

# **Serial Device Server Module Web Operation Manual**

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***KYLAND***

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## Preface

The manual describes the access modes and software features of serial device server 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>➤ Software features</li> </ul>
2. Device Access	
3. Start Page	<ul style="list-style-type: none"> <li>➤ Product overview</li> <li>➤ System summary</li> <li>➤ Configuration Lock<sup>#</sup></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 SNMP)</li> <li>➤ Save Setting/Cancel Changes</li> </ul>
6. VLAN <sup>#</sup>	➤
7. Static Route <sup>#</sup>	➤
8. Access List <sup>#</sup>	➤
9. Mirror <sup>#</sup>	➤
10. Administration	<ul style="list-style-type: none"> <li>➤ Device management (Web 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>
11. Upgrade& Config	<ul style="list-style-type: none"> <li>➤ Software upgrade</li> <li>➤ Configuration file upload/download</li> </ul>

12. Status	<ul style="list-style-type: none"> <li>➤ Transmission statistics</li> <li>➤ Auto Refresh</li> <li>➤ Statistic Refresh</li> </ul>
13. Typical Configuration Examples	<ul style="list-style-type: none"> <li>➤ Virtual Serial Port mode</li> <li>➤ TCP Server↔TCP Client mode</li> <li>➤ UDP↔UDP mode</li> <li>➤ Device↔Device Mode</li> </ul>



**Note:**

# indicates the features not available on SM6.6-4D-232/422/485-0.5U

## 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
 <p><b>Caution</b></p>	The matters need attention during the operation and configuration, and it is supplement to the operation description

 <p><b>Note</b></p>	<p>Necessary explanations to the operation description</p>
 <p><b>Warning</b></p>	<p>The matters that call for special attention. Incorrect operation might cause data loss or damage to devices</p>

## Product Documentation

The documentation of serial device server module includes the following documents:

Document	Description
<p>Serial Device Server Module Hardware Installation Manual</p>	<p>Describes the appearance, structure, hardware specifications, and mounting and dismounting methods of serial device server module.</p>
<p>Serial Device Server Module Web Operation Manual</p>	<p>Describes the software functions, configuration methods, and configuration steps of serial device server module.</p>

## 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

Serial device server module 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 SICOM3028GPT series industrial Ethernet switches.

## 1.2 Software Features

This series devices support the following software features:

- Device management: software upgrade, configuration file upload/download
- Device diagnosis: mirror
- Network management: management through Telnet and Web
- Transmission protocols: TCP and UDP
- Network security: SSH, access list
- Switching attributes: VLAN
- Synchronization protocol: SNTP
- Data transmission: TCP Server, TCP Client, and UDP mode, as well as Multi-connect mode, static route
- 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
  - RTS Carrier control (T1, T2)

## 2 Device Access

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

- Telnet/SSH
- 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 *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, Figure 3.

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Start Page | Serial Data Port Setup | IP Network Setup | Static Route | Vlan | Access List | Mirror | Administration | Upgrade & Config | Status

**Product Overview**

Serial Port Server provides a data path from serial port to network, it could change RS-232/485/422 ports to TCP/IP interfaces such that transparent bi-directional data transmission between RS-232/485/422 port and TCP/IP interface is possible. Device with serial port will have TCP/IP functionality immediately, it can be connected to network for data communication as well as the communication distance of serial port is enlarged significantly at the same time.

**System Summary**

Hardware & Software		System	
Model		IP Address	192.168.0.33
Serial Number	K4A4R01020312	MAC Address	00:1e:cd:00:05:01
Software Version	R0001.P01	Description	
Compiled Time	2014-11-24 14:50:28	Contact	
Bootloader Version	Boot 101.1.3	Location	

Figure 2 Web UI--SM6.6-4D-A-4RS232/422/485-0.5U

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Time up: 00:22:12 up 22 min (01/01/70 00:22:12)  
Load average: 0.13 0.13 0.09 1/33 4724

Start Page | Serial Data Port Setup | Ethernet Network Setup | Administration | Upgrade | Status

**Product Overview**

Kyland Port Server(KPS) series port server has powerful management function supports CLI, Telnet, WEB and management software based on SNMP.

KPS port server supports Din-Rail or Wall Mounting installation. On the front panel, it has 1 10/100Base-TX RJ45 ports and each port can have its own IP address. KPS port server also support 4 serial ports with necessary port protection circuit, and each port can support RS232, RS422 and RS485 which can be set in software.

The KPS port server 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 port server has been integrated with part of the applications and services, such as port forwarding program channel, web service instance httpd, lldp sending service, 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		System	
Model	SM664DRJ50Z	IP Address	192.168.0.93
Serial Number	K4Z4D20131030	MAC Address	00:e0:cd:00:93:01
Software Version	Version F0001-Build-101.4.16.4	Description	
Compiled Time	2013-07-17 17:27:22	Contact	
Bootloader Version	Boot 101.1.3	Location	

Figure 3 Web UI--SM6.6-4D-232/422/485-0.5U

### 3 Start Page

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

#### 3.1 Product Overview

Product Overview covers the port standards, and operation mode of the device, as shown in Figure 4, Figure 5.



Figure 4 Product Overview--SM6.6-4D-A-4RS232/422/485-0.5U

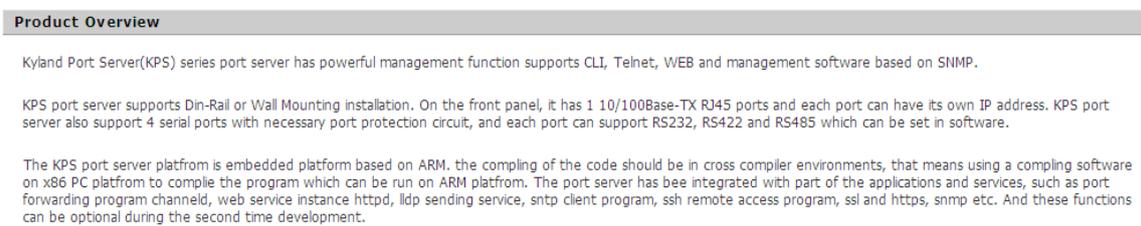


Figure 5 Product Overview--SM6.6-4D-232/422/485-0.5U

#### 3.2 System Summary

System Summary covers the model, SN, software version, compiled time, Bootloader version, management IP address, MAC address, description, contact, and location of the device, as shown in Figure 6.



Figure 6 System Summary

### 3.3 Configuration Lock

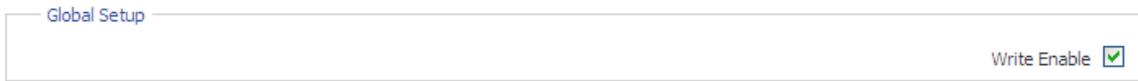


Figure 7 Configuration Lock

There is configuration lock function in every configuration interface. The parameters of interface can be configured by clicking the **Write Enable** option, otherwise you can not configure the parameters.

## 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 8.



Figure 8 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 8, data transmission is already started on serial port 1.

2. Set parameters for the specified serial port.

The screenshot shows a window titled "Serial Data Port Settings" with the following parameters and values:

Baud Rate	9600
Data Bits Used	8
Parity	None
Stop Bits Used	1
Flow Control	RTS Carrier Control
T1	10
T2	10
Serial Mode	RS232
Inter Frame Gap	30

Figure 9 Setting Parameters for the Serial Port

**Baud Rate**

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

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/ 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/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: 1/2

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

None, XON/XOFF, RTS Carrier Control (SM6.6-4D-A-4RS232/422/485-0.5U)

Default: None

Function: Configure the traffic transmission 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. XON/XOFF and Software indicate that traffic transmission control is implemented on the serial port through software. RTS Carrier Control indicates that traffic transmission identification is implemented on the serial port through RTS Carrier signal.

### **T1**

Option: 10/50/100/200 ms

Default: 10ms

Function: T1 indicates the wait time before the serial port sends frames after the RTS carrier signal is activated. When RTS Carrier Control is selected for the flow control, this parameter needs to be set.

### **T2**

Option: 10/50/100/200 ms

Default: 10ms

Function: T2 indicates the wait time before the RTS carrier signal is closed after the serial

port sends frames. When RTS Carrier Control is selected for the flow control, this parameter needs to be set.

**Serial Mode**

Options: RS232/RS485/RS422

Default: RS232

Function: Configure the serial port mode.

**Inter Frame Gap**

Options: 0~100ms(SM6.6-4D-232/422/485-0.5U)

0~280ms(SM6.6-4D-A-4RS232/422/485-0.5U)

Default: 30(SM6.6-4D-232/422/485-0.5U) 0(SM6.6-4D-A-4RS232/422/485-0.5U)

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.

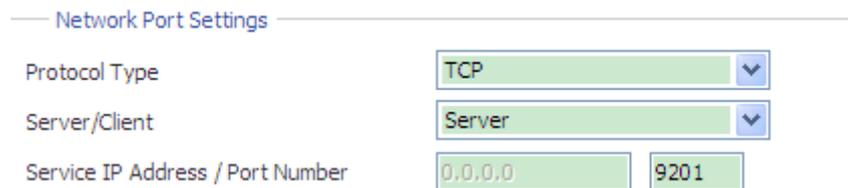


Figure 10 Setting Parameters for the Network Port (TCP Server)--SM6.6-4D-232/422/485-0.5U

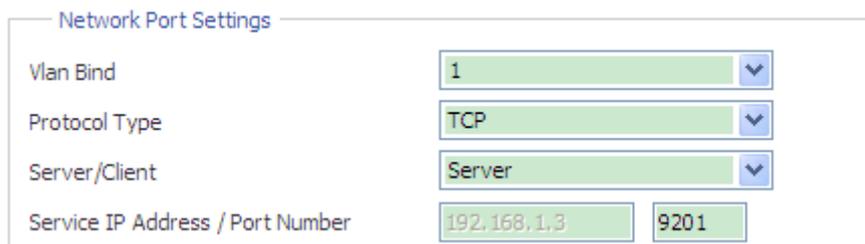


Figure 11 Setting Parameters for the Network Port (TCP Server)--SM6.6-4D-A-4RS232/422/485-0.5U

**Vlan Bind**

Option: none/ all created VLAN IDs

Default: none

Function: Bind the current serial port to a VLAN; none indicates the serial port is not bound to any VLAN. The source IP address of packets forwarded by serial port is the IP address of the VLAN interface that is bound to the serial port. If the serial port is not bound to any VLAN interface, the IP address is the management IP address of the serial port system (default: 192.168.0.3).

**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 IP address and TCP port number for the specified serial port of the TCP server.

SM6.6-4D-A-4RS232/422/485-0.5U: IP address is automatically set to the IP address of the VLAN interface that is bound to the serial port. If the serial port is not bound to any VLAN interface, the IP address is set to the management IP address of the serial port (default: 192.168.0.3).

SM6.6-4D-232/422/485-0.5U: IP address is automatically set to the management IP address of the serial port (default: 192.168.0.3).

➤ Configure the device to work in TCP client mode.

Network Port Settings

Protocol Type: TCP (TCP, UDP)

Server/Client: Client (server, client)

Remote Node

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

add

Figure 12 Setting Parameters for the Network Port (TCP Client)--SM6.6-4D-232/422/485-0.5U

Network Port Settings

Vlan Bind: 1

Protocol Type: TCP (TCP, UDP)

Server/Client: Client (server, client)

Remote Node

Send To	Port	Description
192.168.0.5	1024	1024
<input type="text" value="192.168.1.5"/>	<input type="text" value="1025"/>	<input type="text" value="1025"/>

remove

add

Figure 13 Setting Parameters for the Network Port (TCP Client)--SM6.6-4D-A-4RS232/422/485-0.5U

**Vlan Bind**

Option: none/ all created VLAN IDs

Default: none

Function: Bind the current serial port to a VLAN; none indicates the serial port is not bound to any VLAN. The source IP address of packets forwarded by serial port is the IP address of the VLAN interface that is bound to the serial port. If the serial port is not bound to any VLAN interface, the IP address is the management IP address of the serial port system (default: 192.168.0.3).

**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 <add> to add the entry, click <remove> to delete the entry.

- Configure the device to work in UDP mode.

Network Port Settings

Protocol Type:  (TCP, UDP)

Service IP Address / Port Number:

Remote Node

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

Figure 14 Setting UDP Parameters--SM6.6-4D-232/422/485-0.5U

Network Port Settings

Vlan Bind:

Protocol Type:  (TCP, UDP)

Service IP Address / Port Number:

Remote Node

Send To	Port	Description
192.168.1.5	1025	1025
192.168.0.5	1024	1024
<input type="text" value="192.168.5.5"/>	<input type="text" value="1026"/>	<input type="text" value="1026"/>

Figure 15 Setting UDP Parameters-- SM6.6-4D-A-4RS232/422/485-0.5U

**Vlan Bind**

Option: none/ all created VLAN IDs

Default: none

Function: Bind the current serial port to a VLAN; none indicates the serial port is not bound to any VLAN. The source IP address of packets forwarded by serial port is the IP address of the VLAN interface that is bound to the serial port. If the serial port is not bound to any VLAN interface, the IP address is the management IP address of the serial port system (default: 192.168.0.3).

### **Protocol Type**

Options: TCP/UDP

Default: UDP

Function: Select the transmission protocol for the device.

### **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 IP address and UDP port number for the specified serial port of the UDP local node.

SM6.6-4D-A-4RS232/422/485-0.5U: IP address is automatically set to the IP address of the VLAN interface that is bound to the serial port. If the serial port is not bound to any VLAN interface, the IP address is set to the management IP address of the serial port (default: 192.168.0.3).

SM6.6-4D-232/422/485-0.5U: IP address is automatically set to the management IP address of the serial port (default: 192.168.0.3).

### **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 <add> to add the entry, click <remove> to delete the entry.

Keep Alive	300
Response Wait	200

Figure 16 Setting the Keepalive Time

**Keep Alive**

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. 0 indicates that the connection is not disconnected even if no data is transmitted.

**Response Wait**

Range: 100~2500ms (SM6.6-4D-232/422/485-0.5U)

0~2500ms (SM6.6-4D-A-4RS232/422/485-0.5U)

Default: 200ms (SM6.6-4D-232/422/485-0.5U)

0ms (SM6.6-4D-A-4RS232/422/485-0.5U)

Function: Configure the time of waiting for a response.

Description: Multiple TCP clients have established connections with serial port module (TCP server), when the server sends data to the client:

- If the server has communicated with clients during the configured time, the server would send the data to the last client it has communicated with.
- If the server has not communicated with clients during the configured time, the server would sent the data to the clients that have established TCP connection with the device.



**Caution:**

The Response Wait setting is valid only when the serial port device is set to TCP Server.

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

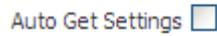


Figure 17 Automatically Obtaining the Parameter Settings of Ports

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

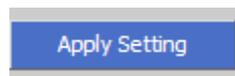


Figure 18 Apply Setting

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

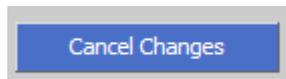


Figure 19 Cancel Changes

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 also view the management IP address through the Web UI of the SICOM3028GPT. Click [Device Advanced Configuration]→[Serial-Card Management]→[Serial-Card Management] to enter Serial-Card Management page, as shown in Figure 20.

Slot ID	VLAN ID	IP地址	MAC地址	Version
6	1.2	192.168.0.3	00-1E-CD-00-05-01	1.0

Figure 20 Serial-Card Management

#### Slot ID

Option: Select a slot ID of serial port module.

#### IP Address

Format: A.B.C.D

Function: Configure the management IP address of the serial port module.

#### 5.1.2 Web Configuration

1. You can set the management IP address of the serial port module through the Web UI of the SICOM3028GPT, as shown in Figure 20.
2. You can also set the management IP address of the serial port module through the Web UI of serial port module, as shown in Figure 21.

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 21 IP Configuration--SM6.6-4D-232/422/485-0.5U

Ethernet Address	
Local IP Address	192.168.0.3
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
Local MAC Address	00:1e:cd:00:05:01

Figure 22 IP Configuration--SM6.6-4D-A-4RS232/422/485-0.5U

**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 23 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 the serial port module (SSH server), as shown in Figure 24.

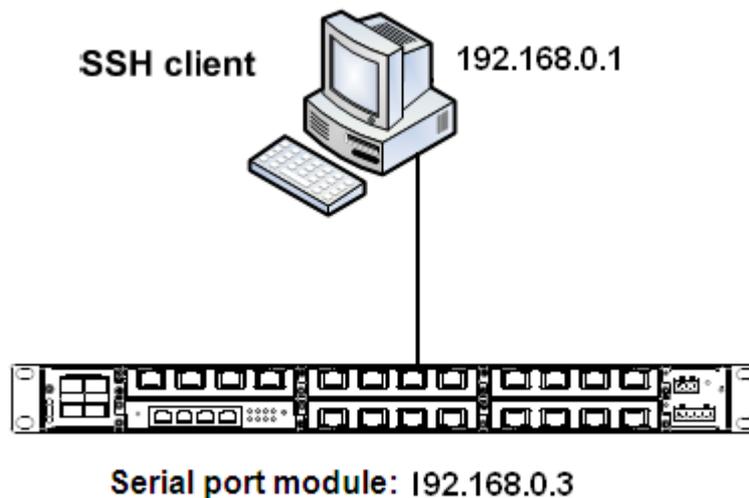


Figure 24 SSH Configuration Example

1. Establish the connection between the PC and serial port module. 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 25.

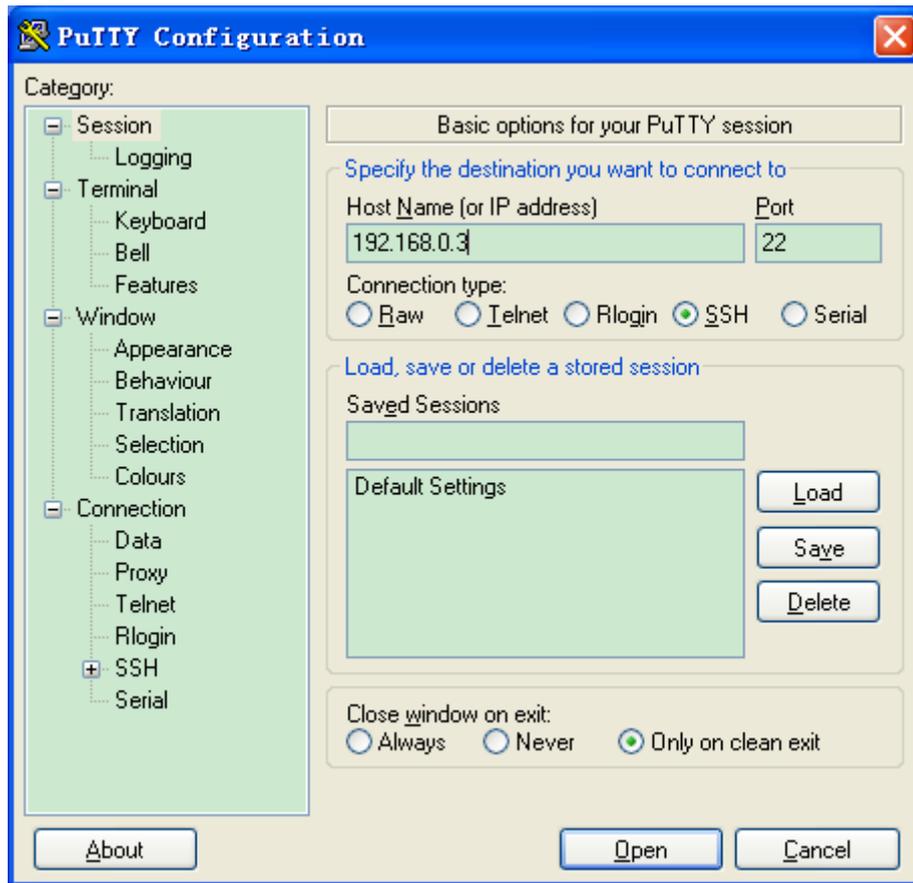


Figure 25 PuTTY Configuration

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



Figure 26 PuTTY Security Alert

3. Enter user name "admin" and password "123". The configuration interface of the device is displayed, as shown in Figure 27.



Figure 27 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	192.168.0.184
Synchronous	60
Last SYNC	01/07/2015 08:04:06 (Active)

Figure 28 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 29 Save Setting

Function: Save the current settings of Ethernet parameters.

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

Figure 30 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 VLAN

### 6.1 Overview

One LAN can be divided into multiple logical Virtual Local Area Networks (VLANs). A device can only communicate with the devices on the same VLAN. As a result, broadcast packets are restricted to a VLAN, optimizing LAN security. VLAN partition is not restricted by physical location. Each VLAN is regarded as a logical network. If a host in one VLAN needs to send data packets to a host in another VLAN, a router or layer-3 device must be involved.

The serial port system supports VLAN interfaces, which are virtual Layer 3 interfaces used for inter-VLAN communication. You can create one VLAN interface for each VLAN. The interface is used for forwarding Layer 3 packets of the ports in the VLAN. VLANs can isolate broadcast domains, so every VLAN has an IP network segment. As an IP network gateway, the VLAN interface performs IP-based, layer-3 forwarding for the data that needs to be transferred across several segments.

### 6.2 Description

After receiving an Ethernet packet, the serial port forwards the packet through the VLAN interface and serial port identified based on the destination IP address in the packet. When sending a packet, the serial port identifies the VLAN interface based on the destination IP address in the packet, and adds a VLAN ID tag to the packet.

The management IP address of the serial port maps a VLAN interface. All the packets forwarded over this VLAN interface are untagged.

### 6.3 Web Configuration

1. Create a VLAN and VLAN interface, as shown in Figure 31.

Figure 31 Creat a VLAN

**Port**

Function: Select Ethernet port based on which the VLAN is created. For the serial port module, the Ethernet port is eth0.

**Vlan**

Range: 1~4093

Function: Configure VLAN ID that is used to distinguish different VLANs. The serial port system supports max 6 VLANs.

**IP**

Format: A.B.C.D

Function: Configure the IP address for the specified VLAN interface.

**Subnetmask**

Description: The subnet mask is a number with a length of 32 bits and consists of a string of 1 and a string of 0. "1" corresponds to network number fields and subnet number fields, while "0" corresponds to host number fields. It is generally configured to 255.255.255.0.

After the configuration is completed, click <Add> button to create a VLAN. The information about the created VLANs would be displayed in “Vlan Infomation”.

Select the VLAN list and click <Remove> button to delete the VLAN list. Select the VLAN list and click <Apply> button to change the VLAN configuration.



**Caution:**

When the Link Layer Discovery Protocol (LLDP) is enabled on the switch, the serial port sends the VLAN information carried in an LLDP packet to the switch after the VLAN configuration

succeeds. Upon receiving the LLDP packet, the switch automatically adds the S-CH port as a tagged port to this VLAN. The prerequisite of this operation is that the VLAN on the switch is created and the S-CH port is not a member of this VLAN.

2. Save Setting



Figure 32 Save Setting

Function: Save the current settings of VLANs.

6.4 Typical Configuration Example

As Figure 33 shows, the entire system is divided into 2 VLANs: VLAN1 and VLAN4. It is required that the devices in a same VLAN can communicate to each other, but different VLANs are isolated.

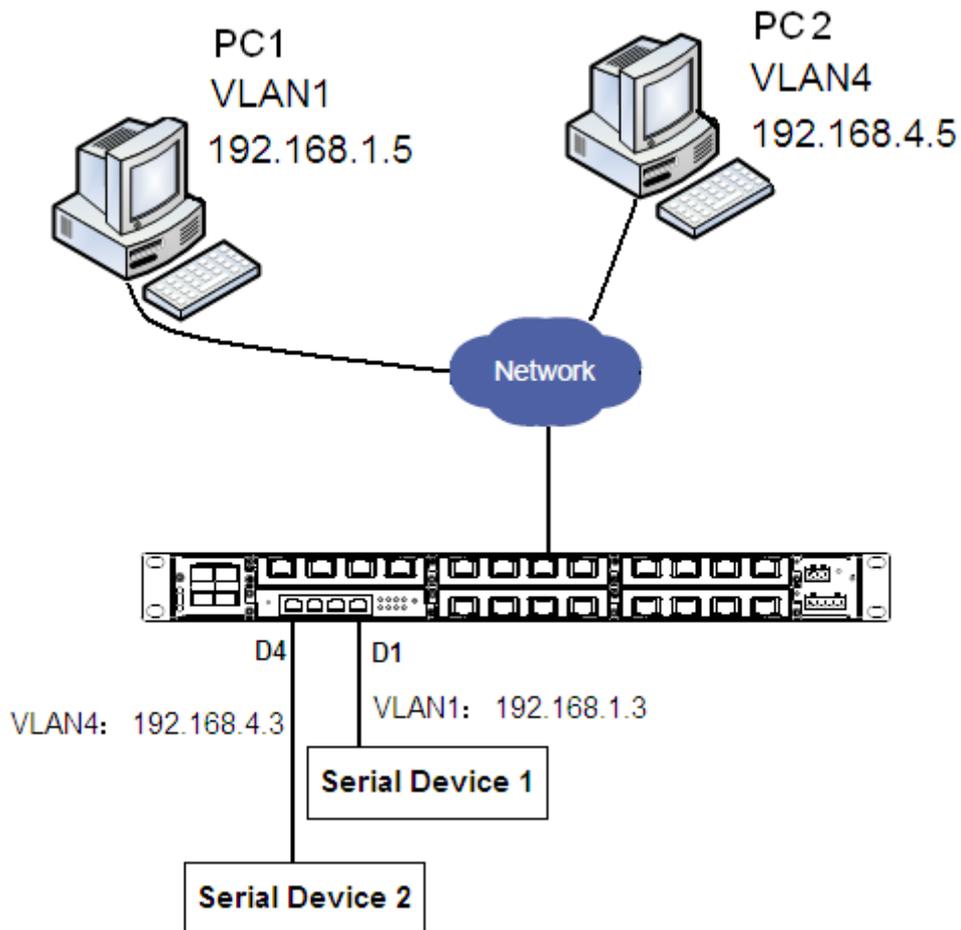


Figure 33 VLAN Application

Serial port system configuration are as follows:

1. Create VLAN1, set the IP address of the VLAN1 interface to 192.168.1.3, subnetmask to 255.255.255.0, as shown in Figure 31.
2. Create VLAN4, set the IP address of the VLAN4 interface to 192.168.4.3, subnetmask to 255.255.255.0, as shown in Figure 31.
3. Bind D1 to VLAN1, D4 to VLAN4, as shown in Figure 10.

Switching system configuration are as follows:

4. Create VLAN1, add port 4/3 and S-CH into VLAN1 as tag ports.
5. Create VLAN4, add port 4/3 and S-CH into VLAN4 as tag ports.

## 7 Static Route

### 7.1 Overview

To access a remote host on the Internet, a host must select an appropriate route by way of routers or Layer-3 switches. During the process of path selection, each router selects the path to the next router according to the destination address of the received packet, until the last router sends the packet to the destination host. The path that each router selects is called a route. Routes fall into the following types:

Direct route: indicates a route of subnets which VLAN interfaces are connected to.

Static route: indicates a route configured by the network administrator manually.

Dynamic route: indicates a route discovered by a routing protocol.

Static routes are manually configured. If a network's topology is simple, you only need to configure static routes for the network to work properly. Static routes are easy to configure and stable. They can be used to achieve load balancing and route backup, preventing illegitimate route changes. The disadvantage of using static routes is that they cannot adapt to network topology changes. If a fault or a topological change occurs in the network, the relevant routes will be unreachable and the network breaks. When this happens, the network administrator must modify the static routes manually.

### 7.2 Routing Table

Each router maintains a routing table that records all the routes used by the switch. Each entry in the table specifies which VLAN interface a packet destined for a certain subnet or host should go out to reach the next router or the directly connected destination.

A route entry includes the following items:

Destination: indicates the destination IP address or network.

Network mask: specifies, in company with the destination address, the network where the destination host or router resides. A logical AND operation between the destination address and the network mask yields the address of the destination network. For example, if the destination address is 129.102.8.10 and the mask 255.255.0.0, the address of the

destination network is 129.102.0.0. A network mask is made up of a certain number of consecutive 1s. It can be expressed in dotted decimal format or by the number of the 1s.

Egress: specifies the interface through which a matching IP packet is to be forwarded.

IP address of the next router (next hop): indicates the new router that the IP packet will pass by.

### 7.3 Web Configuration

1. Configure a static route, as shown in Figure 34.

Static Route	
Destination	192.168.5.0
Netmask Length	24
Gateway	192.168.2.4

Figure 34 Static Routing Configuration

#### Destination

Format: A.B.C.D

Function: Set the IP address of the destination host or network.

#### Netmask Length

Range: 0~32

Function: Set the subnet mask length for the network where the destination host or router resides.

#### Gateway

Format: A.B.C.D

Function: Set the next-hop IP address.

After the configuration is completed, click <Add> button to create a static route entry. The information about the created static route entries would be displayed in “Static Route Information”.

Select the static route entry and click <Remove> button to delete the static route entry. If the created static route entry needs to be changed, you should delete the static route entry first and add a new one.

2. Save Setting

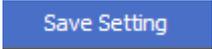


Figure 35 Save Setting

Function: Save the current settings of static routes.

**7.4 Typical Configuration Example**

As shown in Figure 36, the network masks of all devices on the network are 255.255.255.0. It is required to configure static routes to enable the serial device to communicate with PC.

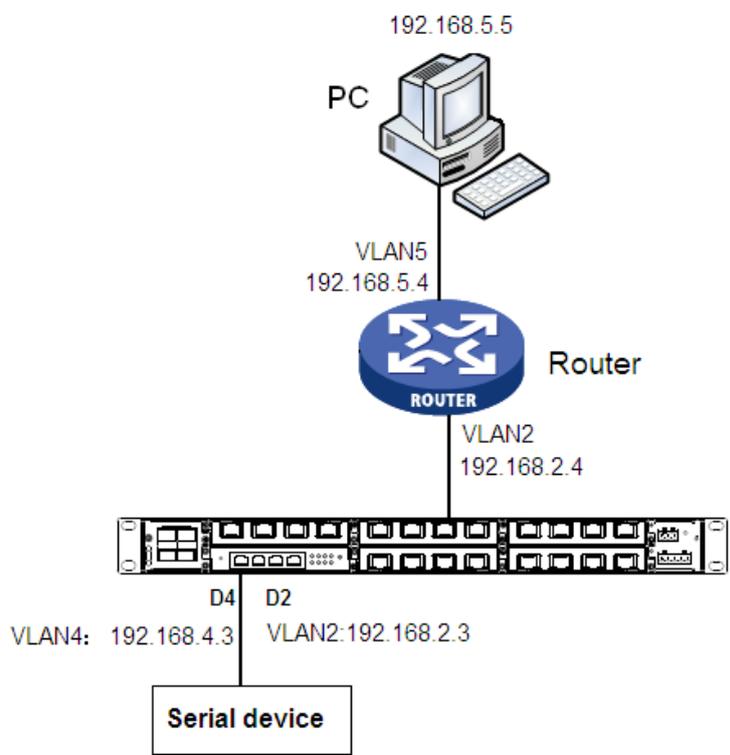


Figure 36 Example for Configuration Static Routes

Switching system configuration are as follows:

1. Create VLAN2, set the IP address of the VLAN2 interface to 192.168.2.3, subnetmask to 255.255.255.0, as shown in Figure 31.
2. Create VLAN4, set the IP address of the VLAN4 interface to 192.168.4.3, subnetmask to 255.255.255.0, as shown in Figure 31.
3. Bind D4 to VLAN4, as shown in Figure 10.
4. Configure a static route with the following parameters: Destination: 192.168.5.0, Netmask Length: 24, Gateway: 192.168.2.4

Switching system configuration are as follows:

5. Create VLAN2, add port 2/3 and S-CH into VLAN2 as tag ports.

## 8 Access List

### 8.1 Overview

The access list is a filtering method for ensuring network security, and the control of TCP Client Connection is realized through IP address and port number. After the access list is enabled, only the client corresponding to the IP address and port number in the access list can establish TCP connection with the server. When the access list is not enabled, all the clients corresponding to the IP address and port number can establish TCP connection with the server.



**Caution:**

Access list applies to the connection control on the client side only, so the access list settings are valid only when the serial port device is set to TCP Server.

### 8.2 Web Configuration

1. Enable the access list, as shown in Figure 37.

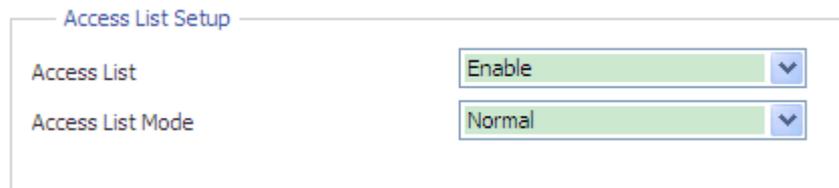


Figure 37 Enable the Access List

**Access List**

Option: Enable/Disable

Default: Disable

Function: Enable or disable access list.

**Access List Mode**

Option: Normal/Mutex

Default: Normal

Function: Configure the access list mode.

Description: Mutex means that only one TCP connection is allowed for each serial port channel.

2. Create the access list, as shown in Figure 38.

The screenshot shows a configuration window titled "Access List Entry Management". It contains three input fields:
 

- Operated Mode:** A dropdown menu with "Single" selected.
- Remote Node Ip Address:** A text input field containing "192.168.0.33".
- Port:** A text input field containing "0".

Figure 38 Create a Access List

**Operated Mode**

Option: Single/Batch

Default: Single

Function: Choose the way access lists are added(Single for adding one access list, Batch for adding multiple access lists at a time).

**Remote Node IP Address**

Option: A.B.C.D

Function: Configure the remote node IP address for the access list. If the operated mode is Batch, the range of the IP address needs to be added.

**Port**

Range: 0/2000~65535

Function: Configure the port for the access list. 0 means there is no restriction for the port.

After the configuration is completed, click <Add> button to create an access list. The information about the created access lists would be displayed in “ Access List”.

Select the access list and click <Remove> button to delete the access list. If the created access list needs to be changed, you should delete the access list first and add a new one.

3. Save Setting

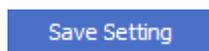


Figure 39 Save Setting

Function: Save the current settings of access lists.

## 9 Mirror

### 9.1 Overview

Mirroring means that the data frame transmitted within the serial port channel would be replicated to the remote mirroring destination client. And it is possible to connect a protocol analyzer or RMON detector to monitor or manage the network, and perform fault diagnosis for the network.

The device only supports one mirroring destination Client. And the number of mirroring source serial ports may be 1 or more than 1.

### 9.2 Web Configuration

1. Mirror Configuration, as shown in Figure 40.

The screenshot shows the 'Mirror Setup' configuration page. It contains the following elements:

- Mirror Service:** Radio buttons for 'Enable' (selected) and 'Disable'. A status indicator '(Enable | Disable)' is shown to the right.
- Mirror Service IP/Port:** Two input fields containing '192.168.0.100' and '6020'.
- Mirror Frame Header:** Radio buttons for 'Enable' (selected) and 'Disable'. A status indicator '(Enable | Disable)' is shown to the right.
- Mirror White List:** Radio buttons for 'Enable' (selected) and 'Disable'. A status indicator '(Enable | Disable)' is shown to the right.
- Mirror Source Channel:** Four columns labeled D1, D2, D3, and D4. Each column has two checkboxes: 'RX' and 'TX'.
  - D1: RX checked, TX unchecked.
  - D2: RX unchecked, TX checked.
  - D3: RX checked, TX checked.
  - D4: RX unchecked, TX unchecked.
- Apply:** A blue button at the bottom right.

Figure 40 Mirror Configuration

#### Mirror Service

Option: Enable/Disable

Default: Disable

Function: Enable or disable mirror service.

#### Mirror Service IP/port

Function: Configure the IP address and port of the mirroring destination client.

#### Mirror Frame Header

Option: Enable/Disable

Default: Disable

Function: Choose whether to add mirror frame header when mirroring the data.

**Mirror White List**

Option: Enable/Disable

Default: Disable

Function: Enable or disable mirror white list. After the mirror white list is enabled, only the clients corresponding to the IP addresses and ports in the white list could be used as the mirroring destination Client.

**Mirror Source Channel**

Function: Choose the Mirror Source Channel ID and the mirror data direction for the source channel, all the data of the mirror source channel would be replicated to the mirroring destination Client.

RX: Only the data received by the source channel would be mirrored.

TX: Only the data sent by the source channel would be mirrored.

RX&TX: Both the data received and sent by the source channel would be mirrored.

2. Create the mirror access list, as shown in Figure 41.

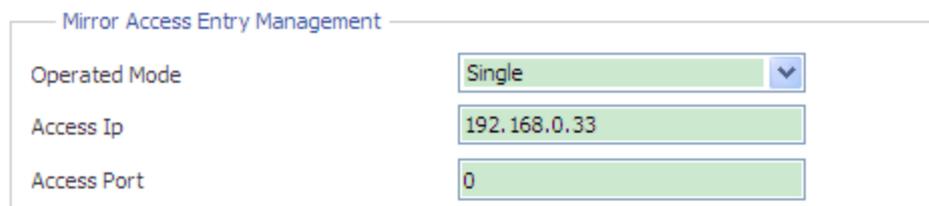


Figure 41 Create the Mirror Access List

**Operated Mode**

Option: Single/Batch

Default: Single

Function: Choose the way access lists are added (Single for adding one access list, Batch for adding multiple access lists at a time).

**Access IP**

Option: A.B.C.D

Function: Configure the remote node IP address for the mirror access list. If the operated mode is Batch, the range of the IP address needs to be added.

**Access Port**

Range: 0/2000~65535

Function: Configure the port for the mirror access list. 0 means there is no restriction for the port.

After the configuration is completed, click <Add> button to create a mirror access list. The information about the created mirror access lists would be displayed in “ Mirror Access List”. Select the mirror access list and click <Remove> button to delete the mirror access list. If the created mirror access list needs to be changed, you should delete the mirror access first and add a new one.

### 3. Save Setting/Cancel Changes

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

Figure 42 Save Setting

Function: Save the current settings of mirror parameters.

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

Figure 43 Cancel Changes

Function: Cancel the current settings of mirror 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**.

# 10 Administration

## 10.1 Device Management

### 1. User name and password setting

The screenshot shows a configuration window titled "Web User Manager". It contains two rows of labels and input fields. The first row has the label "User Name" and an input field containing the text "admin". The second row has the label "User Password" and an input field containing three black dots, indicating a masked password.

Figure 44 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 rows of labels and input fields. The first row has the label "Description" and an input field containing "serial-port". The second row has the label "Contact" and an input field containing "kyland". The third row has the label "Location" and an input field containing "Chongxin Creative Building".

Figure 45 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.

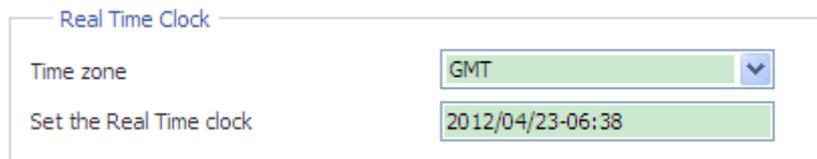


Figure 46 Configuring the RTC

**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 47.

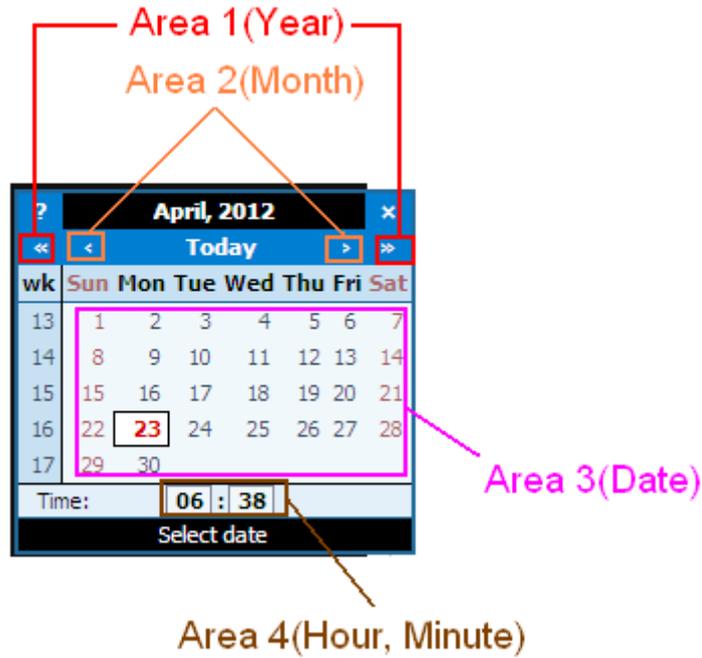


Figure 47 Time Selection

- 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.

### 10.2 Factory Defaults



Figure 48 Restore Factory Defaults

Function: Restore the factory default settings of the device.

### 10.3 Device Control

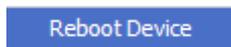


Figure 49 Reboot Device

Function: Restart the device.



**Warning:**

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

## 10.4 Save Setting/Cancel Changes

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

Figure 50 Save Setting

Function: Save the settings in the current page.

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

Figure 51 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**.

---

## 11 Upgrade& Config

Device can obtain more performances by software update.

Configuration backup function can save current device configuration files on the server.

When the device configuration is changed, users can download the original configuration files from the server to device by FTP/TFTP protocol.

Config upload is to upload the device configuration files to the server and save them to \*.doc and \*.txt files. Config download is to download the saved configuration files from the server to device.



**Caution:**

After configuration file is downloaded to the device, you need to restart the device to make the configuration take effect.

---

Software upgrade and config upload/ download 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 52. Enter the user name and password, for example, "admin" and "123". Click <OK>.

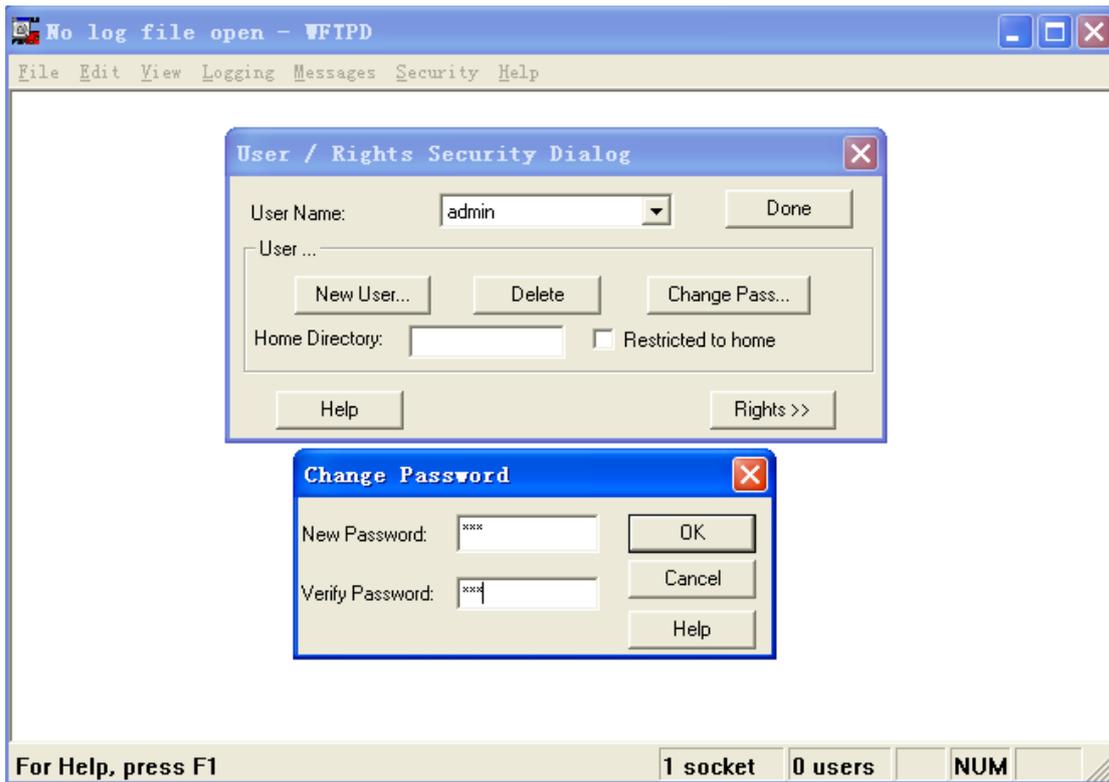


Figure 52 Adding an FTP User

3. Enter the path for saving the file in Home Directory, as shown in Figure 53. Click <Done>.

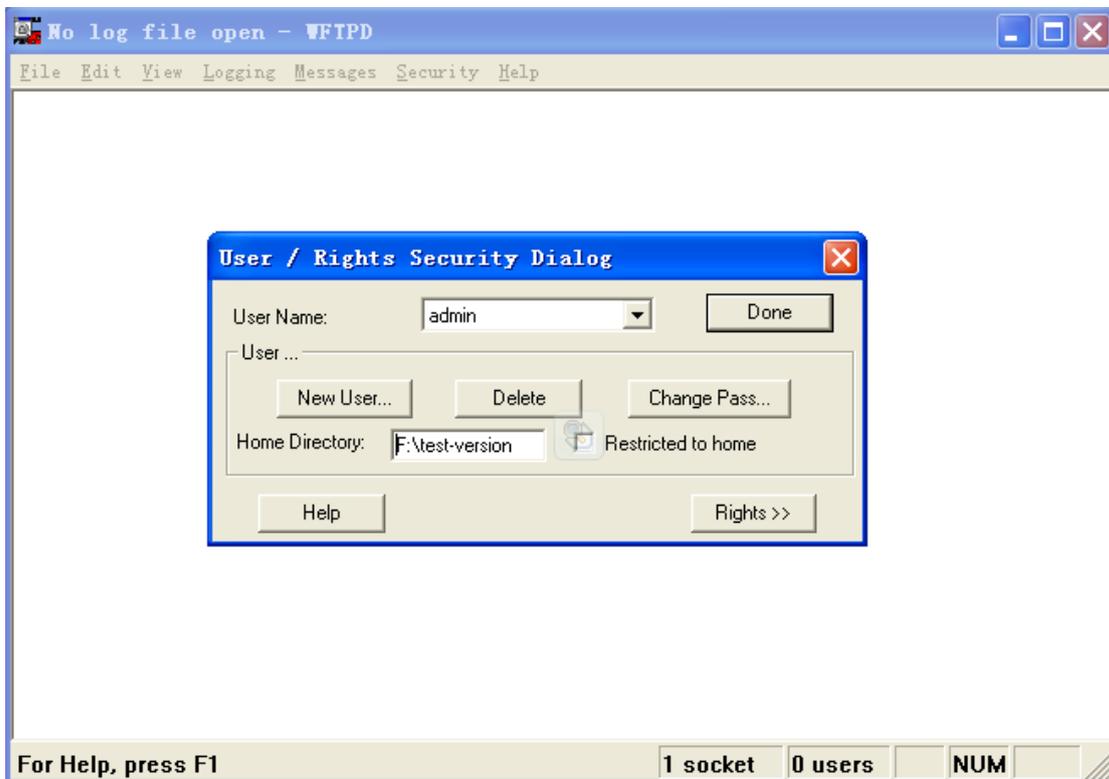


Figure 53 Changing the File Path

4. Figure 54 shows the upgrade& config page. Enter the IP address of the FTP server, user

name, password, and file name. Click <Apply>/<Upgrade>.

Upgrade & Config

Item	Software Upgrade <span style="float: right;">▼</span>
Server IP	192.168.0.23
User Name	admin
User Password	●●●
File Name	.6.2-KPS-C2-SICOM3005A-T0002

**WARNING**

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

Apply

Figure 54 File Transmission through FTP

**Item**

Option: Firmware (SM6.6-4D-232/422/485-0.5U)

Software Upgrade/Config Upload/Config Download(SM6.6-4D-A-4RS232/422/485-0.5U)

Function: select file operation. Firmware indicates software upgrade.



**Warning:**

- The software version 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/ upload/ download to complete, as shown in Figure 55.

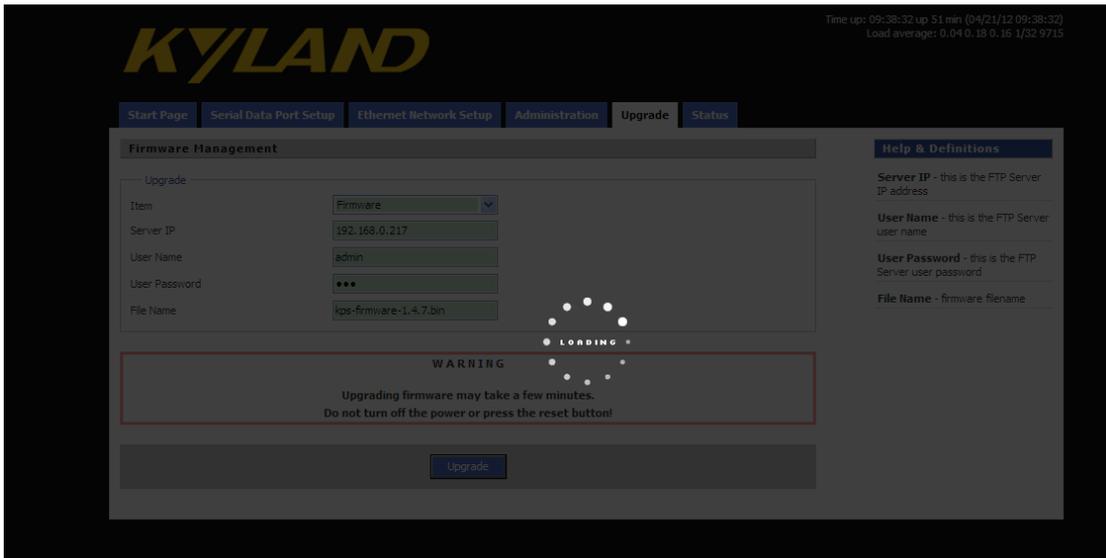


Figure 55 Waiting...

6. After the upgrade/ upload/ download is completed successfully, the following page is displayed. Click <REBOOT> to restart the device.

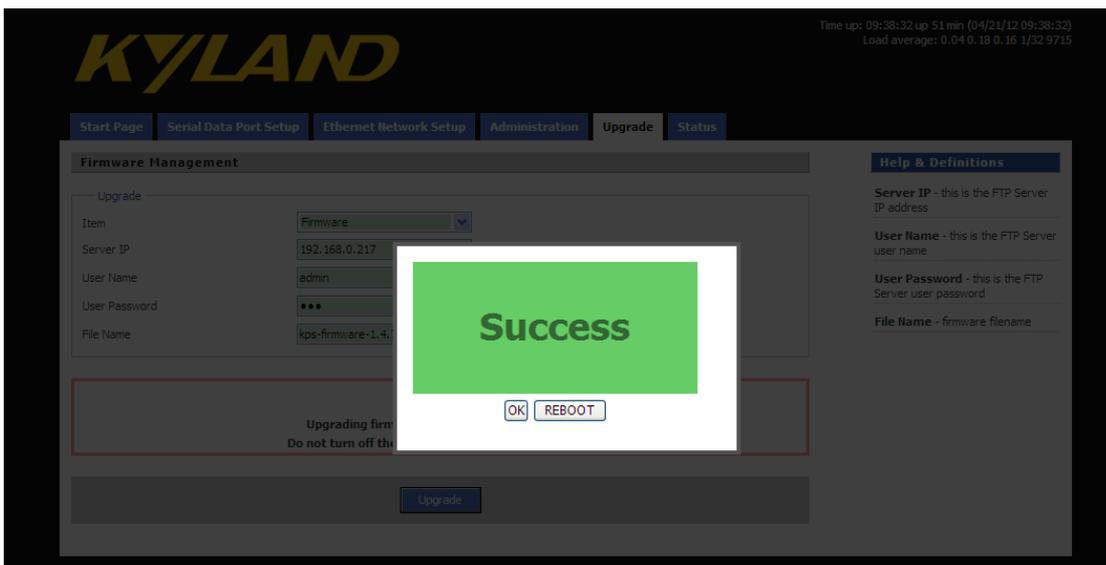


Figure 56 Successfully Upgrading/ Uploading/ Downloading



**Warning:**

- During file transmission, 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.

## 12 Status

### 12.1 Transmission Statistics

#### 12.1.1 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.

#### 12.1.2 Web Configuration

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

Figure 57 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 58 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 59 Reset

Function: Clear the current statistics.

## 12.2 Auto Refresh

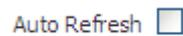


Figure 60 Auto Refresh

Function: Automatically refresh the statistics 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.

## 12.3 Statistic Refresh

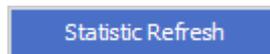


Figure 61 Statistic Refresh

Function: Manually refresh the statistics in the current interface to obtain the latest data.

## 13 Typical Configuration Examples

### 13.1 Virtual Serial Port Mode

You can access the serial port module from a PC through Virtual Serial Port Manager (VSPM) software.

As shown in Figure 62, connect the network port of the PC to that of SICOM3028GPT, and the serial port of serial port module to a serial device. Install VSPM on the PC. VSPM works in client mode, and the serial port module works as the TCP server. In this way, the PC can communicate with the serial device.

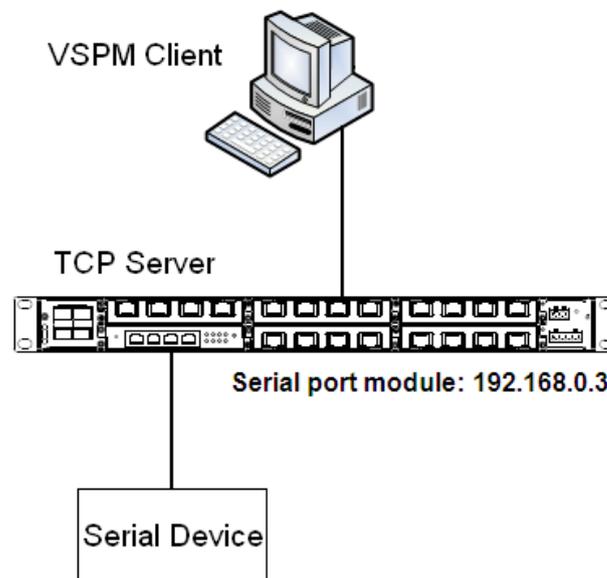


Figure 62 Using Virtual Serial Port

Detailed steps are as follows:

1. Set the management IP address of serial port module to the default, 192.168.0.3. Connect 2 to the serial device. Set the parameters on serial port module 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 63.

**Serial Data Port Setup**

Serial Data Port ID:  start stop

---

**Serial Data Port Settings**

Baud Rate	<input type="text" value="9600"/>
Data Bits Used	<input type="text" value="8"/>
Parity	<input type="text" value="None"/>
Stop Bits Used	<input type="text" value="1"/>
Flow Control	<input type="text" value="None"/>
Serial Mode	<input type="text" value="RS232"/>
Inter Frame Gap	<input type="text" value="30"/>

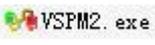
---

**Network Port Settings**

Vlan Bind	<input type="text" value="none"/>
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="9202"/>
Keep Alive	<input type="text" value="300"/>
Response Wait	<input type="text" value="200"/>

Figure 63 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 64 Selecting the Working Mode of the VSPM

- Select the first or second option. If serial port module serves as the server, select the first option to make VSPM work in client mode. If serial port module serves as the client, select the second option to make VSPM work in server mode. In this example, serial port module serves as the server. Therefore, select the first option. Click <OK> to enter the interface of the VSPM client.

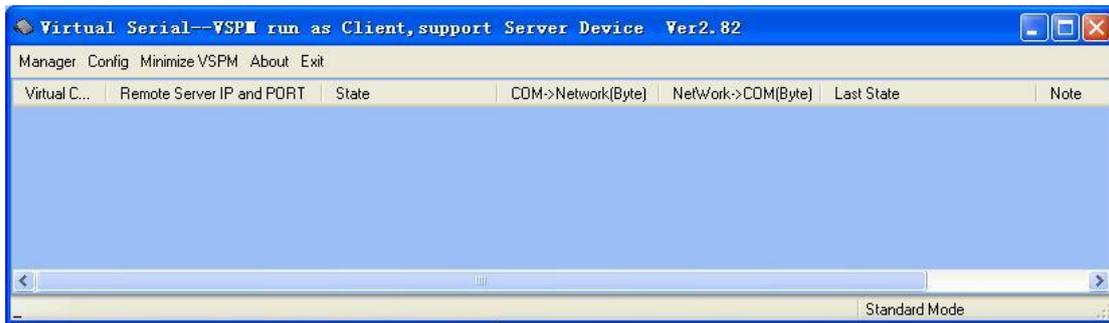


Figure 65 Interface of VSPM Working in Client Mode

- 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 serial port module), as shown in Figure 66.

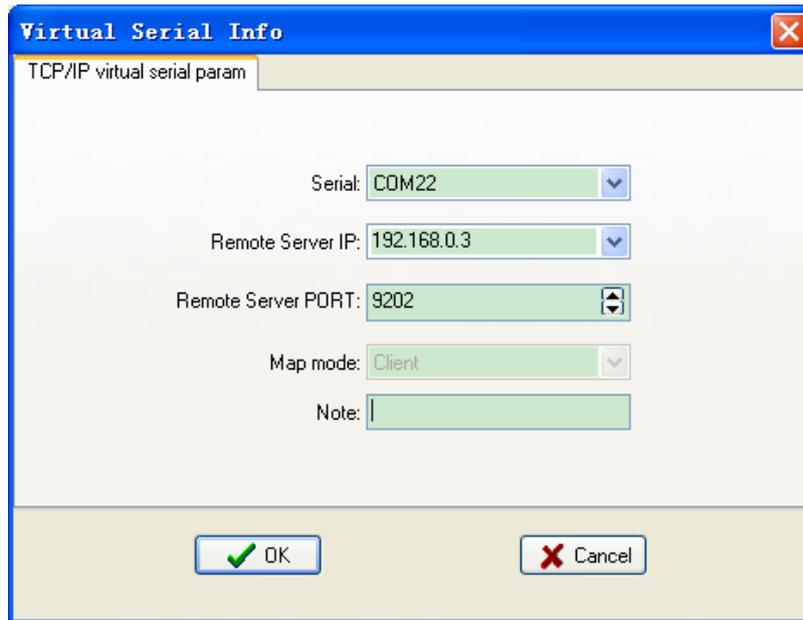


Figure 66 Setting Parameters for the Virtual Serial Port

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

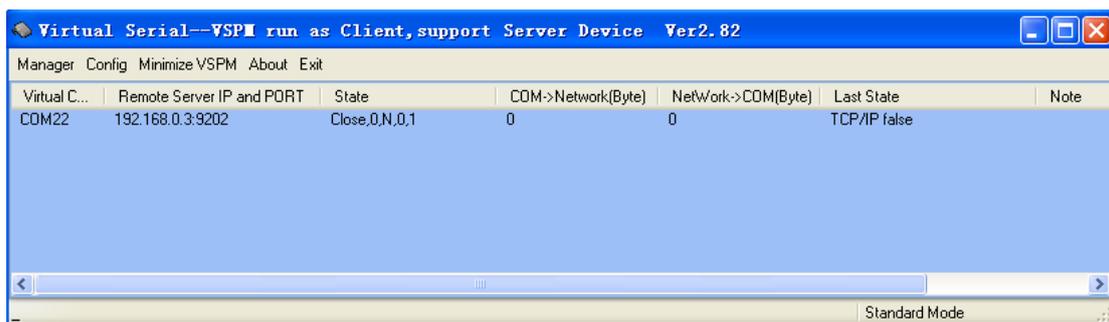


Figure 67 Information about the Virtual Serial Port

3. After VSPM is installed on the PC, the serial port of serial port module 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.

### 13.2 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 SICOM3028GPT, and the serial port of serial port module to a serial device. If the PC works as the TCP server, you need to configure serial port module as the TCP client. If the PC works as the TCP client, you need to

configure serial port module as the TCP server.

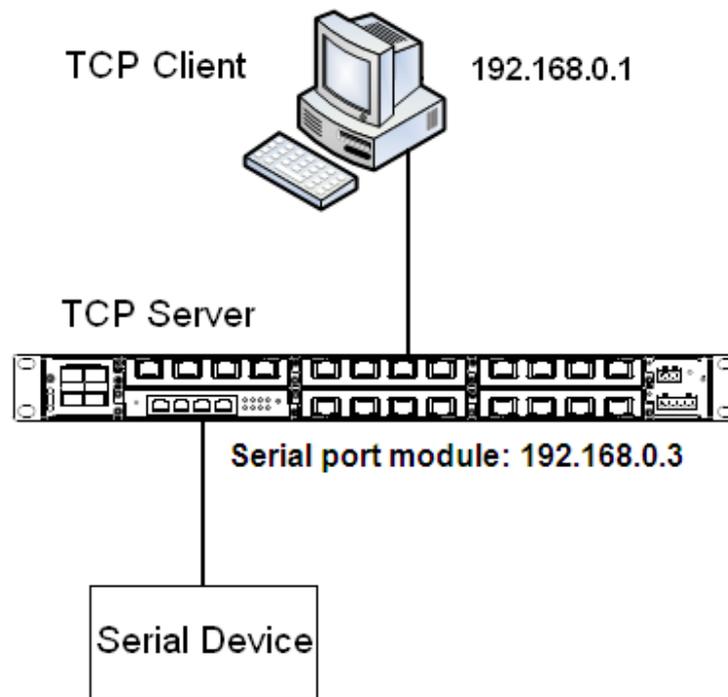


Figure 68 TCP Server $\longleftrightarrow$ TCP Client 1

1. When serial port module works as the TCP server, the TCP port of serial port module 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 serial port module is passively connected. Connect 2 of serial port module to the serial device. Set the parameters on serial port module 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 69.

**Serial Data Port Setup**

Serial Data Port ID:

---

**Serial Data Port Settings**

Baud Rate:

Data Bits Used:

Parity:

Stop Bits Used:

Flow Control:

Serial Mode:

Inter Frame Gap:

---

**Network Port Settings**

Vlan Bind:

Protocol Type:

Server/Client:

Service IP Address / Port Number:

Keep Alive:

Response Wait:

Figure 69 Configuring Serial Port Module as TCP Server

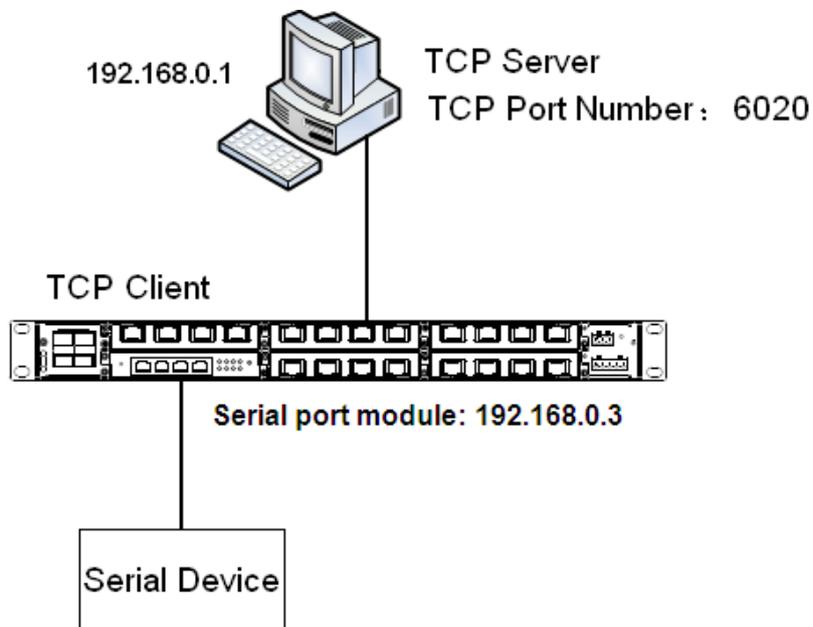


Figure 70 TCP Server ↔ TCP Client 2

2. As shown in Figure 70, serial port module in TCP client mode proactively connects to the TCP port of the TCP server. Therefore, the network address and TCP port number, to which

serial port module 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 serial port module to the serial device. Set parameters on serial port module 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 71.

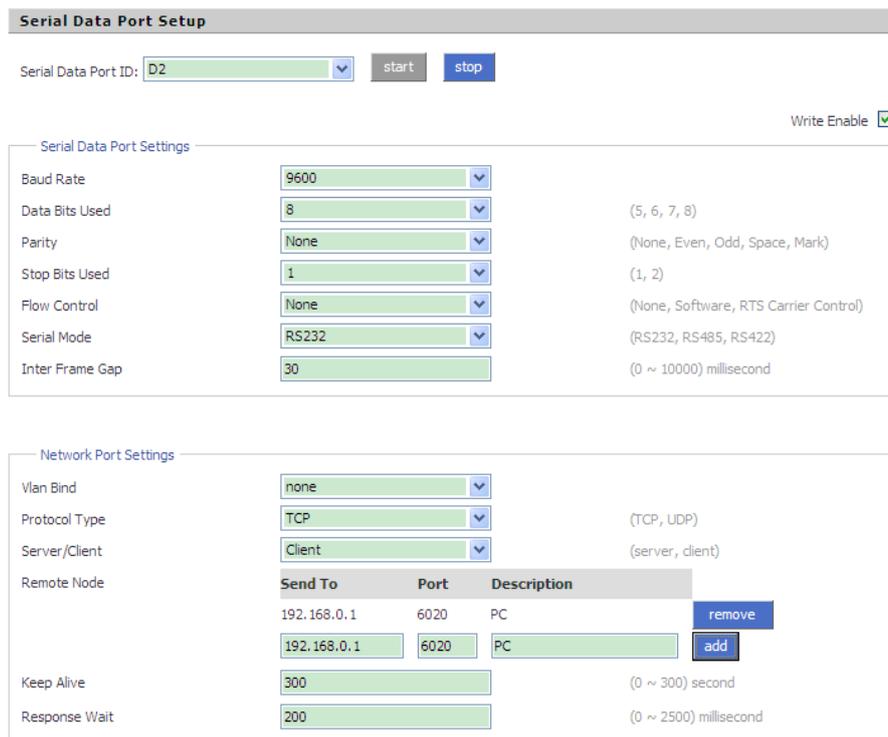


Figure 71 Configuring Serial Port Module as TCP Client

### 13.3 UDP ↔ UDP Mode

You can write programs to support the UDP mode. When serial port module 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 72, connect the network port of PC1 and that of PC2 to the network port of SICOM3028GPT. Then connect 2 of serial port module to the serial device to enable point-to-multi-point communication, that is, communication between PC1 and serial device, between PC2 and serial device.

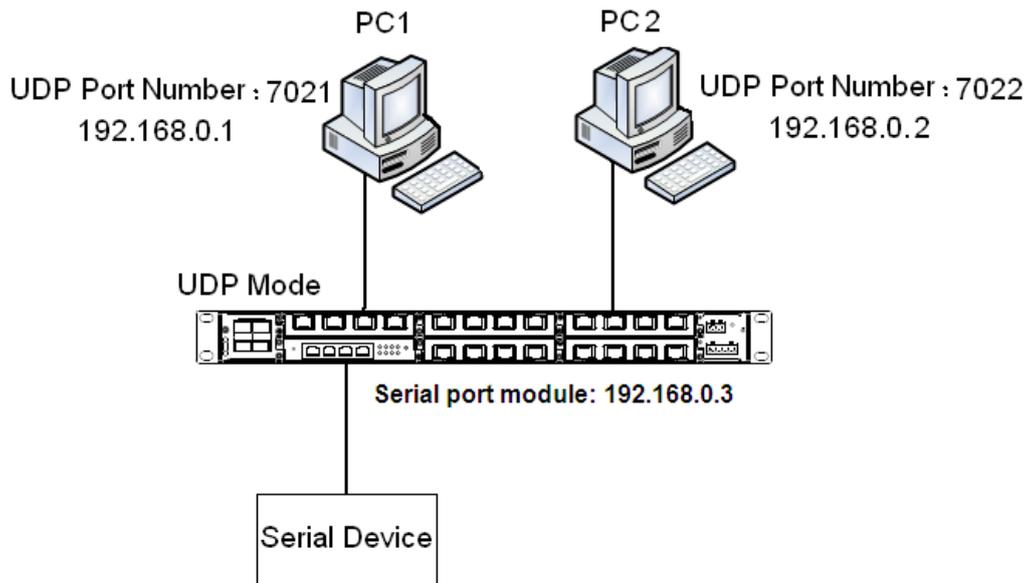


Figure 72 UDP←→UDP

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 serial port module to the serial device. Set the parameters on serial port module as follows:

- Serial Data Port ID: D2
- Protocol Type: UDP
- Port Number: 9202 (default). You can set the port number to a value ranging from 1024 to 65000.
- 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 73.

**Serial Data Port Setup**

Serial Data Port ID: D2 start stop

Write Enable

**Serial Data Port Settings**

Baud Rate	<span style="border: 1px solid #ccc; padding: 2px;">9600</span>	
Data Bits Used	<span style="border: 1px solid #ccc; padding: 2px;">8</span>	(5, 6, 7, 8)
Parity	<span style="border: 1px solid #ccc; padding: 2px;">None</span>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<span style="border: 1px solid #ccc; padding: 2px;">1</span>	(1, 2)
Flow Control	<span style="border: 1px solid #ccc; padding: 2px;">None</span>	(None, Software, RTS Carrier Control)
Serial Mode	<span style="border: 1px solid #ccc; padding: 2px;">RS232</span>	(RS232, RS485, RS422)
Inter Frame Gap	<span style="border: 1px solid #ccc; padding: 2px;">30</span>	(0 ~ 10000) millisecond

**Network Port Settings**

Vlan Bind	<span style="border: 1px solid #ccc; padding: 2px;">none</span>																	
Protocol Type	<span style="border: 1px solid #ccc; padding: 2px;">UDP</span>	(TCP, UDP)																
Service IP Address / Port Number	<span style="border: 1px solid #ccc; padding: 2px;">0,0,0,0</span> <span style="border: 1px solid #ccc; padding: 2px; margin-left: 10px;">9202</span>																	
Remote Node	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f0f0f0;"> <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;"><span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span></td> </tr> <tr> <td>192.168.0.1</td> <td>7021</td> <td>PC1</td> <td style="text-align: right;"><span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span></td> </tr> <tr> <td><span style="border: 1px solid #ccc; padding: 2px;">192.168.0.2</span></td> <td><span style="border: 1px solid #ccc; padding: 2px;">7022</span></td> <td><span style="border: 1px solid #ccc; padding: 2px;">PC2</span></td> <td style="text-align: right;"><span style="background-color: #0056b3; color: white; padding: 2px 5px;">add</span></td> </tr> </tbody> </table>		Send To	Port	Description		192.168.0.2	7022	PC2	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span>	192.168.0.1	7021	PC1	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span>	<span style="border: 1px solid #ccc; padding: 2px;">192.168.0.2</span>	<span style="border: 1px solid #ccc; padding: 2px;">7022</span>	<span style="border: 1px solid #ccc; padding: 2px;">PC2</span>	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">add</span>
Send To	Port	Description																
192.168.0.2	7022	PC2	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span>															
192.168.0.1	7021	PC1	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span>															
<span style="border: 1px solid #ccc; padding: 2px;">192.168.0.2</span>	<span style="border: 1px solid #ccc; padding: 2px;">7022</span>	<span style="border: 1px solid #ccc; padding: 2px;">PC2</span>	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">add</span>															
Keep Alive	<span style="border: 1px solid #ccc; padding: 2px;">300</span>	(0 ~ 300) second																
Response Wait	<span style="border: 1px solid #ccc; padding: 2px;">200</span>	(0 ~ 2500) millisecond																

Figure 73 Configuring Serial Port Module to Work in UDP Mode

## 13.4 Device ↔ Device Mode

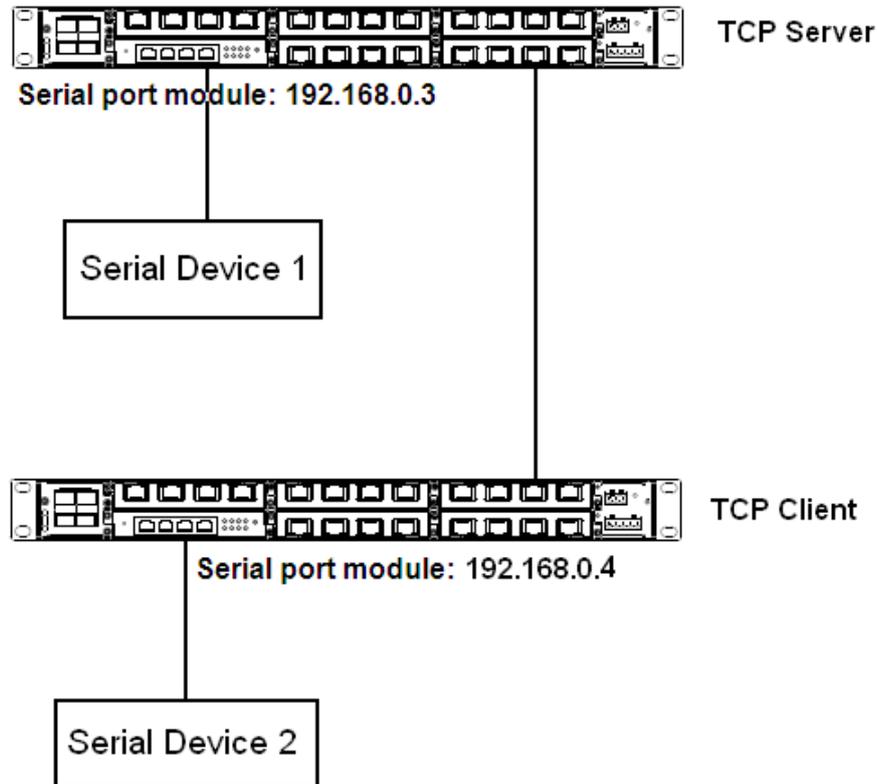


Figure 74 Serial Port Module-1 $\longleftrightarrow$ Serial Port Module-2

As shown in Figure 74, connect serial device 1 to serial port 1 of serial port module-1, serial device 2 to serial port 2 of serial port module-2, and the network port of SICOM3028GPT-1 to that of SICOM3028GPT-2. Because SICOM3028GPT-1 communicates with SICOM3028GPT-2 through Ethernet ports, the connection allows communication between distant serial devices.

The IP address of serial port module-1 is 192.168.0.3, and that of serial port module-2 is 192.168.0.4. Configure serial port module-1 to work in TCP server mode, and serial port module-2 to work in TCP client mode. Detailed steps are as follows:

Configuration on serial port module-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 75.

**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"/>
Parity	<input type="text" value="None"/>
Stop Bits Used	<input type="text" value="1"/>
Flow Control	<input type="text" value="None"/>
Serial Mode	<input type="text" value="RS232"/>
Inter Frame Gap	<input type="text" value="30"/>

---

**Network Port Settings**

Vlan Bind	<input type="text" value="none"/>
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"/>
Keep Alive	<input type="text" value="300"/>
Response Wait	<input type="text" value="200"/>

Figure 75 Configuring Serial Port Module-1 as TCP Server

Configuration on serial port module-2:

- Serial Data Port ID: D2
- Protocol Type: TCP
- Server/Client: Client
- Send To: 192.168.0.3 (IP address of serial port module-1)
- Port: 9201 (same as the TCP port number of serial port module-1)
- Description: Description of serial port module-1
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 76.

### Serial Data Port Setup

Serial Data Port ID: D2 start stop

Write Enable

Serial Data Port Settings

Baud Rate	<span style="border: 1px solid #ccc; padding: 2px;">9600</span>	
Data Bits Used	<span style="border: 1px solid #ccc; padding: 2px;">8</span>	(5, 6, 7, 8)
Parity	<span style="border: 1px solid #ccc; padding: 2px;">None</span>	(None, Even, Odd, Space, Mark)
Stop Bits Used	<span style="border: 1px solid #ccc; padding: 2px;">1</span>	(1, 2)
Flow Control	<span style="border: 1px solid #ccc; padding: 2px;">None</span>	(None, Software, RTS Carrier Control)
Serial Mode	<span style="border: 1px solid #ccc; padding: 2px;">RS232</span>	(RS232, RS485, RS422)
Inter Frame Gap	<span style="border: 1px solid #ccc; padding: 2px;">30</span>	(0 ~ 10000) millisecond

Network Port Settings

Vlan Bind	<span style="border: 1px solid #ccc; padding: 2px;">none</span>													
Protocol Type	<span style="border: 1px solid #ccc; padding: 2px;">TCP</span>	(TCP, UDP)												
Server/Client	<span style="border: 1px solid #ccc; padding: 2px;">Client</span>	(server, client)												
Remote Node	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #f0f0f0;"> <th style="text-align: left; border: none;">Send To</th> <th style="text-align: left; border: none;">Port</th> <th style="text-align: left; border: none;">Description</th> <th style="border: none;"></th> </tr> </thead> <tbody> <tr> <td style="border: 1px solid #ccc; padding: 2px;">192.168.0.3</td> <td style="border: 1px solid #ccc; padding: 2px;">9201</td> <td style="border: 1px solid #ccc; padding: 2px;">device-1</td> <td style="text-align: right;"><span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span></td> </tr> <tr> <td style="border: 1px solid #ccc; padding: 2px;">192.168.0.3</td> <td style="border: 1px solid #ccc; padding: 2px;">9201</td> <td style="border: 1px solid #ccc; padding: 2px;">device-1</td> <td style="text-align: right;"><span style="background-color: #0056b3; color: white; padding: 2px 5px;">add</span></td> </tr> </tbody> </table>		Send To	Port	Description		192.168.0.3	9201	device-1	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span>	192.168.0.3	9201	device-1	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">add</span>
Send To	Port	Description												
192.168.0.3	9201	device-1	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">remove</span>											
192.168.0.3	9201	device-1	<span style="background-color: #0056b3; color: white; padding: 2px 5px;">add</span>											
Keep Alive	<span style="border: 1px solid #ccc; padding: 2px;">300</span>	(0 ~ 300) second												
Response Wait	<span style="border: 1px solid #ccc; padding: 2px;">200</span>	(0 ~ 2500) millisecond												

Figure 76 Configuring Serial Port Module-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
VLAN	Virtual Local Area Network
UDP	User Datagram Protocol