JANUS
Tower and Rack-Mount Convertible UPS

User's Manual

750/1000/1500/2200/3000

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1 Introduction

The UPS featured with Tower/Rack Convertible design, Single AVR Boost and Single Buck, Pure Sine Wave Output, User's Friendly LCD Display, Built-in customer Option Slot, Hot Swappable Battery, and USB/RS232 Communication interface, provides a flexible from factor for most of business critical file server, minicomputers, network switches and hubs, etc. in tower or rack mount formats.

- Sine Wave Output provides assurance of compatibility with all kinds of loads.
- User's Friendly LCD panel may display system status including load level, battery level, AVR-Boost/Buck and fault status for easy service.
- 90% High Efficiency in Normal Mode meets high energy saving standard and reduces noise and heat generated by other topology UPS.
- Easy Swappable Battery Function may save the time and money by swapping the batteries by end-user without sending it back for a factory service.
- Cold Start Function enables to turn on the UPS without connecting to the Utility.
- Optional Communication Software allows not only the control of the UPS and graceful shutdown when the Utility Fails, but also allows the user to remotely test the major operating functions of the UPS, communicate via SNMP/web/network optional card, access UPS functions via the web and alert users via SMS messages against specific events.
- User-friendly Plug and Play design can easily be installed by end user. All units up to 3KVA are supplied with input cables and output sockets as standard.
- Plug-and-play USB/RS232 interface conveniently offers a plug-and-play USB or RS232 port for connecting with nowadays IT products.

2 IMPORTANT SAFETY INSTRUCTION

2.1 *An Important Notice*

1. 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 sockets.

2. Make sure that the AC Utility outlet is correctly grounded.

3. Do not open the case, as there are no serviceable parts inside. Your warranty will be void.

4. Do not try to repair the unit yourself; contact your local supplier or your warranty will be void.

5. Please make sure that the input voltage of the UPS matches the supply voltage.

6. To eliminate any overheating of the UPS, keep all ventilation openings free from obstruction, and do not store "things" on top of the UPS. Keep the UPS 30 cm away from the wall.

7. Make sure the UPS is installed within the proper environment as specified. (0-40℃ and 30-90% non-condensing humidity)

8. Do not install the UPS in direct sunlight. Your warranty may be void if the batteries fail.

9. Install the UPS indoors as it is not designed for installation outdoors.

10. Dusty, corrosive and salty environments can do damage to any UPS.

11. Install the UPS away from objects that give off excessive heat and areas that are excessively wet.

12. If liquids are split onto the UPS or foreign objects dropped into the unit, the warranty will be null and void.

13. The battery will discharge naturally if the system is unused for any length of time.

14. It should be recharged every 2-3 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.

15. This UPS supports electronic equipment in offices, telecommunications, process control, medical and security applications. Non-authorized technician is not allowed to install the UPS in the following areas:
    a. Medical equipment directly related to human life
    b. Elevator, Metro (Subway) system or any other equipment related to human safety.
    c. Public system or critical computer systems.

16. Do not install the UPS in an environment with sparks, smoke or gas.

17. Make sure the UPS is completely turned off when moving the UPS from one place to another. It might cause electrical shock if the output is not cut completely.

18. SAVE THESE INSTRUCTIONS – This Manual Contains Important Instructions that should be followed during Installation and Maintenance of the UPS.

19. Symbol for ON/Off is displayed and defined.

20. Intended for installation in a temperature-controlled, indoor area free of conductive contaminants.

21. Maximum ambient temperature 40℃ (or 0~40℃ for ambient Operating).

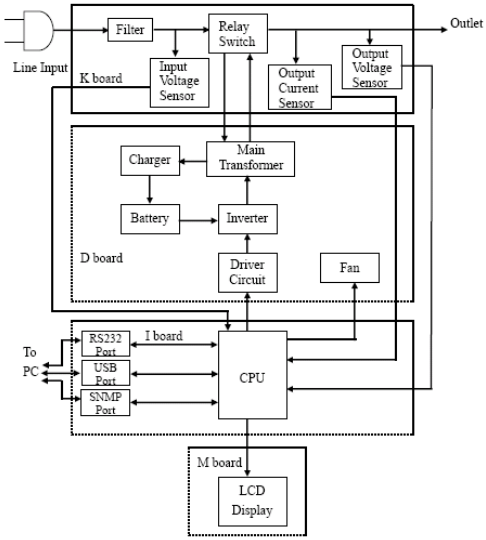
22. For Model 3000 - "CAUTION - To reduce the risk of fire, connect only to a circuit provided with 30 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70"

23. For Models 2200, 1500, 1000 and 750 - "CAUTION - To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70".

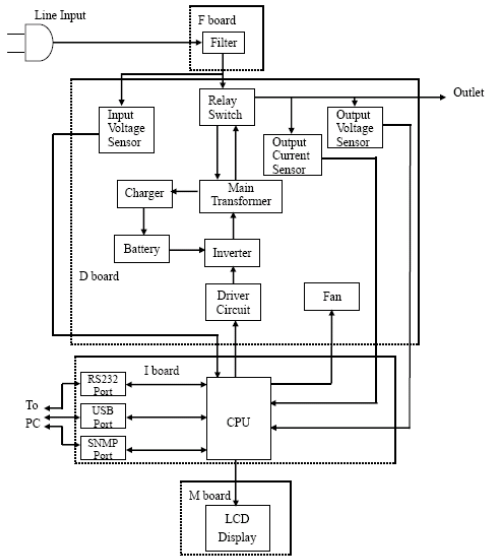
24. CAUTION - RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS."

25. Signaling Circuits Connection:

750VA/1KVA/1.5KVA



2.2KVA/3KVA



n a SERVICE ACCESS AREA
e performed or supervised by personnel
and the required precautions.
ıce with the same type and number of

batteries in a fire. The batteries may

ıtilate batteries. Released electrolyte is
may be toxic.
ent a risk of electrical shock and high
ng precautions should be observed

ther metal objects.
dles.
ts.
s on top of batteries.
prior to connecting or disconnecting

f) 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).

27. CAUTION: the lead acid battery may cause chemical hazard.
28. CAUTION: the battery presents a risk of energy hazard.Maintenance free battery.
29. CAUTION: For disposal instructions for the battery, see users manual.
30. CAUTION – Risk of explosion If battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

2.2 ***Storage Instruction***

For extended storage through moderate climate, the batteries should be charged for 12 hours every 3 months by plugging the UPS power cord into the wall receptacle and turn on input breaker on front panel. Repeat this procedure every 2 months under high temperature environment.

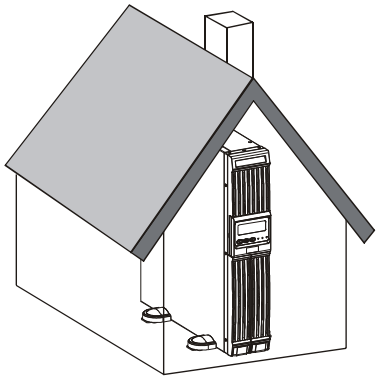
3 SET UP

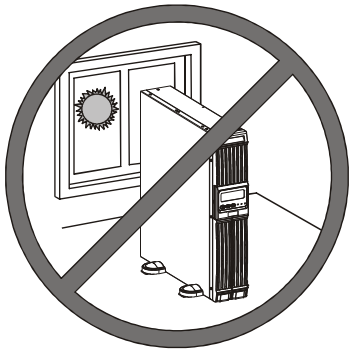
3.1 *Inspection*

Inspect the UPS upon receipt. Notify the carrier and dealer if there is damage. The package is recyclable; save it for reuse or dispose of it properly.

3.2 *Place the UPS Properly*

The UPS is with microprocessor control, which shall be placed in a well-ventilated & low humid environment.

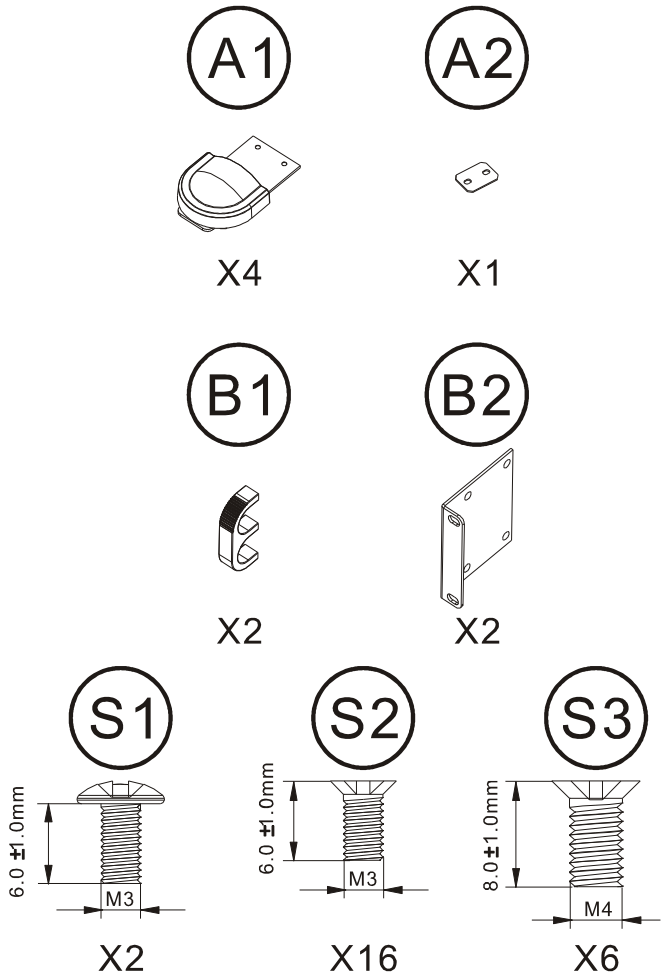




3.3 *Unpacking*

1. Take the UPS out of the PE foam.
2. Remove the packing materials.
3. Standard Package includes:
   a. User's Manual
   b. 1pc x AC Input Power Cord (Not available for hard wiring connection models)
   c. (1pc for 750/1k/1.5kVA, 2pcs for 2.2k/3kVA)x IEC output cables (for the UPS with IEC sockets only)
   d. 1set x UPS communication kit (optional)

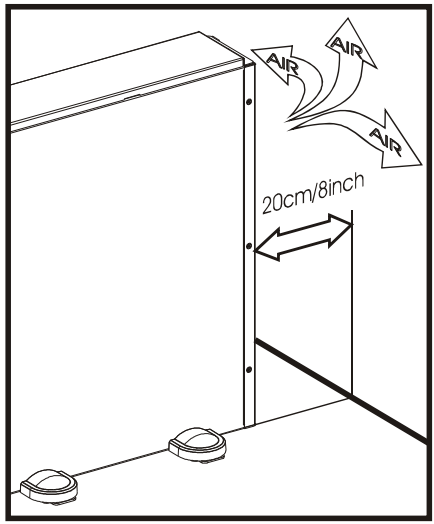
Accessories for Tower and Rack Mount



3.4 *Selecting Installation Position*

It is necessary to select a proper environment to install the unit, in order to minimize the possibility of damage to the UPS and extend the life of the UPS. Please follow the instructions below:

1. Keep at least 20cm(8 inches) clearance from the rear panel of the UPS from the wall or other obstructions.
2. Do not block the air-flow to the ventilation openings of the unit.
3. Please ensure the installation site environmental conditions are in accordance with the UPS working specifications to avoid overheat and excessive moisture.
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.

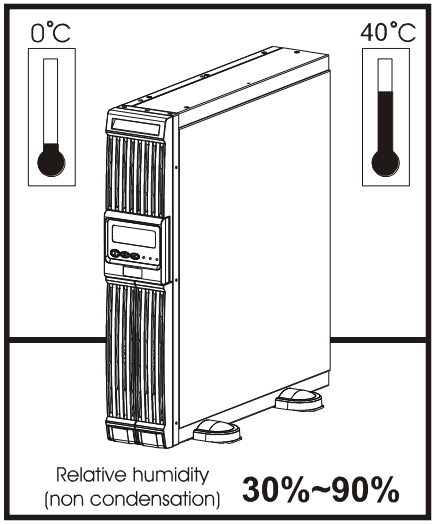


3.5 *UPS Setup*

The UPS offers a flexible form factor enabling integration into a wide variety of environments.

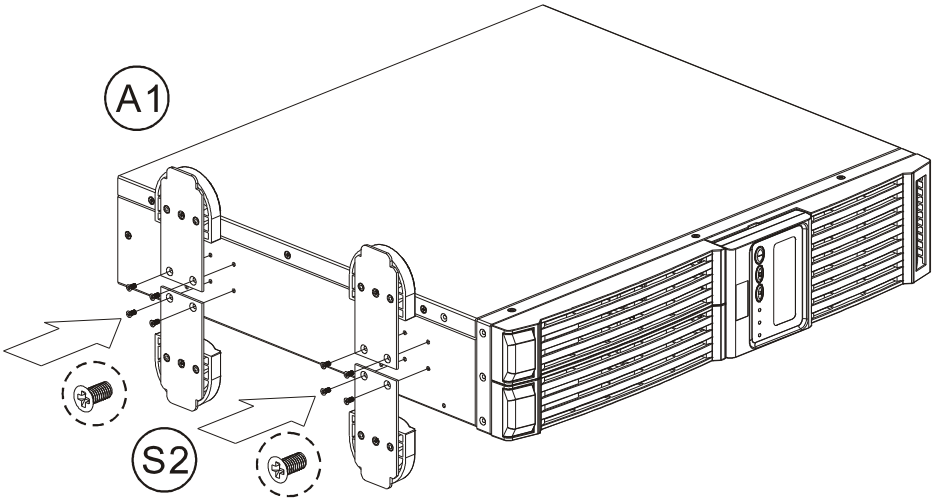
The UPS with space-saving design only occupy 2U for 750 to 3000VA.

If you are installing the UPS in a tower, continue to the following section, “Tower setup” otherwise; continue to “Rack-Mount setup”.



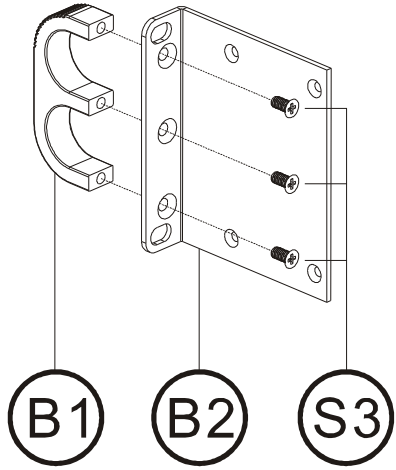
3.6 *Tower Setup*

Stand alone unit

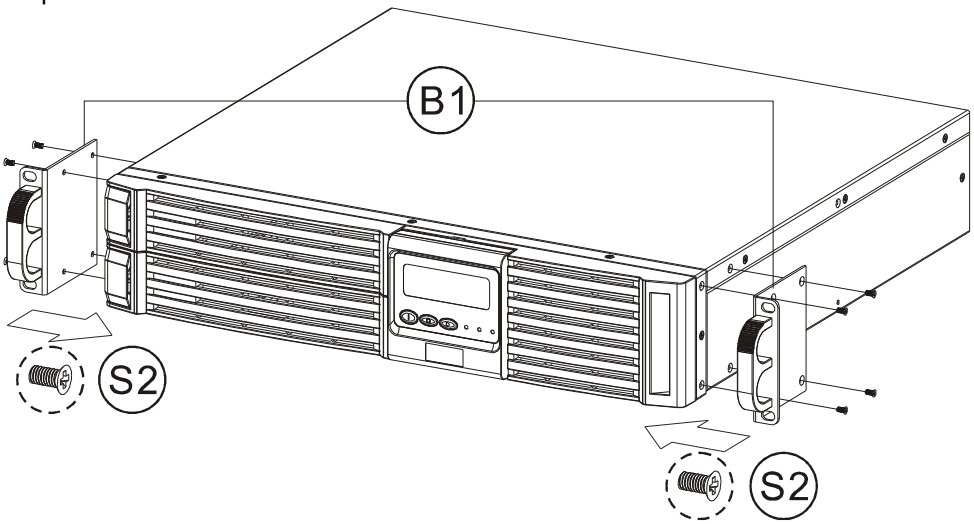


3.7 ***Rack-Mount Setup***

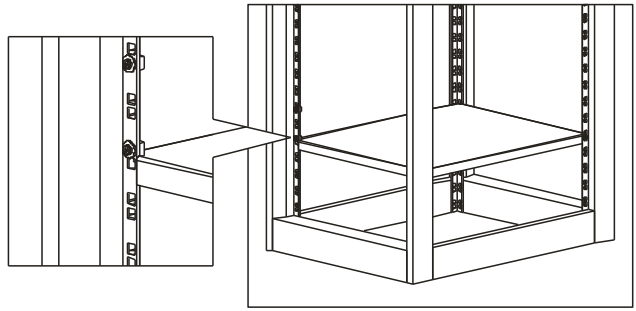
Step1



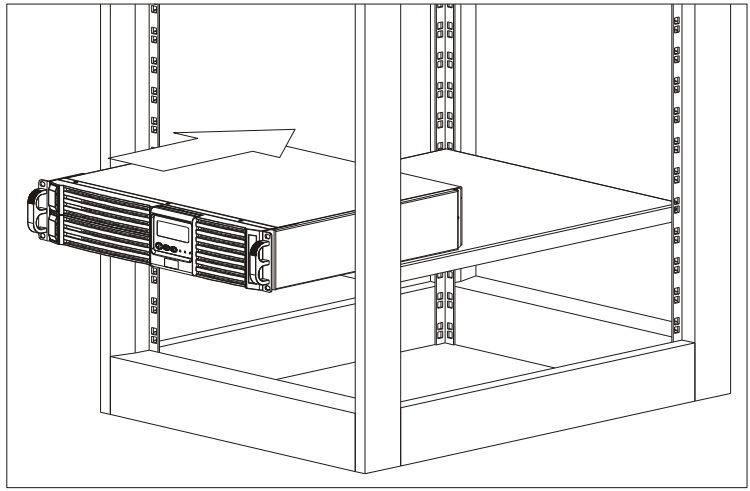
Step2



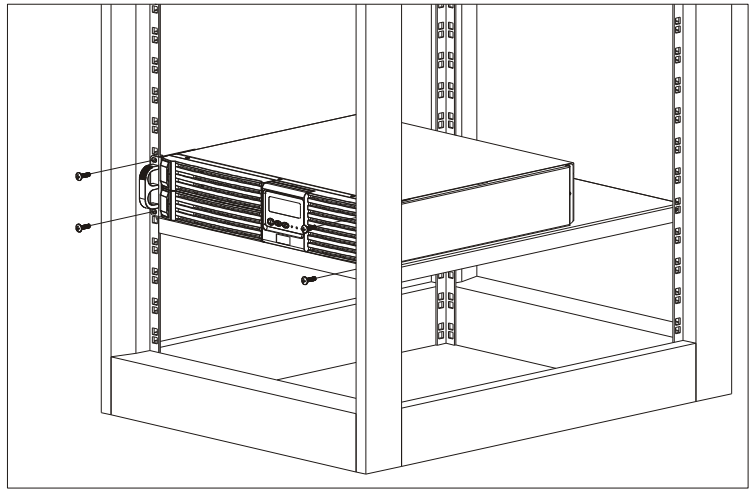
Step3



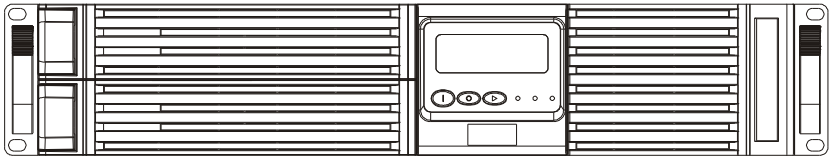
Step4

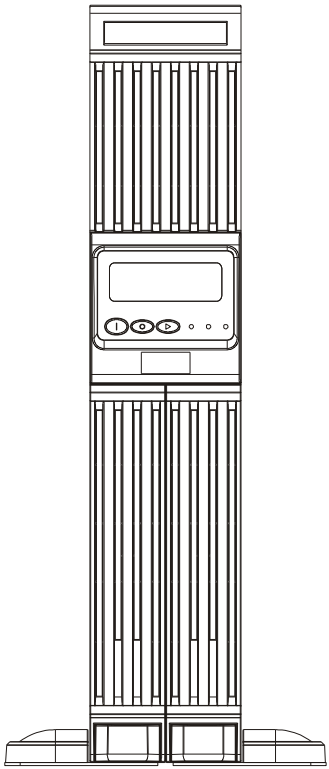


Step5

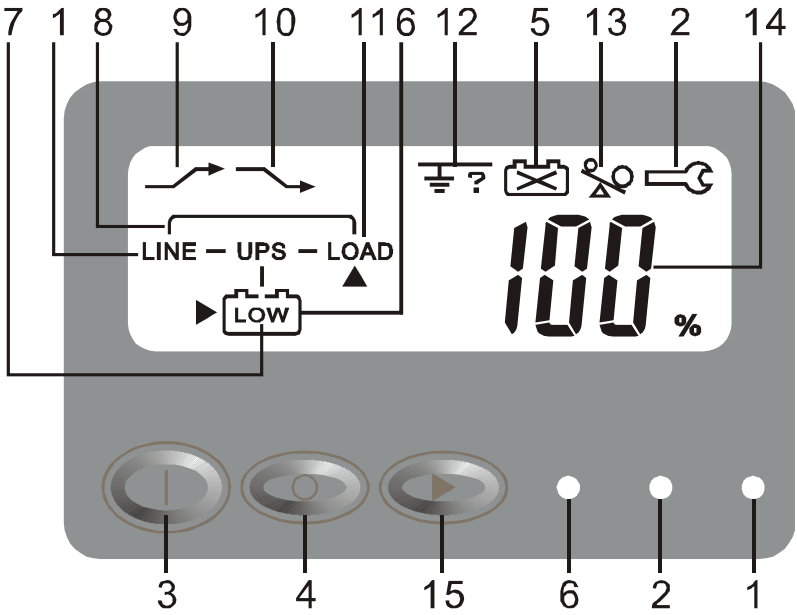


3.8 ***UPS Front Panel***





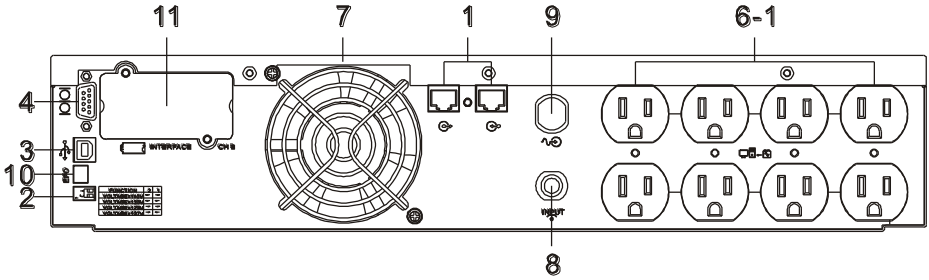
3.9 *LCD Display Panel*



1. Utility LED LINE
2. Fault LED
3. On Switch
4. Off Switch
5. Battery Replacement
6. Battery Backup LED
7. Battery Low LOW
8. Bypass
9. Utility Low, UPS Boost
10. Utility High, UPS Buck
11. UPS Output Indicator LOAD
12. Polarity Error or Ground Fault
13. Overload
14. Load/Battery Level (%) 100
15. Load/Battery Level Indication Control Button

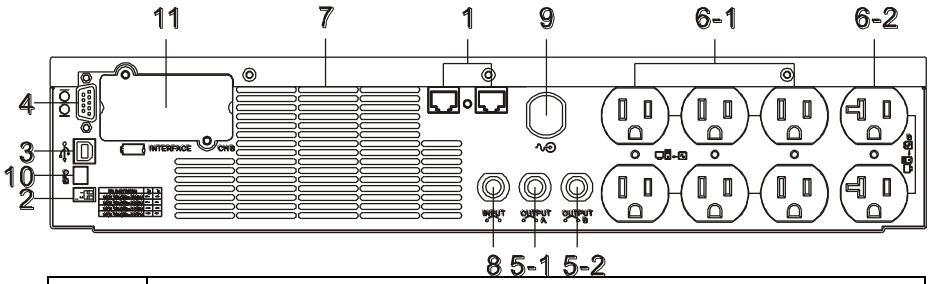
3.10 *UPS Rear Panel*

750 / 1000 / 1500VA 120V



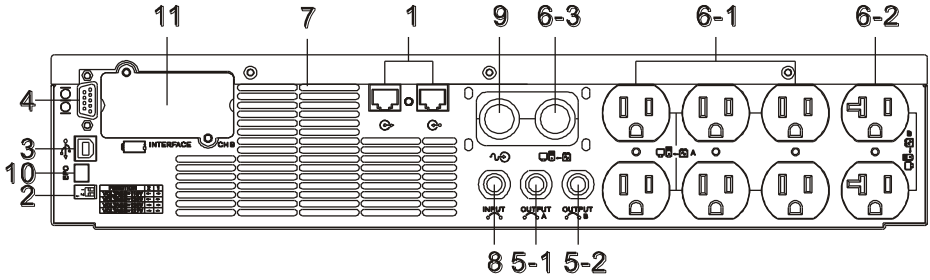
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
6-1	NEMA 5-15R Output Receptacles
7	Cooling Fan
8	12A Input Circuit Breaker (750、1000 model only) 15A Input Circuit Breaker (1500 model only)
9	NEMA 5-15P Input Power Core
10	REPO
11	Intellislot Port

2200VA 120V(1920VA/1920W for UL)



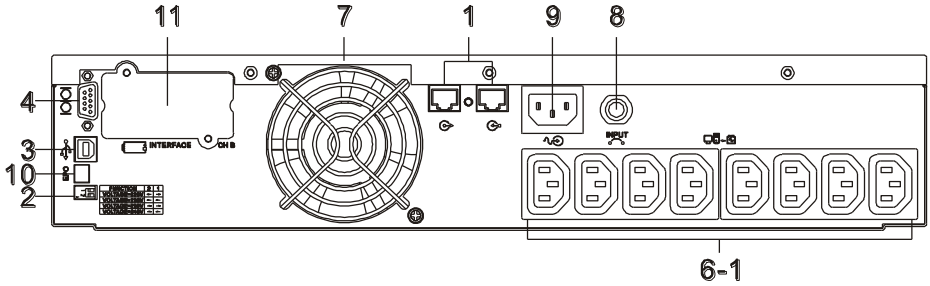
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
5-1	15A Output Circuit Breaker for 6-1
5-2	20A Output Circuit Breaker for 6-2
6-1	NEMA 5-15R Output Receptacles
6-2	NEMA 5-20R Output Receptacles
7	Cooling Vents
8	30A Input Circuit Breaker
9	NEMA 5-20P Input Power Core
10	REPO
11	Intellislot Port

3000VA 120V



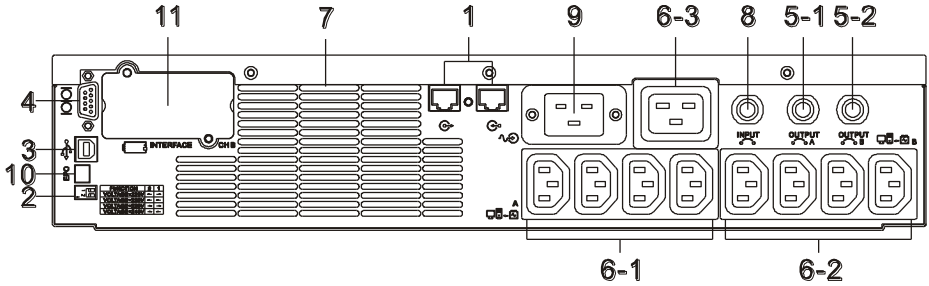
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
5-1	15A Output Circuit Breaker for 6-1
5-2	20A Output Circuit Breaker for 6-2
6-1	NEMA 5-15R Output Receptacles
6-2	NEMA 5-20R Output Receptacles
6-3	NEMA 5-30R Output Receptacles
7	Cooling Vents
8	30A Input Circuit Breaker
9	NEMA L5-30P Input Power Core
10	REPO
11	Intellislot Port

750/ 1000/ 1500VA 230V



Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
6	IEC-320-C13 Output Receptacles
7	Cooling Fan
8	7A Input Circuit Breaker (750 model only) 8A Input Circuit Breaker (1000 model only) 10A Input Circuit Breaker (1500 model only)
9	IEC-320-C14 Input Socket
10	REPO
11	Intellislot Port

2200/ 3000VA 230V



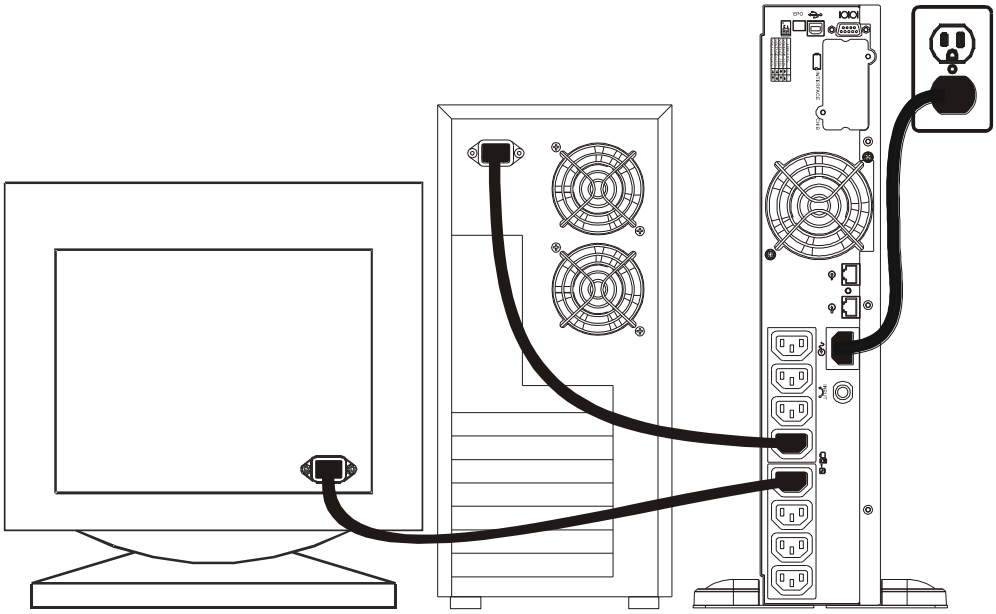
Item	Description
1	Data Line Connectors
2	Voltage Configuration Switch
3	USB Port
4	RS232 (DB-9) Port
5-1	10A Output Circuit Breaker for 6-1
5-2	10A Output Circuit Breaker for 6-2
6-1	IEC-320-C13 Output Receptacles
6-2	IEC-320-C13 Output Receptacles
6-3	IEC-320-C19 Output Receptacles
7	Cooling Vents
8	15A Input Circuit Breaker(2200 model only) 20A Input Circuit Breaker(3000 model only)
9	IEC-320-C20 Input Socket
10	REPO
11	Intellislot Port

4 INSTALLATION

4.1 *Connect Utility and Load*

First, connect the UPS with Utility, then plug the loads into the Outlets on the rear of the UPS. To use the UPS as a master “On/Off” switch, make sure that all of the loads are switched “on”.

These UPS outlets provide battery backup and surge protection to the equipment when Utility voltage is out of window.

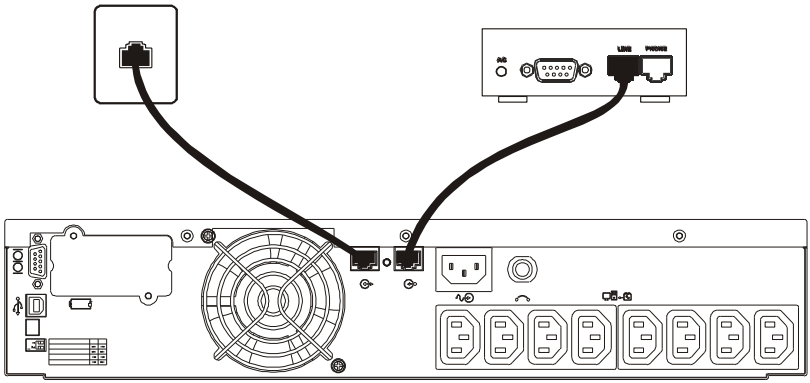


Caution---

Do not connect a laser printer to the UPS outlets!

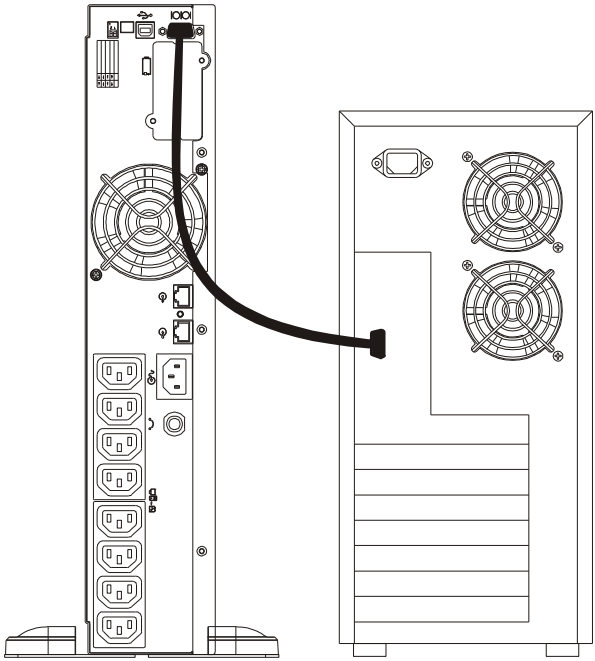
4.2 ***Connect Network Surge protection***

Connect a 10 base-T / 100 base-T network cable with the RJ-45 network surge protection “IN” jack on the rear of the UPS. Connect from the “OUT” jack with network cabling to network equipment.



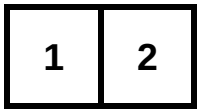
4.3 ***Connect Computer Interface Port***

Connect the supplied interface cable (RS-232 or USB, Optional) between the interface port on the rear of the UPS and the computer interface port. See software installation guide in the CD-ROM (Optional) for installation purpose.



4.4 ***REPO Switch***

The UPS is equipped with an Emergency Power Off (EPO) switch. The user must supply a means of interfacing with the EPO circuit to allow disconnecting the UPS input feeder breaker to interrupt all sources of power to the UPS and connected equipment to comply with national and local wiring codes and regulations.



1 = REPO+
2 = Ground
Short Pin 1 and Pin 2 to enable the REPO function

5 OPERATION

5.1 *Turn on the UPS*

1. Connect the UPS to the wall receptacle. LCD will display “OFF”, when Utility is normal. If there is nothing on the LCD, go to step 3.

2. Press the “On” Switch on the front panel for approximately 3 seconds until buzzer sounds, then release the “On” Switch to start the UPS. Both the LCD and Utility LED (Green) are lit. The start-up procedure is completed and the loads are supplied by the UPS.

3. To cold start the UPS, press the “On” Switch on the front panel for approximately 3 seconds until the LCD lights up and buzzer sounds, then release the “On” Switch. The UPS starts operating and Battery Backup LED (Amber) lights up. The cold start-up procedure is completed and the loads are supplied by the UPS.

4. The UPS will run under Backup mode and the buzzer alarms every 2 seconds in case of blackout or over/under voltage. On the contrary, If Utility is back to normal and then the UPS will run under Utility mode and silence alarm.

5.2 *Turn Off the UPS*

1. Press the “Off” Switch for at least 3 seconds to turn off the UPS. If you press the “Off” Switch less than 3 seconds, the UPS will not execute shutdown command due to insufficient pressing time.

2. In some occasions, the UPS will shut itself down in case of overload, output short-circuited or battery cutoff point reached in the Backup mode.

3. The UPS will automatically shut off the output and beep for 5 seconds then completely shut itself down.

5.3 *Plug-in Charge*

1. If the Input Power Cord is connected to the wall receptacle properly and the utility is normal, the UPS will start charging automatically without processing “Turn On” procedure.

2. You have to charge for at least 8 hours every 3 months to avoid from battery self over-discharge naturally, if the UPS is in an idle condition.

5.4 *Auto-Restart*

If the Input Power Cord is connected to the wall receptacle properly and Utility is back to normal, the UPS will automatically restart to provide energy to the output after battery cut.

5.5 *Alarm Silence*

1. The Alarm might be turned off by pressing the “On” Switch for approximately 1 second in the “Backup” mode.

2. Unless any other warning or fault condition occurs, the alarm remains at Silence condition once the “Alarm Silence” is turned off.

5.6 *Self Test*

1. Under Utility Normal condition, press the “On” Switch for 3 seconds to execute the Battery Self-test function.

2. In case the battery is normal, it will enter into the Battery Backup Mode for 10 seconds then return to Utility Mode.

3. If the battery voltage is detected lower than set limit, the Battery Replacement LCD ✉ will blink for 5 seconds then extinguish to stop self-test procedure. And if battery is detected weak or dead, the Battery Replacement LCD ✉ will steadily illuminate.

Caution---

The UPS will remain at “NO” output, if the start-up operation is not proceeded properly even though the Input Power Cord is connected to the wall receptacle.

Important Notice---

Plug the UPS onto the wall receptacle to charge the UPS for over 8 hours after initial installation.

Storage ---

Store at -15 to +30 °C (+5 to +86 °F), charge the UPS battery every six months.

Store at +30 to +45 °C (+86 to +113 °F), charge the UPS battery every three months

6 UPS MAINTENANCE

6.1 *Battery Replacement*

When the UPS is started up or a self-test is executed, the Battery Replacement LED might light up due to battery weak or battery dead.

1. When the Battery-Replacement (RED) lights up, you may leave the UPS to be re-charged for at least 8 ~ 10 hours to see whether the RED LED will be extinguished after the Self-test function is executed again.

2. In case the RED LED remains unchanged, you may unscrew the Easy Swappable Battery cover, replace a new battery then push the “On” Switch to disable the RED LED. Please follow the steps 1-3 to replace the new battery.

❗Caution---

The UPS will remain at “NO” output, if the start-up operation is not proceeded properly even though the Input Power Cord is connected to the wall receptacle.

❗Caution---

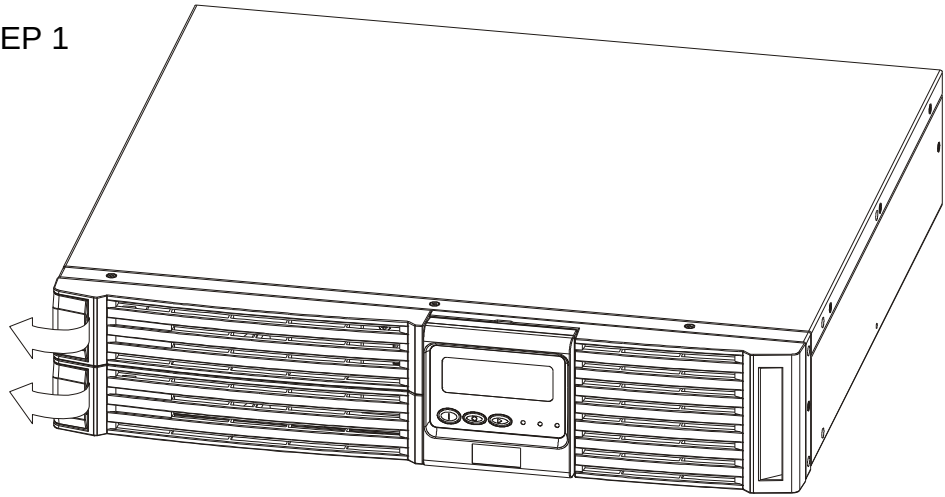
The battery is heavy, pull the battery out onto flat, stable surface.

❗Caution---

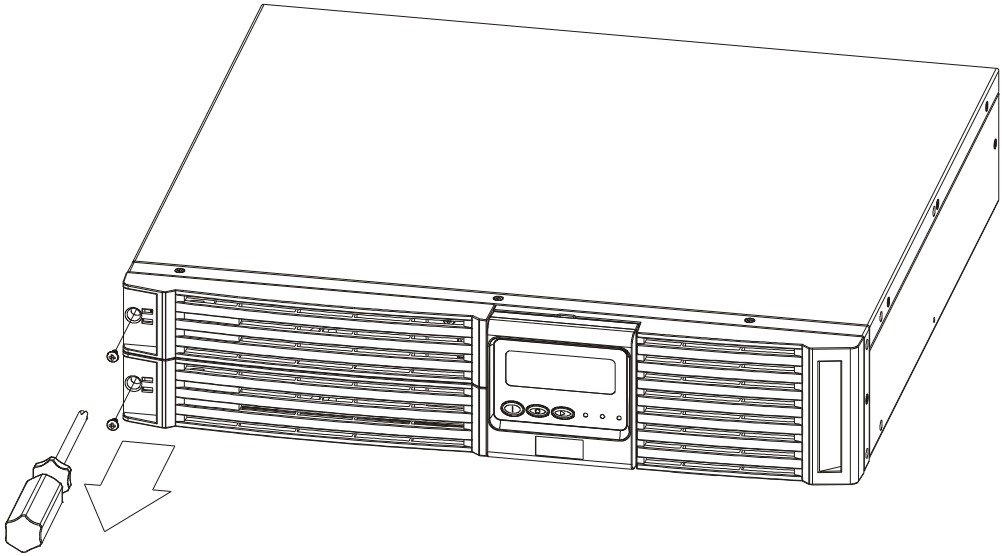
DO NOT DISCONNECT the batteries while the UPS is in the BACKUP mode.

6.2 ***How to Replace Battery***

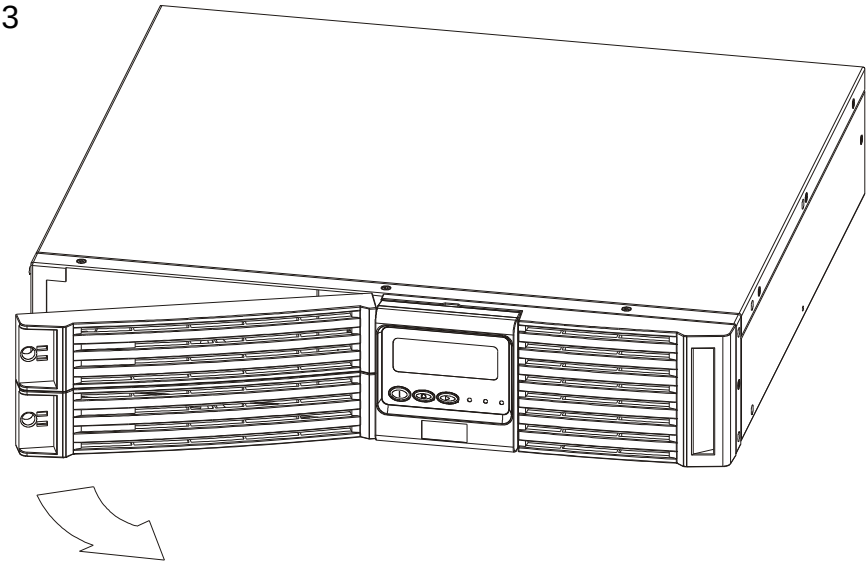
STEP 1



STEP 2

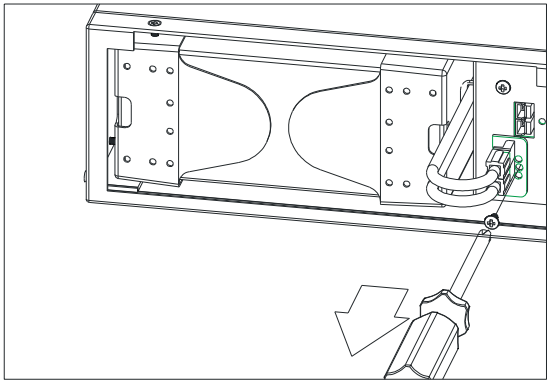


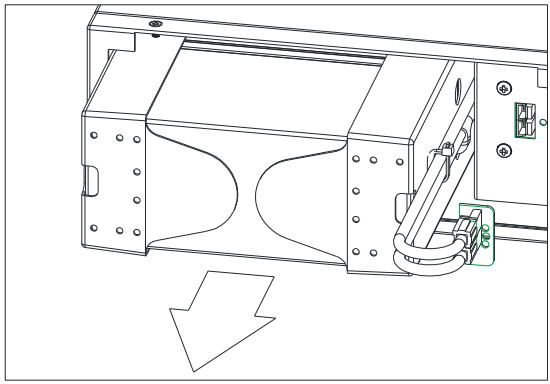
STEP 3



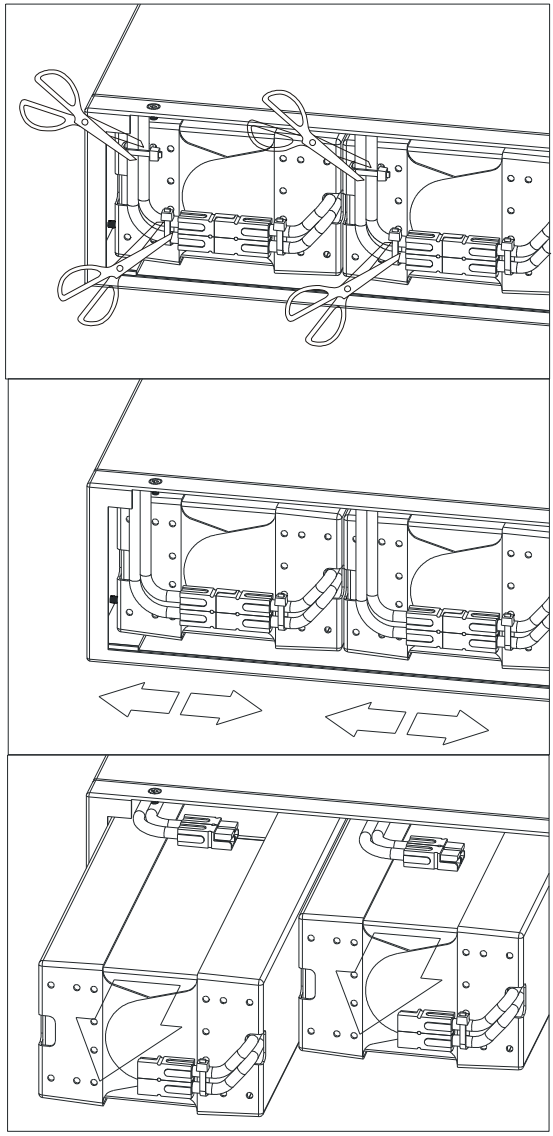
STEP 4

750/ 1000/ 1500VA





2200/ 3000VA



6.3 ***Recycling the Used battery***

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

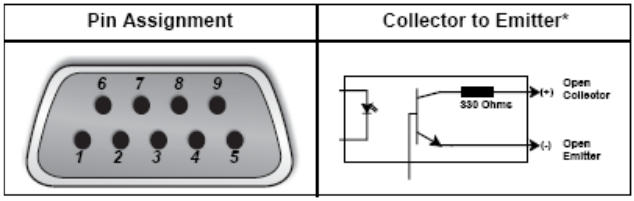
7 Communication

7.1 *DB-9 Connector*

The UPS has a DB-9 (9 pin female) connector on the rear to allow UPS status communications with a computer running UPS software. The connection provides serial communication, On Battery and Low Battery signals.

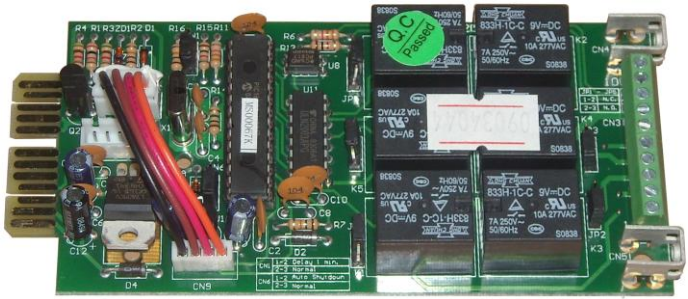
Table 4 DB-9 pin assignment

DB-9 Pin	Assignment Description
1	Low Battery (open collector)
2	UPS TxD
3	UPS RxD
4	N.C.
5	Common
6	N.C.
7	Low Battery (open emitter)
8	Utility Fail (open emitter)
9	Utility Fail (open collector)



8 Optional Communication Cards

8.1 *DCE (Dry Contact) card*



8.1.1 The pin assignments of 10-Pin Terminal：

1	2	3	4	4	5	6	7	8	9	10

1 → N/A
2 → Utility Abnormal
3 → Utility Normal
4 → AVR On
5 → Battery Low
6 → N/A
7 → N/A
8 → Common
9 → Shutdown UPS positive(+) signal
10 → Shutdown UPS Negative(-) signal

8.1.2 The shutdown function will be activeated, after a +6~+25Vdc is put between pin 9 and pin 10 for 5 seconds.

8.1.3 The capacity of each relay contact is 40Vdc/25mA.

8.1.4 Installation Position：Optional Slot.

8.1.5 Flexible signal output for N.C.(Normal Close) or N.O.(Normal Open) contact by shorting pin1-2 or pin2-3 form JP1-5.

8.1.6 The shutdown function will be enabled in 1 minute after blackout occurs if the pin1-2 of both CN1 and CN6 are shorted by cap. Or, the shutdown function can only be enabled by pin9-10 of CN3 if the pin2-3 of both CN1 and CN6 are shorted by cap.

8.2 *SNMP card of Megatec*

8.2.1. For installation, please refer to the user's manual attached with the card.

8.2.2. Installation Position：Optional Slot

9 SPECIFICATIONS

9.1 *120V*

Model number	750/1000VA	1500VA	2200VA	3000VA
Power Rating, VA/W	750VA/750W 1000VA/900W	1500VA/1350W	1920VA/1920W	3000VA/2700W
Dimensions, W x D x H, in (mm)				
Unit	440x405x88	440x405x88	440x650x88	440x650x88
Shipping	560x526x228	560x526x228	560x833x228	560x833x228
Weight, lbs (kg)				
Unit	19.7	21.1	34.6	38.2
Shipping	22.9	24.6	38.3	42
Input AC Parameters				
Surge Protection	570J			
Voltage Range Without Battery Operation	83~159, configurable			
Frequency Range	45~65Hz, (±0.5Hz)			
Input Power Cord	10ft(3m) attached, w/ NEMA 5-15P	10ft(3m) attached, w/ NEMA 5-15P	10ft(3m) attached, w/ NEMA 5-20P	10ft(3m) attached, w/ NEMA L5-30P
Output Receptacles	(8) NEMA 5-15R	(8) NEMA 5-15R	(6) NEMA 5-15R (2) NEMA 5-20R	(6) NEMA 5-15R (2) NEMA 5-20R (1) NEMA L5-30R
Voltage (Normal mode)	110 / 120 / 127 VAC (configurable) ±10%			
Voltage (Battery Mode)	110 / 120 / 127 VAC (configurable); ±5% before low battery warning			
Transfer Time	4-6 ms typical			
Waveform	Sinewave			
Frequency (Normal Mode)	45~65Hz, (±0.5Hz)			
Frequency (Battery Mode)	50/60Hz, (±0.5Hz), auto sensing			
Overload Warning				
Normal Mode	>100% - 109%	Continuous Overload Alarm and power to the load		
	>110% - 120%	Shutdown after 10 minutes		
	>120%	Shutdown UPS immediately		
Battery Mode	>100% - 119%	Continuous Overload Alarm till end of battery discharged		
	>120% - 130%	Shutdown after 10 seconds		
	>130%	Shutdown UPS immediately		
Battery Parameters				
Type	Valve-regulated, nonspillable, lead acid			
Quantity x Voltage x Rating	3x36x7	3x36x9	6x72x7	6x72x9

Backup Time				
Full Load	5”32 / 750VA 3”14 / 1000VA	2”33	2”41	2”32
Half Load	15”32 / 750VA 10”31 / 1000VA	8”18	8”40	8”14
Recharge Time	5 hours to 90% of rated capacity, after full discharge into resistive load			
Environmental				
Operating Temperature	+32°F to + 104°F (0°C to + 40°C)			
Storage Temperature	+5°F to + 104°F (-15°C to + 40°C)			
Relative Humidity	0% to 95%, non-condensing			
Operating Altitude	Up to 10,000 ft. (3000m) at 95°F (35°C) without derating			
Audible Noise	<40 dBA, internal fan(s) Off <45 dBA, internal fan(s) On		<40 dBA, internal fan(s) Off <45 dBA, internal fan(s) On	
Agency				
Safety	UL 1778, c-UL Listed			
Surge	ANSI C62.41 CatA Lev3 (surges) IEC61000-4-5			
ESD	IEC61000-4-2			
Susceptibility	IEC61000-4-3			
Electrical Fast Transient	IEC61000-4-4			
Emissions	FCC Part 15, Class A			
Conducted Immunity	EN61000-4-6			
Harmonics	EN61000-3-2			
Network surge	UL 497 B			
Transportation	ISTA Procedure 1A Certification			

9.2 ***230V***

Model number	750VA	1000VA	1500VA	2200VA	3000VA
Power Rating, VA/W	750VA/675W	1000VA/900W	1500VA/1350W	2200VA/1980W	3000VA/2700W
Dimensions, W x D x H, in (mm)					
Unit	440x405x88		440x405x88	440x650x88	440x650x88
Shipping	560x526x228		560x526x228	560x770x228	560x770x228
Weight, lbs (kg)					
Unit	15	19.4	20.9	33.8	37.2
Shipping	18.2	22.6	24.1	38.3	41.5
Input AC Parameters					
Surge Protection	220J				
Voltage Range Without Battery Operation	165~300, configurable				
Frequency Range	45~65Hz, (±0.5Hz)				
Input Socket	IEC-320-C14		IEC-320-C14	IEC-320-C20	IEC-320-C20
Output Receptacles	(8)IEC-320-C13		(8)IEC-320-C13	(8)IEC-320-C13 (1)IEC-320-C19	(8)IEC-320-C13 (1)IEC-320-C19
Voltage (Normal mode)	220/230/240 VAC (configurable) ±10%				
Voltage (Battery Mode)	220/230/240 VAC (configurable); ±5% before low battery warning				
Transfer Time	4-6 ms typical				
Waveform	Sinewave				
Frequency (Normal Mode)	45~65Hz, (±0.5Hz)				
Frequency (Battery Mode)	50/60Hz, (±0.5Hz), auto sensing				
Overload Warning					
Normal Mode	>100% - 109%		Continuous Overload Alarm and power to the load		
	>110% - 120%		Shutdown after 10 minutes		
	>120%		Shutdown UPS immediately		
Battery Mode	>100% - 119%		Continuous Overload Alarm till end of battery discharged		
	>120% - 130%		Shutdown after 10 seconds		
	>130%		Shutdown UPS immediately		
Battery Parameters					
Type	Valve-regulated, nonspillable, lead acid				
Quantity x Voltage x Rating	2x24x7	3x36x7	3x36x9	6x72x7	6x72x9
Backup Time					
Full Load	2”38	3”14	2”33	2”41	2”32
Half Load	8”35	10”31	8”18	8”40	8”14
Recharge Time	5 hours to 90% of rated capacity, after full discharge into resistive load				

Environmental	
Operating Temperature	+32°F to + 104°C (0°C to + 40°C)
Storage Temperature	+5°F to + 104°F (-15°C to + 40°C)
Relative Humidity	0% to 95%90%, non-condensing
Operating Altitude	Up to 10,000 ft. (3000m) at 95°F (35°C) without derating
Audible Noise	<40 dBA, internal fan(s) Off <45 dBA, internal fan(s) On
Agency	
Safety	IEC61000-4-5
Surge	IEC61000-4-2
ESD	IEC61000-4-3
Susceptibility	IEC61000-4-4
Electrical Fast Transient	IEC/EN/AS 62040-2 2nd Ed class A
Emissions	EN61000-4-6
Conducted Immunity	EN61000-3-2
Harmonics	IEC61000-4-5
Transportation	ISTA Procedure 1A Certification