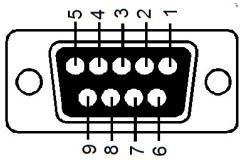
1) EPO/ROO input port
2) Optional interface card
3) USB
4) RJ11/RJ45 Communication surge protection
5) RS-232

3.3.1 True RS-232

The RS-232 interface must be configured as follows.

Baud Rate	**2400 bps**
Data Length	**8 bits**
Stop Bit	**1**
Parity	**None**

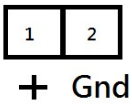
Pin Assignments:



Pin 3: RS-232 Rx
Pin 2: RS-232 Tx
Pin 5: Ground

3.3.2 EPO/ROO

Pin Assignments:



Function setting ：

1. EPO NC → Shutdown UPS (default)
2. EPO NO → Shutdown UPS
3. ROO NC → Start-up UPS
4. ROO NO → Start-up UPS

(this function setting by setting tool)

4. Installation and Operation

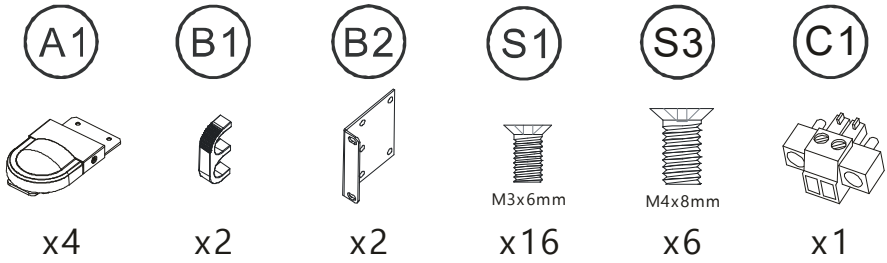
Please read the Safety Instruction guide (pages 2 ~4) before installing the UPS.

4.1 Unpacking

Inspect the UPS upon receipt. The packaging is robust, but accidents and damage may still occur during shipment. Notify the forwarder and dealer if there is damage.

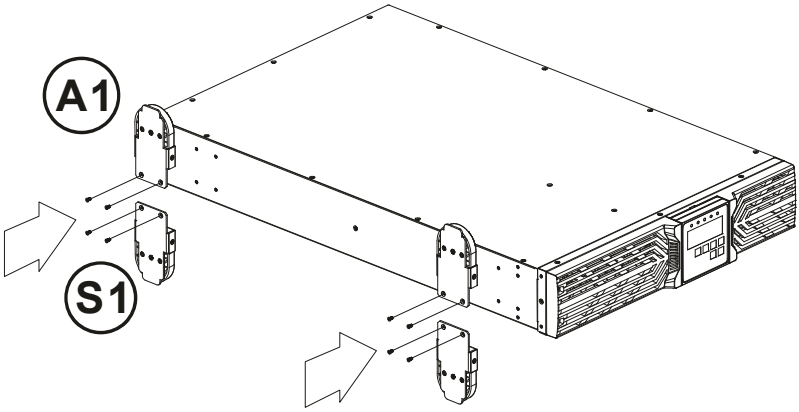
The packaging is recyclable and reusable.

1. After removing the packing foam please be careful handling the UPS while it is still in the plastic bag. The plastic is slippery, and the UPS could fall and injure you.
2. Check for the following standard package contents, in addition to the UPS itself.
   - **A. User Manual**
   - **B. NEMA 5-15P input cables (for UPS with NEMA sockets only)**
   - **C. USB Cable**



4.1.1 Installation Instructions

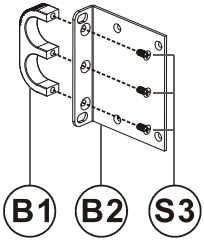
Tower installation



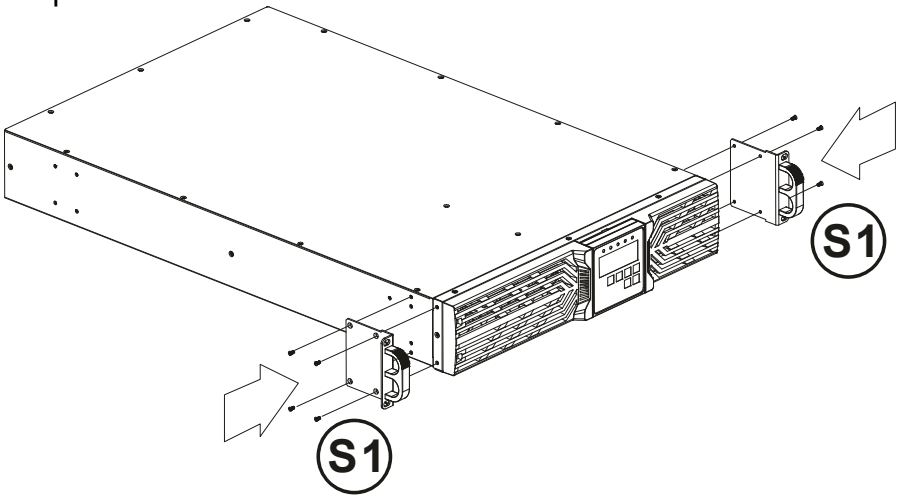
Rack Mount installation

Warning: Do not use rack mount kit to carry UPS

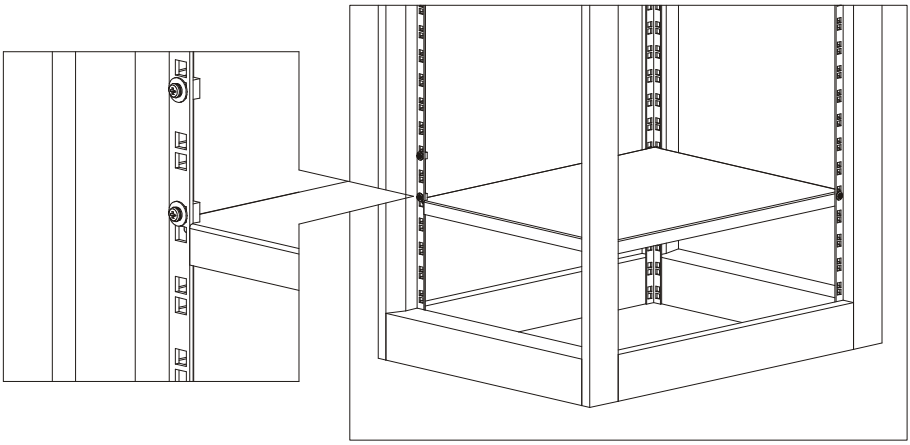
Step 1

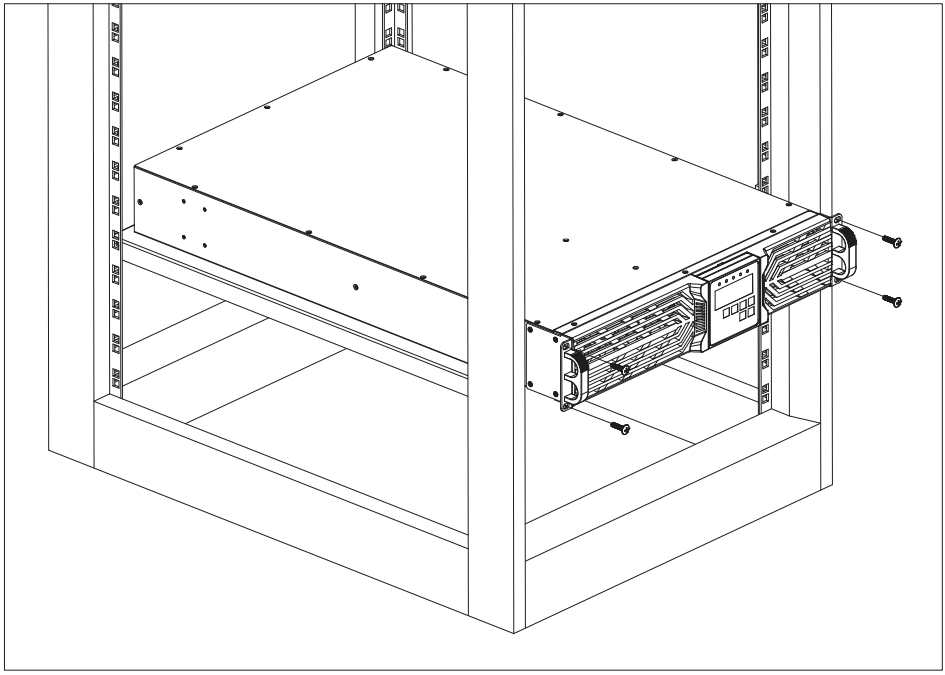


Step 2



Step 3

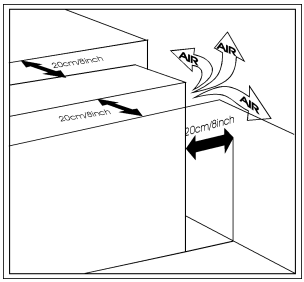




4.2 Selecting Installation Position

The UPS is heavy. Select a location sturdy enough to support the UPS weight.

To ensure proper operation and long operating life, position the UPS according to the following requirements.



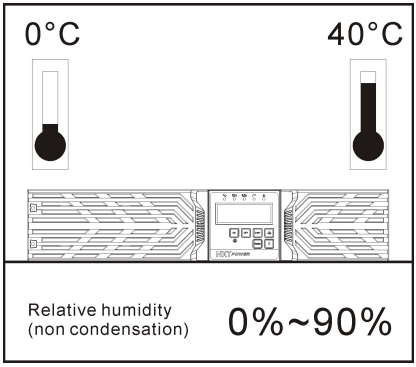
1. Keep at least 20 cm (8 inches) of clearance beyond the rear panel of the UPS.

2. Do not block the air flow to the ventilation louvers of the unit.

3. Ensure that the installation site is free from excessive dust and the ambient temperature and humidity are within the specified limits.

4. Do not place the UPS in a dusty or corrosive environment or near any flammable objects.

5. This UPS is not designed for outdoor use.

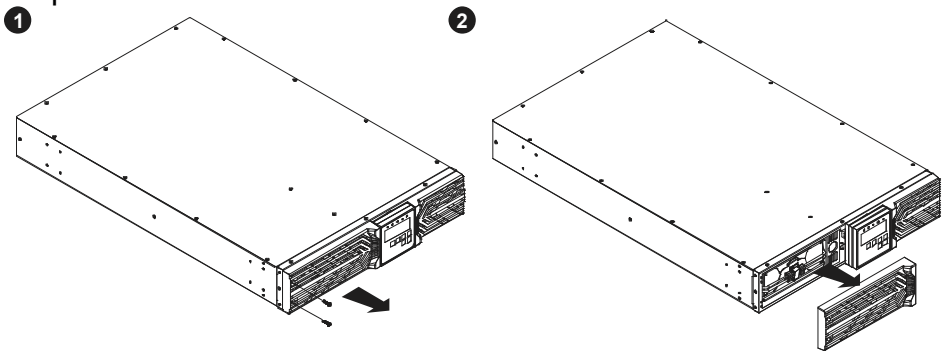


4.3 Battery Connecting Procedure

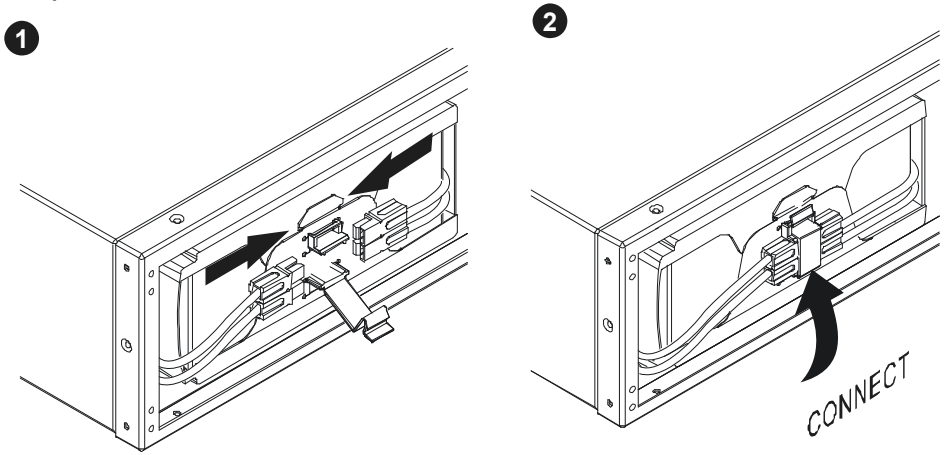
Qualified Service Personnel Only

PLEASE READ ALL OF THE CAUTIONS AND THE WARNINGS BEFORE ATTEMPING TO CONNECT THE BATTERY MODULE

Step 1



Step 2



Step 3

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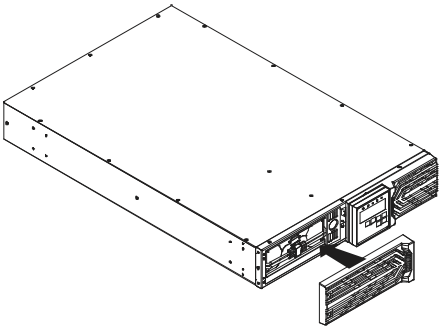

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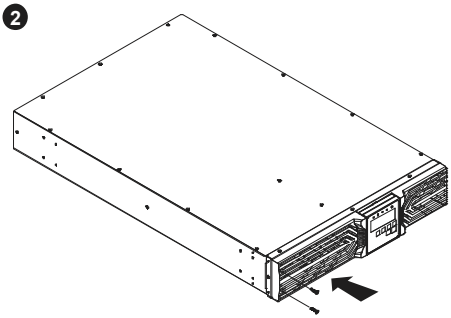


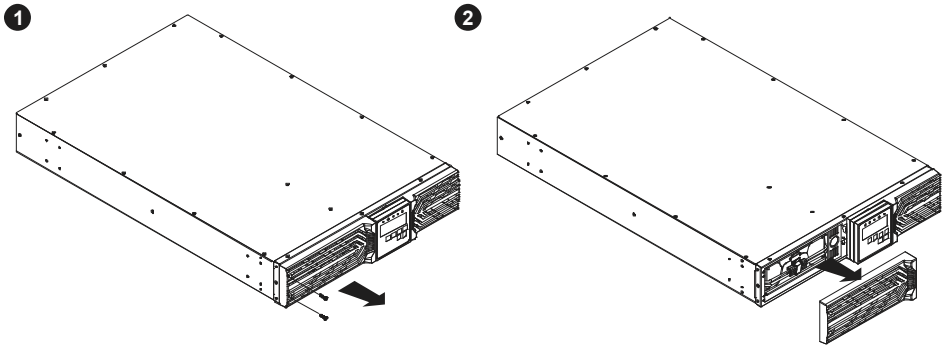
4.4 Battery Replacement Procedure

Qualified Service Personnel Only

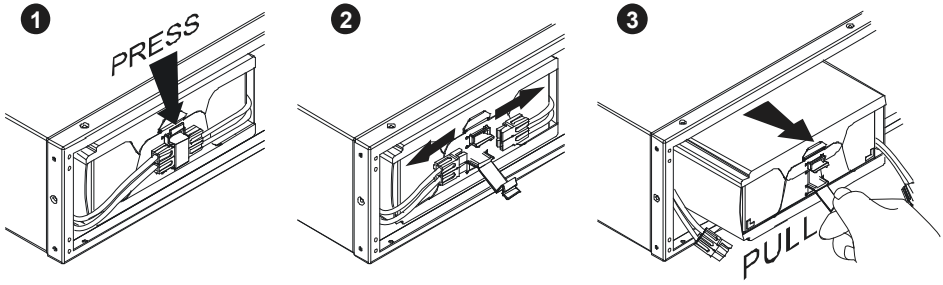
PLEASE READ ALL OF THE CAUTIONS AND THE WARNINGS BEFORE ATTEMPING TO REPLACE THE BATTERY MODULE

Warning: Lead-acid battery could be drained and damaged by long-term self-discharge naturally without maintenance.

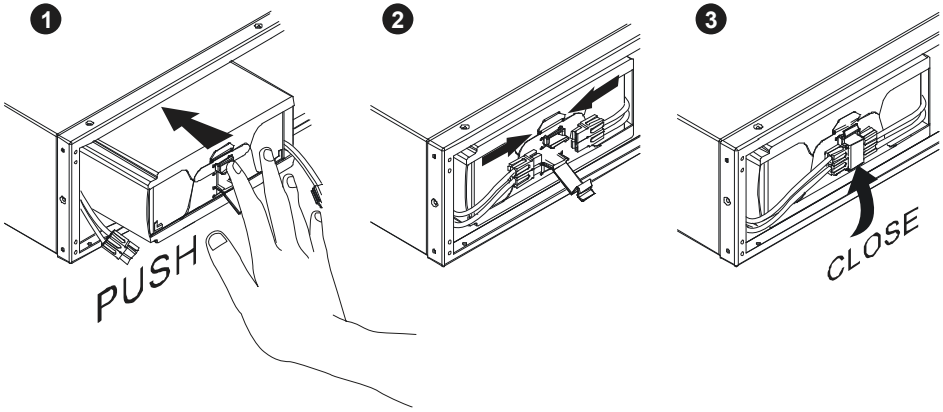
Step 1



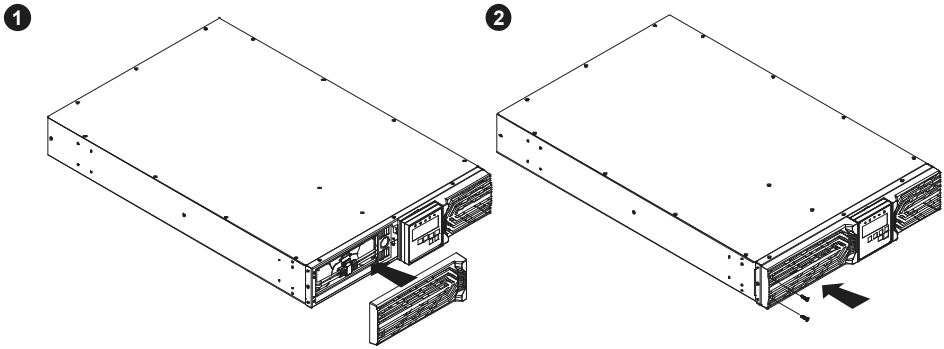
Step 2



Step 3



Step 4



4.4.1 Recycling Used battery

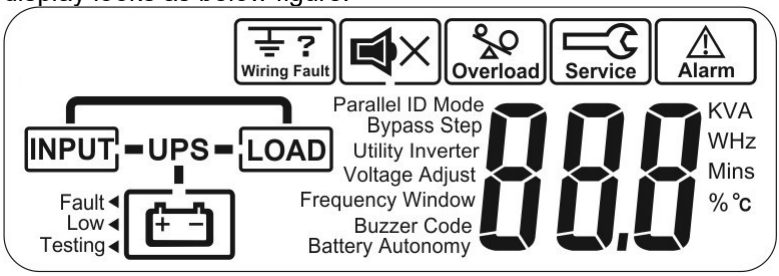
Contact your local recycling or hazardous waste centre for information on proper disposal of the used battery.

4.5 Operation

Using the standard LCD Panel

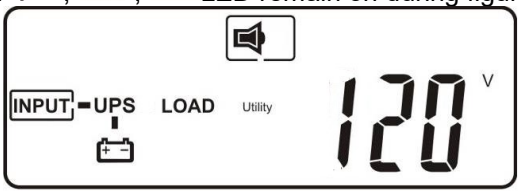
4.5.1.1 Line mode start up

1. Please ensure the source outlet is properly grounded.
2. Ensure the voltage rating of the power source matches the rating of the UPS.
3. Plug in UPS into the AC source
4. UPS will start initializing after AC input power is available 5 seconds. LED/LCD indicator will illuminate, and the fan will start. Full LCD display looks as below figure:

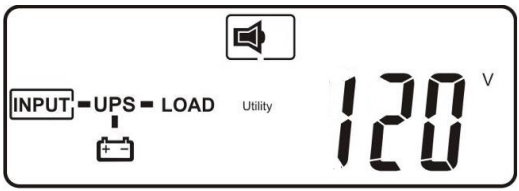


5. Press UPS button and hold untill unit beeps twice, UPS will begin its starting procedures. This will take 5 seconds. LCD display will show as below figure-A and then figure-B sequentially. LEDs will light up to indicate that the Utility and the Bypass are normal. And then "~","1","2 LED remain on during figure-B LCD display.

A



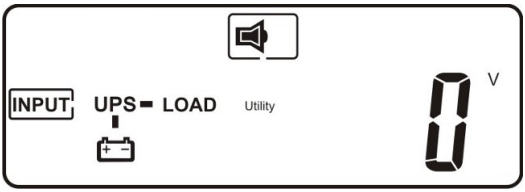
B



When you see figure-B this means the starting up procedure is finished. Please ensure UPS is left in recharge mode for at least 4 hours to fully recharge the batteries before the first backup test.

6. Back up test – Unplug power cord or switch off power source to simulate power failure condition. Green LED indicator ~ will be off and Amber LED "1","2 will be on. Intermittent audible alarm will be heard and LCD display shows as below figure-C:

C

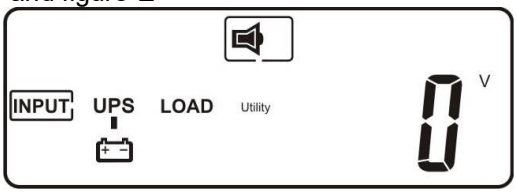


4.5.1.2 Cold Start (DC start)

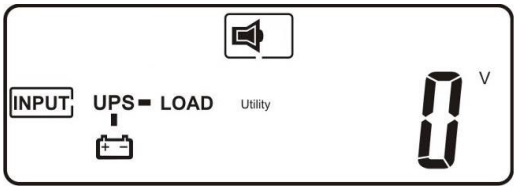
1. Ensure the internal batteries is available or external batteries are connected to UPS. Press and hold ON key for 3 seconds until unit beeps twice, release button and press ON for 3 seconds until twice beeps again to confirm cold start procedure. If the 2nd button confirmation must be done within 10 seconds after 1st two beeps, UPS will not cold start and shut off after 10 seconds.

2. 5 seconds after cold starting, amber LED"1","2 will be on, intermittent audible alarm will be heard, and LCD will show as below figure-D and figure-E

D



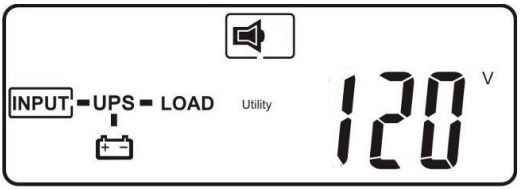
E



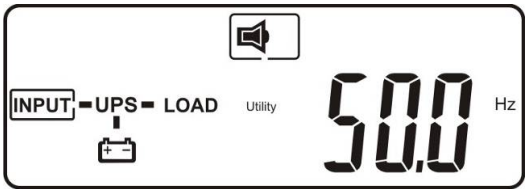
4.5.1.3 Operation of measurements display

1. UPS measurements can be checked after UPS has started by pressing select key  . The display sequence is as below figure-F (AC input voltage)→figure-G (AC input frequency)→figure-H (UPS output voltage)→figure-I (UPS output frequency)→figure-J (UPS loading percentage)→figure-K (UPS output current)→figure-L (Battery voltage) →figure-M (UPS inner temperature) and back to figure-F.

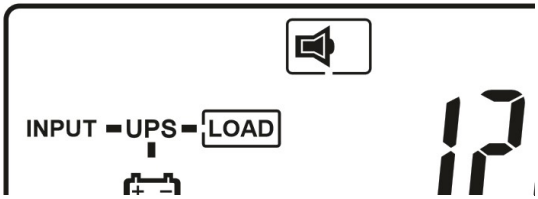
F



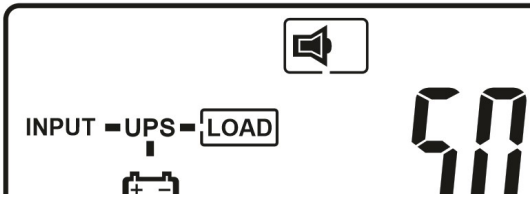
G



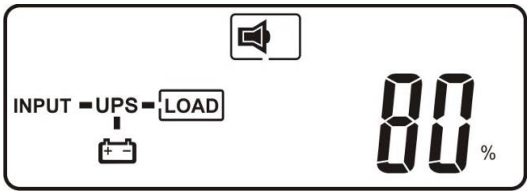
H



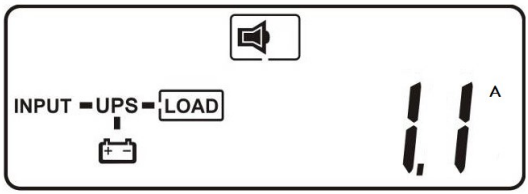
I



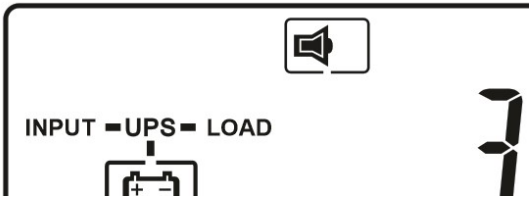
J


INPUT
UPS
LOAD
80
%

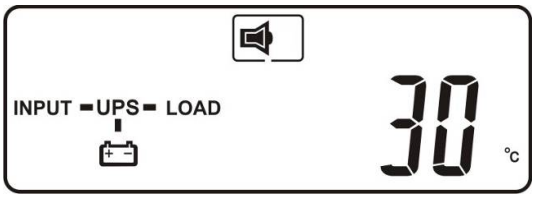
K


INPUT
UPS
LOAD
1.1
A

L


INPUT
UPS
LOAD
7

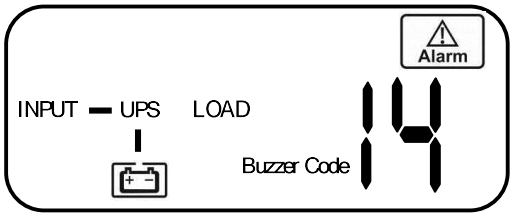
M


INPUT
UPS
LOAD
30
°C

4.5.1.4 UPS Locked up

UPS may lock itself up if there was a critical abnormal or failure condition. User may see LCD display as below figure-N.

N



The procedures to release UPS from locked up status are as below:

(a) Check and record the error code.

(b) Check user's manual to understand possible cause, solve the problem or call service provider.

(c) Press OFF key 

and hold for 5 seconds until unit beeps twice.

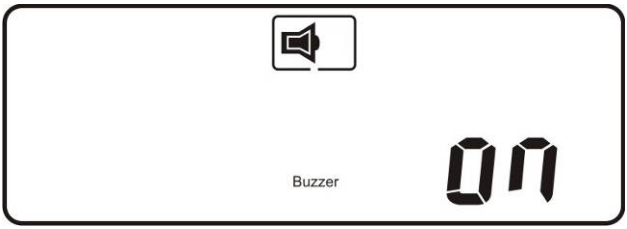
(d) Unplug AC input power cord or turn off power source switch.

(e) After UPS has completely shut off, UPS is now unlocked.

4.5.1.5 UPS Default Data and Special Function Execution

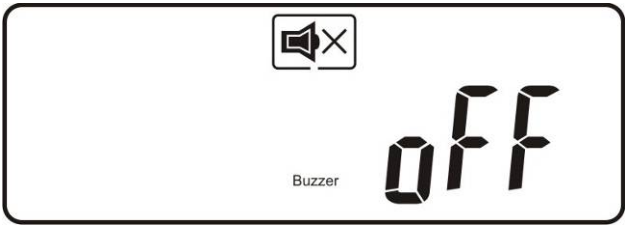
After the UPS completely starts up, press the Function key to change the LCD display to figure Q1.

Q1



buzzer “On”

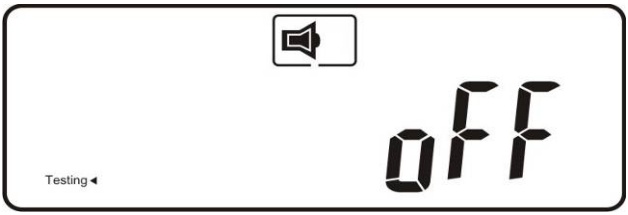
Q2



buzzer “Off”

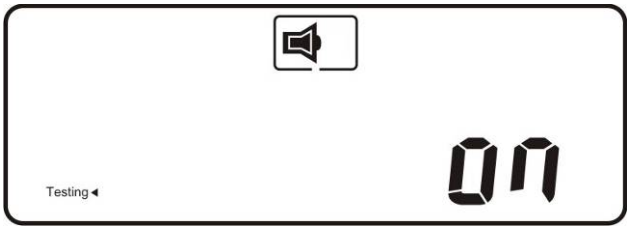
4.5.1.6 Press the ↓ key to scroll through the UPS settings. The LCD will display in sequence figure Q1 (buzzer) → figure R1 (Self-test) → figure S1 (Bypass Voltage Windows) → figure T (Output Frequency Synchronization Window) → figure U (Inverter Output Voltage) → figure V1 (UPS Operation Mode) → figure W (Output Voltage Micro Tune Value)

R1



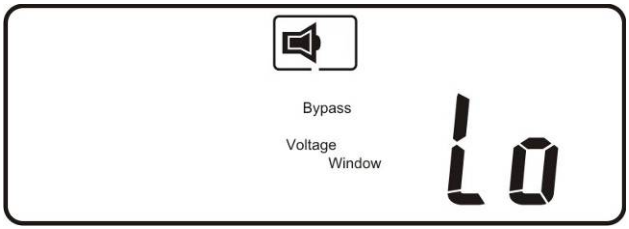
Self-test is not “On”.

R2



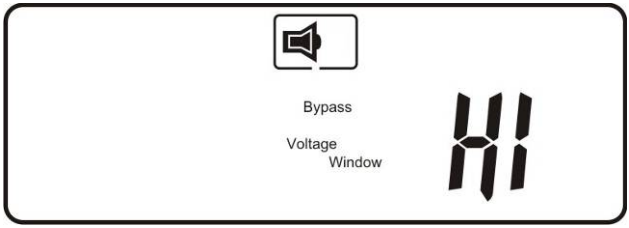
Self-test is “On”.

S1



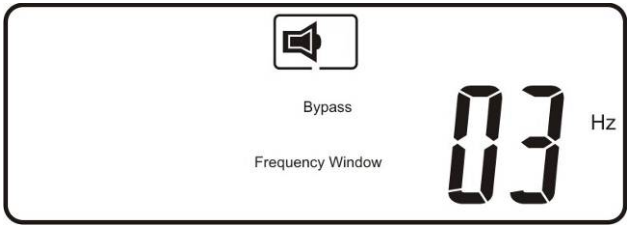
Bypass Voltage is adjusted to wide range.

S2



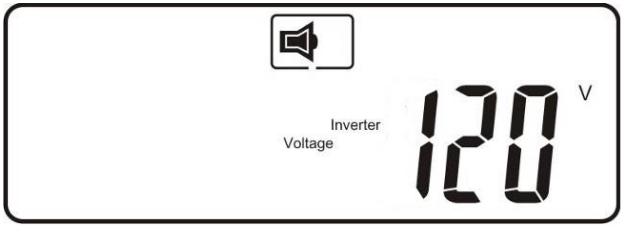
Bypass Voltage is adjusted to narrow range.

T



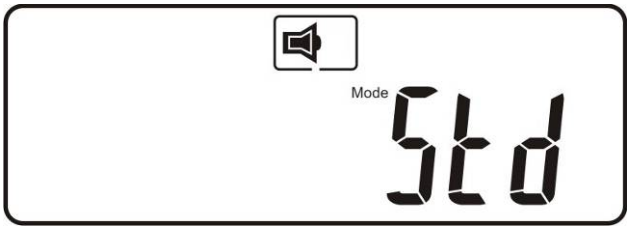
Frequency Window is +/-3 Hz.

U



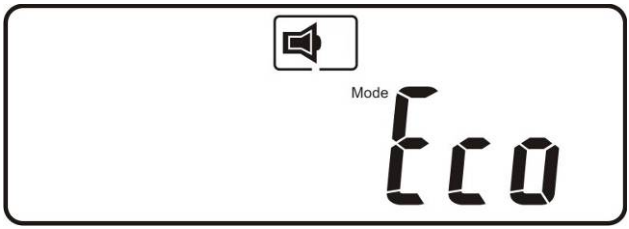
inverter output voltage

V1



The UPS is operating in “normal mode”

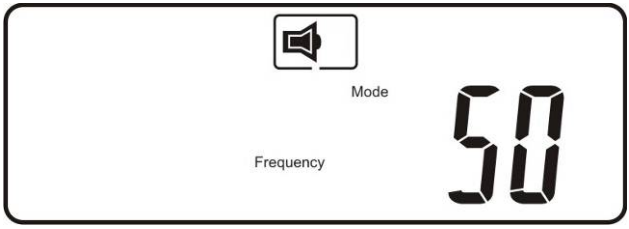
V2



The UPS is operating in “Eco mode”

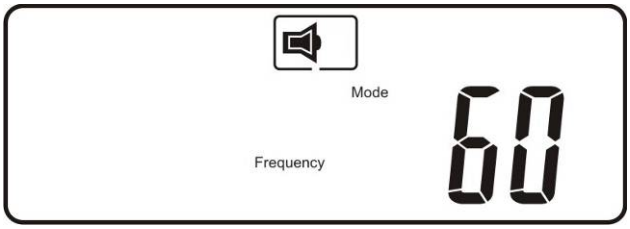
.

V3



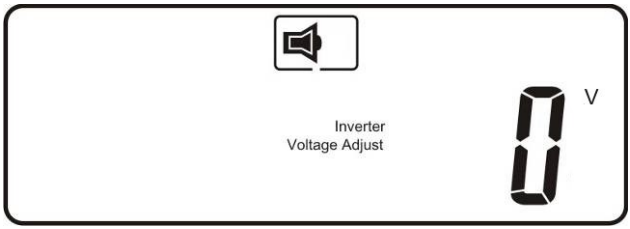
The UPS is operating in “CVCF 50 Hz mode”.

V4



The UPS is operating in “CVCF 60 Hz mode”.

W



Output Voltage Adjustment (-6.0V ~ +6.0V)

4.5.1.7 Press the scroll up key to execute special functions. The functions include buzzer ON (as in figure Q1), buzzer OFF (as in figure Q2, Alarm silence for UPS Warning), and self-test OFF (as in figure R1) or self-test ON (as in figure R2). The UPS will execute the battery test for ten seconds.

4.5.2 UPS Default Settings and their alternatives

4.5.2.1 Make sure the UPS is not “On”. Press the On 

and scroll down  keys simultaneously for approximately three seconds. The buzzer will sound twice, and the LCD will display figure Q1, indicating that the UPS is in setting mode.

4.5.2.2 To scroll through the options, refer to section 4.5.1.6.

4.5.2.3 Except for Buzzer (figures Q1 and Q2) and Self-test (figures R1 and R2) all of the other default settings may be changed by pressing the scroll up  key.

4.5.2.4 Figures S1 and S2 indicate the bypass input acceptable window. It follows the inverter output voltage. Please refer specification for the detail.

4.5.2.5 Figure T indicates the bypass frequency window of the Inverter Output. The acceptable setting values are ±3 Hz and ±1 Hz.

4.5.2.6 Figure U indicates the acceptable Inverter Output Voltage. Possible values are 100 or 120 VAC.

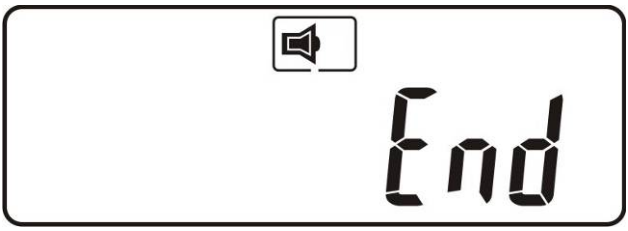
4.5.2.7 Figures V1, V2, V3 and V4 indicate the operation modes of the UPS. Possible values are Online, Eco (Economical) mode, fixed 50 Hz Output, and fixed 60 Hz Output.

4.5.2.8 Figure W indicates the adjustment of the Inverter Output, which may be set to +6V, -6V, +5V, -5V, +4V, -4V, +3V, -3V, +2V, -2V, +1V, -1V, 0V.

4.5.2.9 After changing settings, you must scroll to the “End” screen (figure X) and then press the enter 

key to save all of your changes.

X



* Press the Enter key to save changes.

4.5.2.10 Turn Off the Utility Input breaker.

4.5.2.11 Your setting changes are now complete.

4.5.2.12 Turn UPS off

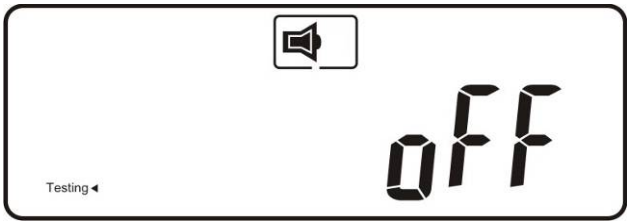
(1) Line mode(AC input available) : Press Off key OFF and hold until twice beeps heard, UPS output will shut off. UPS will stay in standby mode, fan(s) keep spinning and battery will be remained recharging if AC input still available after output is off, otherwise it will be shutdown completely.

(2) Backup mode (AC input not available): Press Off key OFF and hold until twice beeps heard, UPS output will shut off. 10 seconds later, fan stop spinning and UPS shutdown completely.

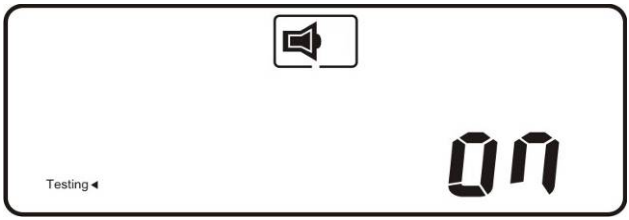
4.5.2.13 Self-Test (Line mode only)

The purpose of the self-test function is to ensure the backup capability of the battery pack, and it can only be applied when UPS is working ac line mode (AC input available) and battery pack is properly recharged.

Press Function → ↓ key to change the LCD display to below figure.



And press key to start Self-test as below figure



If UPS transfers to backup mode for 10sec and transfer back to line mode operation without any code or alarm, this means the battery pack is healthy, otherwise UPS will give code to indicate the cause of failure.

4.5.3 Alarm Codes

The following table contains common UPS statuses with their beep codes.

UPS Status	Alarm Code
UPS faulty, Inverter shut down. All functions inhibited.	Long Continuous Beep
Control keypad error	Long Continuous Beep
UPS faulty, loads continue to be supplied via Inverter or Bypass.	Single beep every two seconds
In battery mode	Single beep once per second
Battery low	Quick and short successive beeps
Confirm RS-232 port receiving	two quick and short beeps
Service mode okay	one quick and short beep

5. UPS System Block Diagram

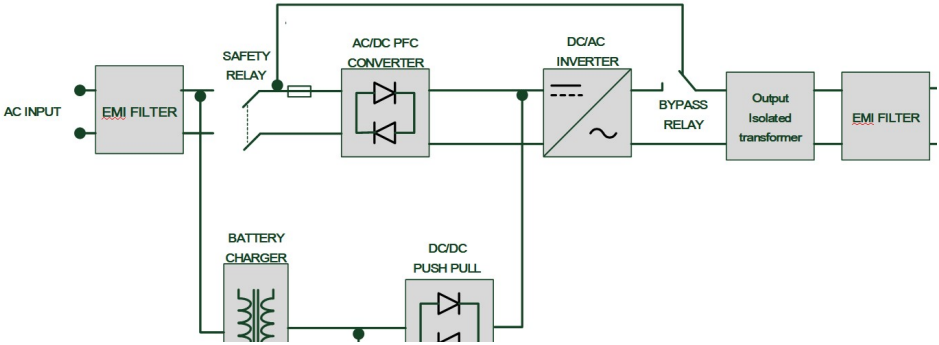


Figure 4.1

Figure 4.1 illustrates the True On-Line Double Conversion architecture of the UPS system. The major modules consist of:

1) An AC-to-DC power converter (rectifier) with PFC control circuit
2) A DC-to-AC high frequency inverter
3) An intelligent battery charger
4) A bank of stationary, maintenance-free batteries
5) A DC-to-DC push/pull converter control circuit
6) A static bypass loop
7) Output Isolation transformer
8) Input and output EMI filters

The table below provides a summary of the UPS operating modes under various utility AC power source and battery conditions.

Utility Condition	UPS Operating Mode	LEDs
Normal	Working power starts after approximately 5 seconds, LEDs on the panel will flash and fans will start. Press the ON button for 1-5 seconds. The UPS starts up normally.	~ 、 1 、 2 and Load LEDs remain lit
Abnormal (under or over voltage or absent)	Rectifier and charger stop operating. Battery discharges via DC-DC boost circuit and supplies Inverter. Loads continue to receive supply from Inverter. Alarm buzzer beeps. UPS now in battery mode.	~ LED off, LED illuminated
Utility abnormal or absent, or battery voltage low	Rectifier and charger stop operating. Battery discharges via DC-DC boost circuit and supplies Inverter. Alarm buzzer beeps quickly, indicating battery power low and Inverter may stop supplying soon.	~ LED off, and ⚠ LEDs illuminated

6. Maintenance Guide

6.1 Troubleshooting

If the UPS malfunctions during operation, please check that all lines are connected properly and that the utility specifications are correct. Then check the table below for solutions. Should the problem persist please contact your local dealer for assistance.

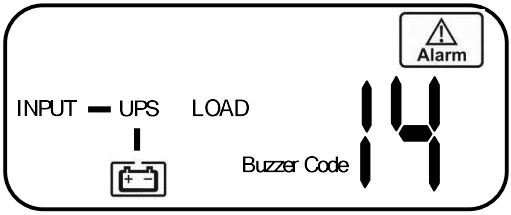
Situation	Check Items	Solution
Fault ⚠ LED Read the error code (see next page) displayed by the combination of LEDs, and verify the fault as follows.	1. Er05,Er39	1. Check for proper battery connection. Measure battery voltage to ensure that batteries are charged and healthy. Recharge batteries for 8 hours if necessary. Simulate utility outage to verify that UPS can provide DC backup. Otherwise consult your local dealer right away.
	2. Overload	2. Disconnect some non-critical loads from the UPS output until the overload ceases. Check if there is any short circuit between cables due to broken cable insulation. Replace the cables if necessary.
	3. Er11 (UPS Over Temperature)	3. Remove any objects obstructing the ventilation. Verify that the cooling fans are working properly. Contact your local dealer to replace the fans if necessary.
	4. Site wiring/Ground fault	4. Check if the “L” and “N” phases of the utility AC source have been wired incorrectly or if the Ground-Neutral voltage is high.
	5. Er14 (Fans out of order)	5. Verify that the fans are functioning properly. Do not attempt to replace the fans yourself. Contact your local dealer for replacement.

	6.Other error codes	6. Consult your local dealer for assistance.
UPS fails to provide battery backup, or its backup time is shorter than its intended performance.		If the backup time remains unsatisfactory after 8 hours of charging, please contact your local dealer for battery replacement.
UPS is normal, but there is no output to the load.	Check that all power cords are properly connected.	If the problem persists consult your local dealer for technical assistance.
The UPS switches on to battery mode and then back into utility mode when a connected device is turned on, or the UPS switches back and forth between battery and utility modes.	1. A power strip is connected to the UPS. See if there is any damage to the utility wall receptacle or if the cord plug is faulty.	1. Do not use the power strip. 2. Replace the wall receptacle/cord plug.
Strange noise or smell		Immediately shut down the whole system. Disconnect the power from the UPS and call for service.
UPS is unable to provide backup power.		Check that the battery connectors are fully engaged. Allow the batteries to recharge if they are weak. If the problem persists after recharging replace the batteries. If the problem persists consult your local dealer for technical assistance.

Error Codes

Checking error cord on LCD panel：

If UPS is in abnormal condition，common alarm sign  will light up and come with audible alarm. The LCD screen will show information of alternate normal and error code. You can follow section 6.1 and 6.2 up for troubleshooting.



6.2 Error Codes and Their Meanings

Code	Meaning
Er05	Battery weak or faulty
Er06	Output short-circuited
Er07	EPO mode
Er11	UPS over-temperature
Er12	Inverter overload
Er14	Fan errors
Er39	When UPS start process, Utility Voltage less than 90V and Battery no connection.
Er28	Bypass overload

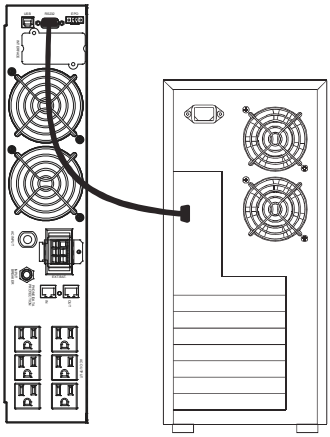
6.3 Maintenance

1. Clean the dust from the ventilation openings and intakes on the rear panel.
2. Turn off the UPS and wipe the casing with a damp cloth. Be careful to avoid getting water in the UPS.
3. Periodically unplug the power cord of the UPS from the wall receptacle to test the condition of the batteries. Be sure you have saved your data in any open computer applications before you proceed with this battery test.

7. Communication Software

7.1 Hardware Setup

1. Decide whether to use RS-232 communication or USB communication. (For optional interface cards please refer to Chapter 8.)
2. Connect a male RS-232 connector or a USB cable* to the UPS communication port. Connect the female RS-232 connector or the other end of the USB cable to the computer.

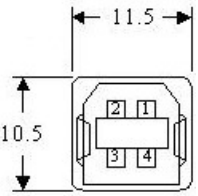


***Note: RS-232 and USB cables are optional.**

7.1.1 USB

The USB communication protocol definition is as below.

1. Complies with USB version 1.0, 1.5 Mbps.
2. Complies with USB HID version 1.0.
3. Pin Assignments:



1 → VCC (+5V)
2 → D−
3 → D+
4 → Ground

7.2 Software Installation

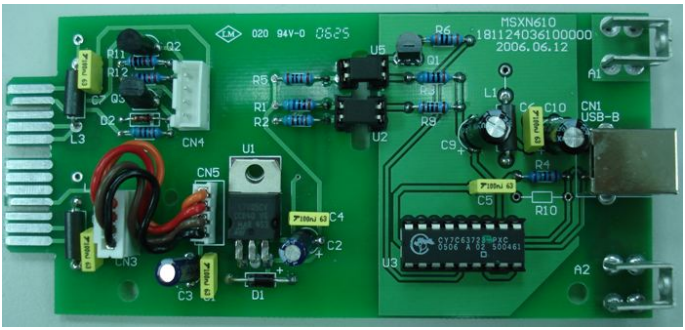
Please refer to the software user's manual.

8. Optional Communication Cards

8.1 R2E (second RS-232) card

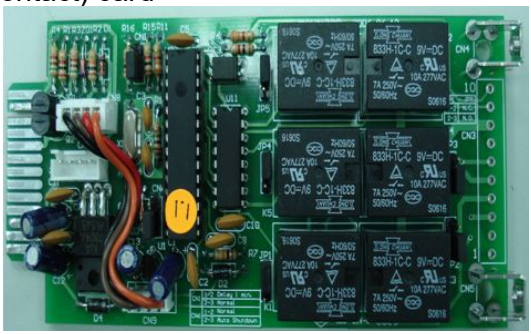
8.1.1 CN1 is for RS-232 DB9.
8.1.2 For interface settings and pin assignments please refer to section 3.3.1
8.1.3 Installation Position: Optional Slot

8.2 USE (USB) card



8.2.1 CN1 is for USB.
8.2.2 For the communicaiton protocol definition please refer to section 7.1.1
8.2.3 Installation Position: Optional Slot

8.3 DCE (Dry Contact) card



8.3.1 Pin assignments of 10-Pin terminal:

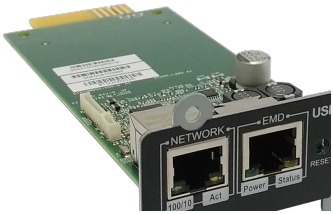
1	2	3	4	4	5	6	7	8	9	10

1 → UPS in Bypass mode (Bypass)
2 → Utility Abnormal (normally closed contact)
3 → Utility Normal (normally open contact)
4 → Inverter On
5 → Battery Low
6 → Battery Bad or Abnormal
7 → UPS Alarm
8 → Common
9 → Shutdown UPS positive (+) signal
10 →Shutdown UPS negative (-) signal

8.3.2 The shutdown function will be activated after +6-25 VDC is applied between pin 9 and pin 10 for 5 seconds.
8.3.3 The capacity of each relay contact is 40 VDC/25 mA.
8.3.4 Installation Position: Optional Slot
8.3.5 Flexible signal output for N.C. (Normally Closed) or N.O. (Normally Open) contact by shorting pins1-2 or pins 2-3 from JP1-5
8.3.6 The shutdown function will be enabled 1 minute after blackout occurs if pins 1-2 of both CN1 and CN6 are shorted. Otherwise the shutdown function can be enabled only by pins 9-10 of CN3 if pins 2-3 of both CN1 and CN6 are shorted.

8.4 SNMP Cards

8.4.1 FIT SNMP card



8.4.1.1 For installation, please refer to the user's manual that came with the card.

8.4.1.2 Installation Position: Optional slot on rear panel

Specifications Convertible Type (Rack)

ITEM	PART		NXT Ares Plus with Transformer RT 120V		
Type	PF=0.9		NPTU800-OR-N	NPTU1100-OR-N	NPTU1500-OR-N
Capacity	VA / W		800VA / 720W	1100VA / 990W	1440VA / 1296W
	Battery Number		3		
Input	Voltage Rating		55-150 V_{AC} (90-150 V_{AC}: 0 ~ 100% Load / 75-90 V_{AC}: 0 ~ 75% Load / 50-75 V_{AC}: 0 ~ 60% Load)		
	Frequency Rating		44-66 Hz (Auto Sensing)		
	Phase		Single phase with ground		
	Power Factor		≧ 0.98 (Nominal voltage for 100% linear load)		
	Total Harmonic Distortion		I_{THD} < 7% (Nominal voltage with >1% V_{THD} for 100% linear load)		
	Input Connection		NEMA 5-15P		
Output	Output Voltage		120V_{AC} / 100 V_{AC} * 100V_{AC} : 666VA/599W	120V_{AC} / 100V_{AC} * 100V_{AC} : 916VA/824W	120V_{AC} / 100V_{AC} * 100V_{AC} : 1200VA / 1080W
	Voltage Regulation		within ± 2% until low-battery warning		
	Frequency (Synchronized Range)		3 Hz or 1 Hz (selectable)		
	Frequency (Battery Mode)		50/60 Hz ±0.1		
	Current Crest Ratio		3:1		
	Total Harmonic Distortion		Linear Load: V_{THD} ≦ 3.5% PF=0.9 Non-Linear Load: V_{THD} ≦ 5% PF=0.7 Non-Linear Load: V_{THD} ≦ 9%		
	Output Waveform		Pure sine wave		
	Outlets		(3+3) NEMA 5-15R (programmable)		
	Overload Capacity	Line Mode	＜105％ continuous 106-120％ for 30 seconds transfer to bypass 121-150％ for 10 seconds transfer to bypass ＞150％ Immediately transfer to bypass. Buzzer continuously alarms.		
		Battery Mode	＜105％ continuous 106-120％ for 30 seconds shuts down 121-150％ for 10 seconds shuts down ＞150％ Immediately shuts down. Buzzer continuously alarms.		
		Bypass Mode	＜105％ continuous 106-120％ for 250 seconds shuts down 121-130％ for 125 seconds shuts down 131-135％ for 50 seconds shuts down 136-145％ for 20 seconds shuts down 146-148％ for 5 seconds shuts down		

			149-157% for 2 seconds shuts down 158-176% for 1 seconds shuts down 177-187% for 0.32 seconds shuts down ＞188% for 0.16 seconds shuts down. Buzzer continuously alarms.		
Efficiency	100% Linear Load	Line Mode	> 84.5%	> 85%	> 84.5%
		Battery Mode	> 82.5%	> 82.5%	> 82%
		ECO Mode	> 90.5%	> 90.5%	> 90.5%
Battery	Battery Number		3		
	Battery Voltage		36 V_{DC}		
	Battery Type		12V_{DC} lead-acid battery (Selected and Installed by customer)		
	Backup Time with Internal Battery	100% Load	> 8 min	> 5 min	> 3 min 15sec
		50% Load	> 22 min	> 14 min	> 10 min
	Charging Voltage	Floating Mode	40.95 V_{DC} ±1%		
		Bulk Mode	42.3 V_{DC} ±1%		
	Charging Current	Standard	1.8A ± 0.2A		
		Additional	3.7-4.1 A		
Transfer time	Line Mode to Backup Mode		0 ms		
	Inverter to Bypass		≦ 8ms		
Protection	Full Protection		Short Circuit / Overload / Over Temperature / ABDM / EPO		
DC start			Yes		
Self-diagnostics			Upon Power-on, Front Panel Setting & Software Control, 24 hours routine check		
Physical (RT)	Dimensions (W x H x D)	inches	17.32 x 3.46 x 27.68		
		mm	440 x 88 x 703		
	Weight	lbs	46.3		
		kg	21		
Audible Alarm	Battery Mode		Sounds once every 1.5 seconds (Sounds once every 0.2 seconds for low-voltage battery alarm)		
	General Alarm		Sounds once every 3 seconds		
	Overload		Continuously Sounds		
	Fault		Continuously Sounds		
Front Panel	LCD (Standard)		Normal, Battery, Bypass, Self-Test, Battery Weak & Bad, Site Wiring Fault, Fault, Overload, and Load/Battery Level		
	LED (Optional)				
	Button		ON / OFF / Enter / Function / Up / Down		
Environmental	Operating Temperature		Operating: 0ºC ~ 40ºC (32ºF to 104ºF) / Storage: -15ºC ~ 55ºC (5ºF to 131ºF)		

	Noise Level	≦ 50dB
	Relative Humidity	5-95% (without condensation)
Interface	Standard	RS-232, USB, EPO
	Option	2nd RS232, USB, EPO/ROO, Dry Contact Relay, SNMP/WEB Card,
	Compatible Platforms	Microsoft Windows series,etc.
Standards and Certifications	Safety	UL 1778, Fifth Edition, and CAN/CSA C22.2 No 107.3-14, Third Edition
	FCC	FCC Part15 Class A
	Markings	UL, cUL

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