0 PDU Management Operating Manual Introduction

1 Introduction

PDU Management Operation Manual is mainly described and illustrated how to carry out software management and operation of PDU; As for the opening of the equipment and the connection, please refer to other specifications.

This Manual includes the following several parts:

0. Introduction
1. WEB Operation Interface Instruction
2. LCD Panel Operation Instruction
3. TELNET-SSH Operation Interface Instruction
4. SNMP Access Operation Instruction
5. Serial Port Communication Operating Instruction

Used in the following products:

- PDU , which includes horizontal installation mode and vertical installation mode;

Optional Equipments include:

1. Power Switch
2. Fuse
3. Current, Voltage Test
4. Electric Energy Test
5. Sensors: temperature sensor, humidity sensor, wind speed sensor, door sensor , smoke sensor , water sensor , Infrared sensor
6. Air Circuit Breaker Test

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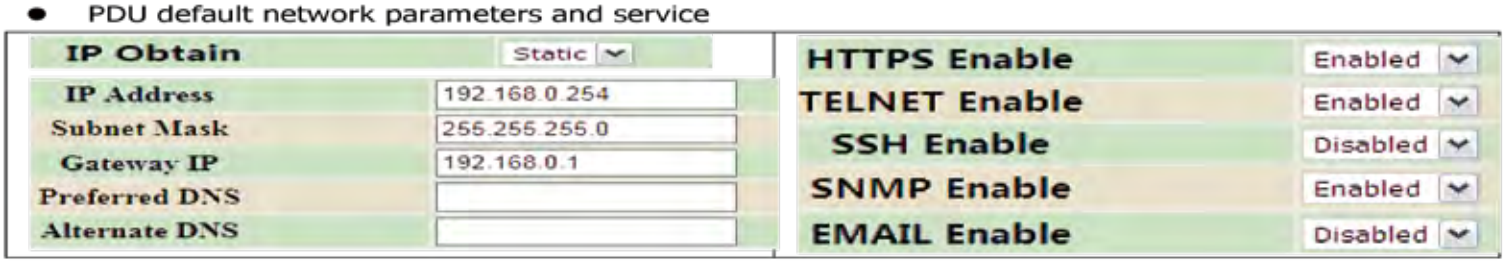
2 Default network user and password

- PDU default network parameters and service



- WEB default user and password：admin@admin
- TELNET/SSH default user and password：admin@admin ; Connection password of SSH is ：sshd@123456
- The function of default SNMP v1/v2c is open.
  Default reading community ： public
  Default writing community ： private
- The function of SNMP v3 is closed.
  As for users : readWriteUser and readOnlyUser, the default passwords are as followed:
  Authentication Password ： authPassword
  Encrypted Password：privacyPassword

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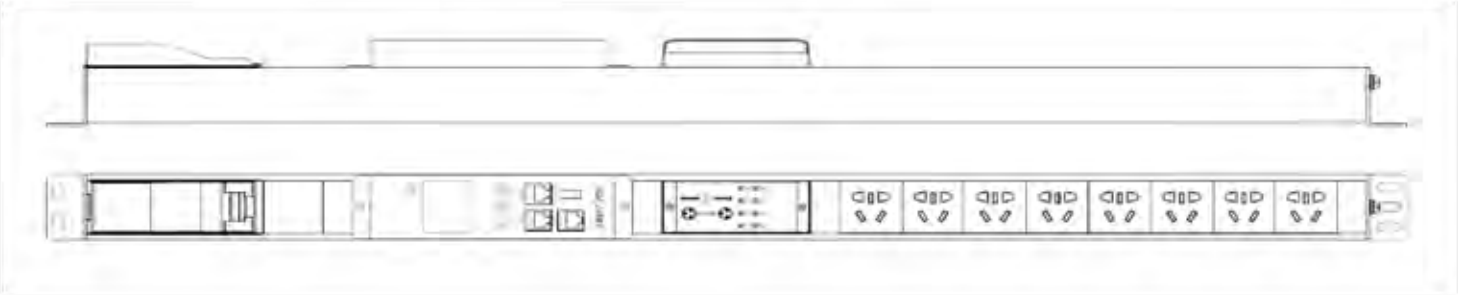
3 Equipment shape with horizontal mode

Note: sample image in following figure Vertical PDU with a configuration for eight switches. As for PDUs with other configurations, please refer to actual object.



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WEB Operation Interface Instruction

WEB Operation Interface Instruction - Content

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WEB Operation Interface Instruction

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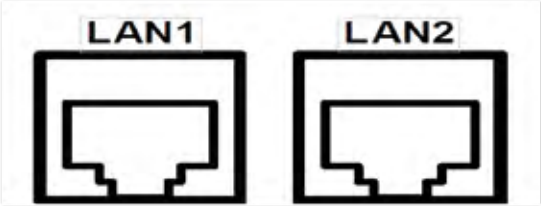
WEB Operation Interface Instruction

1 Use web management equipment

1.1 Connected to WEB



"LAN"/"NET" marked on equipment panel is the network management interface of equipment; through the interface, HTTP (WEB), TELNET, SSH, SNMP protocol, etc can be accessed.

Products with two "LAN" ports indicate that the model has built-in network switch, which can be connected to the network management interface of the next PDU through another "LAN" port.

1. Before connecting, connect computer to "NET" Ethernet management interface of PDU through cable, or transfer through a router. Note: computer network parameters must be set to access to the PDU. If in the same local area network (LAN), must be set as the IP address of the same network segment, if not in the same network segment, should connect to network interface of PDU through correct route or Network Bridge.

2. Open the PDU WEB service (HTTP Protocol). Open method is: Enter menu path "/ Main/System/Network" on the LCD menu panel, set the HTTP service to be open.

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1.2 Web's main interface instruction

- Top LOGO bar: shows company's information and LOGO.

You can use the "Hide Top Bar" command to hide Top bar.

- Navigation bar on the left: navigation bar, which is mainly divided into several big functions.
- Bar on the bottom right: specifically show status and Settings; On the top, the title bar shows subpages information and setting the switch and automatic refresh button, etc.

1.3 Title bar instruction

- "Last Page", Means to return to the last visited page.
- Numbers of alarm are shown:

Zero alarm is shown, sound of alarm is closed (note: after restart, sound will be reverted to be open).

- "Refresh": Refresh current page.
- "Auto": Automatically refresh current page, it is convenient to check state of changes. Automatic refresh time interval can be set in the "/ System/Setup" page.
- "Setup": browse mode

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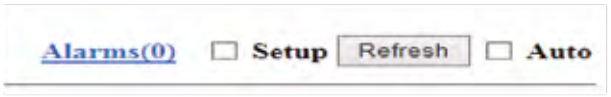
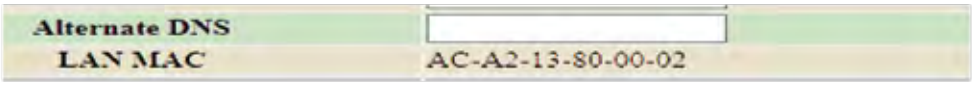
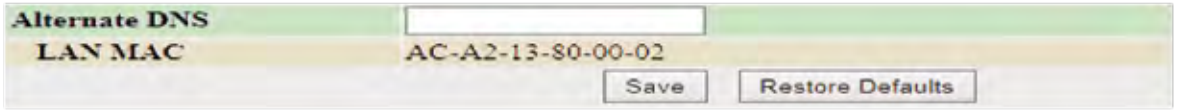


When "Setup" is not checked, it means that the current page is in browsing mode, in which parameters of equipment can't be set. Under this mode, set button is not shown. Parameters input elements of equipment shown on web page (such as text entry box) are read-only, cannot be input and be edited. The figures as followed:



- "Setup": Setup mode

When "Setup" is checked, it means that the current page is in setup mode, in which parameters of equipment can be set. Under this mode, set button is shown.



Note: if you need to modify equipment parameters, please check "Setup", then enter Setup mode.
Note: as for read-only users, "Setup" cannot be checked.

1.4 Screensaver

Page has screen protection function: when login time of the page exceeds a certain limit, the page will be logout, login again is needed to view the page.
Screen saver time interval can be set on page of"/ System/Setup".

1.5 Submit and refresh page

After page is submitted, page will be refreshed after 4 seconds. As for equipment with long time operation (submitted), last operation result can be displayed correctly with delay refresh.

2 Login page– Login

- Prompt user to input user name and password.
- "Default User" input the Default User name "admin" and password "admin".

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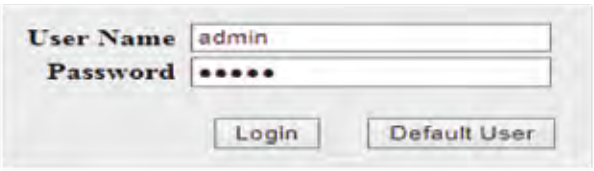

3 Shortcut page - Favorites

3.1 Tool page

- "Tool" Tool interface can be set:
  - "Turn Off Beep"Set up sound of buzzer to be open and close.
  - "Logout Web"Logout Web
  - "Reboot System"Reboot operation system.
  - "Help" indicate how to control / set operation.

3.2 Hosts page

- "Hosts" other host links page can be set for linking, after clicking, you can directly access to IP addresses of other PDU pages without restarting new browser window.
- Note: set name has rules limit, restrictions on the right for prompting.
- Note: other hosts can be linked under the browse mode.

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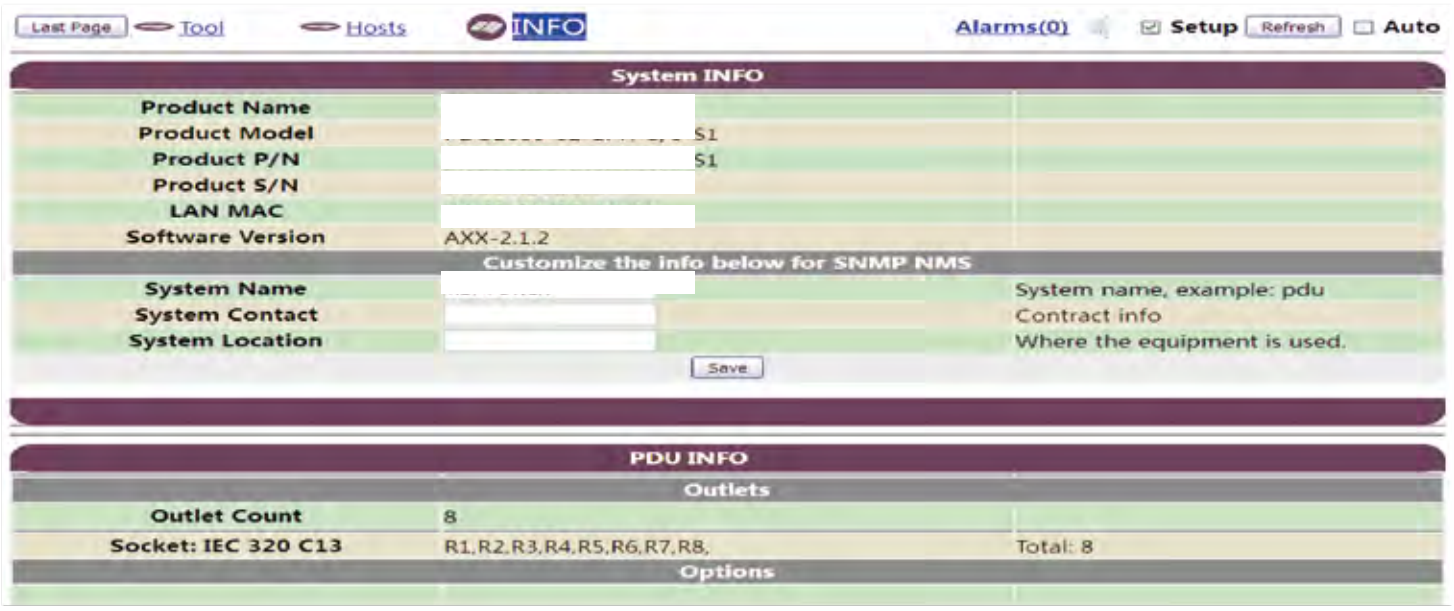
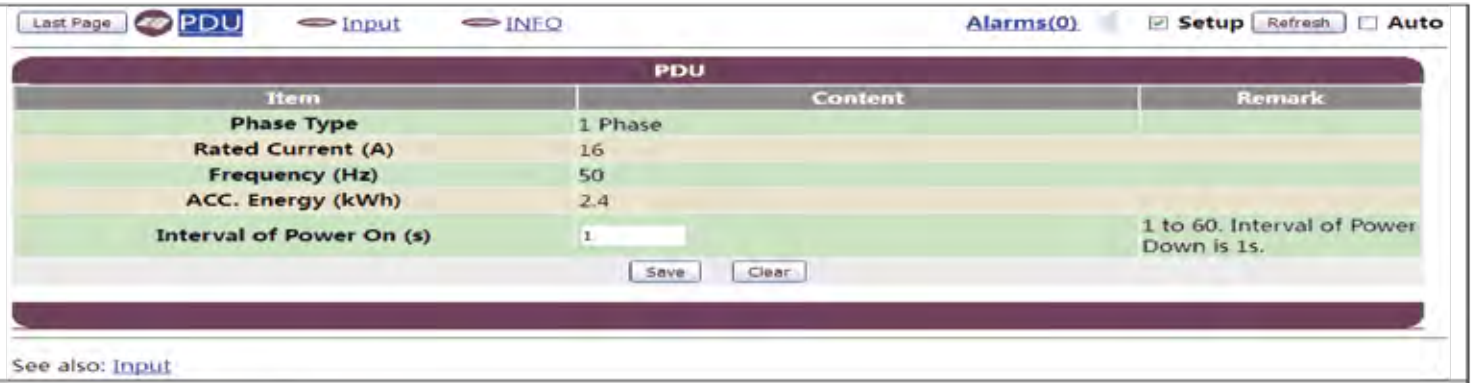
3.3 INFO page



- "INFO" System information page, which shows System information "System INFO" and PDU related information "PDU INFO". These two information is also available in "/ System/INFO" and "/ PDU/INFO" pages.

4 Power page – PDU

4.1 PDU page



- Overall status information of input power is shown.
- "Interval Time" set opening and closing Time intervals for socket. The default time is 1 second.
- Linking of input phase power supply is shown at the bottom. "Phase 1" represents the first Phase. If there are three phases in PDU, three linking are shown at the bottom, at

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the same time, three phases are shown on the top title bar .

4.2 Input/Phase page

- Input phase power supply page. Relevant state and Settings are shown.
- Alarm histories of the power supply, including current alarm, insurance alarm, etc are shown at eh bottom.

4.3 INFO page

- Input power supply information page.
- "Outlets" show all sockets' model configuration and quantity.
- "Options"show related PDU configuration information.

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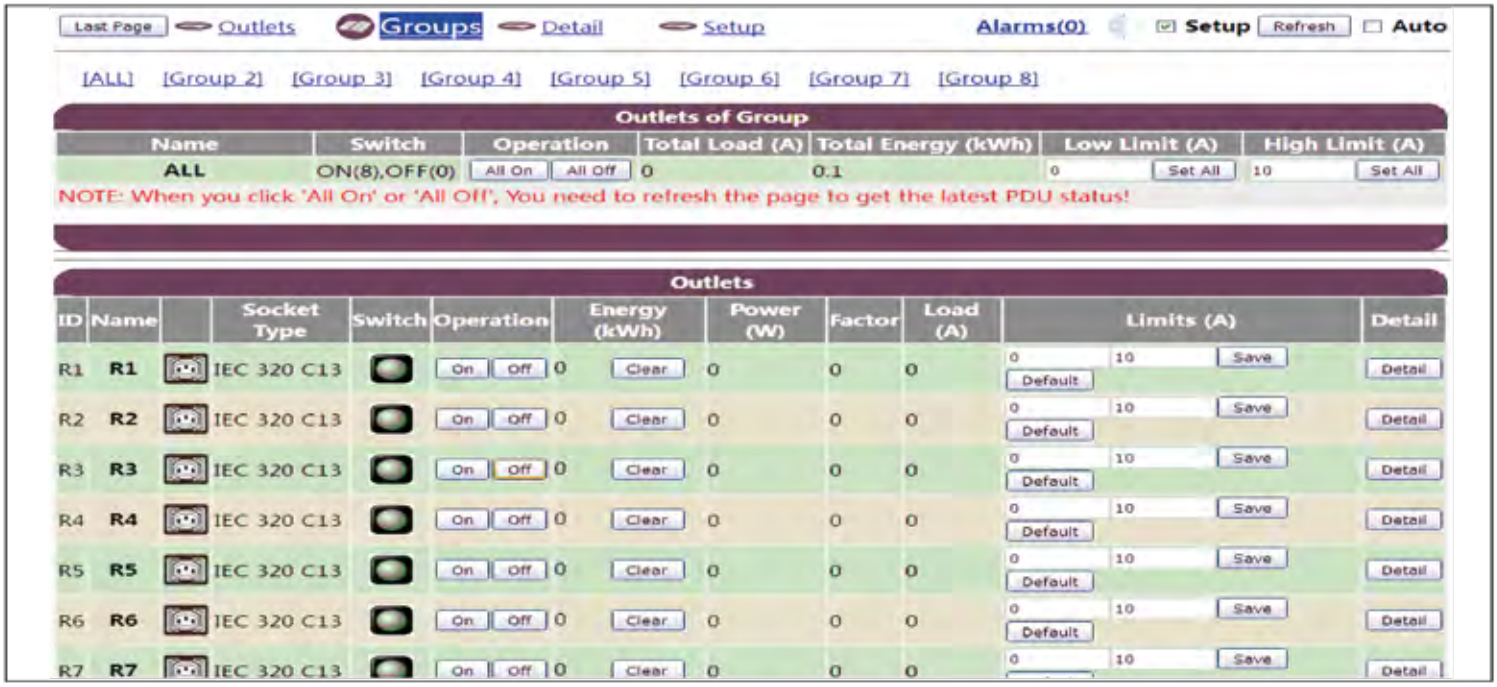
5 Socket page – Outlets

5.1 Outlets page

- Socket information is shown on socket page.
- "ID"is the label on panel of socket, which is a unique identifier of socket in the PDU.
- "Name"is given by the user name, which is convenient for management.
- "Operation"Can close and open socket.
- "Detail"can enter detail page of a single socket.

5.2 Groups page



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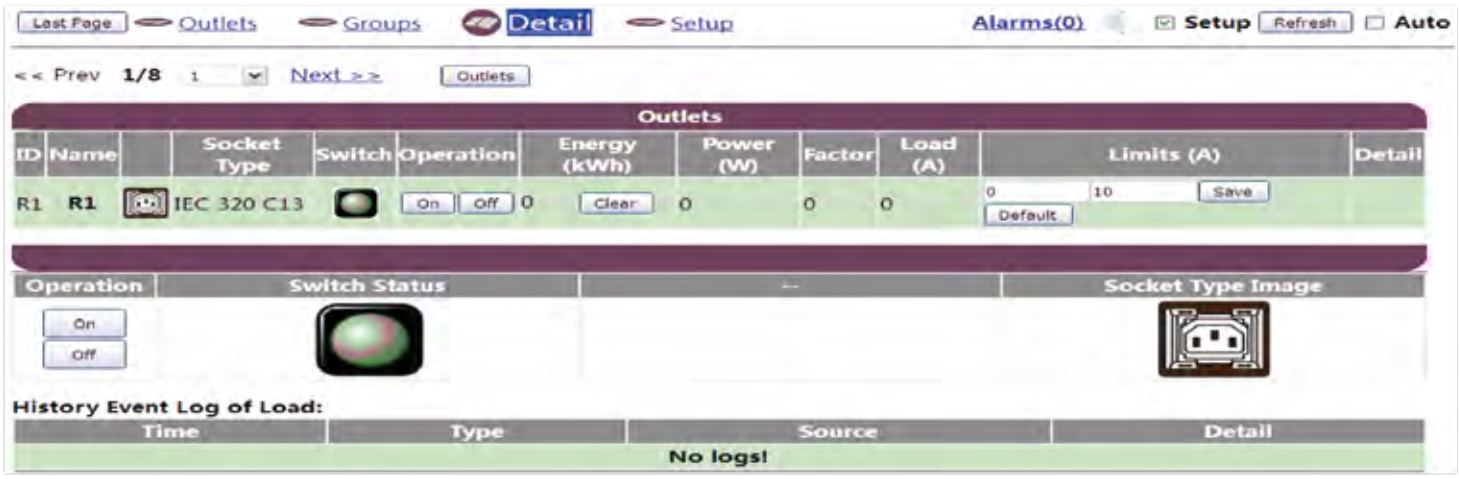
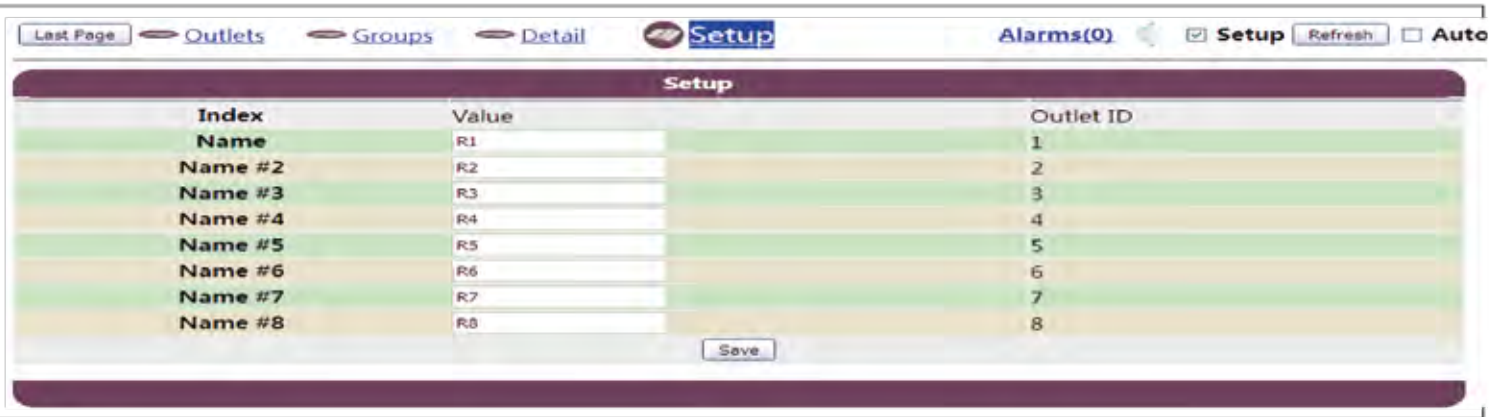
- Sockets are managed on this page according to the form of grouping, statistics of current and electric energy can be carried on; Switch and current scope of socket can be set uniformly.
- This page has the same function as"/ Groups/Groups" .

5.3 Detail page



- Detail page of socket.
- Histories of alarm of a single socket are shown at the bottom , including current alarm history and fuse alarm history, etc.

5.4 Setup page



- Socket's name and address, etc can be set up on setting page.

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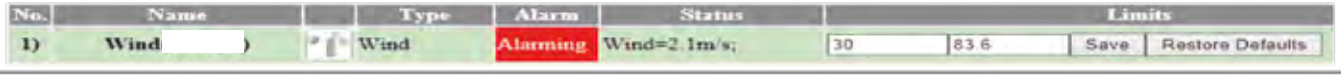
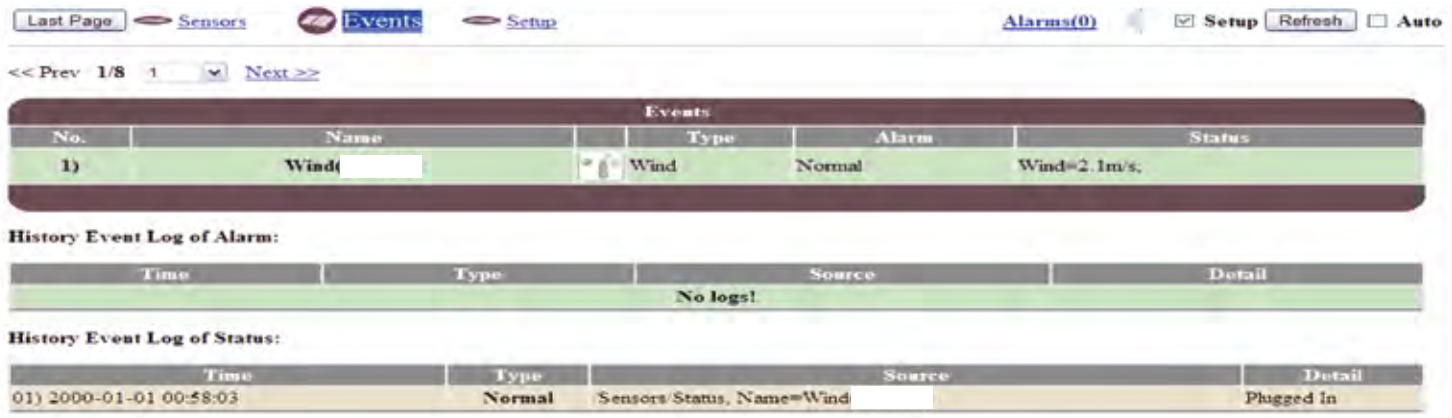
6 Sensor page – Sensors

6.1 Sensors page

- All sensor information are shown on page, eight sensors are shown on above figure.
- Some numerical range of sensor can be set in the "Limits" column. Sensor will alarm when its number is more than numerical range.
- Alarm information can be expressed in red, figure as followed:



6.2 Events page



- A single sensor checking page. The sensor alarm history can be checked.

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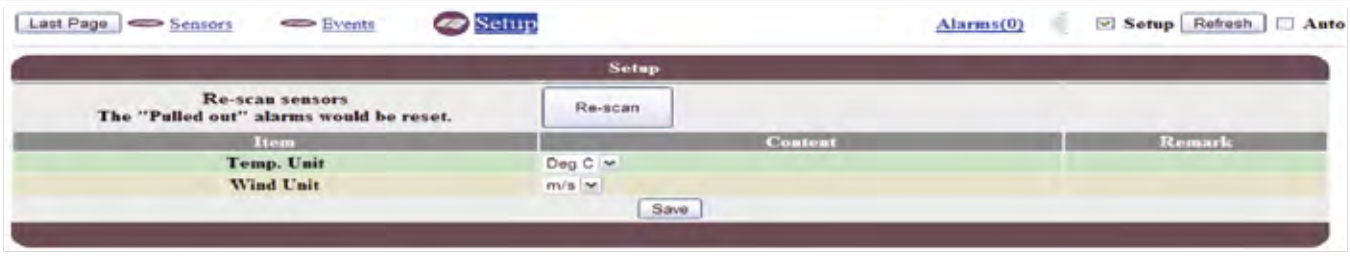
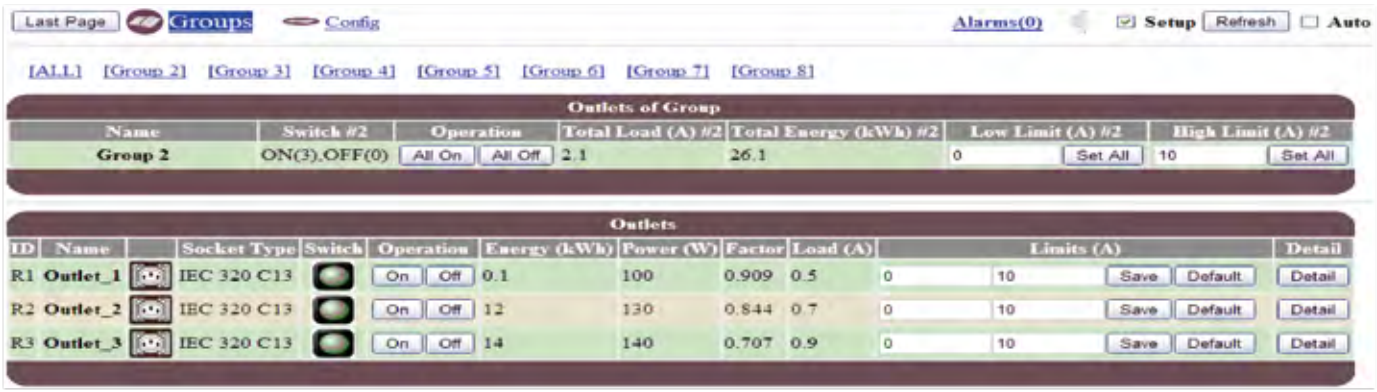
6.3 Setup page



- Settings page, some parameters of sensor are set.
- "Re - scan" rescanning sensors, since sensor is hung on "Sensor" interface of PDU, sensor will alarm when the Sensor is thought be pull out (" Pull Out ").This command can be executed to scan again connected sensor to eliminate alarm because of sensor pulled out.

7 Grouping page – Groups

7.1 Groups page



- Socket grouping is shown on group page.
- "ALL" grouping, which means all of the sockets. Grouping name cannot be modified.
- Seven groups are divided from "Group 2" to "Group 8".
- "Outlets of Group" shows statistics information.
  - "On" and "All Off": open or close all sockets of grouping .
  - "Switch" makes statistics that how many sockets are on, how many sockets are closed. The above figure as a example: three sockets are open, 0 socket is closed.
  - "Total Load"is that grouping sockets' currents are summed up.
  - "Total Energy"is that grouping sockets' electric energies are summed up.
  - "Low Limit"and"High Limit"set current scope of all grouping sockets.

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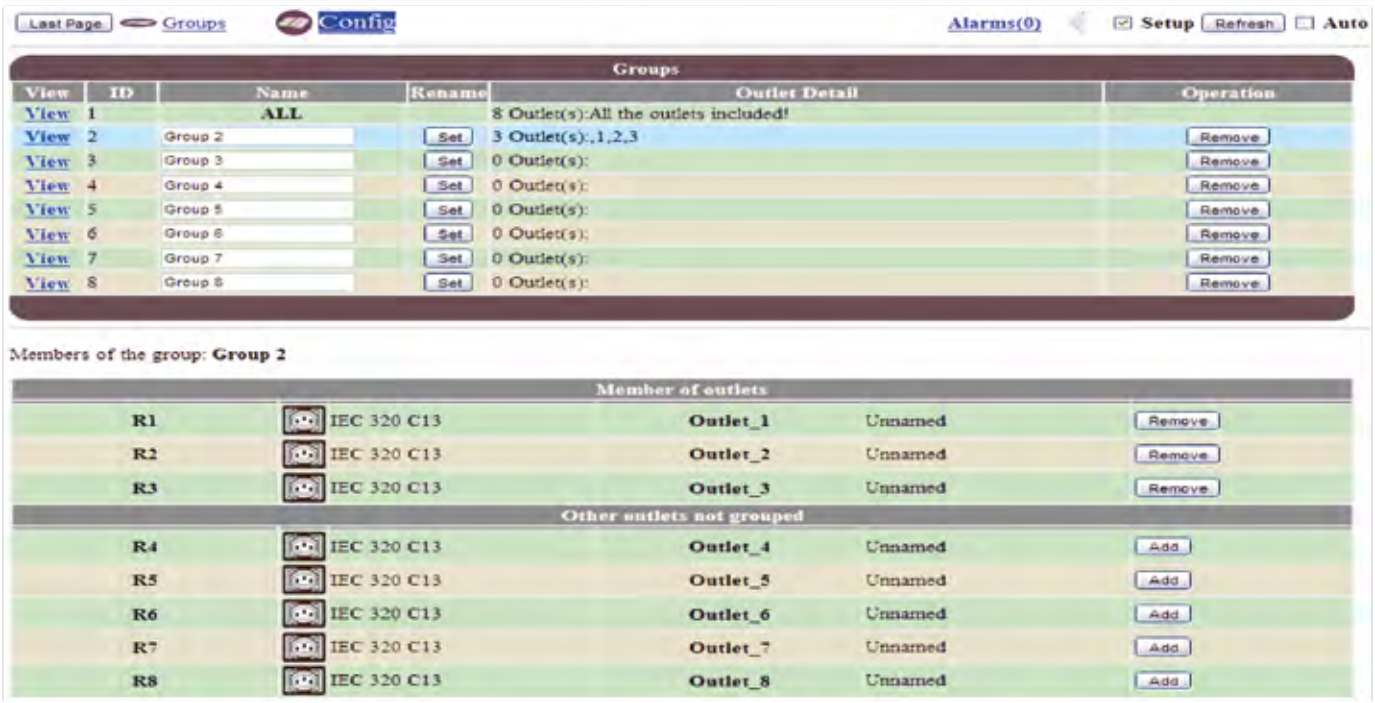
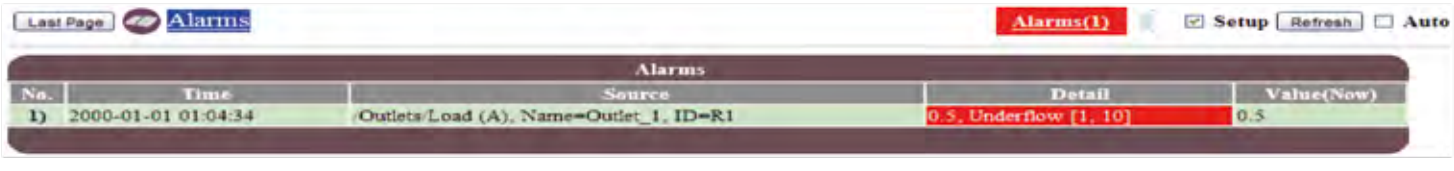
7.2 Config page



- Setting grouping page, all sockets are assigned to different group. The same socket can only be assigned to a group (in addition to the "ALL" group).If a socket is needed to be allocated to another group, first at all, the socket should be removed from the current group, then it can be assigned to another group.
- "View" column, click, select and display the detail grouping information in the below table below.

8 Alarm page – Alarms



- Current existing alarm entries are shown on alarm page. Alarm entries can't be deleted, unless alarm is removed.

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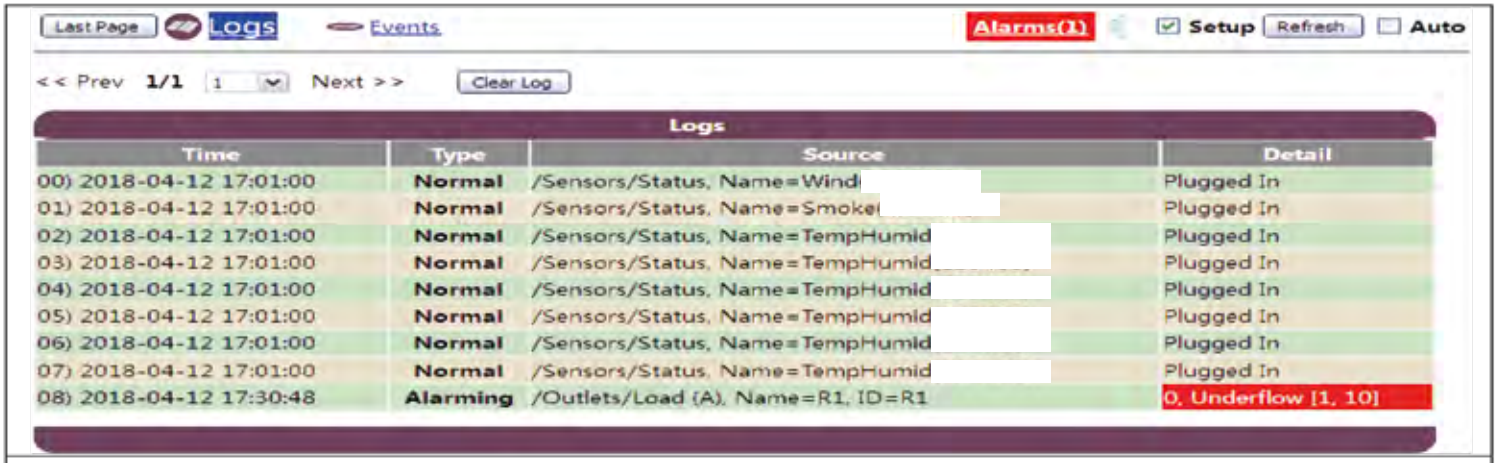
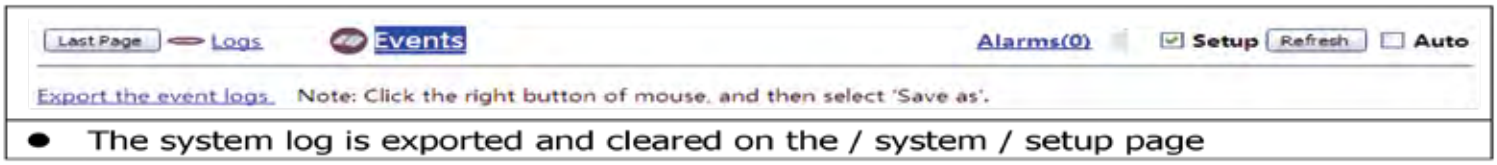
9 Log page– Log

9.1 9.1 Logs page



- Alarm histories are shown on log page.
- Can use"Clear Log"to delete alarm histories

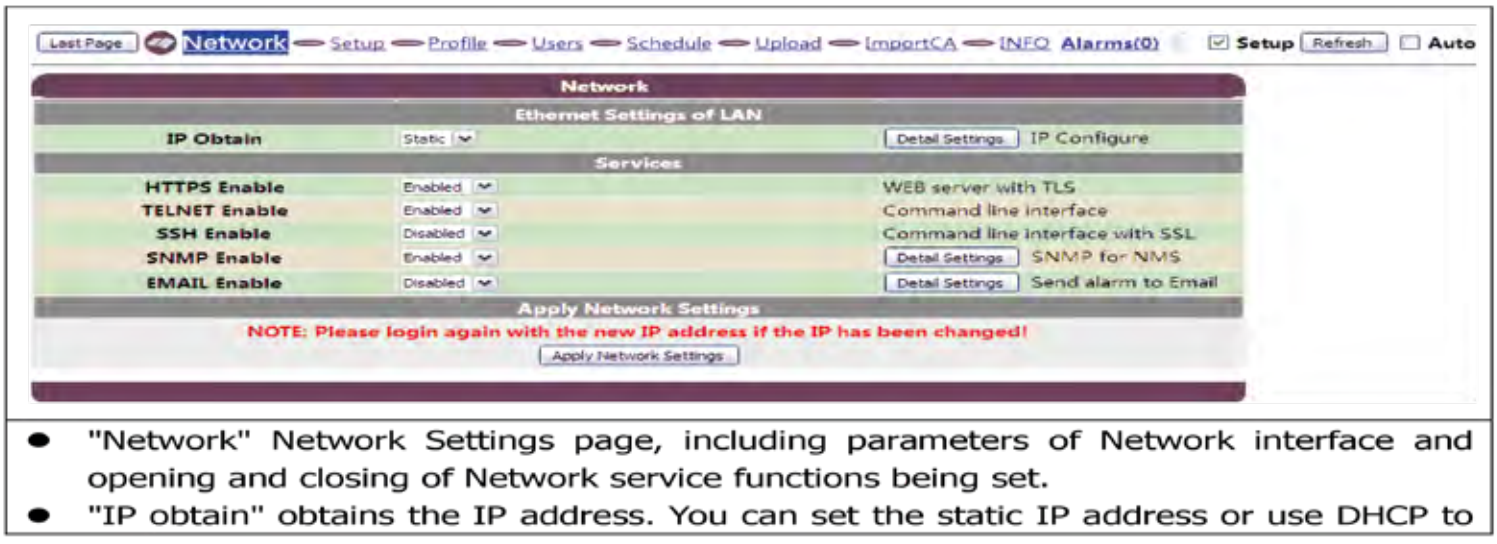
9.2 Events page



- The system log is exported and cleared on the / system / setup page

10 System page – System

10.1 Network page



- "Network" Network Settings page, including parameters of Network interface and opening and closing of Network service functions being set.
- "IP obtain" obtains the IP address. You can set the static IP address or use DHCP to

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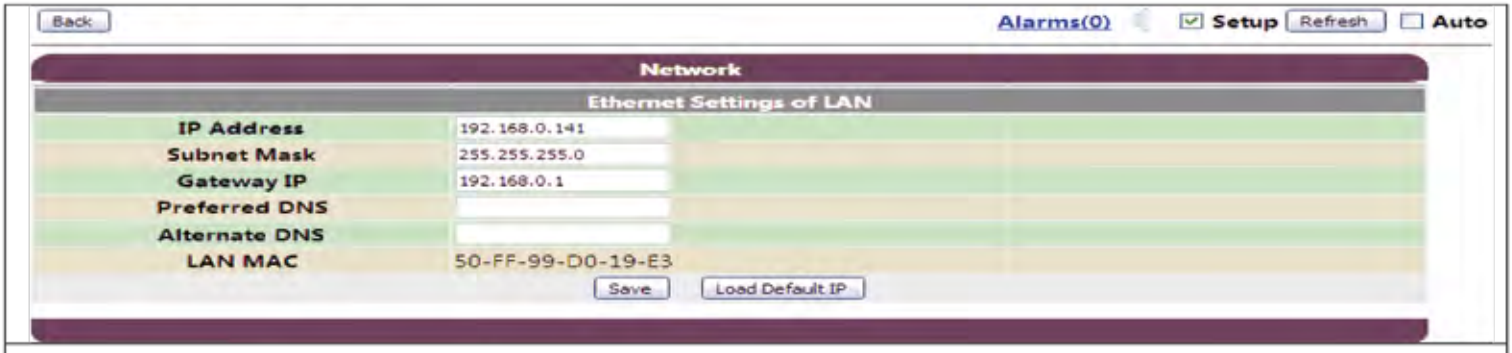
automatically obtain the IP address. The automatically acquired IP address can be viewed on the display.

- "Detail Settings"button, into a more detailed subpage.
- "Apply Network Settings"After the above several settings are modified, the network setting does not come into effect immediately, which doesn't come into effect until the next start begins. If these Settings are needed to be taken effect immediately, this command can be performed.
- Note: there are some retention services or functions which are not supported, the user can't choose and open the kinds of services or functions.

10.1.1 IP page



- IP address setting: after setting, you need to log in with the new IP address.
- "Load Default IP": IP address will restored to default Settings.

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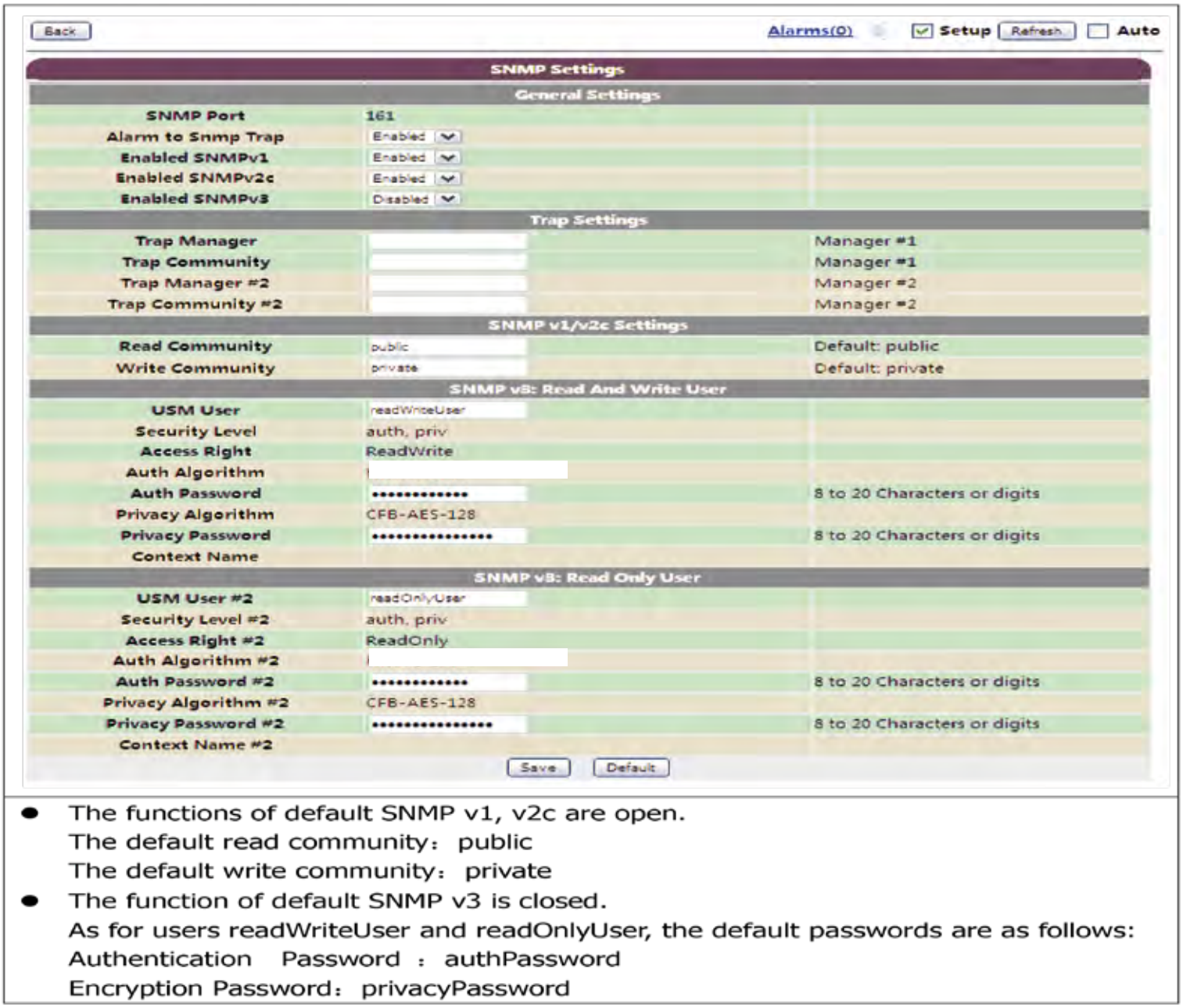
10.1.2 SNMP page



- The functions of default SNMP v1, v2c are open.
  The default read community: public
  The default write community: private
- The function of default SNMP v3 is closed.
  As for users readWriteUser and readOnlyUser, the default passwords are as follows:
  Authentication Password : authPassword
  Encryption Password: privacyPassword

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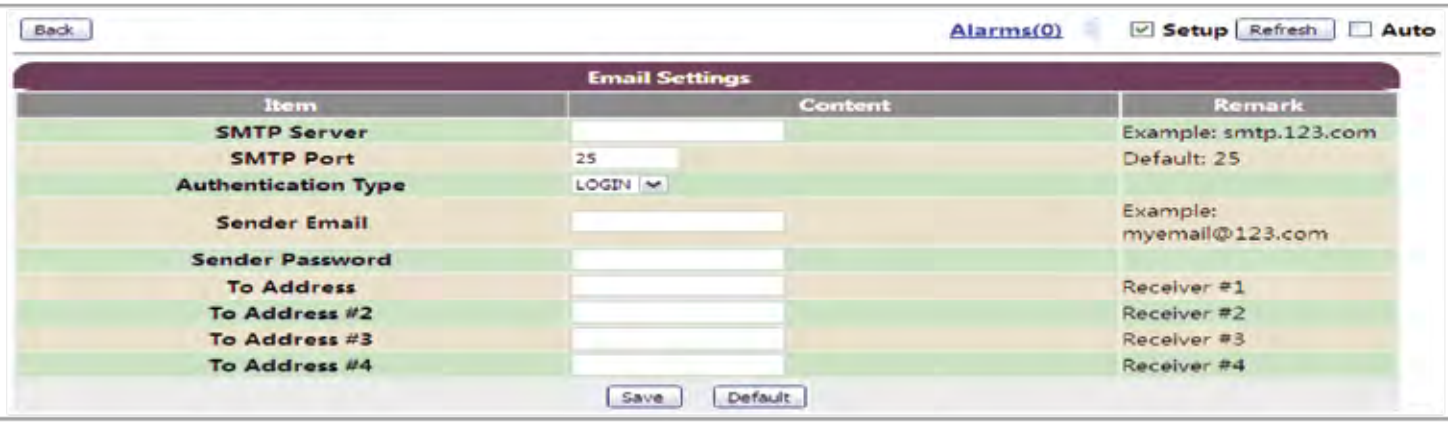
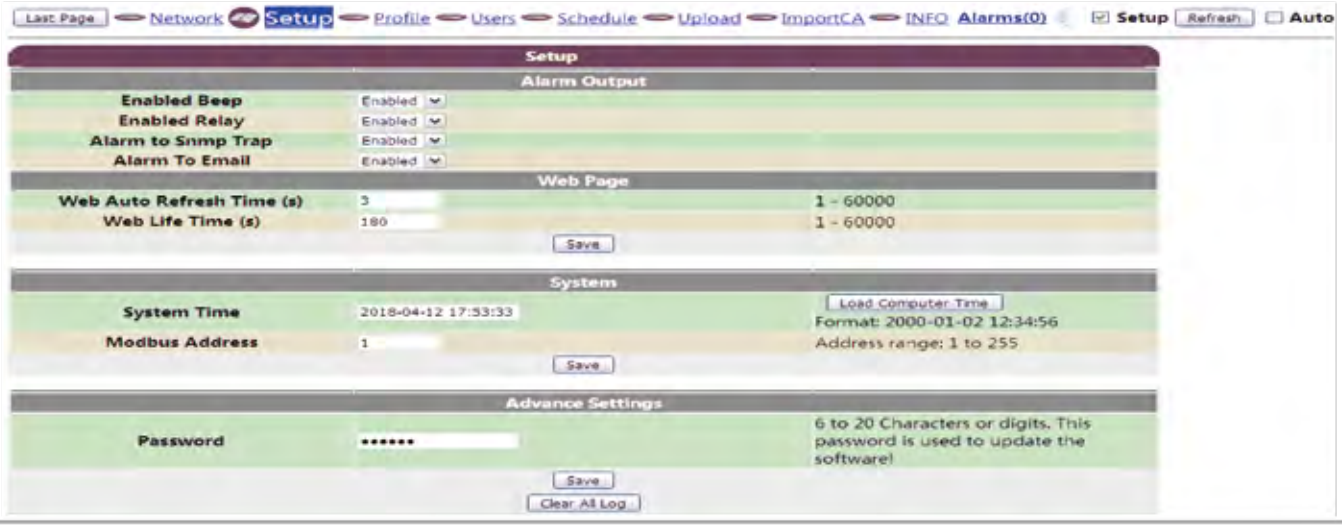
10.1.3 Email page



- When PDU is abnormal, PDU will send abnormal information through the set email
- Note: at present, the email function only supports the login mode, and other encryption modes are not support.

10.2 Setup page



- Set alarm output, for example, whether sending SNMP Trap is set up or not, and whether sending Email alarm is set up or not.
- "Load Computer Time". fill current computer time in time box on the left, and then press "Save" button to set time of equipment. Of course time can also be inputted manually according to prompt in the right format.
- "Advance Settings" ,The password is used to update the software of PDU. It needs to be combined with the additional upgrade software.
  NOTE: Upgrade software is not standard, only available when necessary。
- "Clear All Log" , Clear all log records, including alarm log and Events log

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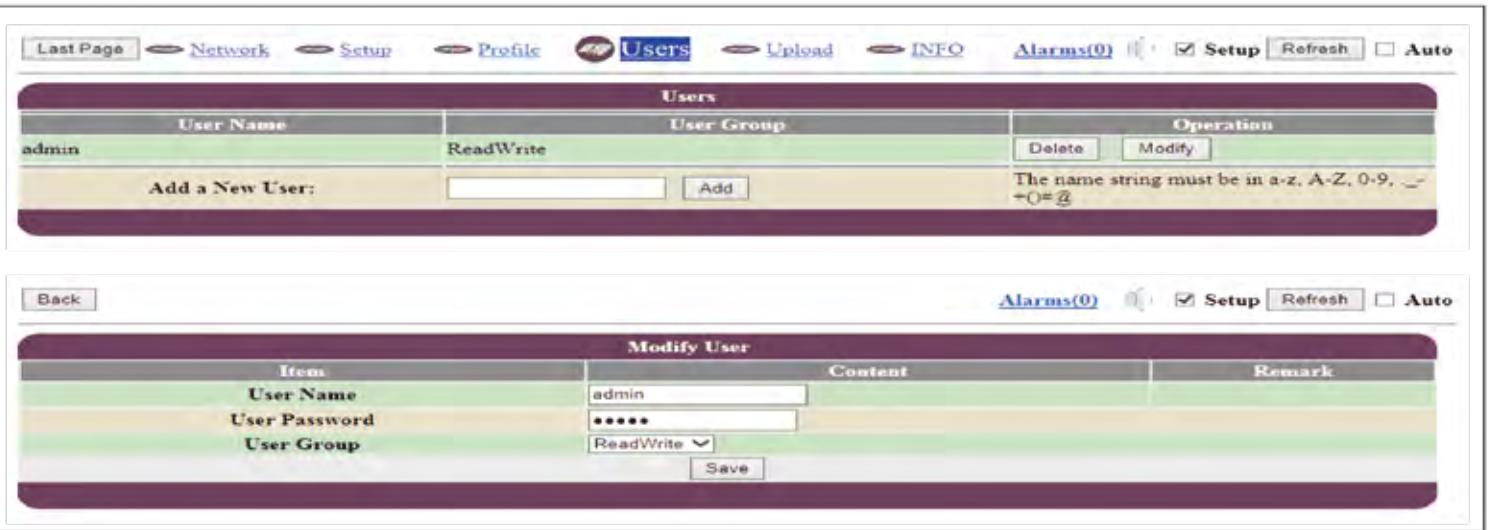
10.3 Profile page

- "Restore Factory Settings" restore factory Settings, including all of the Settings. Note: If the operation is carried out, the current settings will be lost, so you can backup in advance.
- "Restore from profile" The saved settings files are restored to current settings. Note: If the operation is carried out, the current settings will be lost, so you can backup in advance.
- "Backup to profile"Current setting is backed up (saved) to configuration file.
- Note: total 3 files are set up; Setting can be backed up to a file, or setting can be restored from backup file. The backup time is shown in the middle column.

10.4 Users page



- Set up a user who can access and manage equipment.
- There are two kinds of access rights of user:
  - "ReadWrite" is administrator privileges, who can read status and settings, and can also write settings.
  - "ReadOnly"is general user, who can only read state and settings, but cannot write settings.
- Note: the last administrator user cannot be deleted.

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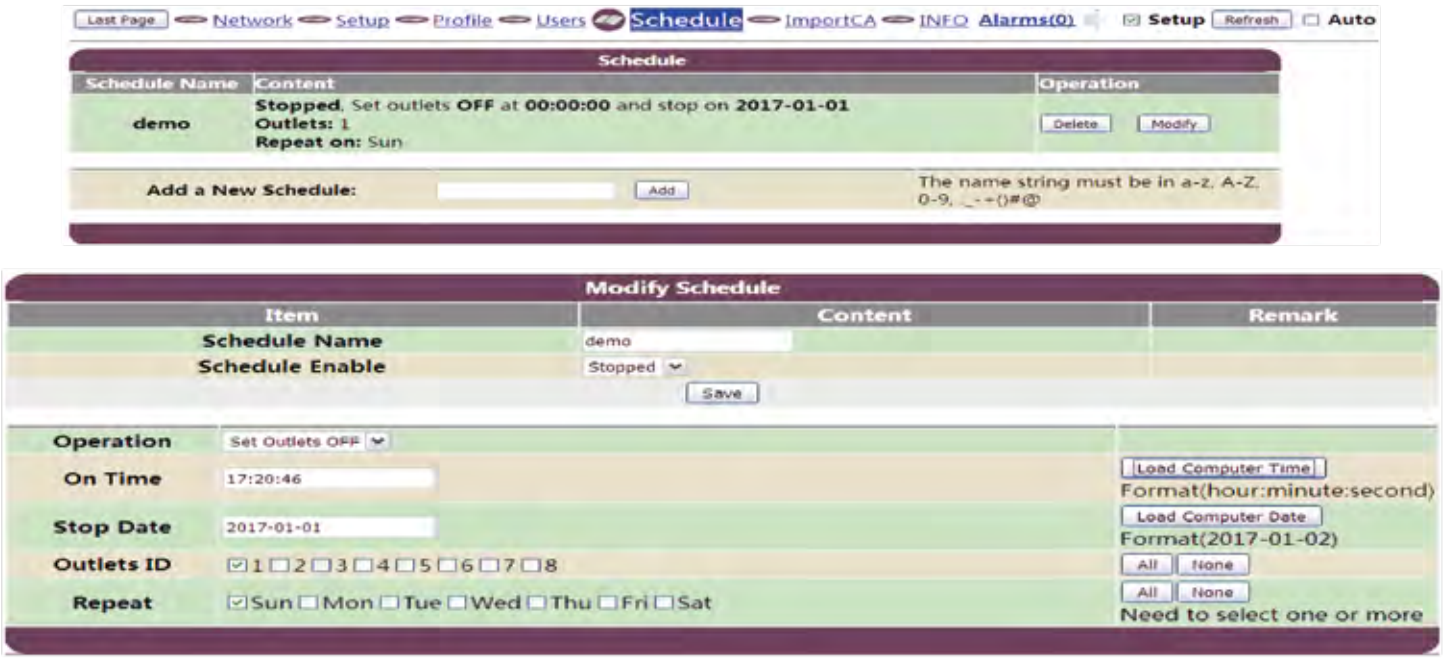
10.5 Schedule page



- Time switch function, PDU has the function of switch control show the content.
- 8 group timing operation is maximum supporting, each group does not limit the number of output socket.

- "Operation" select the item for operating.
- "On Time" switching operation time point.
- "Stop Data" the stop date for the repeat operation.
- "Outlets ID" select the output socket that needs to be operated.
- "Repeat" choose at least one of the days of the week that you want to operate regularly.

10.6 Upload page

- Choose files which need to be upgrades to upload to equipment.
- Suffix of uploaded files are included:
  - *.bin: Binary file, which doesn't take effect until system is restarted after upload is finished.
  - *.dat: Binary file, which will take effect as soon as upload is finished. It needn't to

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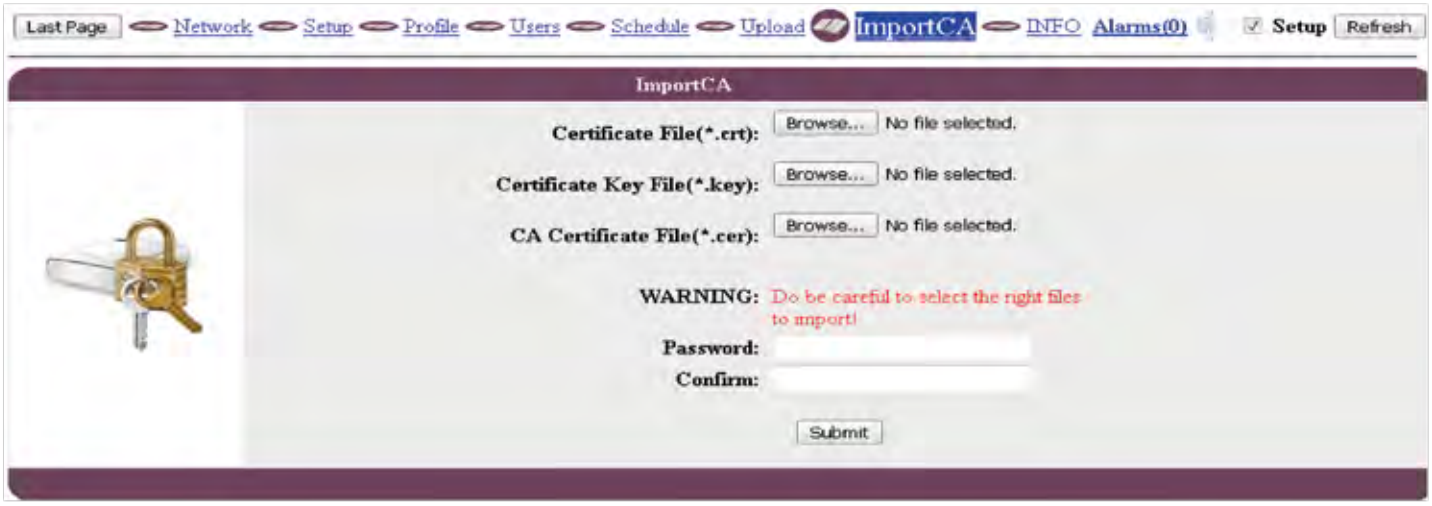
be restarted.

- Uploaded files are included:
  - Application firmware upgrade package, for example：net-power-1.0.0.bin。
  - Settings, configuration and patch upgrade package , for example：xxx-conf.dat，xxx-sp1.dat。
- Note: illegal uploaded files can't be recognized and dealt with.

10.7 CAFiles page



- Only some models of PDU support the function of "CA Files" importing CA certificate page.
- Click 'Browse...' to select corresponding Certificate File(*.crt).
- Click 'Browse...' to select corresponding Certificate Key File(*.key).
- Click 'Browse...' to select corresponding CA Certificate File(*.cer).
- “Password” options are optional.
- Import new CA certificate will be valid on the next HTTPS connection, no need to restart the system.

10.8 INFO page

1 PDU Management Operating Manual
WEB Operation Interface Instruction

- System information is shown and set up.
- Software version, product model and serial number ,etc can be checked here.

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2 PDU Management Operating Manual
LCD Panel Operation Instruction

LCD Panel Operation Instruction – Content

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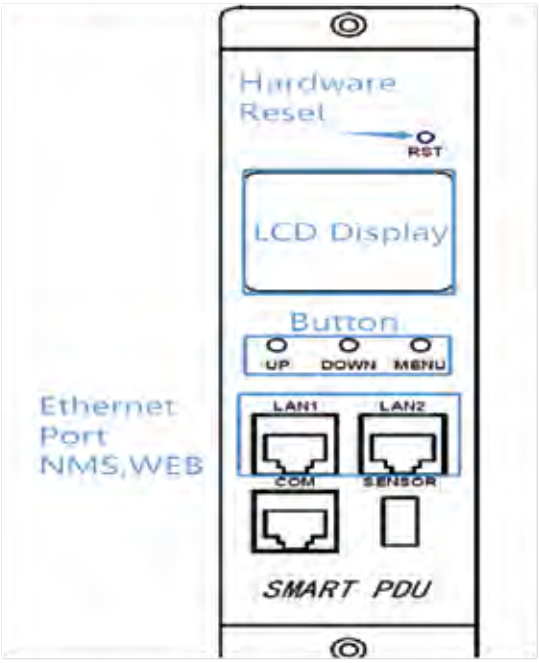
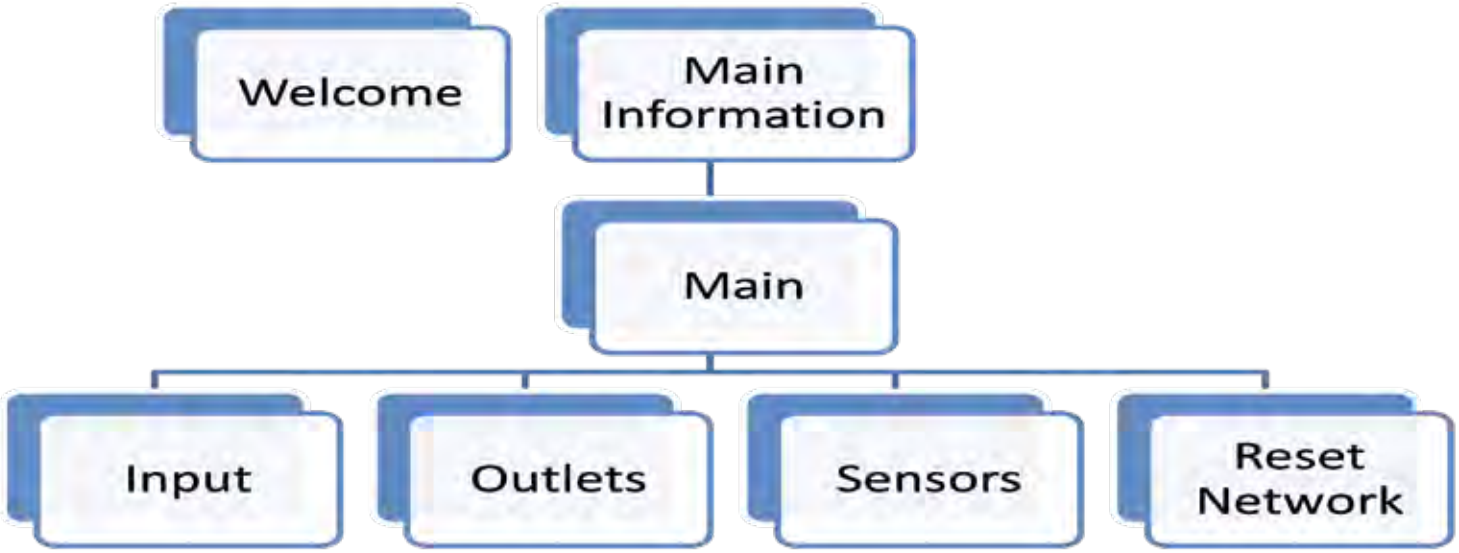
2 PDU Management Operating Manual
LCD Panel Operation Instruction

1 PDU Equipment LCD Panel



2 Tree structure of Menu



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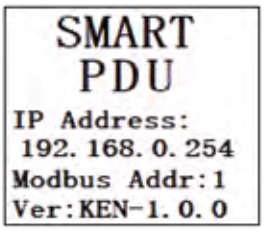
2 PDU Management Operating Manual
LCD Panel Operation Instruction

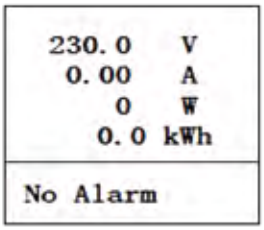
3 Menu Instruction

3.1 Welcome Menu



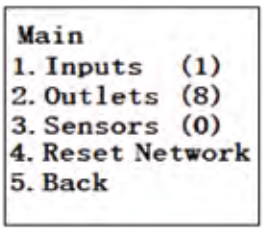
- IP address is shown, which brings convenient for computer being connected to equipment through network interface.
- Modbus RTU address is shown.
- Display software version
- Press UP or DOWN key to enter "Information" menu.
- Press MENU key to enter "Main" menu.

3.2 Information Menu



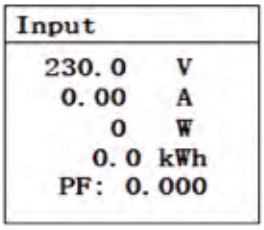
- Display the voltage input, current, active power, energy and alarm of the equipment。
- Press UP or DOWN key to enter "Welcome" menu
- Press MENU key to enter "Main" menu.

3.3 Main Menu



- Press MENU key to enter the corresponding menu
- Outlets(8): means that there are 8 pcs of sockets in equipment.

3.4 Input Menu



- Value of total input
- Press MENU key to enter "Main" menu.

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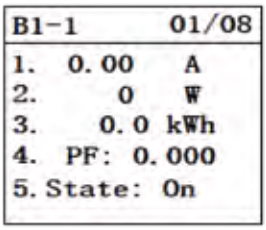
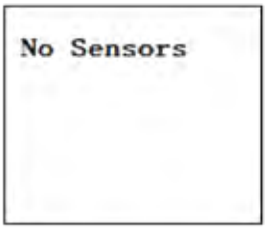
2 PDU Management Operating Manual
LCD Panel Operation Instruction

3.5 Outlets Menu



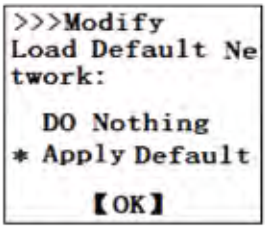
- Press UP or DOWN key to display the status of the other outlets
- Press MENU key to enter "Main" menu.

3.6 Sensors Menu



- Press MENU key to enter "Main" menu.

3.7 Reset Network Menu



- "Apply Default" is loaded with Factory Settings; Restore factory IP, user and password.

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3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

TELNET-SSH - Content

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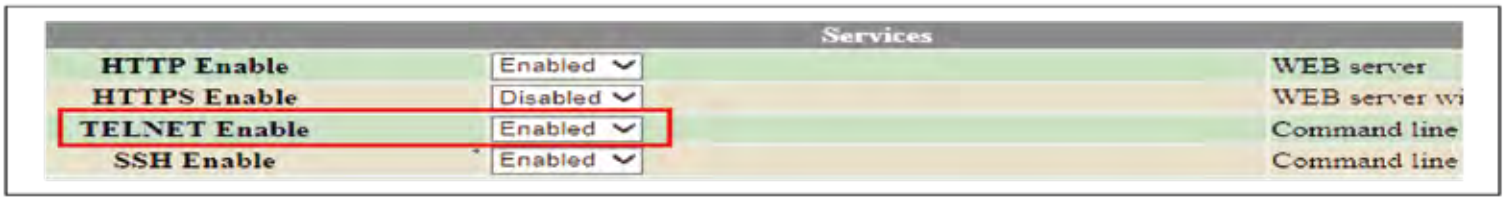
3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

1 Using command line terminal management equipment

PDU uses TELNET protocol (unencrypted) and SSH protocol (encryption protocol) to provide command line terminal management function.

1.1 Connected to TELNET

1. Connect computer to "NET" Ethernet management interface of PDU through cable , or transfer through a router. Note: computer network parameters must be set to access to the PDU. If in the same local area network (LAN), must be set as the IP address of the same network segment, if not in the same network segment, should connect to network interface of PDU through correct route or network bridge.
2. Open the PDU TELNET service. Open method is: in the path of the PDU web page: "/ Network", set the Telnet service to "Enabled", then save, and through set Network Settings, or "/ Main/System/Network" in the liquid crystal display menu path, can also open the service.



3. Terminal software is processed on the computer, and " SecureCRT " is serviced as demonstration terminal software, version information is as follows:

4. Set connection parameters
   Input PDU IP address (In this case, it is: 192.168.0.254), choose the Telnet protocol and the default port 23.

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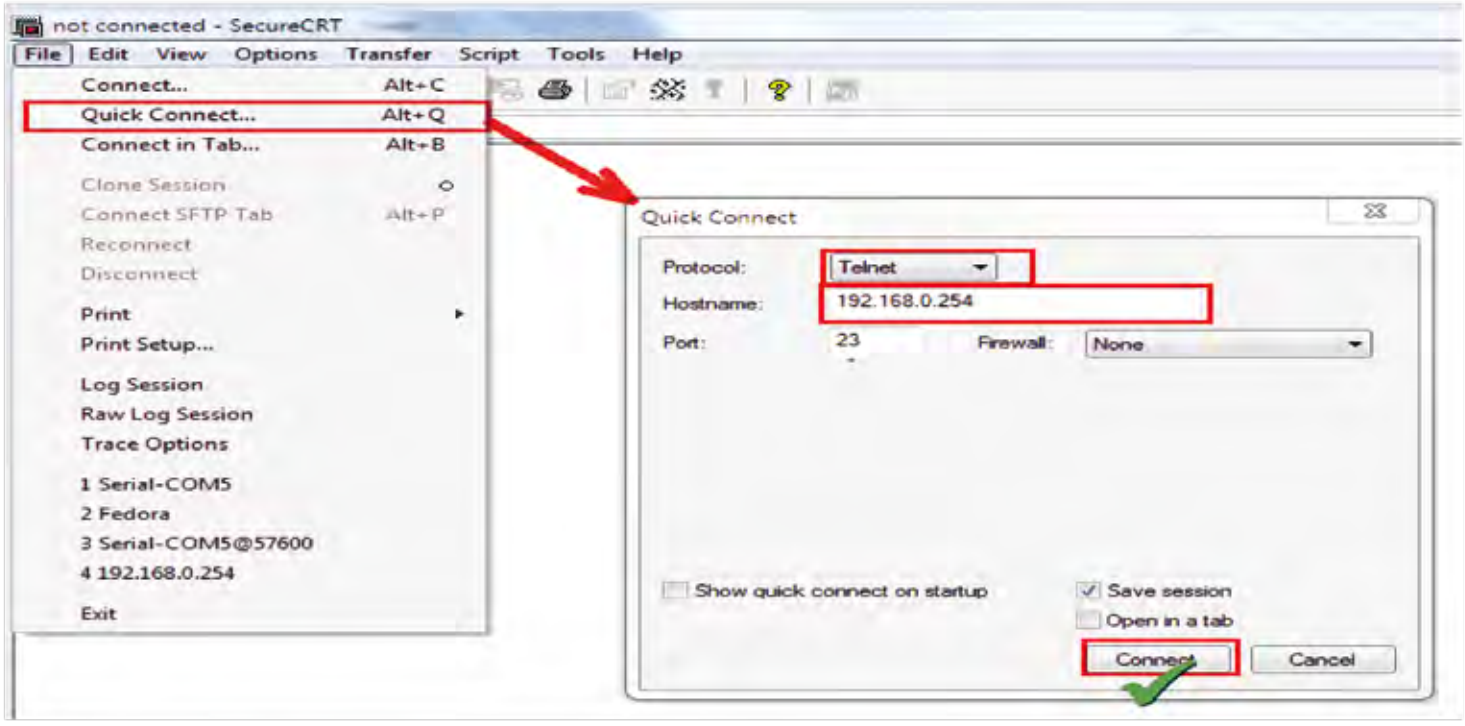
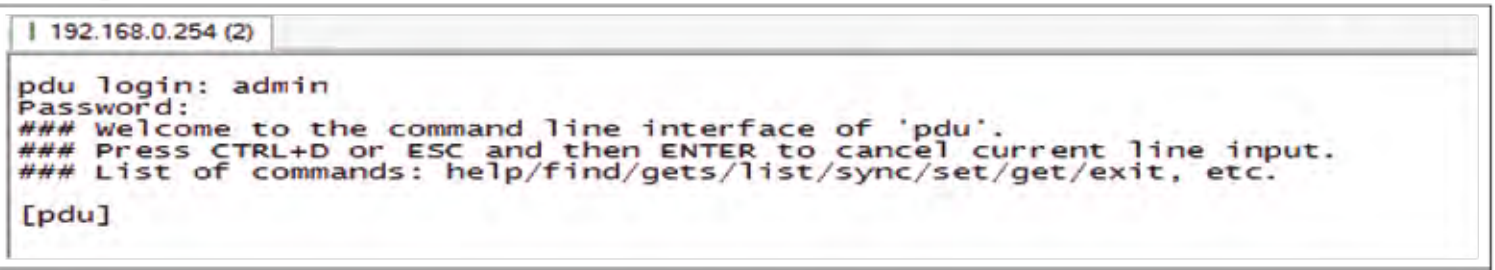


Click the connect button to connect, login prompt of "pdu login" will appear.

5. Log onto PDU Telnet terminal.



Input default user name and password: admin@admin

Click Enter key for entering , then there some helpful information will appear: prompt basic key operation and command of command line terminal, as follows:

```
pdu login: admin
Password:
### Welcome to the command line interface of 'pdu'.
### Press CTRL+D or ESC and then ENTER to cancel current line input.
### List of commands: help/find/gets/list/sync/set/get/exit, etc.

[pdu]
```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3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

```
Welcome to use the 'pdu' command line interface.
Press combination keys (CTRL + D) or press cancel key (ESC), and then press ENTER key to exit the
current command input.
Main list of commands: help/find/gets/list/sync/set/exit, etc.
```

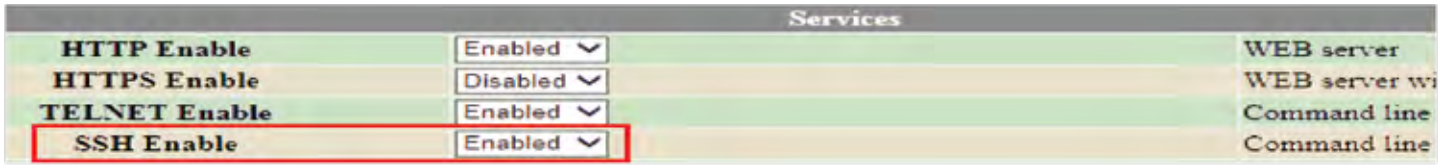
Note: if no any command is input for a long time (about 2 minutes), the terminal will automatically be withdrawn from terminal.

The application quit normally because of timeout.

1.2 Connected to SSH

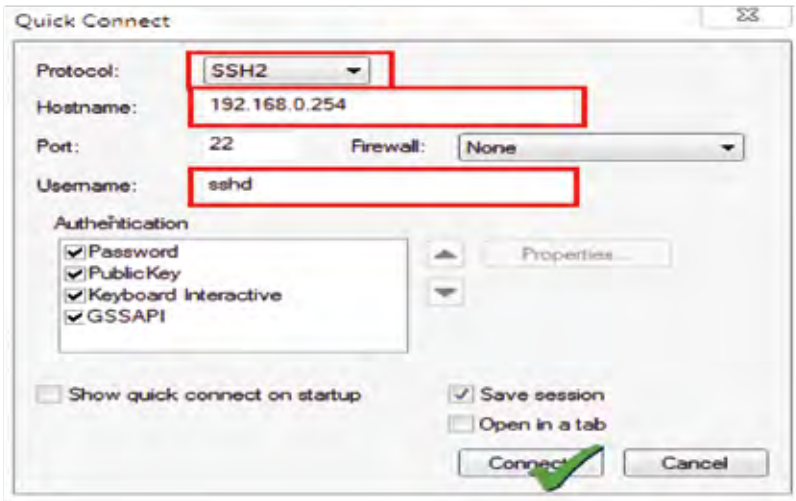
Note: in addition to two differences, SSH login to PDU method is the same as above Telnet login to PDU method. The differences are: opening SSH services and setting up connection parameters.

1. Open the PDU SSH service. Open method is: in the path of the PDU web page: "/ Network", set the SSH service to "Enabled", then save, and through set Network Settings, or " liquid crystal display menu, can also open the service.



2. Set connection parameters

PDU IP address (In this case, it is: 192.168.0.254), choose the SSH2 protocol and the default port 22.



Click connect button to connect, the following two results will appear:

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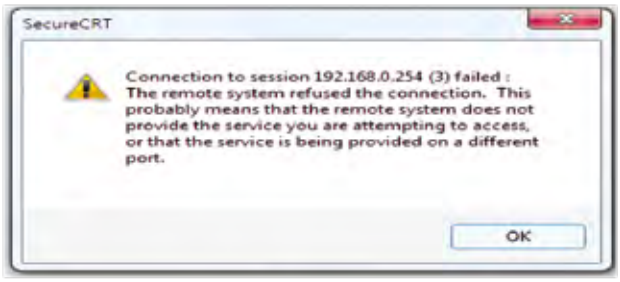
3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

If the connection is successful, user and IP address are correct; Prompt of inputting of SSH connection password will appear.
The default connection user and password:
sshd@123456
Check " Save password " for entering conveniently next time



If the connection is failure, error dialog will appear

After connection is successful, login prompt of "pdu login"will appear.

Input the same login user and password for logging onto PDU as Telnet .

2 Regular instruction for command line

1. It is insensitive for inputting case.
2. The "DELETE/UP/DOWN/LEFT/RIGHT/HOME/END "keys cannot be used on the terminal. If you have input the keys, the current input will be cancelled.
3. The roles of "TAB" key are: can export commands of history, and can also record at most eight command histories.
4. "Object" is the object of management. These objects are sorted by serial number. Inputting name of the object and inputting object serial number have the same effect. All commands are basically operated in view of these objects.
5. If command is not clear, please carry out help command.
6. If management object needs to be cleared: please carry out find command.
7. If user log in as manager user, he can read and write object. If user only log in as read-only user, he can only see objects and can't set object.

3 Command instruction

3.1 Help command

```
[pdu] help
Help to command:
        [set]    object values #set value to a single object
        [get]    object        #get value of a single object
        gets/g   [range]       #get values of objects
```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```
sync/s   [range]          #sync objects from other applications
list/l   [range]          #list properties of objects
list/l   object           #list detail properties of a single object
find/f   string           #find the objects which name partial match the 'string'
hist/h                    #show the history commands
help/?                    #show help messages
exit/x                    #exit this application

*** Expression of object ***
softVer                   #using name, 'softVer' is an example
softVer.0                 #using name with element index
12                        #using identifier number, '12.0' is the same with '12'
12.3                      #using identifier number with element index
.                         #dot punctuation present the last object used

*** Expression of range of objects ***
softVer 34                #using name and number, [softVer, 34]
12 34                     #using numbers only, [12, 34]
12                        #the same as [12,12]

*** Examples ***
find usern                #find object *usern*, we can find 'userName'
list 12 34                #list objects from 12 to 34
get softVer               #get value of object 'softVer'
softVer                   #the same as above
.                         #get the last object
set addUser Jack myPw #set object with 2 values
addUser Jack              #set object 'addUser' to value 'Jack'
set userName.2 Rose       #set the 2nd element of object 'userName'
set . Angel               #set the last object to 'Angel'

*** Navigation and notes ***
The read only user has not right to set most objects.
The DELETE/UP/DOWN/LEFT/RIGHT/HOME/END keys are not used here.
Press CTRL+D or ESC or BACKSPACE then ENTER to cancel current line input.
Press TABs first then ENTER to call out the history command (Total 8 items).
Application would quit automatically if more than 120 seconds without any user input.
```

- "[set]" and "[get]," represent characters which are not inputted with command. If only an object follows, "get" command is carried out .If 2 or more than 2 objects follows, "set" command is carried out.
- "gets/g," represents gets command, which can be abbreviated by s.
- "[range]," represents the range of object, such as: "10 20", there is space in the middle which

represent objects from 10 to 20.

3.2 How to find and check object attribute

1. First of all, you can use "find" command to find corresponding object. For example, to find corresponding software version of "soft".

```
[pdu] f soft

NO.   Object Name
+=== +==============
057) SoftVer
```

Find the object No. 57, with similar name.

2. Then list its attributes.

```
[pdu] list 57
Object properties
        NO.          :057   Number of object
        Name         :SoftVer   Name of object
        Description :Software Version  Description of object
        Elements     :1   (Array member has only one member)
        Data Type    :String  Type of object : character string
        Access       :Read Only  Reading attribute of object, here is read-only
        Unit         :   Unit of object
        Length       :[0, 11].   The length of the object , here is character string, so the length can be
0 to 11 characters
```

3.3 Read object data

You can use gets command to read the information.

```
[pdu] gets 57
NO.   Object Name                  Index Values
+=== +========================== +===== +========================
053) SoftVer                              AHW-1.0.b1
```

You can use get command, don't input get command in the below text, directly input object number 57.

```
[pdu] 57
AHW-1.0.b1
```

The main difference between the two commands for obtaining data is that output's formats are different. "Gets" command can obtain a range of data.

3.4 Set object data

Using object "OutletSwitch" as an example. Use "list" command to get the object's attributes, and use "gets" command to get object data.

```
[pdu] list OutletSwitch
Object properties
        NO.          :096
        Name         :OutletSwitch
        Description :Switch
```


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3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

```
        Elements      :8
        Data Type     :EnumText
        Access        :Read/Write
        Unit          :
        Value List    :OFF(0),ON(1).   Numerical representation method of object, 1 represents "ON"
```

```
[pdu] gets OutletSwitch

NO.   Object Name                Index Values
+=== +======================== +===== +======================
096) OutletSwitch              [   0] ON
                               [   1] ON
                               [   2] ON
                               [   3] ON
                               [   4] ON
                               [   5] ON
                               [   6] ON
                               [   7] ON
```

A switch with total eight sockets, whose state is "ON".

Set switch to "OFF" state, and then check.

```
[pdu] set OutletSwitch.1 0
### OK!
```

```
[pdu] gets OutletSwitch

NO.   Object Name                Index Values
+=== +======================== +===== +======================
096) OutletSwitch              [   0] ON
                               [   1] OFF
                               [   2] ON
                               [   3] ON
                               [   4] ON
                               [   5] ON
                               [   6] ON
                               [   7] ON
```

It means that switch which is set is successful.

3.5 The attribute of synchronization object

When the object's attribute is modified, use the sync command to update data of object.

```
[pdu] sync
Sync properties of objects.....................................................
177 objects are synchronized OK and 0 are failed.
```

3.6 Using object name and serial number

Object can be represented with name or serial numbers:

```
[pdu] f outletswitch
```


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```
NO.   Object Name
+=== +==============
096) OutletSwitch     # object number is 96, name of it is "OutletSwitch"

[pdu] get outletswitch.1      # get the state of No. 1 (the second) switch, which is "OFF"
OFF
[pdu] get 96.1     get the state of # No.1 (the second) switch, which is "OFF" -   which is replaced with
using object number, which has the same effect.
OFF
```

3.7 Using dot mark to represent object which is used for the last time

```
[pdu] get outletswitch.1     get the state of # No.1 (the second) switch, which is "OFF"
OFF
[pdu] set outletswitch.1 1   #set to state of "ON(1)"
### OK!      #set is successful.
[pdu] get outletswitch.1   # get, set success is set to "ON" state.
ON
[pdu] set . 0 # Use the current object symbol "dot", which is set to close state.
### OK!
[pdu] get outletswitch.1     # setting is just the object, which is already closed.
OFF
```

4 PDU management object instruction

Use the list command, do not need to add any object, all the objects can be listed.

Slow one page is shown , message is as follows, choose to show All "All" ,then it will be ok.

```
-- Show more [Y<ENTER>/N<SPACE>/A(All)?]a
```

```
[pdu] list
Sync properties of objects...Ok
197 objects are synchronized OK and 0 are failed.

NO.   Object Name              Count Type       Access
+=== +====================== +==== +========= +===========
000) Pduc                     [  1] Integer    Read/Write   Note: quantity of all the objects
001) PducSoftVer              [  1] String     Read/Write
+=== +====================== +==== +========= +===========Note: User management
006) AddUser                  [  1] String     Read/Write
007) DeleteUser               [  1] String     Read/Write
008) ModifyUserName           [  1] String     Read/Write
```

3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

009)	ModifyUserPW	[1]	String	Read/Write	
010)	ModifyUserGroup	[1]	String	Read/Write	
011)	UserName	[3]	String	Read/Write	
012)	UserPassword	[3]	String	Read/Write	
013)	UserGroup	[3]	String	Read/Write	
014)	UserCount	[1]	Integer	Read Only	
+===	+==========	+====	+=========	+==========	**Note:** SNMP management
023)	SnmpReadCommunity	[1]	String	Read/Write	
024)	SnmpWriteCommunity	[1]	String	Read/Write	
025)	SnmpTrapManagers	[4]	String	Read/Write	
026)	SnmpTrapCommunities	[4]	String	Read/Write	
027)	SnmpV1Enabled	[1]	EnumText	Read/Write	
028)	SnmpV2Enabled	[1]	EnumText	Read/Write	
029)	SnmpV3Enabled	[1]	EnumText	Read/Write	
030)	SnmpPortNumber	[1]	Integer	Read Only	
031)	SnmpUsmUser	[2]	String	Read/Write	
032)	SnmpSecurityLevel	[2]	EnumText	Read Only	
033)	SnmpAccessRight	[2]	EnumText	Read Only	
034)	SnmpAuthAlgo	[2]	EnumText	Read/Write	
035)	SnmpAuthPassword	[2]	String	Read/Write	
036)	SnmpPrivAlgo	[2]	EnumText	Read/Write	
037)	SnmpPrivPassword	[2]	String	Read/Write	
038)	SnmpContextName	[2]	String	Read Only	
039)	SnmpEngineID	[2]	String	Read Only	
+===	+==========	+====	+=========	+==========	**Note:** Serial Port Communication Modbus
041)	ModbusAddr	[1]	Integer	Read/Write	
+===	+==========	+====	+=========	+==========	**Note:** Setting backup of management
045)	BackupConf	[3]	String	Read/Write	
046)	RestoreConf	[3]	String	Read/Write	
047)	LoadFactoryConf	[1]	EnumText	Read/Write	
+===	+==========	+====	+=========	+==========	**Note:** Alarm management
048)	AlarmClear	[1]	String	Read/Write	
049)	AlarmCount	[1]	Integer	Read Only	
050)	BeepEnable	[1]	EnumText	Read/Write	
051)	RelayEnable	[1]	EnumText	Read/Write	
052)	EventCode	[1]	Integer	Read Only	
053)	EventTime	[1]	String	Read Only	
054)	EventLevel	[1]	EnumText	Read Only	
055)	EventDetail	[1]	String	Read Only	
056)	SourceType	[1]	String	Read Only	
057)	SourceId	[1]	String	Read Only	
+===	+==========	+====	+=========	+==========	**Note:** Product Information

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```
058) ProdName                [  1] String     Read Only
059) ProdModel               [  1] String     Read Only
060) ProdPN                  [  1] String     Read Only
061) ProdSN                  [  1] String     Read Only
062) ProdMAC                 [  1] String     Read Only
063) SystemName              [  1] String     Read/Write
064) SystemContact           [  1] String     Read/Write
065) SystemLocation          [  1] String     Read/Write
+=== +==================== +==== +========= +========== Note: Input power supply management
066) PowerFrequency          [  1] Integer    Read Only
067) PowerAccEnergy          [  1] Float      Read Only
069) PowerConnectAlarm       [  1] EnumText   Read Only
070) PowerPhaseVolt          [  1] Float      Read Only
071) PowerPhaseLoad          [  1] Float      Read Only
072) PowerActivePower        [  1] Float      Read Only
073) ReactivePower           [  1] Float      Read Only
074) ApparentPower           [  1] Float      Read Only
075) RatedPower              [  1] Float      Read Only
076) RemainingPower          [  1] Float      Read Only
077) PowerFactor             [  1] Float      Read Only
078) PowerPhaseEnergy        [  1] Float      Read Only
080) PowerInvertJoined       [  1] EnumText   Read Only
081) PowerLLimit             [  1] Float      Read/Write
082) PowerLoadLowAlarm       [  1] EnumText   Read Only
083) PowerHLimit             [  1] Float      Read/Write
084) PowerLoadHighAlarm      [  1] EnumText   Read Only
085) VoltLLimit              [  1] Float      Read/Write
086) VoltLoadLowAlarm        [  1] EnumText   Read Only
087) VoltHLimit              [  1] Float      Read/Write
088) VoltLoadHighAlarm       [  1] EnumText   Read Only
089) BreakerName             [  1] String     Read/Write
090) BreakerAlarm            [  1] EnumText   Read Only
091) PowerOnInterval         [  1] Integer    Read/Write
092) OptionName              [  4] String     Read Only
093) OptionDescr             [  4] String     Read Only
094) RatedTotalLoad          [  1] Integer    Read Only
095) PowerPhaseNumber        [  1] EnumText   Read Only
097) OutletTotalCount        [  1] Integer    Read Only
098) TotalAddress            [  1] String     Read/Write
099) SocketType              [ 36] EnumText   Read Only
100) SocketID                [ 36] String     Read/Write
+=== +==================== +==== +========= +========== Note: Outlets management
```

3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

101)	OutletFuse	[8]	EnumText	Read Only	
102)	OutletSwitch	[8]	EnumText	Read/Write	
103)	OutletHLimit	[8]	Float	Read/Write	
104)	OutletLLimit	[8]	Float	Read/Write	
105)	OutletLoad	[8]	Float	Read Only	
106)	OutletName	[8]	String	Read/Write	
107)	OutletConnectAlarm	[8]	EnumText	Read Only	
108)	OutletEnergy	[8]	Float	Read Only	
109)	OutletPower	[8]	Float	Read Only	
110)	OutletPf	[8]	Float	Read Only	
111)	OutletDescr	[8]	String	Read/Write	
112)	OutletMoveUp	[1]	Integer	Read/Write	
113)	OutletMoveDown	[1]	Integer	Read/Write	
+===	+==========+	+====	+=========	+==========	**Note:** Sensor management
115)	SensorName	[0]	String	Read/Write	
116)	SensorType	[0]	EnumText	Read Only	
117)	SensorAddress	[0]	Integer	Read Only	
118)	SensorAlarm	[0]	EnumText	Read Only	
119)	SensorAlarmEn	[0]	EnumText	Read/Write	
120)	SensorStatus	[0]	String	Read Only	
121)	SensorTemLLimit	[0]	Float	Read/Write	
122)	SensorTemHLimit	[0]	Float	Read/Write	
123)	SensorHumLLimit	[0]	Float	Read/Write	
124)	SensorHumHLimit	[0]	Float	Read/Write	
125)	SensorWindLLimit	[0]	Float	Read/Write	
126)	SensorWindHLimit	[0]	Float	Read/Write	
127)	SensorWindScale	[0]	Float	Read/Write	
128)	TemUnitType	[1]	EnumText	Read/Write	
129)	WindUnitType	[1]	EnumText	Read/Write	
130)	RescanSensor	[1]	EnumText	Read/Write	
+===	+==========+	+====	+=========	+==========	**Note:** Network parameter
131)	IpAddr	[1]	String	Read/Write	
132)	IpMask	[1]	String	Read/Write	
133)	IpGate	[1]	String	Read/Write	
134)	IpDns1	[1]	String	Read/Write	
135)	IpDns2	[1]	String	Read/Write	
136)	IpObtain	[1]	EnumText	Read/Write	
138)	HttpsEn	[1]	EnumText	Read/Write	
139)	TelnetEn	[1]	EnumText	Read/Write	
140)	SshEn	[1]	EnumText	Read/Write	
141)	SnmpEn	[1]	EnumText	Read/Write	
143)	ResetNetwork	[1]	EnumText	Read/Write	

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3 PDU Management Operating Manual TELNET-SSH Operation Interface Instruction

144)	ApplyNetwork	[1]	EnumText	Read/Write	
+===	+==========+	+====+	+========+	+========+	Note: WiFi management
145)	WifiAddr	[1]	String	Read/Write	
146)	WifiMask	[1]	String	Read/Write	
147)	WifiGate	[1]	String	Read/Write	
148)	WifiDns1	[1]	String	Read/Write	
149)	WifiDns2	[1]	String	Read/Write	
150)	WifiObtain	[1]	EnumText	Read/Write	
151)	WifiSSID	[1]	String	Read/Write	
+===	+==========+	+====+	+========+	+========+	Note: Email sending management
153)	SmtpServer	[1]	String	Read/Write	
154)	SmtpPort	[1]	Integer	Read/Write	
155)	SenderEmail	[1]	String	Read/Write	
156)	SenderPassword	[1]	String	Read/Write	
157)	SenderAuthType	[1]	EnumText	Read/Write	
158)	ToAddress	[4]	String	Read/Write	
+===	+==========+	+====+	+========+	+========+	Note: Socket grouping management
159)	GroupEn	[8]	EnumText	Read/Write	
160)	GroupName	[8]	String	Read/Write	
161)	AddGroup	[8]	Integer	Read/Write	
162)	RemoveGroup	[8]	Integer	Read/Write	
163)	GroupCount	[8]	Integer	Read Only	
164)	GroupSwitch	[8]	String	Read/Write	
165)	GroupLoad	[8]	Float	Read Only	
166)	GroupEnergy	[8]	Float	Read Only	
167)	GroupLLimit	[8]	Float	Read/Write	
168)	GroupHLimit	[8]	Float	Read/Write	
+===	+==========+	+====+	+========+	+========+	Note: main PDU management
169)	AddHost	[1]	String	Read/Write	
170)	DeleteHost	[1]	String	Read/Write	
171)	ModifyHostName	[1]	String	Read/Write	
172)	ModifyHostUri	[1]	String	Read/Write	
173)	HostName	[0]	String	Read/Write	
174)	HostUri	[0]	String	Read/Write	
175)	HostCount	[1]	Integer	Read Only	
+===	+==========+	+====+	+========+	+========+	Note: Removable socket management
176)	AddUnit	[1]	String	Read/Write	
177)	DeleteUnit	[1]	String	Read/Write	
178)	ModifyUnitAddr	[1]	String	Read/Write	
179)	ModifyUnitName	[1]	String	Read/Write	
180)	UnitAddr	[1]	String	Read/Write	
181)	UnitName	[1]	String	Read/Write	

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182)	UnitCount	[1]	Integer	Read Only
183)	Qos	[38]	String	Read Only
184)	QosClear	[38]	EnumText	Read/Write
185)	AlarmToSnmpTrap	[1]	EnumText	Read/Write
186)	AlarmToEmail	[1]	EnumText	Read/Write
187)	WebAutoRefreshTime	[1]	Integer	Read/Write
188)	WebPageLifeTime	[1]	Integer	Read/Write
189)	LcdLanguage	[1]	EnumText	Read/Write
190)	LcdRotation	[1]	EnumText	Read/Write
191)	LcdLifeTime	[1]	Integer	Read/Write
192)	Time	[1]	String	Read/Write
193)	Reboot	[1]	EnumText	Read/Write
194)	Restart	[1]	EnumText	Read/Write
195)	Capw	[1]	String	Read/Write
196)	Rootpw	[1]	String	Read/Write

Note: Communication management

Note: miscellanea

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4 PDU Management Operating Manual
SNMP Access Operation Instruction

SNMP Access Operation Instruction — Content

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4 PDU Management Operating Manual
SNMP Access Operation Instruction

1 Use SNMP protocol to manage equipment

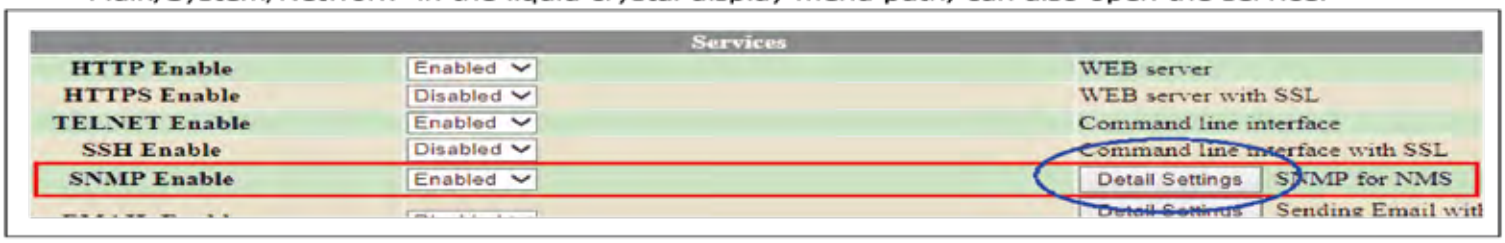
PDU provides SNMP protocol, which supports three versions: v1, v2c, v3.

Through MIB files, PDU equipment can be concentrated to the third-party SNMP network management system (NMS), for example, Solarwinds, WhatsUp, CiscoWorks, HP OpenView, etc.

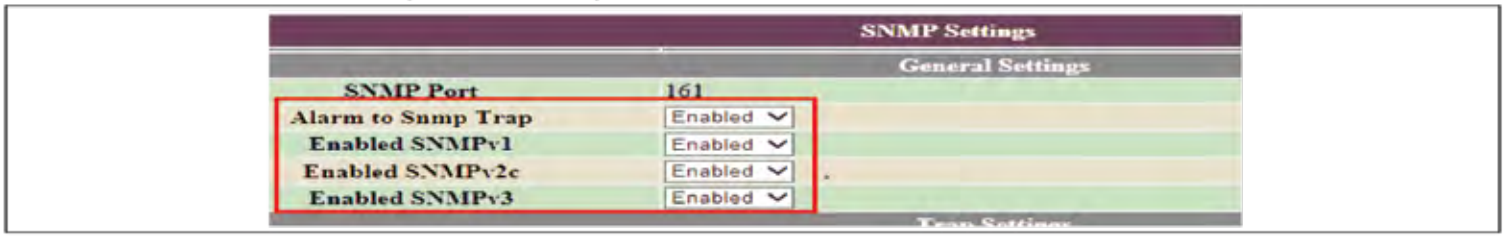
Through the SNMP protocol, this file uses MIB browser to view and set management object of PDU equipment and demonstrate management interface function of PDU equipment SNMP.

1.1 Connected to SNMP

1. Connect computer to "NET" Ethernet management interface of PDU through cable , or transfer through a router. Note: computer network parameters must be set to access to the PDU. If in the same local area network (LAN), must be set as the IP address of the same network segment, if not in the same network segment, should connect to network interface of PDU through correct route or network bridge.
2. Open the PDU SNMP service. Open method is: in the path of the PDU web page: "/ Network", set the SNMP service to "Enabled", then save, and through set Network Settings, or "/ Main/System/Network" in the liquid crystal display menu path, can also open the service.



Note: there are three versions and function of the Trap in SNMP service, which need to be set respectively for opening. Refer to the above figure, click "Detail Settings" in the blue circle and access to Detail Settings of SNMP protocol. In the below figure, the corresponding SNMP version function and function of the Trap are set to open "Enabled".



3. As for MIB Browser software on the computer, "iReasoning MIB Browser" is serviced as demonstration terminal software, version information is as follows:

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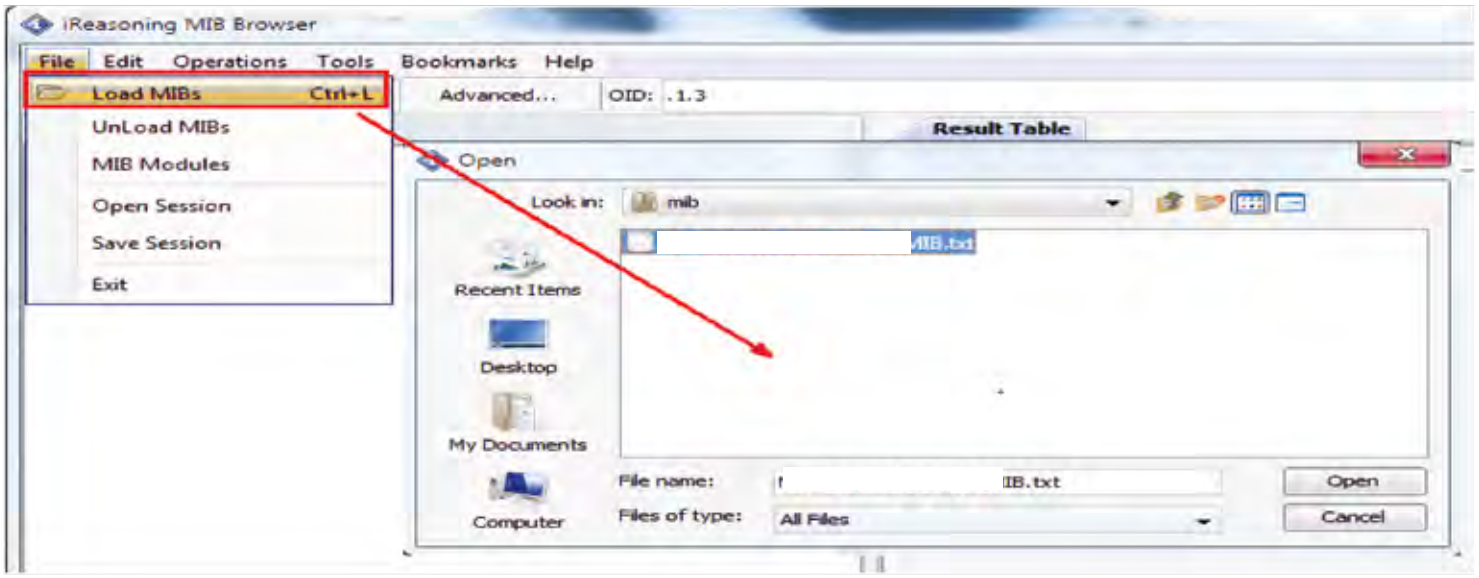
4. Load PDU's MIB files to MIB Browser.



The name of loaded MIB files is I .TS-MIB.txt.

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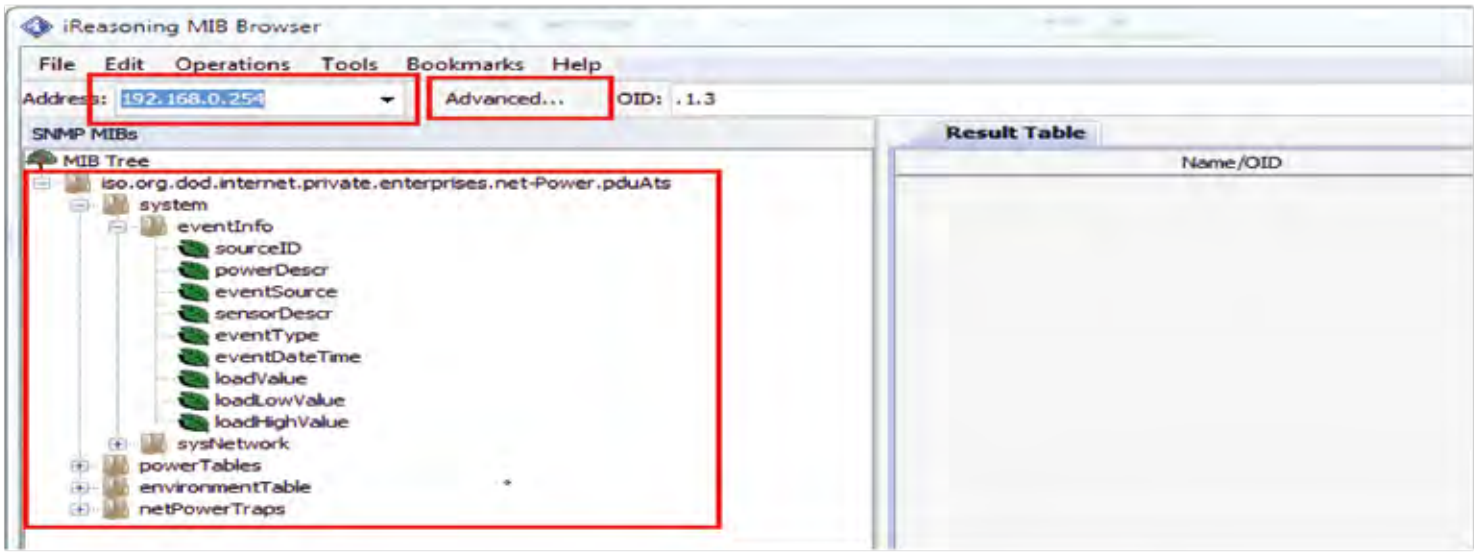
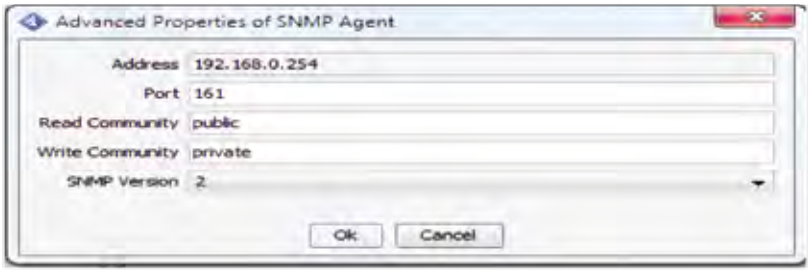
SNMP Access Operation Instruction

1.2 Set connection parameters



Input PDU IP address (In this case, it is: 192.168.0.254), and input it to address box. Then click "Advanced..."Button to enter the connection Settings.



Choose 1 for "SNMP Version", set connection parameters of SNMP v1. In the same way, Choose 2, set connection parameters of SNMP v2. The following default community is set according to factory settings :

- "Default Read Community": public
- "Default Write Community": private

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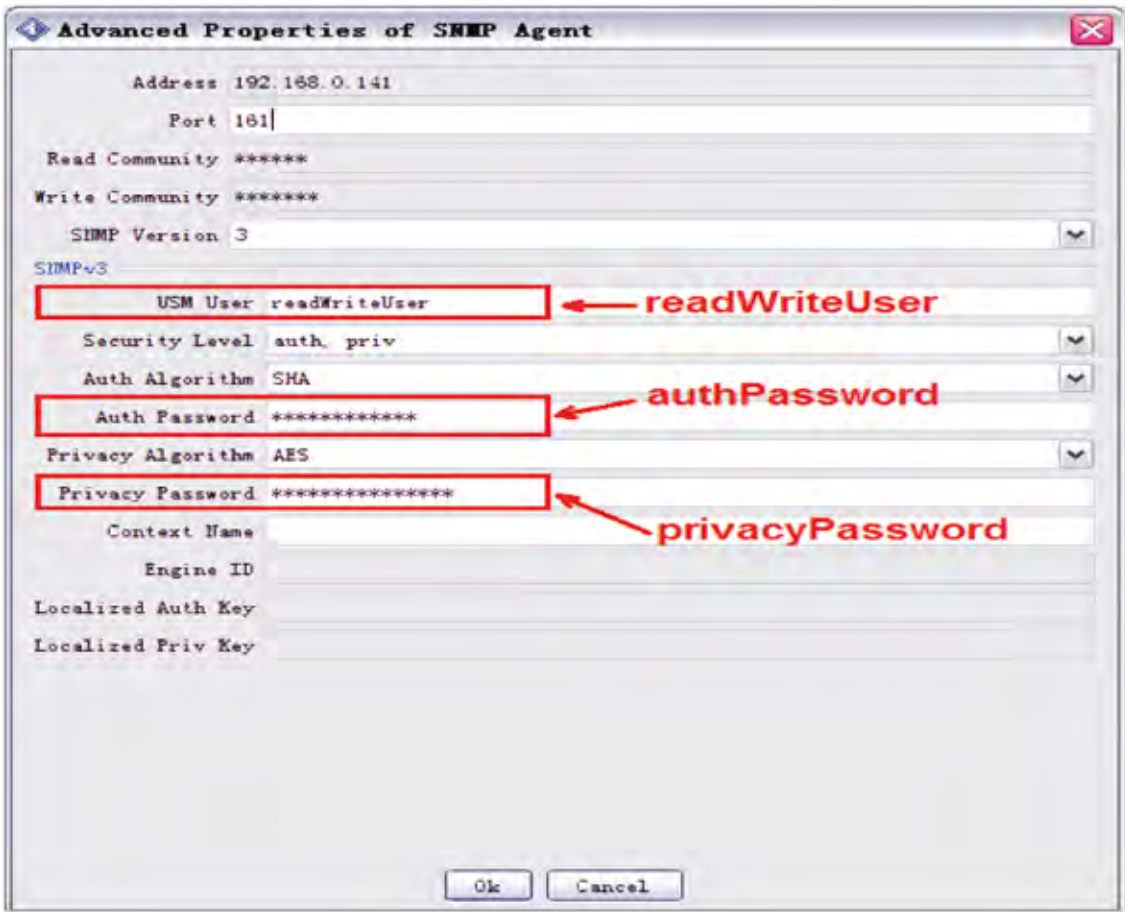

Choose 3 for" SNMP Version" , set connection parameters of SNMP v3. Based on the above figure ,parameters are set : users, security levels, encryption method, password. As for user, readWriteUser default passwords are as follows:

Authentication Password: authPassword

Encryption Password: privacyPassword

2 Set SNMP parameters of PDU

As for different network applications, it is necessary to set the SNMP parameters. The method of setting: Enter into web page "/ System/Network/SNMP" to set; After Settings is saved, execute application network Settings to let new parameter to be applied to the system.

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- "General Settings"General Settings
  - "Alarm to Snmp Trap": Open or close is set, if equipment is alarm, Trap is sent to network. List of network management is set in the second column "Trap Settings".
  - Three contents including "Enabled SNMPv1" have respectively the function of opening and closing SNMP version. Version v1, v2c are set in the third section of "SNMP v1 / v2c Settings" .
  - As for setting of SNMP v3, two default security users are opened in equipment:
    readWriteUser, user can be readable and writable.
    readOnlyUser, user only can be readable.
    Don't add and modify these access parameters, besides encrypted password can be set. Password cannot be empty, and has at least eight characters or more.

3 For example: Read and set object of management

Since configurations of management Object (OID: Object Identifier) in view of different equipments are different, the corresponding MIB files are different ; For example ,there is an equipment, IP address and socket current are read in line, and switch of socket is set .

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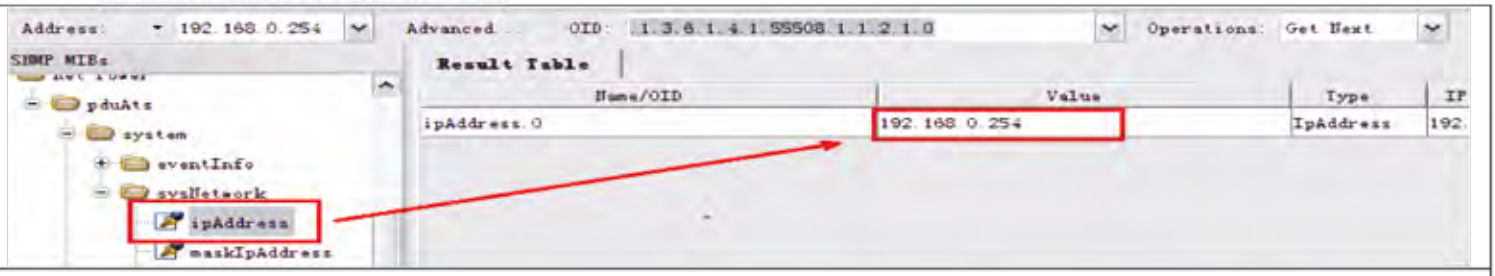
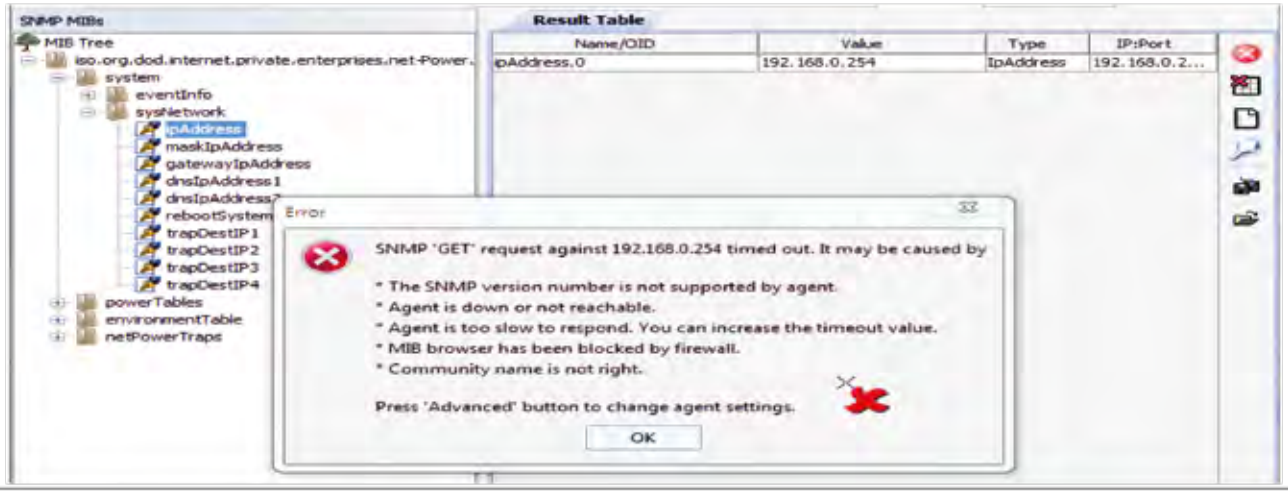
SNMP Access Operation Instruction

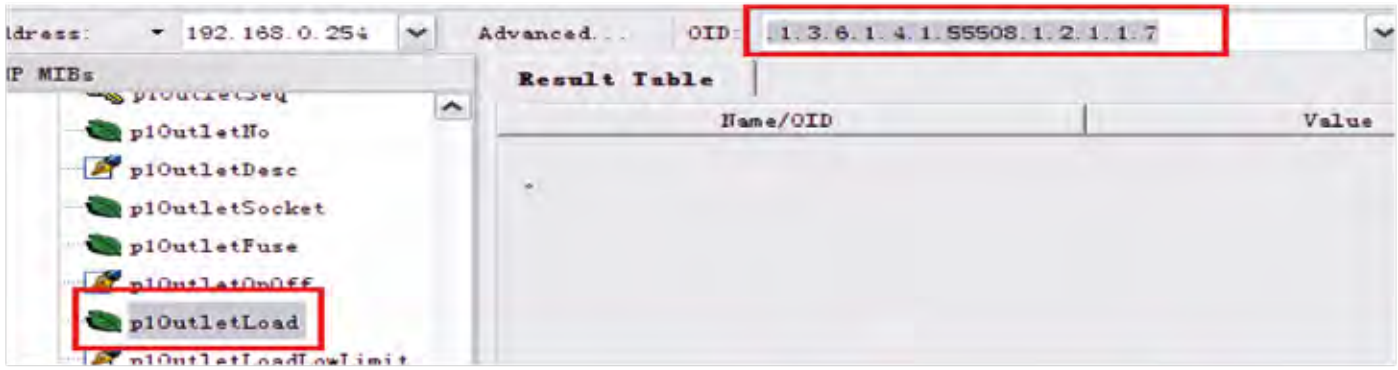
3.1 Read address of IP



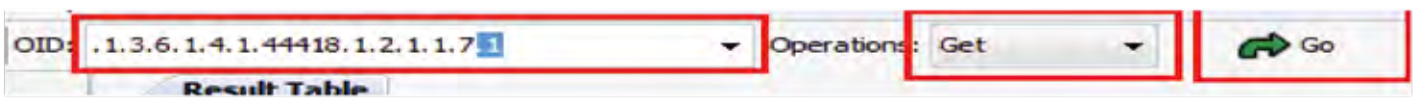
- Find the corresponding object of IP address: ipAddress, then double-click it with mouse, which can be sent read command.
- When read results are in the right of the window, read is successful.
- If the connection is not normal, or SNMP parameter is mismatch, dialog box of read which is unsuccessful is popped up within 10 seconds in general.



3.2 Read current of socket



- If OID: p1OutletLoad of socket is chosen, OID is in OID text box on the top right.



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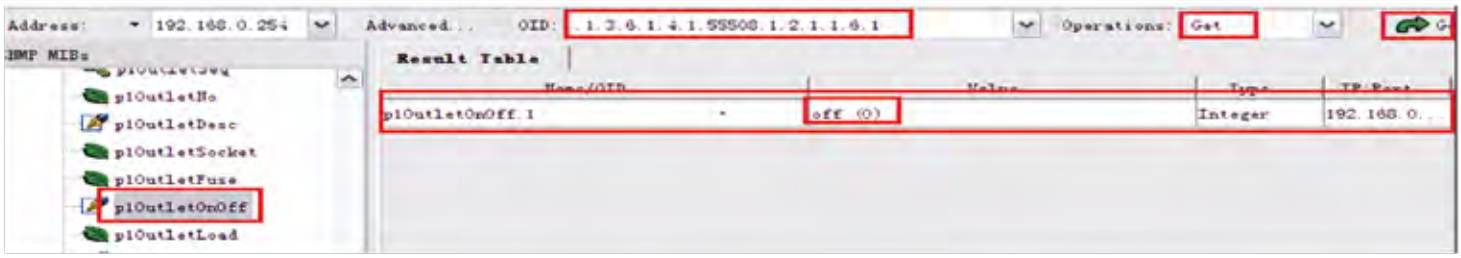
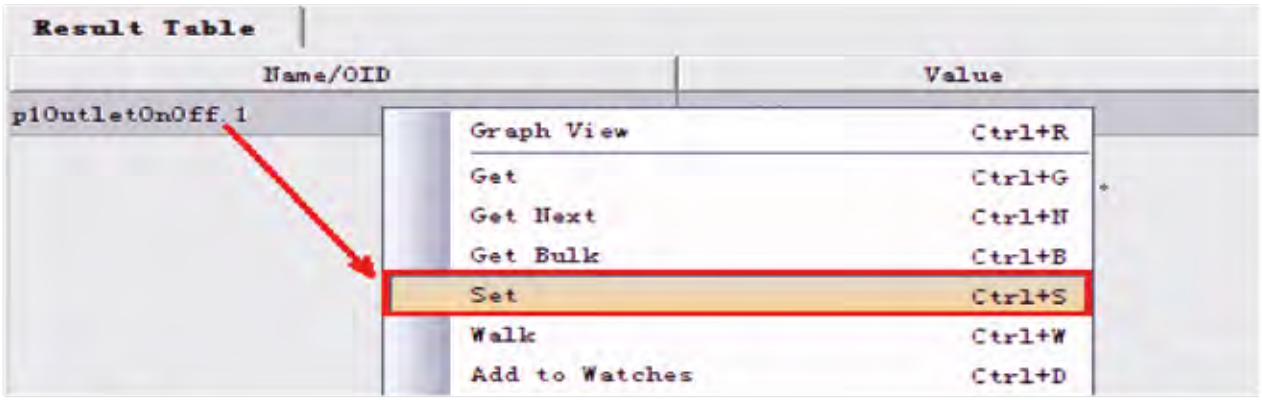
- Since OID is a table element, you need to input the corresponding serial number. If you need to access the second outlet, the serial number "1" should be added in the text box, otherwise you won't know which socket you need to access to .The above IP address is a scalar, so it can be read directly with double-clicking; However, as for the form, it needs to be input the serial number to further identify the object. In general, 0 identifies the first object, 1 identifies the second object.
- Choose "Get" command, click "Go" command to begin to get current attribute of socket 1.

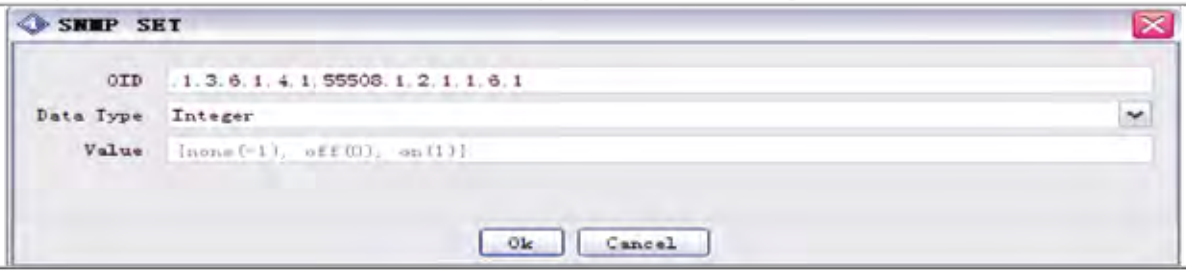
3.3 Set switch of socket



- If OID: p1OutletOnOff of socket is chosen, according to the above reading methods, switch state of this socket is read, result of read is closed: "off (0)".



- In the output box, right click on state information entry of socket' switch, context menu will be popped up, then choose "Set" command to prepare for Setting of OID.



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- Fill in new value "on (1)" which needs to be set, click "ok" Settings, the results of setting is return successfully.

Result Table

Name/OID	Value	Type	IP:Port
p10utletOnOff.1	off (0)	Integer	192.168.0.254:161
p10utletOnOff.1	on (1)	Integer	192.168.0.254:161

- Obtain again the state of socket, that it is changed to open "on (1)" is found.

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5 PDU Management Operating Manual
Serial Port MODBUS Communication Operating Instruction

Serial Port MODBUS Communication Operating Instruction - Contents

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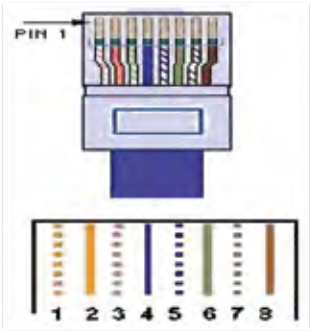
5 PDU Management Operating Manual
Serial Port MODBUS Communication Operating Instruction

1 Use Serial Port TerminalManagement Equipment

Provided PDU equipments are based on RS485 bus standard MODBUS communication protocol, and conform to the standard GB/T 19582-19582

1.1 Physical Interface

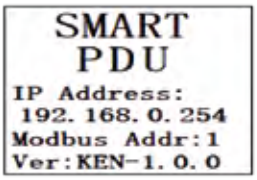
Serial communication port is adapted with a standard way of RS485. Information transmission mode is asynchronous one, 1 start bit, eight data bits , 1 stop bit, no verification. Data transfer rate is 9600 bit/s. Communication interface COM line sequence are defined as follows:



Line No.	Color	Functions
1	Orange and white	NC
2	Orange	NC
3	Green and white	NC
4	Blue	RS485-A
5	Blue and white	RS485-B
6	Green	NC
7	Brown and white	NC
8	Brown	GND

1.2 Communication Address

How to get PDU communication address:



- Enter the WEB page, read the information on page of "/ System/Setup". Or enter the LCD menu "/ System/Setup" to check the related information.

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2 MODBUS Parameter Address Table

Unless stated, the following data are decimal number .

Serial No.	Items	Scope	Default	Unit	MODBUS Address	Attribute	The real value of Parameters (Conversion Formula)	The number of bytes for parameters	Remarks
1	Manufacturer	Use the string form,	\	\	0-3	Read	=Register	8	
2	Model	for an example: HVPDU63-2-32(01)	\	\	4-19	Read	=Register	32	Reserved
3	Current hardware version	A-Z	\	\	20	Read	=Register	2	
4	Current software version	100-999	\	\	21	Read	=Register	2	
5	Communication protocol version	0x100-0x999	\	\	22-23	Read	H_Register means large Version ;L_Register means small version	4	
6	Software compilation time	YYYYMMDD 字符串	\	\	24-27	Read	=Register	8	
7	Rated Voltage	220/380	220/380	V	28	Read	=Register	2	Used for judging one or three phases PDU
8	Rated Current	100	16/32/63	A	29	Read	=Register	2	
9	Rated Frequency	50	50	Hz	30	Read	=Register	2	
10	Numbers of output	48	\	\	31	Read	=Register	2	
11	Switch Function of output	0-1	\	\	32	Read	0: No ; 1 : Have	2	

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12	Current Measuring Function of output	0-1	\	\	33	Read	0: No ; 1 : Have	2	
13	Electrical Degree Measuring Function of output	0-1	\	\	34	Read	0: No ; 1 : Have	2	Include Active Power ,Power Factor of Output
14	Voltage Value(One Phase)	0-350	\	V	35	Read	=Register	2	
15	Current Value(One Phase)	0-700	\	A	36	Read	=Register/10	2	
16	Active Power (One Phase)	0-65535	\	W	37	Read	=Register	2	
17	Reactive Power(One Phase)	0-65535	\	W	38	Read	=Register	2	
18	Power Factor(One Phase)	0-1000	\	\	39	Read	=Register/1000	2	
19	General Active Electrical Degree	0-9999999	\	kWh	40-41	Read	=Register_L/10 + Register_H*65536 /10	4	
20	Frequency	4500-6500	\	Hz	42	Read	=Register/100	2	
21	L1 Voltage Value(Three- Phase)	0-350	\	V	43	Read	=Register	2	
22	L2 Voltage Value(Three- Phase)	0-350	\	V	44	Read	=Register	2	
23	L3 Voltage Value(Three- Phase)	0-350	\	V	45	Read	=Register	2	
24	L1 Current Value(Three- Phase)	0-700	\	A	46	Read	=Register/10	2	
25	L2 Current Value(Three- Phase)	0-700	\	A	47	Read	=Register/10	2	
26	L3 Current Value(Three- Phase)	0-700	\	A	48	Read	=Register/10	2	
27	L1 Active Power(Three- Phase)	0-65535	\	W	49	Read	=Register	2	
28	L2 Active Power(Three- Phase)	0-65535	\	W	50	Read	=Register	2	
29	L3 Active Power(Three- Phase)	0-65535	\	W	51	Read	=Register	2	
30	L1 Reactive Power(Three- Phase)	0-65535	\	W	52	Read	=Register	2	
31	L2 Reactive Power(Three- Phase)	0-65535	\	W	53	Read	=Register	2	
32	L3 Reactive Power(Three- Phase)	0-65535	\	W	54	Read	=Register	2	

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33	L1 Power Factor(Three- Phase)	0-1000	\	\	55	Read	=Register/1000	2	
34	L2 Power Factor(Three- Phase)	0-1000	\	\	56	Read	=Register/1000	2	
35	L3 Power Factor(Three- Phase)	0-1000	\	\	57	Read	=Register/1000	2	
36	1 Current of output	0-700	\	A	58	Read	=Register/10	2	
...	...	...	\	A	...	...	...	...	
83	48 Current of output	0-700	\	A	105	Read	=Register/10	2	
84	1 Electrical Energy of output	0-9999999	\	kWh	106-107	Read	=Register_L/10 + Register_H*65536 /10	4	
...	...	...	\	kWh	...	...	...	...	
131	48 Electrical Energy of output	0-9999999	\	kWh	200-201	Read	=Register_L/10 + Register_H*65536 /10	4	
132	1 Active Power of output	0-65535	\	W	202	Read	=Register	2	
...	...	...	\	W	...	...	...	...	
179	48 Active Power of output	0-65535	\	W	249	Read	=Register	2	
180	1 Power Factor of output	0-1000	\	\	250	Read	=Register/1000	2	
...	...	...	\	\	...	...	...	...	
227	48 Power Factor of output	0-1000	\	\	297	Read	=Register/1000	2	
II. Environmental Parameters: 03H Function code to read, 10H Function code to write									
1	Temperature Value 1	0-140	\	℃	500	Read	=Register-40	2	0xFFFF means that it is not installed
2	Humidity Value 1	0-100	\	%	501	Read	=Register	2	0xFFFF means that it is not

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									installed
3	Temperature Value 2	0-140	\	℃	502	Read	=Register-40	2	0xFFFF means that it is not installed
4	Humidity Value 2	0-100	\	%	503	Read	=Register	2	0xFFFF means that it is not installed
5	Temperature Value 3	0-140	\	℃	504	Read	=Register-40	2	0xFFFF means that it is not installed
6	Humidity Value 3	0-100	\	%	505	Read	=Register	2	0xFFFF means that it is not installed
7	Temperature Value 4	0-140	\	℃	506	Read	=Register-40	2	0xFFFF means that it is not installed
8	Humidity Value 4	0-100	\	%	507	Read	=Register	2	0xFFFF means that it is not installed
9	Temperature Value 5	0-140	\	℃	508	Read	=Register-40	2	0xFFFF means that it is not installed
10	Humidity Value 5	0-100	\	%	509	Read	=Register	2	0xFFFF means that it is not installed
11	Temperature Value 6	0-140	\	℃	510	Read	=Register-40	2	0xFFFF means that it is not installed
12	Humidity Value 6	0-100	\	%	511	Read	=Register	2	0xFFFF means that it is not installed
13	Temperature Value 7	0-140	\	℃	512	Read	=Register-40	2	0xFFFF means that it is not installed
14	Humidity Value 7	0-100	\	%	513	Read	=Register	2	0xFFFF means that it is not installed

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15	Temperature Value 8	0-140	\	℃	514	Read	=Register-40	2	0xFFFF means that it is not installed
16	Humidity Value 8	0-100	\	%	515	Read	=Register	2	0xFFFF means that it is not installed
17	Wind Speed Value	0-255	\	m/s	516	Read	=Register/10	2	0xFFFF means that it is not installed

III. Configuration Parameters: 03H Function code to read, 10H Function code to write

Serial No.	Items	Scope	Default	Unit	MODBUS Address	Attribute	The real value of Parameters (Conversion Formula)	The number of bytes for parameters	Remarks
1	Communication Address	1-255	1	\	1000	Read and Write	=Register	2	
2	Buzzer Switch	0-1	1	\	1001	Read and Write	0: Close; 1: Start	2	Restart to restore defaults
3	Alarm Dry-Contact Switch	0-1	1	\	1002	Read and Write	0: Close; 1: Start	2	Restart to restore defaults
4	Current Upper Limit alarm set value (One- Phase)	0-700	160/320	A	1003	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
5	Current Down Limit alarm set value (One- Phase)	0-700	0	A	1004	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.

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6	L1 Current Upper Limit alarm set value (Three- Phase)	0-700	160/320	A	1005	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
7	L1 Current Down Limit alarm set value (Three- Phase)	0-700	0	A	1006	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
8	L2 Current Upper Limit alarm set value (Three- Phase)	0-700	160/320	A	1007	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
9	L2 Current Down Limit alarm set value (Three- Phase)	0-700	0	A	1008	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
10	L3 Current Upper Limit alarm set value (Three- Phase)	0-700	160/320	A	1009	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
11	L3 Current Down Limit alarm set value (Three- Phase)	0-700	0	A	1010	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
12	Output 1 Current Upper Limit alarm set value	0-400	160	A	1011	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
13	Output 1 Current Down Limit alarm set value	0-400	0	A	1012	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
...	...	...	...	...	...	Read and	...	...	...

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						Write			
106	Output 48 Current Upper Limit alarm set value	0-400	160	A	1105	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
107	Output 48 Current Down Limit alarm set value	0-400	0	A	1106	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
108	Temperature 1 Current Upper Limit alarm set value	0-140	140	℃	1107	Read and Write	=Register-40	2	Upper Limit value is larger than that of Down Limit.
109	Temperature 1 Current Down Limit alarm set value	0-140	0	℃	1108	Read and Write	=Register-40	2	Upper Limit value is larger than that of Down Limit.
...	...	...	...	...	...	Read and Write	...	...	...
122	Temperature 8 Current Upper Limit alarm set value	0-140	140	℃	1121	Read and Write	=Register-40	2	Upper Limit value is larger than that of Down Limit.
123	Temperature 8 Current Down Limit alarm set value	0-140	0	℃	1122	Read and Write	=Register-40	2	Upper Limit value is larger than that of Down Limit.
124	Humidity 1 Current Upper Limit alarm set value	0-100	100	%	1123	Read and Write	=Register	2	Upper Limit value is larger than that of Down Limit.
125	Humidity 1 Current Down Limit	0-100	0	%	1124	Read	=Register	2	Upper Limit value is larger than

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	alarm set value					and Write			that of Down Limit.
...	...	...	...	...	...	Read and Write	...	...	...
138	Humidity 8 Current Upper Limit alarm set value	0-100	100	%	1137	Read and Write	=Register	2	Upper Limit value is larger than that of Down Limit.
139	Humidity 8 Current Down Limit alarm set value	0-100	0	%	1138	Read and Write	=Register	2	Upper Limit value is larger than that of Down Limit.
140	Wind Speed Current Upper Limit alarm set value	0-255	250	m/s	1139	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.
141	Wind Speed Current Down Limit alarm set value	0-255	250	m/s	1140	Read and Write	=Register/10	2	Upper Limit value is larger than that of Down Limit.

VI. Alarm: 01H Function code to read

Serial No.	Items	Scope	Default	Unit	MODBUS Address	Attribute	The real value of Parameters (Conversion Formula)	The number of bytes for parameters	Remarks
1	General Alarm	\	\	\	2000	Read	0. No Alarm ; 1: Alarm	1bit	
2	One –phase Over- current alarm (One –Phase)	\	\	\	2001	Read	0. No Alarm ; 1: Alarm	1bit	

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3	One –phase under -current alarm (One –Phase)	\	\	\	2002	Read	0. No Alarm ; 1: Alarm	1bit	
4	Circuit Breaker Opened alarm	\	\	\	2003	Read	0. No Alarm ; 1: Alarm	1bit	
5	L1 Over- current alarm (Three –Phase)	\	\	\	2004	Read	0. No Alarm ; 1: Alarm	1bit	
6	L2 Over- current alarm (Three –Phase)	\	\	\	2005	Read	0. No Alarm ; 1: Alarm	1bit	
7	L3 Over- current alarm (Three –Phase)	\	\	\	2006	Read	0. No Alarm ; 1: Alarm	1bit	
8	L1 Under- current alarm (Three –Phase)	\	\	\	2007	Read	0. No Alarm ; 1: Alarm	1bit	
9	L2 Under- current alarm (Three –Phase)	\	\	\	2008	Read	0. No Alarm ; 1: Alarm	1bit	
10	L3 Under- current alarm (Three –Phase)	\	\	\	2009	Read	0. No Alarm ; 1: Alarm	1bit	
11	Output 1 Over- current alarm	\	\	\	2010	Read	0. No Alarm ; 1: Alarm	1bit	
12	Output 1 Under- current alarm	\	\	\	2011	Read	0. No Alarm ; 1: Alarm	1bit	
...	...	\	\	\	...	...	...	...	
105	Output 48 Over- current alarm	\	\	\	2104	Read	0. No Alarm ; 1: Alarm	1bit	
106	Output 48 Under- current alarm	\	\	\	2105	Read	0. No Alarm ; 1: Alarm	1bit	

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107	Output 1 with fault	\	\	\	2106	Read	0. No Alarm ; 1: Alarm	1bit	
...	...	\	\	\	...	...	...	...	
154	Output 48 with fault	\	\	\	2153	Read	0. No Alarm ; 1: Alarm	1bit	
155	Too high Temperature 1 alarm	\	\	\	2154	Read	0. No Alarm ; 1: Alarm	1bit	
156	Too low Temperature 1 alarm				2155				
...	...	\	\	\	...	...	...	...	
169	Too high Temperature 8 alarm	\	\	\	2168	Read	0. No Alarm ; 1: Alarm	1bit	
170	Too low Temperature 8 alarm				2169				
171	Too high Humidity 1 alarm				2170				
172	Too Low Humidity 1 alarm	\	\	\	2171	Read	0. No Alarm ; 1: Alarm	1bit	
...	...	\	\	\	...	...	...	...	
185	Too high Humidity 8 alarm				2184				
186	Too low Humidity 8 alarm	\	\	\	2185	Read	0. No Alarm ; 1: Alarm	1bit	
187	Door Controller 1 alarm	\	\	\	2186	Read	0. No Alarm ; 1: Alarm	1bit	
...	...	\	\	\	...	...	...	...	
194	Door Controller 8 alarm	\	\	\	2193	Read	0. No Alarm ; 1: Alarm	1bit	
195	Infrared 1 alarm	\	\	\	2194	Read	0. No Alarm ; 1:	1bit	

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							Alarm		
...	...	\	\	\	...	...	...	...	
202	Infrared 8 alarm	\	\	\	2201	Read	0. No Alarm ; 1: Alarm	1bit	
203	Water Logging 1 alarm	\	\	\	2202	Read	0. No Alarm ; 1: Alarm	1bit	
...	...	\	\	\	...	...	...	...	
210	Water Logging 8 alarm	\	\	\	2209	Read	0. No Alarm ; 1: Alarm	1bit	
211	Smoke 1 alarm	\	\	\	2210	Read	0. No Alarm ; 1: Alarm	1bit	
...	...	\	\	\	...	...	...	...	
218	Smoke 8 alarm	\	\	\	2217	Read	0. No Alarm ; 1: Alarm	1bit	
219	Too high Wind Speed Alarm				2218				
220	Too Low Wind Speed Alarm	\	\	\	2219	Read	0. No Alarm ; 1: Alarm	1bit	

V. The number of control ： 03H Function code to read，10H Function code to write

Serial No.	Items	Scope	Default	Unit	MODBUS Address	Attribute	The real value of Parameters (Conversion Formula)	The number of bytes for parameters	Remarks
1	Shunt output on-off control of	\	\	\	3000	Read	0. Can not be controlled ; 1: on ; 2 : off	2	Write 0 means

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	The First Road					and Write			invalid ;When Parameter 0 ,there is not action for Writing and Registering
2	Shunt output on-off control of The Second Road	\	\	\	3001	Read and Write	0. Can not be controlled ; 1: on ; 2 : off	2	
3	Shunt output on-off control of The Third Road	\	\	\	3002	Read and Write	0. Can not be controlled ; 1: on ; 2 : off	2	
...	...	\	\	\	...	Read and Write	...	...	
48	Shunt output on-off control of The 48th Road	\	\	\	3047	Read and Write	0. Can not be controlled ; 1: on ; 2 : off	2	

VI. Restore Factory Defaults 10H Function code to write

Serial No.	Items	Scope	Default	Unit	MODBUS Address	Attribute	The real value of Parameters (Conversion Formula)	The number of bytes for parameters	Remarks
1	Restore Factory Defaults	0x55AA	\	\	4000	Write	=Register	2	

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