Rugged AC UPS Series
Operation/ Installation and Network Manual

Models:
AC-UPS-24-700, AC-UPS-48-1200, AC-UPS-48-2000

M-ACUPS1.0
Rev. B

*See page 29 for SNMP/ Network card operation manual.

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1. SCOPE

This manual provides safety and installation guidelines as well as information on tools and wiring.

Contents
(1) ea. UPS & Network Manual (combined)
(1) ea. SNMP card-Installed
(1) ea. Manual Bypass Switch - optional (contact facory)
(2) ea. DC Input connector (red & black w/ crimp contacts), 700VA & 1200VA = 10AWG, 2000VA = 8AWG
(8) ea. Mounting bracket hardware:M4 x 5 mm, Flathead Phillips head screw, black
(4) ea. Rack mounting screws,#10-32 x ½", Pan head Phillips head screw
(4) ea. Rack mounting screws,#12-24 x ½", Pan head Phillips head screw
(2) ea. Rack mounting brackets, 19"(1) ea. UPS & Network Manual (combined)
(1) ea. Temperature sensor cable

2. SAFETY INSTRUCTIONS

⚠️ **WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.**

1. Before using the UPS, read all instructions and cautionary markings on the unit, the batteries, and all appropriate sections of this manual.

2. **CAUTION –** To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.

3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.

4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.

5. **CAUTION –** Only qualified personnel can install this device with batteries.

6. **NEVER** charge a frozen battery.

7. For optimum operation of this unit, please follow required spec to select appropriate cable size. It is very important to correctly operate this unit.

8. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.

9. Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to the INSTALLATION section of this manual for the details.

10. The battery breaker, (60A) is provided as over-current protection for the battery supply.

11. GROUNDING INSTRUCTIONS -This unit should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this unit.

12. **NEVER** short circuit the AC output and/ or DC input. Do NOT connect to the AC mains when DC input short circuits.

13. **Warning!!** Only qualified service persons can service this device. If errors persist after following troubleshooting table, please send this unit back to local dealer or service center for maintenance.

3. INTRODUCTION

The battery backup system provides constant and reliable backup power to critical electronics. It consists of the Uninterruptible Power Supply (UPS) System and optional Manual Bypass Switch (AC-UPS-BP) that provides backup power when the line is unqualified. These components should be mounted inside an enclosure to provide protection from most weather conditions. A separate battery string is required.

3.1 System Architecture

Figure 1: Battery Backup System Block Diagram
Models: AC-UPS-48-1200 & Models: AC-UPS-48-2000

Model: AC-UPS-24-700

*Contact the factory for 24VDC to 48VDC converter (700VA only)
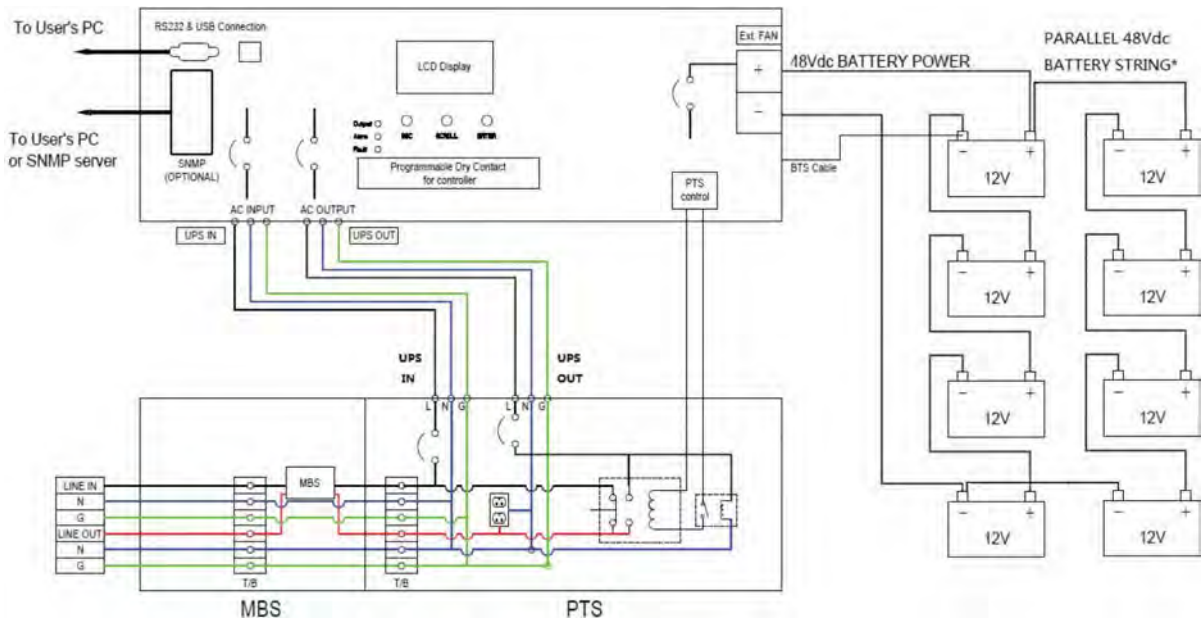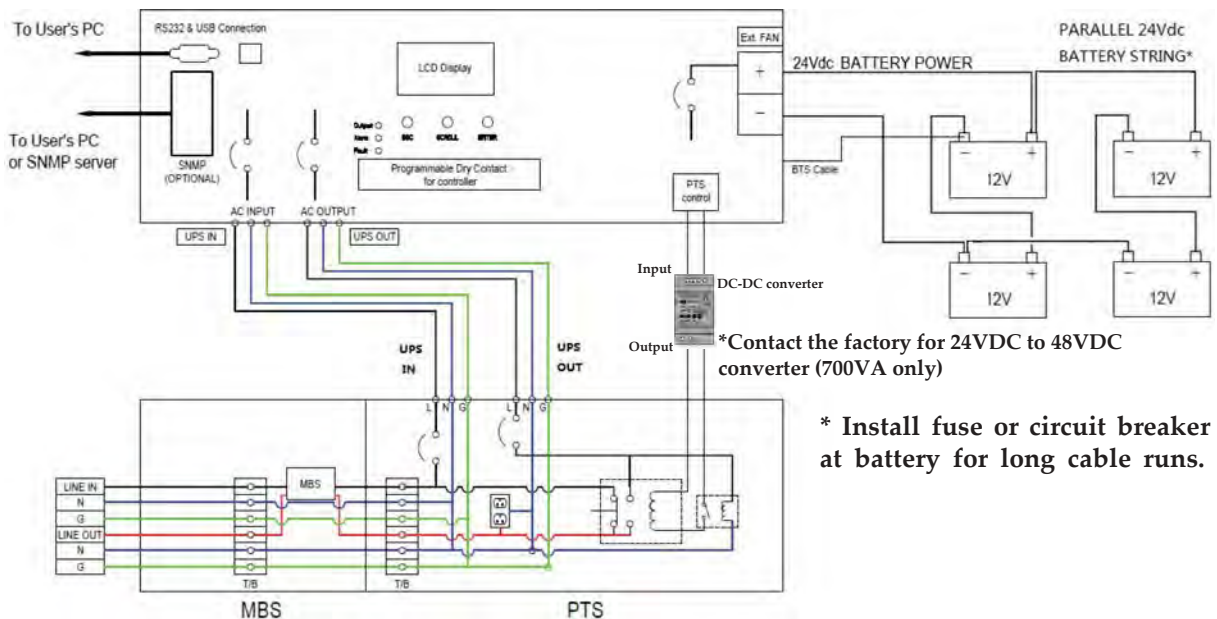
* Install fuse or circuit breaker at battery for long cable runs.

3.2 UPS Module

The UPS module provides utility power to the load when the line is qualified. An automatic voltage regulator (AVR) is embedded to provide stable power to the load and instantly switches to emergency backup power during utility power failure or interruption. The front panel view is shown below.

Figure 2: Front Panel of UPS

❶ **AC Input Terminal Block:** This terminal block is the UPS AC line power input.

❷ **AC Input Breaker:** This circuit breaker is an on/off switch for the line power into the UPS that also provides input protection. It must be switched on for proper UPS operation.
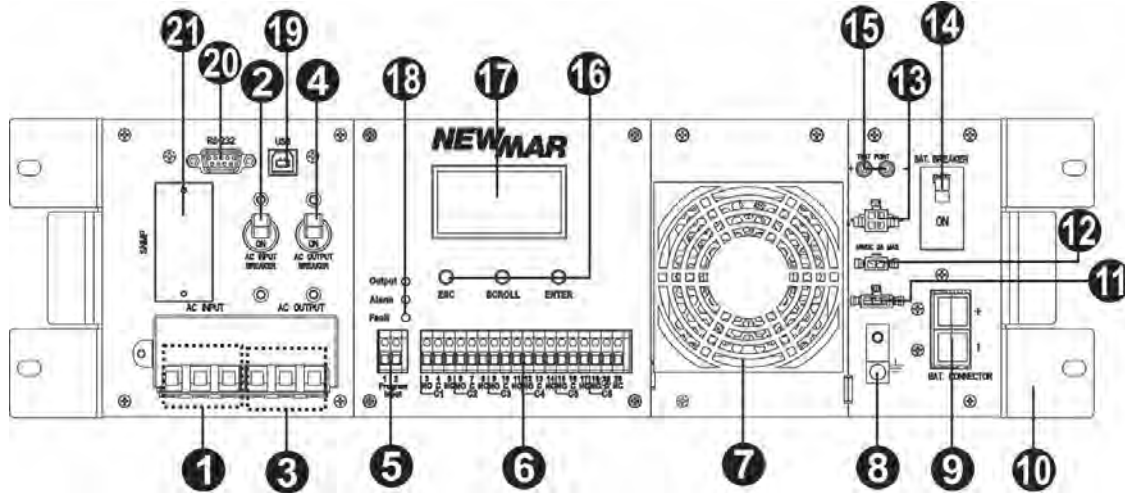
❸ **AC Output Terminal Block:** This terminal block is the UPS AC power output.

❹ **AC Output Breaker:** This circuit breaker is a resettable protective thermal circuit breaker to protect UPS output from overload and short circuits.

❺ **Input Contact:** To activate a programmable alarm by shorting this input contact, see section 5.5.9.

❻ **Dry Contact:** Six sets of dry contacts energize when a programmable event occurs, see section 5.5.9.

❼ **Internal Fan:** The fan is to cool down the inside temperature of the UPS and is easily replaced for maintenance.

❽ **GND:** This connector is the permanent ground of the UPS.

❾ **Battery Connector:** The battery connector is to connect external batteries. **Note:** Leave this breaker in OFF position when connecting Battery Connector to UPS. Failure to do so can cause arcing on battery connector terminals resulting in poor electrical connection.

❿ **Mounting Bracket & Handle:** The Rugged UPS Series is for mounting in a 19'' cabinet. For convenience, handles are provided for people frequently moving the unit. Mounting hardware includes (quantity 8): M4 x 3mm Flat Head, Phillips, S.S.

⓫ **Battery Temperature Connector:** This probe monitors battery temperature. The temperature probe connector must be plugged into the UPS for normal operation. The other end should be firmly attached to the terminal of the battery.

⓬ **External FAN Connector:** To provide DC Power (48V DC, 3 Amp Max) to an optional cabinet 48V DC fan.

⓭ **MBS Control Connector:** This connector provides power to control the MBS unit.

⓮ **Battery Breaker:** This over-current protection acts as an ON/OFF switch for the battery power. It needs to be ON for proper UPS operation. **Note:** Leave this breaker in OFF position when connecting Battery Connector to UPS. Failure to do so can cause arcing on battery connector terminals resulting in poor electrical connection.

⓯ **Battery Voltage Test Points:** The test points allow you to measure battery voltage. They accept 2 mm diameter test probe tips. The battery circuit breaker must be ON before measuring voltage. **CAUTION:** The battery voltage test points are NEVER to be used as a power outlet.

16 **Function Keys:** These buttons operate and control the LCD panel.

17 **LCD Display Panel:** The display shows the UPS information in four-line texts.

18 **Indicator LEDs:** Three LEDs show the information of output status, alarm, and fault.

19 **USB Connector:** This connects the UPS to the computer for remote control and monitoring.

20 **RS232 Connector:** A straight-through DB-9 to DB-9 connector cable connects the UPS to the computer for remote control and monitoring.

21 **Intelligent Slot:** The intelligent slot is for the SNMP card to communicate with UPS. The UPS can be monitored and controlled via a web browser or with SNMP protocols.

3.3 Manual Bypass Module (Optional)

The Manual Bypass Switch (MBS, model AC-UPS-BP) shown below allows the UPS to be removed for service, replacement, or maintenance without interrupting power to the loads.

Figure 3: Front Panel of MBS with terminal block
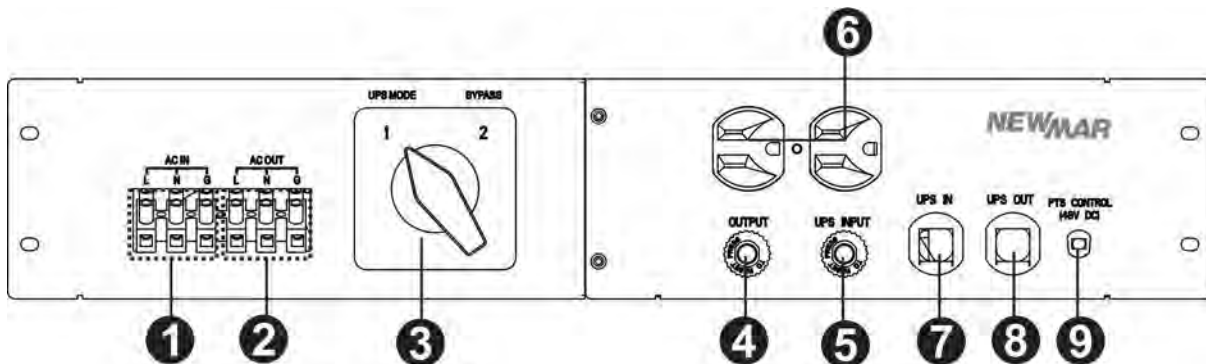
1 **AC Input Terminal Block:** The line input power connects to the terminal block marked with "AC IN".

2 **AC Output Terminal Block:** The output power connects to the terminal block marked with "AC OUT".

3 **Switch:** This switch selects UPS or bypass output.

4 **AC Output Breaker:** This circuit breaker labeled "OUTPUT" is a resettable protective thermal circuit breaker to protect the output from overloads and short circuits.

5 **AC Input Breaker:** This circuit breaker labeled "UPS INPUT" provides input power protection for the UPS.

6 **AC Output Receptacles:** These receptacles are for optional battery heating pads or a PC for maintenance.

7 **UPS Input Connector:** This "UPS IN" power cord connects to AC input connector or terminal blocks on UPS.

8 **UPS Output Connector:** This "UPS OUT" power cord connects to the AC output connector or terminal blocks on UPS.

9 **MBS Control Wiring:** The Black and Red MBS control wires connect to the MBS control connector on the UPS.

4. INSTALLATION

4.1 Unpacking and Inspection

Before installation, please remove the unit from its box carefully since the UPS is heavy. Follow the below guidelines to unpack and inspect the unit.

1. Select a suitable area for unpacking and be sure that nothing inside is damaged.
2. Store all the packing materials and boxes for possible equipment returns (see page 2 for included items).
3. Inspect the package contents and make sure all standard items as well as purchased options are included.

4. Compare the listed parts with the items you received. If the listed parts on your package does not match the items you received, or any items appear damaged, please immediately notify your carrier agent and the supplier who prepared your shipment.

4.2 Mounting the UPS
The UPS unit can be placed in a rack with no other parts needed. It can be rack-mounted or secured to a shelf such as in an outdoor cabinet, with the mounting brackets shown in the following figure. The brackets and the screws to attach them to the UPS case are available as part of the standard packaging.
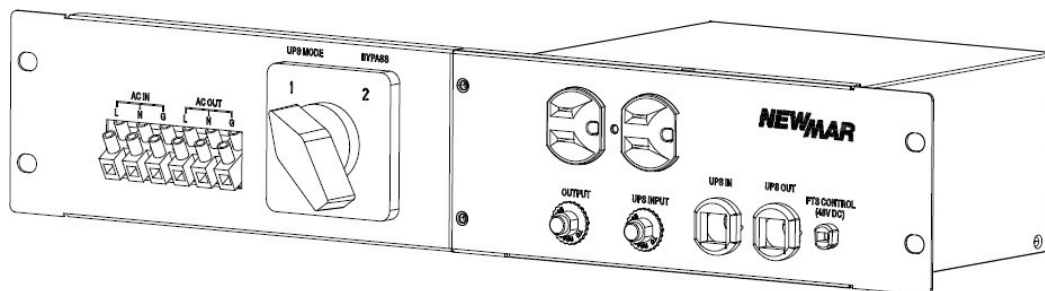
Figure 4: UPS with Bracket for Rack-Mounting

4.3 Mounting the Manual Bypass Switch (Optional)
The Manual Bypass Switch (MBS) is designed and factory-installed with a 19" rack-mounting bracket accessory shelf. It can be rack-mounted or placed on a shelf. The mounting screws and washers are packaged as accessories of the MBS.

Figure 5: MBS with Bracket for Rack Mounting

4.4 Wiring

WARNING! All electrical wiring must be performed by a qualified electrician or trained personnel. Make sure the line power is off. Switch OFF all input and output circuit breakers on the UPS unit before making any electrical connections.

4.4.1 Wiring the UPS

1. Connect the temperature sensor to the UPS unit (Battery Temperature connector ⓫). The other end is connected to the batteries later in the procedure.
2. Refer to Figure 1 & 2, connect the following ports if used.
   - USB Connector ⓭
   - RS-232 Connector ⓴
   - Dry contacts ❻
   - Program input ❺
   - Ethernet connector (RJ-45) ㉑
   - External FAN Connector ⓬

### 4.4.2 Wiring the Manual Bypass Switch to the UPS
Wire the MBS to the UPS according to the schematic shown in Figure 6.
1. The MBS is pre-wired with 2 cables marked as "UPS IN" and "UPS OUT". Connect these cables from MBS to the respective connectors on the UPS.
2. Connect the AC input wires to the AC input terminal blocks on the MBS. Ensure proper polarity (Line, Neutral and Ground to the respective terminal).
3. Connect AC output wires to the AC output terminal blocks on the MBS. Ensure proper polarity (Line, Neutral and Ground to the respective terminal).

Figure 6: Wiring the MBS to the UPS

Suggested cable requirement for AC wires:

Model	Gauge	Cable (mm²)	Torque Value
AC-UPS-48-2000	10 AWG	6	1.2Nm
AC-UPS-48-1200	10 AWG	6	1.2Nm
AC-UPS-24-700	10 AWG	6	1.2Nm
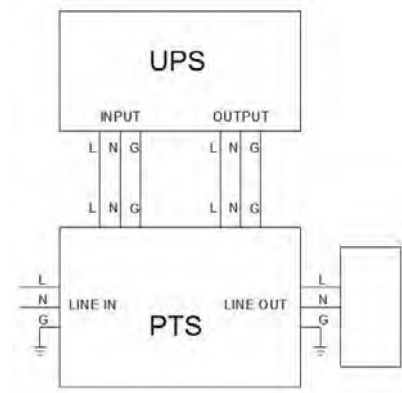
4.4.3 Wiring External Batteries
The UPS supports 24V or 48V DC battery (depending on model). Connect all battery strings as shown in Figure 7.
It is suggested to connect at least 100AH capacity battery.

Figure 7: Battery Connection Chart

48V DC   24V DC
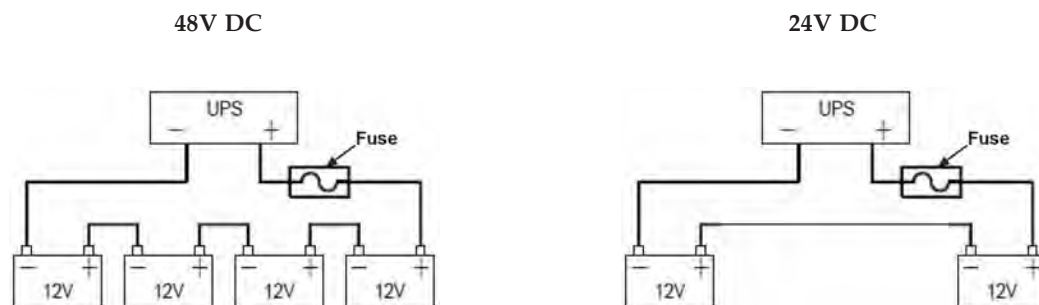
Recommended battery cable size:

Model	Typical Amperage	Wire Size	Cable mm²
AC-UPS-48-2000	40A	1*8 AWG	10
AC-UPS-48-1200	30A	1*10 AWG	6
AC-UPS-24-700	35A	1*10 AWG	6

5. OPERATION

To power up the UPS, ensure the switch on MBS is in "UPS Mode" position. Before commissioning, make sure batteries are fully charged and line power is qualified.

5.1 Switch on UPS in Line Mode
1. Switch the battery circuit breaker ON. All LEDs will illuminate, and the LCD will display, the Startup page, and fan will turn on.

2. Switch the AC input breaker ON. After line power is qualified, the LCD will display normal, buck, or boost according to line voltage range and line threshold setting.
Note: The AVR function default setting is disabled. You may activate it via the LCD panel or USB/RS232/SNMP communication.

5.2 Switch the UPS from Line Mode to Battery Mode
The UPS will operate in battery mode if the input circuit breaker is manually switched OFF. The LCD will display Battery and the output LED will flash and alarm LED will illuminate to show the UPS is running on backup battery power.

5.3 Switch from Battery Mode to Line Mode
After switching input circuit breaker ON and if the line input is qualified, the UPS will transfer to line mode with the output LED "ON" to show UPS is running from utility power.

Note: If the UPS keeps switching between inverter and line mode because of a noisy line, the setting of "UPS Sense type" should be changed from Normal or UPS to Generator.

5.4 Switch Off Procedure
For any reason you need to switch off UPS, please follow below procedure.
1. Switch the output circuit breaker OFF.
2. Switch the input circuit breaker OFF.
3. Switch the battery circuit breaker OFF. The output LEDs and the LCD display will shut off.

5.5 Operation the Control Panel
The control panel includes four-line LCD display, three LED indicators, three function keys, input contacts and six sets of dry contacts. The UPS can be rotated 90 degree for vertical installation.

Figure 8: Control Panel
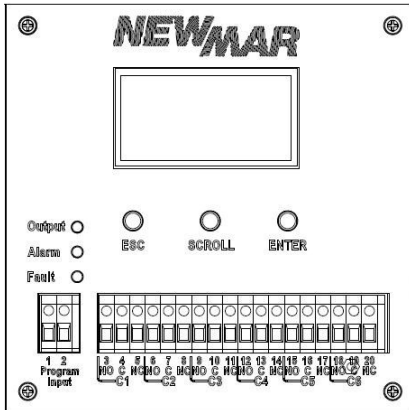
5.5.1 LED Indicator

LED Indicator			Messages
Output	Green	Solid On	Output is available in line mode
		Flashing	Output is available in battery mode
		Off	Output is not available
Alarm	Yellow	Solid On	Alarms occur in the system, indicating a condition not serious enough to stop it from providing output power.
Fault	Red	Solid On	Faults occur in the system, indicating a condition where backup power is not available.

5.5.2 Function Keys

Function Key	Description
ESC	Back to previous menu/page
SCROLL	Jump to next page or next selection
ENTER	Enter submenu or confirm selection

5.5.3 LCD Menu Tree

Users can check the status, view event log, set parameters and control of UPS via LCD panel. See below Menu Tree.

Figure 9: LCD Menu Tree

```
                    ┌─────────────┐   Power on
                    │  Startup    │   After 6sec, enter default page
                    │   .....     │   automatically.
                    └─────────────┘
                           │
                    ┌─────────────────┐
                    │ yy-mm-dd hh:mm  │
                    │ Mode: xxxxx     │   Default page
                    │ OP-V: xxx.xV    │
                    │ Load : xxx%     │
                    └─────────────────┘
                        Esc │ Enter
                    ┌─────────────────┐
                    │ ► 1. Status   ▼ │
                    │   2. Event log  │   Menu page
                    │   3. Setting    │
                    │   4. Control    │
                    └─────────────────┘
                           │
                    ┌─────────────────┐
                    │   5. Help       │
                    │              ▲  │
                    └─────────────────┘
```

Status Menu

```
┌───────────────────────────┐
│ 1. Serial   No.        ▼   │
│    xxxxxxxxxxxxxx           │
│ 2. I/P-V:xxx.xV             │
│ 3. I/P-F: xx.xHz            │
└───────────────────────────┘

┌───────────────────────────┐
│ 4. BAT V: xx.x V       ▼   │
│ 5. BAT T:    xx°C          │
│ 6. O/P-V: xxx.x  V         │
│ 7. O/P-F:    xx.xHz        │
└───────────────────────────┘

┌───────────────────────────┐
│ 8. O/P-P: xxxxVA       ▼   │
│ 9. O/P-P: xxxxWatt         │
│ 10. Load:    xxx%          │
│ 11. Mode:   xxxxx          │
└───────────────────────────┘

┌───────────────────────────┐
│ 12. InvEV: xxxxx       ▼   │
│ 13. InvTM: xxxx.xH         │
│ 14. BukEV: xxxxx           │
│ 15. BukTM: xxxx.xH         │
└───────────────────────────┘

┌───────────────────────────┐
│ 16. BstEV:  xxxxx      ▼   │
│ 17. BstTM: xxxx.xH         │
│ 18. C1:Off(or On)  C2:Off(or On) │
│ 19. C3:Off (or On)  C4:Off(or On) │
└───────────────────────────┘

┌───────────────────────────┐
│ 20. C5:Off(or On)  C6:Off(or On) │
│ 21. MainFW:  xx.xx         │
│ 22. LCDFW:  xx.xx          │
│ 23. HW    :   xx.xx     ▲  │
└───────────────────────────┘

┌───────────────────────────┐
│ IP Address: 192.168.1.51   │
└───────────────────────────┘
```

Event Menu

```
┌───────────────────────┐
│ ► 1. Active Log       │
│   2. History Log      │
└───────────────────────┘
```

Active Event

```
┌───────────────────────┐
│ yy-mm-dd hh:mm        │
│ Overload              │
│ In xxxxxx Mode        │
│ xx/xx              ▼  │
└───────────────────────┘
          ⋮
┌───────────────────────┐
│ yy-mm-dd hh:mm        │   Show all
│ Site fault            │   current events.
│ In xxxxxx Mode        │
│ xx/xx              ▲  │
└───────────────────────┘
```

History Event

```
┌───────────────────────┐
│ History Event         │
│ ► 1. Inquiry          │
│   2. Clear            │
└───────────────────────┘
```

```
┌───────────────────────┐
│ yy-mm-dd hh:mm        │
│ Overload              │
│ In xxxxxx Mode        │
│ xx/xx              ▼  │
└───────────────────────┘
          ⋮
┌───────────────────────┐
│ yy-mm-dd hh:mm        │
│ Site fault            │
│ In xxxxxx Mode        │
│ xx/xx              ▲  │
└───────────────────────┘
    Show all history event
    200 log maximum.
```

```
┌───────────────────────┐
│ Clear all             │
│ history event?        │
│  ⊙ Yes                │
│  ○ No                 │
└───────────────────────┘
          │
┌───────────────────────┐
│ All history event     │
│ deleted !             │
└───────────────────────┘
```

Settings& Control Menu

```
┌───────────────────────┐
│ Enter password :      │
│      ****             │
└───────────────────────┘
         │
    ┌────┴────┐
    ▽         ▽
 Setting    Control
  menu       menu

Default Password: 1111
```

Help

```
┌───────────────────────┐
│ AC-UPS-XX-XXXX        │
│ Tech Support          │
│ Tel 7146193505        │
└───────────────────────┘
```
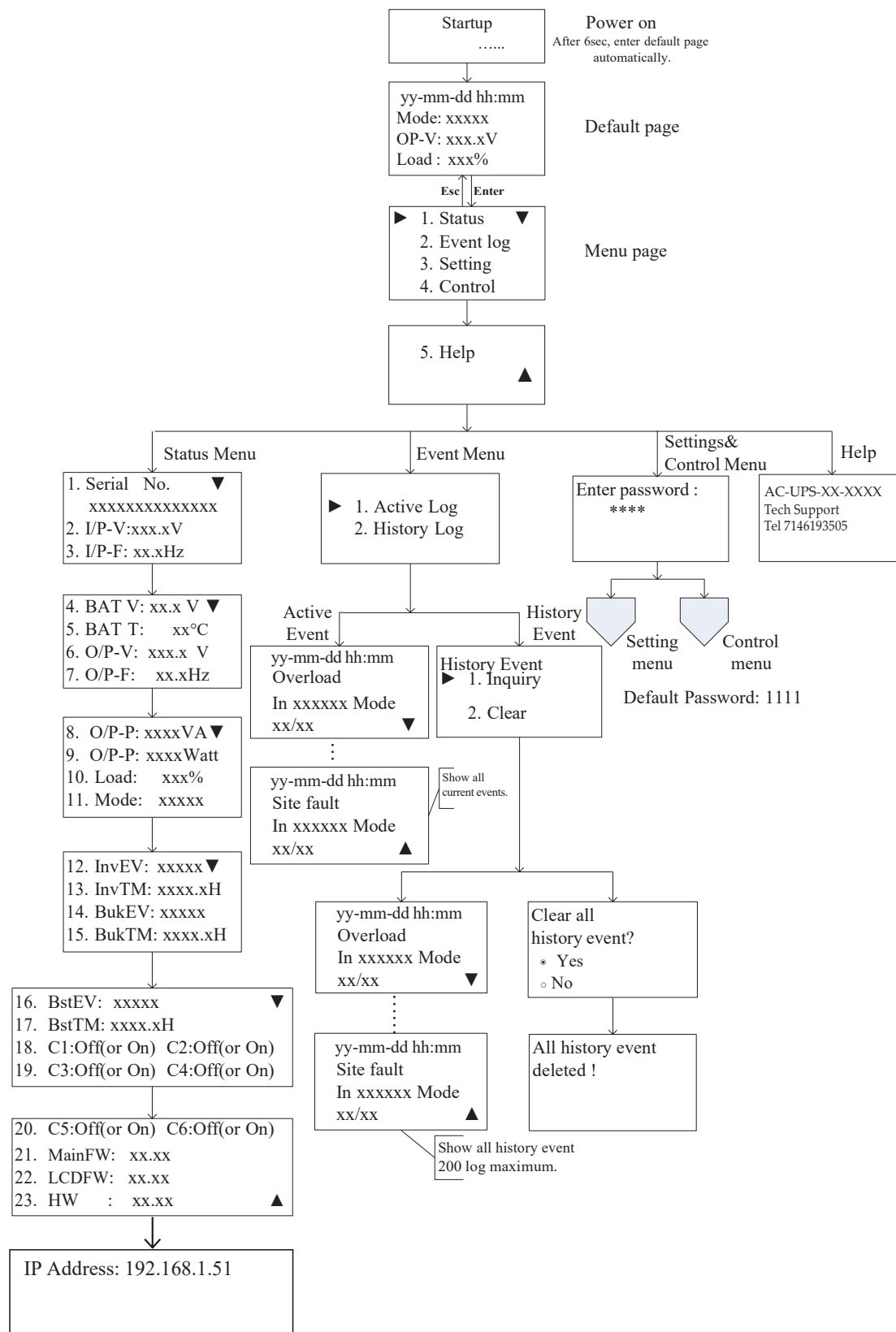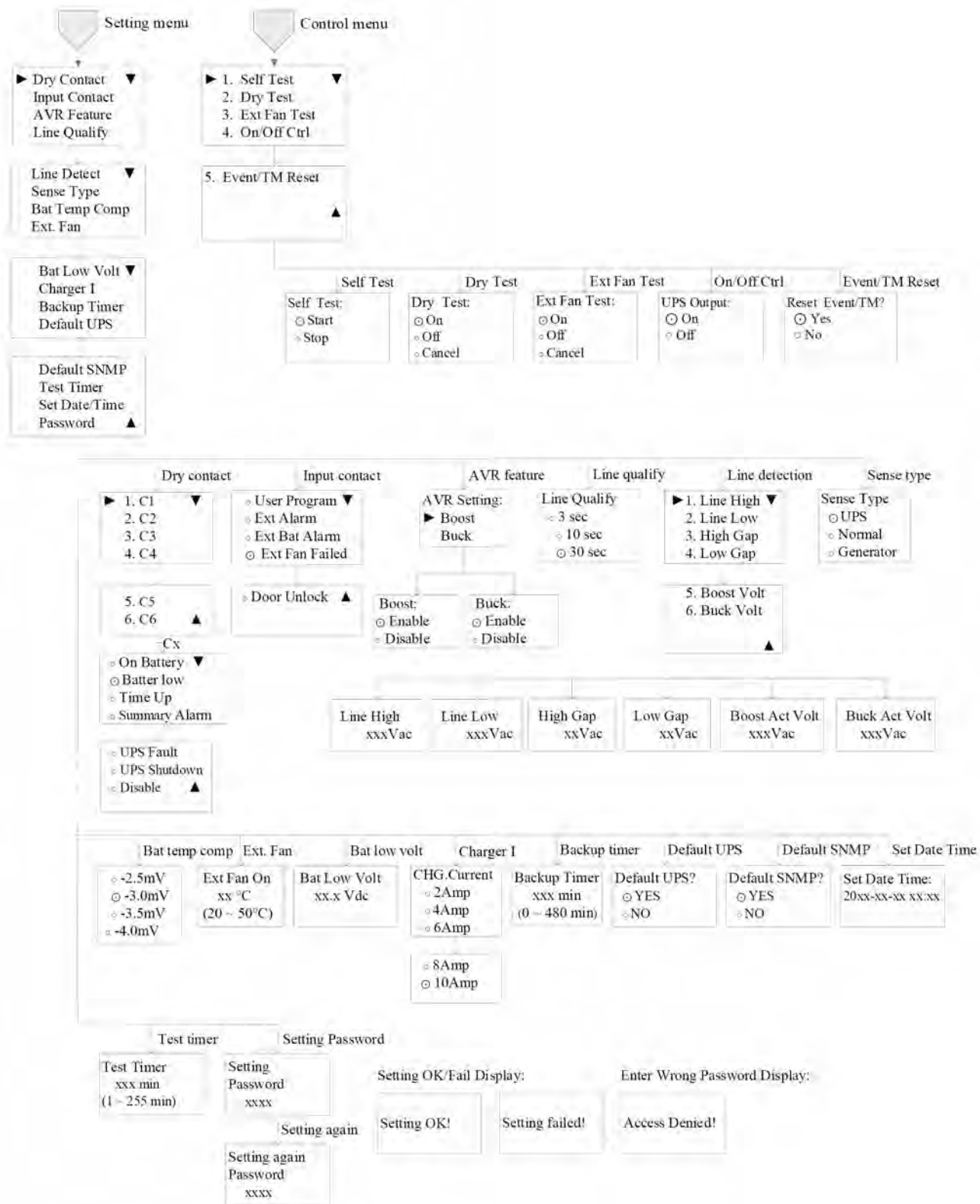
Figure 10: Setting and Control Page

Pressing the ESC, SCROLL and ENTER buttons to navigate through the menus and submenus to control, monitor and troubleshoot the UPS.

5.5.4 Default Page

After power on, Startup page will display. It will automatically switch to default page after 6 sec.

Default page	Explanation
yy-mm-dd hh:mm	Date and time
Mode: xxxxx	UPS current operation mode
OP-V: xxx.xV	UPS output voltage
Load : xxx%	UPS load percent

5.5.5 Operation Mode

The LCD automatically displays the following texts when the UPS changes status.

LCD Display	UPS status and Explanation
Normal	The normal operating mode. Input line is qualified and bypasses to power the loads. At the same time, batteries are charging.
Boost	The unit automatically transfers to Boost mode to raise the lower input line voltage when output voltage drops to the user programmable preset limit.
Buck	The unit automatically transfers to Buck mode to reduce the higher input line voltage when output voltage achieves the user programmable preset limit.
Battery	The unit automatically transfers to battery mode when input line power is unqualified or not present. Batteries provide power to the loads.
Self-Test	When "Self-Test" is executed, the unit will enter "Battery Mode" automatically to test output voltage and waveform. After testing, the unit will return to "Line Mode". Users may program Test Timer in Setting menu to configure a longer time for self-test. Default testing time is 1 minute.
Standby	No output power from UPS to the loads.

5.5.6 Menu Page

After pressing ENTER button in default page, it will enter menu page.

Figure 11: Menu Page
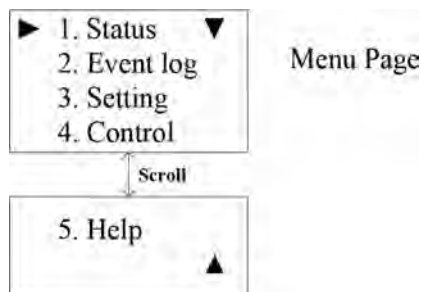
Press SCROLL button to browse all 5 submenus below.

Menu Screen	Explanation
Status	Indicates input and output information, and other values monitored in UPS.
Event log	Indicates the active event log and the history event log which users can inquiry or clear.
Setting	Indicates the parameters of UPS can be adjusted.
Control	Indicates the operational conditions of UPS can be controlled.
Help	Indicates the Model name and phone number

5.5.7 Status Menu

Status menu shows the basic measured information of UPS. Users can select displayed parameters by pressing the ENTER key. Press ESC button in any page will return to default page.

Menu Item	LCD Display	Explanation
Page 1	1. Serial No. ▼ xxxxxxxxxxxxxx 2. I/P-V:xxx.xV 3. I/P-F: xx.xHz	The Serial number of UPS
		The input line (utility) voltage
		The input line (utility) frequency
Page 2	4. BAT V: xx.x V ▼ 5. BAT T: xx°C 6. O/P-V: xxx.x V 7. O/P-F: xx.xHz	The average battery voltage
		The temperature of battery terminal
		The output voltage (true RMS)
		The output frequency
Page 3	8. O/P-P: xxxxVA▼ 9. O/P-P: xxxxWatt 10. Load: xxx% 11. Mode: xxxxx	The output power in VA
		The output power in watt
		The percentage of connected load, before overload
		The operation mode of UPS
Page 4	12. InvEV: xxxxx▼ 13. InvTM: xxxx.xH 14. BukEV: xxxxx 15. BukTM: xxxx.xH	The number of times the unit has been in battery mode
		The total time duration the unit has been in battery mode since the latest reset.
		The number of times the unit has been in buck mode
		The total time duration the unit has been in buck mode since the latest reset.
Page 5	16. BstEV: xxxxx ▼ 17. BstTM: xxxx.xH 18. C1:Off C2:Off 19. C3:Off C4:Off	The number of times the unit has been in boost mode
		The total time duration the unit has been in boost mode since the latest reset.
		The status of the dry contact C1 and C2.
		The status of the dry contact C3 and C4.
Page 6	20. C5:On C6:On 21. MainFW: xx.xx 22. LCDFW: xx.xx 23. HW : xx.xx ▲	The status of the dry contact C5 and C6.
		The firmware version of Main CPU in the UPS.
		The firmware version of LCD panel in the UPS.
		The hardware version of the UPS.
Page 7	IP Address: 192.168.1.51	The IP address of the UPS

5.5.8 Event Menu

User can view the active event log and history event log via this menu. After pressing ESC button in Event page, it will return to default page.

Event Log Page	Explanation
▶ 1. Active Log 2. History Log	Active event log enquiry.
	History event log enquiry and clear. Maximum log number is 200.

Active Log Page	Explanation
yy-mm-dd hh:mm Over Load In xxxxxx Mode xx/xx ▼	Date and time when this event occur
	Event type
	UPS operation mode when this event occurs
	Viewing event index/Total active event number

5.5.9 Setting Menu

The user can set various critical parameters in this menu. Choose the desired function on the screen by pressing ENTER button. Press the ESC button to return to default page.

Setting page	Explanation
► Dry Contact ▼ Input Contact AVR Feature Line Qualify	**Dry Contact:** It indicates programmed values of C1-C6 contacts. Factory default settings: C1,C2=On battery; C3,C4=battery low; C5,C6=Timer. Illustrations for each programmed value are shown below. - On battery: Energized when Unit in INV mode. - Battery low: Energized when the battery voltage is lower than the configurable battery low voltage. The default value is 46VDC for AC-UPS-48-1200, AC-UPS-48-2000 and 24VDC for AC-UPS-24-700. - Timer: Energized after the unit has been in INV mode for the setting backup time. The factory default value is 2 hours. - Alarm: Energized when any alarm occurs in UPS. - Fault: Energized when any fault occurs in UPS. - Off: Energized while the UPS is off. - Disable: The dry contacts become invalid. - Input Contact: It indicates selectable options for input contacts.
	Input Contact: It indicates selectable options for input contacts. Factory default setting is "Ext Fan Failed". Selectable options are listed as below. - User program - Ext Alarm - Ext Battery Alarm - Ext Fan Failed - Door Unlocked
	AVR Feature: Enable or disable Buck and Boost function. Factory default setting is "enabled".
	Line Qualify: Set AC recovery time after the line is qualified. It is to make sure the line is stable. The selectable options are: 3 sec, 10 sec or 30 sec. Default value is "30 sec".

Line Detect ▼ Sense Type Bat Temp Comp Ext. Fan	**Line Detect:** It allows users to set up detection levels for AC input voltages, setting points to go in and out from battery mode, boost, or buck modes. - Line High: When input voltage exceeds this level, unit will transfer from Line Mode to Battery Mode. Refer parameter descriptions and setting values in 5.6.9 Parameter Descriptions Table. - Line Low: When input voltage is lower than this level, unit will transfer from Line Mode to Battery Mode. Refer parameter descriptions and setting values in 5.6.9 Parameter Descriptions Table. - High Gap: The voltage gap between Line High and High Back, Buck High, and Buck Back. Refer parameter descriptions and setting values in 5.6.9 Parameter Descriptions Table. - Low Gap: The voltage gap between Line Low and Low back, Boost Low and Boost Back. Refer parameter descriptions and setting values in 5.6.9 Parameter Descriptions Table. - Boost Low: When AVR function is enabled and input voltage drops between Boost Back point and this level, unit will transfer to Boost Mode. Refer parameter descriptions and setting values in 5.6.9 Parameter Descriptions Table. - Buck High: When AVR function is enabled and input voltage increase between Buck Back point and this level, unit will transfer to Buck Mode. Refer parameter descriptions and setting values in 5.6.9 Parameter Descriptions Table.

	Sense Type: Users can change the Sense Type according to operation condition. Three types for selection: - UPS mode: The UPS can operate successfully with ups mode. The maximum transfer time is 5ms. - Normal mode: The UPS can operate successfully with general line conditions. The maximum transfer time is 20ms. - Generator mode: This setting allows UPS to work with the fluctuations caused by a generator or noisy line. The maximum transfer time is 25ms.
Bat Low Volt ▼ Charger I Backup Timer Default UPS	Bat. Temp Comp: It adjusts the battery temperature compensated voltage to -2.5, -3.0, -3.5 or -4.0 mV/°C/Cell. The factory default setting is -3.0 mV/°C /Cell.
	Ext. Fan: It indicates ambient temperature setting to switch on the external fan. The default value is 25°C (range 20 - 50°C)

Default SNMP Test Timer Set Date/Time Password　▲	Bat. Low Volt: Used to set the low battery warning voltage. For AC-UPS-48-1200, & AC-UPS-48-2000, the resettable range is 42.0 ~ 55.0V. The default value is 46V. For the AC-UPS-24-700 model, the resettable range is 21.0 ~ 27.5V. The default value is 23V.
	Charger I: Used configure the charger current. There are 2, 4, 6, 8 or 10Amp for selection. The default value is 10A.
	Backup Timer: Used to configure the warning time for backup time. This function is available only when timer is set in dry contact. The adjustable range is 0~480 min with 15-min increment of each click by pressing SCROLL button. The default value is 120min.
	Default UPS: Restore factory settings of UPS.
	Default SNMP: Restore factory settings of SNMP.
	Test Timer: Used to define the time of Self-Test. The adjustable range is 1~255min.
	Set Date/Time: It indicates setting for date and time.
	Password: The Password to access Setting and Control Menu can be changed here. Use the SCROLL key with ENTER keys to enter a correct Password. Re-entry is required if an error occurs when entering the password.

5.5.10 Control Menu

Press SCROLL button to switch desired option in Control menu and press ENTER button to confirm new option. Pressing ESC button will return to default page.

Control page	Explanation
Self Test: ⊙ Start ○ Stop	Starts the Self-Test. CAUTION: The unit must be in Normal, Boost or Buck Mode before starting the self-test.
Dry Test: ⊙ On ○ Off ○ Cancel	Starts the dry contact test. On: All dry contacts are energized. This action will be finished automatically after 1 minute. Off: All dry contacts are ineffective. This action will be finished automatically after 1 minute. Cancel: Cancel this test immediately.
Ext Fan Test: ⊙ On ○ Off ○ Cancel	Starts the external fan test. On: The external fan has power from battery. This action will be finished automatically after 1 minute. Off: Cut off battery power. This action will be finished automatically after 1 minute. Cancel: Cancel this test.
UPS Output: ⊙ On ○ Off	UPS output can be turned ON or OFF. This option is available when the UPS is in INV, Boost, Buck, or Normal Mode.

Reset Event/TM? ⊙ Yes ○ No	It resets all event numbers and time duration to zero.

5.5.11 Help Menu
It shows UPS model name in Help menu.

Help page	Explanation
AC-UPS-XX-XXXX Tech Support Tel 7146193505	Indicates UPS model name and phone number.

5.6 RS232/USB interface

Users can check UPS status, view event log, set parameters and control UPS via RS232/USB interface.

5.6.1 RS232/USB connection
Connect the UPS and computer with standard RS232 or USB cable.

5.6.2 HyperTerminal Set Up
With built-in communication tool HyperTerminal in Windows, device can communicate with computer. Follow below steps to step up HyperTerminal.

Step 1: The path of HyperTerminal communication tool is Programs/Accessories/Communications/HyperTerminal as shown in Figure 12.

Step 2: Click on the HyperTerminal icon. It will pop up "Connection Description" screen as shown in Figure 13. Enter a name and select an icon for your unit. Then, click OK.

Figure 12: Hyper Terminal Selection Screen

Figure 13: Connection Description Screen

Step 3: It will pop up "Connect To" screen as shown in Figure 14. Select the COM port from the drop-down n menu and then click OK.

Step 4: It will pop up "COM Properties" screen and select port setting as shown in Figure 15 and click OK.

Figure 14: Connect to Screen

Figure 15: COM Properties
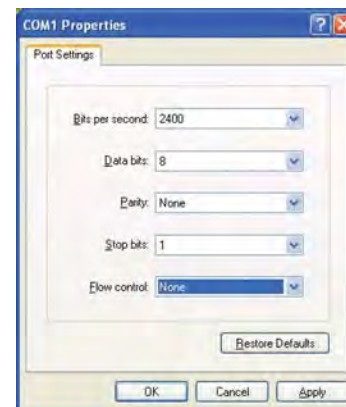
Step 5: A blank window with the entered file name will pop up. Refer to Figure 16. In the File menu, select Properties and Click.

Step 6: The [Name of Unit] Properties screen will pop up as shown in Figure 17. Click on the Settings tab. Select all columns as below figure and click ASCII Setup button.

Figure 16: HyperTerminal Screen

Figure 17: ASCII Properties Screen
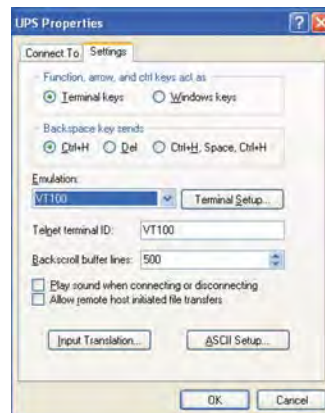
Step 7: Set up all columns in the ASCII Setup screen as shown in Figure 18. Click OK and HyperTerminal setup is completed.

Step 8: Press Enter to go to UPS screen and access the UPS via RS232/USB communications.

Figure 18: ASCII Setup Screen

5.6.3 RS232/USB Menu Tree

The complete Menu Tree is shown below with all default values.

Figure 19: RS232/USB Menu Tree

```
UPS Model: AC-UPS-XX-XXX
ID xxxxxxxxxxxxx
[0-MAIN MENU]
  1 Unit Specification
  2 Input/Output Values
  3 Control
  4 System Setting
  5 Line Conditioning Setup
  6 Programmable Contacts Setup
  7 Event Log View
  8 Login Administrator

Date & Time: 13-10-14, 09:24:02
Sense Type: [Normal]
Line Status: Normal
Output Status: Normal
Contact Status:
  Contact C1 ==> [ON BATT]/[Not Activated]
  Contact C2 ==> [ON BATT]/[Not Activated]
  Contact C3 ==> [LOW BATT: 46.0 Volts]/[Not Activated]
  Contact C4 ==> [LOW BATT: 46.0 Volts]/[Not Activated]
  Contact C5 ==> [Timer : 2.00 Hours]/[Not Activated]
  Contact C5 ==> [Timer : 2.00 Hours]/[Not Activated]
Ext. Fan Status: [Activated]
Faults: None
Alarms: BTS Disconnect
```

```
[0-MAIN MENU]
[1-Unit Specification]
  Unit Model      AC-UPS-XX-XXX
  Unit Freq       60 Hertz
  Output Voltage  120 Volts
  Output VA       xxxx VA
  Battery Voltage xx Volts
  Max Chgr Current 10.0 A
  Panel Firmware Ver xx.xx
  Main Firmware Ver xx.xx
  Hardware Ver    xx.xx
```

```
IP Address
192.168.1.51
```

```
[0-MAIN MENU]
[2-INPUT/OUPUT VALUES]
  Input:-
   Voltage   000.0 Vac
   Freq      00.0 Hz
  Output:-
   Voltage   120.0 Vac
   Freq      50.0 Hz
   Power     0000 Watt
   VA        0000 VA
   Load Per 000 %
  Battery:-
   Temperature 25 Deg C
   Voltage    XX.XX Vdc
  Evt-Timer
   INV EVENT 00003
   INV Timer 0000 Hours 30 Mins
   Boost EVENT 00000
   Boost Timer 0000 Hours 00 Mins
   Buck EVENT 00000
   Buck Timer 0000 Hours 00 Mins
```

```
[0-MAIN MENU]
[3-Control]
  30) Self-Test
  31) Dry Contact Test
  32) Ext Fan Test
  33) Ups Output
  34) Event/Timer Reset
```

```
Self-Test
  0) Stop
  1) Start
  >
```

```
Dry Contact Test
  0) Off
  1) On
  2) Cancel
  >
```

```
Ext FAN Test
  0) Off
  1) On
  2) Cancel
  >
```

```
Ups Output
  0) Off
  1) On
  >
```

```
Reset Event/TM
  0) No
  1) Yes
  >
```

```
[0-MAIN MENU]
[4-SYSTEM SETTING]
  40) Ext Fan On By Temperature
  41) Battery Low Voltage
  42) Charging Current
  43) Battery Temperature Compensation
  44) Test Timer
  45) Backup Timer
  46) Set To Default UPS
  47) Set Date
  48) Set Time
  49) Change Password
```

```
[0-MAIN MENU]
[40-EXT FAN ON BY TEMPERATURE]
  Current setting is [25 Deg C]
  Enter new value. (20->50)
  >
```

```
[0-MAIN MENU]
[41-BAT LOW VOLTAGE]
  Current setting is [xx.x Volts]
  Enter new value. (xx.x->xx.x)
  >
```

```
[0-MAIN MENU]
[42-Charging Current]
  Current setting is [10 Ampers]
  0) Set to 2  Ampers
  1) Set to 4  Ampers
  2) Set to 6  Ampers
  3) Set to 8  Ampers
  4) Set to 10 Ampers
```

```
[0-MAIN MENU]
[43-Battery Temperature Compensation]
  Current setting is [-3.0 mv/Deg C/Cell]
  0) Set to -2.5 mv/Deg C/Cell
  1) Set to -3.0 mv/Deg C/Cell
  2) Set to -3.5 mv/Deg C/Cell
  3) Set to -4.0 mv/Deg C/Cell
```

```
[0-MAIN MENU]
[44-Test Timer]
  Current setting is [001min]
  Enter New Value
  >
```

```
[0-MAIN MENU]
[45-Backup Timer]
  Current setting is [08] (Unit = 0.25Hour)
  Enter New Value
  >
```

```
[0-MAIN MENU]
[46-Set To Default UPS]
  0) No
  1) Yes
  >
```

```
[0-MAIN MENU]
[47-Set Date]
  Current Date is [13-09-13]
  Enter new value (**-**-**)
  >
```

```
[0-MAIN MENU]
[48-Set Time]
  Current Time is [18:38:54]
  Enter new value (**:**:**)
  >
```

```
[0-MAIN MENU]
[4-SYSTEM SETTING]
[49-Change Password]
  Please Enter New Password:0000-9999
  >
```

```
[0-MAIN MENU]
[5-LINE CONDITIONING SETUP]
  50) Buck function
  51) Boost function
  52) Sense Type
  53) Line Qualify Time
  54) High Limit [152] Vac
  55) Low Limit  [088] Vac
  56) Boost Low  [102] Vac
  57) Buck High  [128] Vac
  58) High Gap   [005] Vac
  59) Low Gap    [005] Vac
  *) High back  [147] Vac
  *) Low back   [093] Vac
  *) Boost back [107] Vac
  *) Buck back  [123] Vac
```

```
[0-MAIN MENU]
[5-LINE CONDITIONING SETUP]
[50-Buck Function]
  Current setting is [Enable]
  0) Disable
  1) Enable
  >
```

```
[0-MAIN MENU]
[5-LINE CONDITIONING SETUP]
[51-BOOST FUNCTION]
  Current setting is [Enable]
  0) Disable
  1) Enable
  >
```

```
[0-MAIN MENU]
[5-LINE CONDITIONING SETUP]
[52-SENSE TYPE]
  Current setting is [Normal]
  0) Normal
  1) Generator
  2) UPS
  >
```

```
[0-MAIN MENU]
[5-LINE CONDITIONING SETUP]
[53-Line Qualify Time]
  Current setting is [03 Seconds]
  0) Set to 3 seconds.
  1) Set to 10 seconds.
  2) Set to 30 seconds.
  >
```

```
HIGH LIMIT [152]  Enter new value. (120->152)
>
```

```
Low Limit [088]  Enter new value. (088->120)
>
```

```
Boost Low [102]  Enter new value. (096->120)
>
```

```
Buck High [128]  Enter new value. (120->144)
>
```

```
High Gap [005]  Enter New Value. (003->007)
>
```

```
Low Gap [005]  Enter New Value. (003->007)
>
```

```
[0-MAIN MENU]
[6-PROGRAMMABLE CONTACTS SETUP]
  60) Contact C1 = [ON BATT]
  61) Contact C2 = [ON BATT]
  62) Contact C3 = [LOW BATT: 46/23 Volts]
  63) Contact C4 = [LOW BATT: 46/23 Volts]
  64) Contact C5 = [Timer : 2.00 Hours]
  65) Contact C6 = [Timer : 2.00 Hours]
  66) PROGRAM I/P Contact = [EXT FAN FAILED]
```

```
[0-MAIN MENU]
[6-PROGRAMMABLE CONTACTS SETUP]
[66-PROGRAM I/P CONTACT]
  Current Setting is [EXT FAN FAILED]
  0) Set to [USER PROGRAM IN]
  1) Set to [EXT ALARM]
  2) Set to [EXT BATT ALARM]
  3) Set to [EXT FAN FAILED]
  4) Set to [DOOR UNLOCK]
  >
```

```
[0-MAIN MENU]
[6-PROGRAMMABLE CONTACTS SETUP]
[60-CONTACT C1]
  Current Setting is [ON BATT]
  0) Set to [ON BATT]
  1) Set to [LOW BATT]
  2) Set to [TIMER]
  3) Set to [ALARM]
  4) Set to [FAULT]
  5) Set to [OFF]
  6) Set to [DISABLE]
  >
```

```
[0-MAIN MENU]
[7-EVENT LOG VIEW]
  70) Display Event Records
  71) Reset Event Log
```

```
[0-MAIN MENU]
[7-EVENT LOG VIEW]
  70) Display Event Records
  71) Reset Event Log
71
Success

  Reset Event Log
  0) No
  1) Yes
  >1
```

```
[0-MAIN MENU]
[7-EVENT LOG VIEW]
[70-Display Event Records]
  0) Event #001-#050
  1) Event #051-#100
  2) Event #101-#150
  3) Event #151-#200
  >
```

```
[0-MAIN MENU]
[7-EVENT LOG VIEW]
[70-Display Event Records]
  0) Event #001-#050
  1) Event #051-#100
  2) Event #101-#150
  3) Event #151-#200
  >0
001.2013-09-05 21:20:26 In Bat Mode Warning:Drycontact1 :[ON BAT]
002.2013-09-05 21:23:28 In Normal  Warning:Line Fail
003.2013-09-05 21:23:31 In Bat Mode Warning:Drycontact1 :[ON BAT]
004.2013-09-05 21:24:27 In Off Mode Warning:Line Fail
005.2013-09-06 11:11:55 In Off Mode Warning:Line Fail
006.2013-09-06 11:11:57 In Bat Mode Warning:Drycontact1 :[ON BAT]
007.2013-09-06 11:33:09 In Off Mode Warning:Line Fail
008.2013-09-06 12:27:54 In Off Mode Warning:Line Fail
009.2013-09-06 12:27:54 In Off Mode Warning:Bat Temp High
010.2013-09-06 12:30:10 In Off Mode Warning:Fan Fault
```

```
[0-MAIN MENU]
[8-Login Administrator]
  Current user is [Guest]
  Please Enter Password
  >1111
  >Success
```

```
[0-MAIN MENU]
[8-Login Administrator]
  Current user is [Administrator]
  Success To Access!
  >
```

5.6.4 RS232/USB Main Menu

The RS232 / USB menus are hierarchical. Press ENTER to access main menu as shown in Figure 20. Type in the number of submenu and press Enter to access a particular submenu. Press Enter to refresh the screen, the Status, Faults, and Alarm readouts. Note: It is requested to enter passwords in 8 Login Administrator first to access submenu 3~7. The factory default password is 1111.

The main menu displays the submenu numbers, the line status, the unit's output status and any faults or alarms that may be present.

Figure 20: Main Menu Screen

```
UPS Model:
ID: xxxxxxxxxxxxx
[0-MAIN MENU]
 1 Unit Specification
 2 Input / Output Values
 3 Control
 4 System Setting
 5 Line Conditioning Setup
 6 Programmable Contacts Setup
 7 Event Log View
 8 Login Administrator

Date & Time : 13-10-14, 09:24:02
Sense  Type  :  [Normal]
Line  Status  :  Not  Good
Output Status : Inverter
Contact Status :
  Contact C1 ==> [ON BATT]/[Activated]
  Contact C2 ==> [ON BATT]/[Activated]
  Contact C3 ==> [LOW BATT : 46.0 /23.0Volts]/[Not Activated]
  Contact C4 ==> [LOW  BATT : 46.0  /23.0Volts]/[Not  Activated]
  Contact C5 ==> [Timer : 2.00 Hours]/[Not Activated]
  Contact C6 ==> [Timer : 2.00 Hours]/[Not Activated]
Ext.Fan Status : [Activated]
Faults : None
Alarms : Line Fail/BTS Disconnect
```

BTS = Manual Bypass Switch (MBS)

Displayed contents of Line Status, Output Status, Faults and Alarms are listed in Figure 21.

Figure 21: Displayed contents in Main Menu

```
Line Status: [Current Status]
Output Status: [Current Status]
Contact Status: [Current Status]
Ext. Fan Status: [Current Status]
Faults: [If any, otherwise blank]
Alarms: [If any, otherwise blank]
>_
```
▼

Line Status Displays	Output Status Displays	Fault Displays	Fault Displays
Normal	Self-Test	Bus Voltage	Bus Voltage Over
Not Good	Inverter	Bus Voltage Under	Bus Voltage Under
	Buck	Bus Soft Fail	Bus Soft Fail
	Boost	Output Short	AC Fail
	Normal	INV Output Voltage Low	Output Short
	Off	INV Output Voltage High	INV Output Voltage Low
		Over Temperature	INV Output Voltage High
Contact Status/ Ext. Fan Status Displays		Fan Fault	Over Temperature
		Battery Voltage High	Fan Fault
Activated		Overload	Battery Voltage High
Not Activated			Battery Voltage Low
			Over Charge
			Battery Voltage Under
			Temp Derating
			Overload
			Eeprom Fault
			Battery Temperature Low
			Battery Temperature High
			BTS Disconnect
			Battery Disconnect
			Site Fault

5.6.5 Unit Specifications
To access Unit Specification menu, type 1 and press Enter on the main menu. To return to the main menu, press Esc and then press Enter.

It lists unit specifications as following table.

1- Unit Specifications	
Unit Model	The model name
Unit Freq	Nominal operating frequency
Input Voltage	Nominal input voltage
Output Voltage	Nominal output voltage
Output VA	The output capacity in VA
Battery Voltage	Nominal battery voltage
Max Charge Current	Maximum charging current
Panel Firmware Version	Panel board firmware version
Main Firmware Version	Main board firmware version
Hardware Version	Hardware version
IP Address	UPS IP address

PoweringTheNetwork.com

5.6.6 Input/Output Values

To access Input/Output Values menu, type 2 and press Enter on the main menu. To return to the main menu, press Esc and then press Enter buttons. The table below lists the actual measurements of input/output parameters.

2 - Input/Output Values	
Input	
Voltage	The Input voltage
Freq	The Input frequency
Output	
Voltage	The output voltage
Freq	The output frequency
Power	The output active power
VA	The output apparent power
Load Per	The load percent of output power
Battery	
Temperature	The ambient temperature of the battery case as read via attached temperature probe.
Voltage	The battery DC voltage
Evt-Timer	
INV Event	The number of times that input power failure occurs
INV Timer	Total time that the battery was discharged since the latest RESET
BUCK Event	The number of times that BUCK function activates
BUCK Timer	Total time that the BUCK function activates since the latest RESET
BOOST Event	The number of times that BOOST function activates
BOOST Timer	Total time that the BOOST function activates since the latest RESET

5.6.7 Control

To access Control menu, type 3 and press Enter on the main menu. To return to the main menu, press Esc and then press Enter button. The table below lists all control options.

3 - Control	
30 Self-Test	Start or stop for the self-test. The test duration is user-programmable. Please refer to 44 in system setting for the details. Tip: The time duration can be changed only when the UPS in line mode.
31 Dry Contact Test	Turn on or switch off the dry contacts. The test will end after 1 minute automatically.
32 Ext Fan Test	Turn on or switch off the external fan. The test will end after 1 minute automatically.
33 Ups Output	This option allows user to control the inverter to be switched OFF or turned ON.
34 Event/Timer Reset	Resets INV, BUBK, BOOST Event to 0. Resets INV, BUBK, BOOST Timer to 0.

5.6.8 System Setting

To access System Setting menu, type 4 and press Enter on the main menu. To return to the main menu, press Esc and then press Enter buttons.

Following table lists all options in system setting.

4 – System Setting	
40. Ext Fan On By Temperature	Setting temperature in °C to trigger external cooling fan. When temperature is higher than setting, battery power will be provided for external cooling fan. The temperature can be set from 20 to 55°C with 1°C increment by each increase. The factory default temperature is 25°C.
41. Battery Low Voltage	Voltage level for low battery alarm. For AC-UPS-48-1200, and AC-UPS-48-2000, the voltage level can be configured from 42V DC to 55V DC. The factory default setting is 46V DC. For AC-UPS-24-700, the voltage level can be configured from 21V DC to 27.5V DC. The factory default setting is 23V DC.
42. Charging Current	Setting battery charging current. It can be configured to 2A, 4A, 6A, 8A or 10A. The factory default value is 10A.
43. Battery Temperature Compensation	Setting charging rate based on the battery case temperature. The factory default value is -3mv/°C /Cell. It can be configured to -2.5, -3, -3.5 or -4 mv/°C /Cell.
44. Test Timer	Setting time duration for self-test. The factory default setting is 1 minute. It can be configured from 1 to 255 minutes.
45. Backup Timer	Setting backup time. The factory default setting is 120 minutes. It can be configured from 0 to 480 minutes with 15-minute increment of each increase.
46. Set To Default Ups	Set all the configurations to factory default value.
47. Set Date	Adjust the date.
48. Set Time	Adjust the time.
49. Change Password	Change password. The factory default password is 1111. Note: The password can only be changed in Line mode.

5.6.9 Line Conditioning Setup

This option allows the user to change various detection and warning levels for input AC voltages, qualified and unqualified values, transfer & re-transfer setting points for going in & out of Battery mode, Boost or Buck modes. See the detailed descriptions in the following Parameter Description table.

The UPS uses line conditioning to operate at maximum efficiency under specific standard supply voltage. Buck and boost voltage regulator is an ideal solution when the line voltage is consistently higher or lower than nominal. The transformer can buck (decrease) or boost (increase) the supply voltage without battery backup or involving other active UPS board level components.

When activated, the transformer will automatically switch to the secondary tap to buck or boost voltage 10% to keep the output voltage within acceptable range.

CAUTION: Improper parameter value setting can cause permanent damage to the unit. Changes should only be made by qualified and trained personnel.

Note: Parameter values are interdependent. Changing one value can affect the range and permissible value(s) in other fields. This feature is to avoid users entering contradictory values.

Users can change parameters as following procedure.

Step 1: Go to the Menu 5.
Step 2: When Parameter Change Screen appears (Figure 22), type the new value within acceptable range and press Enter. The screen will return to the Line Slow Detection Screen. For example, refer to Figure 22.

Figure 22: Parameter Change Screen (Slow Detect Low Limit Screen Shown)

Acceptable Parameter Limits

Current Parameter Status

Name of Parameter

Prompt

Low Limit [088] Enter new value. (088->120)
>_

Parameter Descriptions Table (All levels are user-programmable. Some values are interdependent.)

Parameter		AVR Function Disable		AVR Function Enable	
		Default Setting	Selections or Selectable Range	Default Setting	Selections or Selectable Range
50. Buck Function				√	
51. Boost Function				√	
52. Sense Type		Normal	Normal Generator UPS	Normal	Normal Generator UPS
53. Line Qualify Time	Battery to Line ------------------	30s	3s 10s 30s	30s	3s 10s 30s
54. Line High When input voltage exceeds this level, unit transfers to Battery Mode from either Buck Mode (when AVR is enabled) or Line mode.	Line to Battery ------------------	130VAC	120~152V AC	152V AC	120~152V AC
55. Line Low When input voltage is lower than this level, unit transfers to Battery Mode from either Boost Mode (when AVR is enabled) or Line Mode.	Line to Battery ------------------	100VAC	88~120V AC	88V AC	88~120V AC
56. Boost Low When input voltage drops between Boost Back point and Boost Low point, unit will transfer to Boost Mode only when AVR is enabled.	Normal to Boost ------------------	[DISABLE]		102V AC	96~120V AC
57. Buck High When input voltage increases between Buck High point and Buck Back point, unit will transfer to Buck Mode only when AVR is enabled.	Normal to Buck ------------------	[DISABLE]		128V AC	120~144V AC
58. High Gap		5VAC	3~7V AC	5VAC	3~7V AC
59. Low Gap		5VAC	3~7V AC	5V AC	3~7V AC
* High Back When input voltage drops below this level, unit transfers back to Line Mode from Battery Mode.	Battery to Line ------------------	(Line High - High Gap)		(Line High - High Gap)	
* Low Back When input voltage rises above this level, unit transfers back to the Line Mode from Battery Mode.	Battery to Line ------------------	(Line Low + Low Gap)		(Line Low + Low Gap)	
* Boost Back When input voltage rises above this level, unit transfers to Normal Mode.	Boost to Normal ------------------	[DISABLE]		(Boost Low + Low Gap)	
* Buck Back When input voltage drops below this level, unit transfers back to the Normal Mode.	Buck to Normal ------------------	[DISABLE]		(Buck High - High Gap)	

5.6.10 Event Log View

Menu 7 lists the Event log status.

To access Event Log menu, type 7 and press Enter on the main menu. To return to the main menu, press Esc and then press Enter.

[7 – Event Log View]	
70. Display Event Log Records	Display the history event log records. The maximum log number is 200.
71. Reset Event Log	Clear all the event log records.

5.7 *SNMP card
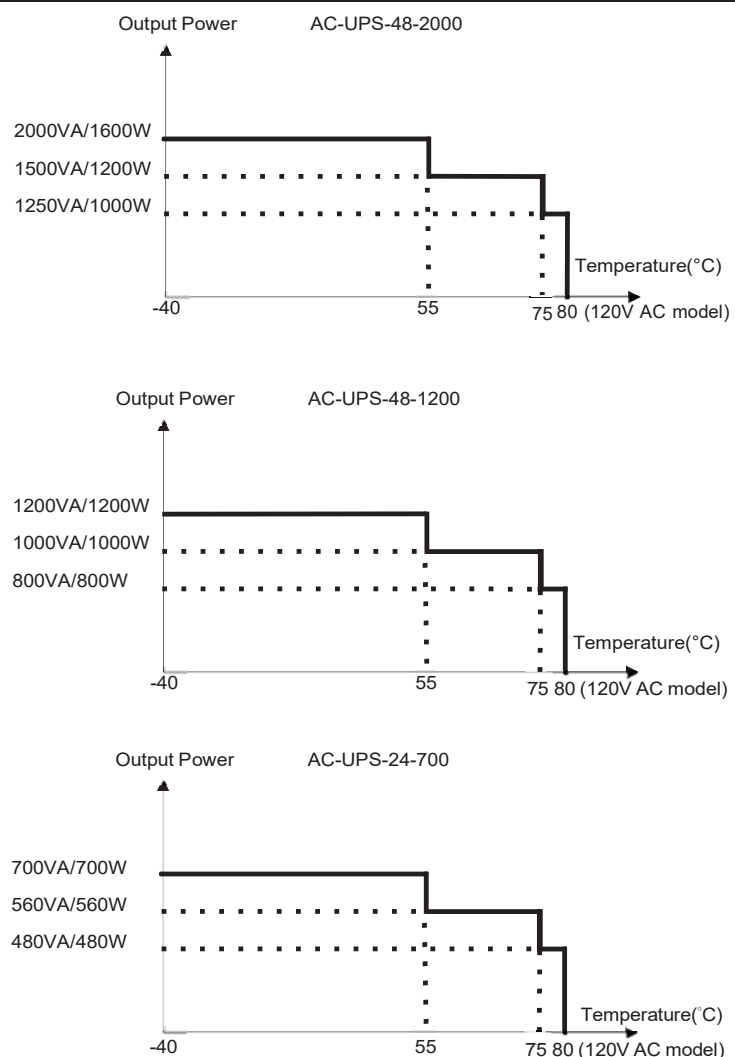
This is an optional communication function for UPS over a company intranet or the internet via a web browser. Please refer to SNMP user manual for more information.

6. SPECIFICATIONS
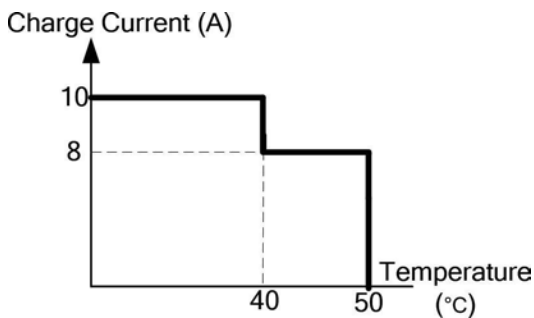
6.1 Line Mode Specifications

Model	AC-UPS-48-2000	AC-UPS-48-1200	AC-UPS-24-700
Power factor	0.8	1.0	
Nominal battery voltage	48V DC		24V DC
Utility Voltage Waveform	Sinusoidal (utility or generator)		
Utility qualify time setting	3/10/30 seconds adjustable,		
Nominal Input Voltage	120V AC		
AVR function	Enable/ Disable		
Utility voltage range	88 ~152 V AC user programmable. Defaults set @ 100 ~ 130V AC		
Nominal Input Frequency	50Hz / 60Hz (Auto detection, 55Hz as boundary)		
Default frequency	Last utility frequency		
Utility frequency range	47 ~ 53 Hz (50Hz mode) / 57 ~ 63Hz (60Hz mode)		
Transfer Time	UPS without MBS	UPS mode	5ms typical
		Normal mode	20ms typical
		Generator mode	20ms typical
	UPS with MBS	40ms maximum	
Overload Protection	5s @≥ 125 ~150% load; 60s @110% ~ 125% load		
Output short circuit	Input/Output Breaker		
Site fault detection	Yes		
Efficiency (Line mode)	95%		
Efficiency (AVR mode)	90%		
External MBS power capacity	30A		
External MBS	When UPS is good, the MBS allows UPS output to flow out to the outdoor cabinet. If the UPS is not functioning, the MBS will bypass the UPS allowing the utility to flow out to the outdoor cabinet.		

6.2 Battery Mode Specifications

Model	AC-UPS-48-2000		AC-UPS-48-1200	AC-UPS-24-700
Output Waveform	Pure sine wave			
Output Voltage Regulation	120 ± 5%			
Output Frequency	50/60Hz ± 0.1%			
Nominal DC Voltage	48V DC			24VDC
DC voltage range	42.5 ~ 60V DC (48V)			21.3~30V DC (24V)
Low DC warning voltage	42 ~ 55V DC adjustable			21 ~ 27.5V DC adjustable
Peak Efficiency	>90%			
No Load Power Consumption	28W @ 48V DC			28W @ 24V DC
THD (Bat. mode)	<3% (Full resistive load)			
Load crest factor	3:1 @ rated load			
Overload protection	5s @ ≥125 ~ 150% load; 60s @ 110% ~ 125% load			
Output short circuit protection	Output breaker/ electronic current limit/ firmware			
Surge Capacity	200% * rated power for 5sec			
Back feed protection	Yes			
Power limitation				

6.3 Charger Mode Specifications

Appropriate battery type	AGM		
Charging Current	2Amp / 4Amp / 6Amp / 8Amp / 10Amp adjustable		
Max Charger Current Limitation			
Charging Algorithm	3-Step		
Charger Voltage Setting @25 °C	Battery Type	Boost CC, CV	Float
		24/48V DC	24/48V DC
	AGM	28.2/56.4V DC	27.0/ 54.0V DC
Battery Temperature Control	Charging voltage is compensated according to battery temperature		
	-2.5mV / -3.0mV / -3.5mV / -4.0mV per cell per °C compensated coefficient adjustable		
	Charger on when battery temperature between -20 °C to 50 °C		

6.4 General Specification

Dimension (WxDxH): Inches/mm: 15.75" x 9.45" x 5.23" / 400 x 240 x 133
Net Weight: Lbs. / Kgs: 27.5 / 13
Operation Temperature Range: -40° C ~ 80° C for 120V AC model
Storage Temperature Range: -50° C ~ 80° C
Relative Humidity: 5% ~ 95% non-condensing
Audible Noise: < 53dB
Cooling: Forced Air
EMI: FCC Part 15, Subpart B, Class A
Safety: UL1778, CSA 107.3

7. TROUBLE SHOOTING

7.1 For MBS Module

Problem	Possible Cause	Remedy
No output available from MBS.	External AC circuit breaker may be OPEN.	Close the external AC input breaker.
	Line AC power is not available.	Check if utility is available with the AC voltmeter and contact Utility Company.
	Wiring error on MBS terminal blocks.	Correct wirings on MBS.
	MBS fault.	If utility power voltage is present at AC IN "L" and "N" on the MBS terminal blocks, replace the MBS.
MBS is not allowed to transfer to battery mode.	UPS output power is not connected to MBS.	Verify if power cord from "UPS OUT" on MBS is properly connected to the AC output terminal blocks on UPS.
	"UPS INPUT" circuit breaker on MBS is open status.	Reset breaker.
	Black and red control wires from MBS are not connected to MBS control connector of UPS.	Connect black and red control wires from MBS-to-MBS control connector of UPS.
	48V DC signal not available at the MBS control connector on the UPS.	Replace UPS.
	MBS fault.	Replace MBS
UPS does not return to Linemode.	Line power is missing.	Verify if power cord from "UPS IN" on MBS is properly connected to the AC input terminal blocks on UPS.
		Verify if the "UPS INPUT" circuit breaker on MBS is closed status.
		Verify if AC input circuit breaker on UPS is closed status.
		Ensure that Line input is present.

7.2 For UPS Module

No output.	AC input and output circuit breakers are off.	Turn on input and output circuit breakers.
	No line power input.	Turn on AC input breaker.
	Red LED is lit solid on front panel indicating fault.	Read fault event under Event Log in LCD display. Manually restart UPS. Contact the factory if fault persists.
Output LED is off.	Line power or battery power is not available.	Apply qualified input power and make sure if battery breaker is closed.
	UPS fault.	Return to repair center.
UPS does not transfer to battery mode during a power failure or backup time is shorter than expected.	Battery is not connected.	Connect batteries (48V DC/24 V DC nominal).
	Battery circuit breaker is off.	Turn on battery breaker
	Battery is not fully charged.	Recharge the battery and then test discharge time.
	Dead battery.	Replace with new batteries.
	UPS fault.	Return to repair center.
Alarm LED is illuminated.	Abnormal conditions are detected.	Refer to Figure 21 on page 19.

Problem	Possible Cause	Remedy
Batteries will NOT charge.	Battery circuit is open.	1. Check if battery cable is connected firmly and make sure battery connection is correct. Any connection error, loose or open connection will cause circuit open. 2. Check if proper battery voltage is detected on battery connector of UPS. 3. Check if battery breaker is closed. 4. If battery is bad, replace it.
	Wrong or bad temperature probe connected.	Only use factory-supplied temperature probe reading approximately 15,000 OHMS @ 25°C (77°F)
LCD text is not readable.	UPS fault.	Return to repair center.
Password access is NOT available.	Password is LOST or forgotten.	Contact repair center for resetting the new password.

8. Appendix: Approximate Back-up Timetable

Model	Load%	Backup Time @ 48V DC 100Ah (min)	Backup Time @ 48V DC 200Ah (min)
AC-UPS-48-2000	10%	1581	3161
	20%	751	1581
	30%	491	1054
	40%	331	760
	50%	268	615
	60%	221	508
	70%	172	387
	80%	136	335
	90%	120	295
	100%	106	257

Model	Load%	Backup Time @ 48V DC 100Ah (min)	Backup Time @ 48V DC 200Ah (min)
AC-UPS-48-1200	10%	2107	4231
	20%	1001	2107
	30%	653	1405
	40%	441	1012
	50%	356	820
	60%	293	676
	70%	228	515
	80%	181	446
	90%	160	392
	100%	141	342

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Model	Load%	Backup Time @ 24V DC 100Ah (min)	Backup Time @ 24V DC 200Ah (min)
AC-UPS-24-700	10%	1807	3613
	20%	858	1807
	30%	561	1205
	40%	378	869
	50%	306	703
	60%	253	581
	70%	197	442
	80%	155	383
	90%	137	337
	100%	121	294

9. WARRANTY AND FACTORY CONTACT INFORMATION

Newmar warrants that the Rugged AC UPS Series to be free from defects in material and workmanship for three years from date of purchase. If you have a problem with your Rugged AC UPS, or have any questions about the installation and proper operation of the unit, please contact NEWMAR's Technical Services Department:

E-mail: ruggedUPS@newmarpower.com

10. SNMP/ Network Card Operation Manual

10.1 Introduction

This SNMP/Network card can provide a web server to monitor and manage off-grid inverters in a networked environment including LAN and internet. It can retrieve the UPS's working status, working data and settings.

10.2 Features

➢ Open monitor via Web Browser.
➢ Automatically detect and exchange data through 10M/100M Fast Ethernet.
➢ Support wake-on-LAN function.
➢ Supported protocol such as TCP/IP, UDP, SNMP, SMTP, SNTP, HTTP and so on.
➢ Support to record and export event log, including warnings and faults.
➢ Support daily reports for event log and data log.
➢ Support parallel-inverter monitoring.

10.3 Overlook
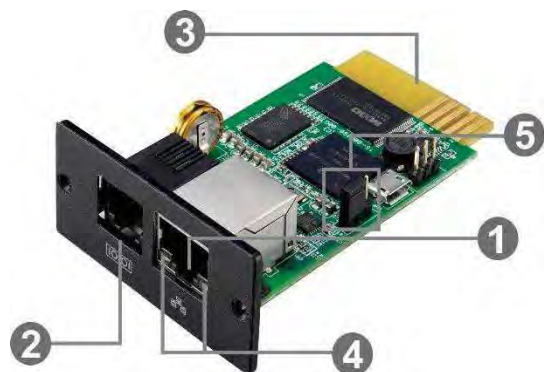
❶Ethernet port (10/100Base-T)
❷Sensor port/data transmission port
❸Golden finger: connects to UPS slot
❹Ethernet port status LEDs
❺Jumper setting to restore default setting

Ethernet port status LEDs:

100M LED (Green)	On	Port is operating at 100Mbit/s
	Off	Current web bandwidth is 10Mbit/s
Link status LED (Yellow)	Flash	Link Active
	Off	Card is not connected to the network

Pin assignment for Jumper:

Pin #	Status	Description
Pin 1 & Pin 2	Closed	Normal operation
Pin 2 & Pin 3	Closed	After re-connecting utility, the IP address of

		SNMP web card and password will restore to default setting. Default static IP address: (192.168.1.51) Default password: **12345678**

NOTICE: After setting is restored to default, be sure to change the jumper setting to connect Pin 1 and Pin 2 for normal operation.

10.4 Installation and Connection

Installation

If changing the SNMP/ Network card is required, please follow below steps to install card first:

Step 1: Remove the cover of intelligent slot on the front panel of UPS and retain the screws.

Step 2: Slide the card into the open slot and secure with the screws from step 1.
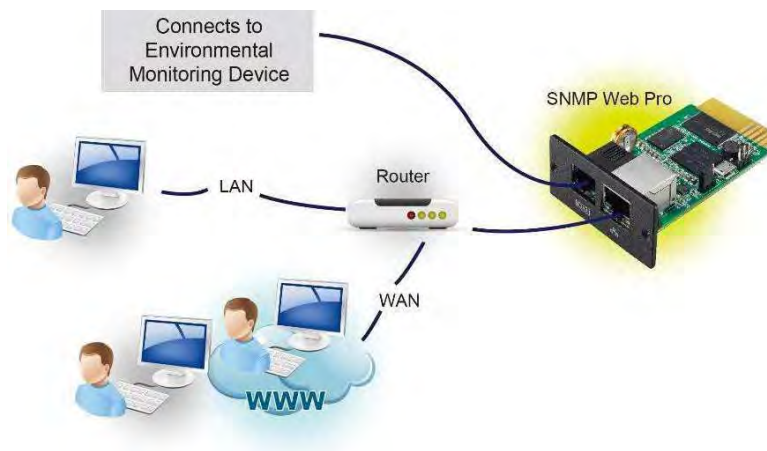
Figure 1-1

10.5 Configuration

a) Please install SNMP Web Manager software in your PC. After software is installed successfully, the Installer will leave a shortcut icon on your desktop. To download SNMP Web Manager software, visit http://www.power-software-download.com/SNMP_Web_Manager.html for the latest version.

Figure 1-2

b) Enter specific IP address to search all SNMP devices in LAN. (The SNMP Web Manager will automatically collect the IP address from sever by default via a DHCP server. It will apply default IP address of 192.168.1.51, default subnet mask as 255.255.255.0, and default gateway as 0.0.0.0 without a DHCP server.
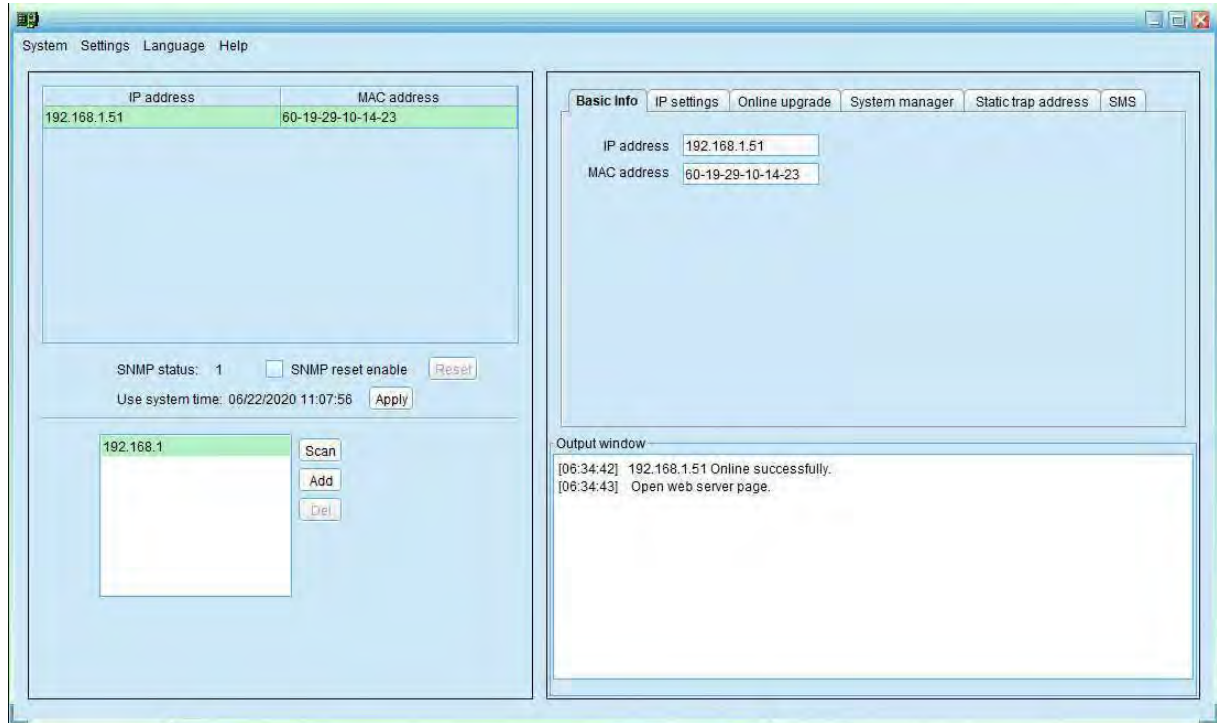
Figure 1-3

c) Users can modify IP setting, online upgrade, password management, and static trap address setting in SNMP Web Manager screen. It is necessary to enter password for any modifications. The default password is: **12345678**.

10.6 Monitoring

There are two ways to monitor the UPS. Double click the selected device from the device list (refer to Figure 1-3) to open web page as Figure 1-4.
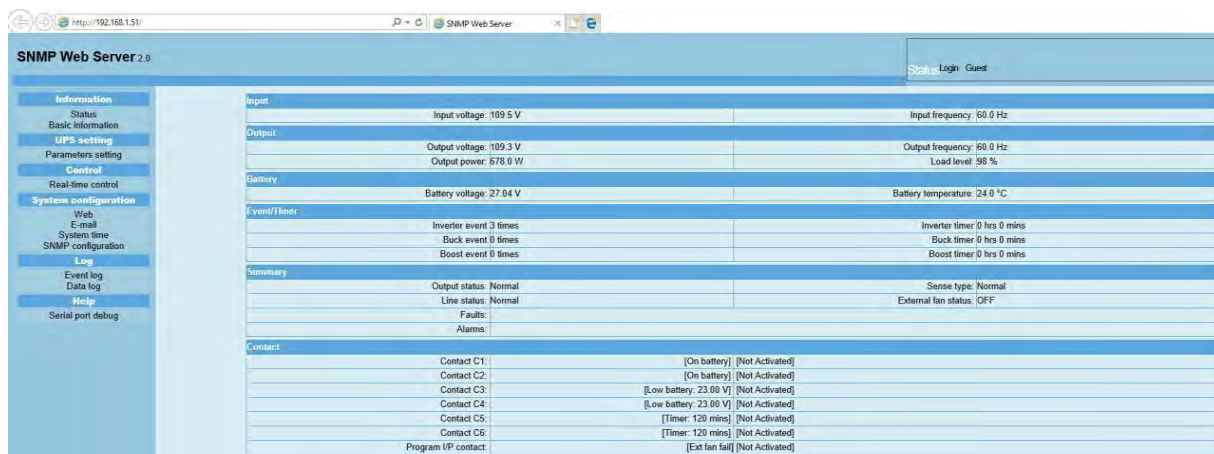
Figure 1-4

11. SNMP Web GUI

SNMP web GUI includes function menu, login section and main screen. Refer to Figure 2-1:
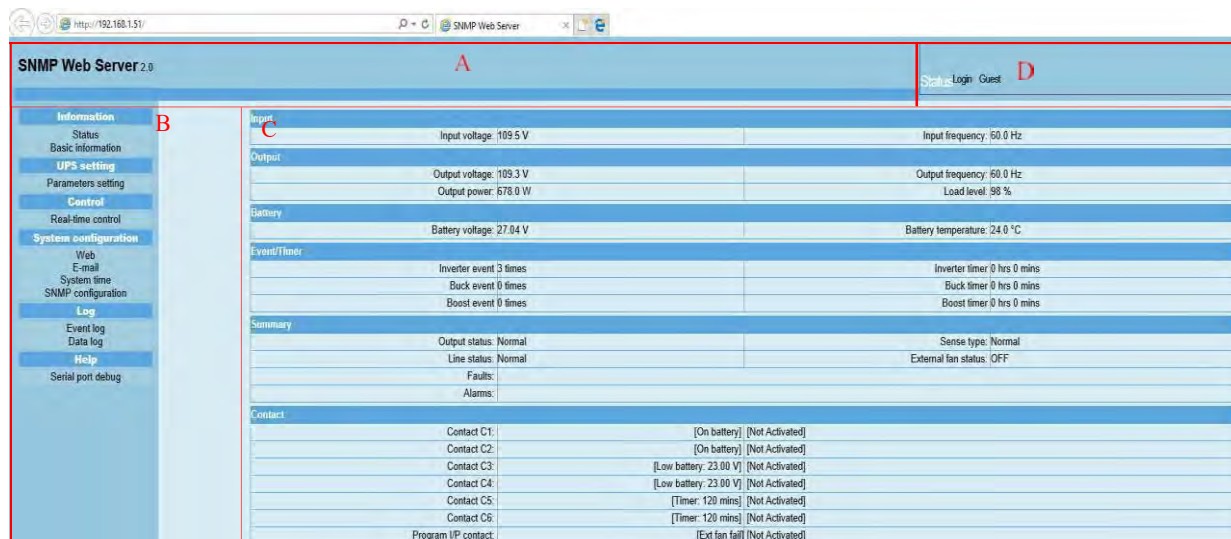
Figure 2-1

A. SNMP web GUI version
B. Function Menu
   It offers complete tool-set for navigation and setting the GUI.
C. Main Screen
   It will display information and/or control alternatives according to function menu selected.
D. Login section
   It shows user type for current login user. The default administer username is "admin" and password are "user".

12. Function Menu

12.1 Information

12.1.1.   Status

Select Information >> Status. Refer to Figure 3-1. It is shown real- time monitored off-grid inverter data including working status and data. Working data includes input information, output information, device mode and battery information in table format.
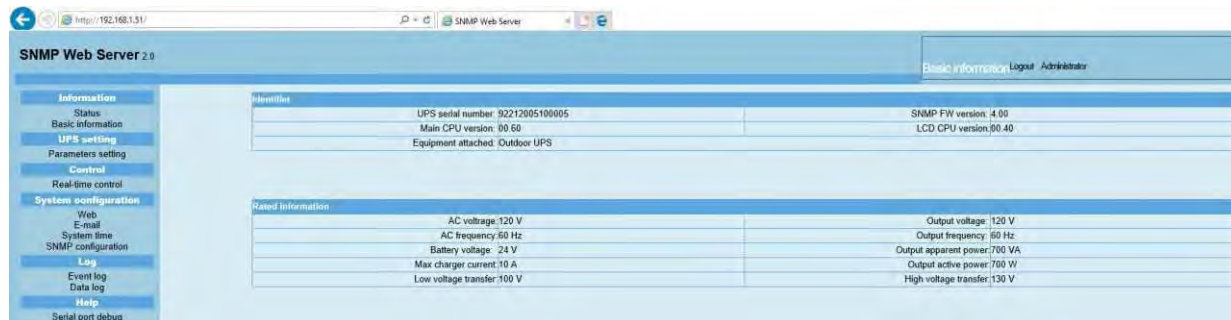
Figure 3-1

12.1.2.   Basic Information

Select Information>>Basic information. It includes product information and rated information. Refer to Figure 3-2.

Figure 3-2

12.2 UPS Settings

12.2.1 Parameters setting

Some functions can be set and changed via software. Parameter setting includes voltage and frequency setting, status setting and restore to the default setting.

Select Setting >> Parameters setting. Refer to Figure 3-3A and 3-3B.

Figure 3-3A

Figure 3-3B

Note: Different inverter model may access different parameter setting.

1. Select the functions by clicking "Enable" or "Disable" button. Change the numbers by clicking up-down arrows or modify the numbers directly in the number column.

2. Click "Apply" button to save the settings. Each function setting is saved by clicking "Apply" button in each section.

3. Click "Restore to the defaults" button to set control parameter to default value.

4. Before setting value in Battery cut-off voltage, Bulk charging voltage and Floating charging voltage columns, it is necessary to set Battery type as "user".

5. Please check parallel setting for detailed set up.

Note: Any functions which are not supported by the current inverter will not be accessible.

➤ **Line Qualify Options:** This setting allows for an allotted amount of time before the UPS validates the line voltage to be stable. The allotted amount of time is: 3 seconds, 10 seconds, and 30 seconds.

➤ **Sense Type Options:** This setting is where the user can specify which kind of input mode the UPS will work under.
   o **Normal Mode:** The UPS will operate using AC main power to supply the load.
   o **UPS Mode:** The UPS will use the battery bank to provide power to the load.
   o **Generator Mode:** The UPS will operate under noisy line conditions or generator power to supply the load.

➤ **Battery Charging Current:** This setting limits the amount of current that can be supplied for charging the batteries.

➤ **Battery Charger Temperature Compensation:** This setting will adjust the battery voltage based on the temperature sensor reading. The default value is -3.0mV/Cell/°C, with a range of -2.5 to -4.0

➤ **Battery Voltage Low Warning:** This setting will cause a warning alarm when the voltage reaches the setpoint. The default setting for 48V systems is 43.0V. The default for 24V systems is 23.0V.

➤ **Battery Timer Options:** This setting allows the user to set the battery self-test timer period and the battery backup timer. The battery self-test timer may be set in 1-minute intervals. It will produce a warning to one of the programmed contacts at the set interval.

- ➢ **External Fan On/Off by Temperature:** This setting activates the fan at the temperature setting. The default setting is 25° C to 50° C.

- ➢ **High Transfer Point:** When the input voltage exceeds this level, the UPS transfers to Battery Mode from either Buck Mode (when AVR is enabled) or Line Mode.

- ➢ **Low Transfer Point:** When input voltage is lower than this level, the UPS transfers to Battery Mode from either Boost Mode (when AVR is enabled) or Line Mode.

- ➢ **Buck Transfer Point:** This setting will put the UPS into Buck Mode when the AC main power goes too high.

- ➢ **Boost Transfer Point:** This setting will put the UPS into Boost Mode when the AC main power goes too low.

- ➢ **AVR Feature:** The AVR feature allows the user to select automatic voltage regulation for buck or boost modes. Only one feature may be selected at a time.

- ➢ **Contact Information:** This field is to set the alarm feature for contacts C1-C6. The selectable alarms are as follows:
    1) On battery
    2) Low battery
    3) Time
    4) Alarm
    5) Fault
    6) Off
    7) Disable

- ➢ **SNMP Equipment Attached:** This field allows up to 32 characters to name your system.

- ➢ **Replace Battery Time:** This field allows the user to set a reminder date, time, and the frequency with which to replace batteries.

12.3 Control

12.3.1 Real Time Control

Select Control >> Real-time control. Refer to Figure 3-5.

Figure 3-5

You can real-time control the UPS by executing following operation:

➢ **UPS turn On/Off:** Click "On" to turn on the UPS and "Off" to turn off the UPS immediately.

➢ **Battery Self-Test:** It offers three types of battery self-test: 10-second self-test, deep discharge test, and self-defined self-test. Simply clicking "Start" button from each type. It will execute the self-test immediately.

12.4 System configuration

12.4.1 Web

It configures the authority to access SNMP web pro. Please enter access ID and password in each column. There is no limitation to access control in default setting. It is also allowed for http and https modification. The default setting is 80 for http and 443 for https. If any modification to add web users, delete web users or port reconfiguration, it is necessary to click "Restart Web Server" button to restart web server to activate all modifications.

Upload HTTPS CA Certificate
Click "Select" button to select HTTPS CA certificate file under designated directory. Refer to Figure 3-6.
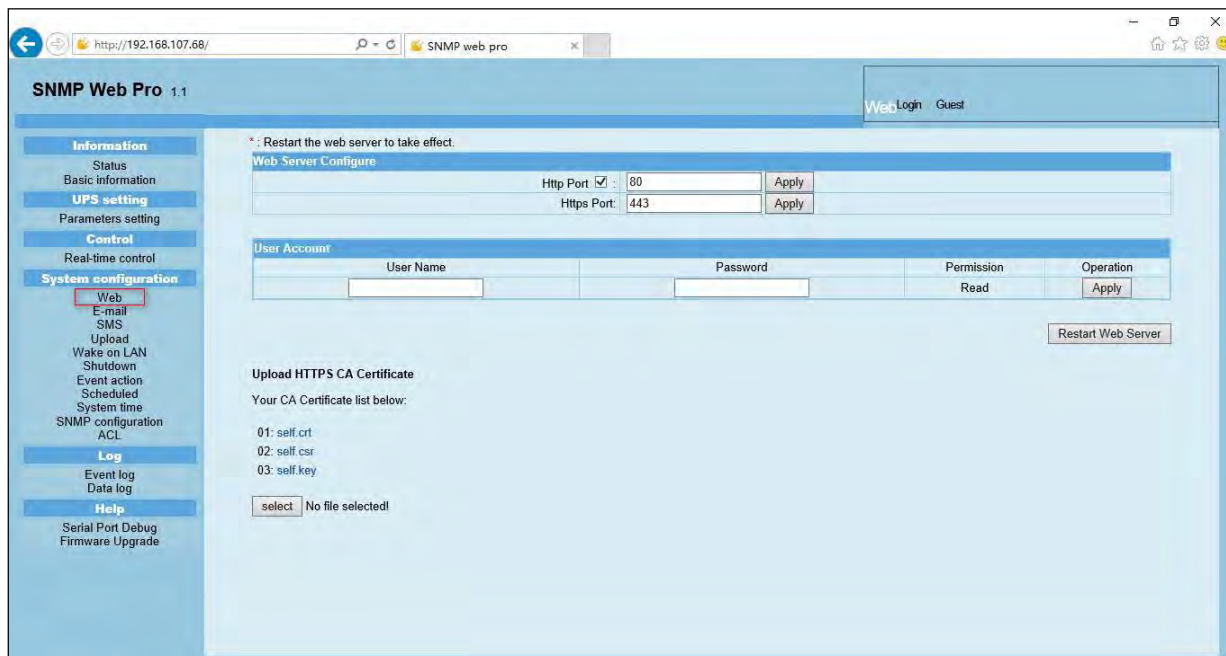
Figure 3-6

12.4.2　Email

It can send an alarm mail by SMTP server. To use this function, the e-mail service must be configured correctly. All values in this function page are empty by default. This action cannot be executed without the SMTP information, e-mail account and password. Also, the sender account should be allowed for SMTP/POP3 forwarding. Select System Configuration
>> E-mail. Refer to Figure 3-7.
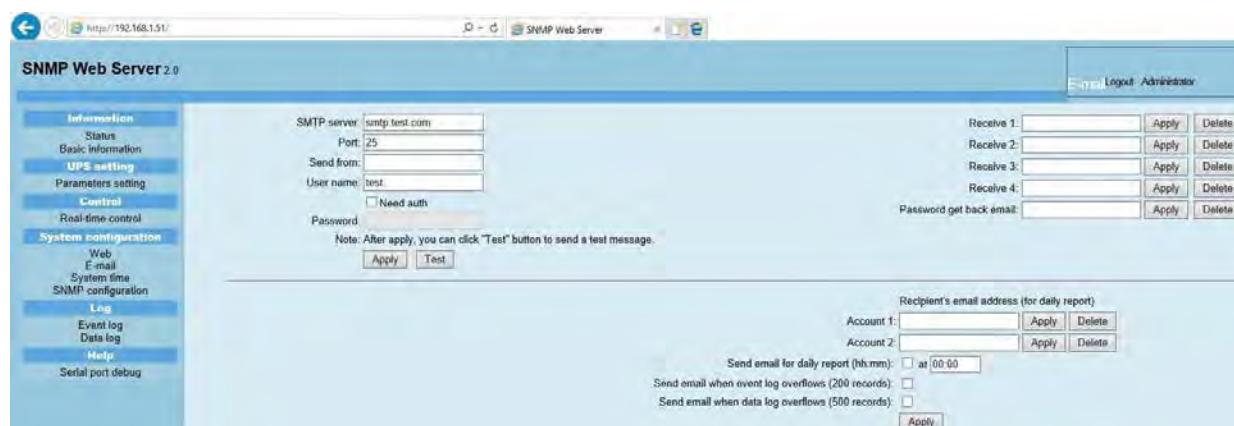
Figure 3-7

Enter SMTP server, SMTP port, sender's E-mail address, username, and password. Click checkbox of "Need Auth" for password verification.

1. Click "Apply" to save the changes. The "Test" button can be used to send a test e-mail to all receivers to confirm correct operation. When the test e-mails are successfully sent to specific recipients, a pop up "success" message will

inform the user. Otherwise, a pop up "failure dialog" message to indicate there is an error in setting.

2. Enter correct e-mail accounts in Recipient section. Then, click "Apply" to add into receivers list. Click "Delete" button to delete e-mail account.

3. A daily report will be sent to setting recipients by e-mail at a specific time every day. Please enter recipient's email address and receiving time into columns. Then, click "Apply" button to confirm. Setting recipients also receive an alarm e-mail when event log exceeds 100 or data log exceeds 50 records by clicking each checkbox.

12.4.3 SMS

➤ **Sending SMS By Server:** It is required to have service software available such as ViewPower Pro. In the event of an alarm condition occurring, a message about UPS status will be sent to the specified users via mobile phone. Please refer to Figure 3-8A.

➤ **Sending SMS By Serial Port:** It is used EMD port as data transmission to send SMS without any service software. Please configure Baud rate of GSM Modem as 9600 and then connect data transmission port of SNMP web port card to GSM Modem with a RJ11 to DB9 cable. Please refer to Figure 3-8B.
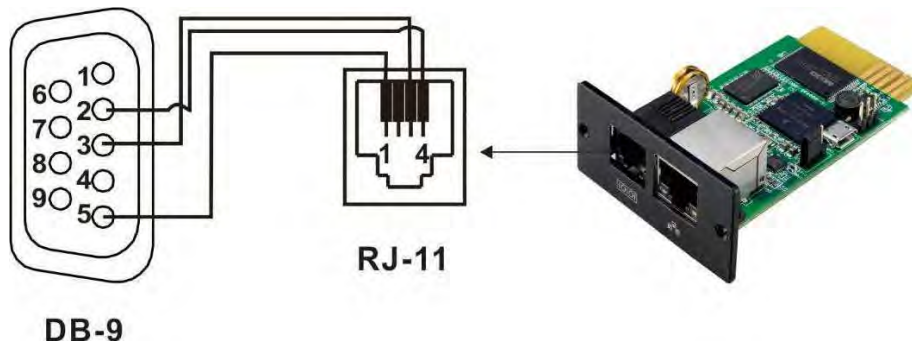
Figure 3-8A

Figure 3-8B

12.4.4 Wake on LAN

It is to remotely wake on specific PCs in LAN when these PCs are supported to Wake-on-LAN (WOL) via a magic packet.

Select System Configuration >> Wake on LAN. Refer to Figure 3-9A and Figure 3-9B.
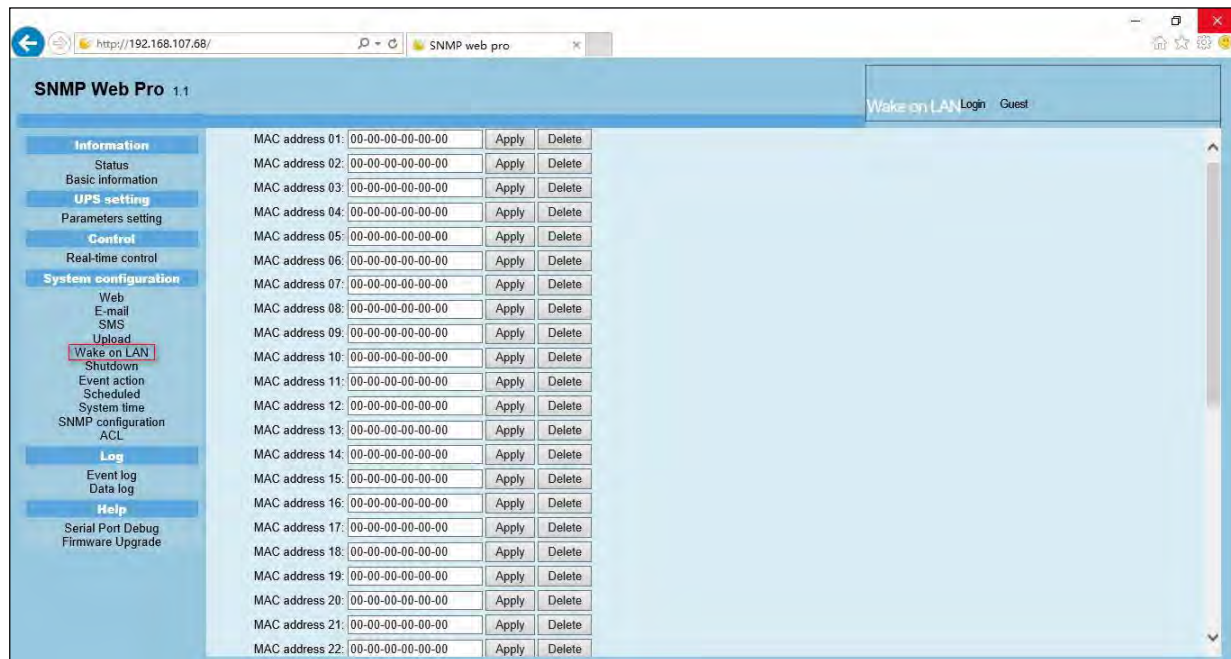
Figure 3-9A
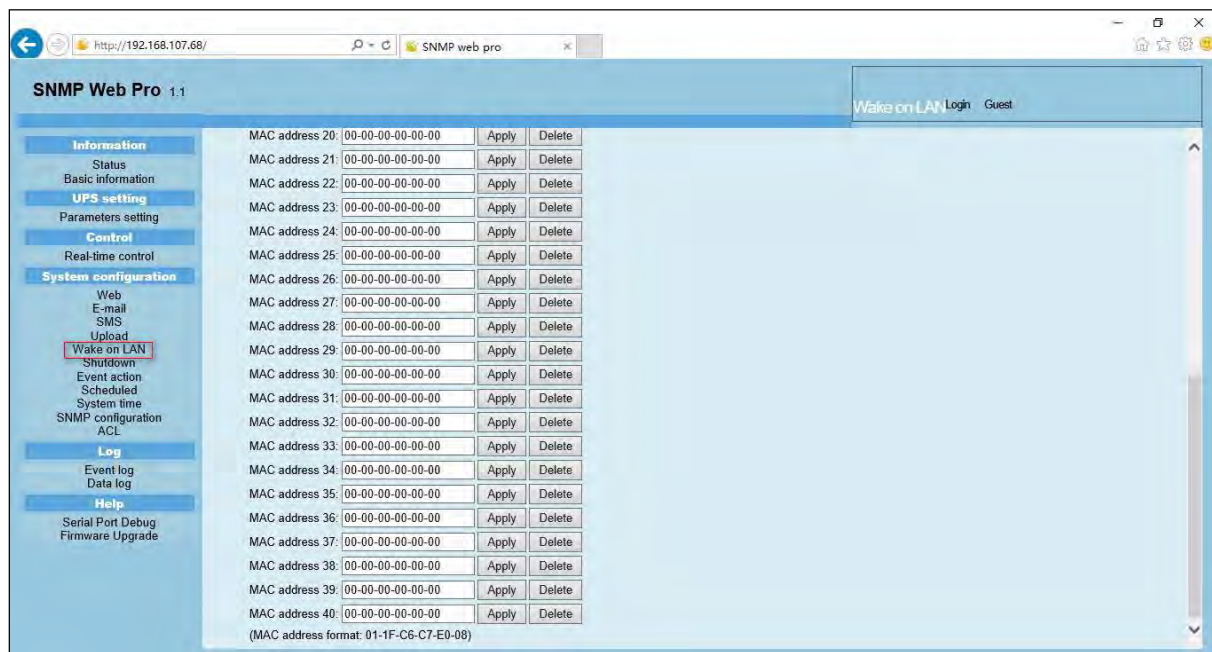
Figure 3-9B

After the MAC address of each remote PC is entered into address column, it will allow to remote control the PCs. However, it is also required to have hardware support for remote PCs to implement this function.

12.4.5   Shutdown

It is to remotely shut down specific PCs with Shutdown Wizard. This function is only available to integrate with Shutdown Wizard. Please also check user manual of Shutdown Wizard for the details.

Select System Configuration >> Shutdown. Refer to Figure 3-10.
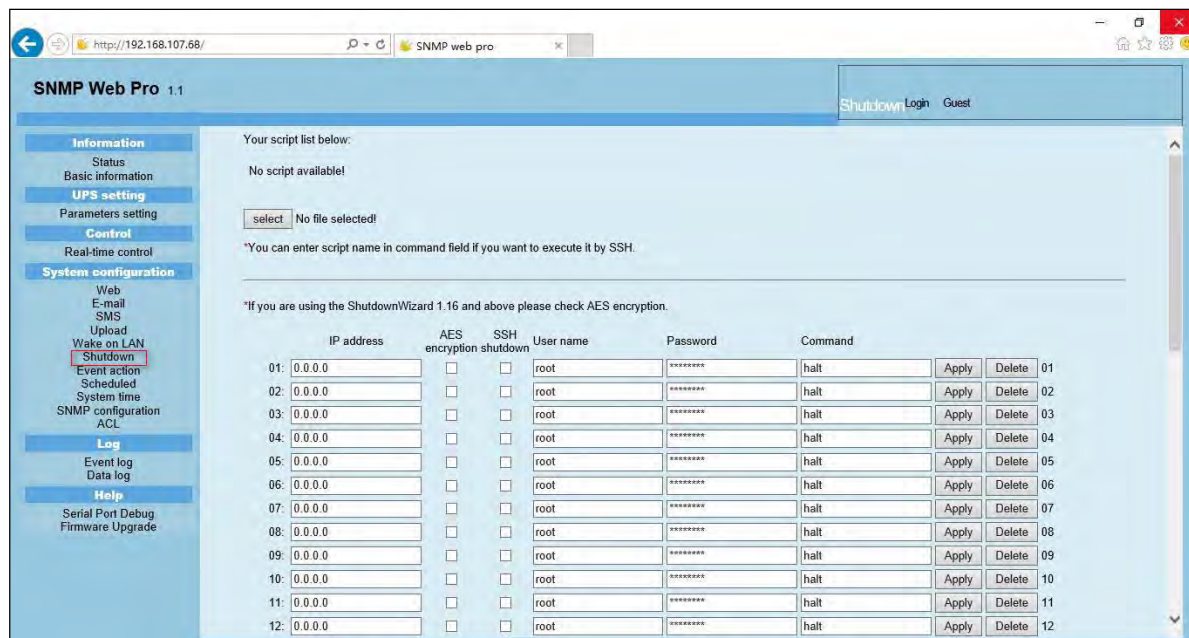
Figure 3-10

12.4.6   Event action

This function is only available to integrate with Shutdown Wizard. Please also check user manual of Shutdown Wizard for the details.
Select System Configuration >> Event action. Refer to Figure 3-11.
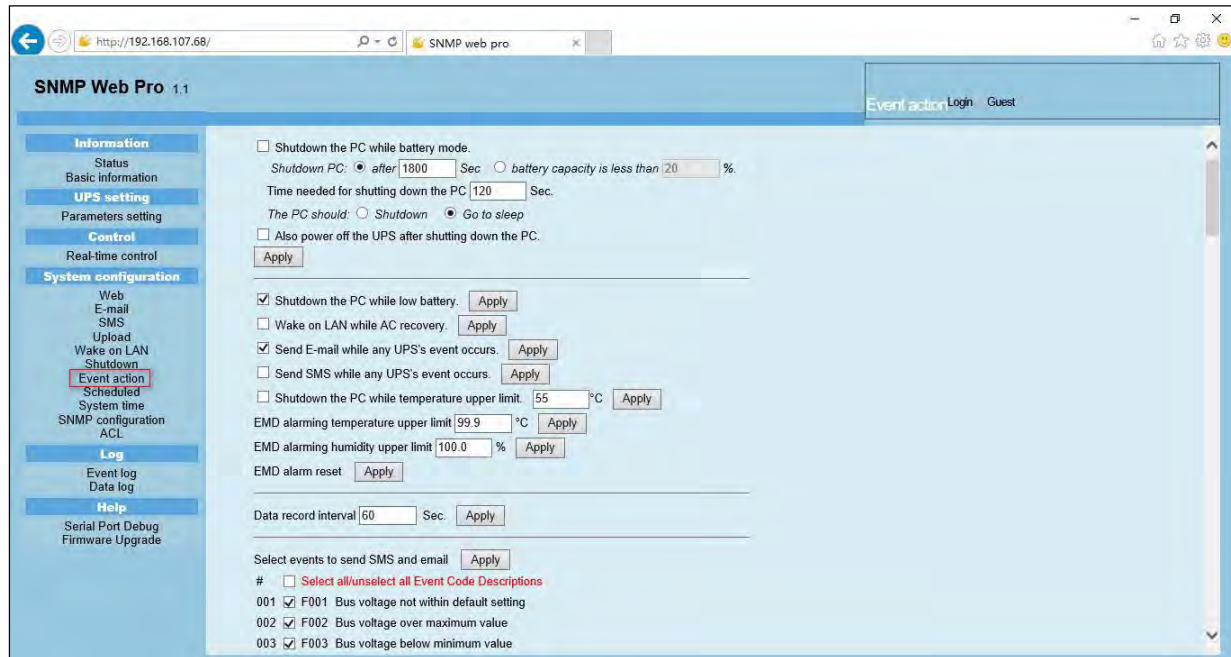
Figure 3-11

➢ **Shutdown the PC while battery mode:** When selected, integrated with Shutdown Wizard, local PC will shut down while UPS works on battery mode.

➢ **Time needed for shutting down the PC:** Enter the delay time to shut down the operating system.

➢ **The PC should:**
  o Shutdown: When clicking the checkbox, the selected system will shut down. The default setting is clicked.

  o Sleep mode: When clicking the checkbox, selected system will suspend the system instead of a normal shutdown. But this function is only supported by Windows 2000 or higher on supported hardware.

  o Also power off the UPS after shutting down the PC: When click the checkbox, monitored UPS will turn off after local system shuts down. The UPS shutdown time will be later than system complete shutdown time. Users can choose to shut down the system without shutting down the UPS.

- ➢ **Shutdown UPS output after xx sec:** It will cut off UPS output after monitored UPS works on battery mode for xx sec.

- ➢ **Shutdown the PC while low battery:** When clicking this checkbox, local PC will shut down when monitored UPS battery is running low.

- ➢ **Wake on LAN while AC recovery:** When clicking this checkbox, the local PC will be wake on LAN while AC recovery.

- ➢ **Send E-mail while any UPS event occurs:** When clicking this checkbox, it will send alarm E-mail when any event occurs on the local UPS.

- ➢ **Send SMS while any UPS event occurs:** When clicking this checkbox, in the event of an alarm condition occurring, a message about UPS status will be sent to the specified users via mobile phone.

- ➢ **EMD alarming temperature upper limit:** Set up alarm for high temperature point. If detected temperature is beyond setting value, it will send alarm message.

- ➢ **EMD alarming humidity upper limit:** Set up alarm for high humidity point. If detected humidity is beyond setting value, it will send alarm message.

- ➢ **EMD alarm reset :** Clear all EMD alarms.

- ➢ **Data record interval xx sec:** Data log record the data per xx sec.

- ➢ **Select events to send SMS and email: Select** events to notify users via SMS and Email.

- ➢ **Select all/unselect all Event Code Descriptions:** When selected, all Event Code Descriptions will be selected. When it changes from selected to unselected, the selected state of all Event Code Descriptions is cleared.

12.4.7 Scheduled

Select System Configuration >> Scheduled. Refer to Figure 3-12.

Figure 3-12

- ➢ **Scheduled battery self-test:** Scheduled battery self-test can be executed once, daily, weekly, or monthly. Users can select UPS and time parameters. It is recommended to set only one action at the same time. If multiple actions have been applied at the same time, some of these actions may be ignored. Any action will be ignored when the action is not supported by the UPS.

- ➢ **Scheduled UPS on/off:** Scheduled UPS on/off can be executed once, daily, weekly. Users can select UPS and time parameters. It is recommended to set only one action at the same time. If multiple actions have been applied at the same time, some of these actions may be ignored. Any action will be ignored when the action is not supported by the UPS.
- ➢ **Use battery test scheduled:** When selected, enabled battery test scheduled function.

- ➢ **Use UPS On/Off schedule:** When selected, enabled UPS On/Off schedule function.

12.4.8 System time

Select System Configuration >> System time. Refer to Figure 3-13.

Figure 3-13

Automatic time correction interval: There are five options: No, 1 hour, 12 hours, 1 day and 1 week. When interval is selected, it will automatically calibrate time.

➤ **Time server:** Please enter SNTP server IP address or domain name of time server.

➤ **Time Zone:** Select time zone based on GMT.

➤ **Applying daylight saving time:** Please choose "Yes" when your time zone is applying daylight saving time.

➤ **System Time (mm/dd/yyyy hh:mm:ss):** It is to set up SNMP web local time. Please be sure to set up correctly so that time of event log and data log will be correctly recorded.

➤ **Auto Restart system for Every (0: Disable):** XX Minute(s)

➤ **Manual Restart system after 30 Seconds:** When click "Apply" button, SNMP will restart after 30 seconds.

12.4.9 SNMP configuration

Setting SNMP web pro basic information such as IP address, password, trap IP address, SNMP UDP port, add/delete snmpv3 user account and restore the factory settings.

Note: Some modifications are required to restart SNMP server to become effective.

Select System Configuration >> SNMP configuration. Refer to Figure 3-14A, 3-14B, and 3-14C.

Figure 3-14A

Figure 3-14B

Figure 3-14C

➢ **IP address:** There are two methods to obtain IP address.

1) Automatically obtain IP address (DHCP, default)

2) Manually configure IP address: The system will default automatically obtain IP addresses. If there is no service provided using a LAN connection, the default IP will display as "192.168.1.51", Net mask as "255.255.255.0" and default gateway as "0.0.0.0".

➢ **Password:** Modify the password. The length of password is 8~15 digits.

➤ **Trap IP address:** The SNMP device could provide 12 static trap addresses.

➤ **SNMP server configuration:** You may change SNMP port and trap port. You also can add SNMPV3 users by clicking "Add" button. It will pop up a screen to set up user setting such as security level and permission level. Refer to below Figure 3-14D.
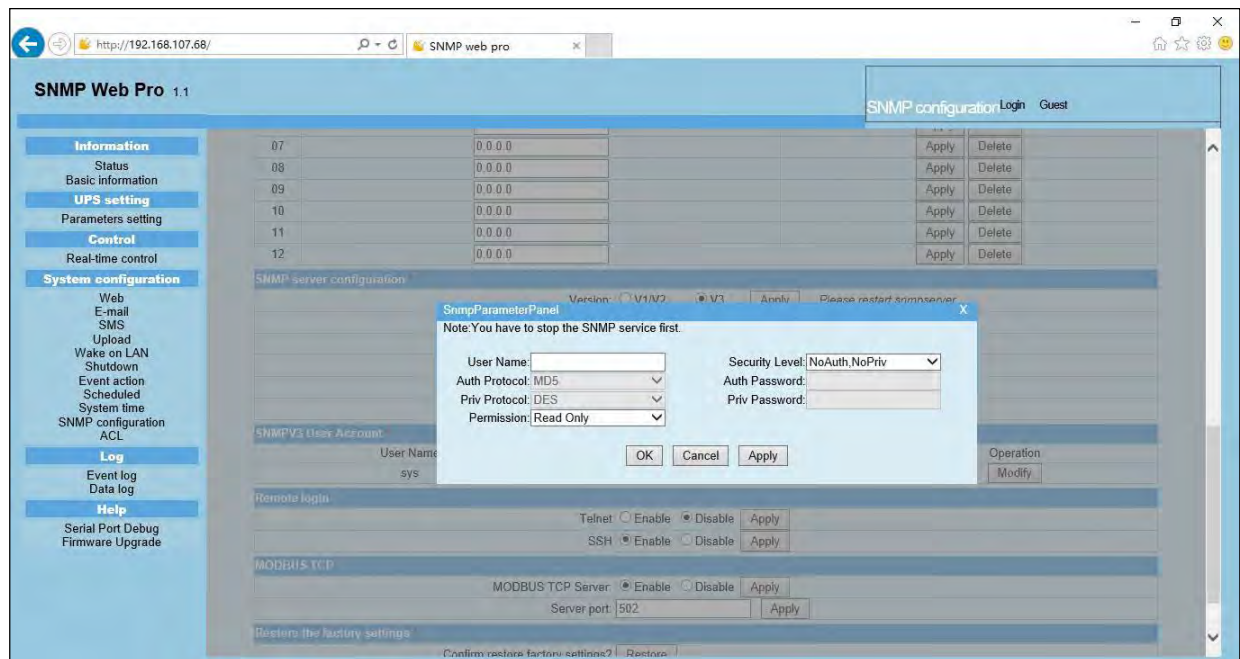
Figure 3-14D

➤ **Remote login:** Enable /Disable remote access to Telnet and SSH services.

➤ **Modbus TCP:** Before using this function, you need to enable Modbus TCP Services and set the Modbus TCP port. The default setting is 502. If you disable it, the service will be not available, and the data packets of Modbus TCP will not be obtained.
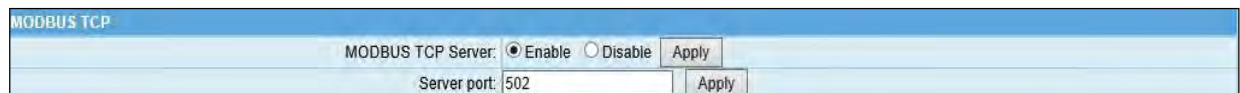
Figure 3-14E

Once you have configured it, you can test it using Modbus Poll or ModScan software. The data acquisition for machine parameters is required to refer to Modbus register address mapping protocol. Different machine models need to refer to the corresponding protocol.

➤ **Restore the factory settings:** The factory reset will only reset the settings on the SNMP configuration tab.

Note : The system will default automatically obtain IP addresses and default Password is **12345678**.

➢ **Reboot:** When clicked, SNMP Web Pro will reboot.

12.4.10   ACL

ACL is abbreviation of Access Control Lists. It is to protect internet security by identifying designated IP address to effectively control the user access for SNMP Web Pro.

Users can decide to choose which services to apply for ACL service by clicking boxes. Before clicking "Apply" button, it's necessary to enter IP address and select service type in "IP address allowed to access" column. Otherwise, any computer whose IP address is not entered, and service not selected here will be blocked from firewall and not allowed to access SNMP Web Pro. Refer to Figure 3-15.

Figure 3-15

12.5   Log

12.5.1   Event log

In the Event Log window, it lists all history events and can be saved as .csv file. The event log includes warnings, fault information and EMD warnings.

Refer to Figure 3-16.

Figure 3-16

12.5.2   Data log

In the Data Log window, it will list all history logs and can be save as .csv file. Refer to Figure 3-17.

Figure 3-17

12.6 Help

12.6.1 Serial Port Debug

The serial port debug is a useful tool to verify communication problems between SNMP web card/box and device. Users can send commands in this webpage and it will get query result from output window. It will help technical support personnel to verify problems. Refer to Figure 3-18.
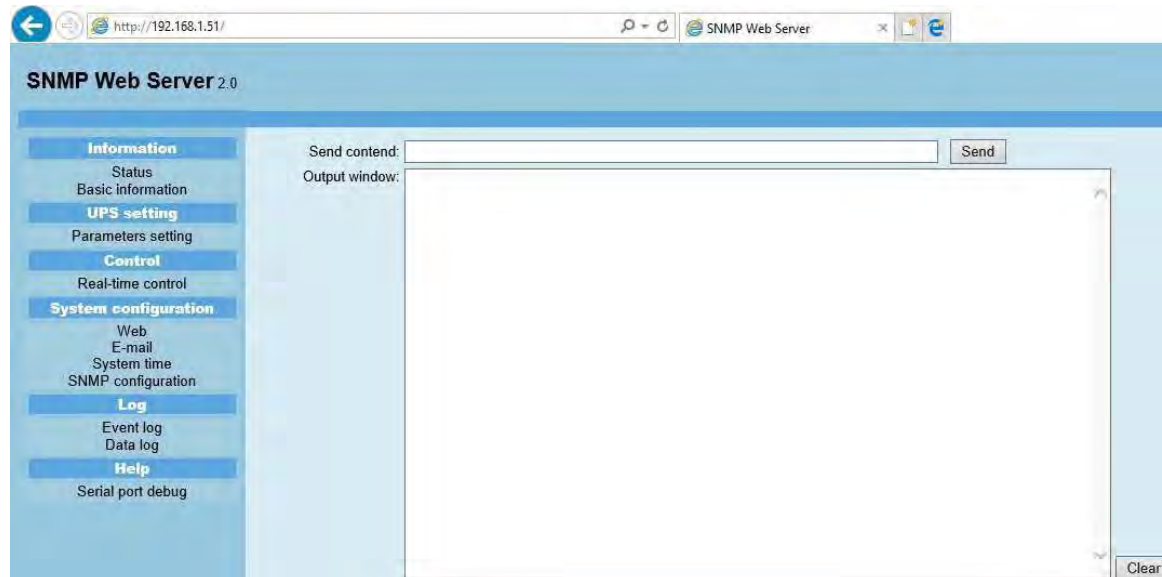

Figure 3-18

12.6.2   Firmware Upgrade

Upgrade the device's firmware version using manufacturer supplied versions only. Refer to Chart 3-19.
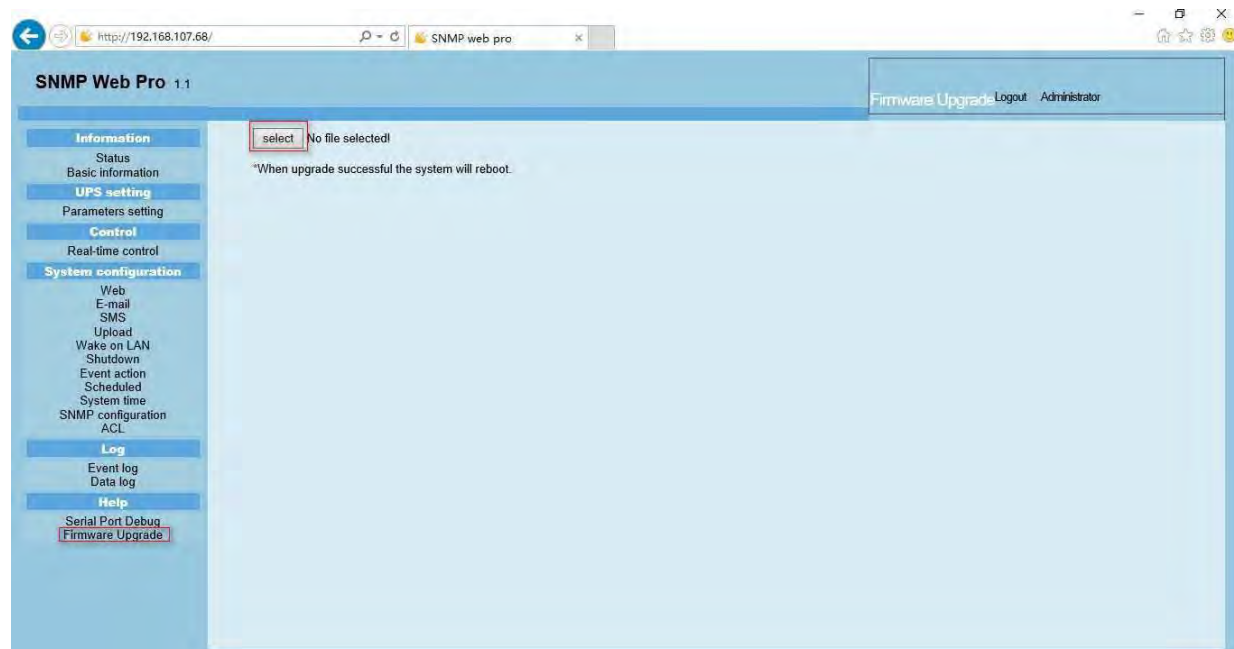

Figure 3-19