DISCONTINUED PRODUCT

RDU-S Rack Data Unit

User Manual

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Emerson Network Power provides customers with technical support. Users may contact the nearest Emerson local sales office or service center.

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Chapter 1 Overview

This chapter gives a brief introduction to the appearance, indicators, ports, technical specifications and options of RDU-S rack data unit (data unit for short).

1.1 Product Introduction

The data unit is an intelligent acquisition system developed by Emerson to monitor the environment in rack and IDC machine room. It is also suitable for other applications, such as small base station environment monitoring, power equipment & environment monitoring in telecom machine room, power grid monitoring and bank ATM machine monitoring. When configured with a proper sensor or proper sensors, it can detect corresponding electric signals and non-electric signals in real time. The small profile design makes it suitable for installation in small space in the rack.

1.1.1 Appearance

The appearance of the data unit is shown in Figure 1-1.

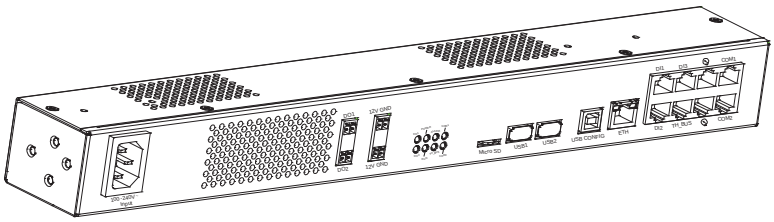


Figure 1-1 Appearance

1.1.2 Indicators

The indicators are located on the front panel, as shown in Figure 1-2. Their descriptions are listed in Table 1-1.

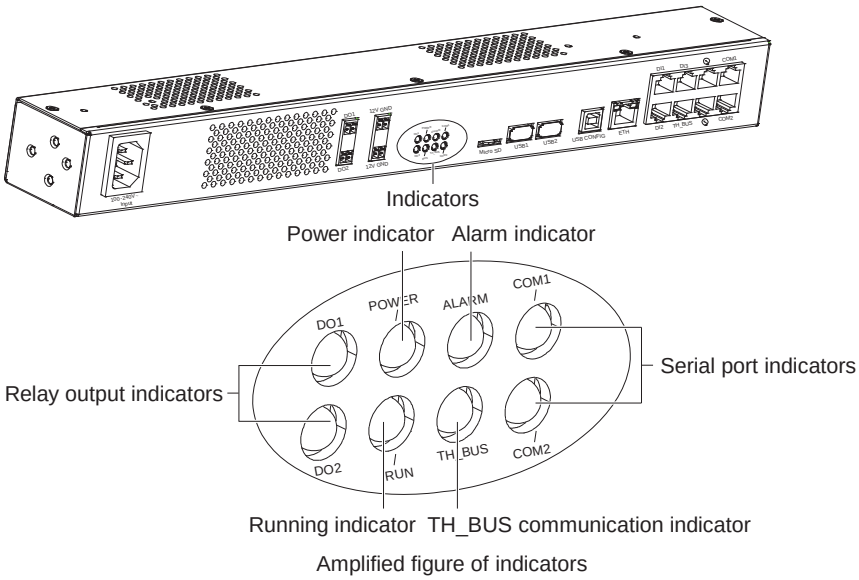


Figure 1-2 Indicator position

Table 1-1 Indicator descriptions

Silkscreen	Definition	Color	Status	Descriptions
DO1, DO2	Relay output indicators	Yellow	On	The relay is closed
			Off	The relay is open
POWER	Power indicator	Green	On	The data unit is powered on normally
			Off	The data unit is not powered on
ALARM	Alarm indicator	Red	On	The data unit has an critical alarm
			Blinking	The data unit has an warning alarm
			Off	The data unit is starting up or normal
RUN	Running indicator	Green	Blinking	The data unit is operating normally
			Off	The data unit is starting up
TH_BUS	TH_BUS communication indicator	Green	Blinking	The data unit is receiving or sending data
			Off	The data unit is not receiving or sending data
COM1, COM2	Serial port indicators	Green	Blinking	The serial port is receiving or transmitting data
			Off	The serial port is not receiving or transmitting data

1.1.3 Ports

The ports of the data unit are located on the front panel, as shown in Figure 1-3.

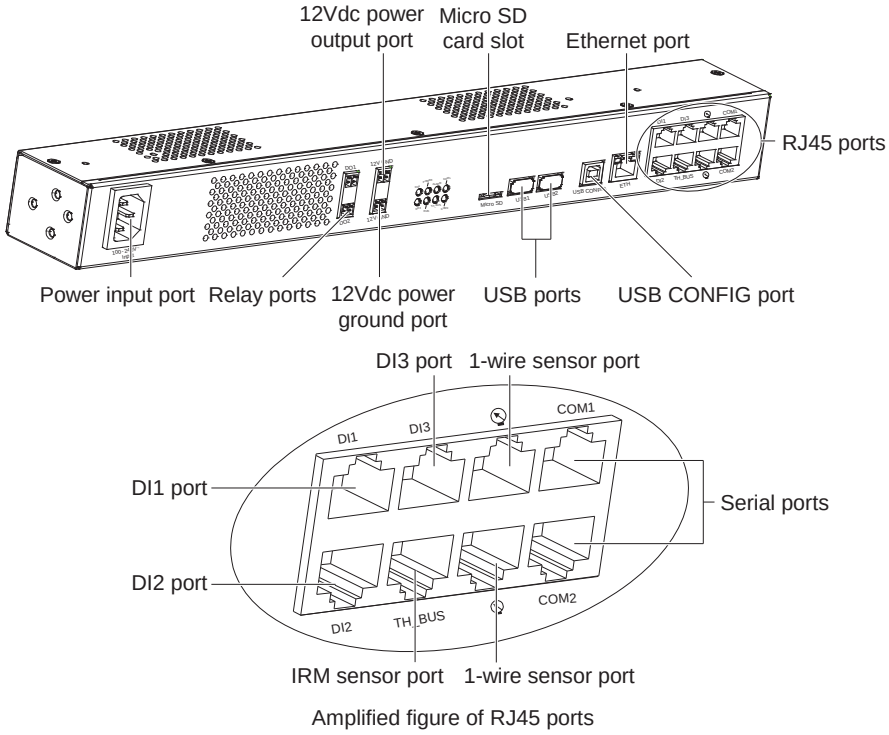


Figure 1-3 Port position

The definitions, functions and features of the ports are listed in Table 1-2.

Table 1-2 Port descriptions

Silkscreen	Port	Functions and features
100-240V ~ Input	Power input port	Adopt power socket to feed power to the data unit. The power input range is 100Vac ~ 240Vac
DO1, DO2	Relay ports	Output relay status
12V	12Vdc power output port	Feed power to external sensor (12Vdc power)
GND	12Vdc power ground port	12Vdc power ground
Micro SD	Micro SD card slot*	Support 2G, 4G or 8G Micro SD card to store video information and configuration file
USB1, USB2	USB ports	Provide two A type ports of 2.0 standard; capable of recognizing standard U disk, getting USB camera image and connecting GPRS Modem
USB CONFIG	USB CONFIG port	Display the current IP and restore the default password

Silkscreen	Port	Functions and features
ETH	Ethernet port (RJ45 port)	10M/100M, half/full-duplex self-adaptive; cable auto-crossing function; supportive of IEEE802.3 protocol
DI1, DI2, DI3	DI1, DI2, DI3 ports (RJ45 ports)	Connect to digital sensors. Each port can connect up to four digital sensors
TH_BUS	IRM sensor port (RJ45 port)	Connect to IRM series temperature sensor, temperature & humidity sensor
COM1, COM2	Serial ports (RJ45 ports)	COM1 serial port is compatible with RS485, RS422 and RS232 communication modes; COM2 serial port is compatible with RS485 and RS232 communication modes
	1-wire sensor port (RJ45 port)	Connect to 1-wire sensor
Note*: After unplugging and plugging the Micro SD card, the data unit must be restarted to read the data		

Except for the Ethernet port, the pin definitions of the RJ45 ports are listed in Table 1-3.

Table 1-3 Pin definitions of RJ45 ports

Pin No.	RJ45 ports				
	(1-wire)	DI1, DI2, DI3	TH_BUS	COM1	COM2
1	VCC (5Vdc)	12Vdc	12Vdc	R+	NC
2	1-wire signal	NC	NC	R-	NC
3	NC	D1	NC	TXD	TXD
4	NC	GND	GND	GND	GND
5	NC	GND	NC	GND	GND
6	NC	D2	NC	RXD	RXD
7	NC	D3	D+	T+/D+	D+
8	GND	D4	D-	T-/D-	D-

1.2 Technical Specifications

1.2.1 Input Specifications

The input specifications of the data unit are listed in Table 1-4.

Table 1-4 Input specifications

Input parameters		Corresponding port	Measurement accuracy	Descriptions
1-wire sensor input	1-wire signal	1-wire sensor port	The final accuracy is determined by the used sensor	Capable of measuring temperature and humidity. The 1-wire sensor can also be connected with the digital signal from water sensor, door magnet sensor, and so on
Digital signal input		DI1, DI2, DI3 ports	-	Capable of measuring the digital signal from door magnet sensor, smoke sensor and infrared sensor
PDU input		Serial ports	-	Capable of connecting Switched PDU, Metered PDU and Mps PDU
IRM sensor input		IRM sensor port	The final accuracy is determined by the used sensor	Capable of measuring temperature and humidity

1.2.2 Output Specifications

The output specifications of the data unit are listed in Table 1-5.

Table 1-5 Output specifications

Output parameters		Specification	Descriptions
Relay output	Route number	Two routes	Supportive of two triggering modes: level mode and pulse mode
	Output contact	Relay normally open contact output	
	Contact capacity	5A/24Vdc; 5A/220Vac	

Output parameters		Specification	Descriptions
Sensor power output	12Vdc output	11.5Vdc ~ 12.5Vdc, maximum output current: 0.8A	The output current is the total current which the sensor power can provide. The total power consumption of 12Vdc power does not exceed 10W
USB port output		Maximum output current: 500mA	-

1.2.3 Ambient Specifications

The ambient specifications of the data unit are listed in Table 1-6.

Table 1-6 Ambient specifications

Item	Requirement
Application location	Indoor
Working temperature*	0ºC ~ 45ºC
Relative humidity	5%RH ~ 95%RH (non-condensing)
Working environment	Dust: compliant with GR-63 indoor standard. No corrosive gas, flammable gas, oily mist, steam, water drops or salt
Air pressure	70kPa ~ 106kPa
Storage temperature	-40ºC ~ +70ºC
Cooling	Natural cooling
Note*: It is the working temperature of the data unit, not including the sensors connected with it. Make sure that the used sensors will not be damaged within the temperature range	

1.2.4 Mechanical Specifications

The mechanical specifications of the data unit are listed in Table 1-7.

Table 1-7 Mechanical specifications

Dimensions (L × W × H)	Weight
440mm × 44.2mm × 55mm	≤ 1.5kg

1.3 Options

The options of the data unit are listed in Table 1-8.

Table 1-8 Options

Classification	Optional model
Digital sensors	1. ER-ST01P infrared sensor (RJ45 port) 2. EE-SD01S smoke sensor (RJ45 port) 3. ER-DR02J door magnet sensor (RJ45 port) 4. EW-WT01B water sensor (RJ45 port) 5. IRM-S01W (5m, 10m) water sensor(RJ45 port) 6. SN-TH temperature & humidity sensor (RJ45 port) 7. SN-2D door dry contact sensor (RJ45 port) 8. SN-3C dry contact sensor (RJ45 port) 9. IRM-S01T intelligent temperature sensor (RJ45 port) 10. IRM-S02TH intelligent temperature/humidity sensor (RJ45 port) 11. SN-L leak detection sensor (RJ45 port)
Relay connectors	1. SL79LED stroboscopic alarm (two cables, non-RJ45 port) 2. HX-F8502 acousto-optic alarm (two cables, non-RJ45 port)
Cameras	1. KS-188 USB camera 2. ICAM-01 camera (with PTZ control)
Installation options of sensors	1. IDS-08 5cm simple installation support 2. Mushroom head magic paste 3. 16mm gummed magic paste 4. CT3Y 3cm round magnet 5. RJ45 three-way connector

Chapter 2 Installation

This chapter expounds the installation preparation, installation tools and installation method of the data unit.

2.1 Installation Preparation

Notes

To avoid personnel injury and damage to the device in installation and use of the data unit, take the following precautions:

- Never put the data unit in watery places and always prevent liquid from entering the data unit.
- In installation and connection, wear anti-static clothing and an anti-static wrist strap; if anti-static clothing and anti-static wrist strap are not available, wash your hands instead and dry them before installation and connection.
- Arrange the wires properly. Do not put any heavy objects on the wires or stamp the wires.
- Ground the data unit properly.
- Always cut off the power before performing any hardware operation.

Operating environment

The data unit must be installed indoors. The temperature and humidity should meet the product specifications (see Table 1-6).

EMI

For EMI purpose, take the following measures:

- Do not connect the working ground of the data unit to ground of electrical power equipment or lightning ground. Instead, place them away from each other as far as possible.
- Keep the data unit away from large-power radio transmitters, radar transmitters and high-frequency large current electrical equipment.
- Take electromagnetic shielding measures if necessary.

Heat dissipation

The heat dissipation requirements of the data unit are given as follows:

- Keep the data unit as far as possible from heat sources.
- Keep at least 10mm clearances around the data unit for adequate heat dissipation.

2.2 Installation Tool

The installation tools of the data unit are listed in Table 2-1.

Table 2-1 Installation tools

Tool	Specification		Tool	Specification
Crimping pliers for network cable	Standard		Slotted screwdriver	100mm, 200mm
Electrician diagonal cutting pliers	150mm		Wire cutter	Maximum 300mm^2
Electrician long nose pliers	150mm		Digital multimeter	Three and a half digit
Crossed screwdriver	100mm, 200mm		Drill	With a Φ6 aiguille

2.3 Installing Data Unit

The data unit can be installed in a standard 19” rack through hangers (accessories) or a round hanger (accessory). It can also be mounted on the wall through hangers.

2.3.1 Installation Hole Position

The hangers are installed on the side panels and the round hanger is installed on the back panel or top panel. The installation holes on the panels are shown in Figure 2-1.

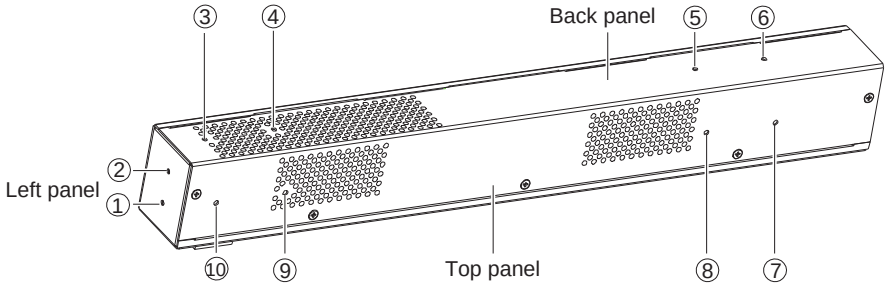


Figure 2-1 Positions of installation holes

The installation holes ① and ② (also two installation holes on the right panel) are used for installing the hangers and the installation holes ③ ~ ⑩ are used for installing the round hanger.

2.3.2 Installing The Data Unit In A Standard 19” Rack

Installing the data unit through hangers

1. Fasten two hangers respectively to both sides of the data unit with M3 screws, as shown in Figure 2-2.

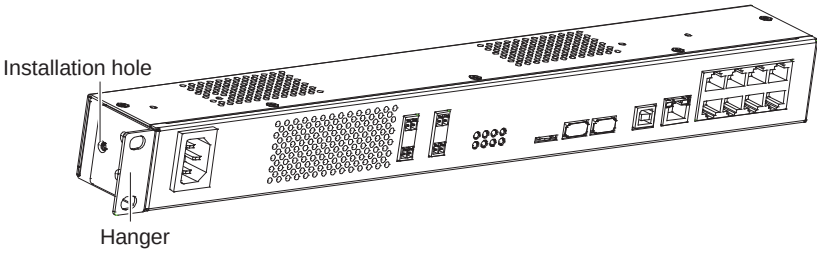


Figure 2-2 Installing hangers (rack mounting)

The completed status is shown in Figure 2-3.

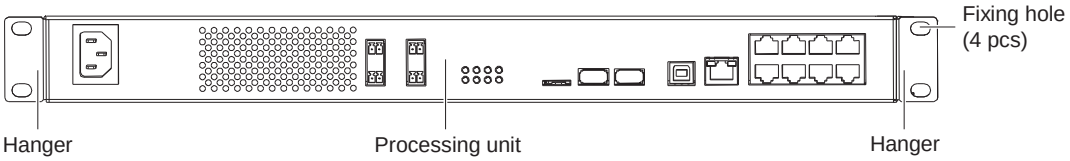


Figure 2-3 Completed status figure

2. Put the data unit onto the guide rails in the rack and push it into the rack completely.
3. Wrench M6 screws into the fixing holes (see Figure 2-3) of the hangers to fasten the data unit onto the rack.

Installing the data unit through a round hanger

1. Fasten the round hanger onto the top panel or back panel of the data unit with an M3 screw, as shown in Figure 2-4.

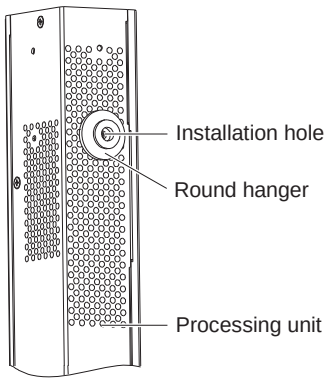


Figure 2-4 Installing round hanger

2. Hang the data unit onto the vertical pole in the rack through the round hanger.

2.3.3 Installing The Data Unit On The Wall

1. Fasten two hangers respectively to both sides of the data unit with M3 screws, as shown in Figure 2-5.

Note

The installation direction of the hangers in wall mounting mode is opposite to that in rack mounting mode.

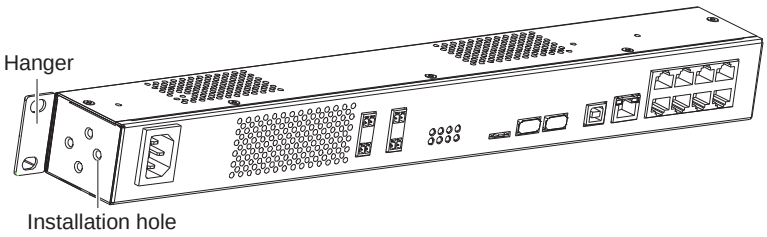


Figure 2-5 Installing hanger (wall mounting)

2. Use a drill (aiguille: Φ6) to drill four holes (depth: 70mm) on the wall according to the dimensions in Figure 2-6 and knock four plastic expansion pipes into the holes.

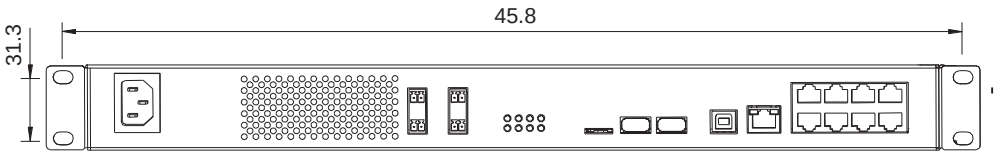


Figure 2-6 Hole dimensions (unit: mm)

3. Put the data unit in the position, and wrench self-tapping screws into the plastic expansion pipes through the fixing holes of the hangers to fix the data unit on the wall.

Chapter 3 Connection

This chapter expounds the connection of the data unit, including connection notes, and connecting the sensor ports, serial ports, relay port and multiple signals of RJ45 ports.

3.1 Connection Notes

The connection notes are given as follows:

1. The power and external signals that are connected to the data unit must be SELV circuits. The isolation and insulation must be enhanced between them and the power grid.

2. When making RJ45 port cables, pay attention to the pin definitions to avoid wrong connection. For the pin definitions, refer to Table 1-3 and the pin definition figures of the RJ45 ports in this chapter.

3.2 Connecting Sensor Ports

Note

Refer to the corresponding sensor instructions to carry out the installation and wiring operation.

Before sent to the data unit, the site signals should be transformed into electrical signals by sensors. The data unit provides six sensor ports (silkscreen: DI1, DI2, DI3, TH_BUS and) to connect the sensors.

- The 1-wire sensor port (silkscreen:) is supportive of 1-wire sensor.
- The DI1, DI2 and DI3 ports are supportive of digital sensors, including infrared sensor, water sensor, door magnet sensor, smoke sensor, and so on.
- The IRM sensor port (silkscreen: TH_BUS) is supportive of IRM series sensor, including temperature sensor and temperature & humidity sensor.

If the used sensor needs 12Vdc power, the 12Vdc power output port (see Figure 1-3) of the data unit can be used.

3.2.1 Connecting 1-Wire Sensor Port

The 1-wire sensor port (silkscreen:) is used to connect the SN-TH temperature & humidity sensor, SN-2D door dry contact sensor, SN-3C dry contact sensor or SN-L leak detection sensor.

Port position

The positions of the 1-wire sensor ports are shown in Figure 3-1.

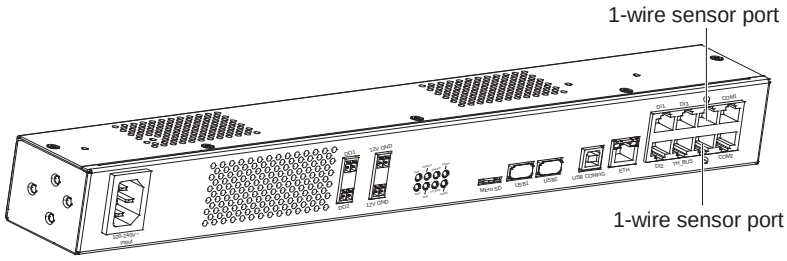
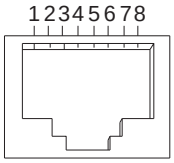


Figure 3-1 Positions of 1-wire sensor ports

Pin definition

The pin definition of the 1-wire sensor port is described in Figure 3-2.



Pin definition

1: VCC (5Vdc)	5: NC
2: 1-wire signal	6: NC
3: NC	7: NC
4: NC	8: GND

Figure 3-2 Pin definition of 1-wire sensor port

Connection method

Use a standard network cable with RJ45 connectors on both ends, insert one end into the 1-wire sensor port, and insert the other end into the RJ45 port of SN-TH temperature & humidity sensor, SN-2D door dry contact sensor, SN-3C dry contact sensor or SN-L leak detection sensor.

3.2.2 Connecting DI1, DI2 And DI3 Ports

The DI1, DI2 and DI3 ports are used to connect the digital sensors.

Port position

The positions of the DI1, DI2 and DI3 ports are shown in Figure 3-3.

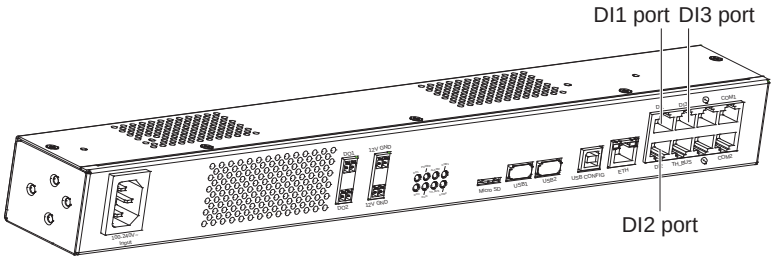
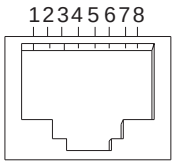


Figure 3-3 Positions of DI1, DI2 and DI3 ports

Pin definition

The pin definition of the DI1, DI2 and DI3 ports is shown in Figure 3-4.



Pin definition

1: 12Vdc	5: GND
2: NC	6: D2 (door magnet sensor)
3: D1 (smoke sensor)	7: D3 (water sensor)
4: GND	8: D4 (infrared sensor)

Figure 3-4 Pin definition of DI1, DI2 and DI3 ports

Connection method

Note

1. It is recommended to use the auxiliary sensors shown in Figure 3-5. If you want to connect other types of sensors, make the connection cables according to the port pin definition in Figure 3-4 and then connect them.

2. Both vibration sensor and water sensor use D3 channel. If the vibration sensor is selected, it cannot share the same digital sensor port with the water sensor.

3. The line sequence (see Figure 3-4 for detailed definition) of the DI1, DI2 and DI3 ports is fixed. The types of the sensors connected to a port cannot be the same.

If the digital sensor (with a connection cable in factory) recommended by Emerson is connected, insert the RJ45 connector of the connection cable into the DI1, DI2 or DI3 port.

The recommended sensors are shown in Figure 3-5.

EE-SD01S smoke sensor

ER-DR02J door magnet sensor

IRM-S01W water sensor

ER-ST01P infrared sensor

Figure 3-5 Recommended sensors

Connecting multiple signals of RJ45 ports

DI1, DI2 and DI3 ports can be connected with multiple signals simultaneously.

When a port is connected to multiple signals, RJ45 three-way connectors (optional) are required for transferring according to the signal amount. Use standard straight network cables to cascade-connect the signals in daisy chain mode and then connect them with the corresponding port. Figure 3-6 indicates the connection method that DI1 port is connected with infrared sensor, door magnet sensor and smoke sensor.

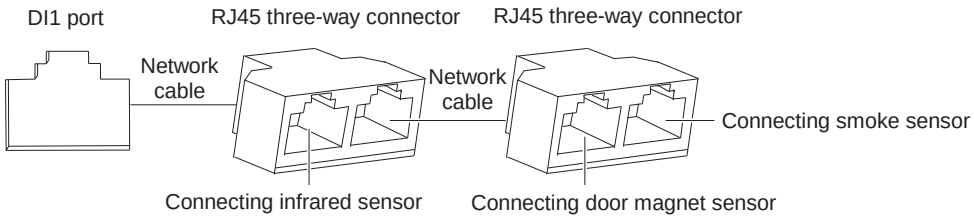


Figure 3-6 Connecting multiple sensors

When a port is connected with multiple signals simultaneously, you must note that the line sequence conflict of the signals cannot occur. For example, the DI1 port can be connected with four sensors simultaneously. The recommended sensors include smoke sensor, door magnet sensor, water sensor and infrared sensor. If the DI1 port is connected with vibration sensor and water sensor simultaneously, signal conflict will occur, resulting in signal acquisition failure, because both sensors use the DI3 channel.

3.2.3 Connecting IRM Sensor Port

The IRM sensor port (silkscreen: TH_BUS) is used to connect the IRM series temperature sensor and temperature & humidity sensor.

Note

The address range of the IRM series temperature sensor and temperature & humidity sensor is 10, 11, 12, 13, 20, 21, 22 and 23; besides the above addresses, the address range of the IRM series temperature sensor also includes 30, 31, 32, 33, 40, 41, 42 and 43.

Port position

The position of the IRM sensor port is shown in Figure 3-7.

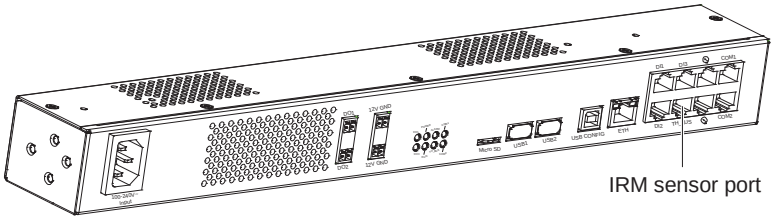
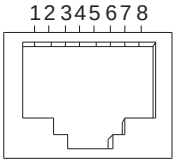


Figure 3-7 Position of IRM sensor port

Pin definition

The pin definition of the IRM sensor port is shown in Figure 3-8.



Pin dfinition

1: 12Vdc	5: NC
2: NC	6: NC
3: NC	7: D+
4: GND	8: D-

Figure 3-8 Pin definition of IRM sensor port

Connection method

Use a standard network cable with RJ45 connectors on both ends, insert one end into the IRM sensor port, and insert the other end into the RJ45 port of IRM series temperature sensor or temperature & humidity sensor.

3.3 Connecting Serial Ports

The serial ports (silkscreen: COM1, COM2) are used to connect Emerson serial PDU.

Port position

The positions of the serial ports are shown in Figure 3-9.

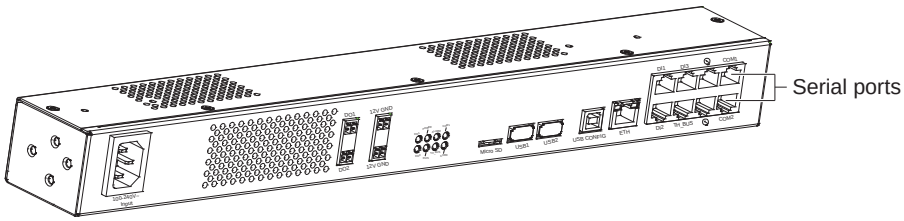
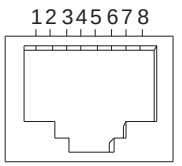


Figure 3-9 Positions of serial ports

Pin definition

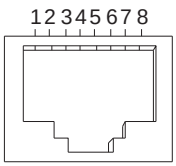
The pin definitions of the serial ports are shown in Figure 3-10.



Pin dfinition

1: R+	5: GND
2: R-	6: RXD
3: TXD	7: T+/D+
4: GND	8: T-/D-

COM1



Pin dfinition

1: NC	5: GND
2: NC	6: RXD
3: TXD	7: D+
4: GND	8: D-

COM2

Figure 3-10 Pin definitions of serial ports

Connection method

When Emerson serial PDU is required to be monitored by the data unit, use standard Cat5 cable to connect the RS485 port of PDU with the serial port of the data unit. If multiple PDUs need to be monitored, use standard Cat5 cable to connect the Link port of the upper PDU with the RS485 port of the lower PDU in daisy chain mode, as shown in Figure 3-11.

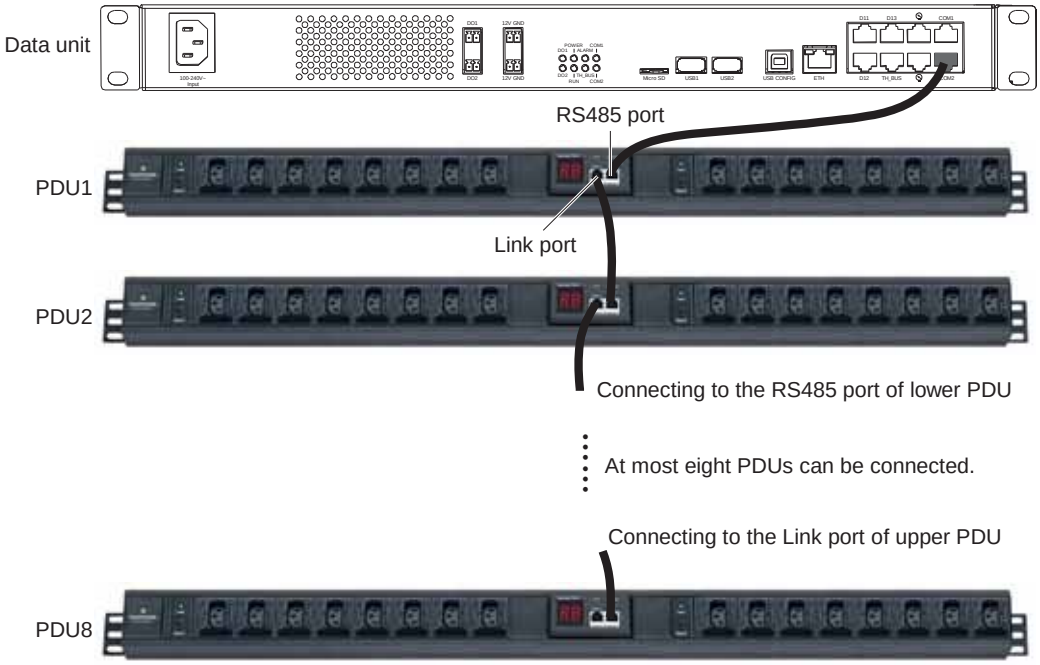


Figure 3-11 Connecting the data unit and the PDUs

Note

At most eight Emerson serial PDUs can be monitored by the data unit through the serial ports (COM1 and/or COM2).

3.4 Connecting Relay Ports

Port position

The positions of the relay ports are shown in Figure 3-12.

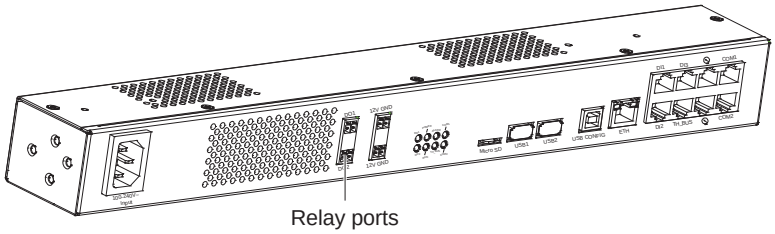


Figure 3-12 Positions of relay ports

Connection method

When the relay output specification reaches 5A/24Vdc, connect the required cables with the relay ports (silkscreen: DO1, DO2). The relay of the data unit is normally open passive dry contact. Properly arrange the wiring according to the site conditions.

Note

Pay attention to the port silkscreen before connection to avoid the wrong connection. Otherwise, the device may be damaged.

Chapter 4 Parameter Setting

This chapter introduces the parameter setting, including connecting data unit with computer, setting HyperTerminal, powering on, logging onto data unit, setting IP address and restarting data unit.

4.1 Connecting Data Unit With Computer

A computer is a must for commissioning the data unit. Therefore, before commissioning the data unit, connect the data unit with the computer using a standard network cable and set the communication parameters through the computer.

4.2 Setting HyperTerminal

This section takes Windows XP as an example to illustrate how to set HyperTerminal.

After the network cable is connected, set the HyperTerminal according to the following procedures:

1. Click **Start** -> **Programs** -> **Accessories** -> **Communications** -> **HyperTerminal**, and the HyperTerminal interface pops up, as shown in Figure 4-1.

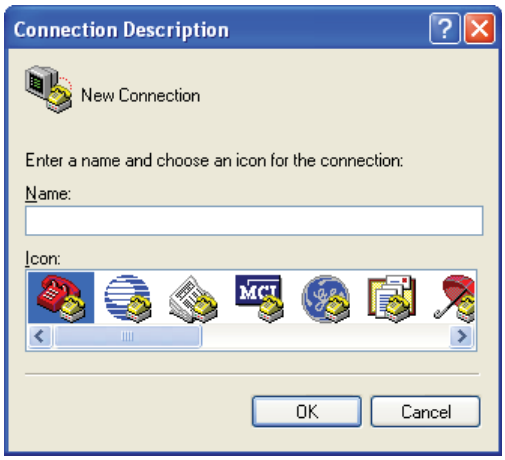


Figure 4-1 Connection description interface

2. Type the name ‘RDU-S’ in the **Name** field and click **OK**, as shown in Figure 4-2.

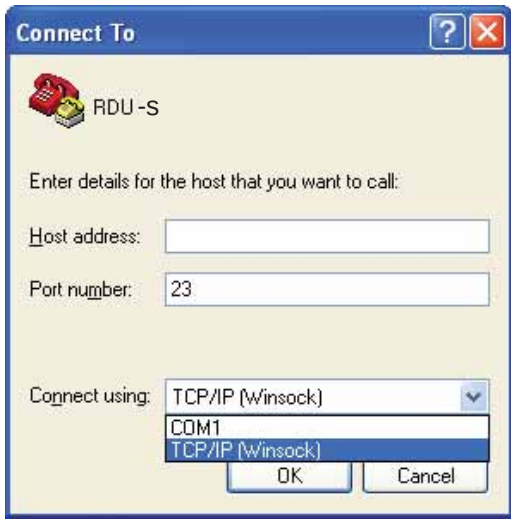


Figure 4-2 Connect to interface 1

3. Select ‘TCP/IP (Winsock)’ in the **Connect using** field, as shown in Figure 4-3.

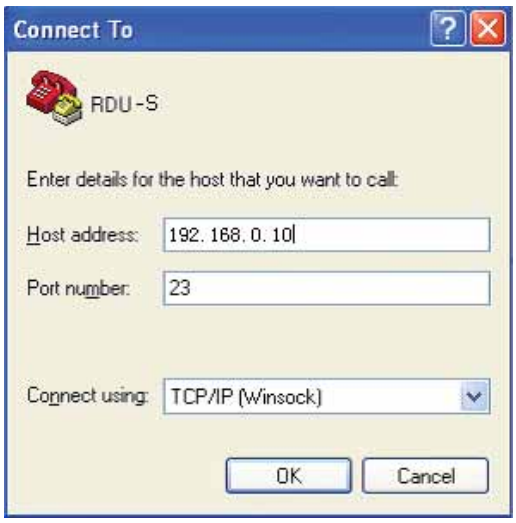


Figure 4-3 Connect to interface 2

4. As shown in Figure 4-3, type the host address (factory default IP: 192.168.0.10) and port number, and click **OK** to complete the HyperTerminal setting.

4.3 Powering On

After the communication cable connection between the data unit and the computer, and the HyperTerminal setting are completed, you can power on the data unit.

4.3.1 Checking Before Powering On

Ensure the following items before powering on the data unit:

1. The power cable and communication cable are connected properly.
2. The power supply voltage meets the device requirement.
3. The HyperTerminal setting is completed.

Note

Before powering on the device, confirm the location of the power input port (see Figure 1-3) to make sure that the power can be cut off in time in case of an accident.

4.3.2 Checking After Powering On

Insert the power cable to power on the data unit and check that:

1. The indicators (see Figure 1-2) of the data unit are working normally.

See Table 1-1 for the descriptions of the indicators during normal operation. If the indicators work abnormally, check the cable connection and the working status of the base site to which the data unit is connected.

2. The information displayed on the HyperTerminal is normal.

If no information is displayed, check that the connection between the data unit and the computer, and HyperTerminal settings are correct.

You can log onto the data unit through the HyperTerminal after the above checks.

4.4 Logging Onto Data Unit

The logging procedure is shown in the following figure.

```
Emerson Network Power Co., Ltd.
Linux/armv4tl 2.6.24


RDU-S login: rduadmin
Password:

Linux 2.6.20

Copyright 2006. Emerson Network Power Co., Ltd. All Rights Reserved.

*****************    The model is RDU     ********************
 ************************************************************************
 *                                                                      *
 *   Copyright(c) 2007-2009, Emerson Network Power Co., Ltd.            *
 *                     ALL RIGHTS RESERVED                              *
 *                                                                      *
 *       Welcome to RDU (Rack Data Unit)                                *
 *                                                                      *
 *                                              Version 1.0             *
 *                                                   2008.12            *
 ************************************************************************

RDU_admin#
```

The detailed procedures are given as follows:

1. Power on the data unit. After it starts up normally, the HyperTerminal will display **RDU-S login:**.

2. Type the user name ‘rduadmin’ and press the Enter key, and the HyperTerminal will prompt **Password:**.

3. Type the password ‘rduadmin’ following **Password:**, and the HyperTerminal will display the command prompt **RDU_admin#**.

> 🕮 **Note**
>
> Both the user name and the password are case-sensitive.

4.5 Setting IP Address

After logging onto the command line, use the command ‘setip’ first to set the IP address of the data unit. The detailed setting procedures are given as follows:

1. Type ‘setip’ following the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#setip
Please input IP_address[10.163.162.150]:10.163.162.151
Please input Subnet_mask[255.255.255.0 ]:255.255.255.0
Please input Default_gateway[10.163.162.1]:10.163.162.1
Are you sure to set
IP: 10.163.162.151
Netmask: 255.255.255.0
Default Gateway: 10.163.162.1 ? Y/N [N]y

Your current setting has been modified!
Please telnet RDU with the new IP address now!
System will reboot automatically after  save (y/n)  operation!
please relogin RDU,if you will use other command!

Are you want to save it ? Y/N [N]y
```

2. Respectively type the new IP address, sub_net mask and default gateway in **Please input IP_address**, **Please input Subnet_mask** and **Please input Default_gateway**.

3. Type ‘Y’ or ‘N’ under **Y/N [N]** according to the system prompt.

Typing ‘N’ will cancel the settings. Typing ‘Y’ will confirm that the network parameters are set successfully, then the system will prompt whether to save these network parameters.

Note

After the network parameters are set, the system will prompt whether to save them. If ‘Y’ is typed, the system will maintain the network parameters and reboot automatically; otherwise, the system will retrieve the factory default IP address after 5 minutes.

4.6 Restarting Data Unit

Use the command ‘reboot’ to restart the data unit after all parameters are set. The detailed procedures are given as follows:

1. Type ‘reboot’ following the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#reboot
Are you sure to reboot the system? Y/N [N]y
```

2. Type 'Y' or ’N’ according to the system prompt.

Typing ‘Y’ will restart the data unit; typing ‘N’ will cancel the restarting operation.

Chapter 5 Software Operation

This chapter expounds the software operation of the data unit, including login, logout and detailed operation descriptions of Monitor, Control, Configure, Events, History and System Information interfaces.

Note

Java V1.6 or above is required for proper function of the software.

5.1 Login

The login procedures are given as follows:

1. Type the IP address of the data unit in the address bar of Internet Explorer browser and press the Enter key to enter the login interface, as shown in Figure 5-1.

Figure 5-1 Login interface

2. Select the correct user name (default: ‘admin’) from the **User Name** drop-down list and type the correct password (default: ‘emerson’) in **Password**, and click **Login** to enter the software operation interface.

Note

1. Both the user name and the password are case-sensitive.
2. On one computer, only one user is allowed to log in the system at a time.
3. The system only supports IE7 or IE8 browser.

The default interface after login is the **Monitor** interface, as shown in Figure 5-2.

5.2 Monitor Interface Operation Description

After the user name and password are verified, you can enter the **Monitor** interface, as shown in Figure 5-2.

Figure 5-2 Monitor interface

The structure tree in **Environmental** displays the devices connected with the data unit, including temperature sensor, humidity sensor, input contacts (digital sensor), output relays (relay port output). The operation area provides three tabs and you can click a tab to enter the corresponding operation interface.

- Set temperature sensor and humidity sensor, and view the working status of input contacts & output relays and the last alarms through the **Environmental** tab.
- View and set the working status of the PDU through the **PDU** tab.
- View and set the working status of the cameras through the **Camera** tab.

5.2.1 Environmental

Click the **Environmental** tab in the operation area, and the interface shown in Figure 5-2 will appear. You can set the temperature sensors and humidity sensors, and view the working status of the input contacts & output relays and the events through the interface.

Temperature sensor

1. Setting temperature parameter

1) Click the **Temperature Sensor** node in the **Monitor** structure tree, and the window shown in Figure 5-3 will appear.

Figure 5-3 Temperature sensor window

2) Double-click one sensor histogram to enter the edit mode; meanwhile, the serial number of the sensor is visible, as shown in Figure 5-4.

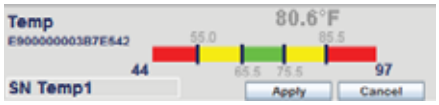


Figure 5-4 Setting mode of temperature sensor

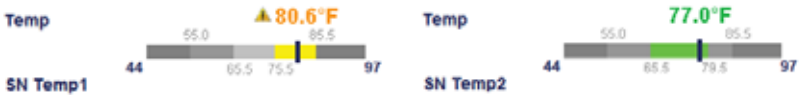
3) Drag the mouse to set the high and low thresholds and double-click the sensor name ('SN Temp1' shown in Figure 5-4) to change it. The length of the sensor name is up to 10 characters.

The red, yellow and green areas on the histogram respectively indicate alarm, warning and normal range.

4) After setting, click **Apply** to confirm the setting.

Clicking **Cancel** will cancel the preceding setting.

If the temperature setpoint exceeds the normal range, the histogram will turn yellow or red; if it is within the normal range, the histogram will turn green, as shown in Figure 5-5.



Warning status *Normal status*

Figure 5-5 Status figure after setting

2. Displaying sensor information

Move the mouse to one sensor histogram, and a prompt box, displaying sensor name and sensor location, will appear, as shown in Figure 5-6.

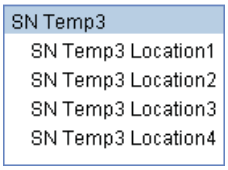


Figure 5-6 Prompt box

Humidity sensor

The operation of the humidity sensor is the same as that of the temperature sensor.

Input contacts

Click the **Input Contacts** node in the **Monitor** structure tree, and the figure shown in Figure 5-7 will appear.

You can view the working status of the connected digital sensors. If the working status (**Open** or **Closed**) of the digital sensor is displayed in black, it indicates that the digital sensor is normal and does not detect any alarm; if the working status is displayed in red, it indicates that the digital sensor detects an alarm or alarms.

Figure 5-7 Input contacts window

Output relays

Click the **Output Relays** node in the **Monitor** structure tree, and the figure shown in Figure 5-8 will appear.

This window displays the working status of the devices connected to the relay port. For example, the icon of **DO1** (indicator alarm) turning red indicates that it generates an alarm.

Figure 5-8 Output relays window

Double click the icon of **DO1** or **DO2** to configure the output status of DO sensor, as shown in the Figure 5-9.

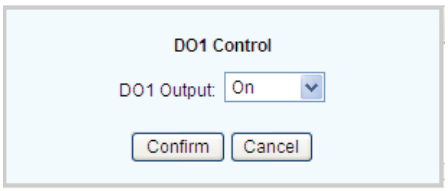


Figure 5-9 DO control window

Event list

The monitor interface will display the latest 20 events in the event list, including **High Critical**, **Low Critical**, **Critical**, **High Warning**, **Low Warning**, **Loss of Comms** and **Normal** events.

If you want to clear the **Loss of Comms** events in the event list, click the **Comms Loss Reset** button in the SN DI Sensor Configure window shown in Figure 5-46.

Events Event History>>

SN	Alarm	Time	Sensor Name	Severity
1	⚠	2010-11-28 15:34:19	SerialT41	High Warning
2	⚠	2010-11-28 15:34:11	SN Temp4	High Warning
3	✓	2010-11-28 15:34:03	SN Temp5	Normal
4	✗	2010-11-28 15:29:50	DI1-4	Critical
5	⚠	2010-11-28 15:04:46	SN Temp5	High Warning
6	✗	2010-11-28 15:04:44	SN 3D-2	Critical
7	✗	2010-11-28 15:04:44	SN 3D-1	Critical
8	✗	2010-11-28 15:04:44	SN 2D-2	Critical
9	✗	2010-11-28 15:04:44	SN 2D-1	Critical
10	✗	2010-11-28 15:04:44	SN 1D-2	Critical
11	✗	2010-11-28 15:04:44	SN 1D-1	Critical
12	✓	2010-11-28 15:04:20	Branch24 relay state(SW)	ON
13	✓	2010-11-28 15:04:20	Branch23 relay state(SW)	ON
14	✓	2010-11-28 15:04:20	Branch22 relay state(SW)	ON
15	✗	2010-11-28 15:04:20	Branch21 relay state(SW)	OFF
16	✗	2010-11-28 15:04:20	Branch20 relay state(SW)	OFF
17	✗	2010-11-28 15:04:20	Branch19 relay state(SW)	OFF
18	✗	2010-11-28 15:04:20	Branch18 relay state(SW)	OFF
19	✗	2010-11-28 15:04:20	Branch17 relay state(SW)	OFF
20	✗	2010-11-28 15:04:20	Branch16 relay state(SW)	OFF

Figure 5-10 Event list

5.2.2 PDU

Click the **PDU** tab in the operation area to enter the **PDU** interface, as shown in Figure 5-11.

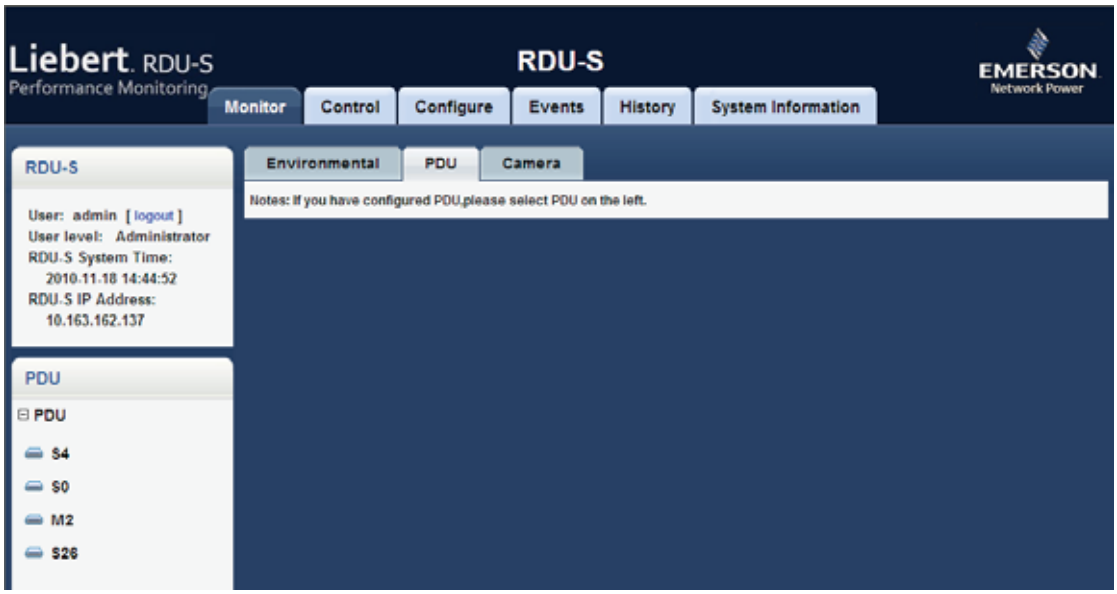


Figure 5-11 PDU tab

If there are PDUs connected, click the one you would like to monitor in the structure tree, the PDU page shown in Figure 5-12 will appear. The data unit supports three types of PDU: metered PDU, switched PDU and Mps PDU, through RS485 serial protocol provided by Emerson.

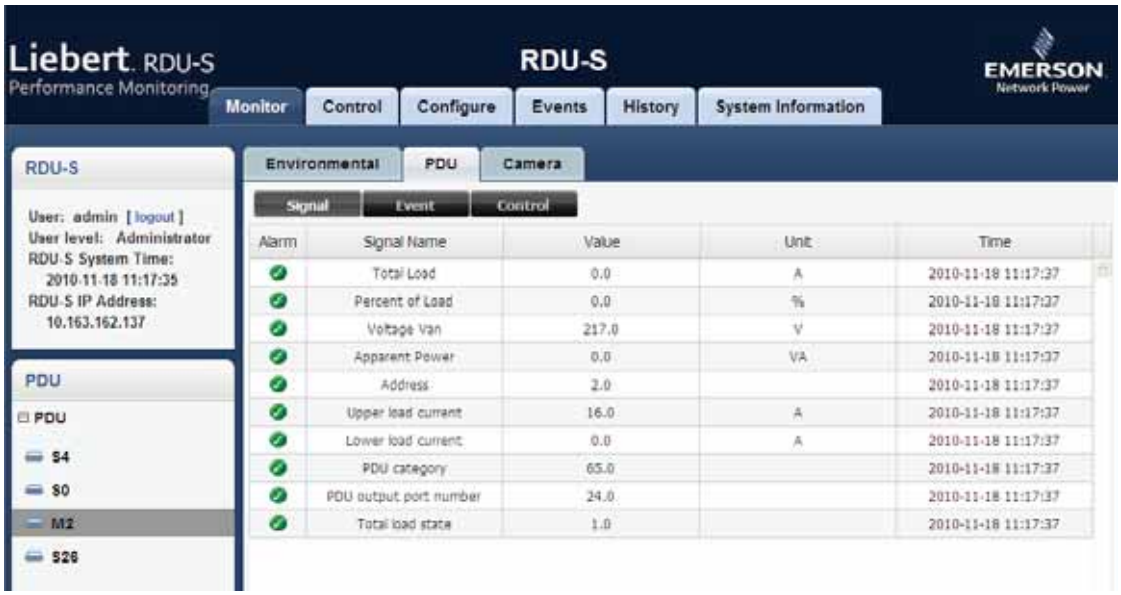


Figure 5-12 PDU page

Metered PDU

For metered PDU, click **Signal** tab and **Event** tab to check the status of PDU and abnormal events; Click **Control** tab to set the address, upper load current and lower load current of the PDU. The tabs are shown in Figure 5-13.

Environmental | PDU | Camera

Signal | Event | Control

Alarm	Signal Name	Value	Unit	Time
✓	Total Load	0.0	A	2011-02-05 16:48:57
✓	Percent of Load	0.0	%	2011-02-05 16:48:57
✓	Voltage Van	225.0	V	2011-02-05 16:48:57
✓	Apparent Power	0.0	VA	2011-02-05 16:48:57
✓	Address	0		2011-02-05 16:48:57
✓	Upper load current	5.5	A	2011-02-05 16:48:57
✓	Lower load current	0.0	A	2011-02-05 16:48:57
✓	PDU category	65		2011-02-05 16:48:57
✓	PDU output port number	8		2011-02-05 16:48:57
✓	Total load state	1		2011-02-05 16:48:57
✓	Rated load	10.0	A	2011-02-05 16:48:57
✓	Rated voltage	250.0	V	2011-02-05 16:48:57

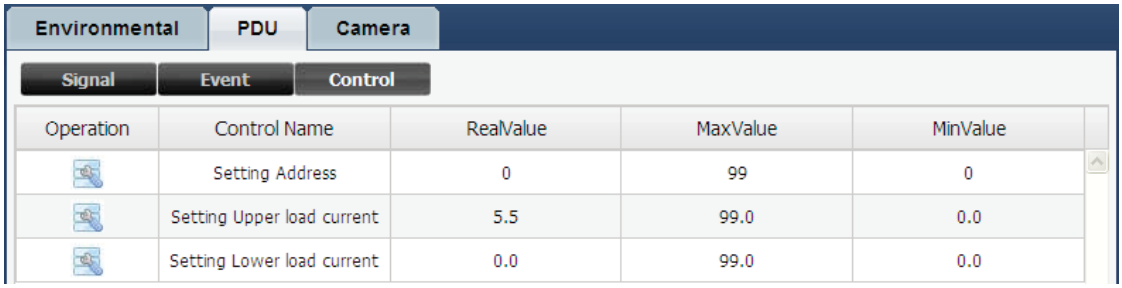
Signal tab

Environmental | PDU | Camera

Signal | Event | Control

Alarm	EventName	Severity	Event Meaning	State	Trigger Value	Start Time
✓	Total Load	0	Normal	1	1	2011-02-05 16:46:31

Event tab



Control tab

Figure 5-13 Tabs of metered PDU

In the **Control** tab, click the icon in the **Operation** column to set the address or threshold for metered PDU, as shown in Figure 5-14.

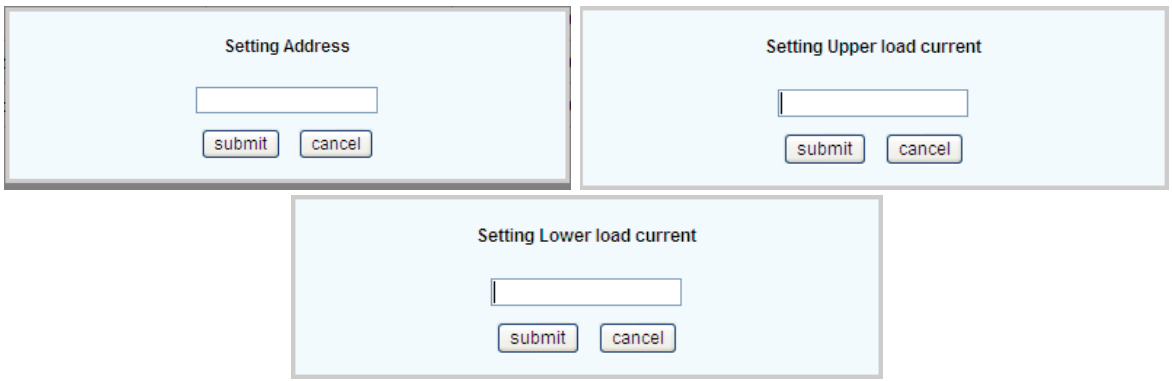


Figure 5-14 PDU setting windows

Switched PDU

For switched PDU, the PDU page is shown in Figure 5-15.

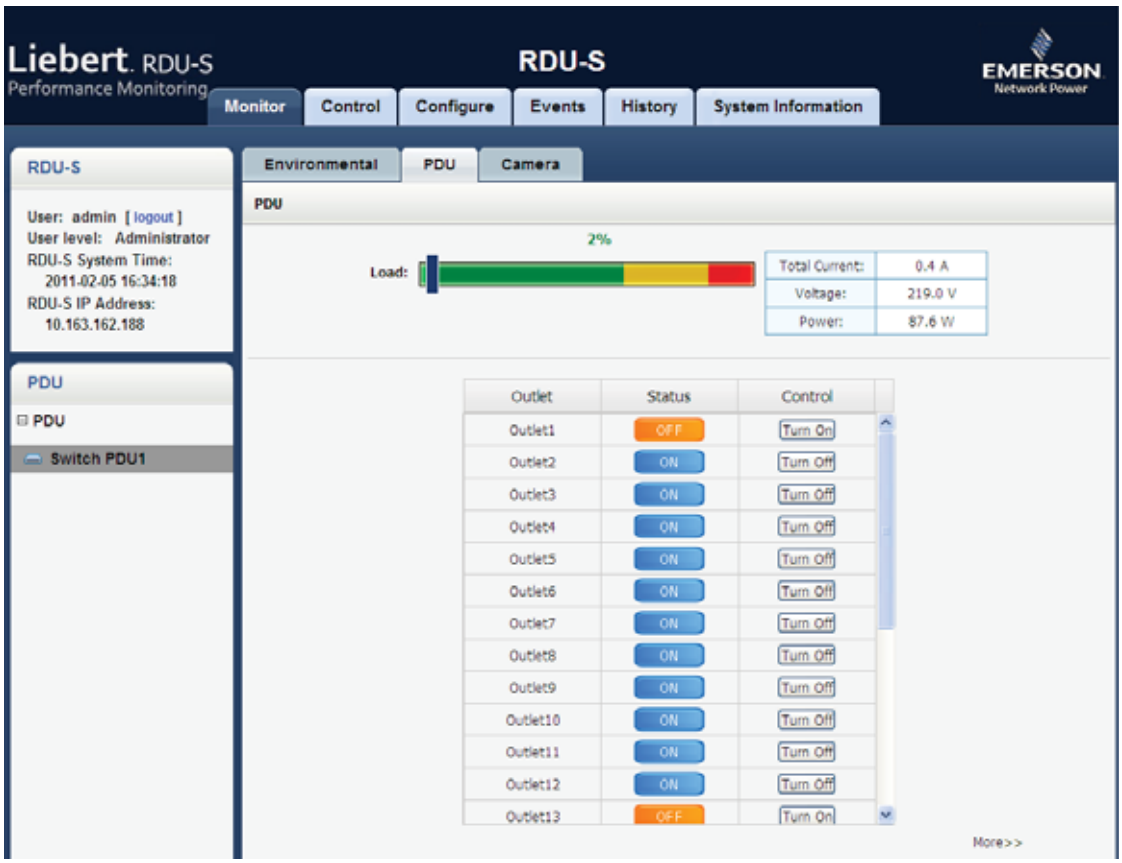


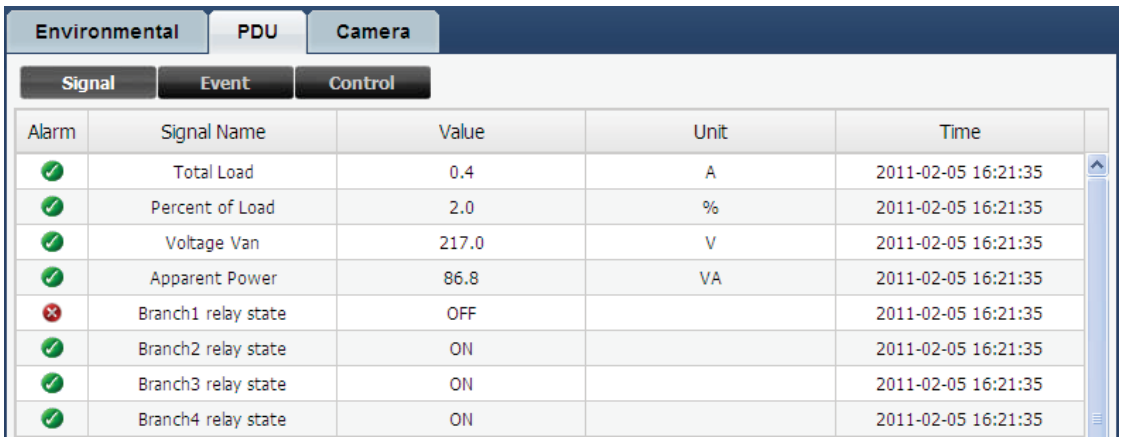
Figure 5-15 PDU page (switched PDU)

The items in Figure 5-15 are described in Table 5-1.

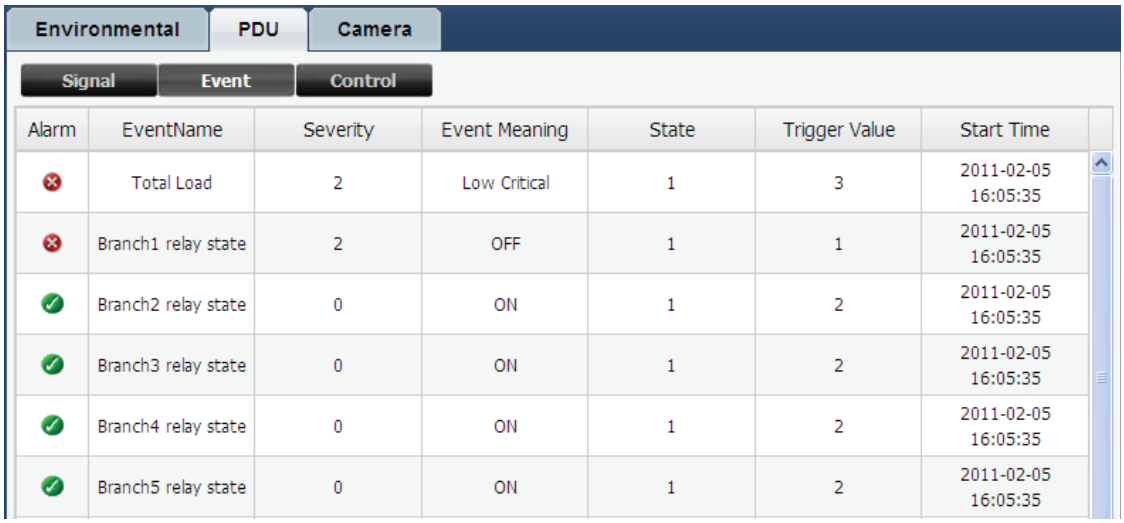
Table 5-1 Switched PDU setting item descriptions

Item	Descriptions
Outlet	Out port of the Switched PDU
Status	The current ON/OFF status of the Switched PDU out port
Control	Click **Turn On** and **Turn Off** to control the On/Off status of the Switched PDU output port

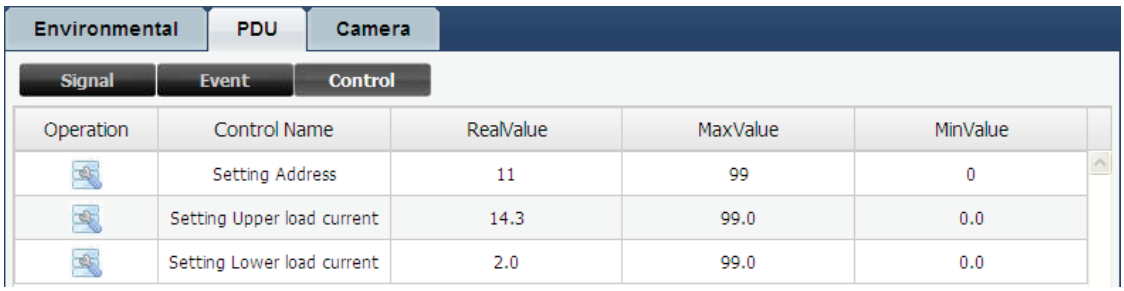
Click **More>>** on the lower right corner to enter the detailed information window, which also has three tabs: **Signal**, **Event** and **Control**, as shown in Figure 5-16.



Signal tab



Event tab



Control tab

Figure 5-16 Detailed information window

In the **Control** tab, the setting method of switched PDU is the same as that of metered PDU (see Figure 5-14).

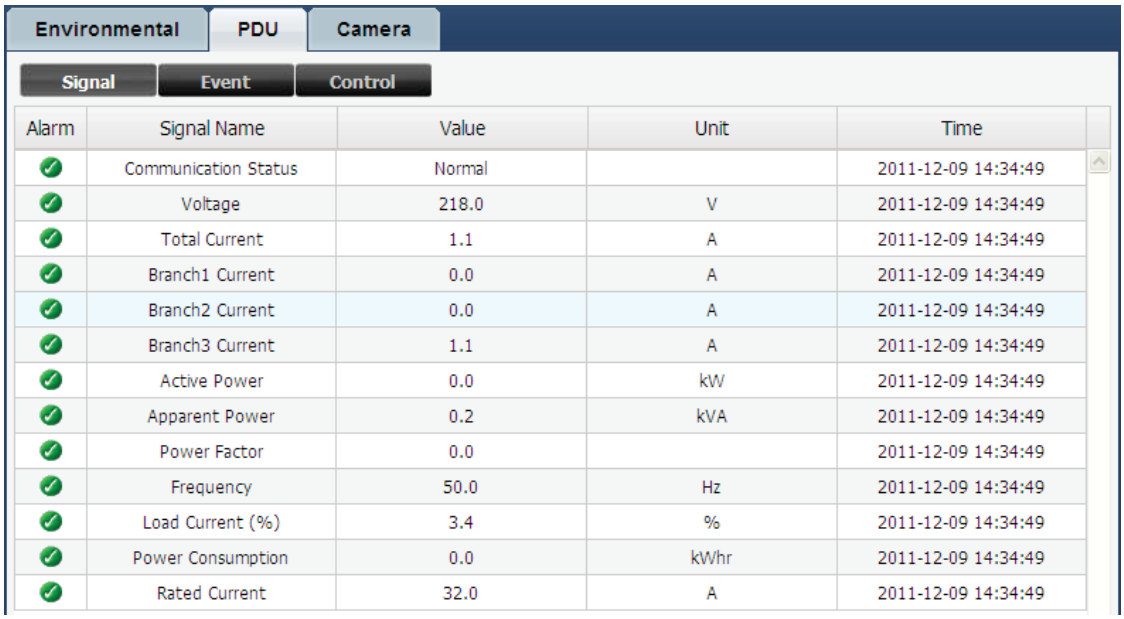
Note

1. Setting address in the **Control** tab will change the address of switched PDU and metered PDU, and thus lose the communication between the PDU and the data unit.

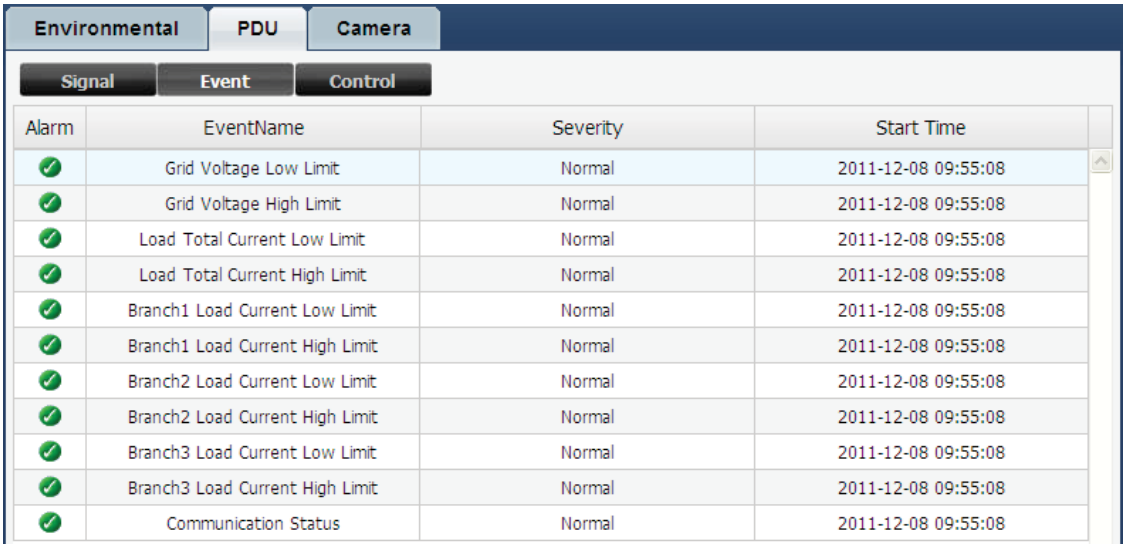
2. To build the communication between the PDU and the data unit, the same address should be configured on the configure interface, please refer to *PDU* in *5.4 Configure Interface Operation Description* for detailed method.

Mps PDU

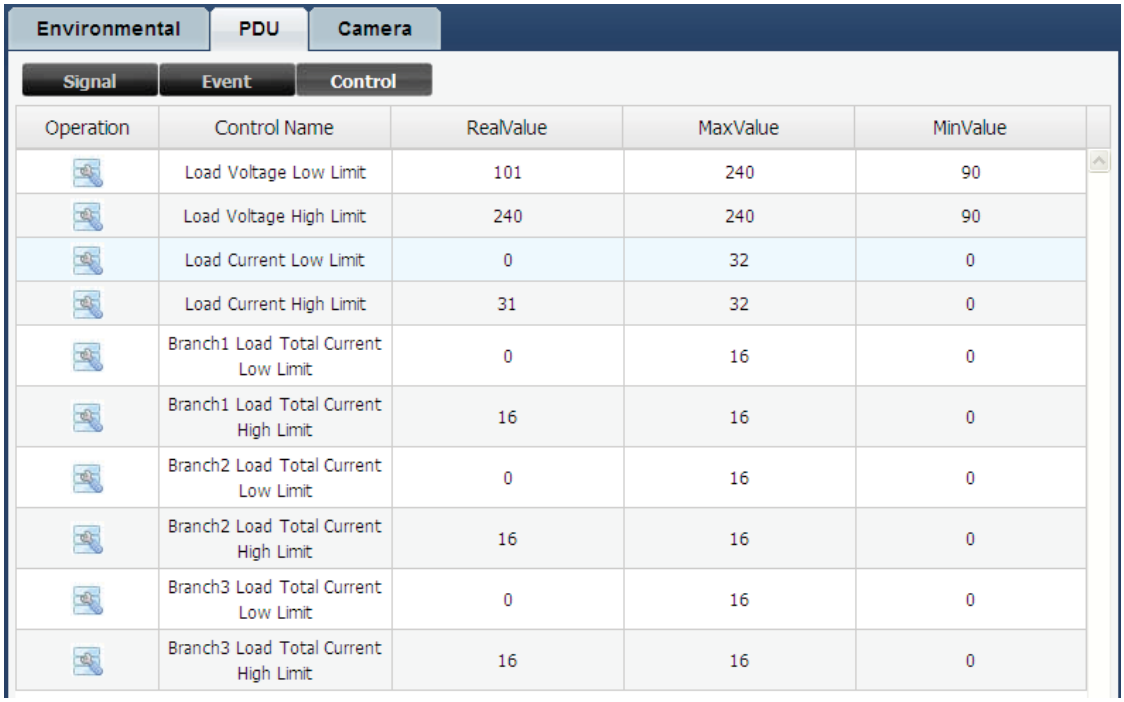
The Mps PDUs are divided into different models depending on the PDU length and whether each outlet can be controlled, and the interface of each model differs. The following takes one model as an example to introduce the interface of Mps PDU, which contains three tabs. Click **Signal** tab and **Event** tab to check the status of PDU and abnormal events; Click **Control** tab to set upper load current and lower load current of the PDU. The tabs are shown in Figure 5-17.



Signal tab



Event tab



Operation	Control Name	RealValue	MaxValue	MinValue
	Load Voltage Low Limit	101	240	90
	Load Voltage High Limit	240	240	90
	Load Current Low Limit	0	32	0
	Load Current High Limit	31	32	0
	Branch1 Load Total Current Low Limit	0	16	0
	Branch1 Load Total Current High Limit	16	16	0
	Branch2 Load Total Current Low Limit	0	16	0
	Branch2 Load Total Current High Limit	16	16	0
	Branch3 Load Total Current Low Limit	0	16	0
	Branch3 Load Total Current High Limit	16	16	0

Control tab

Figure 5-17 Tabs of Mps PDU

In the **Control** tab, click the icon in the **Operation** column to set the thresholds for metered PDU.

5.2.3 Camera

1. Click the **Camera** tab in the operation area to enter the **Camera** interface, as shown in Figure 5-18.

Figure 5-18 Camera interface

2. Extend the **USB Camera** node. Click **All Camera**, and camera1 and camera2 images will be displayed simultaneously in the interface, as shown in Figure 5-18. Click **Camera1** or **Camera2**, and the corresponding camera image will be displayed in the interface.

Different display modes have the same control buttons, as shown in Figure 5-19. Through operating them, you can turn up/down/left/right direction of the camera, regulate the brightness and contrast, set the frame frequency, record video, replay video, capture the picture and preview the image. The **Record** button will turn to **Stop** after the recording action is initiated and click the **Stop** button to stop recording, as shown in Figure 5-19.

Note

If **Rewriting** is ticked, when the SD card is full, the foremost records will be covered by the newly-taken pictures and videos.

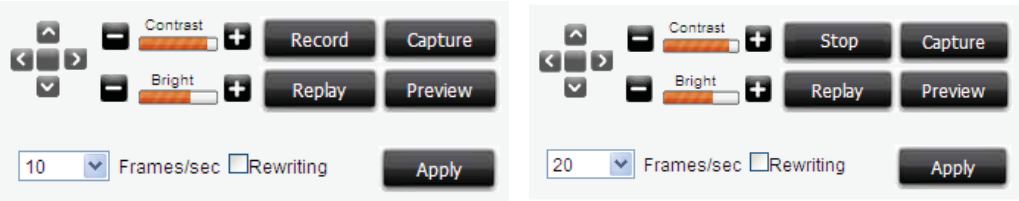


Figure 5-19 Control buttons

The capture picture list and the preview window are shown in Figure 5-20 and Figure 5-21 respectively.

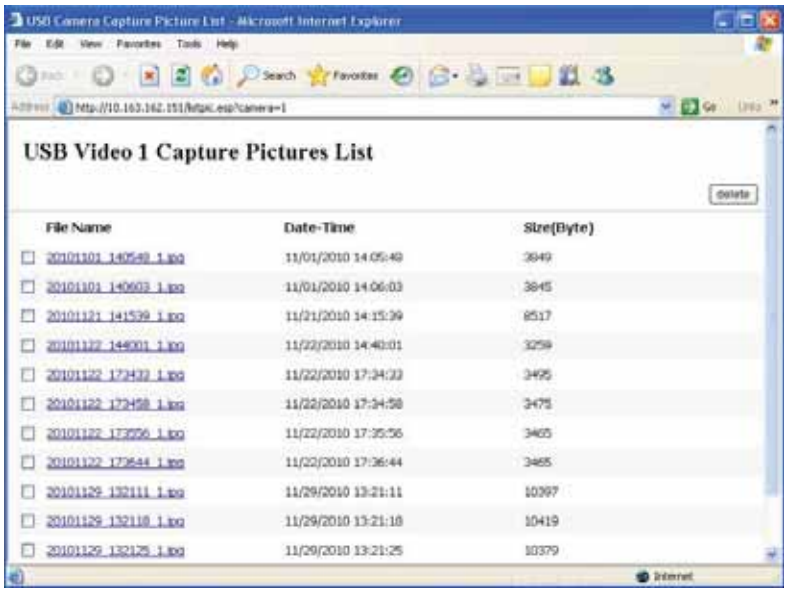


Figure 5-20 Capture picture list

Figure 5-21 Picture preview window

The record video list and the record video replay window are shown in Figure 5-22 and Figure 5-23 respectively.

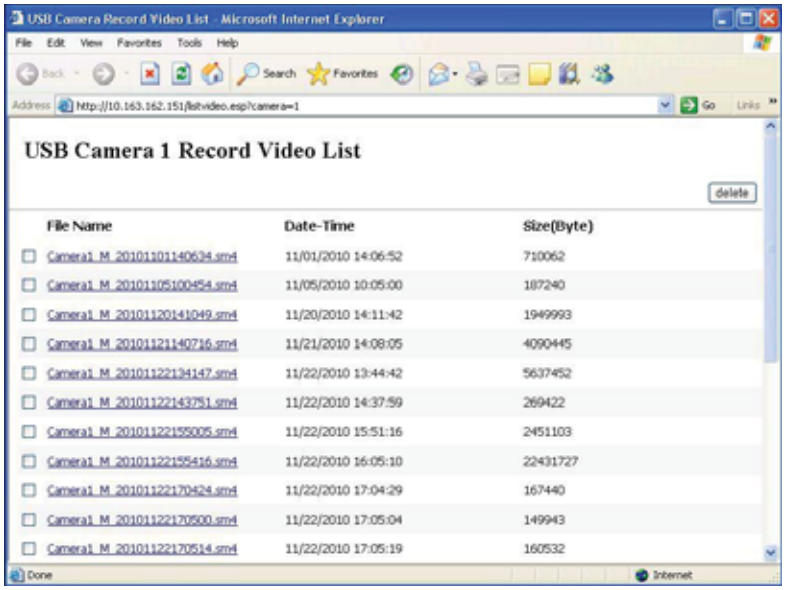


Figure 5-22 Record video list

Figure 5-23 Record video replay window

Note

1. Do not pull out the SD card during recording.
2. For alarm event, the recording time is two minutes at most; for manual recording, the recording time is 15 minutes at most.

5.3 Control Interface Operation Description

Click the **Control** tab to enter the **Control** interface, as shown in Figure 5-24.

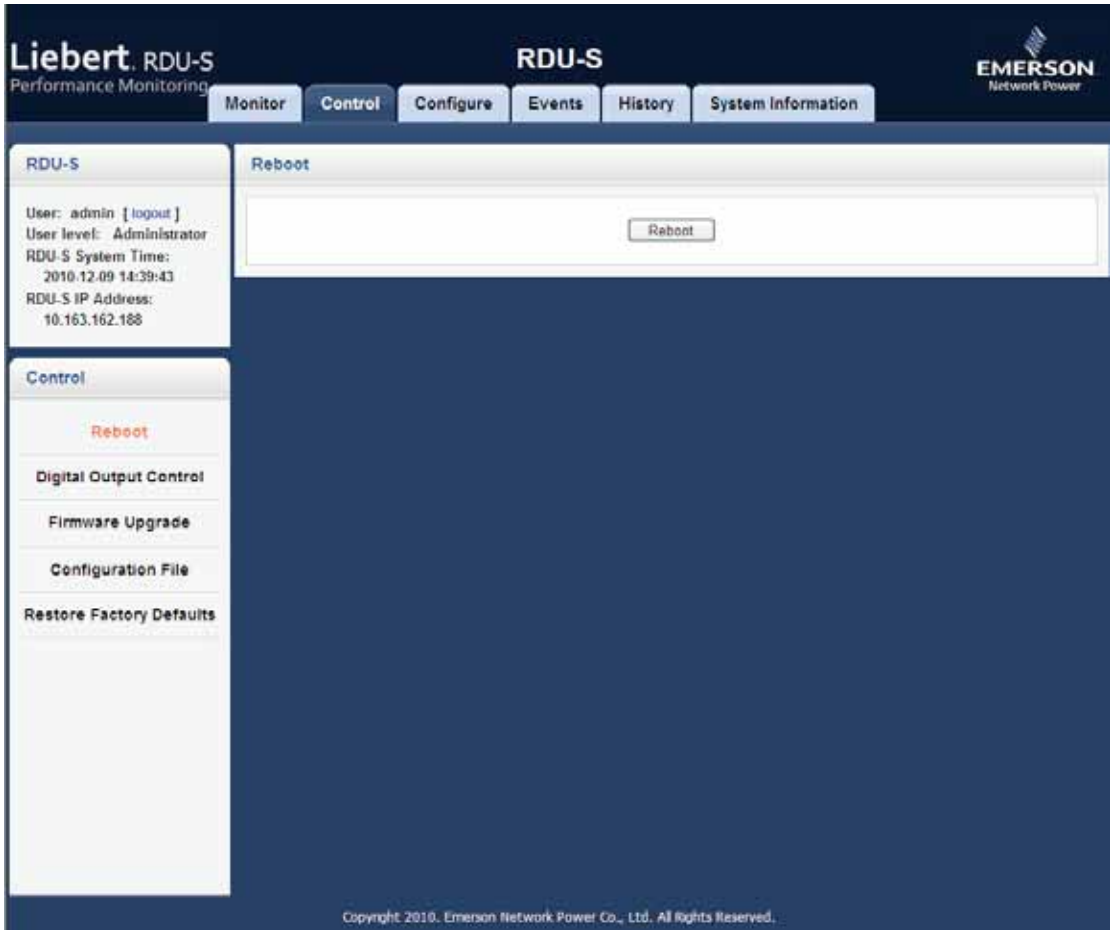


Figure 5-24 Control interface

Reboot

1. Click the **Reboot** node in the **Control** interface, and the figure shown in Figure 5-25 will appear.

Figure 5-25 Reboot window

2. Click **Reboot**, and the data unit will be restarted.

Digital output control

1. Click the **Digital Output Control** node in the **Control** interface, and the figure shown in Figure 5-26 will appear.

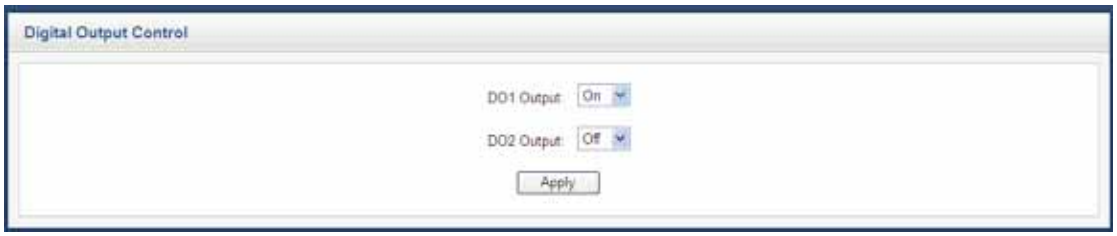


Figure 5-26 Digital output control window

Select the control mode (including 'On' and 'Off') in **DO1 Output** and **DO2 Output**, and click **Apply**.

Firmware update

1. Click the **Firmware Update** node in the **Control** interface to upgrade the firmware file of the data unit, and the window shown in Figure 5-27 will appear.

Figure 5-27 Updating window

2. Click **Browse…**, select the firmware update file (firmware.rdus) of the data unit in the pop-up **Select file** dialogue box and click **Upload** to update the firmware update file (firmware.rdus) into the data unit.

Configuration file

1. Click the **Configuration File** node in the **Control** interface to upgrade the configuration file of the data unit, and the window shown in Figure 5-28 will appear.

Figure 5-28 Configuration file window

2. Click **Browse…**, select the configuration file of the data unit in the pop-up **Select file** dialogue box and click **Upload** to update the configuration file into the data unit.

Restore factory defaults

Click the **Restore Factory Defaults** node in the **Control** interface to restore the system default setting, and the window shown in Figure 5-29 will appear.

Figure 5-29 Restore factory defaults window

Click **Restore** to restore the system default setting.

5.4 Configure Interface Operation Description

Click the **Configure** tab to enter the **Configure** interface, as shown in Figure 5-30.

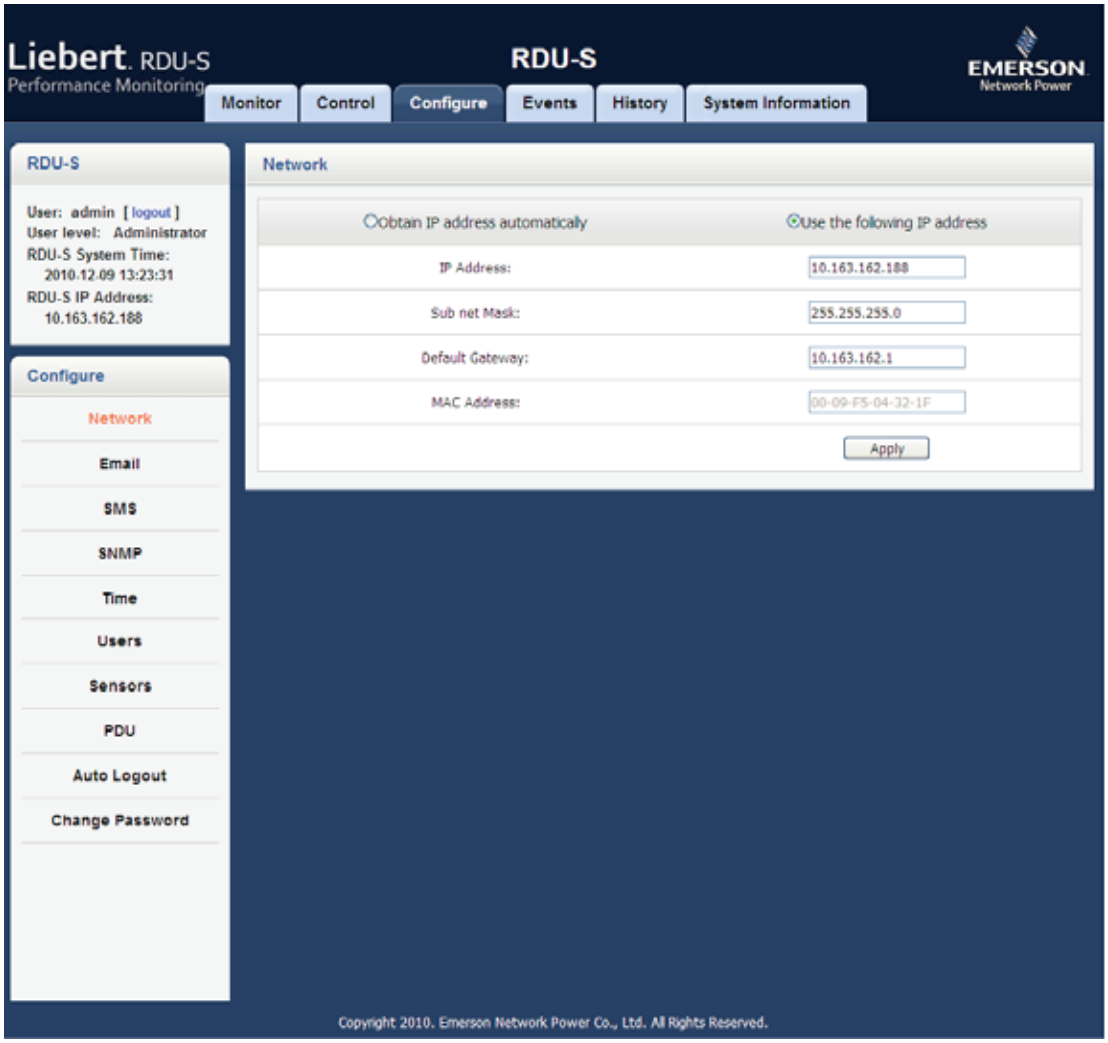


Figure 5-30 Configure interface

Network

Click the **Network** node, and the window shown in Figure 5-31 will appear.

You can set the IP address through the window. Two methods are available:

- Select **Obtain IP address automatically** (DHCP), and click **Apply** to complete the configuration.

Note

1. If DHCP is selected, there are two conditions as follows:

1) The system cannot obtain the IP address in five minutes, the IP address will be restored as 192.168.0.10.

2) The system obtains the IP address in five minutes, and then the system will be restarted automatically. Wait five minutes, and then you can view the dynamic IP address in the 'Current_DHCP_IP.txt' file in the background computer that is connected to the data unit through the USB CONFIG port.

2. Before using the DHCP service, please check that the DHCP server has been started normally, or else, the DHCP can not be used normally.

- Select **Use the following IP address**, type IP address, subnet mask and gateway in the textbox, and click **Apply** to complete the configuration.

Figure 5-31 Network window

Email

Click the **Email** node, and the window shown in Figure 5-32 will appear.

You can configure the Email sending function, including Email server IP address, port, using SSL or not, and Email addresses of sender & receiver, and separately test the Email serving function of the data unit through the window.

Email server port default: If SSL is not used, the port number is 25; If SSL is used, the port number is 465.

- If you have not modified the port number, when you check or uncheck SSL, the port number will be switched between 465 and 25.
- If you have set other port number manually, when you check or uncheck SSL, the port number will always be the user-defined value, not being changed.

1. SMTP server

Click the **SMTP Server** tab, and the window shown in Figure 5-32 will appear.

As shown in Figure 5-32, type the corresponding configuration values of the parameter items and click **Apply** to complete the configuration.

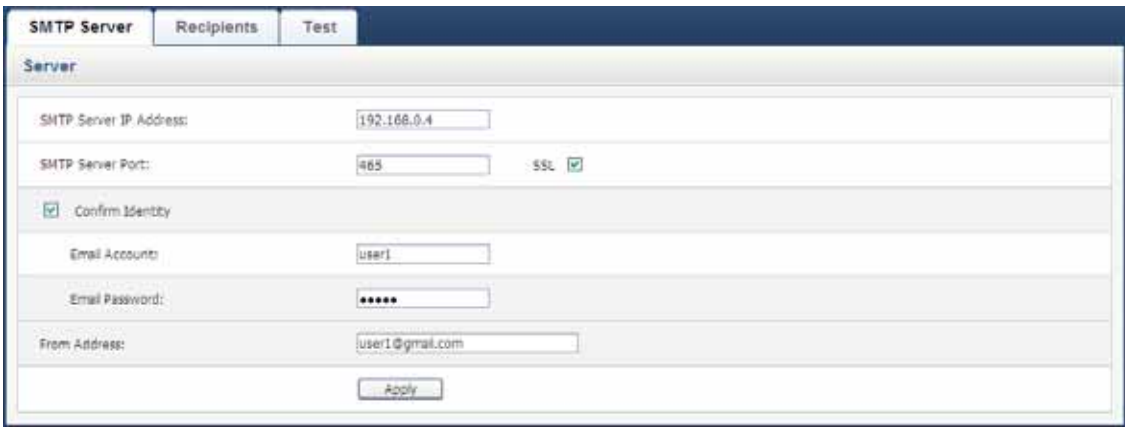


Figure 5-32 SMTP server window

2. Recipients

1) Click the **Recipients** tab, and the window shown in Figure 5-33 will appear.

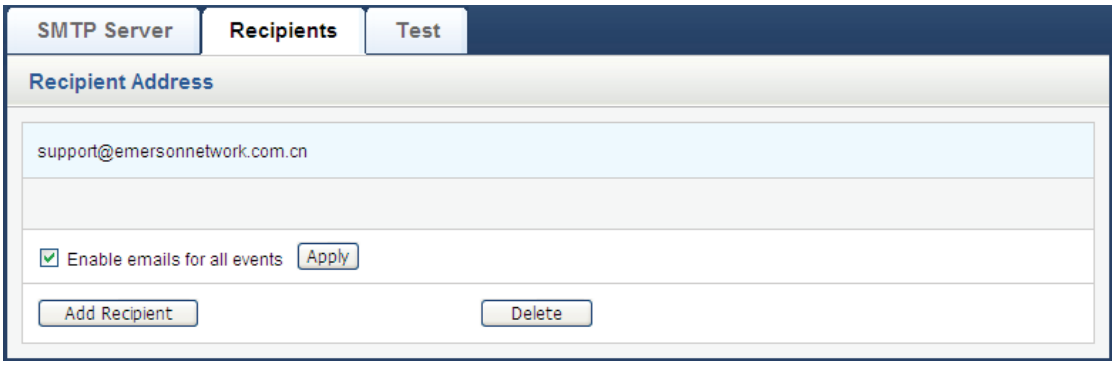


Figure 5-33 Recipients window

2) Click **Add Recipient**, and the figure shown in Figure 5-34 will appear.

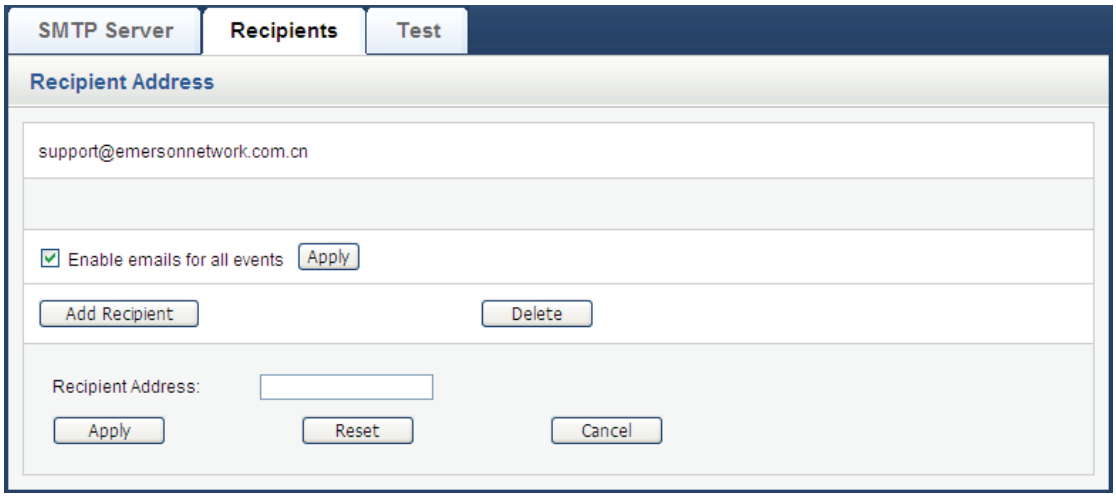


Figure 5-34 Adding recipient window

3) Type the Email address in **Recipient Address** and click **Apply**. Adding recipients is completed.

Clicking **Reset** can re-type the E-mail address, and clicking **Cancel** can cancel the adding operation.

4) Select one Email address and click **Delete**, and the Email address will be deleted.

Note

1. At most eight Email addresses can be added.

2. If '**Enable emails for all events**' is ticked, the system will send you an Email under any event (generated by all sensors) except the event generated by the third party intelligent devices, for example, PDU.

3. Test

Click the **Test** tab, and the window shown in Figure 5-35 will appear.

Figure 5-35 Test window

Click **Test**, the data unit will send a test Email to the recipient address.

SMS

Click the **SMS** node, and the window shown in Figure 5-36 will appear.

You can set the SMS function of the data unit through the interface, including receiving the SMS reminding function through SMTP mode (note that the mobile phone is required to apply mobile mailbox function), receiving SMS sending function through Wireless Modem and adding & deleting phone numbers.

1. Wireless Modem

Click the **Wireless Modem** tab, and the window shown Figure 5-36 will appear.

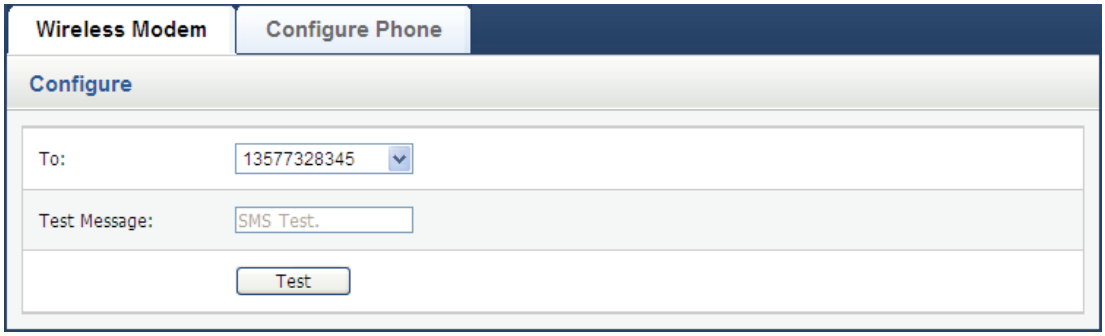


Figure 5-36 GPRS Modem window

3. Phone numbers

1) Click the **Configure Phone** tab, and the window shown in Figure 5-37 will appear.

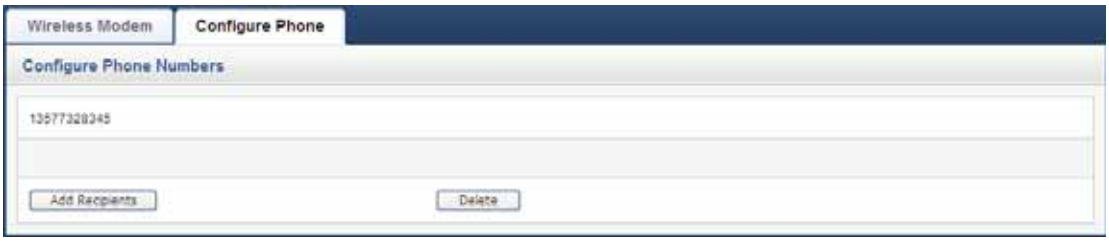


Figure 5-37 Phone numbers window

2) Click **Add Recipients**, and the window shown in Figure 5-38 will appear.

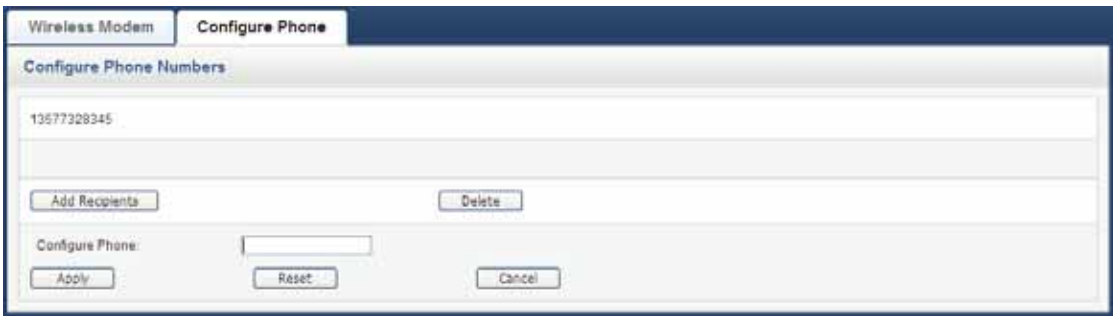


Figure 5-38 Adding phone number window

3) Type a new phone number in the textbox after **Configure Phone** and click **Apply**.

4) Select a phone number and click **Delete**, and the number will be deleted.

Note

At most eight phone numbers can be added.

SNMP

Click the **SNMP** node, and the window shown in Figure 5-39 will appear.

Figure 5-39 SNMP window

1. Adding NMS

1) Click **Add**, the window shown in Figure 5-40 will appear.

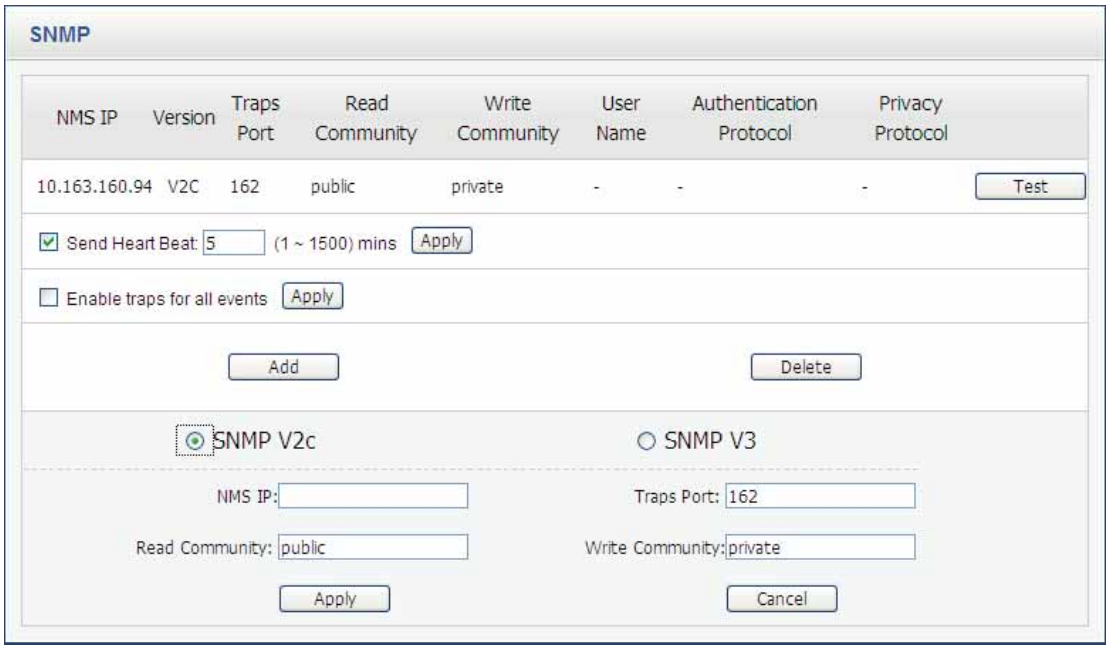


Figure 5-40 Adding new NMS

2) Select **Enable traps for all events** and click **Apply** to send traps for all events.

3) Select **SNMP V2c**, type a new NMS IP address in **NMS IP** and keep other parameters in default.

4) Click **Apply**, the setting is successful; Click **Cancel**, the setting is cancelled.

5) Select **SNMP V3**, the window shown in Figure 5-41 will appear.

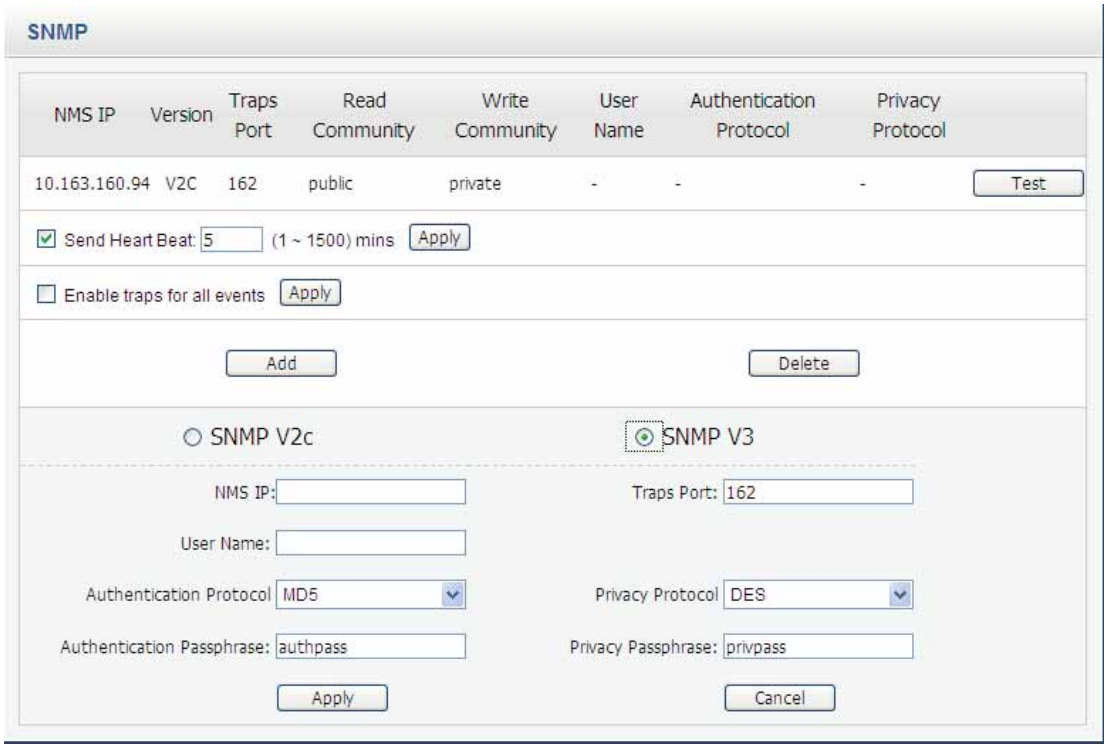


Figure 5-41 Select SNMP V3

6) Click **Apply**, the setting is successful; Click **Cancel**, the setting is cancelled.

2. Deleting NMS

Select one NMS and click **Delete**, and the NMS will be deleted.

Note

1. At most 20 NMSs can be added.

2. If '**Enable emails for all events**' is ticked, the system will send you an Email under any event (generated by all sensors) except the event generated by the third party intelligent devices, for example, PDU.

Time

Click the **Time** node, and the window shown in Figure 5-42 will appear.

You can calibrate the system time of the data unit through the window, including automatically getting local time and getting time through NTP server. You can also set the calibration interval through the NTP server, and select the **Time Zone**. In addition, you can disable and enable **Daylight Saving Time** (DST) by the following method:

- Select **Disable** to disable **Daylight Saving Time**.
- Select **Automatically adjust clock for daylight saving time** only when '-5:00 ~ -8:00' is selected for **Time Zone**.
- Select **Manual Set**, you can set **DST Start Time**, **DST End Time DST** and **Adjust Hours**.

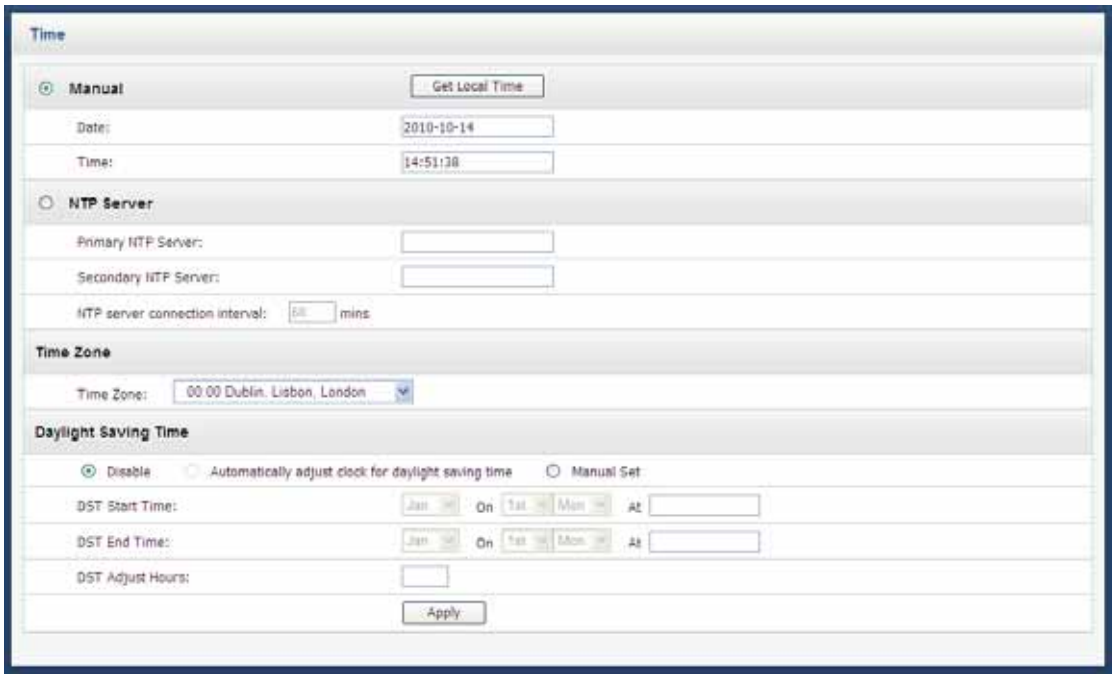


Figure 5-42 Time window

Users

Click the **Users** node, and the window shown in Figure 5-43 will appear.

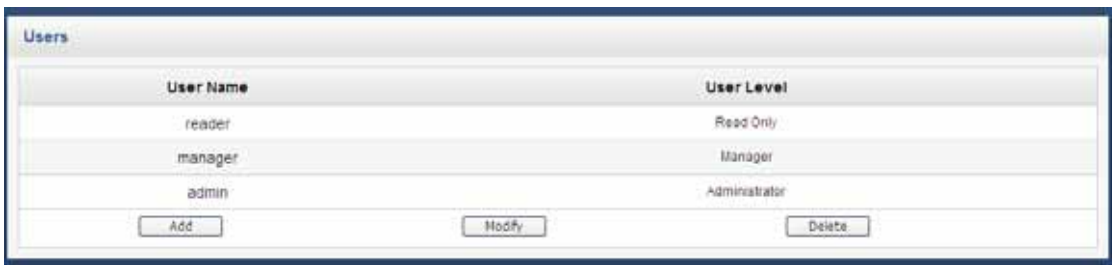


Figure 5-43 User window

1. Adding new user.

1) Click **Add**, and the window shown in Figure 5-44 will appear.

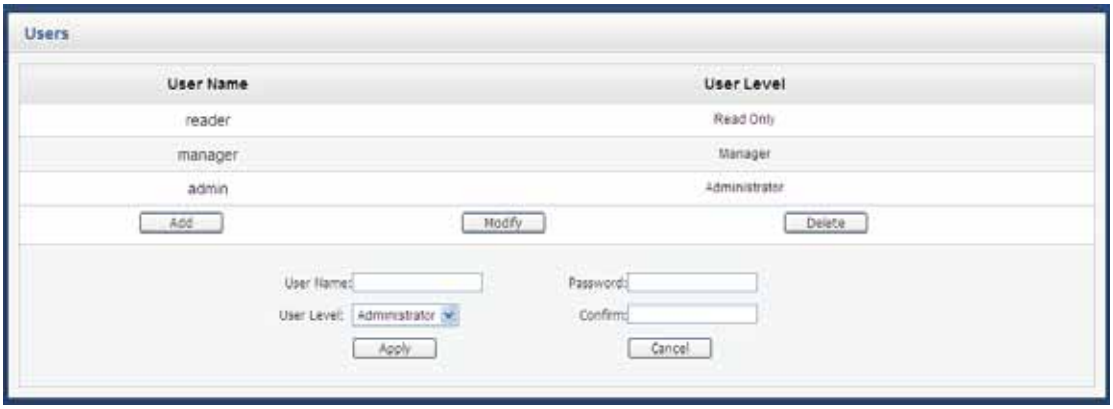


Figure 5-44 Adding new user window

2) Type a new user name in **User name**, select the authority for the new user in **Authority** and type the password respectively in **Password** and **Confirm**.

3) Click **Apply**.

Note

At most three users of administrator level, five users of Manager level and five users of Reader level can be added.

2. Deleting user.

Select the user to be deleted and click **Delete**.

Sensors

1. Click the **Sensors** node, and the window shown in Figure 5-45 will appear.

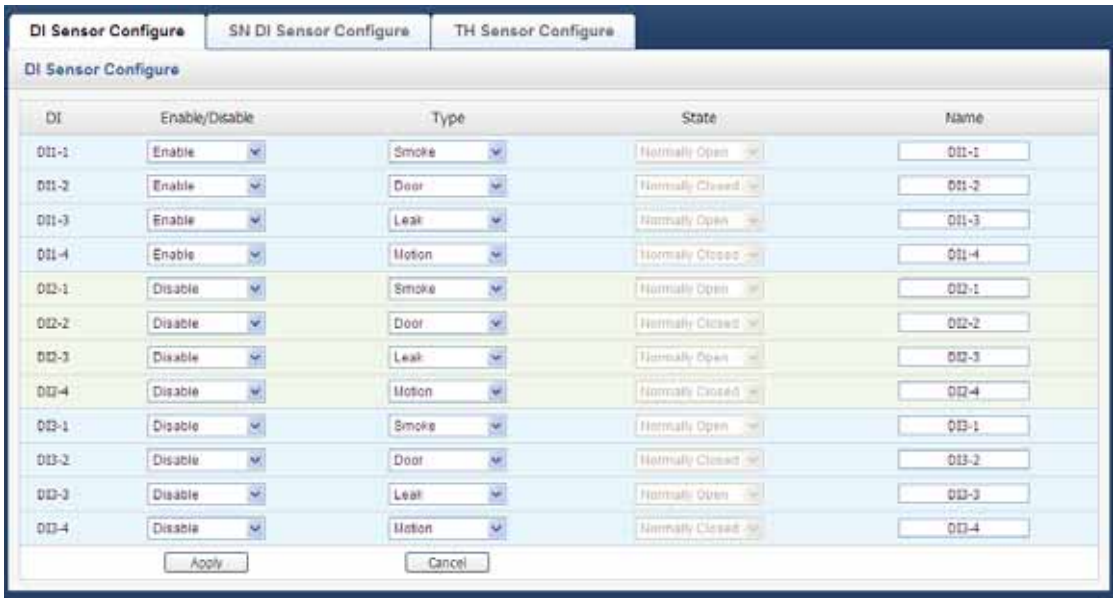


Figure 5-45 DI sensor configure window

Note

For third-party equipment, 'Custom' must be selected in the **Type** column in the DI sensor configure window.

2. Select the **DI Sensor Configure** tab, and the window shown in Figure 5-45 will appear.

You can enable or disable the DI channels, and set the DI type and name of the DI channels. Click **Apply** to complete the configuration.

3. Click the **SN DI Sensor Configure** tab, and the window shown in Figure 5-46 will appear.

You can enable or disable the SN DI channels, and set the SN DI type and name of the SN DI channels. Click **Apply** to complete the configuration. Click the **Comms Loss Reset** button to clear the **Loss of Comms** events in the event list.

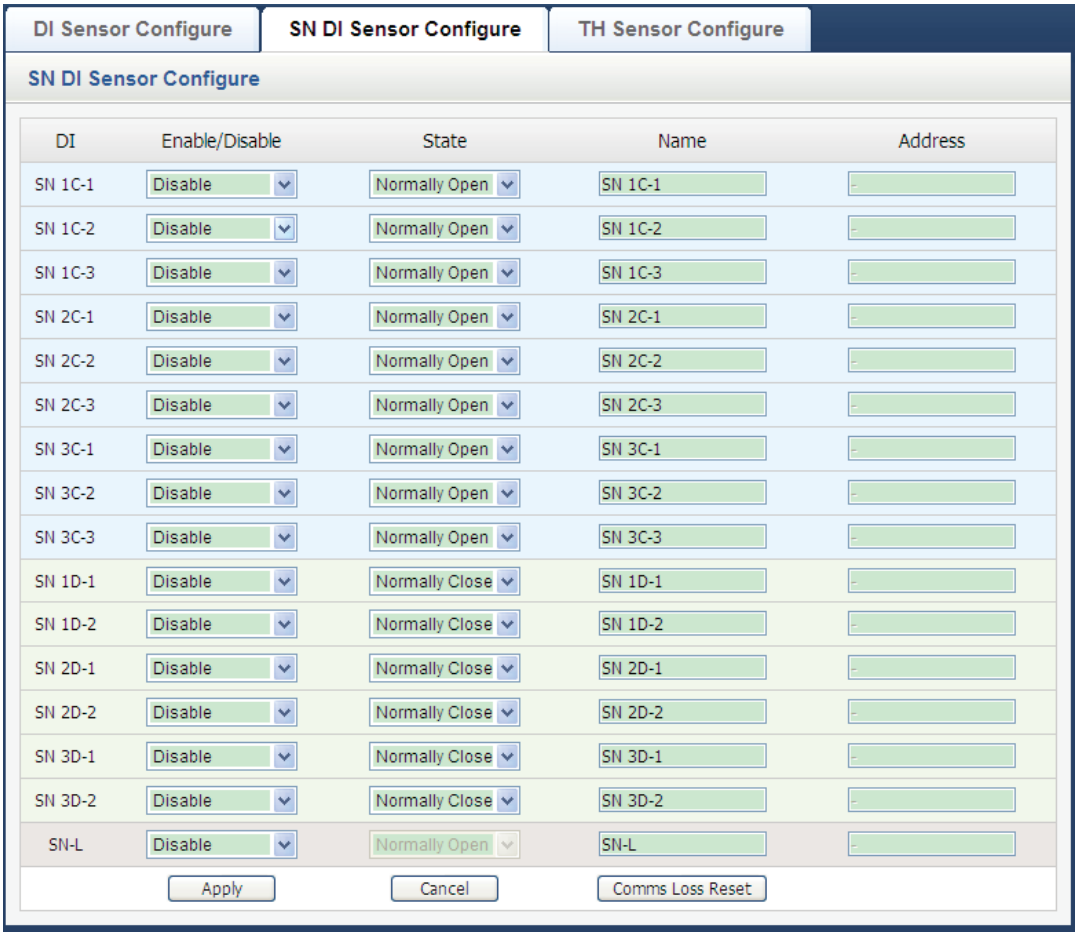


Figure 5-46 SN DI sensor configure window

Note

1. At most three SN-3C dry contact sensors, three SN-2D door dry contact sensors and one SN-L leak detection sensor can be configured.

2. The serial numbers of the sensors will be displayed in the **Address** column automatically.

4. Select the **TH Sensor Configure** tab, and the window shown in Figure 5-47 will appear.

You can set the positions of the temperature and humidity sensors. Click **Apply** to complete the configuration.

Figure 5-47 TH sensor configure window

Note

1. At most ten SN-TH temperature & humidity sensors can be configured.

2. The serial numbers of the sensors will be displayed in the **Address** column automatically.

3. At most eight IRM series temperature sensors and eight IRM series temperature & humidity sensors can be connected with the system. After NForm is connected, when IRM series sensors are used, the system supports at most ten temperature monitoring points and eight humidity monitoring points. The address range of the ten temperature monitoring points is 10, 11, 12, 13, 20, 21, 22, 23, 30 and 31. The temperature monitoring points beyond this address range will not be displayed in the NForm.

PDU

Click the **PDU** node, and the window shown in Figure 5-48 will appear.

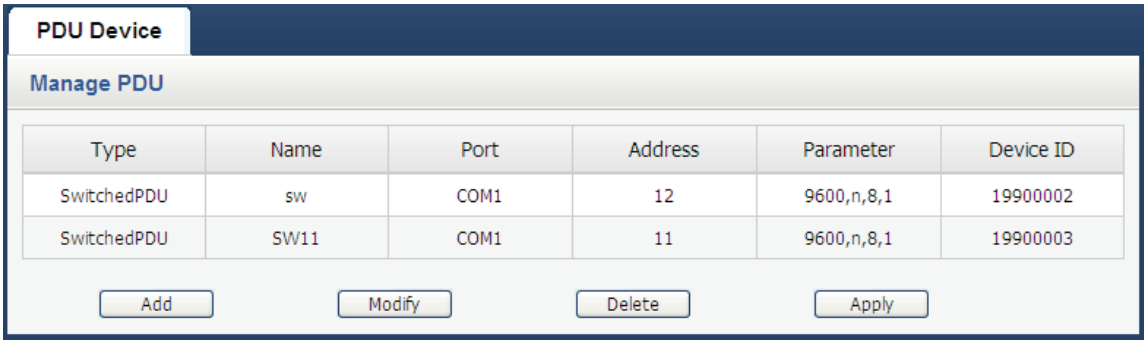


Figure 5-48 PDU management window

Click **Add** to configure PDU and the windows shown in Figure 5-49 will appear. Click **Modify** to revise the PDU setting by selecting the PDU you want to revise. Click **Delete** to delete the configured PDU.

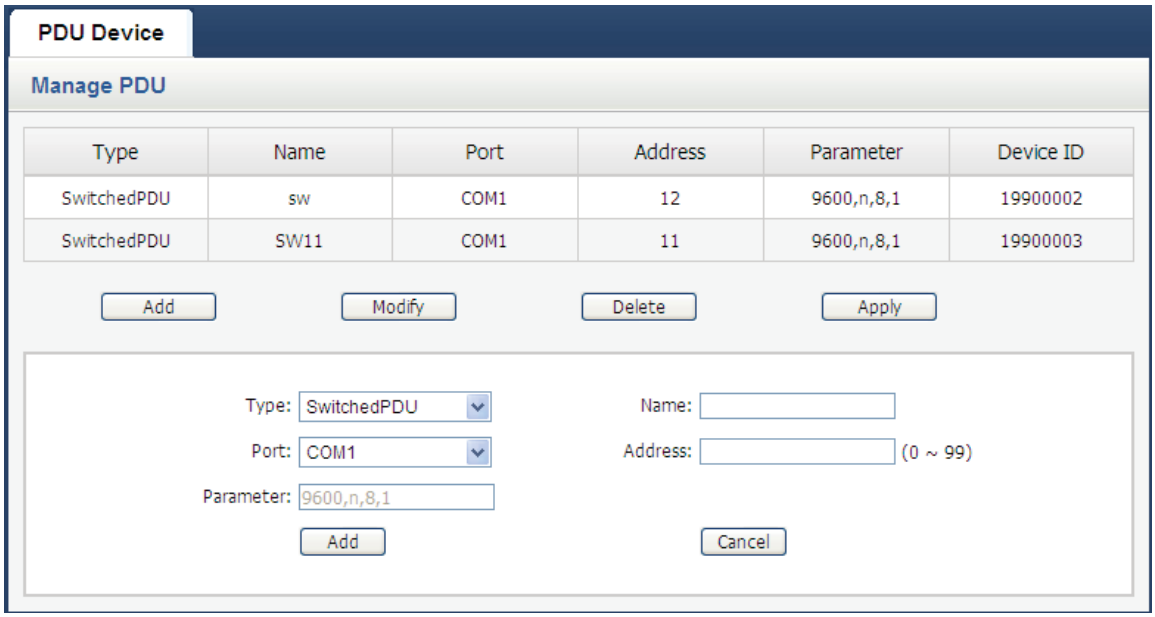


Figure 5-49 Adding PDU

Note

1. The address to be input should be the same as that of serial PDU you want to monitor. The address and current will be displayed alternately on the LED display screen of the PDU for your reference.

2. After finishing all actions such as adding, modifying and deleting, click **Apply** to enable all the settings and the system will be rebooted.

Auto logout

Click the **Auto Logout** node, and the window shown in Figure 5-50 will appear.

Type the time, such as '15' (the setting range is 0min ~ 15min), in **Auto logout (mins)** and click **Apply**. You may set the value as '0', and the system will never logout automatically.

If you do not have any operation on the WEB interface within 15 min, it will automatically exit and return to the login interface (see Figure 5-1).

Figure 5-50 Auto logout window

Change password

Click the **Change Password** node, and the window shown in Figure 5-51 will appear.

Type the old password in **Current Password**, and the new password respectively in **New Password** and **Confirm**, and click **Apply**.

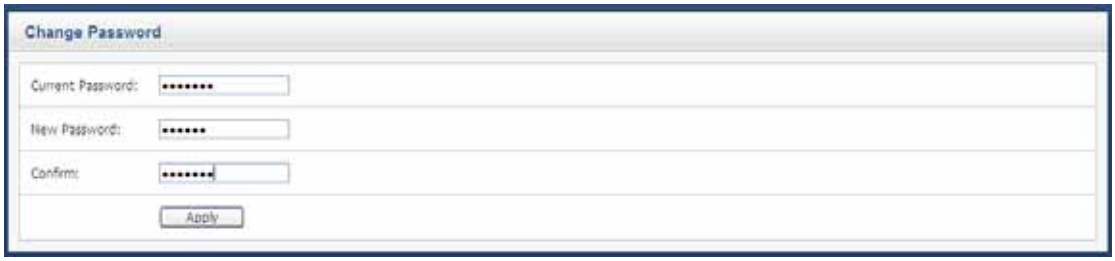


Figure 5-51 Changing password window

5.5 Events Interface Operation Description

Click the **Events** tab to enter the **Events** interface, as shown in Figure 5-52.

Figure 5-52 Events interface

Digital input actions

Click the **Digital Input Actions** node, and the figure shown in Figure 5-53 will appear.

You can configure the output mode of alarm events for the digital sensors through the interface. When an alarm is generated, you can select the alarm output mode according to the severity of the alarm event, including EventLog, Email, SMS, Camera USB, Relay out and SNMP TRAPS.

Figure 5-53 Configuration interface of alarm notification

Note

1. At most 64 alarm events can be configured.
2. The logical operation (‘and’, ‘or’) will be processed from left to right.
3. Several Email addresses can be selected by clicking them one by one.

Temp & Hum

Click the **Temp & Hum** node, and the window shown in Figure 5-54 will appear.

You can configure the output mode of alarm events for the temperature and humidity sensor through the interface. When an alarm is generated, the system can selectively output it according to the alarm class. The output mode includes Email (Email notification), Camera USB (video through USB Camera) and DO (audible and visual alarm through the relay).

Figure 5-54 Temp & Hum action window

Note

Among the selections in SN Temp2, the sensor whose name is ‘SN Temp XX’ or ‘SN Hum XX’ belongs to 1-wire mode; the sensor whose name is ‘SerialTXX’ or ‘SerialHXX’ belongs to RS485 mode.

Event history

Click the **Events History** node, and the figure shown in Figure 5-55 will appear.

You can view the alarm records, including critical alarm, warning and notification in the interface. You can click **Time** to list the events in time sequence.

Figure 5-55 Event history window

Click the **Export CSV File** button to export the history events in CSV format and the figure shown in Figure 5-56 will appear.

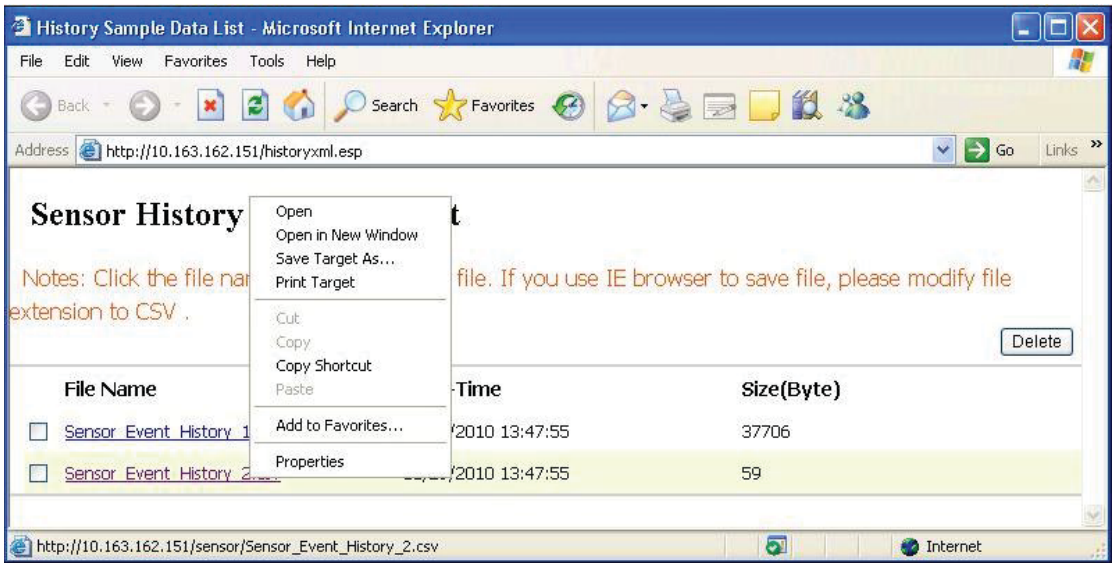


Figure 5-56 File list window

Right-click the file to be exported, and select the command. For example, select ‘Save Target AS…’ to save the file.

Clear event history

1. Click the **Clear Event History** node, and the window shown in Figure 5-57 will appear.

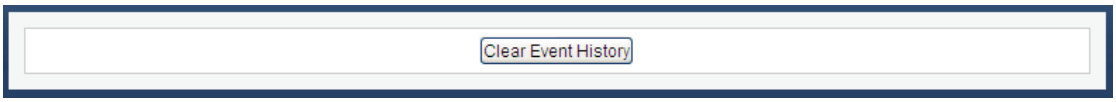


Figure 5-57 ‘Clear Event History’ window

2. Click **Clear Event History**, and the historical events will be cleared.

5.6 History Interface Operation Description

Click the **History** tab to enter the **History** interface, as shown in Figure 5-58.

Chart

Click the **Chart** node to enter the historical data interface in chart mode, as shown in Figure 5-58. The chart of two sensors will be displayed by default.

After the sensor types on upper side of the interface are selected, the corresponding chart will appear. Figure 5-58 shows the historical data charts after all sensor types are selected.

Clicking NEXT and PRE buttons can scroll down and up the historical data charts.

Figure 5-58 Historical data interface in chart mode

Table

1. Getting historical data

Click the **Table** node to enter the historical data interface in table mode, as shown in Figure 5-59. You may click **Time**, **Name**, **Value** and **Unit** to list the data in the corresponding sequence respectively.

Figure 5-59 Historical data interface in table mode

2. Export CSV file

Click **Export CSV File** to export the historical data. The exported historical data will be saved in local computer.

Interval

1. Click the **Interval** node, and the window shown in Figure 5-60 will appear.

Figure 5-60 Interval window

2. Type the interval and click **Apply**, and the interval of the acquisition data is changed.

Clear history data

1. Click the **Clear History Data** node, and the window shown in Figure 5-61 will appear.

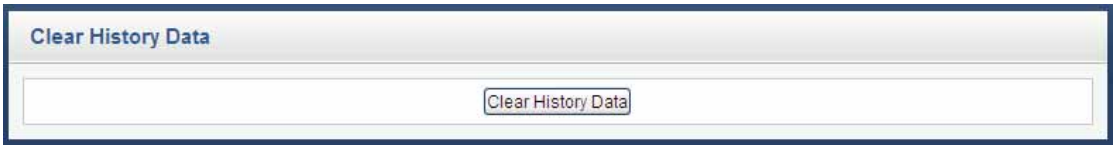


Figure 5-61 'Clear History Data' window

2. Click **Clear History Data**, and the historical data will be cleared.

5.7 System Information Interface Operation Description

Click the **System Information** tab to enter the **System Information** interface, as shown in Figure 5-62.

You can view the version information of the system and hardware through the interface. You can also define the **Site Name** according to your preference by inputting the name and clicking **Apply**.

Figure 5-62 System information interface

5.8 Logout

Click the **logout** button on the upper left corner of the interface or the exit button on the upper right corner of the interface to exit the software.

Chapter 6 Troubleshooting

The chapter introduces the troubleshooting of the data unit.

See Table 6-1 for the troubleshooting.

Table 6-1 Troubleshooting

Fault phenomenon	Treatment
After the data unit is powered on, the power indicator is off and the running indicator (see Figure 1-2) is not blinking	Check that the host board is powered on
After the network cable is connected, the indicator on the Ethernet port is off	1. Check that the network cable is normal. 2. Check that the device in upper network is working normally
No response occurs after the Micro SD card is inserted	1. Check that no obstructs exit in the Micro SD card slot. 2. Check that the Micro SD card is inserted in place. It is recommended to insert it again. 3. Restart the data unit. After unplugging and plugging the Micro SD card, the data unit must be restarted to read the data
No response occurs after the corresponding sensor is connected	1. Check that the sensor is working normally. 2. Check that the configuration file is configured correctly. 3. Check that the channel used by the sensor does not have conflict
SMS message error without response	1. Check the model number of GPRS Modem, and make sure that the modem being used is supported by the system. 2. See supported modem list in RDU brochure
No communicating for PDU	1. Check the model number of PDU. Make sure that it is Serial Switched PDU, Serial Metered PDU or Serial Mps PDU. 2. Check address of the PDU

Appendix 1 Command Lines

This appendix introduces the command lines of the data unit.

1. Overview

The data unit provides command lines, which include a series of configuration commands. You can run commands to configure and manage the device. The command lines provide the function of helping, loading, uploading files, testing, changing password and command setting.

The command lines provide the following features:

- Support simple command line editing function.
- Type '?' or 'help' to get online help information at any moment after logging.
- Provide the relative commissioning information help to diagnose network malfunction.
- Support key word input mode. You only need to input part of the key word related to a command and the shell can recognize the command, for example, to run the command 'lookstatus', just type 'look'.

2. Main Command Lines

(1) ? or help

Type '?' or 'help' under the command prompt **RDU_admin#** and press the Enter key to get the help information, as shown in the following figure.

```
help            Show this information
download        Download files to RDU work dir, Delete files in RDU work dir
logout          Logout from RDU
password        Change password
reboot          Reboot RDU system
ipview          Show ip parameter
setip           Set IP address, netmask and default gateway
test            View startup self-test log,  network and serial ports
show            Show product information
lookstatus      Show system status,show net status
stoprdu         Stop rdu application
startmod        Start dhcp
stopmod         Stop dhcp
setrelay        Set relay1 and relay2
setrtc          Set real time clock
version         View the version information of RDU
```

(2) Download

The download command is used to download the software or delete the files and subdirectory under the data unit directory.

Type 'download' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#download

+=====================================================+
|                                                     |
|           RDU download function                     |
|                                                     |
| Please make sure the file size is under 2M Bytes!   |
+=====================================================+
Before operating, you should stop application program first!
0) Print this menu
1) Download firmware.rdus files and decompress to RDU directory
2) Delete all the files in RDU directory
3) Exit


DOWNLOAD> Command (0 for help):
```

You can type '0' ~ '4' to realize the different operation functions:

- Type '0' and press the Enter key: show the download command interface.
- Type '1' and press the Enter key: download software package (firmware.rdus) (with recommended size of no more than 2M) and decompress to RDU directory.
- Type '2' and press the Enter key: delete all contents in the directory of data unit.
- Type '3' (or 'q') and press the Enter key: exit the download command and return to the main interface of command line. If you do not have any operation for the command within five minutes, the software will automatically exit and return to the main interface of command line.

Note

1. If you log onto the data unit through a remote terminal or HyperTerminal, and 1 or 2 is selected, the system will display: rz ready. Type 'sz file' to your modem program. Then you can choose a file to download by selecting **Send** -> **Send File** and send the file using the zmodem protocol.

2. If you log onto the data unit through RS232 serial port, you can download files through data unit configuration port; if you logs into the data unit through a remote terminal, you can download files through Ethernet port. It is recommended to use a network that offers a high speed.

3. After a file is downloaded, upload the file to check if the download is successful.

4. For upgrading the firmware successfully, command 2 (Delete all the files in RDU directory) should be processed before command 1 (Download firmware.rdus files and decompress to RDU directory).

(3) Logout

The logout command is used to exit the data unit.

Type 'logout' under the command prompt **RDU_admin#** and press the Enter key to exit the system.

(4) Password

The password command is used to change the logging password.

Type 'password' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure. You can type the new password under the command prompt **Enter new password:**

```
RDU_admin#password
Changing password for rduadmin
Enter the new password (Recommendation: 5-8 characters)
Please use a combination of upper and lower case letters and numbers.
Enter new password:
```

(5) Reboot

The reboot command is used to restart the data unit.

Type 'reboot' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure. Type 'y' or 'Y' and press the Enter key, and the data unit will be restarted.

```
RDU_admin#reboot
Are you sure to reboot the system? Y/N [N]
```

(6) Ipview

The ipview command is used to display the IP parameters.

Type 'ipview' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#ipview

current IP address        :142.100.6.157
current IP mask           :255.255.254.0
current IP default gateway:142.100.6.1

RDU_admin#
```

(7) Setip

The setip command is used to set the network parameters, such as IP address, mask and default gateway.

Type 'setip' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#setip
Please input IP_address[10.163.162.151]:
```

Type the IP address, mask and default gateway of the device following the instructions and press the Enter key, the new network parameters can take effect immediately.

(8) Test

The test command is used to test the network, serial port and display self-test information.

Type ‘test’ under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#test

+=====================================================+
|                                                     |
|           RDU test function                         |
|                                                     |
+=====================================================+
0) Print this menu
1) View start-up self-test information
2) Ping-to-network test
3) Start serial port test
4) Stop serial port test
5) Exit


RDU_test> Command (0 for help):
```

You can type ‘0’ ~ ‘5’ to realize the different operation functions:

- Type ‘0’ and press the Enter key: show the test command interface.
- Type ‘1’ and press the Enter key: view start-up self-test information.
- Type ‘2’ and press the Enter key: ping to network test.
- Type ‘3’ and press the Enter key: start serial port test.
- Type ‘4’ and press the Enter key: stop serial port test.
- Type ‘5’ (or ‘q’) and press the Enter key: exit the test command and return to the main interface of command line. If you do not have any operation for the command within five minutes, the software will automatically exit and return to the main interface of command line.

(9) Show

The show command is used to display the product information.

Type ‘show’ under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#show
      Emerson Network Power Co.,Ltd
      RDU Product--Rack Data Unit
```

(10) Lookstatus

The lookstatus command is used to display the system status and network status.

Type ‘lookstatus’ under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#lookstatus

+=====================================================+
|                                                     |
|          RDU lookstatus function                    |
|                                                     |
+=====================================================+
0) Print this menu
1) Show system status
2) Show net status
3) Exit


RDU_lookstatus> Command (0 for help):
```

You can type ‘0’ ~ ‘3’ to realize the different operation functions:

- Type ‘0’ and press the Enter key: show the lookstatus command interface.
- Type ‘1’ and press the Enter key: show the system status, as shown in the following figure.

```
RDU_lookstatus> Command (0 for help): 1

final cpu result: occupancy=100%
final flash result: occupancy=85%
final memory result: occupancy=128%
```

- Type ‘2’ and press the Enter key: show the network status, as shown in the following figure.

```
RDU_lookstatus> Command (0 for help): 2

**********************************************************************************************************************
*************************************          Netflow         ***************************************************
Rx: 43799563 bytes    485281 packets     0 errs     0 drop     0 fifo     0 frame     0 compressed  2592 multicast
Tx:  4697512 bytes     42480 packets     0 errs     0 drop     0 fifo     0 frame     0 compressed     0 multicast
The netflow is 0.305664 KByte/s
**********************************************************************************************************************

RDU_lookstatus> Command (0 for help):
```

- Type ‘3’ (or ‘q’) and press the Enter key: exit the lookstatus command interface and return to the main interface of command line.

(11) Startmod

The startmod command is used to start the DHCP service command.

Type ‘startmod’ under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#startmod

+=====================================================+
|                                                     |
|          RDU startmod function                      |
|                                                     |
+=====================================================+
0) Print this menu
1) start DHCP client service
2) Exit


RDU_startmod> Command (0 for help):
```

You can type ‘0’ ~ ‘2’ to realize the different operation functions:

- Type ‘0’ and press the Enter key: show the startmod command interface.
- Type ‘1’ and press the Enter key: start the DHCP client service.
- Type ‘2’ (or ‘q’) and press the Enter key: exit the startmod command interface and return to the main interface of command line. If you do not have any operation for the command within five minutes, the software will automatically exit and return to the main interface of command line.

Note

1. Upon the first startup of the system, a static IP address is assigned to the system, with DHCP disabled. Once the DHCP is started, a dynamic IP address is obtained each time the system starts. You can disable DHCP with the command stopmod.

2. If DHCP is enabled, there are two conditions as follows:

1) The system cannot obtain the IP address in five minutes, the IP address will be restored as 192.168.0.10.

2) The system obtains the IP address in five minutes, and then the system will be restarted automatically. Wait five minutes, and then you can view the dynamic IP address in the ‘Current_DHCP_IP.txt’ file in the background computer that is connected to the data unit through the USB CONFIG port.

3. Directly pressing the Enter key will leave the previous value unchanged.

(12) Stopmod

The stopmod command is used to stop the DHCP client service.

Type ‘stopmod’ under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#stopmod

+=====================================================+
|                                                     |
|          RDU stopmod function                       |
|                                                     |
+=====================================================+
0) Print this menu
1) stop DHCP client service
2) Exit


RDU_stopmod> Command (0 for help):
```

You can type '0' ~ '2' to realize the different operation functions:

- Type '0' and press the Enter key: show the stopmod command interface.
- Type '1' and press the Enter key: stop the DHCP client service.
- Type '2' (or 'q') and press the Enter key: exit the stopmod command and return to the main interface of command line.

(13) Setrtc

The setrtc command is used to set the real time clock.

Type 'setrtc' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#setrtc
*************************************************
*               Set RDU time                    *
* Pleae input year-month-day:hour-minute-second *
*   format :  YYYY-MM-DD:hh-mm-ss               *
*   example:  2008-05-06:08-06-18               *
*                                               *
*************************************************
Please input new time(YYYY-MM-DD:hh-mm-ss):2010-10-19:12-21-30
Current time is 2010-10-19:12-21-30
Tue Oct 19 12:21:30 UTC 2010
RDU_admin#
```

(14) Version

The version command is used to show the device version information, including hardware version information and software version information.

Type 'version' under the command prompt **RDU_admin#** and press the Enter key, as shown in the following figure.

```
RDU_admin#version
  Emerson Network Power Co.,Ltd
  RDU Product--Rack Data Unit
  U-Boot version 1.1.6
  Linux version 2.6.24 (g92278@localhost.localdomain)
  Gcc version 4.0.0 (DENX ELDK 4.1 4.0.0)
  Filesystem version 1.04
RDU_admin#
```