



Alpha Continuity: 6K / 10K

Indoor Double Conversion Online UPS User Manual

Part # 0170012-J0
Effective: 06/2012



Alpha Continuity: 6K / 10K

Indoor Double Conversion Online UPS

 **NOTE:**

Photographs contained in this manual are for illustrative purposes only. These photographs may not match your installation.

 **NOTE:**

Operator is cautioned to review the drawings and illustrations contained in this manual before proceeding. If there are questions regarding the safe operation of this powering system, contact Alpha Technologies or your nearest Alpha representative.

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1. Important Safety Instructions

1.1 Important Information

SAVE THESE INSTRUCTIONS – This manual contains important instructions that must be followed during the installation and maintenance of the UPS and batteries.

- The UPS has its own external energy source (battery). A voltage may be present at the output terminals even when no AC input power is available.
- This UPS is equipped with an EMI filter. To prevent potential leakage current hazard, ensure that the AC main supply is securely grounded.
- Make sure that the AC utility outlet is correctly grounded.
- Make sure that the input voltage to the UPS matches the rating on its name plate. Use a certified input power cable with the correct plugs and sockets for the appropriate voltage system.
- Install the UPS indoors only as it is not designed for outdoor use. Install in a temperature-controlled indoor area free of conductive contaminants
- To prevent the UPS from overheating, keep all ventilation openings unobstructed. Do not place anything on top of the UPS. Keep the UPS rear panel at least 20 cm away from the wall or other objects.
- Units are considered acceptable for use in a maximum ambient of 40°C. Make sure the UPS is installed in an appropriate environment—0 to 40°C (32 to 104°F) ambient temperature, and 30 to 90% relative humidity (non-condensing).
- Do not install the UPS in direct sunlight. Failure of the batteries under these conditions may void the warranty.
- Do not install in a inflammable or hazardous environment.
- Dusty, corrosive, or salty environments can damage the UPS.
- Install the UPS away from objects that give off excessive heat and areas that are excessively wet.
- Do not install the UPS in an environment with sparks, smoke or gas. Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data processing Equipment, ANSI/NFPA 75.
- The entrance of liquids or foreign objects into the UPS will void the warranty.
- The external battery will gradually discharge if the system is unused for extended periods.
- If unused, recharge the external battery pack every 2 to 3 months. Neglecting to do so will void the warranty. The batteries charge automatically and are kept in good condition if the UPS is installed and used.
- Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions."
- A battery can present a risk of electrical shock and high short circuit current. Observe the following precautions when working on batteries:
 - a. Remove watches, rings, or other metal objects.
 - b. Use tools with insulated handles.
 - c. Wear rubber gloves and boots.
 - d. Do not lay tools or metal parts on top of batteries.
 - e. Disconnect charging source prior to connecting or disconnecting battery terminals.
 - f. Determine if the 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).

- There is a risk of explosion if a battery is replaced by an incorrect type. When replacing batteries, replace with the same type and number of batteries or battery packs.
- Do not dispose of batteries in a fire—the batteries may explode. Dispose of used batteries according to the battery manufacturer's instructions.
- Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- Always switch off the UPS and disconnect the batteries before relocating the UPS. It may cause electrical shocks if the output is not completely switched off.
- Do not open the UPS—there are no serviceable parts inside. Opening the UPS will void the warranty.
- Do not repair the UPS yourself. Contact your local supplier. Opening the UPS will void the warranty.
- The UPS can be used with only one Battery Cabinet
- The UPS can be equipped with an optional Maintenance Bypass Switch. Follow the procedures strictly to switch on/off the Maintenance Bypass Switch.
- The UPS offers CVCF (Constant Voltage Constant Frequency) setting function.
 - a. For correct setting and wiring, contact the Alpha technical service team (see chapter 8).
 - b. Do not do it yourself; otherwise, your warranty will be void.
- This UPS has been designed and constructed to protect your assets from the wide range of power aberrations experienced on Utility power lines today. It is your insurance for reliable, clean and stable voltage supply. It is worth taking care to install the system correctly and to have it maintained correctly by your regional Alpha service center (see chapter 8).



CAUTION!

Disconnection Device - The customer must provide a disconnect switch for the AC output circuit. To reduce the risk of fire, connect only to a circuit provided with branch circuit over-current protection of 30 amperes for 6KVA and 50 amperes for 10KVA rating in accordance with the National Electric Code, ANSI/NFPA 70.



CAUTION!

To reduce the risk of fire, connect the unit input only to a circuit provided with branch circuit over-current protection of 40A for 6KVA and 70A for 10KVA amperes rating in accordance with the National Electric Code, ANSI/NFPA 70.

1.2 Storage Instruction

Store the UPS in a location where the temperature ranges between -15°C (+5°F) to 40°C (104°F).

For extended storage in moderate climates, charge the external battery pack for 12 hours every 3 months. Repeat every 2 months if the ambient storage temperature is above 30°C (86°F).

2. Introduction

2.1 General Characteristics

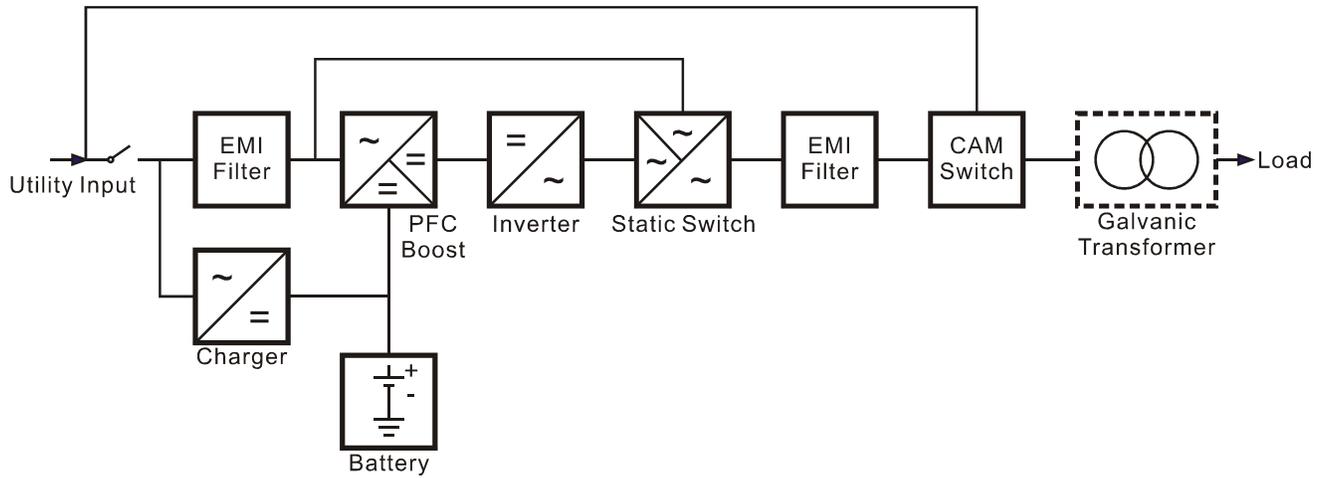
- The UPS continuously supplies your critical device with stable, regulated, transient-free pure sine wave AC power.
- High-efficiency 20 kHz pulse-width modulation (PWM) sine-wave topology yields an excellent overall performance. The output is capable of handling high crest factor and high inrush current loads.
- A multi-functional LCD/LED panel displays the status of the UPS. The LED display shows the UPS working status, utility power status, and abnormal UPS status. The LCD display shows the input/output voltage, frequency, load status, inner cabinet temperature, and abnormal conditions.
- Automatic overload protection switches the output from inverter mode to bypass mode if the load increases to between 105 and 120% of full load for 30 seconds and automatically enables inverter mode when the overload condition is removed. If the load reaches 150% of the rated capacity, the UPS switches to the bypass mode immediately.
- If the output is short-circuited, the UPS locks automatically, provides visual & audible alarms and cuts the output supply until the short circuit situation is resolved.
- If the unit overheats, the internal thermal switch detects the temperature and switches to bypass mode. It switches back to the inverter mode once the temperature drops to a predetermined value.
- This UPS is equipped with fully digitized control logic for greater functionality and an enhanced high level of power protection. Digital signal processing (DSP) enhances the UPS communication capability by providing the flexibility for easy remote control and monitoring.
- A maintenance-free, sealed-type battery minimizes after-sales service.
- An optional maintenance bypass switch provides easy and safe troubleshooting or maintenance when the utility power is normal.
- Four different working modes are provided that can be used for a variety of applications:
 - a. Normal (On-line mode)
 - b. ECO (Economic mode)
 - c. CF50 (50Hz Frequency Converter mode)
 - d. CF60 (60Hz Frequency Converter mode)
- When the UPS is operated in the CF50 or CF60 mode, the recommended load must be 75% of the rated capacity if the input voltage is 176 to 280 VAC, and 50% of the rated capacity if the input voltage is 160 to 280 VAC.
- A DC-start function ensures that the UPS starts up during power outages.
- Revolutionary battery management circuit analyzes battery discharging status to adjust the battery cut-off point and extend the batteries' life span.
- An intelligent temperature-controlled fan extends the life of the fan, and also reduces annoying noise caused by the sudden acceleration of the fan.
- If the UPS is out of order, a fault message will be displayed on the LCD screen.

2.2 Optional Configurations

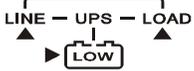
The Continuity 6K / 10K UPS can be installed with a transformer—see Appendix A.

It can also be installed in the parallel configuration—see Appendix B.

2.3 System Block Diagram



2.4 Symbols on the LCD Display Panel

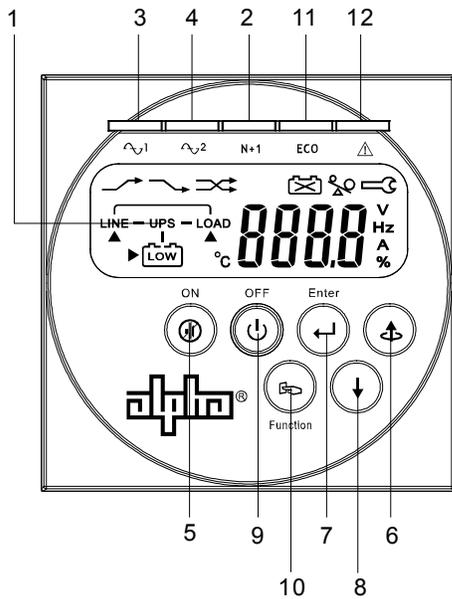
Symbols	Description
LINE	Utility or bypass source
	Battery low
	Battery abnormal
	UPS overload
	UPS working in specified mode*
	A blackout transfer occurred in UPS output
	Bypass input abnormal. UPS fails to transfer to bypass. Bypass abnormal at ECO mode
	Utility input abnormal
OFF	UPS shutoff
FAIL	UPS abnormal lock
	UPS flow chart
	4 digit display
	Indicates the desired item to be measured
	UPS ON switch or alarm silence
	UPS OFF switch
	Previous page or setting change
	Next page
	Special function log in /out
	Enter or reconfirm

Symbols	Description
	Utility input normal LED
	Bypass input normal LED
	UPS under redundancy mode
	UPS under ECO mode
	UPS fault or abnormal warning LED
EPO	Emergency power off
Er05	Battery weak or dead
Er06	Output short circuit
Er10	Inverter over-current
Er11	UPS overheating
Er12	UPS output overload
Er14	Fan error
Er15	Wrong procedure to enter maintenance mode
Er16	Output parameters set error in parallel system
Er17	ID numbers in conflict in parallel system or ID number error in single unit
Er21	Parallel communication error. Communication wire disconnected or failure to find ID1 UPS) in parallel system.
Er24	CVCF mode with bypass input.
Er27	The UPS must be operated in normal mode in parallel system.
Er28	Bypass overload time out and cut off output
Er31	The settings of the control board and driver board do not match.
Er33	Isolated transformer overheat
Er**	Other error code

*The specified modes include Normal mode, ECO mode, CVCF mode, etc.

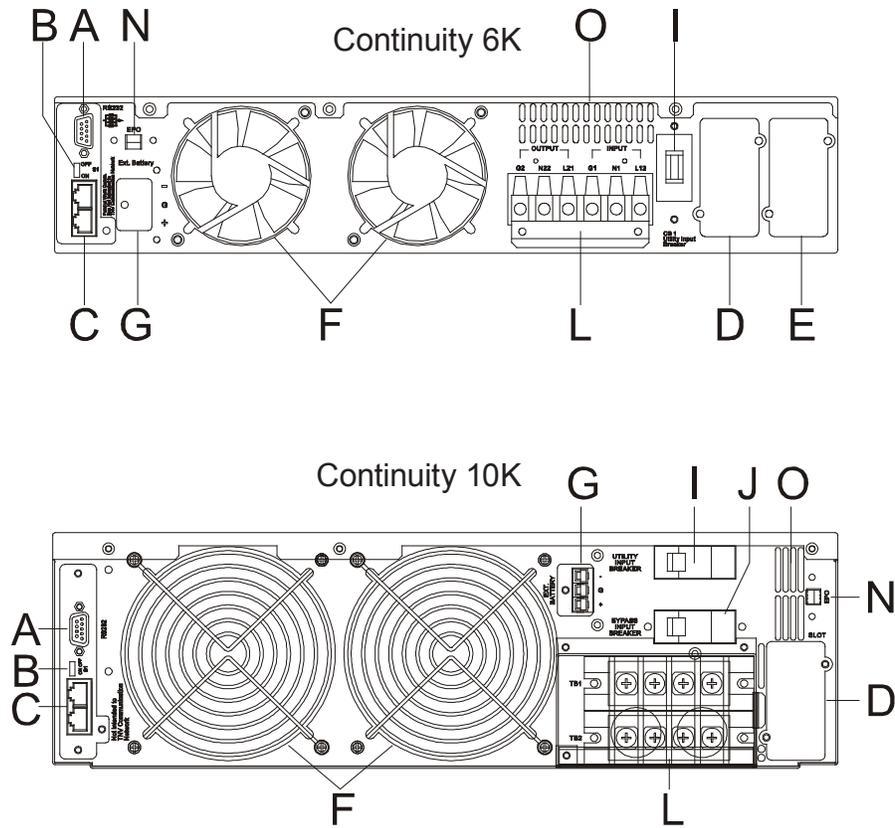
2.5 Front and Rear Panels

2.5.1 Front Panel Functions



1. LCD display
2. Green LED illuminates to indicate that the UPS has the capability to run under the redundancy mode.
3. Green LED illuminates to indicate that the utility input voltage is within the acceptable range.
4. Green LED illuminates to indicate the bypass input is normal.
5. UPS ON/Alarm Silence
6. Go to previous page or change the settings of the UPS
7. Re-confirm the change of UPS Setting
8. Go to the next page
9. UPS OFF switch
10. Special functions log in/out
11. UPS is working in the ECO (economic) mode
12. UPS fault or abnormal condition

2.5.2 Rear Panel Functions



Item	Description
A	RS232 port
B	Terminal resistor for parallel function
C	CAN bus connection port for parallel system
D	Customer options – Slot 1
E	Customer options – Slot 2
F	Cooling fan
G	External battery connector
I	Utility input breaker CB1
J	Bypass input breaker CB2 for dual input model only
L	Input/output terminal block
N	EPO emergency power off → short to enable the function
O	Thermal breaker for the protection of load during abnormal conditions: CB3

Figure 1 — Rear Panel Components

2.6 Communication Ports

The UPS is equipped with a remote emergency power off (REPO) dry contact input, true RS232 and USB communication ports to provide communication with bundled UPS monitoring software for remote monitoring of UPS status via a PC.

Four optional interface cards are available to meet various communication needs (refer to Section 6):

- DCE (dry contact relay card)
- RS232
- USB
- SNMP/WEB card

The bundled software of the UPS is compatible with many operating systems such as Windows 98, 2000, ME, NT and XP.

All communication ports (including optional cards) can be active simultaneously to monitor the UPS status. However only 1 communication interface can be active at any one time. The interface with the highest priority controls the UPS. The priority of these communication interfaces are as follows from highest to lowest priority:

- REPO input port
- Optional Interface card
- USB
- RS232

The communication port on the UPS provides true RS232 type communication with the UPS software. This is used for remote monitoring the power and UPS status.

Optional interfaces cards include R2E (2nd RS232), RSE (RS485), USE (USB), DCE (dry contact), and SNMP/. These can be combined according to your requirements. However, the R2E, RSE, and USE card cannot be used simultaneously.

The bundled software of the UPS is compatible with many operating systems such as Windows 98, & 2000, ME, NT and XP. For other applications like Novell, NetWare, Unix, Linux, contact your local distributor for advice.

When optional interface cards are used together with the onboard RS232 port for communications. The REPO signals have the highest control command priority followed by the SNMP/WEB card, the shutdown command at the DCE card and the R2E, RSE and USE cards. The onboard RS232 port has the lowest priority.

2.6.1 True RS232 Port Settings

The RS232 interface should be set as follows:

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

2.6.2 USB Port Settings

The USB communication protocol definition complies with

- USB version 1.0, 1.5 Mbps
- USB HID Version 1.0

3. Installation and Operation

Read Section 1 (Important Safety Instructions) before installing the UPS

3.1 Unpacking

Inspect the UPS upon receipt. The manufacturer has designed robust packaging for your product, but accidents and damage can occur during shipment. Notify the shipper and dealer if there is damage.

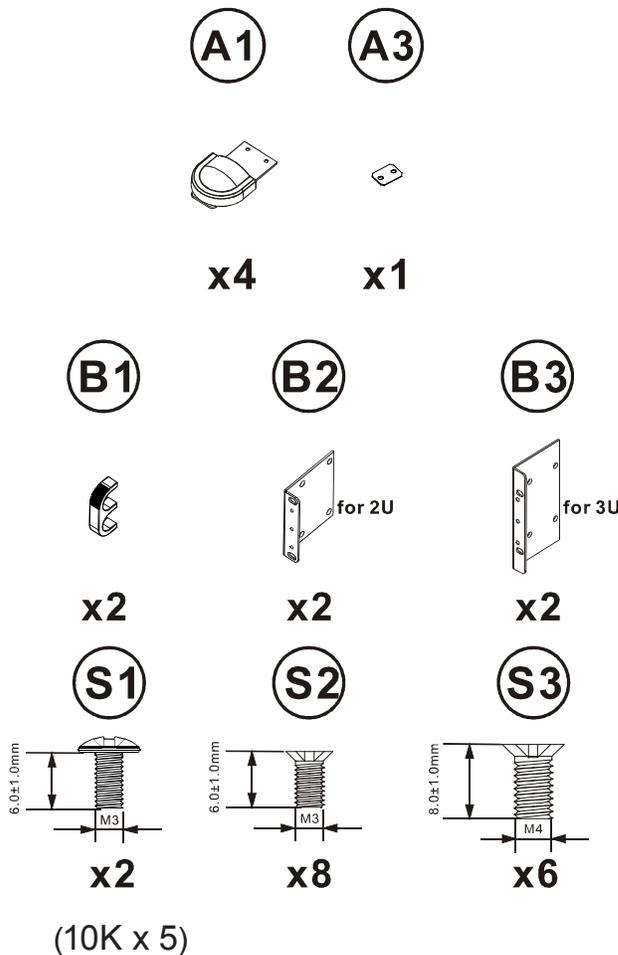
The packaging is recyclable; save it for reuse or dispose of it properly.

Remove the UPS from the cardboard box. Check that the following standard contents are included:

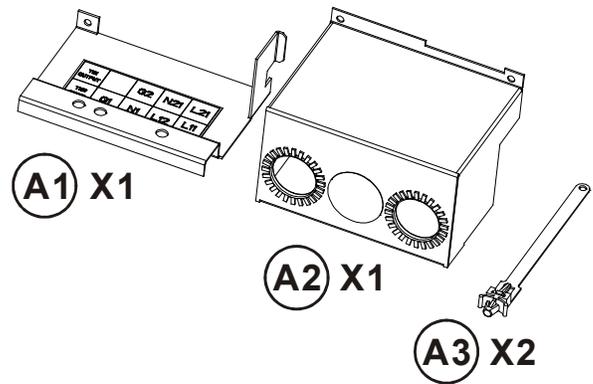
- One (1) user manual
- UPS communication software CD with RS232 cable
- Accessories shown below for Continuity 6K or Continuity 10K model
- Additional 1 piece of wire for a UPS with dual input but no isolation transformer (#8 for 6kVA and #6 for 10kVA).

(Note: Wire is used at the input/output terminal block of the UPS.

All Continuity models



Continuity 10K only



3.2 Selecting Installation Position

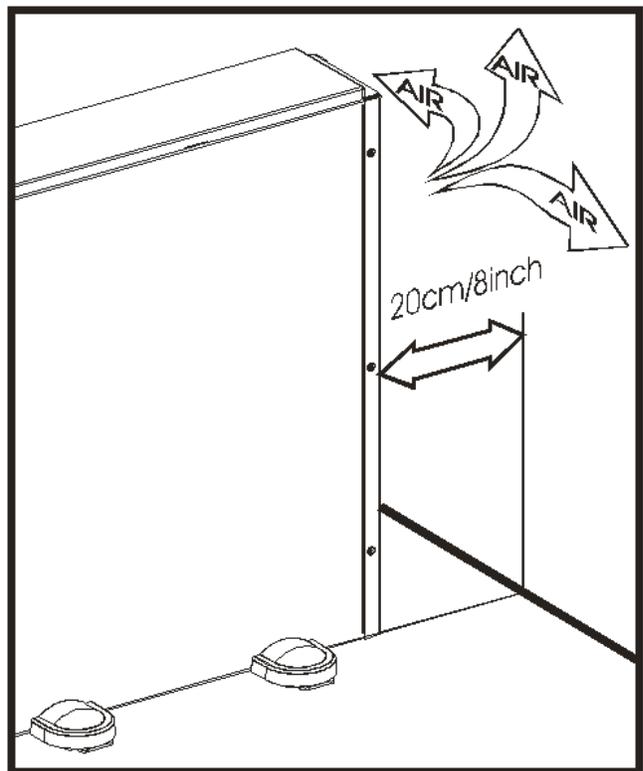
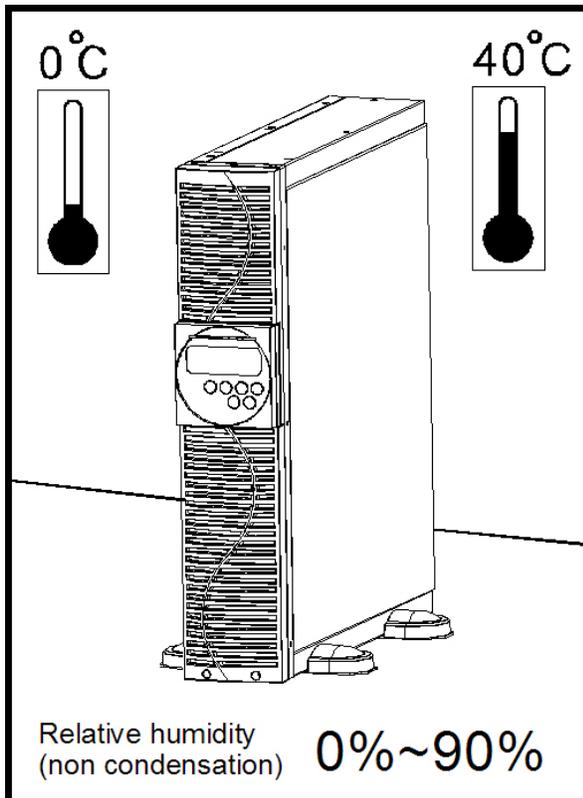


WARNING!

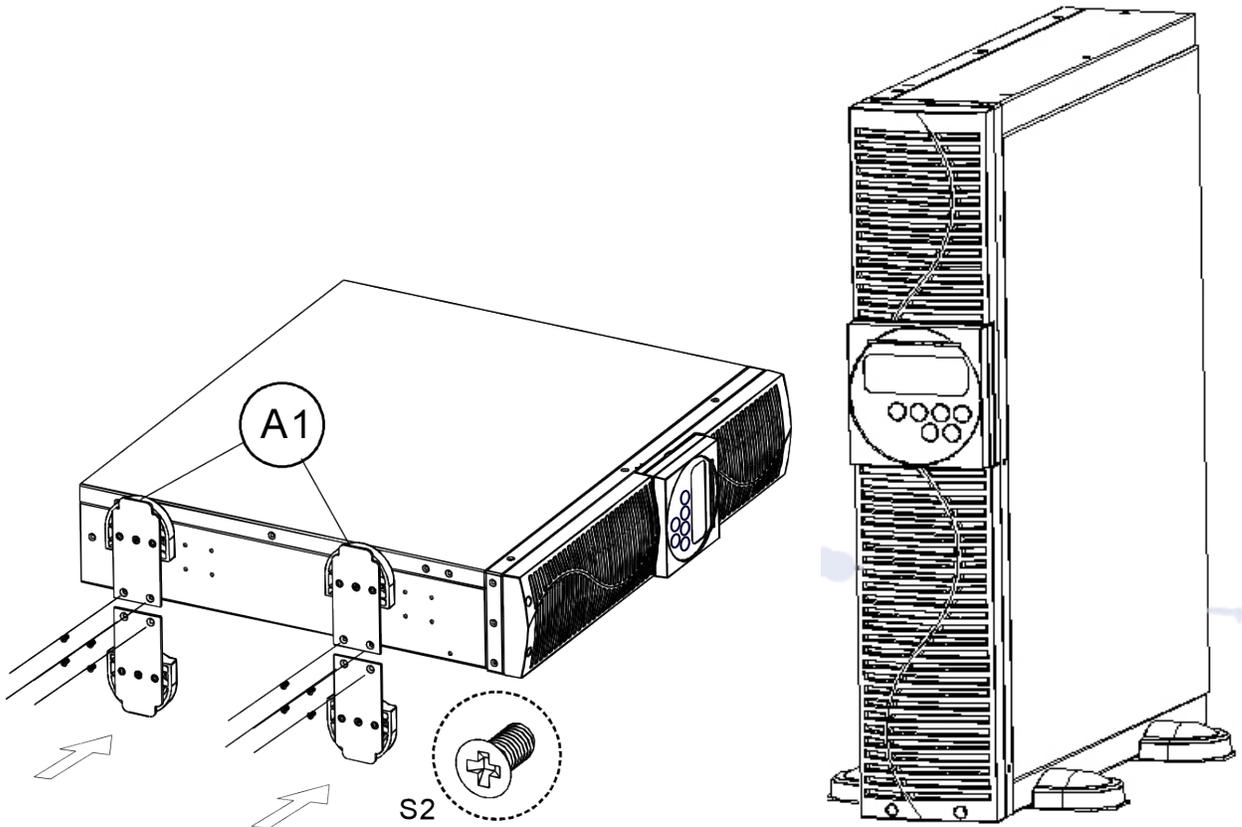
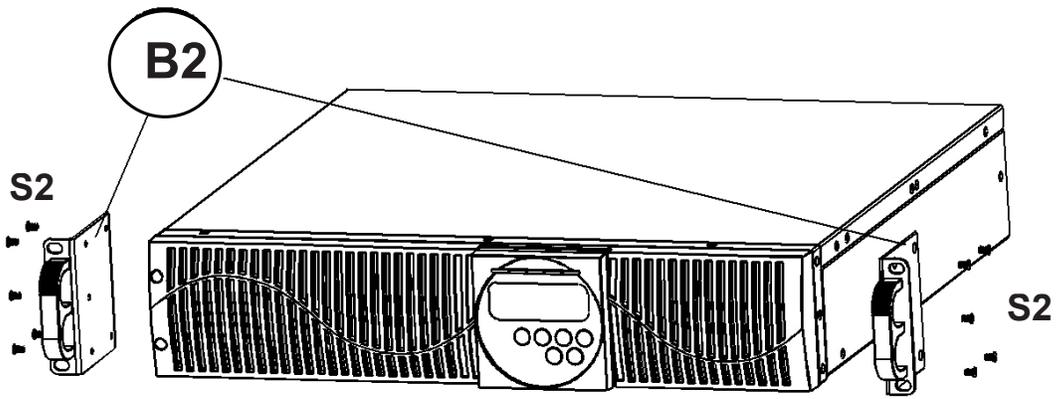
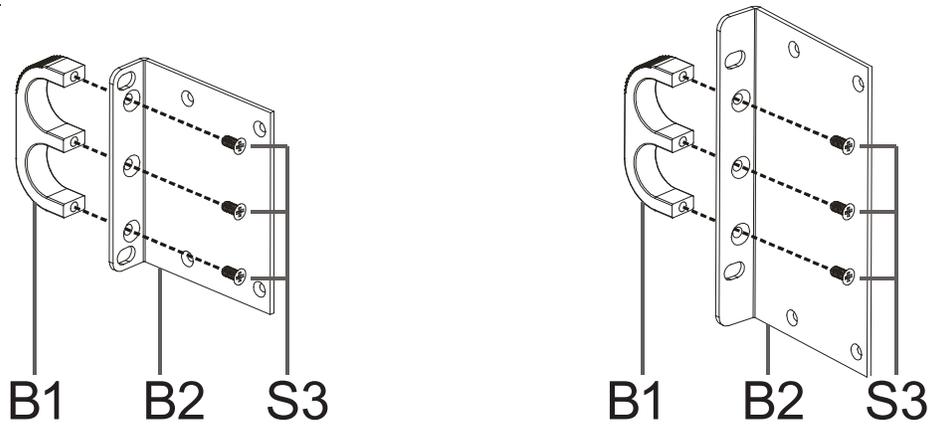
The UPS is heavy. Select a location that is structurally strong enough to withstand the UPS weight.

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

1. Ensure that there is a minimum of 30 cm (12 inches) of clearance behind 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 that the ambient temperature and humidity are within the specified limits.
4. Do not place the UPS in a dusty or corrosive environment or near flammable objects.
5. This UPS is not designed for outdoor use.



3.3 Installation of the Accessory kits



3.4 Terminal Block Wiring

Continuity 6K model

OUTPUT			INPUT		
G2	N22	L21	G1	N1	L12
L21-N22: UPS OUTPUT G2 : OUTPUT EARTH GROUND			L12-N1: UTILITY INPUT G1 : INPUT EARTH GROUND		

Continuity 10K model

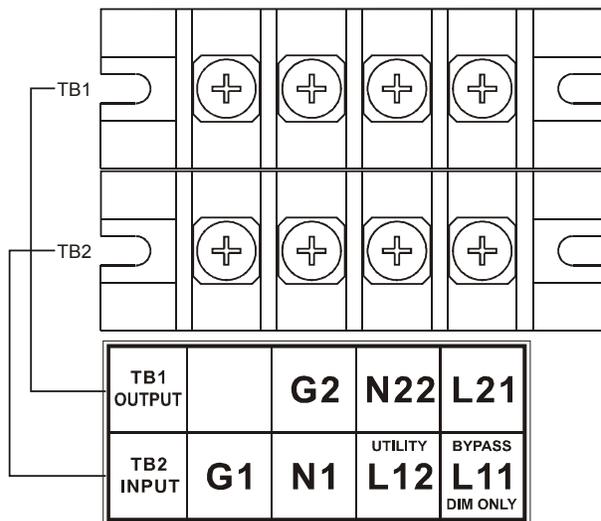


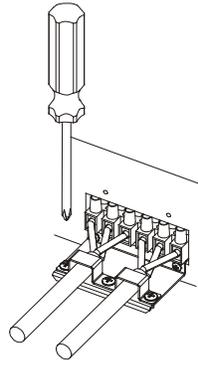
Figure 2 — 1-phase terminal block wiring

L11-N1:	Terminals for bypass input that provides power to the loads when the UPS is working in the bypass mode.
L12-N1	Terminals for the utility input that provides power to the loads when the UPS is in the Utility mode.
G1:	Terminal for the UPS input ground.
L21 ~ N22:	Terminals for the UPS output.
G2:	Terminal for the UPS output ground.

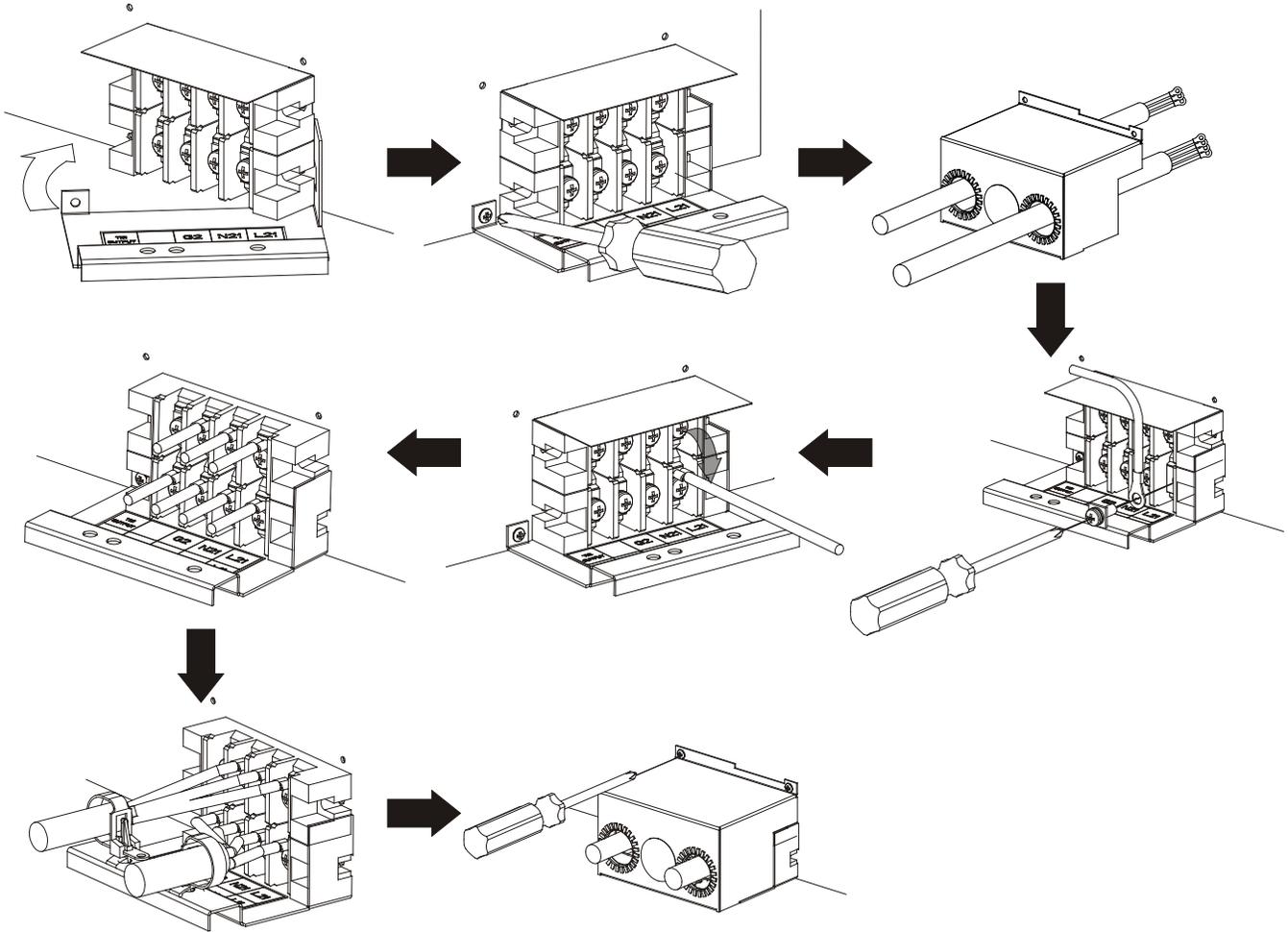
Remarks:

- The maximum output current for each terminal is 30 Amps for the 6 kVA model and 50 Amps for the 10 kVA model.
- If the UPS is a DIM (dual input mode) type whose utility and bypass sources are the same, L11 and L12 must to be shorted for 1-phase input models.
- If the UPS is a SIM (single input mode) type, only the AC source can be hooked up to the UPS via the L12-N1 terminal for a 1-phase input model.
- Use cable ties to secure the cables.

Continuity 6K model



Continuity 10K model



Refer to the table below for input current, output current, and recommended conductors specifications:

- AC input and output (75°C minimum copper wire)

Model	Maximum current	Conductor section	Torque
Continuity 6K	33 A	AWG #8	11 lb-in
Continuity 10K	54.3 A	AWG #6	23 in-lb

- Battery input

Model	Maximum current	Conductor section
Continuity 6K	25 A	AWG #8
Continuity 10K	41 A	AWG #6

3.5 Operation Test and Installation Instruction

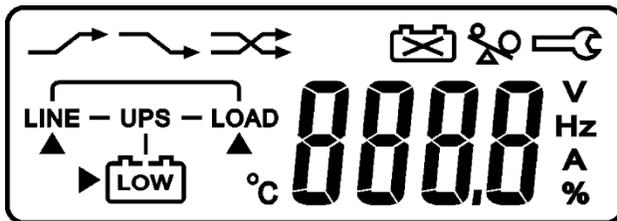
3.5.1 Start Up in Normal Mode

1. Open the terminal block cover on the rear panel (refer to Section 3.4). Make sure the grounding is properly connected.
2. Make sure the utility breaker, UPS utility breaker, and Bypass breaker are in the **Off** position.
3. Make sure the utility voltage is within the allowable input voltage range of the UPS.
4. Connect the utility power separately to the terminal blocks of the UPS utility input and the bypass input.
5. Switch on the distribution panel breaker and the UPS utility and bypass input breakers.
6. The UPS starts up.

The green $\infty 1$ and $\infty 2$ LEDs illuminate indicating that the utility and bypass inputs are normal. The LCD display, with parallel function, scrolls from Screen A1 to Screen B. Otherwise the LCD display scrolls from Screen A2 to Screen B.

7. The UPS is in the bypass mode and automatically runs a self-test. If no fault messages appear, the pre-startup of the UPS has been successful and the charger starts charging the batteries.

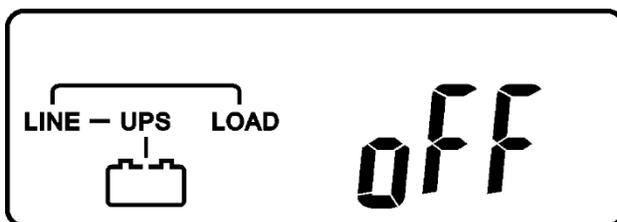
Screen A1



Screen A2

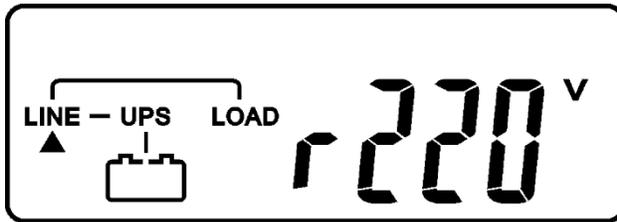


Screen B



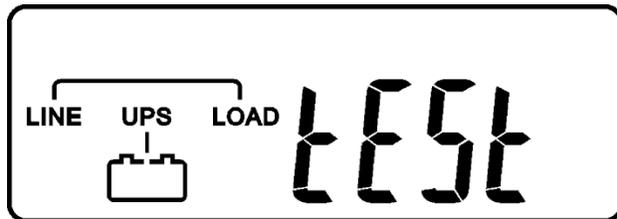
- Press and hold the UPS On  button for approximately 3 seconds. The buzzer sounds twice and the LCD display scrolls from Screen B to Screen C.

Screen C



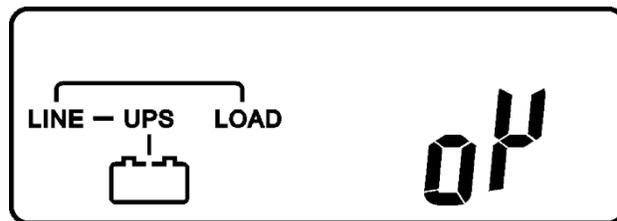
- The UPS is in self-test mode again. The LCD display scrolls from Screen C to Screen D and remains in the battery mode for approximately 4 seconds. The display scrolls from Screen E1 to Screen F if the self-test is successful.

Screen D



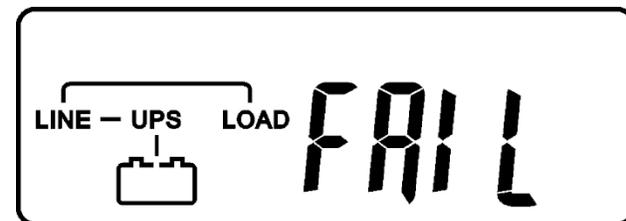
Test

Screen E1



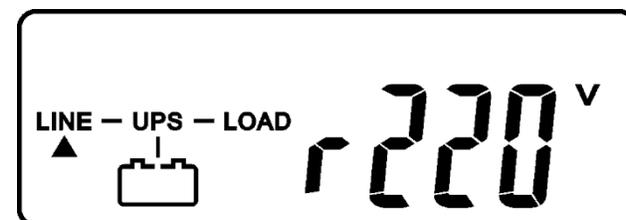
OK in self test

Screen E2



If the self-test fails, the LCD display scrolls from Screen D to Screen E2. An error code or status is shown on the screen

Screen F



220 VAC in utility input

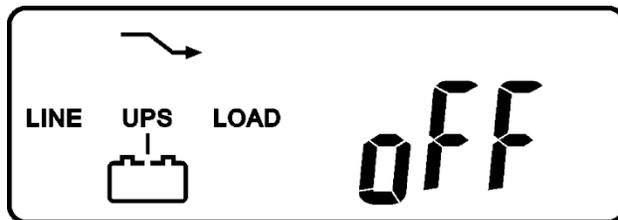
- The UPS start-up operation is now complete. Charge the batteries for at least 8 hours to ensure they are fully charged.

3.5.2 Start-up in Battery Mode (Cold Start)

1. Make sure the UPS has at least 1 set (20 pcs) of 12 V / 7 Ah batteries installed.
2. Press and hold the UPS On  button for approximately 5 seconds. The buzzer sounds twice. The LCD display scrolls from Screen A to Screen G.
3. Press and hold the UPS On  button again for about 3 seconds until the LCD display scrolls from Screen G to Screen H. The UPS is in the self-test mode and can supply power to the output after about a minute. The LCD display will scroll to Screen I.

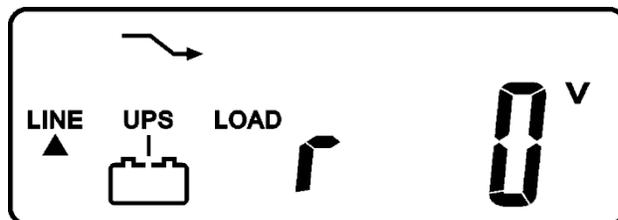
If a failure occurs within 15 seconds of pushing the UPS On button, the UPS will automatically switch off.

Screen G



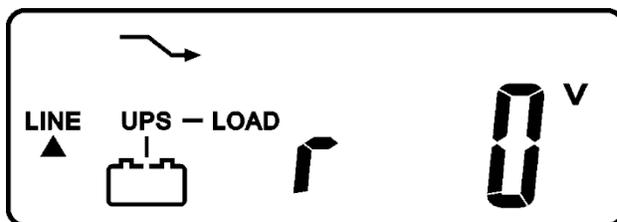
Off means the UPS pre-start has been successful.

Screen H1



Utility input is 0 and abnormal.

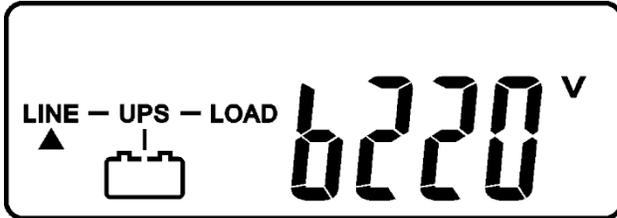
Screen H2



3.5.3 Check Measured Values & Figures detected by UPS

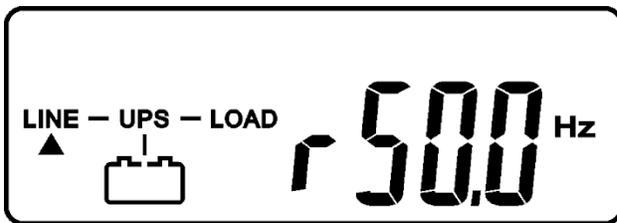
Use the \uparrow and \downarrow keys to check the measured values and figures detected by the UPS. The LCD display will scroll through the following screens: Screen C (Voltage from Utility Input) \rightarrow Screen I (Voltage from Bypass Input) \rightarrow Screen J (Frequency from Utility Input) \rightarrow Screen K (Frequency from Bypass Input) \rightarrow Screen L (UPS Output Voltage) \rightarrow Screen M (UPS Output Frequency) \rightarrow Screen N (UPS Output Load %) \rightarrow Screen O (UPS Battery Voltage) \rightarrow Screen P (UPS Inner Temperature).

Screen I



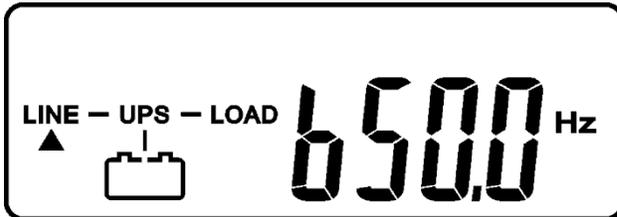
Voltage from bypass input

Screen J



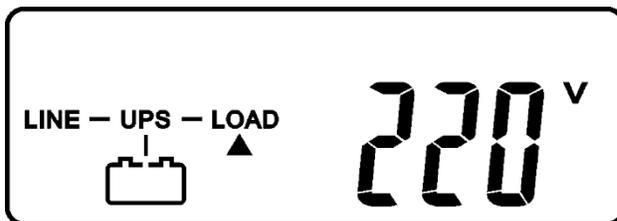
Frequency from utility input.

Screen K



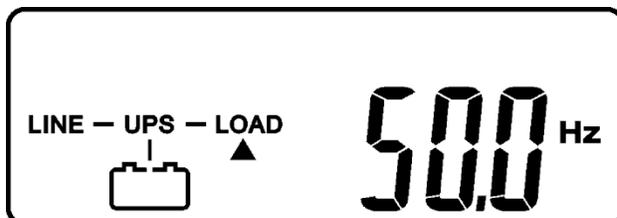
Frequency from bypass input.

Screen L



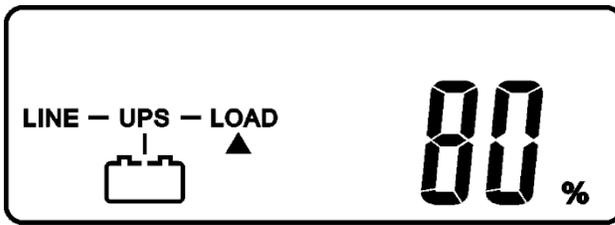
UPS output voltage.

Screen M



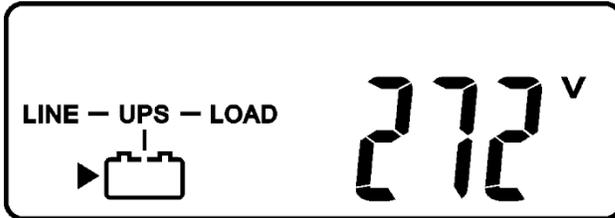
UPS output frequency.

Screen N



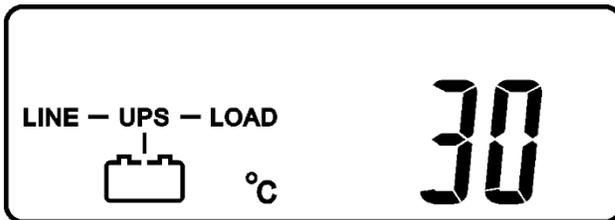
Output load level (%).

Screen O



Battery voltage.

Screen P

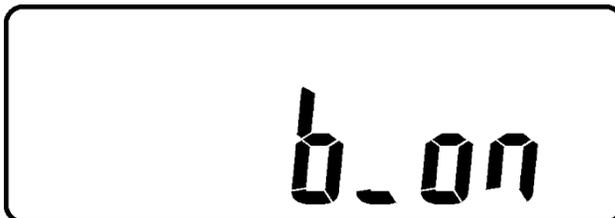


UPS inner temperature.

3.5.4 UPS Default Data and Special Function Execution

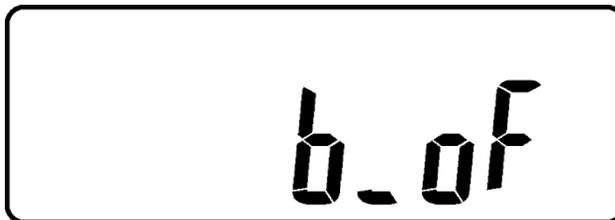
1. To run a self test or check default data, press the Special function  key to scroll to Screen Q1.

Screen Q1



Buzzer on.

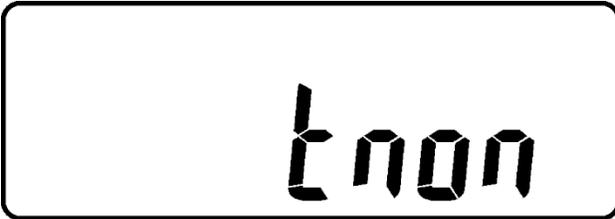
Screen Q2



Buzzer off.

2. Press the  key to scroll through the UPS settings. The LCD display will sequentially show Screen Q1 (buzzer) → Screen R1 (self-test) → Screen S1 (bypass voltage ranges) → Screen T (output frequency synchronization range) → Screen U (Inverter output voltage) → Screen V1 (UPS operation mode) → Screen W (output voltage micro tune value) → Screen X (UPS Id) → Screen Y (parallel function status).

Screen R1



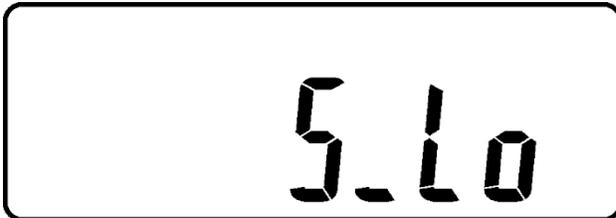
Self-test is NOT on.

Screen R2



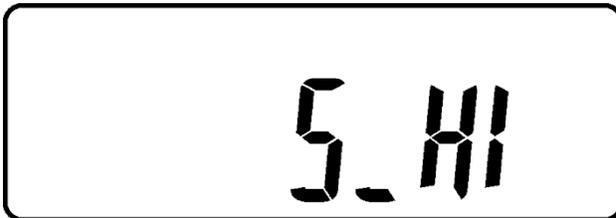
Self-test is on.

Screen S1



Bypass voltage is adjusted to a narrow range.

Screen S2



Bypass voltage is adjusted to a wider range.

Screen T



Frequency range is +/-3 Hz.

Screen U



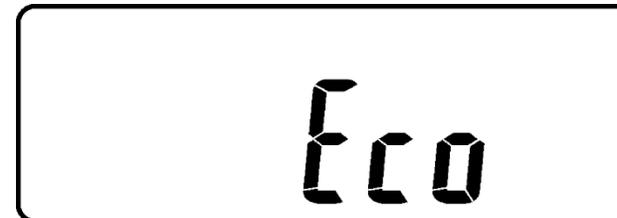
Inverter output voltage.

Screen V1



UPS is in normal mode.

Screen V2



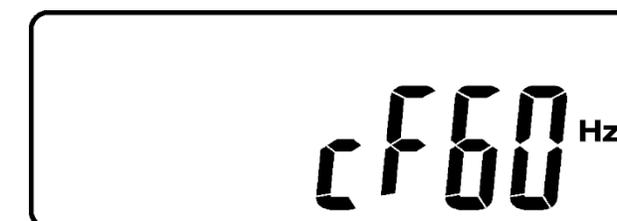
UPS is operated in Eco mode.

Screen V3



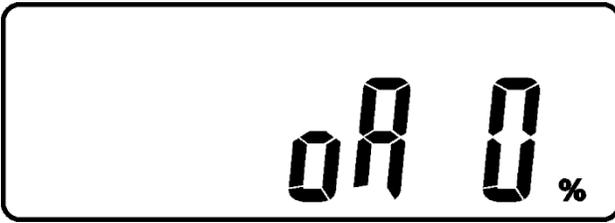
UPS is operated in CVCF 50 Hz mode.

Screen V4



UPS is operated in CVCF 60 Hz mode.

Screen W



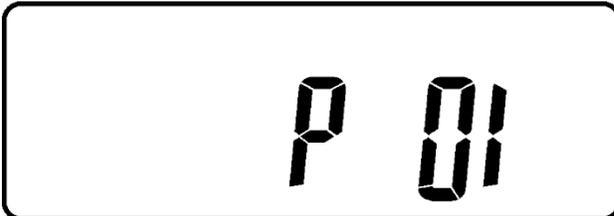
Output voltage adjustment %
from 0% to 3% or -0% to -3%.

Screen X



Identification number.

Screen Y



UPS is in the Number 1
parallel system.

3. Press the  key to execute special functions. The functions include Screen Q1 (buzzer ON), Screen Q2, alarm silence for UPS warning (buzzer OFF), Screen R1 (self-test OFF), Screen R2 (self-test ON). The UPS will execute a battery test for 10 seconds. Screen E1 will be displayed if the self-test is successful. If the self-test fails, Screen E2 and an error message will be displayed.

3.5.5 UPS Default Settings and Alternatives

1. Press and hold the OFF  button for 5 seconds. The inverter output switches off and the output load is then supplied by the bypass loop. The LCD displays Screen B.
2. Simultaneously press and hold the ON  button and the Scroll Down  key for approximately 3 seconds. The buzzer sounds twice and the LCD display shows Screen Q1.

The UPS is now in setup mode. Except for the buzzer (screens Q1 and Q2) and self-test (screens R1 and R2) settings, all default settings can be changed by pressing the Scroll Up  key.

3. Screens S1 and S2 show the acceptable range for the input bypass voltage. Acceptable values are 184 to 260 VAC or 195 to 260 VAC.
4. Screen T shows the bypass frequency range of the inverter output. Acceptable values are ± 3 Hz or ± 1 Hz.
5. Screen U shows acceptable inverter output voltages. The voltage can be set to 200, 208, 220, 230, or 240 VAC.
6. Screen V1, V2, V3 and V4 show the operation modes of the UPS. The available modes are: (1) Online, (2) Eco (Economic), (3) Fixed 50Hz Output, and (4) Fixed 60Hz Output.
7. Screen W shows the inverter output settings, which can be set to 0%, +1%, -1%, +2%, -2%, +3%, or -3%.
8. Screen X shows the address and position of the UPS when the UPS is in the parallel mode. The values can be set from 1st to 4th. The value must be set to 1st if the UPS is not in parallel.
9. Screen Y shows the parallel function status. P 01 means the parallel function disabled and P 02 means the parallel function is enabled.
10. When all the changes have been completed, scroll to Screen Z and press Enter  to save all the changes. The LCD display will scroll to Screen AA, which means that the setting changes have been completed. To cancel all the changes, press OFF  for 5 seconds. The LCD display will scroll directly to Screen AA, indicating that all the changes are invalid.

Screen Z



Press Enter to save data.

Screen AA



UPS is locked.

11. Switch the UPS OFF and ON (with utility input breaker CB1—Figure 1) to exit Configuration mode after all settings are complete.
12. Your setting changes are now complete.

3.5.6 Troubleshooting a UPS that is Off for an Unknown Reasons

1. If a serious abnormal condition has occurred, the UPS will lock into the OFF position. The LCD displays Screen AA and an error message.
2. After 3 seconds, all messages are blocked except the bypass indicators: LED  and LCD . If the utility voltage is outside the normal range after the UPS is locked, the LED  will extinguish and the LCD  will be shown on the LCD.
3. Unlock the UPS as follows:
 - a. Check all the recorded error messages.
 - b. Check the table in Section 2.2 to troubleshoot the problem. If this is unsuccessful, consult your local distributor for service.
 - c. Press and hold the OFF  button for 5 seconds. The buzzer sounds twice.
 - d. Switch off the utility input power breaker.
 - e. The UPS is now unlocked, but you may want to contact your local distributor to make sure the underlying fault has been solved.

3.5.7 Shutting Off the UPS

1. Press and hold the OFF  button for 5 seconds. The inverter output switches off. The output load is then supplied via the bypass loop. The LCD displays Screen B.
2. Switch off the utility input power breaker and the bypass input power breaker.
3. The UPS is now completely shut off.

3.5.8 Maintenance Bypass Mode - for Optional Maintenance Bypass Switch

The maintenance bypass mode is for UPS maintenance only. Only authorized technicians should implement this procedure. Your warranty will be void if the UPS is damaged by unauthorized repairs.



CAUTION!

Complete Step 1 before proceeding to Step 2. Otherwise the UPS will go through a 10 second warning procedure to alert you that the procedure is not being followed, which can damage the UPS because of the uncertain utility status. The UPS will switch back to inverter mode immediately if the CAM switch is turned back to the UPS position.

1. Press and hold the OFF  button for 5 seconds. The LCD displays Screen B and the UPS output is in the bypass mode.
2. Remove the cover of the maintenance bypass switch (CAM switch). Turn the CAM switch to the Bypass mode. The upper right-hand corner of the LCD display screen shows .
3. Switch off the utility input power breaker and the bypass input power breaker (see Figure 1). The UPS can now be serviced or repaired.
4. When the repair is complete, switch on the utility input power breaker and the bypass input power breaker.
5. The UPS starts up in the bypass mode and automatically runs a self-test. If no fault messages appear, the pre-startup of the UPS has been successful and the charger starts charging the batteries.
6. Turn the CAM switch back to the INV/UPS position and replace the maintenance bypass switch cover.
7. Complete Steps 8 and 9 of section 3.5.1. The UPS start-up operation is now complete.

4. Troubleshooting Guide

Check the following if the UPS malfunctions during operation:

- Are the input and output cables correctly connected?
- Is the utility input voltage within the allowable limits?

If the problems or symptoms persist, follow the instructions in the table below. If necessary, contact your local distributor for help.

Problem	Check Items	Solution
UPS Red Fault LED illuminates.	Er05,  and 	Check that the batteries are properly connected, re-charge the batteries for 8 hours, and then check if the UPS backs up normally. If necessary, contact your local dealer for assistance.
	Er06, Er10, Er12, Er28, 	If the CB3 is tripped, switch off the UPS completely. Keep the CAM switch at the INV position and then press CB3. Remove one non-critical UPS output load. If the coating of the AC power cord is damaged, replace it with a new one.
	EPO	Remove the short circuit that occurred at the EPO terminal.
	Er11, Er33	Remove objects that block the ventilation holes.
	Er14	Check that the cooling fans on the rear panel are working normally.
	Er15	Make sure the UPS is in the normal mode. If it is running in the CVCF mode, switch the UPS off and then on again.
	Er16, Er27	All of the settings except the ID Number must be the same in the parallel UPS. Refer to chapter 3.5.5 to reset the values.
	Er21	Reconnect the RJ-45 wire or set the UPS to ID=1.
	Er24	When the UPS is on the CVCF mode, do not activate the bypass input. Switch off the UPS, bypass the input, and restart the UPS.
	Other error codes	Consult your local dealer for assistance.
UPS fails to provide battery backup or the back up time is shorter than its design performance.		If the backup time remains non-satisfactory after 4 hours of charging, contact your local dealer for battery replacements.
UPS locks itself and cannot be turned off.		Refer to chapter 3.5.6 to troubleshoot the problem. If necessary, contact your local dealer for assistance.

5. Bundled Software Installation Guide

5.1 Hardware Installation

1. Connect the male connector of RS232 cable to the UPS communication port.
2. Connect the female connector of the RS232 cable to a dedicated RS232 port on the computer.
3. For optional interface card installation, refer to Chapter 6.

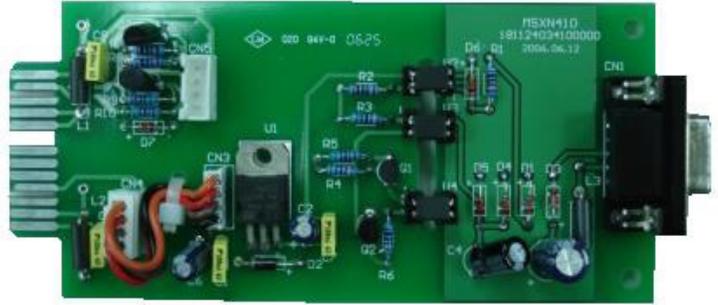
5.2 Software Installation

Refer to the software user's manual on the CD for installation.

6. Optional Communication Cards

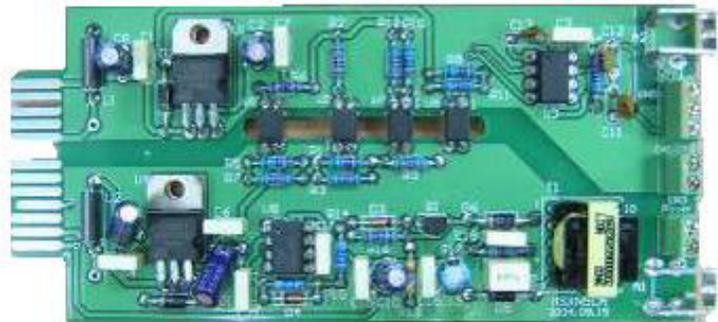
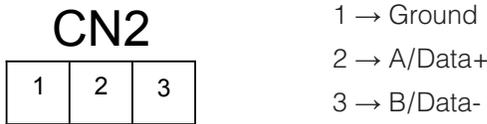
6.1 R2E (2nd RS-232) Card

- CN1 is for RS232 DB9.
- For the communication protocol, refer to section 2.6.1 on page 11.
- Installation position → Slot 1 (CHA - CN4) or Slot 2 (CHB - CN5).



6.3 RSE (RS-485) Card

- CN1 is for the function of the terminal resistor. Short Pin 1-2 to enable the function and short Pin 2-3 to disable it.
- CN2 for RS485 and CN3 for remote power
- Specification:

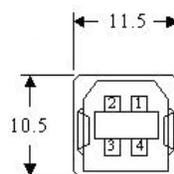


- Installation position → Slot 1

6.2 USE (USB) Card

- CN1 for USB.
- Specification:
 - Comply with USB version 1.0, 1.5 Mbps
 - Comply with USB HID Version 1.0.
 - The pin assignments of the USE card:

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



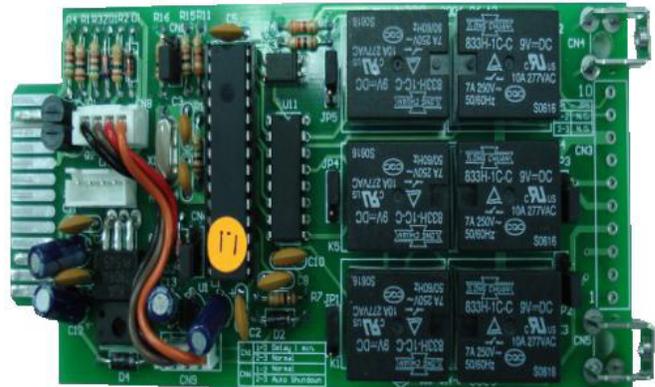
- Installation position → Slot 1 (CHA - CN3) or Slot 2 (CHB - CN4)

6.4 DCE (Dry Contact) -B Card

6.4.1 The 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 normal (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.
 - The shutdown function is activated when +6 to +25 Vdc is applied between Pin 9 and Pin 10 for 5 seconds.
 - The capacity of each relay contact is 40 Vdc / 25 mA.
 - Installation position → optional slot.
 - Flexible signal output for NC (normally closed) or NO (normally open) contact is provided by shorting Pin 1-2 or Pin 2-3 from JP 1-5.
 - The shutdown function is activated 1 minute after a power outage occurs if Pin 1-2 of both CN1 and CN6 are shorted by a cap. The shutdown function can also be activated by Pin 9-10 of CN3 if Pin 2-3 of both CN1 and CN6 are shorted by a cap.
10. Shutdown UPS negative(-) signal.



6.5 SNMP Cards

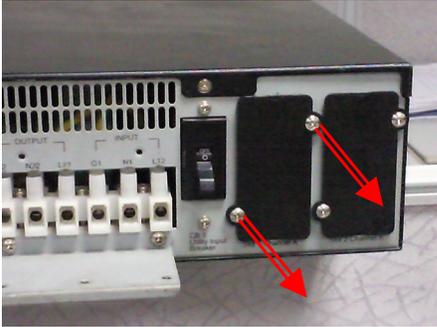
- For installation, refer to the user manual attached to the card.
- Installation position → Slot 2 (CHB).

Insert
to UPS



6.6 Interface Card Installation

Step 1



Step 2



Step 3



7. Specifications

Model	Continuity 6K	Continuity 10K
Input		
Voltage range (nominal)	208/240 (UL), 208-240 (CE) Vac	
Frequency (nominal)	50/60 Hz	
Phase/wire	Single, Line + Neutral + Ground	
Power factor	Up to 0.99 at 100% linear load	
Current THD (100% linear load)	< 6%	
Output		
Voltage window	208/220/230/240 VAC Selectable	
Voltage adjustment	±0%; ±1%; ±2%; ±3%	
Voltage regulation	±2%	
Capacity	5400W (6000 VA)	8550W (9500 VA)
Rated power factor	0.9 lagging	
Wave form	Sine Wave, THD <3% (no load to full load)	
Frequency stability	±0.2% (free running)	
Frequency regulation	±1Hz; ±3Hz	
Transfer time	0 ms	
Crest factor	3:1 acceptable	
Efficiency (AC to AC, normal)	Up to 91%	
Efficiency (AC to AC, ECO)	Up to 97%	Up to 93%
Autonomy	≥ 6 min.	≥ 4 min.
DC start	Yes	
Battery		
Type	Sealed lead acid maintenance free 12V / 7Ah	Sealed lead acid maintenance free 12V / 9Ah
Quantity	20 pcs	
Voltage	240 VDC	
Recharge Time	4 hours to 90%	
Display		
Status on LED + LCD	Line Mode, Backup Mode, ECO Mode, Bypass Supply, Battery Low, Battery Bad/ Disconnect, Overload, Transferring with interruption, and UPS Fault	
Readings on LCD	Input Voltage, Input Frequency, Output Voltage, Output Frequency, Load Percentage, Battery Voltage, and Inner Temperature.	
Self-diagnostics	Upon power-up, front panel setting and software control, 24-hour routine checking	
Alarms		
Audible and visual	Line Failure, Battery Low, Transfer to Bypass, System Fault Conditions	

Model		Continuity 6K	Continuity 10K
Physical			
Dimensions (W x D x H) mm		440 x 680 x 88	440 x 680 x 132
Input/Output Connection		Hardwire	
External battery connection		Plug-in & Play	
Net weight (kg), without isolation transformer*		24 kg	26 kg
Heat dissipation	Without isolated transformer at full linear load	< 450W	< 600 W
Leakage current		< 3 mA at full load	
Markst		CE, cUL, UL	

* Isolation transformer: net 53kgs for 6000VA, 10000VA

8. Warranty and Service Information

Technical Support

Free Technical Support 24/7/365 is part of the Alpha customer satisfaction commitment. The phone numbers below can also be used to access a wide range of service solutions both at your premise and at the Alpha facility nearest you.

**In Canada and the USA, call toll free 1-888-462-7487 24 hours a day, seven days a week.
Customers outside Canada and the USA, call +1-604-436-5547.**

Warranty

Alpha Technologies Ltd. warrants its equipment to be free of manufacturing defects in material and workmanship, for a period of 36 months from the date of shipment from the factory. The warranty provides for repairing, replacing or issuing credit (at Alpha's discretion) for equipment shipped by it and returned by the customer to the factory or other authorized location during the warranty period.

There are limitations to this warranty coverage. The warranty does not provide to the customer or other parties any remedies other than the above. It does not provide coverage for any loss of profits, loss of use, costs for removal or installation of defective equipment, damages or consequential damages based upon equipment failure during or after the warranty period. No other obligations are expressed or implied. Warranty also does not cover damage or equipment failure due to cause(s) external to the unit including, but not limited to, environmental conditions, water damage, power surges or any other external influence.

The customer is responsible for all shipping and handling charges. Where products are covered under warranty Alpha will pay the cost of shipping the repaired or replacement unit back to the customer.

Battery Warranty

Battery warranty provided by Alpha is a three year full replacement warranty with a pro-rated warranty for the following two years. Pro rated warranty provides a credit applicable toward the purchase of new batteries from Alpha. The credit is calculated as the purchase price multiplied by the percentage of the battery life that was not available (in months). Battery warranty coverage is lost where the battery charge is not maintained for 6 months. Contact your Alpha sales representative or the Technical Support team at the above number to understand your entitlements under Battery Warranty.

Extended Warranty

The terms of warranty can be extended in time by purchase of an Extended Warranty. Warranty extensions are available on a per year basis and can be purchased during the initial warranty period.

Return of Material

Please contact Technical Support at the number above to obtain a Service Repair Order (or Return Material Authorization) number BEFORE sending material back. This will ensure that your service needs are handled promptly and efficiently.

On Site Services and Service Plans

A wide range of services are available at your location including installation, commissioning, preventative maintenance, remedial maintenance, battery replacement, battery delivery, etc. Preventative maintenance is recommended for Alpha products at least once per year. Customers can arrange to have these services provided automatically with one annual payment.

Service Centers

For a list of service centers, visit:

<http://www.alpha.ca/>

Appendix A Transformer Installation

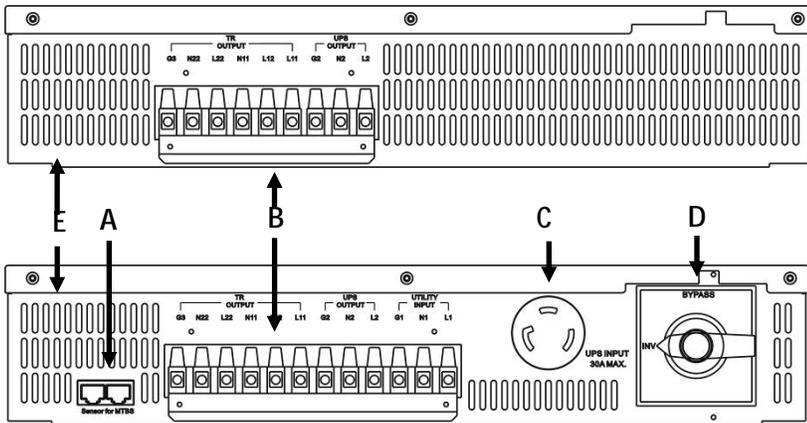
A.1. Important Safety Instructions

- There is a tiny leakage current from the Transformer Module, so make sure to it is correctly grounded before connecting to the UPS, Utility or Output Device.
- To eliminate any overheating of the unit, keep all ventilation openings free from obstruction, and do not store anything on top of the unit. Keep the unit 30 cm away from the wall.
- Install in an environment with 5m³ (176.6 ft³) airflow per hour.

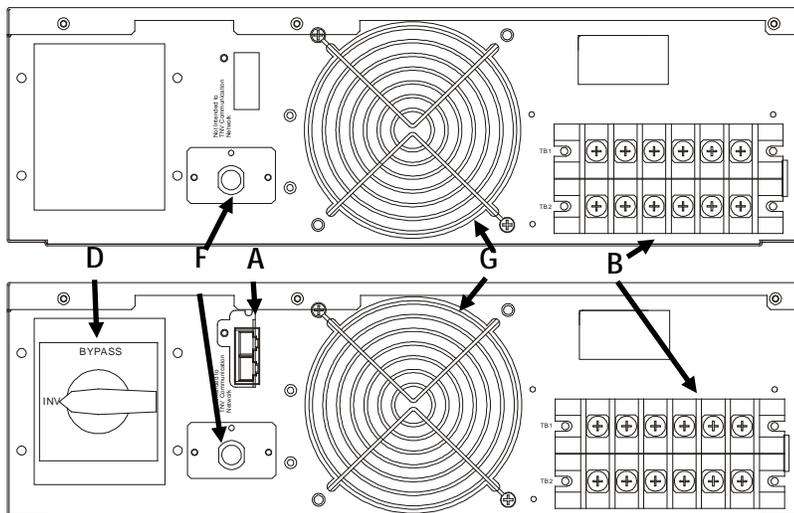
A.2. Rear Panel Description

A	RJ-45 Communication port	F	Thermal breaker for the protection of the load in an abnormal condition: CB3
B	Input & Output Terminal Block	G	Cooling Fan
C	For UPS Input		
D	Maintenance Bypass Switch (optional)		
E	Air Ventilation Openings		

6K



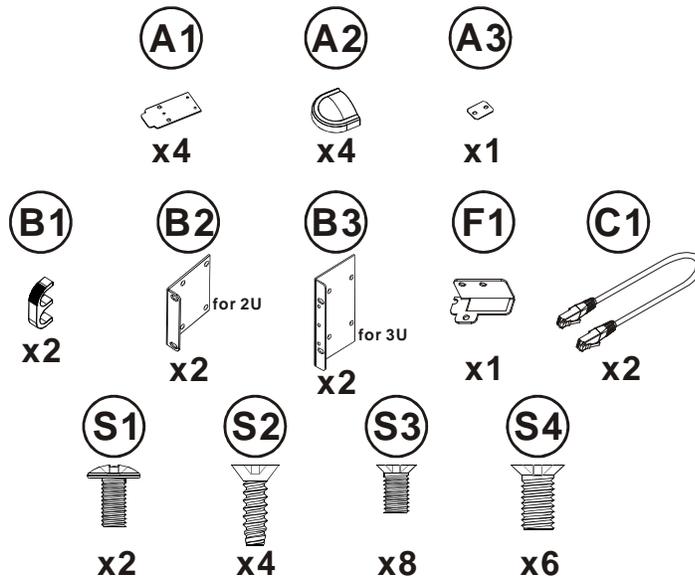
10K



A.3. Unpacking

Check for the following parts:

- Accessory kit parts:

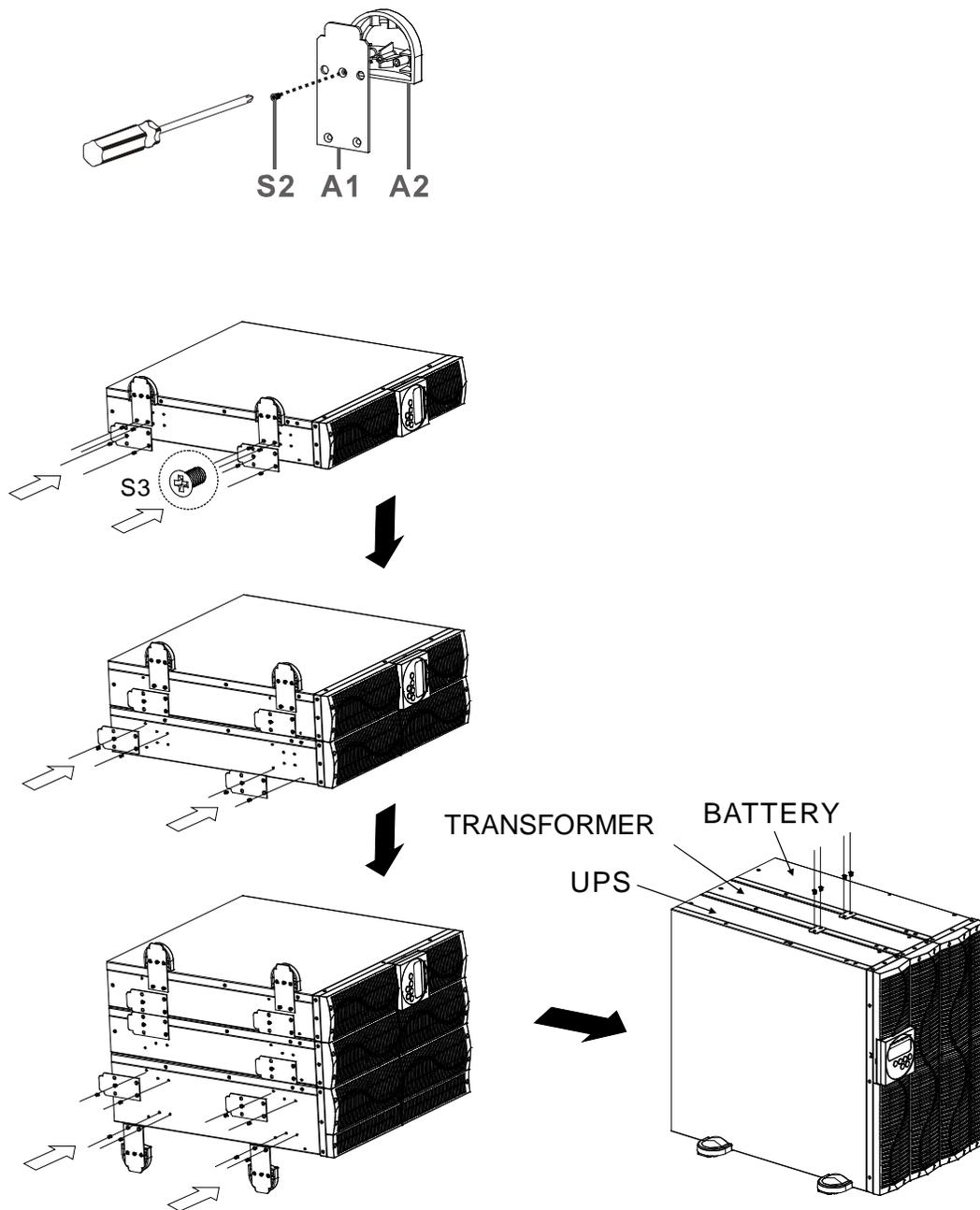


(C1 & F1 are for a unit with a Maintenance Bypass Switch)

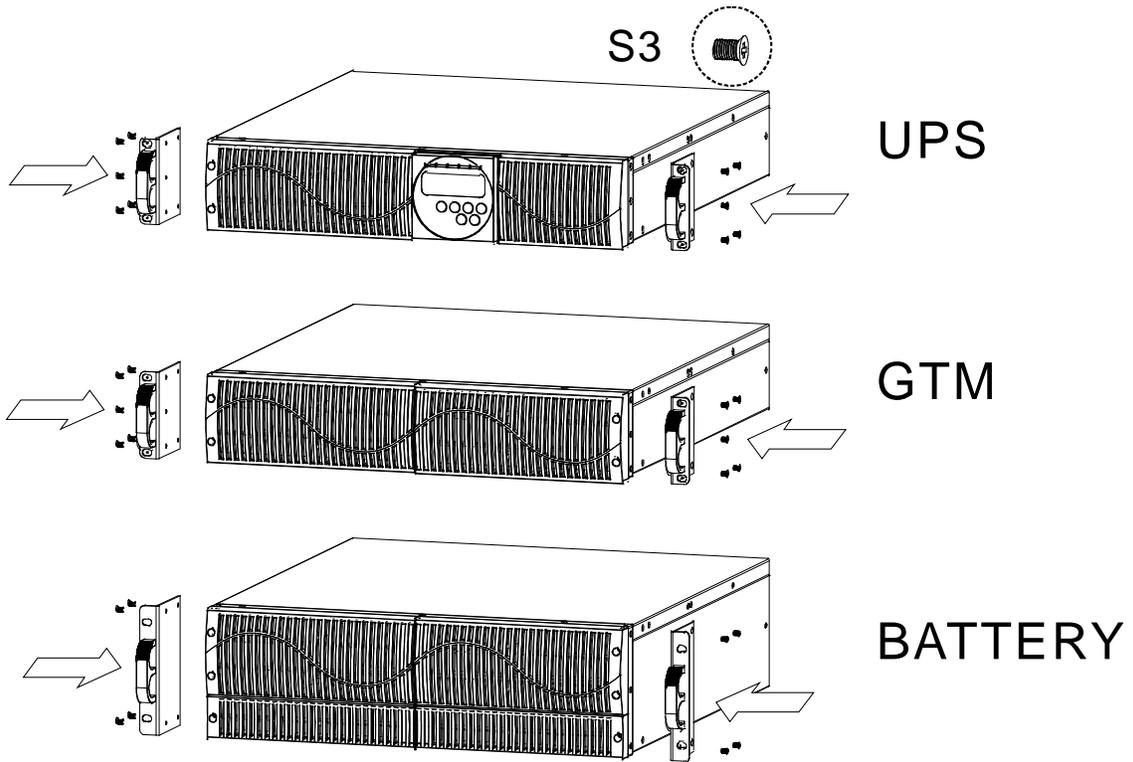
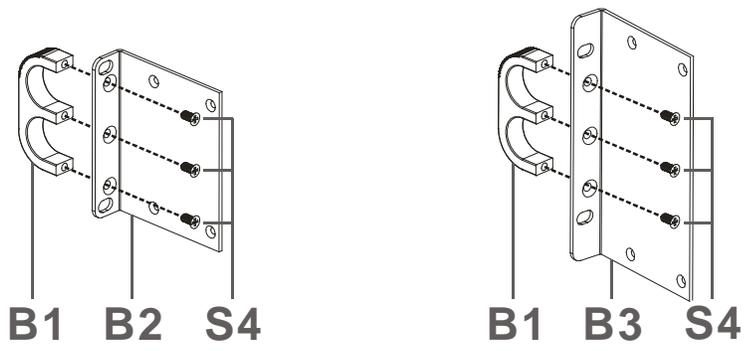
- Cables for a unit with a Maintenance Bypass switch:
 - 12" NEMA L6-30P cable x 2 pcs
 - 12" NEMA L6-30R cable x 1 pc
- Cables for a unit without a Maintenance Bypass switch:
 - 10 AWG, 105°C cable x 3pcs

A.4. Installation

A.4.1. Installation as a Tower Unit



A.4.2. Installation as a Rack Unit



A.5. Terminal Block Description for Input, Output

A.5.1. 6K

TR OUTPUT						UPS OUTPUT			UTILITY INPUT		
G3	N22	L22	N11	L12	L11	G2	N2	L2	G1	N1	L1
L11,L12,N11,L22,N22: GTM CONFIGURATION OUTPUT G3 : OUTPUT EARTH GROUND						L2-N2: UPS OUTPUT G2 : OUTPUT EARTH GROUND			L1-N1: UTILITY INPUT G1 : INPUT EARTH GROUND		

TR OUTPUT						UPS OUTPUT		
G3	N22	L22	N11	L12	L11	G2	N2	L2
L11,L12,N11,L22,N22: GTM CONFIGURATION OUTPUT G3 : OUTPUT EARTH GROUND						L2-N2: UPS OUTPUT G2 : OUTPUT EARTH GROUND		

A.5.2. 10K

TB1	TR OUTPUT					
	G3	N22	L22	N11	L12	L11
TB2	TO UPS OUTPUT			UTILITY INPUT		
	G2	N2	L2	G1	N1	L1

TB1	TR OUTPUT					
	G3	N22	L22	N11	L12	L11
TB2	TO UPS OUTPUT			N/A	N/A	N/A
	G2	N2	L2			

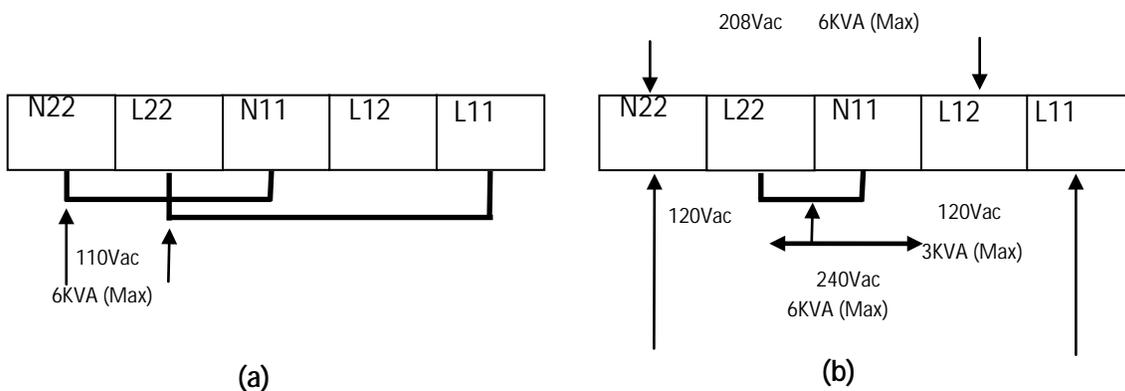
L1-N1 :	Utility Input
G1 :	Input Ground
L2、 N2 :	Connect to UPS Output Terminal
G2 :	Connect to UPS Output Ground Terminal
L11、 L12、 N11、 L22、 N22:	Output Terminals of the Unit
G3 :	Output Ground Terminals of the Unit

A.5.3. Output Wiring Description

The maximum output current for each terminal is 30A (6K) or 50A (10K).

When the wiring of the TR OUTPUT block corresponds to drawing (a) and the input of L2-N2 from the UPS OUTPUT block is 200Vac, 220Vac, 230Vac or 240Vac, the output voltage is 100Vac, 110Vac, 115Vac or 240Vac. If the input of L2-N2 from UPS OUTPUT block is 208Vac, the output is 120Vac.

When the wiring of the TR OUTPUT block corresponds to drawing (b) and the input of L2-N2 from the UPS OUTPUT block is 200Vac, 220Vac, 230Vac or 240Vac, the output voltage is 200/100Vac, 220/110Vac, 230/115Vac or 240/120Vac. If the input of L2-N2 from UPS OUTPUT block is 208Vac, the output voltage is 240Vac/208Vac/120Vac.



Appendix B Parallel System Installation

The Continuity 6K and 10K can be connected in parallel to provide N+1 redundancy with up to 3 units in parallel plus one redundant.

B.1. Important Safety Instructions

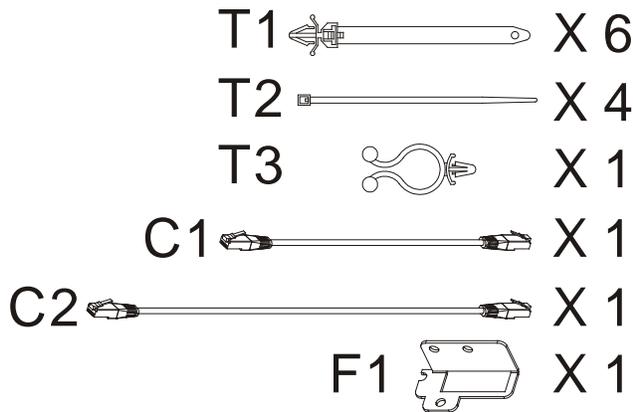
- Parallel function of the UPS can only be enabled in the Normal mode operation.
- Prior to a parallel installation, ensure the tolerance of the output voltage of each UPS at zero-load condition is less than 0.5Vac. Consult your authorized dealer if any of the UPS output voltage has a tolerance over 0.5Vac.
- Ensure the RJ45 communicating wire is connected securely during parallel mode to avoid damage to both the UPS and the output devices.
- Ensure the terminal resistors on the rear panel of the 2 units of UPS in parallel are set to the ON position. With 3 UPS units in parallel, only UPS 1 and 3 terminal resistors are set to ON. With 4 UPS units in parallel, only UPS 1 and 4 terminal resistors are set to ON.
- Note that only a UPS with the same rating and type can be installed in parallel. For instance, a UPS without a galvanic transformer cannot be connected in parallel with a UPS with a galvanic transformer. While installing these UPS, add a 40A/250VAC and 30A/250VAC NFB (Non-fuse Breaker) at the input and output of each UPS. The NFB prevents any potential hazard when the UPS is in the maintenance mode.

B.2. Preparation for Installation

B.2.1. Unpacking

Check for the following accessories:

- § 1 set of RJ-45 communication cables for parallel system (C1, C2)
- § 1 set of metal brackets (F1)
- § 1 set of cable ties (T1 or T2 and T3)



B.2.2. Selecting an Installation Position

Air flow within the unit is from the front to back. Select an installation position that has good ventilation with at least 30 cm clearance around the equipment.

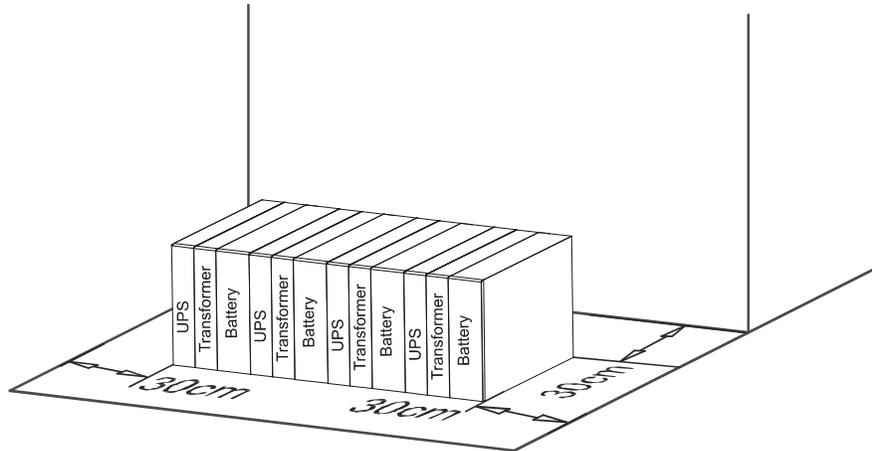


Figure 1 Installation position

B.2.3. Wiring

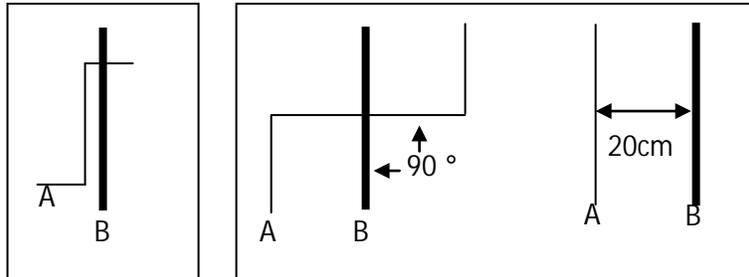
Refer to the following table for cable and breaker sizes:

Model	Maximum Current	Circuit Breaker	Wire Size
AC input and Output			
6KVA	33A	40A	AWG # 8
10KVA	54.3	63A	AWG # 6
Battery input			
6KVA	25A	30A	AWG # 10
10KVA	41	63A	AWG # 10

B.3. Installation

Take the following steps to minimize EMI when wiring:

1. Make sure the input and output cables and the battery cables are kept separate from each other to avoid unnecessary noise interference.
2. Keep the path of the communication cables (RJ45, RS232, RS485, USB, EPO and Shutdown) separate from the I/O and battery cables. If unavoidable, place them at 90 degrees to each other and at least 20cm apart.



Incorrect

Correct

A à Communication or Control signal wires

B à Power wires & cables

Figure 2 Cabling

3. The UPS is equipped with an EMI filter. To prevent potential current leakage hazard, ensure that the AC main supply is securely grounded.

B.4. Start-up Procedure

1. Position the units as shown in Figure 1.
2. Use communication cables that are less than 7M long, connected as a “Ring” loop.

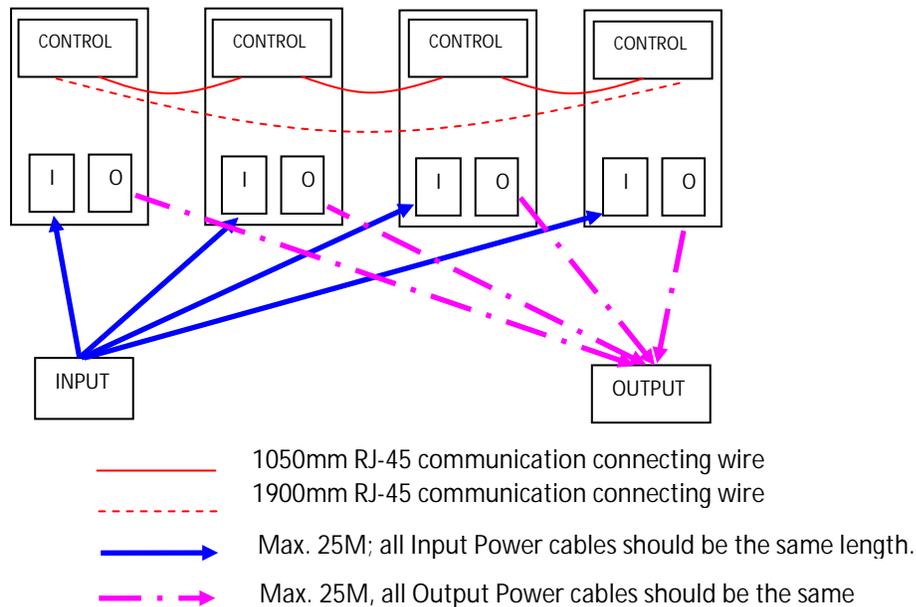


Figure 3

3. Arrange the power cables and the control signal cables as indicated in Figure 1 and Figure 2 depending on the UPS type. Ensure all the circuit breakers at input and output ends are set to OFF position.
4. A maintenance bypass box (MTBS) is recommended for use during maintenance.
5. Only two terminal resistors of the UPS in parallel are to be set to the ON position as indicated in Figure 4. For 3 units in parallel only UPS 1 and 3 terminal resistors are ON; for 4 units in parallel, only UPS 1 and 4 terminal resistors are ON.
6. Turn on the input breaker (CB1 and CBi) of the Utility (see Figure 4). Configure each UPS for parallel operating mode and set the IDs (eg. UPS 1, ID=1) of the respective UPS. Ensure all parameters of each UPS are the same.
7. If you are using the front panel for UPS parameter entry and setting, switch the UPS OFF and ON to exit Configuration mode after all settings are complete.
8. If an external MTBS box is installed, ensure the switch is in Bypass position. Check to see if the UPS is in Bypass mode with output voltage available.
9. Turn on the output breaker (CB2) and ensure the connected loads are supplied with power via the MTBS Box.
10. Turn on the output breaker of the UPS (CBo) and turn the switch of the MTBS Box to INV/UPS position. Now the connected loads should be supplied with power via the UPS Bypass loop.
11. Turn on each UPS individually and make sure the UPS are in Inverter supply mode.

The installation procedures are now complete.

Set the two terminal resistors of two(2) or four(4) UPS to at "On" positions.

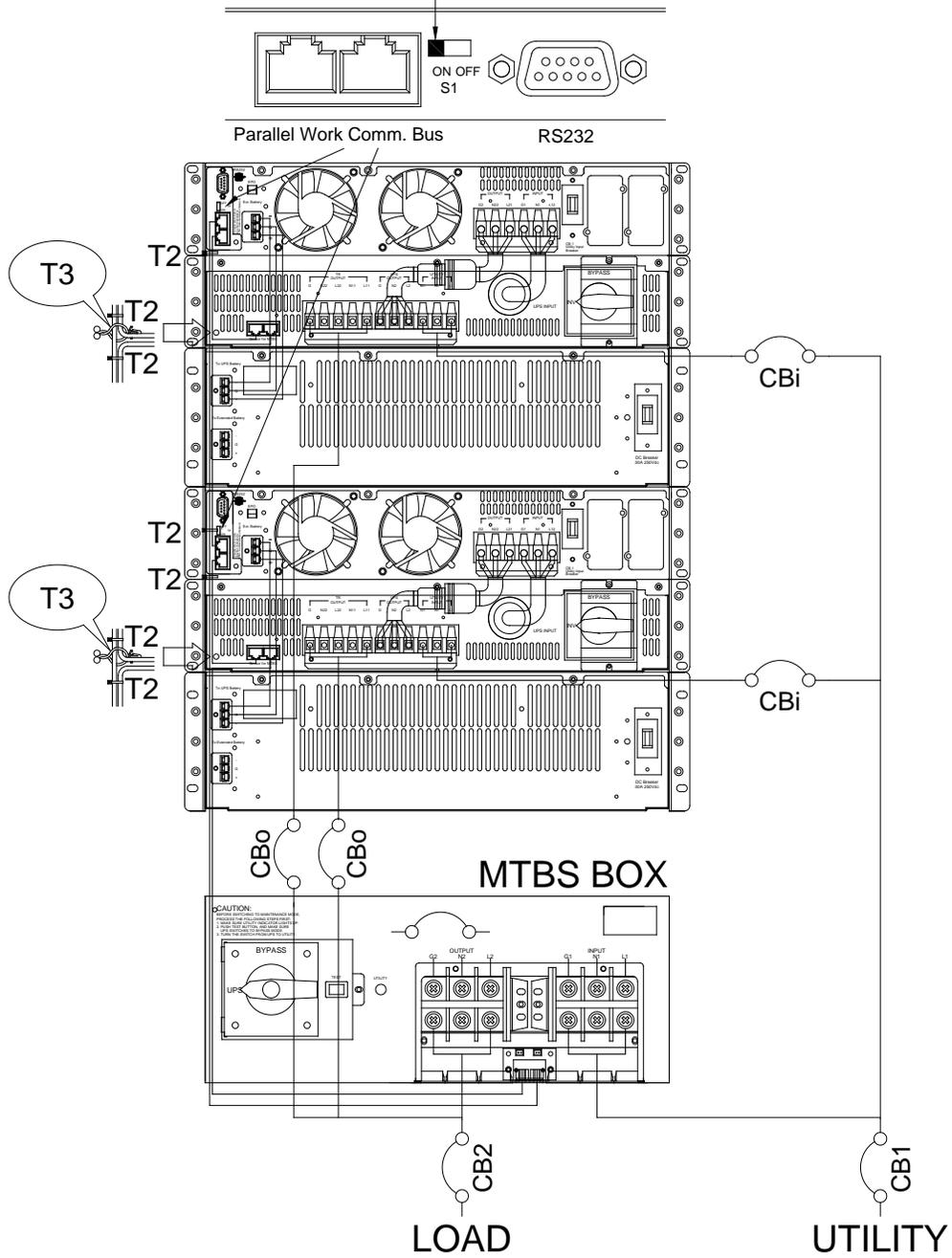
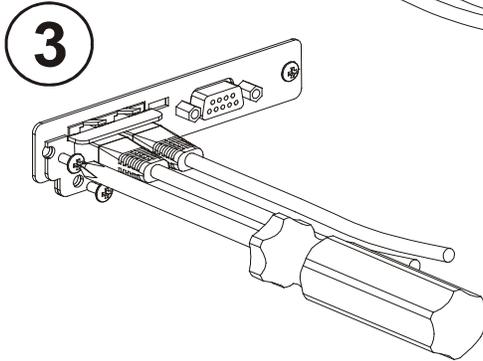
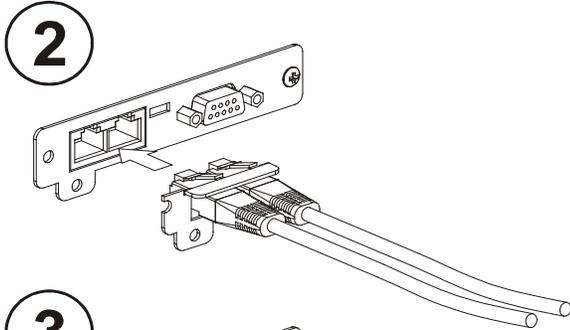
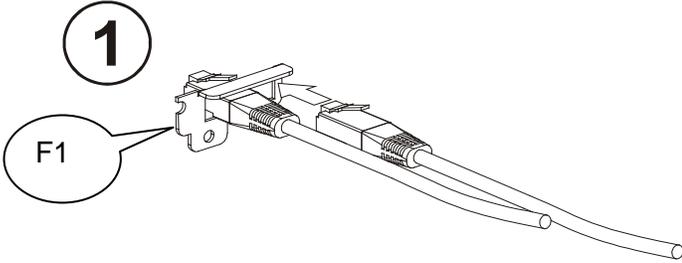
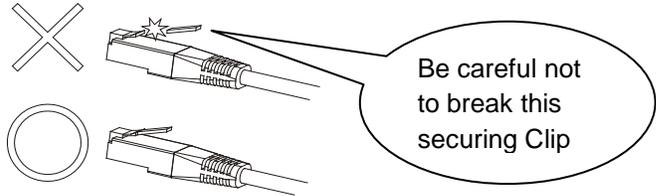


Figure 4 Parallel UPS with Maintenance Bypass Box



B.5. Maintenance Operation Procedure

1. Refer to the operations chapter to switch all UPS to Bypass supply mode.
2. Switch MTBS box to BYPASS position first. And then switch off all output breakers (CBo). Now the load is supplied through MTBS box from Bypass.
3. Make sure the UPS that needs maintenance is completely shutdown first. Then switch off the output breakers (CBo) and input breakers(CBi).
4. Proceed with maintenance.
5. Repeat the steps in section B.4 after you have completed repairing/maintaining, to ensure the load is supplied from the UPS.

The maintenance work is complete.

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