

KPS2204 Programmable Protocol Converter

Web Operation Manual



KYLAND

Kyland Technology Co., LTD.

Publication Date: Apr. 2012

Version: V1.0

Customer Service Hotline: (+8610) 88796676

FAX: (+8610) 88796678

Website: <http://www.kyland.cn>

Email: support@kyland.biz

Disclaimer:

Kyland Technology Co., Ltd. tries to keep the content in this manual as accurate and as up-to-date as possible. This document is not guaranteed to be error-free, and we reserve the right to amend it without notice.

Copyright © 2012 KYLAND Technology CO., LTD.

All rights reserved

No part of this documentation may be excerpted, reproduced, translated, annotated or duplicated, in any form or by any means without the prior written permission of KYLAND Corporation.

Contents

Preface	1
1 Product Introduction	4
1.1 Overview	4
1.2 Product Models	4
1.3 Software Features	4
2 Device Access	6
3 Start Page.....	8
3.1 Product Overview	8
3.2 System Summary	8
4 Serial Data Port Setup	9
4.1 Overview	9
4.2 Web Configuration.....	9
5 Ethernet Network Setup	17
5.1 Ethernet Port Setup.....	17
5.1.1 Overview.....	17
5.1.2 Network Port IP Address Query	17
5.1.3 Web Configuration	18
5.2 Network Protocols	19
5.2.1 SSH Daemon.....	19
5.2.2 SSL Protocol	22
5.2.3 LLDP	24
5.2.4 SNTP	24
5.3 Save Setting/Cancel Changes	25
6 Administration.....	27
6.1 Device Management	27
6.2 Factory Defaults	30
6.3 Device Control.....	30

6.4	Save Setting/Cancel Changes	31
7	Upgrade.....	32
8	Status.....	36
8.1	Transmission Statistics	36
8.1.1	Overview.....	36
8.1.2	Web Configuration	36
8.2	Level Measurement.....	37
8.3	Auto Refresh	37
8.4	Statistic Refresh	37
9	Typical Configuration Examples	39
9.1	Virtual Serial Port Mode	39
9.2	TCP Server \longleftrightarrow TCP Client Mode	42
9.3	UDP \longleftrightarrow UDP Mode	45
9.4	Device \longleftrightarrow Device Mode	47
	Appendix: Acronyms	50

Preface

The manual describes the access modes and software features of KPS2204 programmable protocol converter, as well as the Web configuration methods.

The manual is applicable to the following firmware version:

kps-firmware-1.4.7.bin

Content Structure

The manual contains the following contents:

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



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

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
 Caution	The matters need attention during the operation and configuration, and it is supplement to the operation description
 Note	Necessary explanations to the operation description

**Warning**

The matters that call for special attention. Incorrect operation might cause data loss or damage to devices

Product Documentation

The documentation of KPS2204 includes the following documents:

Document	Description
KPS2204 Programmable Protocol Converter Hardware Installation Manual	Describes the appearance, structure, hardware specifications, and mounting and dismounting methods of KPS2204.
KPS2204 Programmable Protocol Converter Web Operation Manual	Describes the software functions, configuration methods, and configuration steps of KPS2204.

Document Obtainment

You can obtain the documents from:

- CD or manual delivered with the device
- Kyland website: www.kyland.cn

1 Product Introduction

1.1 Overview

KPS2204 includes a series of programmable protocol servers designed by Kyland for serial device networks. It integrates Ethernet and serial data transmission, realizing direct conversion between the serial port protocol and Ethernet protocol.

1.2 Product Models

The series devices provide the following models to suit customers' different needs, as shown in Table 1.

Table 1 Product Models

Model	100M RJ45 Port	RS232/422/485 Serial Data Port	Programmable Push Switch	Level Detection Terminal
KPS2204-2T-4D -232/422/485-wit h switch	2	4	1	1
KPS2204-2T-4D -232/422/485-wit hout switch	2	4	--	--

1.3 Software Features

This series devices support the following software features:

- Device management: software upgrade through FTP
- Network management: management through Telnet and Web, LLDP
- Transmission protocols: TCP and UDP
- Network security: SSH and SSL
- 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 "root" and password "123". Click <OK>.



Figure 1 Web Login



Note:

The device provides two network ports. Both ports are equipped with IP addresses. The default IP address of E1 is 192.168.0.3, and that of E2 is

192.168.1.3. To connect the device to a PC through a specified port, you need to enter the IP address of the port. If you do not know the IP address of the network port in use, see section 5.1.2 *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.

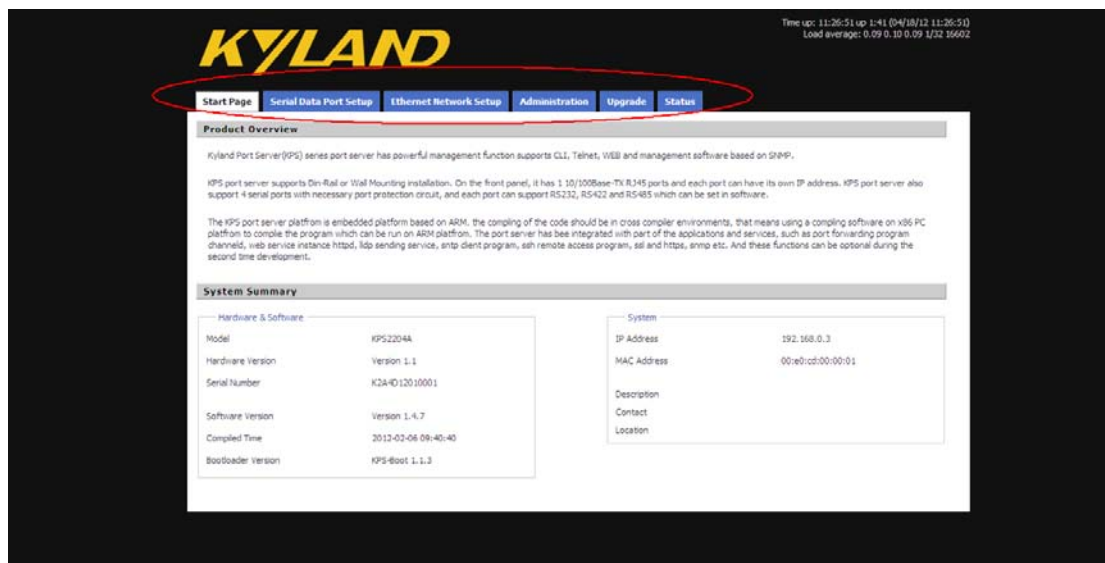


Figure 2 Web UI

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.

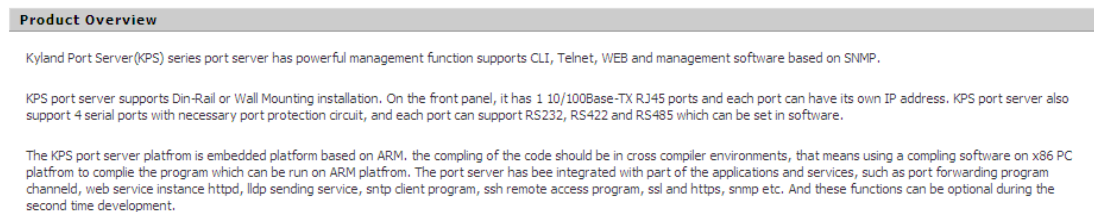


Figure 3 Product Overview

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.

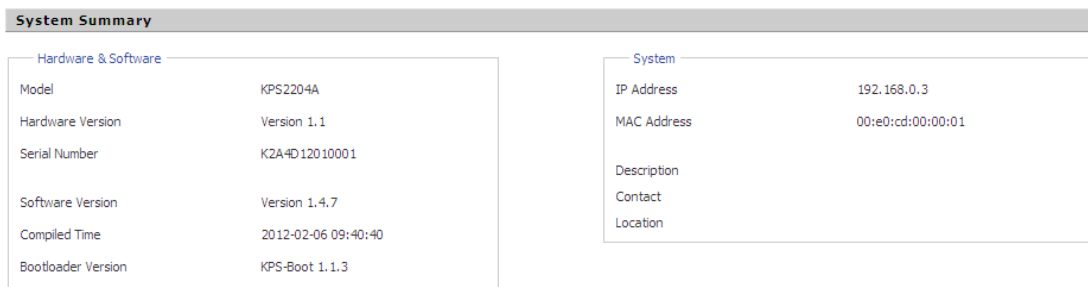


Figure 4 System Summary

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 (S1, S2, S3, and S4) on the front panel respectively.

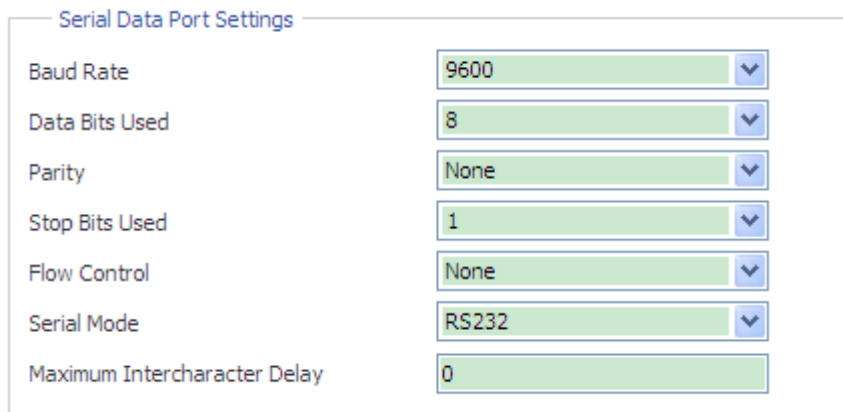
Start/Stop

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 web interface for 'Serial Data Port Settings'. It contains seven configuration items, each with a label and a dropdown menu. The settings are: Baud Rate (9600), Data Bits Used (8), Parity (None), Stop Bits Used (1), Flow Control (None), Serial Mode (RS232), and Maximum Intercharacter Delay (0). The dropdown menus are green with blue arrows on the right.

Parameter	Value
Baud Rate	9600
Data Bits Used	8
Parity	None
Stop Bits Used	1
Flow Control	None
Serial Mode	RS232
Maximum Intercharacter Delay	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.

Maximum Intercharacter Delay

Options: 0~2500ms

Default: 0

Function: Set the maximum inter-frame interval.

Description: KPS2204 identifies a complete data frame based on inter-frame intervals. To be specific, if no data is received within the specified interval, KPS2204 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.

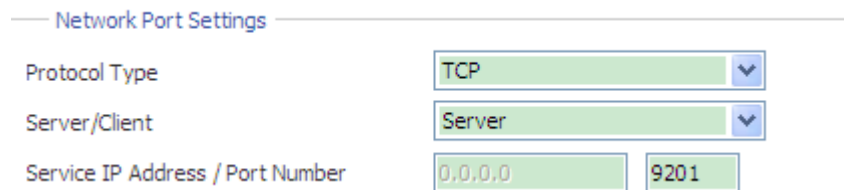


Figure 7 Setting Parameters for the Network Port (TCP Server)

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	<input type="text" value="TCP"/>	(TCP, UDP)						
Server/Client	<input type="text" value="Client"/>	(server, client)						
Remote Node	<table> <thead> <tr> <th>Send To</th> <th>Port</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table> <input type="button" value="add"/>		Send To	Port	Description	<input type="text"/>	<input type="text"/>	<input type="text"/>
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


Fuction: 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: 0

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.


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

Auto Get Settings ☐

Figure 11 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

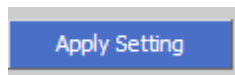


Figure 12 Apply Setting

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

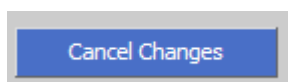


Figure 13 Cancel Changes

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

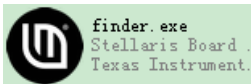
5.1.1 Overview

KPS2204 provide two Ethernet ports, E1 and E2, corresponding to different network adapters. You can set different IP addresses for the two ports. The IP address of E1 is the primary IP address of the device.

5.1.2 Network Port IP Address Query

You can view the IP address in use 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 (in the red box) of the network port in use (connected to the PC) and the primary IP address (in the purple box) of the device, as shown in Figure 14.

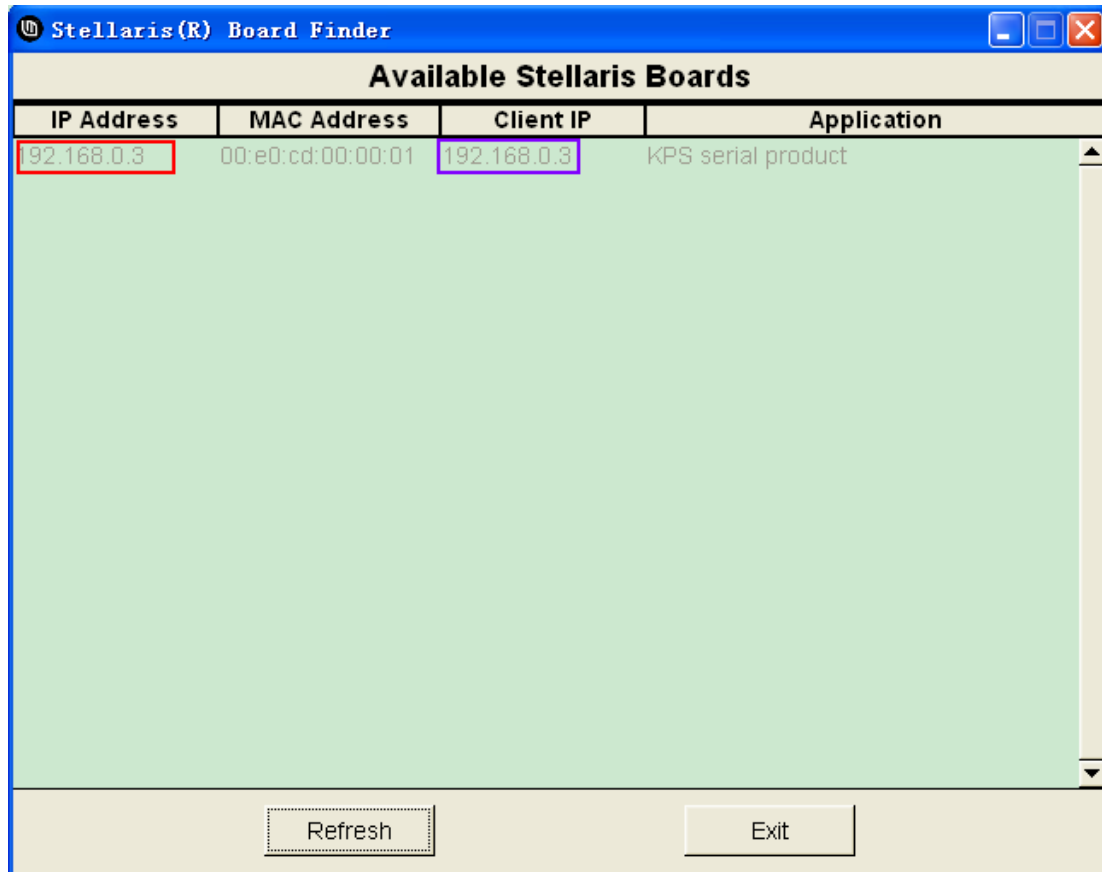


Figure 14 Network Port IP Address Query

5.1.3 Web Configuration

You can set IP addresses for network ports of the device through the Web UI.

1. Configuration of E1

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 15 Configuration of E1

Default setting

Local IP Address: 192.168.0.3

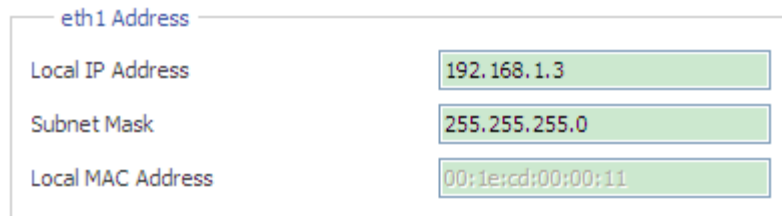
Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Local DNS: 192.168.0.1

Local MAC Address: 00:e0:cd:00:00:01

2. Configuration of E2



The screenshot shows a configuration window titled "eth1 Address". It contains three input fields, each with a green border and a light green background. The first field is labeled "Local IP Address" and contains the value "192.168.1.3". The second field is labeled "Subnet Mask" and contains the value "255.255.255.0". The third field is labeled "Local MAC Address" and contains the value "00:1e:cd:00:00:11".

Figure 16 Configuration of E2

Default setting

Local IP Address: 192.168.1.3

Subnet Mask: 255.255.255.0

Local MAC Address: 00:1e:cd:00:00:11



Caution:

The IP address of E1 and that of E2 cannot be on the same network segment.

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



The screenshot shows a configuration window titled "SSH Daemon (Secure Shell Daemon)". It contains a single dropdown menu labeled "SSH Server" with the value "Disable" selected. A small blue arrow icon is visible to the right of the dropdown.

Figure 17 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 KPS2204 (SSH server), as shown in Figure 18.

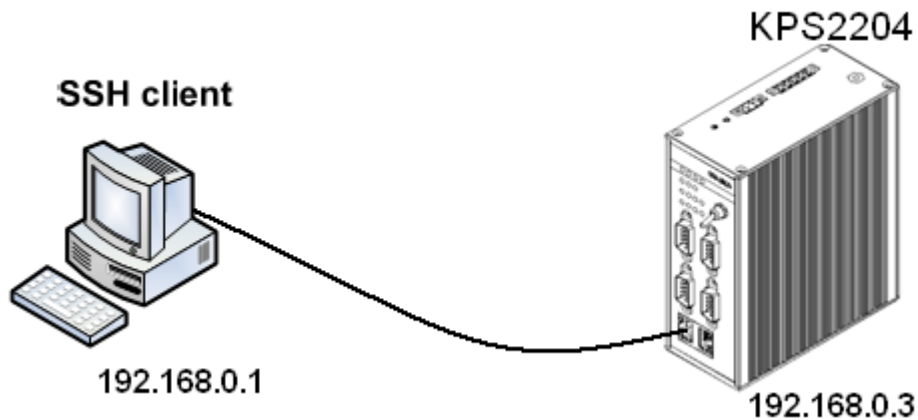


Figure 18 SSH Configuration Example

1. Establish the connection between the PC and KPS2204. 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 19.

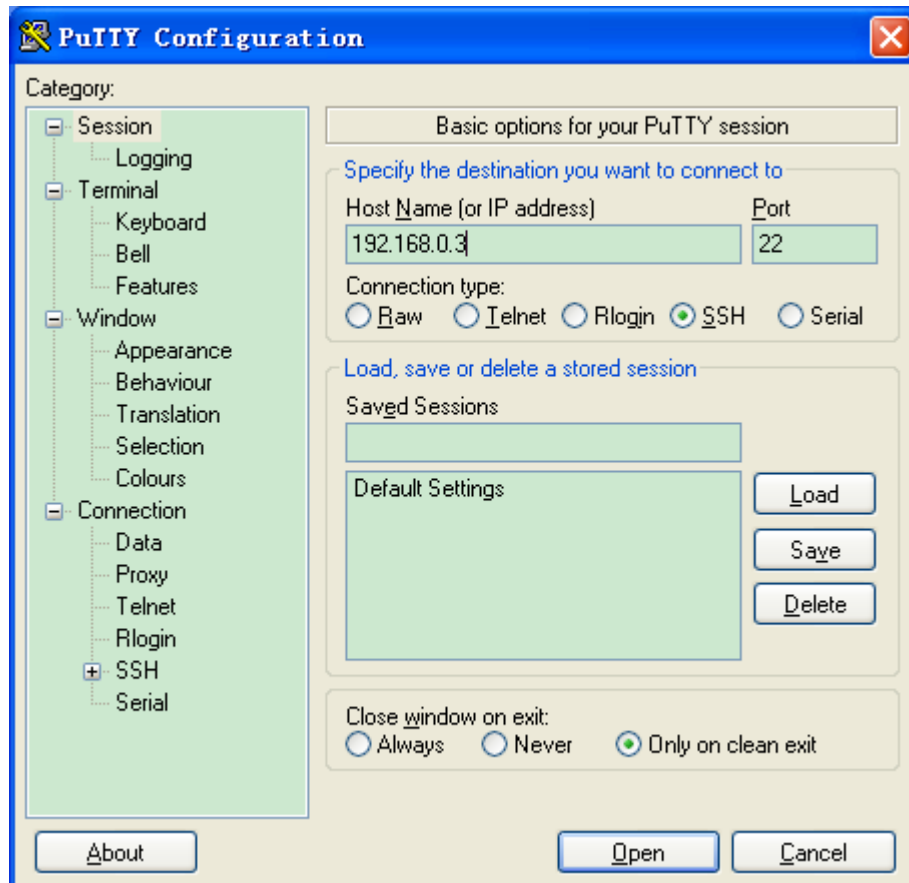


Figure 19 PuTTY Configuration

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



Figure 20 PuTTY Security Alert

3. Enter user name "root" and password "123". The configuration interface of the device is displayed, as shown in Figure 21.

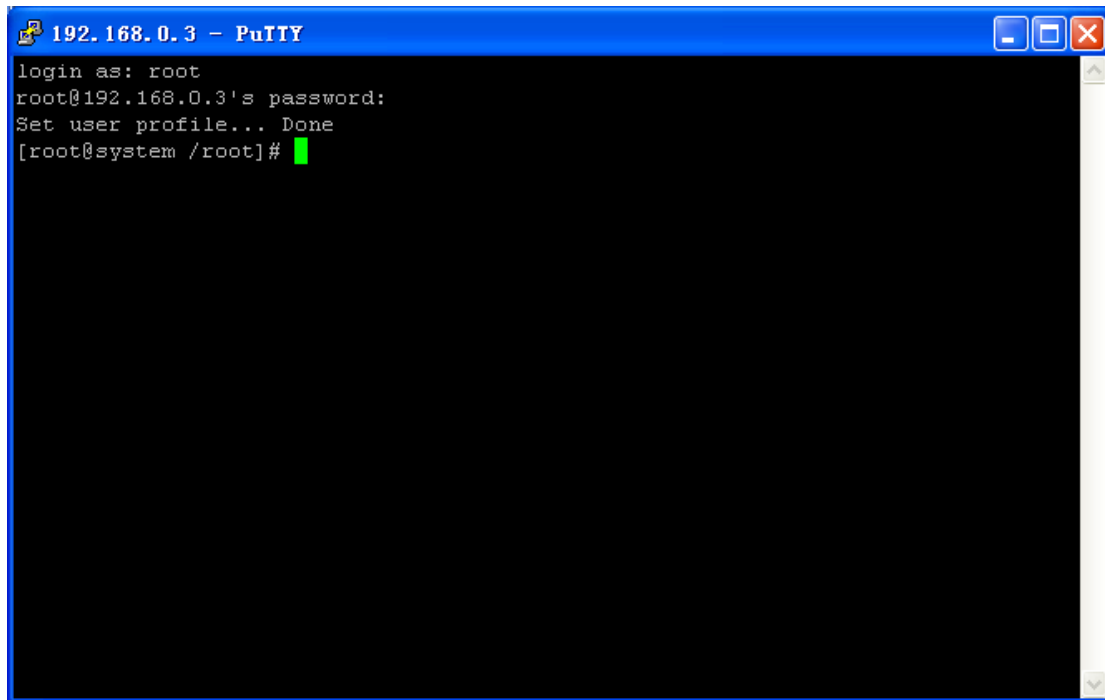


Figure 21 SSH Remote Login Interface

5.2.2 SSL Protocol

5.2.2.1 Overview

Secure Sockets Layer (SSL) is a security protocol. It provides secure links for TCP-based application layer protocols, for example, HTTPS. SSL encrypts transmitted data with public and private keys. The public key is known to all, and the private key is known only by the receiver. SSL establishes a secure network connection between the server and client, ensuring the reliability of data transmission. SSL is widely used in Web browsing, email sending and receiving, network fax, and real-time communication for secure transmission.

After SSL is enabled on the device, you must use secure link protocol HTTPS (for example, <https://192.168.0.3>) to log in to the device.

**Caution:**

When using HTTPS to access the device, ensure that SSL3.0 is in use. (You can select SSL3.0 by clicking [Tools] → [Internet Options] → [Advanced] → [Security] in the Web browser.)

5.2.2.2 Web Configuration

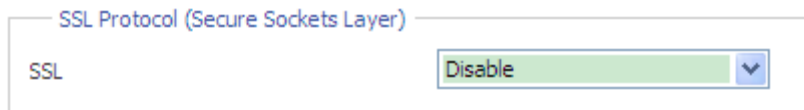


Figure 22 SSL Configuration

SSL

Options: Disable/Enable

Default: Disable

Function: Disable/Enable SSL.

5.2.2.3 Typical Configuration Example

1. In the IE Web browser, enter "**https://IP Address**". The warning page is displayed. Click "Continue to this website", as shown in Figure 23.

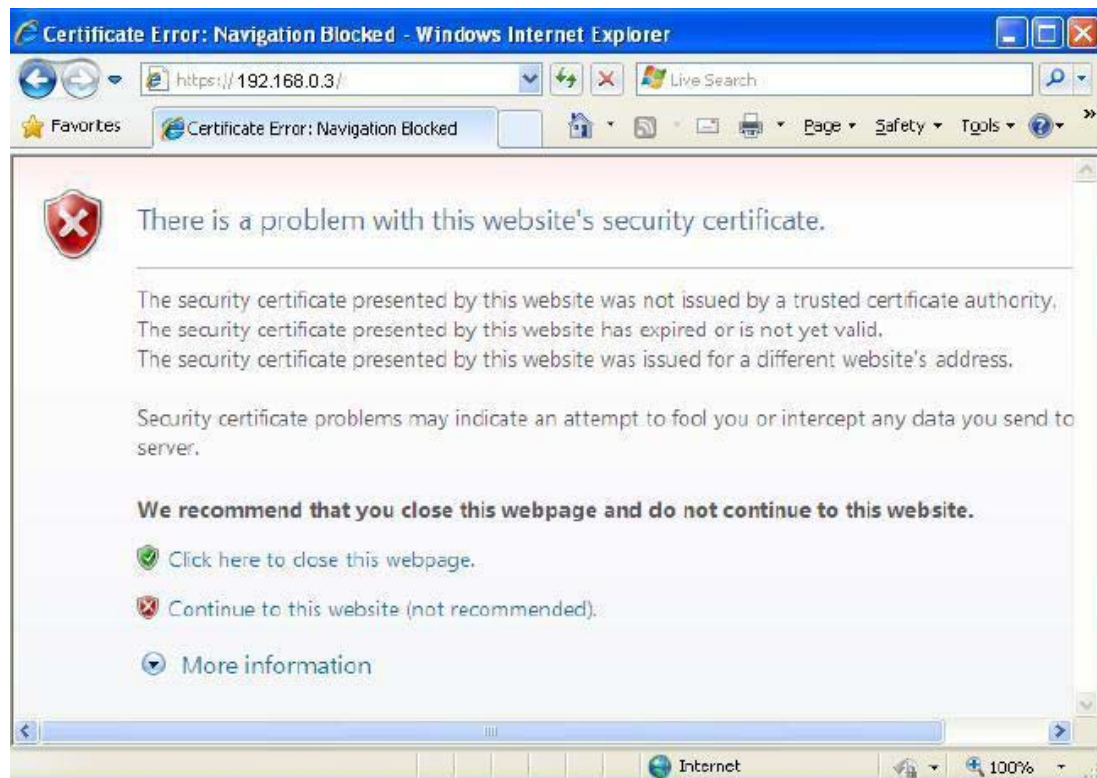


Figure 23 HTTPS Access Interface

2. Enter user name "root" and password "123". In this way, you can access the device through HTTPS successfully.

5.2.3 LLDP

5.2.3.1 Overview

The Link Layer Discovery Protocol (LLDP) provides a standard link layer discovery mechanism. It encapsulates device information such as the capability, management address, device identifier, and interface identifier in a Link Layer Discovery Protocol Data Unit (LLDPDU), and advertises the LLDPDU to its directly connected neighbors. Upon receiving the LLDPDU, the neighbors save these information to MIB for query and link status check by the NMS.

5.2.3.2 Web Configuration

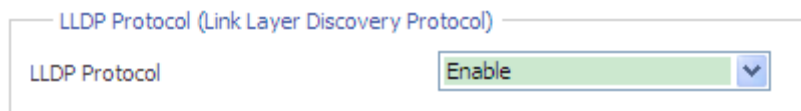


Figure 24 LLDP Configuration

LLDP Protocol

Options: Disable/Enable

Default: Enable

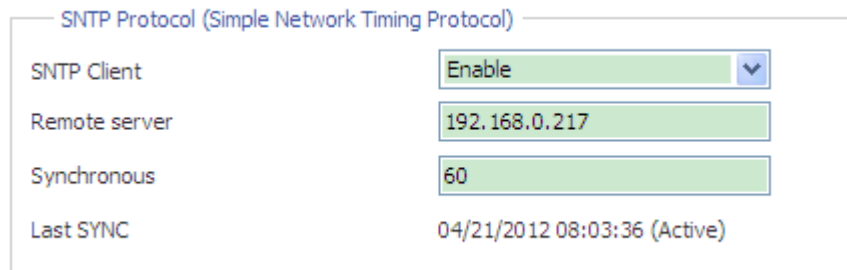
Function: Enable/Disable LLSP.

5.2.4 SNTP

5.2.4.1 Overview

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

5.2.4.2 Web Configuration



The image shows a web configuration interface for the SNTP Protocol (Simple Network Timing Protocol). It contains four fields: 'SNTP Client' is a dropdown menu set to 'Enable'; 'Remote server' is a text input field containing '192.168.0.217'; 'Synchronous' is a text input field containing '60'; and 'Last SYNC' is a read-only field displaying '04/21/2012 08:03:36 (Active)'.

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 25 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

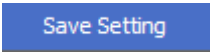
Range: 60~86400s

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

Last SYNC

Function: Display the time of last synchronization.

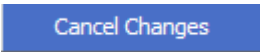
5.3 Save Setting/Cancel Changes



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

Figure 26 Save Setting

Function: Save the current settings of Ethernet parameters.



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

Figure 27 Cancel Changes

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



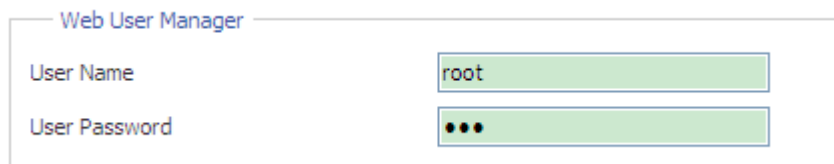
Caution:

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



Web User Manager

User Name	root
User Password	...

Figure 28 Setting the User Name and Password

User Name

Range: 3~32 characters

Default: root

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



System

Description	KPS2204
Contact	KYLAND
Location	Chongxin Mansion Building

Figure 29 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.

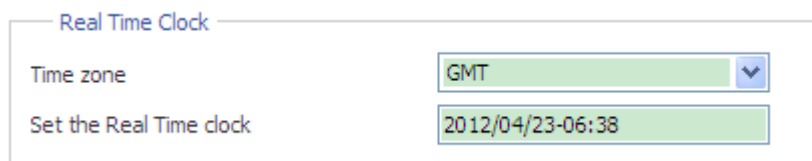


Figure 30 Configuring the RTC

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 31.

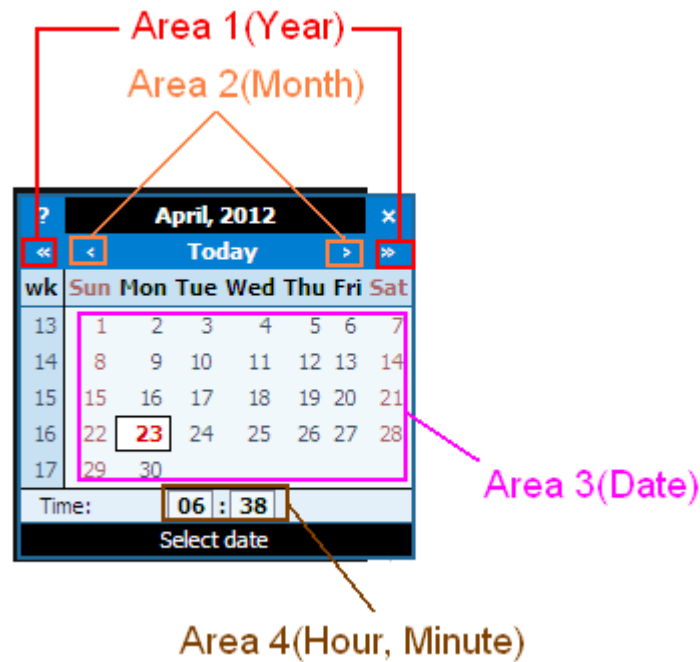


Figure 31 Time Selection

- 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.

4. RESET and LOAD DEFAULT

RESET

Timeout in Seconds

5

Disable Button

☐

LOAD DEFAULT

Timeout in Seconds

5

Disable Button

☐

Figure 32 RESET/LOAD DEFAULT

RESET

Timeout in Seconds

Range: 3~10s

Function: Set the time for pressing and holding the RESET button to reset the

device.

Usage: The RESET button controls the RST button on the top panel. If the time is set to 5 seconds, a user needs to press and hold the RST button on the top panel for five seconds to reset the device.

Disable Button

Function: Enable/Disable the RESET button.

Usage: Click ☐. The ☒ icon indicates the button is disabled.

LOAD DEFAULT

Timeout in Seconds

Range: 3~10s

Function: Set the time for pressing and holding the LOAD DEFAULT button to restore default settings.

Usage: The LOAD DEFAULT button controls the DEF button on the top panel. If the time is set to 5 seconds, a user needs to press and hold the DEF button on the top panel for five seconds to restore default settings.

Disable Button

Function: Enable/Disable the LOAD DEFAULT button.

Usage: Click ☐. The ☒ icon indicates the button is disabled.

6.2 Factory Defaults

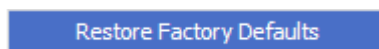


Figure 33 Restore Factory Defaults

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

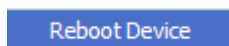


Figure 34 Reboot Device

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

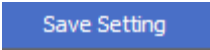


Figure 35 Save Setting

Function: Save the settings in the current page.

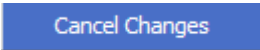


Figure 36 Cancel Changes

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 37. Enter the user name and password, for example, "admin" and "123". Click <OK>.

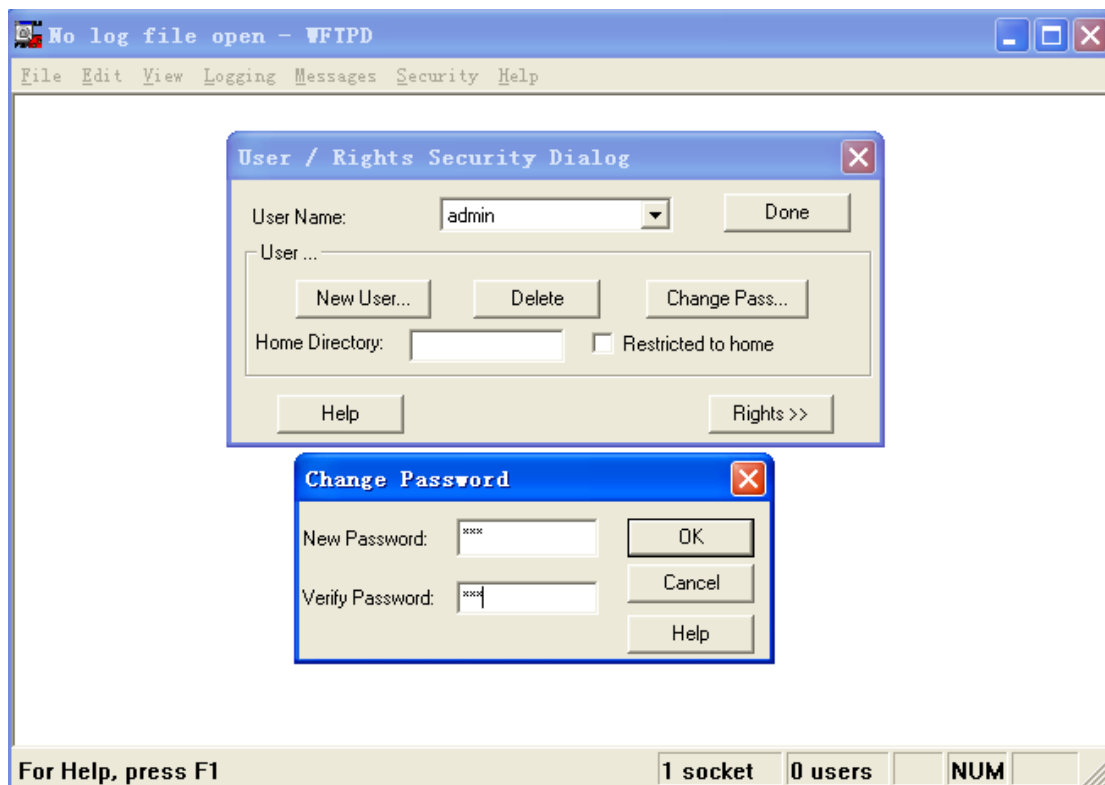


Figure 37 Adding an FTP User

3. Enter the path for saving the upgrade file in Home Directory, as shown in Figure 38. Click <Done>.

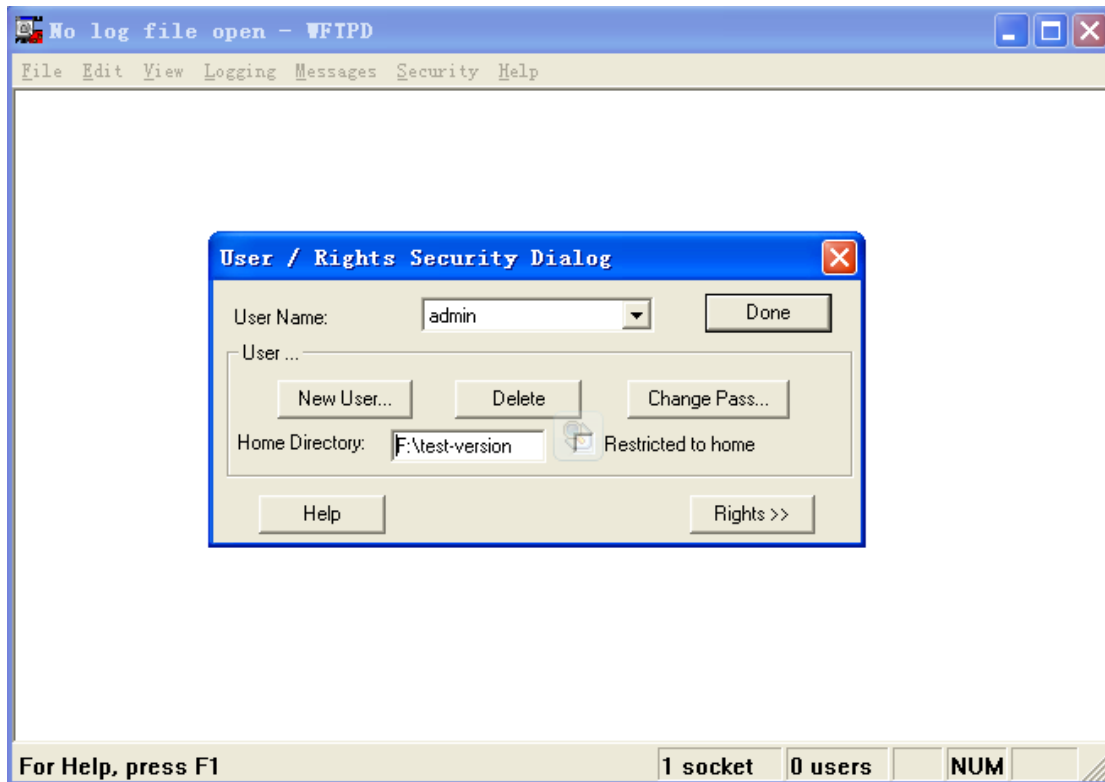


Figure 38 Changing the File Path

4. Figure 39 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 39 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 40.

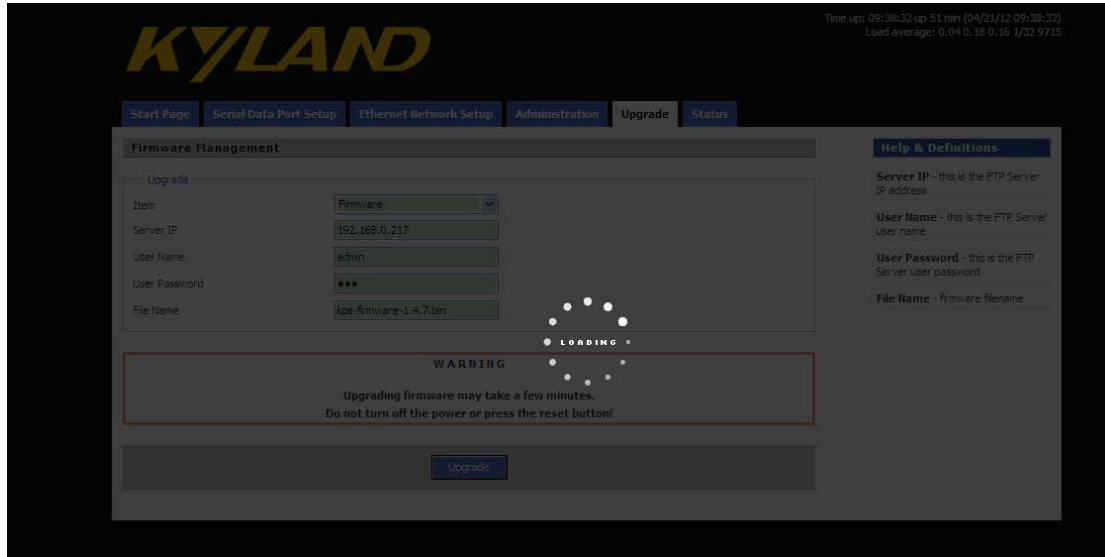


Figure 40 Waiting...

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.

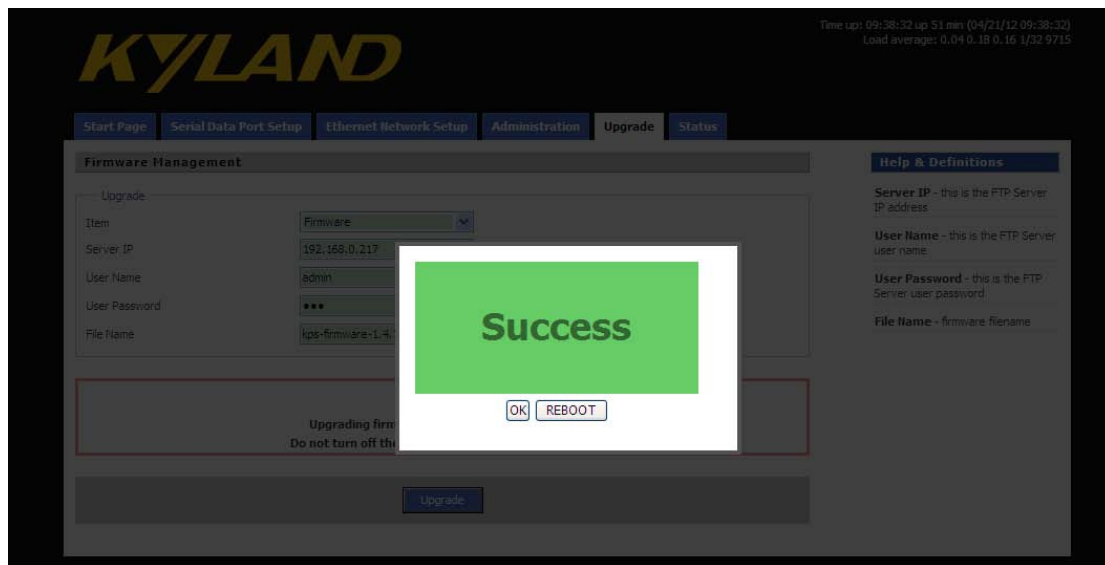


Figure 41 Successfully Upgrading Firmware



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 42 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 43 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 44 Reset

Function: Clear the current statistics.

8.2 Level Measurement



Figure 45 Level Measurement

Function: Detect the input level of the level detection terminal on the top panel.


Level 1 indicates the level input of DI-1. Level 2 indicates the level input of DI-2.

8.3 Auto Refresh



Figure 46 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.

8.4 Statistic Refresh

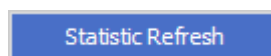


Figure 47 Statistic Refresh

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 KPS2204 from a PC through Virtual Serial Port Manager (VSPM) software.

As shown in Figure 48, connect the network port of the PC to that of KPS2204, and the serial port of KPS2204 to a serial device. Install VSPM on the PC. VSPM works in client mode, and KPS2204 works as the TCP server. In this way, the PC can communicate with the serial device.

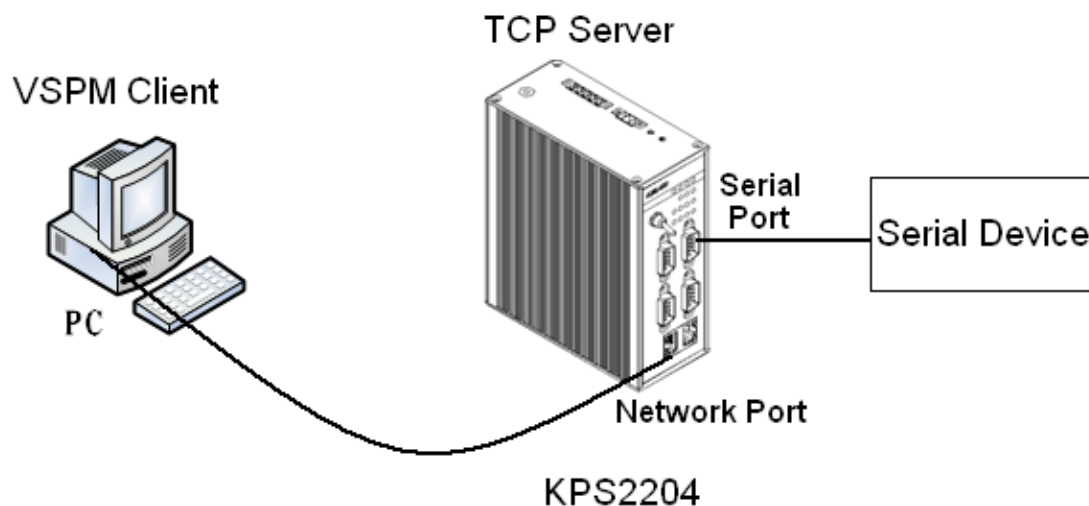


Figure 48 Using Virtual Serial Port

Detailed steps are as follows:

1. Set the IP address of KPS2204 to the default, 192.168.0.3. Connect S2 to the serial device. Set the parameters on KPS2204 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 49.

Serial Data Port ID: D2 start stop

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)
Maximum Intercharacter Delay	0	(0 ~ 2500) 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 Time	0	(0 ~ 300) second

Auto Get Settings ☐


Success

Figure 49 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.

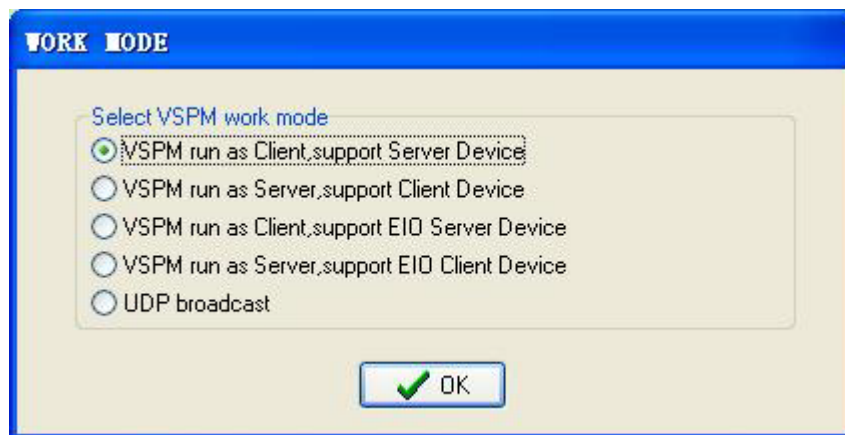


Figure 50 Selecting the Working Mode of the VSPM

- Select the first or second option. If KPS2204 serves as the server, select

the first option to make VSPM work in client mode. If KPS2204 serves as the client, select the second option to make VSPM work in server mode. In this example, KPS2204 serves as the server. Therefore, select the first option. Click <OK> to enter the interface of the VSPM client.

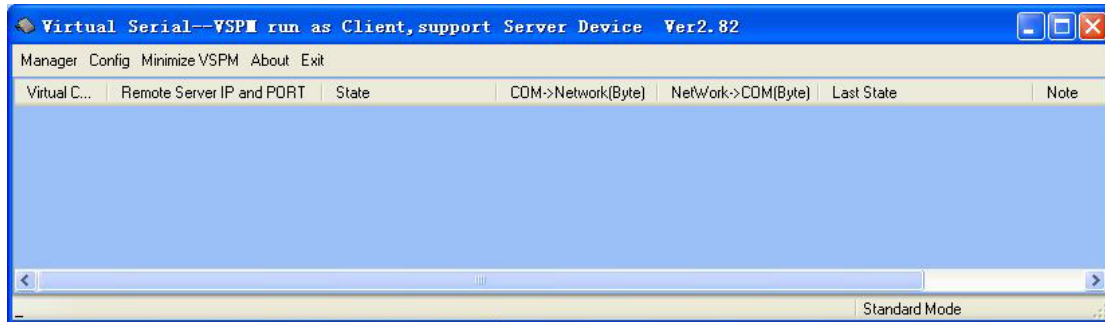


Figure 51 Interface of VSPM Working in Client Mode

- 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 KPS2204), as shown in Figure 52.

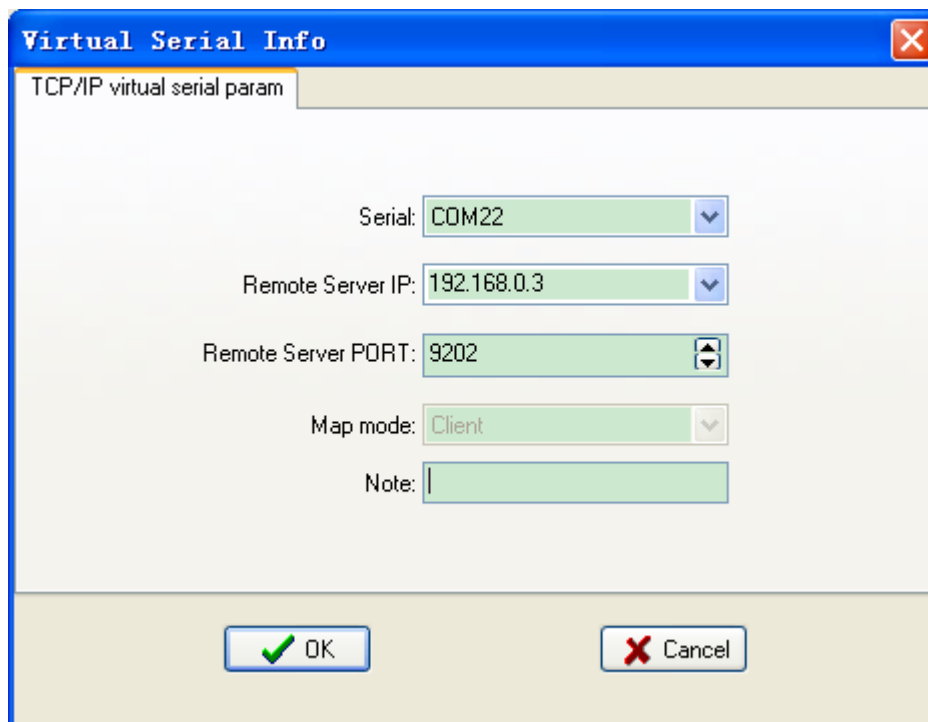


Figure 52 Setting Parameters for the Virtual Serial Port

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

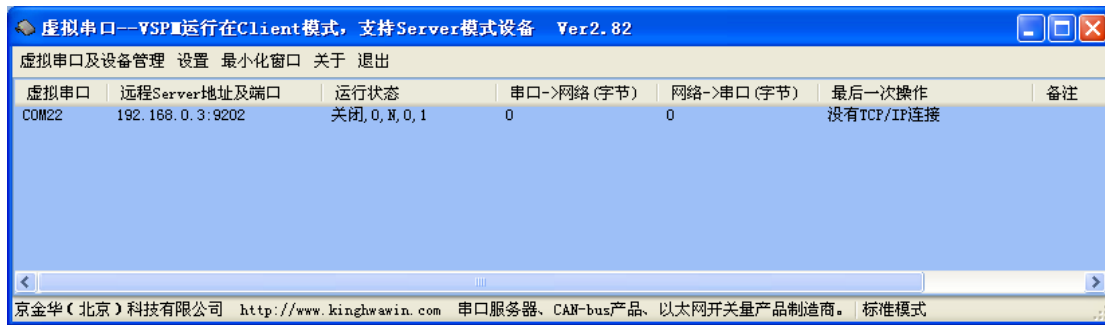


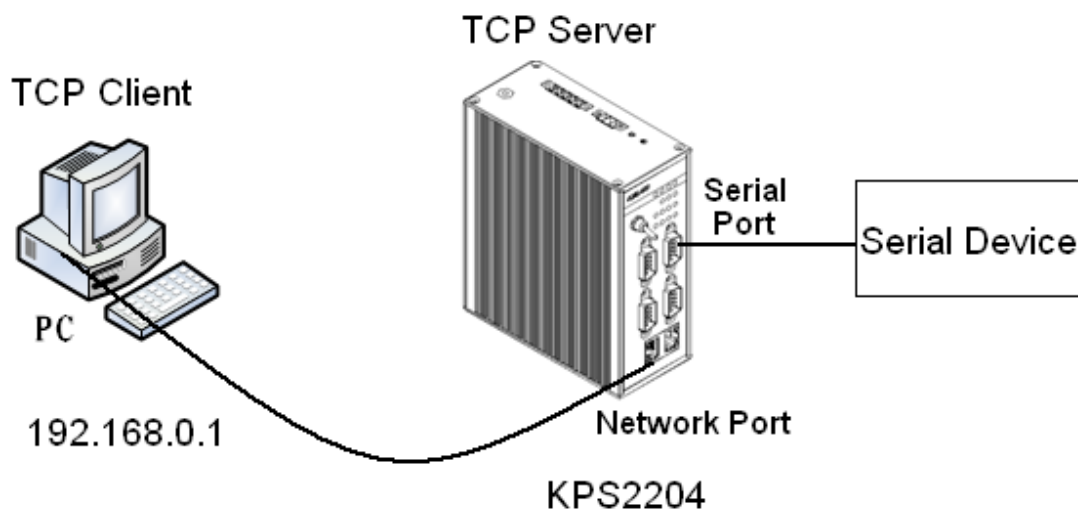
Figure 53 Information about the Virtual Serial Port

3. After VSPM is installed on the PC, the serial port of KPS2204 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 \longleftrightarrow 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 KPS2204, and the serial port of KPS2204 to a serial device. If the PC works as the TCP server, you need to configure KPS2204 as the TCP client. If the PC works as the TCP client, you need to configure KPS2204 as the TCP server.

Figure 54 TCP Server \longleftrightarrow TCP Client 1

1. When KPS2204 works as the TCP server, the TCP port of KPS2204 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 KPS2204 is passively connected.

Connect S2 of KPS2204 to the serial device. Set the parameters on KPS2204 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 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)
Maximum Intercharacter Delay	<input type="text" value="0"/>	(0 ~ 2500) 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 Time	<input type="text" value="0"/>	(0 ~ 300) second

Auto Get Settings ☐

Success

Figure 55 Configuring KPS2204 as TCP Server

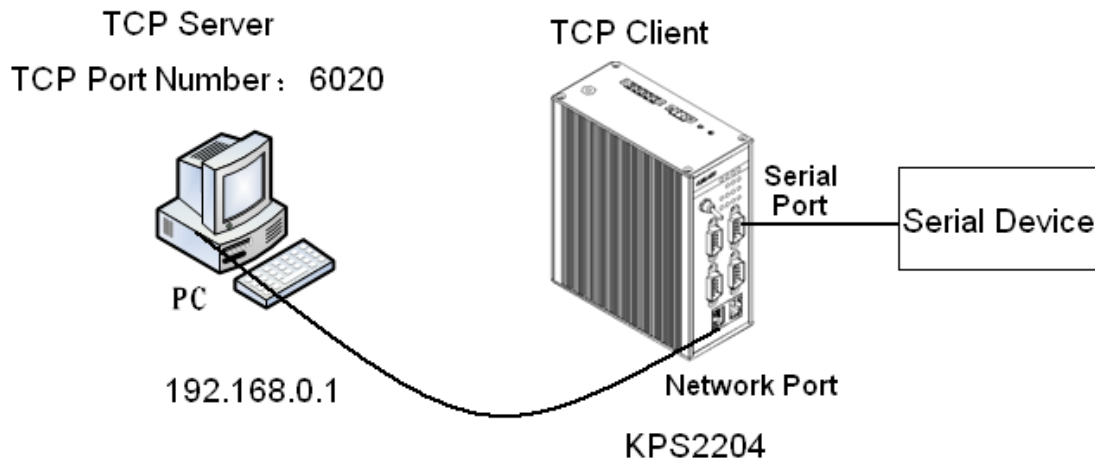


Figure 56 TCP Server←→TCP Client 2

2. As shown in Figure 56, KPS2204 in TCP client mode proactively connects to the TCP port of the TCP server. Therefore, the network address and TCP port number, to which KPS2204 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 S2 of KPS2204 to the serial device. Set parameters on KPS2204 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 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)
Maximum Intercharacter Delay	<input type="text" value="0"/>	(0 ~ 2500) 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 border="1"> <thead> <tr> <th>Send To</th> <th>Port</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>192.168.0.1</td> <td>6020</td> <td>PC</td> </tr> <tr> <td><input type="text"/></td> <td><input type="text"/></td> <td><input type="text"/></td> </tr> </tbody> </table>	Send To	Port	Description	192.168.0.1	6020	PC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="button" value="remove"/> <input type="button" value="add"/>
Send To	Port	Description									
192.168.0.1	6020	PC									
<input type="text"/>	<input type="text"/>	<input type="text"/>									
Keep alive Time	<input type="text" value="0"/>	(0 ~ 300) second									

Auto Get Settings ☐

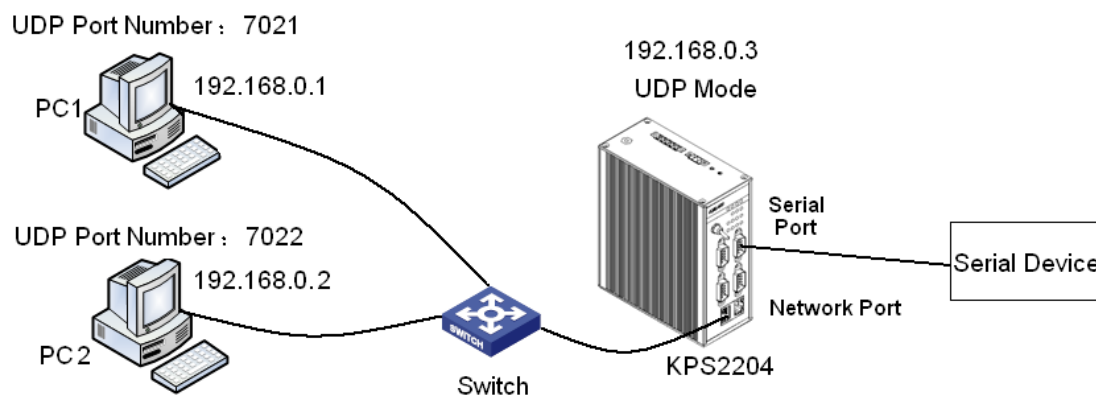
Success

Figure 57 Configuring KPS2204 as TCP Client

9.3 UDP \longleftrightarrow UDP Mode

You can write programs to support the UDP mode. When KPS2204 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 58, connect the network port of PC1 and that of PC2 to the switch, and the switch to the network port of KPS2204. Then connect S2 of KPS2204 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 58 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 S2 of KPS2204 to the serial device. Set the parameters on KPS2204 as follows:

- Serial Data Port ID: D2
- Protocol Type: UDP
- Port Number: UDP port number of the local KPS2204
- 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 59.

Serial Data Port ID: D2 start stop

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)

Maximum Intercharacter Delay

0

(0 ~ 2500) millisecond

Network Port Settings

Protocol Type

UDP

(TCP, UDP)

Service IP Address / Port Number

0.0.0.0

9202

Remote Node

Send To	Port	Description	
192.168.0.2	7022	PC2	remove
192.168.0.1	7021	PC1	remove
<input type="text"/>	<input type="text"/>	<input type="text"/>	add

Keep alive Time

0

(0 ~ 300) second

Auto Get Settings

☐

Success

Figure 59 Configuring KPS2204 to Work in UDP Mode

9.4 Device↔Device Mode

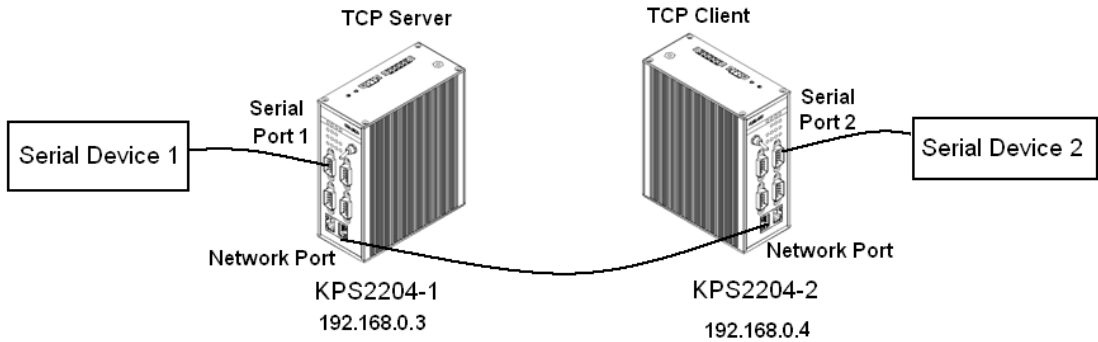


Figure 60 KPS2204-1↔KPS2204-2

As shown in Figure 60, connect serial device 1 to serial port 1 of KPS2204-1, serial device 2 to serial port 2 of KPS2204-2, and the network port of KPS2204-1 to that of KPS2204-2. Because KPS2204-1 communicates with KPS2204-2 through Ethernet ports, the connection allows communication

between distant serial devices.

The IP address of KPS2204-1 is 192.168.0.3, and that of KPS2204-2 is 192.168.0.4. Configure KPS2204-1 to work in TCP server mode, and KPS2204-2 to work in TCP client mode. Detailed steps are as follows:

Configuration on KPS2204-1:

- 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 61.

Serial Data Port Setup

Serial Data Port ID: D1
start
stop

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)
Maximum Intercharacter Delay	0	(0 ~ 2500) millisecond

Network Port Settings

Protocol Type	TCP	(TCP, UDP)
Server/Client	Server	(server, client)
Service IP Address / Port Number	0.0.0.0 9201	
Keep alive Time	0	(0 ~ 300) second

Auto Get Settings ☐

Success

Figure 61 Configuring KPS2204-1 as TCP Server

Configuration on KPS2204-2:

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

- Server/Client: Client
- Send To: 192.168.0.3 (IP address of KPS2204-1)
- Port: 9201 (same as the TCP port number of KPS2204-1)
- Description: Description of KPS2204-1
- Keep the default settings for the other parameters unless otherwise required, as shown in Figure 62.

Serial Data Port Setup

Serial Data Port ID: D2 start stop

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)
Maximum Intercharacter Delay	0	(0 ~ 2500) millisecond

Network Port Settings

Protocol Type	TCP	(TCP, UDP)												
Server/Client	Client	(server, client)												
Remote Node	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #cccccc;"> <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>KPS2204-1</td> <td style="text-align: center;">remove</td> </tr> <tr> <td></td> <td></td> <td></td> <td style="text-align: center;">add</td> </tr> </tbody> </table>		Send To	Port	Description		192.168.0.3	9201	KPS2204-1	remove				add
Send To	Port	Description												
192.168.0.3	9201	KPS2204-1	remove											
			add											
Keep alive Time	0	(0 ~ 300) second												

Auto Get Settings ☐

Success

Figure 62 Configuring KPS2204-2 as TCP Client

Appendix: Acronyms

Acronym	Full Spelling
FTP	File Transfer Protocol
LLDP	Link Layer Discovery Protocol
RTC	Real Time Clock
SSH	Secure Shell
SSL	Secure Sockets Layer
SNTP	Simple Network Time Protocol
TCP	Transmission Control Protocol
UDP	User Datagram Protocol