

# **SM6.6-4D-232/422/485-0.5U Serial Port Module**

## **Web Operation Manual**

***KYLAND***

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# Contents

Preface .....	1
1 Product Introduction .....	4
1.1 Overview .....	4
1.2 Software Features.....	4
2 Device Access .....	5
3 Start Page.....	7
3.1 Product Overview.....	7
3.2 System Summary.....	7
4 Serial Data Port Setup .....	8
4.1 Overview .....	8
4.2 Web Configuration .....	8
5 Ethernet Network Setup .....	17
5.1 Ethernet Port Setup .....	17
5.1.1 IP Address Query .....	17
5.1.2 Web Configuration.....	18
5.2 Network Protocols.....	19
5.2.1 SSH Daemon .....	19
5.2.2 SNTP.....	22
5.3 Save Setting/Cancel Changes.....	23
6 Administration.....	24
6.1 Device Management .....	24
6.2 Factory Defaults .....	26
6.3 Device Control.....	26
6.4 Save Setting/Cancel Changes.....	27
7 Upgrade.....	28
8 Status.....	32
8.1 Transmission Statistics.....	32

8.1.1 Overview .....	32
8.1.2 Web Configuration.....	32
8.2 Auto Refresh .....	33
8.3 Statistic Refresh .....	33
9 Typical Configuration Examples .....	34
9.1 Virtual Serial Port Mode .....	34
9.2 TCP Server $\leftrightarrow$ TCP Client Mode.....	37
9.3 UDP $\leftrightarrow$ UDP Mode.....	41
9.4 Device $\leftrightarrow$ Device Mode.....	43
Appendix: Acronyms .....	46

## Preface

The manual describes the access modes and software features of SM6.6-4D-232/422/485-0.5U serial port module, as well as the Web configuration methods.

### Content Structure

The manual contains the following contents:

Chapter	Description
1. Product Introduction	<ul style="list-style-type: none"> <li>➤ Overview</li> <li>➤ Product models</li> <li>➤ Software features</li> </ul>
2. Device Access	
3. Start Page	<ul style="list-style-type: none"> <li>➤ Product overview</li> <li>➤ System summary</li> </ul>
4. Serial Data Port Setup	Serial data port and network port configuration
5. Ethernet Network Setup	<ul style="list-style-type: none"> <li>➤ Ethernet port configuration (IP address, subnet mask, gateway, and local DNS)</li> <li>➤ Network protocols (SSH and SNTP)</li> <li>➤ Save Setting/Cancel Changes</li> </ul>
6. Administration	<ul style="list-style-type: none"> <li>➤ Device management (login user name and password; device name, contact, and address; RTC)</li> <li>➤ Factory defaults</li> <li>➤ Device control</li> <li>➤ Save Setting/Cancel Changes</li> </ul>
7. Upgrade	Upgrade through FTP
8. Status	<ul style="list-style-type: none"> <li>➤ Transmission statistics</li> <li>➤ Auto Refresh</li> <li>➤ Statistic Refresh</li> </ul>
9. Typical Configuration	➤ Virtual Serial Port mode




Examples	<ul style="list-style-type: none"> <li>➤ TCP Server←→TCP Client mode</li> <li>➤ UDP←→UDP mode</li> <li>➤ Device←→Device Mode</li> </ul>
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## Conventions in the manual

### 1. Text format conventions

Format	Explanation
< >	The content in < > is button name. For example, click <Apply> button.
[ ]	The content in [ ] is window name or menu name. For example, click [File] menu item.
{ }	The content in { } is a portfolio. For example, {Send To, Port, Description} means Send To, Port, and Description are a portfolio and they can be configured and displayed together.
→	Multi-level menus are separated by “→”. For example, Start → All Programs → Accessories. Click [Start] menu, click the sub menu [All programs], then click the submenu [Accessories].
/	Use / to separate two or more options, and select one from all options. For example “Addition/Deduction” means addition or deduction.
~	It means a range. For example, “1~255” means the range from 1 to 255.

### 2. Symbol conventions

Symbol	Explanation
 <b>Caution</b>	The matters need attention during the operation and configuration, and it is supplement to the operation description
 <b>Note</b>	Necessary explanations to the operation description
 <b>Warning</b>	The matters that call for special attention. Incorrect operation might cause data loss or damage to devices

## Product Documentation

The documentation of SM6.6-4D-232/422/485 serial port module includes the

following documents:

Document	Description
SM6.6-4D-232/422/485-0.5U Serial Port Module Hardware Installation Manual	Describes the appearance, structure, hardware specifications, and mounting and dismounting methods of SM6.6-4D-232/422/485-0.5U.
SM6.6-4D-232/422/485-0.5U Serial Port Module Web Operation Manual	Describes the software functions, configuration methods, and configuration steps of SM6.6-4D-232/422/485-0.5U.

## Document Obtainment

You can obtain the documents from:

- CD or manual delivered with the device
- Kyland website: [www.kyland.com](http://www.kyland.com)

# 1 Product Introduction

## 1.1 Overview

SM6.6-4D-232/422/485-0.5U is a serial port module developed by Kyland Technology Co., Ltd. Specifically for the power industry. The module, compact and light, can be inserted into the slots of SICOM3000GPT and SICOM6000GPT series industrial Ethernet switches.

## 1.2 Software Features

This series devices support the following software features:

- Device management: software upgrade through FTP
- Network management: management through Telnet and Web
- Transmission protocols: TCP and UDP
- Network security: SSH
- Synchronization protocol: SNTP
- Data transmission: TCP Server, TCP Client, and UDP mode, as well as  
Multi-connect mode
- Serial port parameters:
  - Baud rate: 50~230400
  - Data bits used: 5, 6, 7, 8
  - Stop bits used: 1, 2
  - RS232/RS485/RS422 mode
  - Parity
  - Flow control by software
  - Inter-frame interval setting



## 2 Device Access

You can access the device in either of the following ways:

- Telnet
- Web browser

The manual describes access through the Web browser. Before login, you need to make sure that the PC can communicate with the device properly.

**Note:**

Firefox or IE8.0 or a later version is recommended for the best access result.

1. Enter "**http://IP address**" in the address box of the browser. The login dialog box is displayed, as shown in Figure 1. Enter user name "admin" and password "123". Click <OK>.



Figure 1 Web Login

**Note:**

The default IP address of the device is 192.168.0.3. If you do not know the IP address of the network port in use, see section 5.1.1 *Network Port IP Address Query* to view the IP address.

2. The Web UI of the device is displayed. The navigation tab menu is on the top of the page, as shown in the red circle in Figure 2.

The screenshot displays the KYLAND web interface. At the top right, system statistics are shown: "Time up: 09:18:50 up 2:23 (07/16/13 09:18:51)" and "Load average: 0.21 0.17 0.10 1/33 25162". The navigation menu at the top includes "Start Page", "Serial Data Port Setup", "Ethernet Network Setup", "Administration", "Upgrade", and "Status", with "Status" circled in red. Below the menu is the "Product Overview" section, followed by a "System Summary" section containing two tables.

**Product Overview**

SM664DRJ50 serial card has powerful management function supports Telnet, WEB and management software based on SNMP.

SM664DRJ50 serial card supports Din-Rail or Wall Mounting installation. It can have its own IP address. SM664DRJ50 serial card also support 4 DB9 serial ports with necessary port protection circuit, and each port can support RS232, RS422 and RS485 which can be set in software.

The serial card platform is embedded platform based on ARM, the compiling of the code should be in cross compiler environments, that means using a compiling software on x86 PC platform to compile the program which can be run on ARM platform. The serial card has been integrated with part of the applications and services, such as port forwarding program, web service instance httpd, snmp client program, ssh remote access program, ssl and https, snmp etc. And these functions can be optional during the second time development.

**System Summary**

Hardware & Software	
Model	SM664DRJ50Z
Serial Number	K424D12086868
Software Version	Version F0001-Build-101.4.15.4
Compiled Time	2013-07-09 15:03:32
Bootloader Version	Boot 101.1.3

System	
IP Address	192.168.0.222
MAC Address	00:0E:CD:18:ED:00
Description	
Contact	
Location	

Figure 2 Web UI

### 3 Start Page

The Start Page consists of two parts: Product Overview and System Summary.

#### 3.1 Product Overview

Product Overview covers the hardware installation modes, port numbers, port standards, and software management and compiling of the device, as shown in Figure 3.

**Product Overview**

The serial card has powerful management function supports Telnet, WEB and management software based on SNMP.

The serial card supports Din-Rail or Wall Mounting installation. It can have its own IP address. The serial card also support 4 RJ50-10PIN serial ports with necessary port protection circuit, and each port can support RS232, RS422 and RS485 which can be set in software.

The serial card platform is embedded platform based on ARM. the compiling of the code should be in cross compiler environments, that means using a compiling software on x86 PC platform to compile the program which can be run on ARM platform. The serial card has bee integrated with part of the applications and services, such as port forwarding program channel, web service instance httpd, snmp client program, ssh remote access program, ssl and https, snmp etc. And these functions can be optional during the second time development.

Figure 3 Product Overview

#### 3.2 System Summary

System Summary covers the model, hardware version, SN, software version, compiled time, Bootloader version, IP address, MAC address, description, contact, and location of the device, as shown in Figure 4.

**System Summary**

Hardware & Software		System	
Model	SM664DRJ50Z	IP Address	192.168.0.222
Serial Number	K4Z4D12086868	MAC Address	00:0E:CD:18:ED:00
Software Version	Version F0001-Build-101.4.15.4	Description	
Compiled Time	2013-07-09 15:03:32	Contact	
Bootloader Version	Boot 101.1.3	Location	

Figure 4 System Summary

## 4 Serial Data Port Setup

### 4.1 Overview

Serial data port is also called serial port. A serial port sends data bit by bit along a simple communication line. Bidirectional communication requires only a pair of transmission cables, greatly reducing costs. Based on electrical standards and protocols, the serial ports of the device can work in RS232, RS422, and RS485 modes.

### 4.2 Web Configuration

1. Select a serial port ID, as shown in Figure 5.



Figure 5 Selecting a Serial Port ID

#### Serial Data Port ID

Options: D1/D2/D3/D4

Function: Select the specific serial port. D1, D2, D3, and D4 indicate the four serial ports (1, 2, 3, and 4) on the front panel respectively.

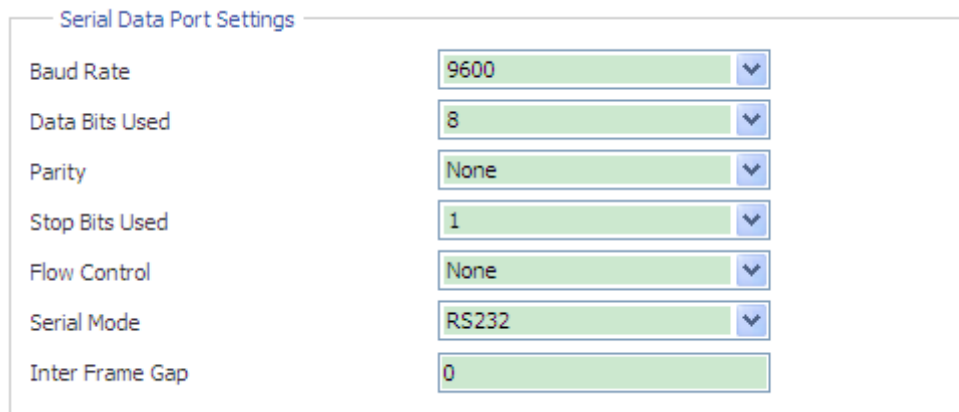
#### Start/Stop

Default: Start

Function: Start/Stop data transmission on the serial port.

Description: If the button is grey, the corresponding function is already enabled. If the button is blue, the function is disabled. As shown in Figure 5, data transmission is already started on serial port 1.

2. Set parameters for the specified serial port.



The image shows a dialog box titled "Serial Data Port Settings". It contains seven configuration options, each with a dropdown menu or a text input field. The settings are: Baud Rate (9600), Data Bits Used (8), Parity (None), Stop Bits Used (1), Flow Control (None), Serial Mode (RS232), and Inter Frame Gap (0).

Parameter	Value
Baud Rate	9600
Data Bits Used	8
Parity	None
Stop Bits Used	1
Flow Control	None
Serial Mode	RS232
Inter Frame Gap	0

Figure 6 Setting Parameters for the Serial Port

### **Baud Rate**

Options: 230400, 115200, 57600, 38400, 19200, 9600, 4800, 2400, 1800, 1200, 600, 300, 200, 150, 134, 110, 75, and 50

Default: 9600

Function: Set the baud rate of the serial port.

Description: Baud rate is the number of bits transmitted per second. It is an indicator of communication speed.

### **Data Bits Used**

Options: 5, 6, 7, and 8

Default: 8

Function: Set the data bits of the serial port.

Description: The parameter is an indicator of the actual data bits in communication.

### **Parity**

Options: None, Even, Odd, Space, and Mark

Default: None

Function: Set the parity mode of the serial port.

Description: Parity is an error check mode for serial port communication. A check bit is transmitted besides the data bits to make the transmitted bits meet related standard. If the transmitted bits does not meet related standard, error code occurs. None: indicates that transmitted data is not checked. Even:

indicates that a check bit is set to make transmitted data contain an even number of "1". Odd: indicates a check bit is set to make transmitted data contain an odd number of "1". Space: indicates that the check bit is always set to 0. Mark: indicates that the check bit is always set to 1.

### **Stop Bits Used**

Options: 1 and 2

Default: 1

Function: Set the stop bit of the serial port.

Description: The stop bit is the last bit of a single packet indicating the transmission end. It also serves for clock synchronization.

### **Flow Control**

Options: None/Software

Default: None

Function: Configure the traffic control of the serial port.

Description: Flow control adds specific signal to the serial port to stop or recover data transmission on the serial port, achieving traffic control on the port. None: indicates no traffic control. Software indicates that traffic control is implemented on the serial port through software.

### **Serial Mode**

Options: RS232/RS485/RS422

Default: RS232

Function: Configure the serial port mode.

### **Inter Frame Gap**

Options: 0~100ms

Default: 30

Function: Set the maximum inter-frame interval.

Description: The serial port module identifies a complete data frame based on inter-frame intervals. To be specific, if no data is received within the specified interval, the device considers the previous data frame as complete and forwards the frame at one time.

### 3. Set parameters for the network port.

➤ Configure the device to work in TCP server mode.

---

— Network Port Settings —

Protocol Type	<input type="text" value="TCP"/>
Server/Client	<input type="text" value="Server"/>
Service IP Address / Port Number	<input type="text" value="0.0.0.0"/> <input type="text" value="9201"/>

Figure 7 Setting Parameters for the Network Port (TCP Server)

#### **Protocol Type**

Options: TCP/UDP

Default: TCP

Function: Select the transmission protocol for the device.

#### **Server/Client**

Options: Server/Client

Default: Server

Function: Configure the device as the TCP server or client.

#### **Service IP Address/Port Number**

Options: --/1024~65000

Default: --/9201 (serial port 1), --/9202 (serial port 2), --/9203 (serial port 3),  
--/9204 (serial port 4)

Function: Set the TCP port number of the TCP server.



#### **Caution:**

Before setting **Service IP Address/Port Number**, you need to configure the device as the TCP server, as shown in Figure 7.

---

➤ Configure the device to work in TCP client mode.

Network Port Settings

Protocol Type  (TCP, UDP)

Server/Client  (server, client)

Remote Node

Send To	Port	Description
<input type="text"/>	<input type="text"/>	<input type="text"/>

Figure 8 Setting Parameters for the Network Port (TCP Client)

**Protocol Type**

Options: TCP/UDP

Default: TCP

Function: Select the transmission protocol for the device.

**Server/Client**

Options: Server/Client

Default: Server

Function: Configure the device as the TCP server or client.

**Remote Node****Send To**

Function: Set the IP address of the remote TCP server.

**Port**

Range: 1024~65000

Function: Set the TCP port number of the remote TCP server.

**Description**

Function: Describe the remote TCP server.

**Caution:**

If multiple remote TCP servers are configured, the **Description** parameter of each entry must be unique. Otherwise, the configuration fails.

After setting these parameters, click  to add the entry.



**Caution:**

Before setting **Remote Node**, you need to configure the device as the TCP client, as shown in Figure 8.

➤ Configure the device to work in UDP mode.

Network Port Settings

Protocol Type: UDP (TCP, UDP)

Service IP Address / Port Number: 0.0.0.0 9201

Remote Node

Send To	Port	Description
<input type="text"/>	<input type="text"/>	<input type="text"/>

add

Figure 9 Setting UDP Parameters

**Protocol Type**

Options: TCP/UDP

Default: UDP

Function: Select the transmission protocol for the device.

**Port Number**

Default: --/9201 (serial port 1), --/9202 (serial port 2), --/9203 (serial port 3), --/9204 (serial port 4)

Function: Configure the UDP port number.

**Remote Node****Send To**

Function: Set the IP address of the remote UDP host.

**Port**

Range: 1024~65000


Function: Set the port number of the remote UDP host.

**Description**

Function: Describe the remote UDP host.

**Caution:**

If multiple remote TCP servers are configured, the **Description** parameter of each entry must be unique. Otherwise, the configuration fails.

After setting these parameters, click  to add the entry.



**Caution:**

Before setting **Remote Node**, you need to configure the device to work in UDP mode, as shown in Figure 9.

Keep alive Time

0

Figure 10 Setting the Keepalive Time

**Keep alive Time**

Range: 0~300s

Default: 300s

Function: Set the keepalive time for a connection. If no data is transmitted within the keepalive time, the connection is automatically disconnected. The default, 0, indicates that the connection is not disconnected even if no data is transmitted.

Response Wait

200

Figure 11 Setting the Time of Waiting for a Response

**Response Wait**

Range: 100~2500ms

Default: 200ms

Function: Configure the time of waiting for a response.

Description: when multiple TCP clients have established connections with SM6.6-4D-232/422/485-0.5U and one TCP client sends data to SM6.6-4D-232/422/485-0.5U first:

- If SM6.6-4D-232/422/485-0.5U receives the response data from the serial port within the configured time, the data is sent only to the TCP client.
- If SM6.6-4D-232/422/485-0.5U receives the response date from the serial port beyond the configured time, the data is sent to all connected TCP

---

clients.

---

**Caution:**

Other TCP Clients can receive the responses only if they send data to SM6.6-4D-232/422/485-0.5U after the configured time.

---


4. Automatically obtain the parameter settings of the current serial port and network port.

Auto Get Settings

Figure 12 Automatically Obtaining the Parameter Settings of Ports

Function: Enable or disable the function of automatically obtaining the parameter settings of the current serial port and network port.

Description: After the function is enabled, you do not need to refresh the interface to obtain the parameter settings of the serial port and network port.

Configuration method: Click the check box. The  icon indicates the function is enabled.

---

**Caution:**

When setting the parameters of the serial port and network port, you need to disable the Auto Get Settings function. Otherwise, the interface will automatically refresh itself, resulting in parameter setting failures.

---

5. Apply Setting/Cancel Changes

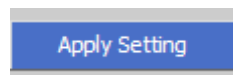


Figure 13 Apply Setting

Function: Save and apply the parameter settings of the current serial port and network port.

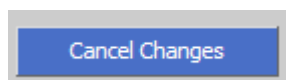


Figure 14 Cancel Changes

Function: Cancel the parameter settings of the serial port and network port to restore previous settings.

---



**Caution:**

If you click **Cancel Changes** after you have clicked **Apply Setting**, the previous settings cannot be restored. Therefore, make sure that all parameter settings are correct before you click **Apply Setting**.

---


## 5 Ethernet Network Setup

### 5.1 Ethernet Port Setup

#### 5.1.1 IP Address Query

➤ You can view the IP address by the finder.exe software.

1. Download finder.exe in the [Software Download] folder to the PC.
2. Connect the PC to the device with network cable and ensure they can communicate with each other properly.

3. Double-click . You can view the IP address of the device, as shown in Figure 15.

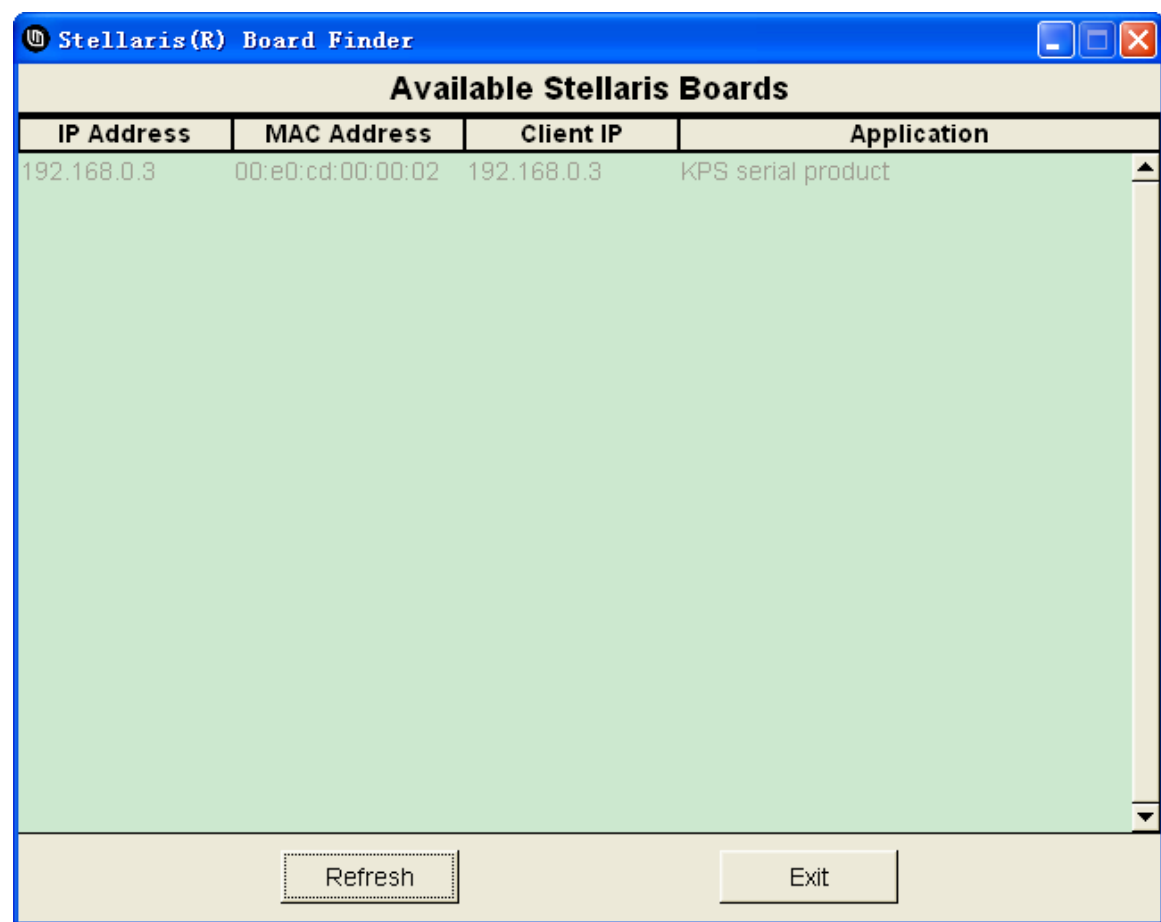


Figure 15 Network Port IP Address Query

➤ You can also view the IP address through the Web UI of the

SICOM3000GPT or SICOM6000GPT.

Click [Device Advanced Configuration] → [Serial-Card Management] → [Serial-Card Management] to enter Serial-Card Management page, as shown in Figure 16.

Slot ID	7
IP Address	
VLAN ID	

Apply

Slot ID	VLAN ID	IP Address	MAC Address	Version
7	1	192.168.0.3	00-E0-CD-00-00-02	1.0

Figure 16 Serial-Card Management

### 5.1.2 Web Configuration

1. You can set IP addresses of the device through the Web UI of the SICOM3000GPT or SICOM6000GPT, as shown in Figure 16.
2. You can also set IP addresses of the device through the Web UI of SM6.6-4D-232/422/485-0.5U, as shown in Figure 17.

Ethernet Address	
Local IP Address	192.168.0.3
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
Local DNS	192.168.0.1
Local MAC Address	00:e0:cd:00:00:01

Figure 17 IP Configuration

#### Default setting

Local IP Address: 192.168.0.3

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Local DNS: 192.168.0.1

**Caution:**

- IP address and gateway must be in the same network segment; otherwise, the IP address cannot be modified.
- If you cannot access the device successfully after changing IP address, please reboot the device.

## 5.2 Network Protocols

### 5.2.1 SSH Daemon

#### 5.2.1.1 Overview

Secure Shell (SSH) is a network protocol for secure remote login. SSH encrypts transmitted data to prevent information disclosure. In this case, you can configure the device through the CLI.

#### 5.2.1.2 Web Configuration



Figure 18 SSH Server Configuration

#### SSH Server

Options: Disable/Enable

Function: Enable/Disable SSH server.

#### 5.2.1.3 Typical Configuration Example

It is required that the PC (SSH client) connects to SM6.6-4D-232/422/485-0.5U (SSH server), as shown in Figure 19.

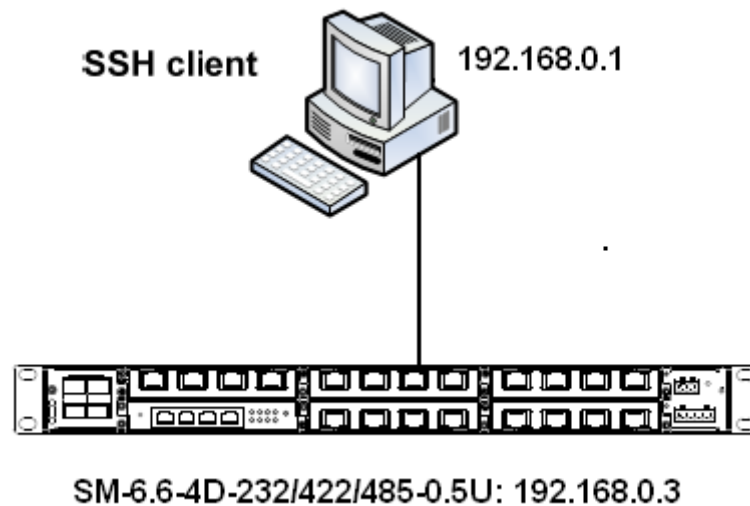


Figure 19 SSH Configuration Example

1. Establish the connection between the PC and SM6.6-4D-232/422/485-0.5U. Open PuTTY.exe. Enter the IP address of SSH server, namely, 192.168.0.3, and set port number to 22, as shown in Figure 20.

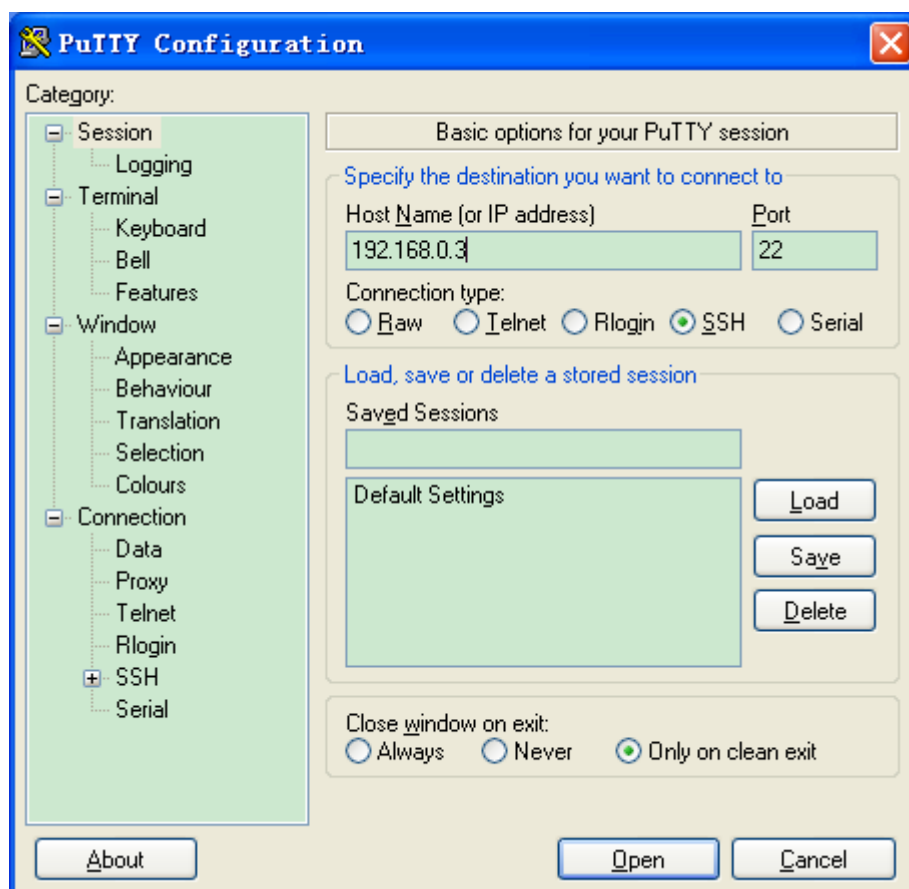


Figure 20 PuTTY Configuration

2. Click <Open>. The following dialog box is displayed. Click <Yes>.





Figure 21 PuTTY Security Alert

3. Enter user name "root" and password "123". The configuration interface of the device is displayed, as shown in Figure 22.





Figure 22 SSH Remote Login Interface

## 5.2.2 SNTP

### 5.2.2.1 Overview

The Simple Network Time Protocol (SNTP) synchronizes time between server and client by means of requests and responses. The device, as the client, synchronizes time from the server based on the messages sent from the server.

### 5.2.2.2 Web Configuration

SNTP Protocol (Simple Network Timing Protocol)	
SNTP Client	Enable
Remote server	192.168.0.217
Synchronous	60
Last SYNC	04/21/2012 08:03:36 (Active)

Figure 23 SNTP Configuration

### SNTP Client

Options: Disable/Enable

Default: Disable

Function: Enable/Disable SNTP.

### **Remote server**

Function: Set the IP address of the SNTP server. The client synchronizes time from the server based on the messages sent by the server.

### **Synchronous**

Range: 60~86400s

Function: Configure the interval for sending synchronization requests from the SNTP client to the server.

### **Last SYNC**

Function: Display the time of last synchronization.

## **5.3 Save Setting/Cancel Changes**

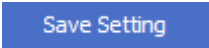
A blue rectangular button with the text "Save Setting" in white.

Figure 24 Save Setting

Function: Save the current settings of Ethernet parameters.

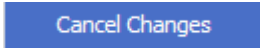
A blue rectangular button with the text "Cancel Changes" in white.

Figure 25 Cancel Changes

Function: Cancel the current settings of Ethernet parameters to restore previous settings.

---



### **Caution:**

If you click **Cancel Changes** after you have clicked **Save Setting**, the previous settings cannot be restored. Therefore, make sure that all parameter settings are correct before you click **Save Setting**.

---

## 6 Administration

### 6.1 Device Management

#### 1. User name and password setting



The screenshot shows a configuration window titled "Web User Manager". It contains two input fields: "User Name" with the value "admin" and "User Password" with three dots indicating a masked password.

Figure 26 Setting the User Name and Password

#### User Name

Range: 3~32 characters

Default: admin

Function: Configure the user name for device login.

#### User Password

Range: 3~32 characters

Default: 123

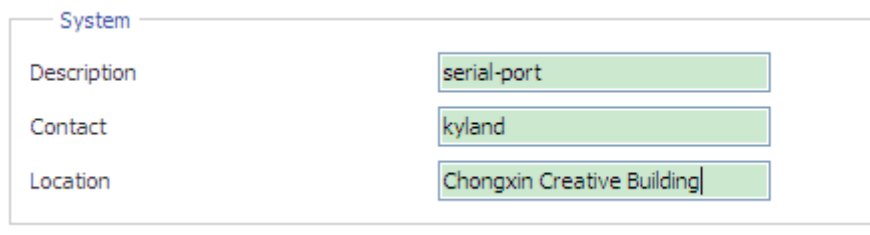
Function: Configure the password for device login.



#### Caution:

The user name and password are used only in Web login. If you change the user name and password, those for Telnet login are not affected.

#### 2. Device information configuration



The screenshot shows a configuration window titled "System". It contains three input fields: "Description" with the value "serial-port", "Contact" with the value "kyland", and "Location" with the value "Chongxin Creative Building".

Figure 27 Configuring Device Information

#### Description

Range: 0~32 characters

Function: Describe the name or usage of the device.

### **Contact**

Range: 0~32 characters

Function: Describe the contact of the device.

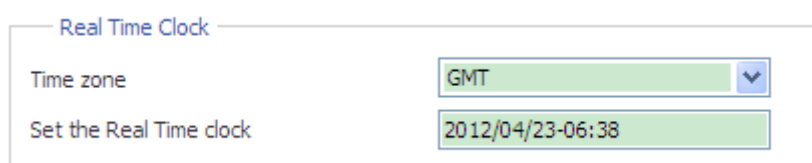
### **Location**

Range: 0~32 characters

Function: Describe the location of the device.

## 3. RTC configuration

Real Time Clock (RTC) is a computer clock (usually an integrated circuit) indicating the current time. The RTC is used in event records and log entries.



Real Time Clock

Time zone GMT

Set the Real Time clock 2012/04/23-06:38

Figure 28 Configuring the RTC

### **Time zone**

Options: GMT/GMT+8:00

Default: GMT

Function: Select the local time zone.

### **Set the Real Time clock**

Function: Set the local RTC.

Configuration method:

- Select time in the time selection box, as shown in Figure 29.

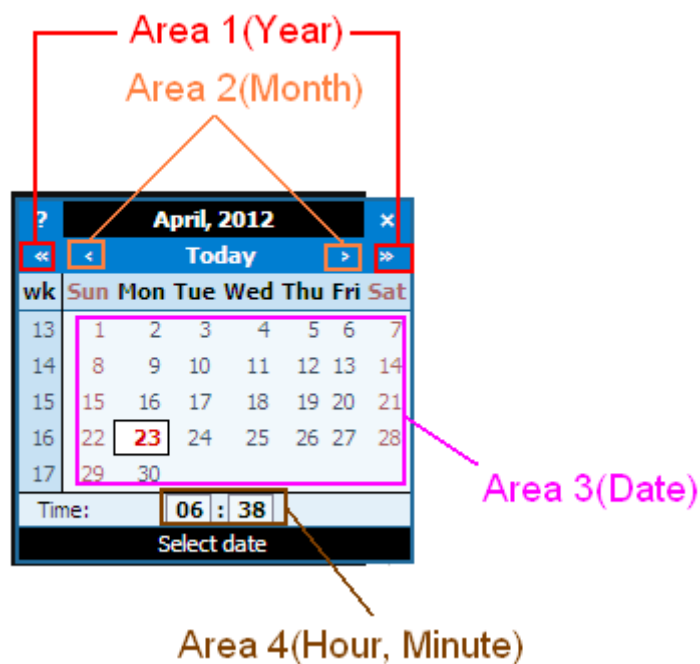


Figure 29 Time Selection

- Select the year, month, and date in area 1, area 2, and area 3 respectively.
- Set the hour and minute in area 4. You can add 1 to the number by clicking it and deduct 1 from the number by clicking it and pressing Shift at the same time.

## 6.2 Factory Defaults

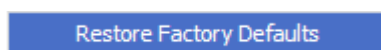


Figure 30 Restore Factory Defaults

Function: Restore the factory default settings of the device.

Description: The button is used to restore factory default settings immediately, covering the serial port and network port parameters, IP addresses, user name, and password.

## 6.3 Device Control

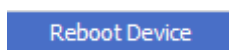


Figure 31 Reboot Device

---

Function: Restart the device.

Description: The button is used to restart the device.

---



**Warning:**

Before clicking the button, make sure that you have saved all required settings.

---

## 6.4 Save Setting/Cancel Changes

Figure 32 Save Setting

Function: Save the settings in the current page.

Figure 33 Cancel Changes

Function: Cancel the settings in the current page to restore previous settings.

---



**Caution:**

If you click **Cancel Changes** after you have clicked **Save Setting**, the previous settings cannot be restored. Therefore, make sure that all parameter settings are correct before you click **Save Setting**.

---

## 7 Upgrade

Firmware upgrades require an FTP server.

Install WFTPD software on your PC. The PC will serve as the FTP server. Before upgrades, ensure that the PC can communicate with the device properly.

1. Connect the PC to the device and ensure they can communicate with each other properly.
2. Click [Security] → [users/rights]. The "User/Rights Security Dialog" dialog box is displayed. Click <New User> to add a new FTP user, as shown in Figure 34. Enter the user name and password, for example, "admin" and "123". Click <OK>.

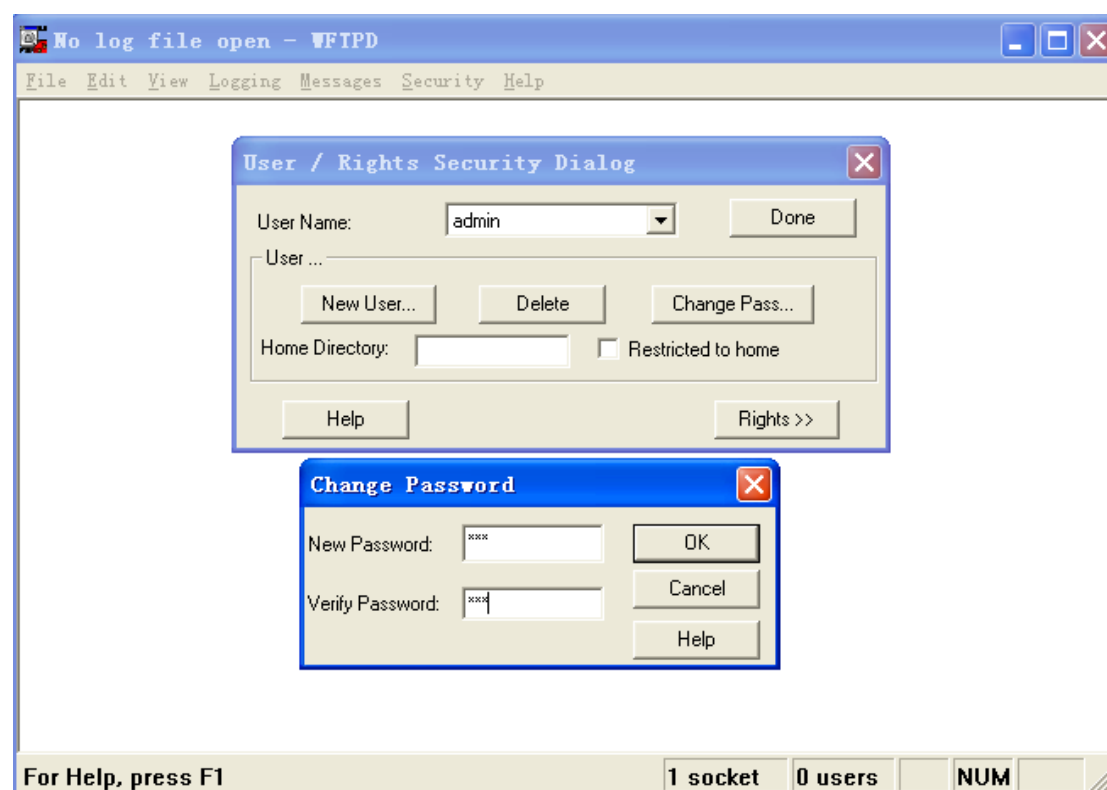


Figure 34 Adding an FTP User

3. Enter the path for saving the upgrade file in Home Directory, as shown in Figure 35. Click <Done>.



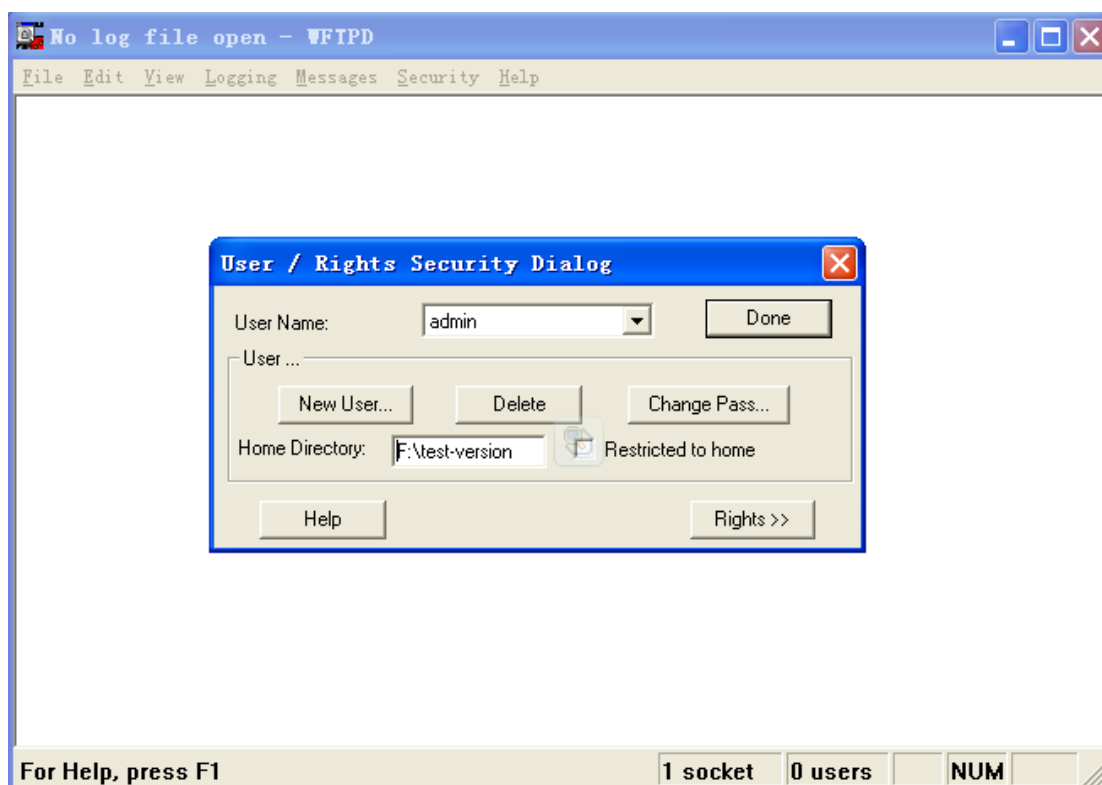


Figure 35 Changing the File Path

4. Figure 36 shows the firmware upgrade page. Enter the IP address of the FTP server, user name, password, and firmware file name. Click <Upgrade>.

Upgrade

Item	Firmware
Server IP	192.168.0.217
User Name	admin
User Password	...
File Name	kps-firmware-1.4.7.bin

**WARNING**

Upgrading firmware may take a few minutes.  
Do not turn off the power or press the reset button!

Upgrade

Figure 36 Upgrading Firmware through FTP

**Warning:**

- The file name must have an extension; otherwise the upgrade may fail.
- The Web UI involves a bottom-layer BootROM. Therefore, you need to

contact Kyland representatives before firmware upgrade to ensure that the firmware version match the BootROM version.

5. Wait for the upgrade to complete, as shown in Figure 37.

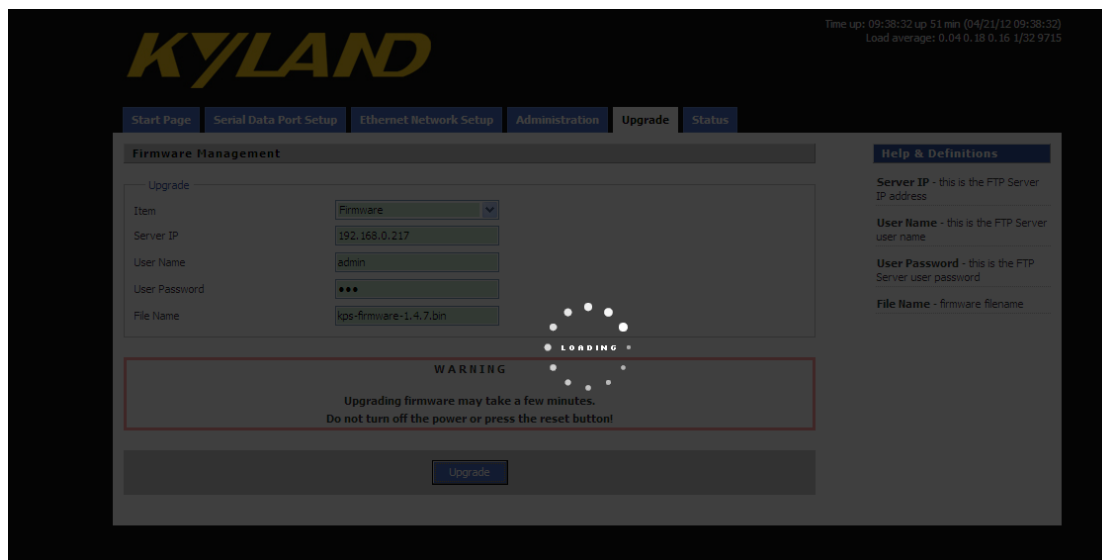


Figure 37 Waiting...

6. After the upgrade is completed successfully, the following page is displayed. Click <REBOOT> to restart the device. Then click the Start Page tab in the navigation menu to view the version after upgrade.

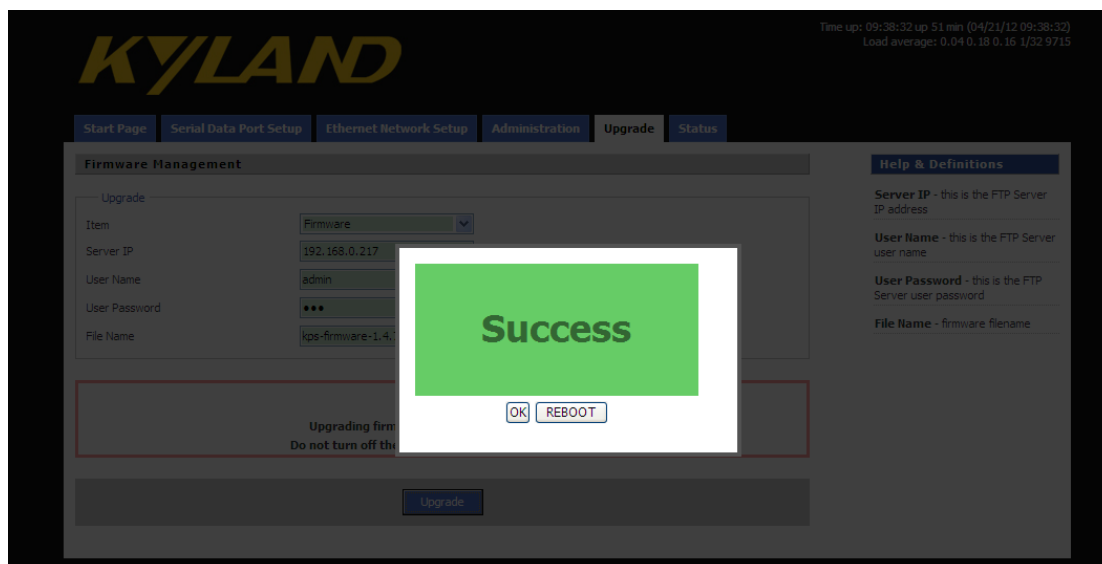


Figure 38 Successfully Upgrading Firmware



**Warning:**

- During software upgrade, keep the FTP server software in operation.

- After the upgrade is completed successfully, you need to restart the device to make the new version take effect.
  - If the upgrade fails, do not restart the device. If you restart the device, you may lose the version file and the device may fail to start.
-

## 8 Status

### 8.1 Transmission Statistics

#### 8.1.1 Overview

**Transmission Statistics** is used to collect the bytes of data sent and received by Ethernet port and serial ports. You can know the transmission status of a port by querying the statistics.

#### 8.1.2 Web Configuration



Serial Statistics	
Total Data In:	0
Total Data Out:	0
Parity Errors:	0
Framing Errors:	0
Overrun Errors:	0

Figure 39 Transmission Statistics of a Serial Port

#### **Total Data In**

Function: Collect the number of bytes received by the serial port.

#### **Total Data Out**

Function: Collect the number of bytes sent by the serial port.

#### **Parity Errors**

Function: Collect the number of parity errors of the serial port.

#### **Framing Errors**

Function: Collect the number of framing errors of the serial port.

#### **Overrun Errors**

Function: Collect the number of overrun errors of the serial port.



Network Statistics	
Packet Transmitted Bytes:	0
Packet Received Bytes:	0

Figure 40 Transmission Statistics of a Network Port

### Packet Transmitted Bytes

Function: Collect the number of bytes sent by the network port.

### Packet Received Bytes

Function: Collect the number of bytes received by the network port.

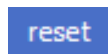


Figure 41 Reset

Function: Clear the current statistics.

## 8.2 Auto Refresh

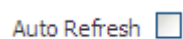



Figure 42 Auto Refresh

Function: Automatically refresh the statistics and level measurement status in the current interface, so that the interface always displays the latest data.

Configuration method: Click the check box. The  icon indicates the function is enabled.

## 8.3 Statistic Refresh

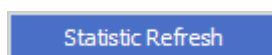


Figure 43 Statistic Refresh

Function: Manually refresh the statistics and level measurement status in the current interface to obtain the latest data.

## 9 Typical Configuration Examples

### 9.1 Virtual Serial Port Mode

You can access SM6.6-4D-232/422/485-0.5U from a PC through Virtual Serial Port Manager (VSPM) software.

As shown in Figure 44, connect the network port of the PC to that of SICOM3000GPT or SICOM6000GPT, and the serial port of SM6.6-4D-232/422/485-0.5U to a serial device. Install VSPM on the PC. VSPM works in client mode, and SM6.6-4D-232/422/485-0.5U works as the TCP server. In this way, the PC can communicate with the serial device.

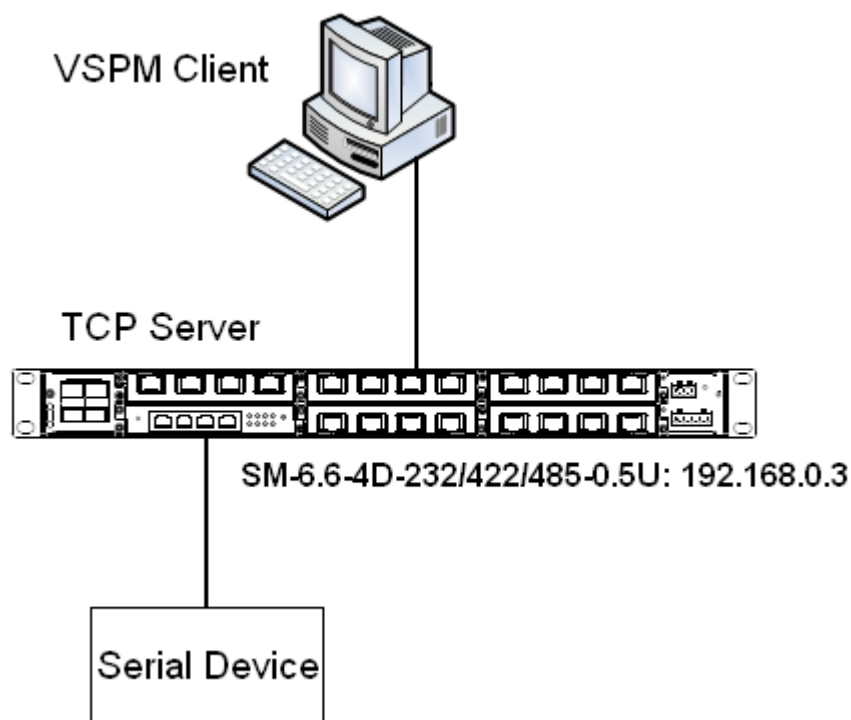


Figure 44 Using Virtual Serial Port

Detailed steps are as follows:

1. Set the IP address of SM6.6-4D-232/422/485-0.5U to the default, 192.168.0.3. Connect 2 to the serial device. Set the parameters on SM6.6-4D-232/422/485-0.5U as follows:

- Serial Data Port ID: D2
- Protocol Type: TCP

- Server/Client: Server
- Port Number: 9202 (default). You can set the port number to a value ranging from 1024 to 65000.
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 45.

The screenshot shows the VSPM configuration window. At the top, there is a 'Serial Data Port ID' dropdown set to 'D2', with 'start' and 'stop' buttons. Below this are two main sections: 'Serial Data Port Settings' and 'Network Port Settings'.

**Serial Data Port Settings:**

Baud Rate	9600	
Data Bits Used	8	(5, 6, 7, 8)
Parity	None	(None, Even, Odd, Space, Mark)
Stop Bits Used	1	(1, 2)
Flow Control	None	(None, Software, Hardware)
Serial Mode	RS232	(RS232, RS485, RS422)
Inter Frame Gap	30	(0 ~ 100) millisecond

**Network Port Settings:**

Protocol Type	TCP	(TCP, UDP)
Server/Client	Server	(server, client)
Service IP Address / Port Number	0.0.0.0	9202
Keep Alive	300	(0 ~ 300) second
Response Wait	200	(100 ~ 2500) millisecond

At the bottom right, there is an 'Auto Get Settings' checkbox which is unchecked. A green success bar at the bottom of the window contains the text 'Success'.

Figure 45 Setting Parameters for Ports

2. Install the VSPM on the PC.

- Double-click  and follow the instructions to install the VSPM.




- Double-click  to start the VSPM. Upon the initial startup, the following dialog box will be displayed.



Figure 46 Selecting the Working Mode of the VSPM

- Select the first or second option. If SM6.6-4D-232/422/485-0.5U serves as the server, select the first option to make VSPM work in client mode. If SM6.6-4D-232/422/485-0.5U serves as the client, select the second option to make VSPM work in server mode. In this example, SM6.6-4D-232/422/485-0.5U serves as the server. Therefore, select the first option. Click <OK> to enter the interface of the VSPM client.

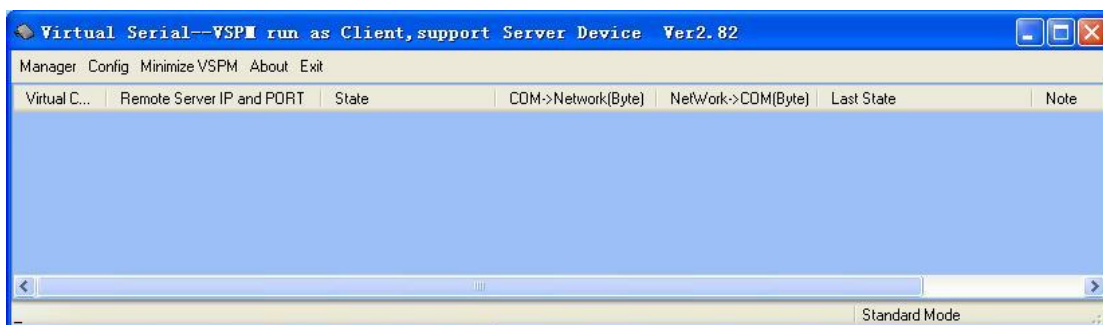


Figure 47 Interface of VSPM Working in Client Mode

- Click [Manager] → [New Virtual COM]. The following page is displayed. Set parameters for the virtual serial port. Set Serial Port to COM22, Remote Server IP Address to 192.168.0.3, Remote Server Listening Port Number to 9202 (same as the TCP port number of SM6.6-4D-232/422/485-0.5U), as shown in Figure 48.



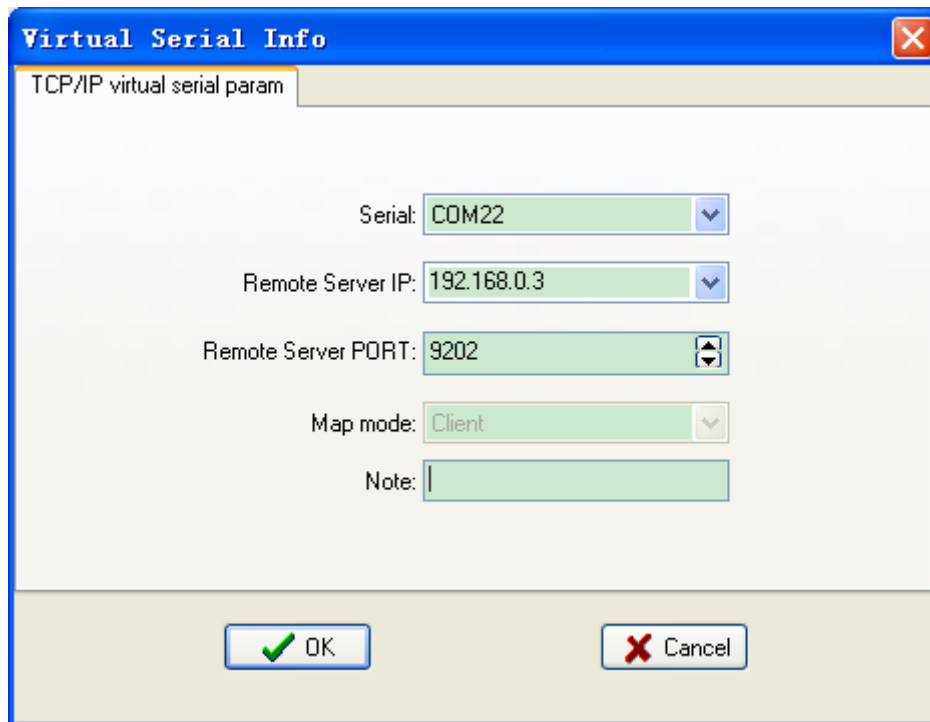


Figure 48 Setting Parameters for the Virtual Serial Port

➤ Click <OK>. The following figure is displayed.

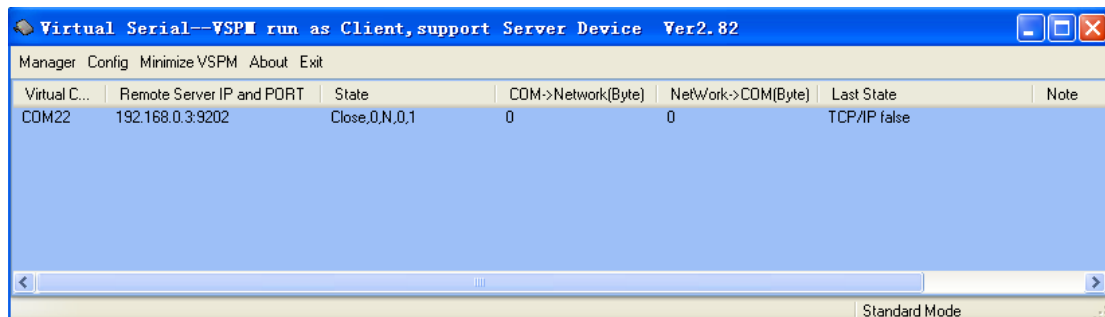


Figure 49 Information about the Virtual Serial Port

3. After VSPM is installed on the PC, the serial port of SM6.6-4D-232/422/485-0.5U can be mapped to the virtual serial port of the local PC. You can use the virtual serial port just like the serial port of the PC. All the software or communication modules on the serial device can be used without any change.

## 9.2 TCP Server ↔ TCP Client Mode

You can write programs as required if the programming supports TCP Server or TCP Client. In this way, you can also enable the communication between a

PC and a serial device.

Connect the network port of the PC to that of SICOM3000GPT or SICOM6000GPT, and the serial port of SM6.6-4D-232/422/485-0.5U to a serial device. If the PC works as the TCP server, you need to configure SM6.6-4D-232/422/485-0.5U as the TCP client. If the PC works as the TCP client, you need to configure SM6.6-4D-232/422/485-0.5U as the TCP server.

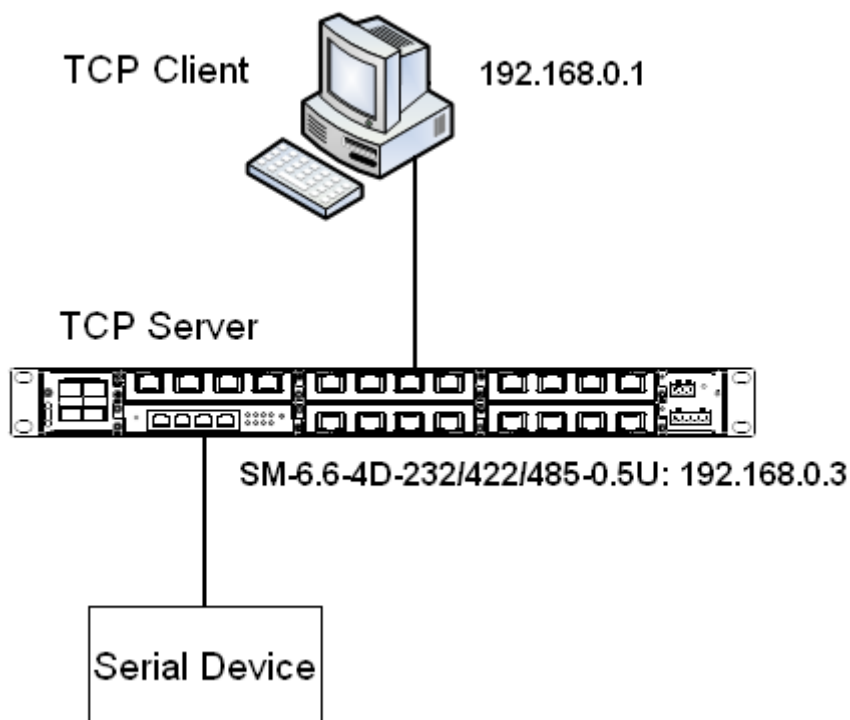


Figure 50 TCP Server $\longleftrightarrow$ TCP Client 1

1. When SM6.6-4D-232/422/485-0.5U works as the TCP server, the TCP port of SM6.6-4D-232/422/485-0.5U is in listening state and waits for the TCP client running on the PC to connect to the local port. The mode is applicable to networks on which SM6.6-4D-232/422/485-0.5U is passively connected.

Connect 2 of SM6.6-4D-232/422/485-0.5U to the serial device. Set the parameters on SM6.6-4D-232/422/485-0.5U as follows:

- Serial Data Port ID: D2
- Protocol Type: TCP
- Server/Client: Server
- Port Number: 9202 (default). You can set the port number to a value ranging from 1024 to 65000.

- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 51.

Serial Data Port ID:

**Serial Data Port Settings**

Baud Rate	<input type="text" value="9600"/>	
Data Bits Used	<input type="text" value="8"/>	(5, 6, 7, 8)
Parity	<input type="text" value="None"/>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<input type="text" value="1"/>	(1, 2)
Flow Control	<input type="text" value="None"/>	(None, Software, Hardware)
Serial Mode	<input type="text" value="RS232"/>	(RS232, RS485, RS422)
Inter Frame Gap	<input type="text" value="30"/>	(0 ~ 100) millisecond

**Network Port Settings**

Protocol Type	<input type="text" value="TCP"/>	(TCP, UDP)
Server/Client	<input type="text" value="Server"/>	(server, client)
Service IP Address / Port Number	<input type="text" value="0.0.0.0"/> <input type="text" value="9202"/>	
Keep Alive	<input type="text" value="300"/>	(0 ~ 300) second
Response Wait	<input type="text" value="200"/>	(100 ~ 2500) millisecond

Auto Get Settings

Success

Figure 51 Configuring SM6.6-4D-232/422/485-0.5U as TCP Server

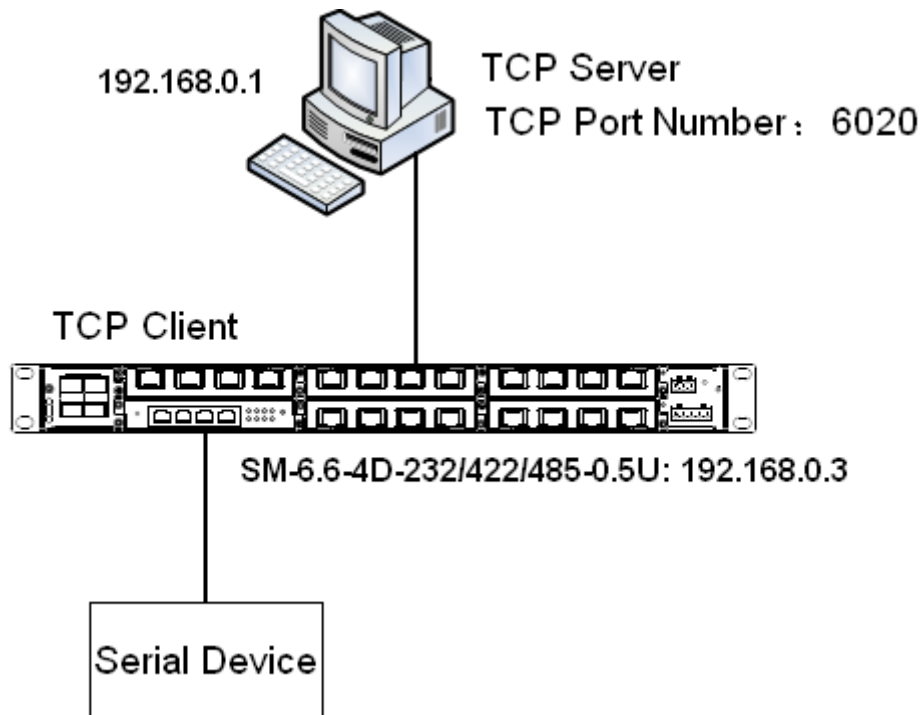


Figure 52 TCP Server ↔ TCP Client 2

2. As shown in Figure 52, SM6.6-4D-232/422/485-0.5U in TCP client mode proactively connects to the TCP port of the TCP server. Therefore, the network address and TCP port number, to which SM6.6-4D-232/422/485-0.5U will connect to, need to be configured.

The TCP port number of the TCP server on the PC is 6020. The IP address of the PC is 192.168.0.1. Connect 2 of SM6.6-4D-232/422/485-0.5U to the serial device. Set parameters on SM6.6-4D-232/422/485-0.5U as follows:

- Serial Data Port ID: D2
- Protocol Type: TCP
- Server/Client: Client
- Send To: 192.168.0.1
- Port: 6020
- Description: Description of the PC running TCP server
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 53.

Serial Data Port ID:

Serial Data Port Settings

Baud Rate	<input type="text" value="9600"/>	
Data Bits Used	<input type="text" value="8"/>	(5, 6, 7, 8)
Parity	<input type="text" value="None"/>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<input type="text" value="1"/>	(1, 2)
Flow Control	<input type="text" value="None"/>	(None, Software, Hardware)
Serial Mode	<input type="text" value="RS232"/>	(RS232, RS485, RS422)
Inter Frame Gap	<input type="text" value="30"/>	(0 ~ 100) millisecond

Network Port Settings

Protocol Type	<input type="text" value="TCP"/>													
Server/Client	<input type="text" value="Client"/>	(TCP, UDP)												
Remote Node		(server, client)												
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Send To</th> <th style="width: 20%;">Port</th> <th style="width: 30%;">Description</th> <th style="width: 20%;"></th> </tr> </thead> <tbody> <tr> <td>192.168.0.1</td> <td>6020</td> <td>PC</td> <td><input type="button" value="remove"/></td> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="button" value="add"/></td> </tr> </tbody> </table>	Send To	Port	Description		192.168.0.1	6020	PC	<input type="button" value="remove"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>	
Send To	Port	Description												
192.168.0.1	6020	PC	<input type="button" value="remove"/>											
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>											
Keep Alive	<input type="text" value="300"/>	(0 ~ 300) second												
Response Wait	<input type="text" value="200"/>	(100 ~ 2500) millisecond												

Auto Get Settings

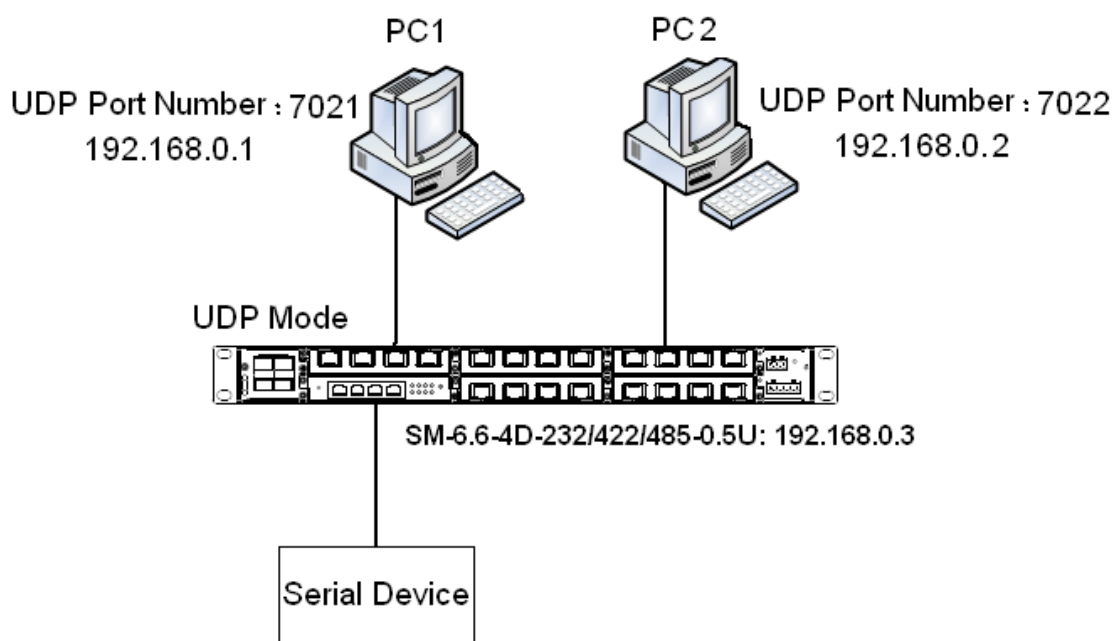
Success

Figure 53 Configuring SM6.6-4D-232/422/485-0.5U as TCP Client

### 9.3 UDP $\longleftrightarrow$ UDP Mode

You can write programs to support the UDP mode. When SM6.6-4D-232/422/485-0.5U works in UDP mode, packet sending and receiving are connectionless-oriented. Therefore, a connection is not required to realize point-to-point, point-to-multi-point, or multicast communication between two devices.

As shown in Figure 54, connect the network port of PC1 and that of PC2 to the network port of SICOM3000GPT or SICOM6000GPT. Then connect 2 of SM6.6-4D-232/422/485-0.5U to the serial device to enable point-to-multi-point communication, that is, communication between PC1 and serial device, between PC2 and serial device.

Figure 54 UDP $\longleftrightarrow$ UDP

For PC1, the UDP port number is 7021, and the IP address is 192.168.0.1. For PC2, the UDP port number is 7022, and the IP address is 192.168.0.2. Connect 2 of SM6.6-4D-232/422/485-0.5U to the serial device. Set the parameters on SM6.6-4D-232/422/485-0.5U as follows:

- Serial Data Port ID: D2

- Protocol Type: UDP
- Port Number: UDP port number of the local SM6.6-4D-232/422/485-0.5U
- Establish entries of remote nodes PC1 and PC2.
  - Entry of PC1
    - Send To: 192.168.0.1
    - Port: 7021
    - Description: Description of PC1
  - Entry of PC2
    - Send To: 192.168.0.2
    - Port: 7022
    - Description: Description of PC2
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 55.

Serial Data Port ID:

**Serial Data Port Settings**

Baud Rate	<input type="text" value="9600"/>	
Data Bits Used	<input type="text" value="8"/>	(5, 6, 7, 8)
Parity	<input type="text" value="None"/>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<input type="text" value="1"/>	(1, 2)
Flow Control	<input type="text" value="None"/>	(None, Software, Hardware)
Serial Mode	<input type="text" value="RS232"/>	(RS232, RS485, RS422)
Inter Frame Gap	<input type="text" value="30"/>	(0 ~ 100) millisecond

**Network Port Settings**

Protocol Type	<input type="text" value="UDP"/>																	
Service IP Address / Port Number	<input type="text" value="0.0.0.0"/> <input type="text" value="9202"/>	(TCP, UDP)																
Remote Node	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 30%;">Send To</th> <th style="width: 15%;">Port</th> <th style="width: 45%;">Description</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>192.168.0.2</td> <td>7022</td> <td>PC2</td> <td style="text-align: right;"><input type="button" value="remove"/></td> </tr> <tr> <td>192.168.0.1</td> <td>7021</td> <td>PC1</td> <td style="text-align: right;"><input type="button" value="remove"/></td> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td style="text-align: right;"><input type="button" value="add"/></td> </tr> </tbody> </table>	Send To	Port	Description		192.168.0.2	7022	PC2	<input type="button" value="remove"/>	192.168.0.1	7021	PC1	<input type="button" value="remove"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>	
Send To	Port	Description																
192.168.0.2	7022	PC2	<input type="button" value="remove"/>															
192.168.0.1	7021	PC1	<input type="button" value="remove"/>															
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>															
Keep Alive	<input type="text" value="300"/>	(0 ~ 300) second																
Response Wait	<input type="text" value="200"/>	(100 ~ 2500) millisecond																

Auto Get Settings

Success

Figure 55 Configuring SM6.6-4D-232/422/485-0.5U to Work in UDP Mode

## 9.4 Device $\longleftrightarrow$ Device Mode

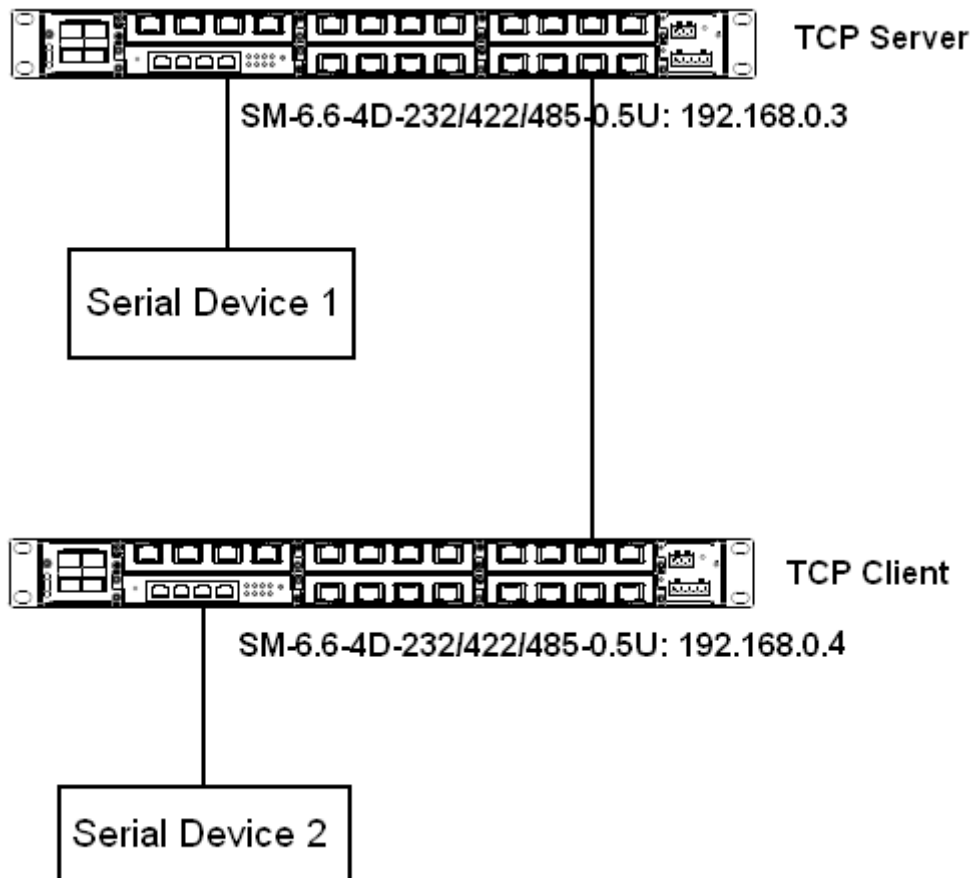


Figure 56 SM6.6-4D-232/422/485-0.5U-1 $\longleftrightarrow$ SM6.6-4D-232/422/485-0.5U-2

As shown in Figure 56, connect serial device 1 to serial port 1 of SM6.6-4D-232/422/485-0.5U-1, serial device 2 to serial port 2 of SM6.6-4D-232/422/485-0.5U-2, and the network port of SICOM3000GPT/SICOM6000GPT-1 to that of SICOM3000GPT/SICOM6000GPT-2. Because SICOM3000GPT/SICOM6000GPT-1 communicates with SICOM3000GPT/SICOM6000GPT-2 through Ethernet ports, the connection allows communication between distant serial devices.

The IP address of SM6.6-4D-232/422/485-0.5U-1 is 192.168.0.3, and that of SM6.6-4D-232/422/485-0.5U-2 is 192.168.0.4. Configure SM6.6-4D-232/422/485-0.5U-1 to work in TCP server mode, and SM6.6-4D-232/422/485-0.5U-2 to work in TCP client mode. Detailed steps are

as follows:

Configuration on SM6.6-4D-232/422/485-0.5U-1:

- Serial Data Port ID: D1
- Protocol Type: TCP
- Server/Client: Server
- Port Number: 9201 (default). You can set the port number to a value ranging from 1024 to 65000.
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 57.

Serial Data Port ID:

**Serial Data Port Settings**

Baud Rate	<input type="text" value="9600"/>	
Data Bits Used	<input type="text" value="8"/>	(5, 6, 7, 8)
Parity	<input type="text" value="None"/>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<input type="text" value="1"/>	(1, 2)
Flow Control	<input type="text" value="None"/>	(None, Software, Hardware)
Serial Mode	<input type="text" value="RS232"/>	(RS232, RS485, RS422)
Inter Frame Gap	<input type="text" value="30"/>	(0 ~ 100) millisecond

**Network Port Settings**

Protocol Type	<input type="text" value="TCP"/>	(TCP, UDP)
Server/Client	<input type="text" value="Server"/>	(server, client)
Service IP Address / Port Number	<input type="text" value="0,0,0,0"/> <input type="text" value="9201"/>	
Keep Alive	<input type="text" value="300"/>	(0 ~ 300) second
Response Wait	<input type="text" value="200"/>	(100 ~ 2500) millisecond

Auto Get Settings

Success

Figure 57 Configuring SM6.6-4D-232/422/485-0.5U-1 as TCP Server

Configuration on SM6.6-4D-232/422/485-0.5U-2:

- Serial Data Port ID: D2
- Protocol Type: TCP
- Server/Client: Client
- Send To: 192.168.0.3 (IP address of SM6.6-4D-232/422/485-0.5U-1)
- Port: 9201 (same as the TCP port number of



SM6.6-4D-232/422/485-0.5U-1)

- Description: Description of SM6.6-4D-232/422/485-0.5U-1
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 58.

**Serial Data Port Setup**

Serial Data Port ID:

**Serial Data Port Settings**

Baud Rate	<input type="text" value="9600"/>	
Data Bits Used	<input type="text" value="8"/>	(5, 6, 7, 8)
Parity	<input type="text" value="None"/>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<input type="text" value="1"/>	(1, 2)
Flow Control	<input type="text" value="None"/>	(None, Software, Hardware)
Serial Mode	<input type="text" value="RS232"/>	(RS232, RS485, RS422)
Inter Frame Gap	<input type="text" value="30"/>	(0 ~ 100) millisecond

**Network Port Settings**

Protocol Type	<input type="text" value="TCP"/>	(TCP, UDP)												
Server/Client	<input type="text" value="Client"/>	(server, client)												
Remote Node	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #e0e0e0;"> <th style="width: 30%;">Send To</th> <th style="width: 15%;">Port</th> <th style="width: 45%;">Description</th> <th style="width: 10%;"></th> </tr> </thead> <tbody> <tr> <td>192.168.0.3</td> <td>9201</td> <td>device-1</td> <td style="text-align: right;"><input type="button" value="remove"/></td> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> <td style="text-align: right;"><input type="button" value="add"/></td> </tr> </tbody> </table>		Send To	Port	Description		192.168.0.3	9201	device-1	<input type="button" value="remove"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>
Send To	Port	Description												
192.168.0.3	9201	device-1	<input type="button" value="remove"/>											
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="add"/>											
Keep Alive	<input type="text" value="300"/>	(0 ~ 300) second												
Response Wait	<input type="text" value="200"/>	(100 ~ 2500) millisecond												

Auto Get Settings

Success

Figure 58 Configuring SM6.6-4D-232/422/485-0.5U-2 as TCP Client

## Appendix: Acronyms

<b>Acronym</b>	<b>Full Spelling</b>
FTP	File Transfer Protocol
RTC	Real Time Clock
SSH	Secure Shell
SNTP	Simple Network Time Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol