KPS/KGW Series User Manual

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Directory

1 Product Introduction

KPS/KGW product name prefix indicates the product category, KPS series includes industrial serial server products, and KGW series includes industrial intelligent gateway products; This document applies to the following series of products:

KPS/KGW310XA & 320XA Series;

KPS/KGW3224A Series;

KGW3204A 4G Series;

KPS3x0xAL Series;

KPS/KGW320xA-232-485-422 Series

1.1 Overview

1.1.1KPS/KGW310X & 320XA Series

KPS/KGW310XA & 320XA series is an industrial gateway product based on Linux system architecture and ARM9 processor. It is mainly used to connect serial devices to Ethernet, read data of serial devices and control them remotely through the network.

This series can be divided into two serial communication modes: RS-232 and RS-485. RS-485 provides 120 Ω switchable terminal resistor, which is convenient to reduce signal reflection and can effectively improve the stability and reliability of RS-485 serial communication.

Series products include the following models:

- KPS3101A-E-1T1D-232-L17 KPS3101A-E-1T1D-485-L17
- KPS3102A-E-1T2D-232-L17 KPS3102A-E-1T2D-485-L17
- KPS3204A-E-2T4D-232-L17 KPS3204A-E-2T4D-485-L17
- KPS3208A-E-2T8D-232-L17 KPS3208A-E-2T8D-485-L17
- KGW3101A-E-1T1D-232-L17 KGW3101A-E-1T1D-485-L17
- KGW3102A-E-1T2D-232-L17 KGW3102A-E-1T2D-485-L17
- KGW3204A-E-2T4D-232-L17 KGW3204A-E-2T4D-485-L17
- KGW3208A-E-2T8D-232-L17 KGW3208A-E-2T8D-485-L17

Figure1 KPS/KGW3102A, KPS/KGW3204A, KPS/KGW3208A RS-485 Physical Map

1.1.2KPS/KGW3224A Series

KPS3224A/KGW3224A series is an industrial-grade high-performance 24-port rack-mounted product based on Linux system architecture and 4-core A53 processor. It is mainly used for the conversion of communication protocol. Through data collection, storage and control, it can realize online real-time monitoring and remote control functions, and can be used as the terminal device of industrial Internet platform. The device can meet the requirements of communication protocol conversion in different industrial applications, and is suitable for smart cities, smart transportation, smart power and other fields.

It can be set as RS-232, RS-485 and RS422 serial communication modes. The RS-485 serial interface of this series of device provides 120 Ω switchable terminal resistance, which is convenient to reduce signal reflection and can effectively improve the stability and reliability of RS-485 serial communication.

Series products include the following models:

- KPS3224A-2T24D-HV
- KPS3224A-2T24D-HV-HV
- KGW3224A-2T24D-HV
- KGW3224A-2T24D-HV-HV

Figure2 KPS3224A/KGW3224A Front Panel Physical Figure

Figure3 KPS3224A/KGW3224A Back Panel Physical Figure

1.1.3KGW3204A-4G Series

KGW3204A-4G wireless gateway is an industrial-grade 4G wireless gateway based on Linux

system architecture, which is mainly used for the conversion of communication protocols. Through data collection, storage and control, it can realize online real-time monitoring and remote control, and can be used as the terminal device of industrial Internet platform.

4G wireless gateway can support three serial communication modes: RS-232, RS-485 and RS422. Provide 2 Ethernet interfaces and 1 channel 4G to meet the needs of wired and wireless communication. It provides 120 Ω switchable terminal resistor, which is convenient to reduce signal reflection and can effectively improve the stability and reliability of serial communication.

Series products include the following models:

- KGW3204A-2T4D-232/485-4G-L17

Figure4 KGW3204A-2T4D-232/485-4G-L17 Physical Figure

1.1.4KPS3x0xAL Series

KPS3x0xAL Series Serial Server is an industrial economical serial server based on Linu x system architecture and ARM9 processor. It is mainly used to connect serial devices to Et hernet, read serial device data through the network and remotely control serial devices. This serial port server supports TCP Client, TCP Server and UDP network communication mode, supports transparent transmission and Modbus RTU data transmission protocol, and supports SSH Mode transparent transmission mode.

Series products include the following models:

- KPS3102AL-1T4D-485-L5
- KPS3204AL-2T4D-485-L5

Figure5 KPS3204AL-2T4D-485-L5 Physical Figure

1.1.5KPS/KGW320xA-232-485-422 Series

KPS/KGW320xA-232-485-422 series is an industrial gateway product based on Linux system architecture and ARM9 processor. It is mainly used to connect serial devices to Ethernet, read serial device data through the network and remotely control serial devices.

This serial port server supports TCP Client, TCP Server and UDP network communication mode, supports transparent transmission and Modbus RTU data transmission protocol, and supports SSH Mode transparent transmission mode.

This series of products adopts three-in-one serial interface and switches RS-232/RS-485/RS-422 by software. It provides 120 Ω switchable terminal resistor, which is convenient to reduce signal reflection and can effectively improve the stability and reliability of serial communication.

Series products include the following models:

- KPS3204A-2T4D-232/485/422-L17-L17
- KPS3208A-2T8D-232/485/422-L17-L17
- KGW3204A-2T4D-232/485/422-L17-L17
- KGW3208A-2T8D-232/485/422-L17-L17

Figure6 KPS/KGW320xA-2TxD-232/485/422-L17-L17 Physical Figure

1.2 Product characteristics

Data transfer: Supports Socket operation modes, including TCP Server, TCP Client, and UDP, SSH mode, Rtelnet, Real port

Transmission protocol: KPS series supports transparent transmission and Modbus RTU data transmission protocol;

KGW Series Additional support for Modbus, OPC UA, DNP, IEC101, IEC103, IEC104, IEC61850, DL/T645-1997, DL/T645-2007, Siemens S7 data transmission protocol, support for advanced application-scripted computing

Routing: Support static routing

Security function: Support SSH, MAC address binding, user classification, AES\ DES\ 3DES data encryption

Device management: Web management support (HTTP/HTTPS)

Support for KyCMT Integrated Debug Management Tool (device Search, IP Address Configuration, etc.)

Support for KyPMT Integrated Configuration Tool (EDPS Protocol Engineering Configuration)

Supports ICMP control messages

Support SNMP v2c

Support for SNMP Trap

Support ARP, DNS, DHCP Client

Device maintenance: support to upgrade through WEB software

Supports FTP, TFTP, Syslog

Support SMTP mail alerts

Support device alarm indicator

Support breakpoint reconnection

Support telnet management

Clock features: NTPv3 Client support

2 Specification Parameters and Pin Definition

2.1 Power interface

Table1 Power Information

Products	Input voltage	Access terminal	Power consumption	Anti-reverse connection of power supply
KPS/KGW3x0xA Series	24V DC (12-48V DC)	2-core plug-in type	KPS3101A: 1.0 W KGW3101A: 2.0W KPS3102A: 1.0 W KGW3102A: 2.0W KPS3204A: 1.5W KGW3204A: 2.0W KPS3208A: 1.6W KGW3208A: 3.0W	√
KPS/KGW3224A Series	220V AC	3-core plug-in type	15.0 W	AC
KGW3204A 4G Series	24V DC (12-48V DC)	2-core plug-in type	8.0W	**Tick**
KPS3x0xAL Series	24V DC (9-36V DC)	2-core plug-in type	1.5W	**Tick**
KPS/KGW320xA-232-485-422 Series	24V DC (12-48V DC)	2-core plug-in type	3W	**Tick**

KPS/KGW3x0xA series, KGW3204A-4G series, KPS3x0XAL series, KPS/KGW320xA-232-485-422seriesuse a 2-core plug-in terminal to access the power supply. The device has anti-reverse connection protection, and the line sequence is subject to the screen printing instructions of the

mask.

Table2 Power Interface Definition

Power	Pin	Describe
PWR	V +	Power supply access
	V-	Power supply access

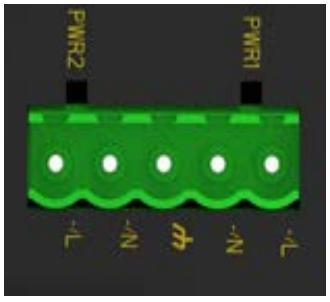
KPS/KGW3224A Series Rack Serial Server uses two3-coreplug-in terminals to access the power supply.

Table3 Power Interface Definition

Power	Pin	Describe
PWR	-/N	Zero line
	+/L	FireWire
	GND	Ground wire

KPS/KGW32x4A-232-485-422 series three-in-one serial port server uses a5-coreplug-in terminal to access the power supply.

Table4 Power Interface Definition



Power	Pin	Describe
PWR1	-/N	Power supply access
	+/L	Power supply access
	GND	Ground wire
PWR2	-/N	Power supply access
	+/L	Power supply access

2.2 Serial interface

2.2.1 RS-485 Terminal Resistor

Table5 Resistance Information

Products	120 Ω terminal resistance setting mode
KPS/KGW3x0xA Series	DIP switch
KPS/KGW3224A Series	WEB page configuration

KGW3204A 4G Series	DIP switch
KPS3x0xAL Series	WEB page configuration
KPS/KGW320xA-232-485-422 Series	DIP switch

When using RS-485 transmission mode in complex industrial environment, it may be necessary to increase terminal resistance to reduce signal interference caused by serial signal reflection:

The DIP switch sets 120 Ω terminal resistance: the identification n of the DIP switch corresponds to the serial port Sn respectively. When the n dialing switch is turned to ON, the terminal resistance of the Sn serial port is enabled; When the n dialing switch is turned to OFF, the terminal resistance of Sn serial port is not enabled; Terminal resistors are not enabled by default.

WEB page setting 120 Ω terminal resistance: when serial port server-additional configuration page serial port terminal resistance is set to ON, the serial port terminal resistance is enabled; When set to OFF, the terminal resistance of the serial port is not enabled; The device does not enable the terminal resistor by default.

KPS/KGW320xA-232-485-422 DIP switch pull-up resistance definition: each serial port contains a group of DIP switches, and each group of DIP switches contains three sub-DIP switches, as shown in the following figure;

Figure7 KPS/KGW3204A-2T4D-232/485/422-L17-L17 DIP switch physical figure

Sub-Dip switch 1:RS485 pull-up-A line pair isolated supply positive resistance: Pull High ON: 500 Ω OFF: 1K Ω

Sub-Dip Switch 2:RS485 Pull-Down-B Line Ground Resistance to Isolated Supply: Pull Low ON: 500 Ω OFF: 1K Ω

Sub-Dip Switch3:RS485 Match Resistor-Resistance between A, B lines: Terminator ON: 120 Ω OFF:---

2.2.2 Serial Interface Pin Definition

2.2. 2.1 KPS/KGW310XA & 320XA

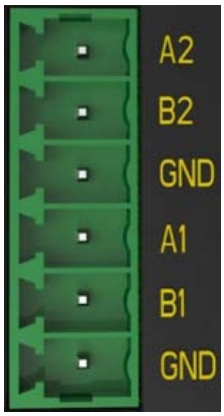
According to different product models, serial ports can be divided into RS-232 and RS-485, and each type of gateway only supports one of the serial interface communication modes.

Table6 KPS/KGW3101A Terminal Definition

Pin	String	RS-232	RS-485
GND	S1	GND	GND

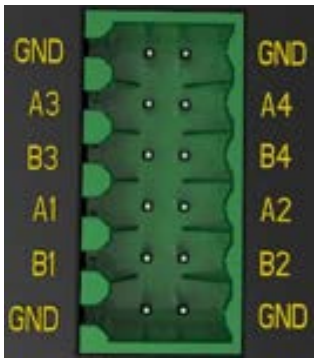
B1		RxD	Data-(B)
A1		TxD	Data + (A)

Table7 KPS/KGW3102A Terminal Definition



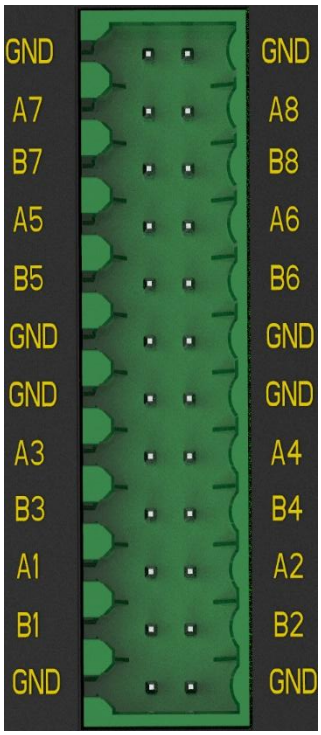
Pin	String	RS-232	RS-485
GND	S1	GND	GND
B1		RxD	Data-(B)
A1		TxD	Data + (A)
GND	S2	GND	GND
B2		RxD	Data-(B)
A2		TxD	Data + (A)

Table8KPS/KGW3204A Terminal Definition



Pin	String	RS-232	RS-485
GND	S1	GND	GND
B1		RxD	Data - (B)
A1		TxD	Data + (A)
GND	S2	GND	GND
B2		RxD	Data - (B)
A2		TxD	Data + (A)
B3	S3	RxD	Data - (B)
A3		TxD	Data + (A)
GND		GND	GND
B4	S4	RxD	Data - (B)
A4		TxD	Data + (A)
GND		GND	GND

Table9 KPS/KGW3208A Terminal Definition



Pin	String	RS-232	RS-485
GND	S1	GND	GND
B1		RxD	Data - (B)
A1		TxD	Data + (A)
GND	S2	GND	GND
B2		RxD	Data - (B)
A2		TxD	Data + (A)
B3	S3	RxD	Data - (B)
A3		TxD	Data + (A)
GND		GND	GND
B4	S4	RxD	Data - (B)
A4		TxD	Data + (A)
GND		GND	GND
GND	S5	GND	GND
B5		RxD	Data - (B)
A5		TxD	Data + (A)
GND	S6	GND	GND
B6		RxD	Data - (B)
A6		TxD	Data + (A)
B7	S7	RxD	Data - (B)
A7		TxD	Data + (A)
GND		GND	GND
B8	S8	RxD	Data - (B)
A8		TxD	Data + (A)
GND		GND	GND

2.2. 2.2 KPS/KGW3224A

This series of serial ports can be divided into RS-232, RS-485, RS-422, each serial port only supports one of the serial interface communication mode. The RS-485 type terminal can be configured to use the RS-422 type terminal according to the additional configuration of the page serial port-serial mode configuration item.

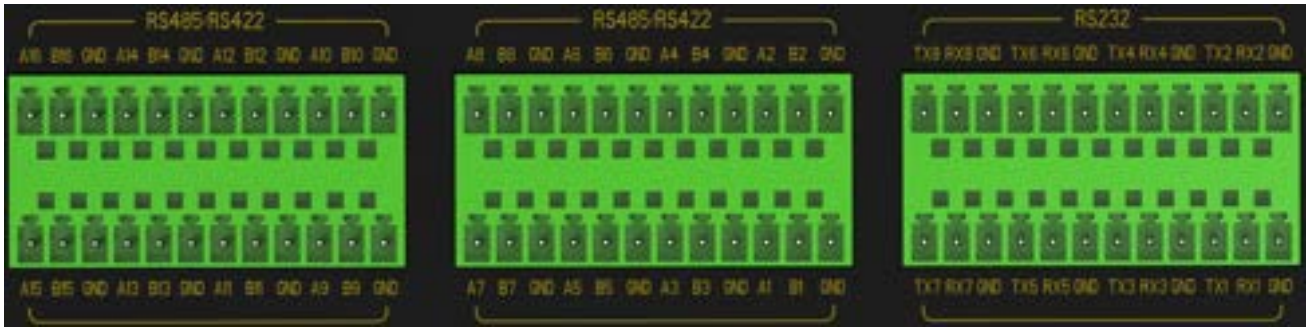


Table10 KPS3224A/KGW3224A RS-485 Terminal Definition

Pin	String	RS-232	RS422	RS-485
GND	S1	-	GND	GND
B1		-	TxD1-	B1
A1		-	TxD1 +	A1
GND	S2	-	GND	GND
B2		-	RxD1-	B2
A2		-	RxD1 +	A2
GND	S3	-	GND	GND
B3		-	TxD2-	B3
A3		-	TxD2 +	A3
GND	S4	-	GND	GND
B4		-	RxD2-	B4
A4		-	RxD2 +	A4
GND	S5	-	GND	GND
B5		-	RxD3-	B5
A5		-	RxD3 +	A5
GND	S6	-	GND	GND
B6		-	RxD3-	B6
A6		-	RxD3 +	A6
GND	S7	-	GND	GND
B7		-	RxD4-	B7
A7		-	RxD4 +	A7
GND	S8	-	GND	GND
B8		-	RxD4-	B8
A8		-	RxD4 +	A8
GND	S9	-	GND	GND
B9		-	TxD5-	B9

A9		-	TxD5 +	A9
GND	S10	-	GND	GND
B10		-	TxD5-	B10
A10		-	TxD5 +	A10
GND	S11	-	GND	GND
B11		-	TxD6-	B11
A11		-	TxD6 +	A11
GND	S12	-	GND	GND
B12		-	TxD6-	B12
A12		-	TxD6 +	A12
GND	S13	-	GND	GND
B13		-	RxD7-	B13
A13		-	RxD7 +	A13
GND	S14	-	GND	GND
B14		-	RxD7-	B14
A14		-	RxD7 +	A14
GND	S15	-	GND	GND
B15		-	RxD8-	B15
A15		-	RxD8 +	A15
GND	S16	-	GND	GND
B16		-	RxD8-	B16
A16		-	RxD8 +	A16

Table11 KPS3224A/KGW3224A RS-232 Terminal Definition

Pin	String	RS-232	RS422	RS-485
GND	S1	GND	-	-
RX1		Rx1	-	-
TX1		Tx1	-	-
GND	S2	GND	-	-
RX2		Rx2	-	-
TX2		Tx2	-	-
GND	S3	GND	-	-
RX3		Rx3	-	-
TX3		Tx3	-	-

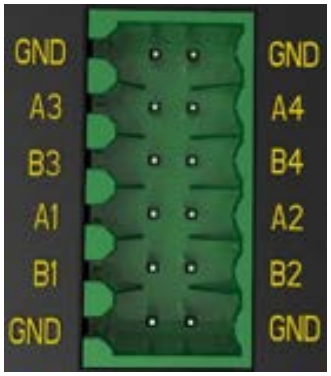
GND	S4	GND	-	-
RX4		Rx4	-	-
TX4		Tx4	-	-
GND	S5	GND	-	-
RX5		Rx5	-	-
TX5		Tx5	-	-
GND	S6	GND	-	-
RX6		Rx6	-	-
TX6		Tx6	-	-
GND	S7	GND	-	-
RX7		Rx7	-	-
TX7		Tx7	-	-
GND	S8	GND	-	-
RX8		Rx8	-	-
TX8		Tx8	-	-

2.2. 2.3 KGW3204A-2T4D-232/485-4G-L17

This series of serial ports can be divided into RS-232, RS-485 and RS-422, each serial port only supports one of the serial interface communication mode. The RS-485 type terminal can be configured as the RS-422 type terminal according to the Page Serial Server-Serial Interface Setting.

Table12 KGW3204A-2T4D-232/485-4G-L17 Terminal Definition

Pin	Strin	RS-485	RS-232	RS-422



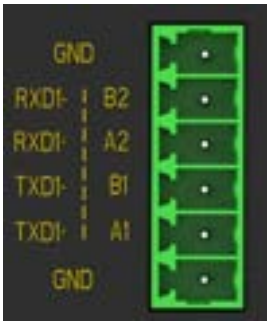
GND	S1	GND	-	-
A1		Data + (A)	-	-
B1		Data-(B)	-	-
GND	S2	GND	-	-
A2		Data + (A)	-	-
B2		Data-(B)	-	-
GND		GND	GND	GND
A3	S3	Data + (A)	TxD	TxD +
B3		Data-(B)	RxD	TxD-
GND	S4	GND	GND	GND
A4		Data + (A)	TxD	RxD +

B4		Data-(B)	RxD	RxD-

2.2. 2.4 KPS310XAL & 320XAL

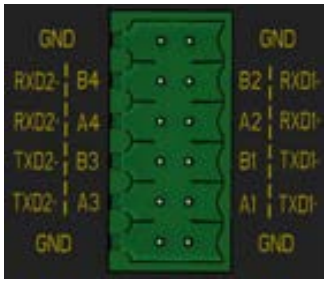
The serial port of this series is RS-485. The RS-485 type terminal can be configured to use the RS-422 type terminal according to the additional configuration of the page serial port-serial mode configuration item.

Table13 KPS3102AL Terminal Definition



Pin	String	RS-485	RS-422
GND	S1	GND	GND
A1		Data + (A)	TxD1 +
B1		Data - (B)	TxD1-
A2	S2	Data + (A)	RxD1 +
B2		Data - (B)	RxD1-
GND		GND	GND

Table14 KPS3204AL Terminal Definition



Pin	String	RS-485	RS-422
GND	S1	GND	GND
A1		Data + (A)	TxD1 +
B1		Data - (B)	TxD1-
A2	S2	Data + (A)	RxD1 +
B2		Data - (B)	RxD1-
GND		GND	GND
GND	S3	GND	GND
A3		Data + (A)	TxD2 +
B3		Data - (B)	TxD2-
A4	S4	Data + (A)	RxD2 +
B4		Data - (B)	RxD2-
GND		GND	GND

2.2. 2.5 KPS/KGW 3204A-2T4D-232/485/422-L17-L17

The serial port of this series adopts standard DB9 male interface, which can be switched to RS-232, RS-485 and RS-422 modes by software.

Table15KPS/KGW3204A-2T4D-232/485/422-L17-L17 Terminal Definition

Pin	String number	RS-485	RS-232	RS-422
1	S1/S2/S3/S4	NC	NC	TxD-
2		NC	RxD	TxD +
3		Data + (A)	TxD	RxD +
4		Data - (B)	NC	RxD-
5		GND	GND	GND

2.3 Network port

Table16 Network Interface Information

Products	Network interface
KPS/KGW3x0xA Series	KPS/KGW310XA: 1 10/100 Mbps KPS/KGW320XA: 2 10/100 Mbps
KPS/KGW3224A Series	2 10/100 Mbps
KGW3204A 4G Series	2 10/100 Mbps
KPS3x0xAL Series	KPS3102AL: 1 10/100 Mbps KPS3204AL: 2 10/100 Mbps
KPS/KGW320xA-232-485-422 Series	KPS/KGW3204A: 2 10/100 Mbps KPS/KGW3208A: 2 10/100 Mbps

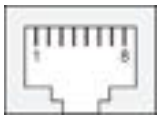
When working normally, you can connect the device directly to the network by using the network cable. When initialization and fault detection are needed, it can be directly connected to PC through network cable. When the device is running, the indicator lamp of the network port lights up, so as to judge whether the network has been accessed and the rate of accessing the network.

Users can change the IP address of the network port, but the MAC address cannot be changed.

If you want to connect multiple devices to the network end, the external network device must keep the same network segment as the network port of the device, and there is no IP and MAC address conflict.

Port pins are defined as follows:

Table17 Interface Definition



Pin	MDI-X	MDI signal
1	Rx +	Tx +
2	Rx-	Tx-
3	Tx +	Rx +
6	Tx-	Rx-
4-5	Undefined	Undefined
7-8	Undefined	Undefined

2.4 LED Indicator

Table18 LED Indicator

LED indicator	Color	Description
Reset	Green	Flash: Reset button pressed for more than 3 seconds
		Bright: Reset button is pressed within 3 seconds
		Off: Reset button not pressed
Power	Green	Constantly bright: The input power supply is connected normally and the device is running normally
		Off: The input power supply is not connected or operates abnormally
PWR1	Green	Bright: Power on
		Off: No power on
PWR2	Green	Bright: Power on
		Off: No power on
Run	Green	Constantly bright: Serial server is starting
		Flash: The frequency is about 1 second, and the system runs normally
		Flash mob (no Reset indicator): The reset key is pressed (press for 3-10 seconds) and the system restores the factory Setting
		Off: The main state is abnormal or not powered on
4G	Green	Bright: The port has established a valid network connection
		Flash: Port has network activity
		Off: The port has not established a valid network connection
Alarm	Green/red	Flash: The frequency is about 2 times per second, and the system crashes or the running state is abnormal
		Off: The system is normal
		Always bright: KGW Series Non-protocol Project KPS Series Serial Port Not Started
Link/ACT	Green	Bright: The port has established a valid network connection
		Flash: Port has network activity
		Off: The port has not established a valid network connection
Speed	Green	Bright: 100M operating state (i.e. 100Base-TX)
		Off: 10M working state (i.e. 10Base-TX)
RJ45 (Link/ACT)	Green	Bright: The port has established a valid network connection
		Flash: Port has network activity
		Off: The port has not established a valid network connection
RJ45 (10/100 M)	Yellow	Bright: 100M operating state (i.e. 100Base-TX)
		Off: 10M working state (i.e. 10Base-TX)
Tx-n	Green	Flash: Serial port n has data signal to send
		Off: Serial port n has no data transmission
Rx-n	Green	Flash: Serial port n has data signal reception
		Off: Serial port n has no data transmission

Note: The value of n in the above table is the serial port serial number, for example, Tx1 means serial port 1. The Alarm lamps in the KPS/KGW320xA-232-485-422 series are red.

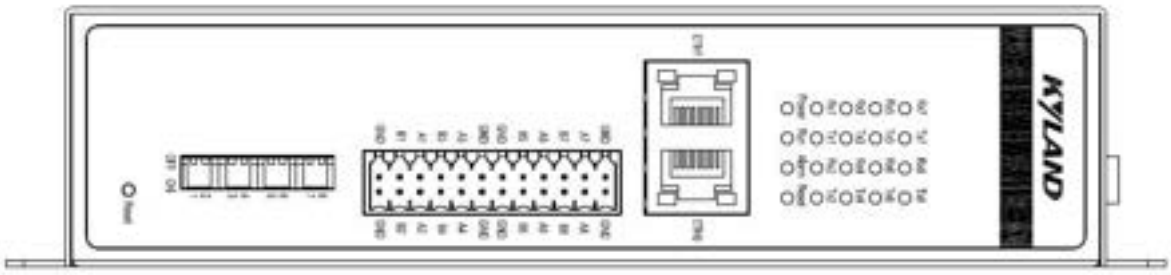


Figure8 KPS/KGW3x0xA Series Indicator Panel Line Figure (Example KPS3208A)

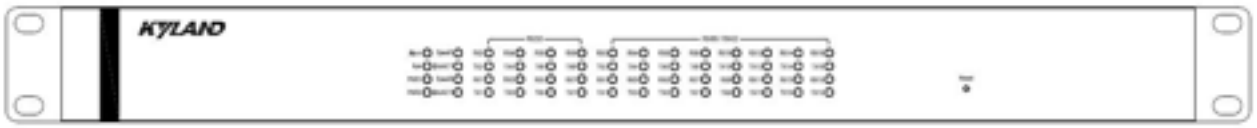


Figure9 KPS/KGW3224A Indicator Panel Line Figure

Note: The KPS/KGW3224A series of devices support configuring the RS485 serial port to RS422 mode. When RS-422 Serial Port n is enabled, the RX 2n indicator will always be on, indicating that RS-422 Serial Port n is turned on. RX/TX (2n-1) is the serial indicator for RS-422 port n.

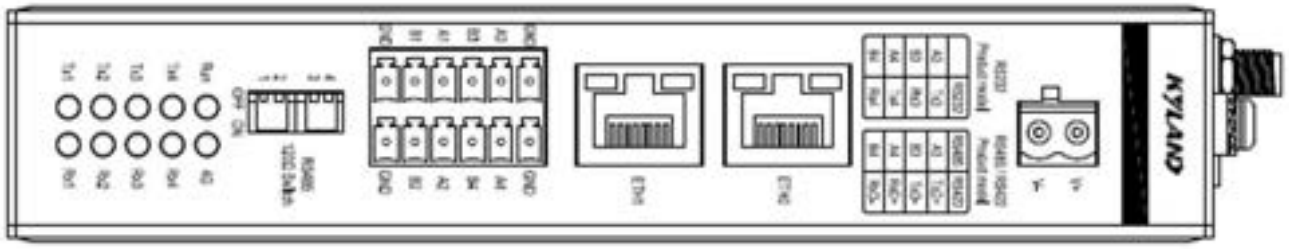


Figure10 KGW3204A-4G Series Indicator Panel Line Figure

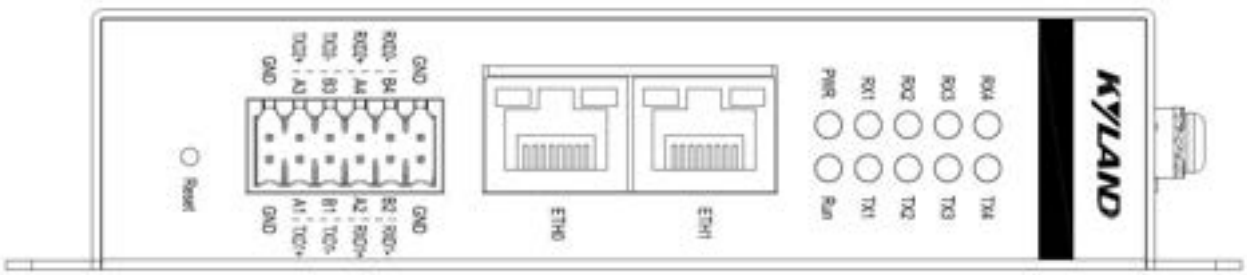


Figure11 KPS3x0xAL Series Indicator Panel Line Figure (Take KPS3204AL as an Example)

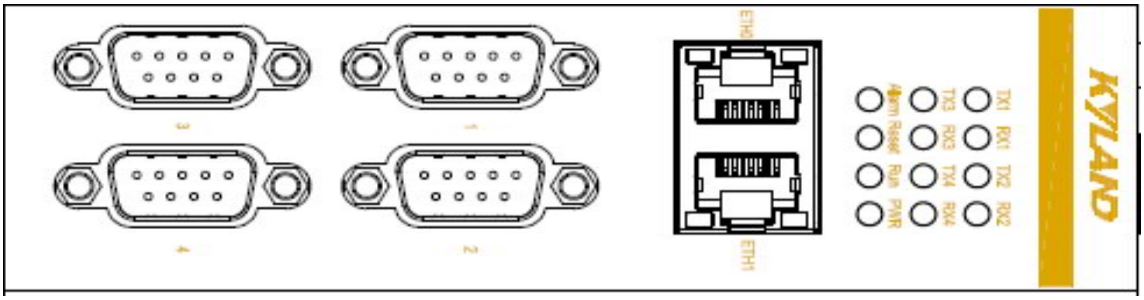
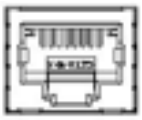


Figure12 KPS3204A-2T4D-232/485/422-L17-L17 Series Indicator Panel Line Figure

2.5 Console interface

Note: The Console interface applies to KPS/KGW3224A, KPS/KGW320xA-232-485-422

Table19 Console Port Definition



Pin	MDI-X	MDI signal
1	Undefined	Undefined
2	Tx	Tx
3	Rx	Rx
4	Undefined	Undefined
5	GND	GND
6-8	Undefined	Undefined

Note: The KPS3204A-2T4D-232/485/422-L17-L17 device supports debugging serial authentication. Default login username: root, login password: ky.yc.18.

2.6 4G module

Note: 4G module is suitable for KGW3204A-4G. The domestic version uses EC200A-CN module, and the global version uses EG25-G module.

2.6.1 EC200A-CN Mini PCIe

Table20 EC200A-CN Mini PCIe RF Parameters

Network system	Frequency band	Max downlink	Max Uplink (Mbps)
LTE-FDD	B1/B3/B5/B8	150	50
LTE-TDD	B34/B38/B39/B40/B41	130	30
WCDMA	B1/B5/B8	384	384

Table21 EC200A-CN Mini PCIe Transmit Power

Frequency band	Maximum power value
EGSM900	33dBm±2dB
DCS1800	30dBm±2dB
WCDMA	24dBm +1/-3db

LTE-FDD	23dBm±2dB
LTE-TDD	23dBm±2dB

2.6.2 EG25-G Mini PCIe

Table22 EG25-G Mini PCIe RF Parameters

Network	Frequency band	Max Downlink	Max Uplink
LTE-FDD	B1/B2/B3/B4/B5/B7/B8/B12/B13/B18/B19/B20/B25/B26/B28	150	50
LTE-TDD	B38/B39/B40/B41	130	30
WCDMA	B1/B2/B4/B5/B6/B8/B19	384	384
GSM	B2/B3/B5/B8	296	236.8
		107	85.6

Table23 EC200A-CN Mini PCIe Transmit Power

Frequency band	Maximum power value
EGSM900	33dBm±2dB
DCS1800	30dBm±2dB
WCDMA	24dBm +1/-3db
LTE-FDD	23dBm±2dB
LTE-TDD	23dBm±2dB

3 Hardware Characteristics

3.1 Network Interface

Table24 Network Interface Parameters

Products	KPS/KGW3x0xA Series	KPS/KGW3224A Series	KGW3204A 4G Series	KPS3x0xAL Series	KPS/KGW320xA-232-485-422 Series
Number of network interfaces	KPS/KGW310XA: 1 KPS/KGW320XA: 2	2	2	KPS3102AL: 1 KPS3204AL: 2	KPS/KGW3204A: 2 KPS/KGW3208A: 2
Speed	10/100 Mbps, adaptive	10/100 Mbps, adaptive	10/100 Mbps, adaptive	10/100 Mbps, adaptive	10/100 Mbps, adaptive
Connector	RJ45	RJ45	RJ45	RJ45	RJ45
4G	None	None	Route 1	None	None
ESD protection	Air ± 8KV, contact ± 6KV electrostatic protection	Air ± 15KV, contact ± 8KV electrostatic protection	Air ± 15KV, contact ± 8KV electrostatic protection	Air ± 8KV, contact ± 6KV electrostatic protection	Air ± 8KV, contact ± 6KV electrostatic protection
Isolation protection	Built-in 1.5 kV	Built-in 1.5 kV	Built-in 1.5 kV	Built-in 1.5 kV	Built-in 1.5 kV

Note: It is recommended to use shielded wires for network interface wiring to improve

anti-interference ability.

3.2 Serial Interface

Table25 Serial Interface Parameters

Products	KPS/KGW3x0xA Series	KPS/KGW3224A Series	KGW3204A 4G Series	KPS3x0xAL Series	KPS/KGW320xA-232-485-422 Series
Number of serial interfaces	KPS/KGW3101A: 1 KPS/KGW3102A: 2 KPS/KGW3204A: 4 KPS/KGW3208A: 8	24	4	KPS3102A: 2 KPS3204A: 4	KPS/KGW3204A: 4 KPS/KGW3208A: 8
Serial port type	RS-232/RS-485 Product model optional	8 RS-232, 16 RS-485 (configurable as 8 RS-422)	2 RS-485, 2 RS-232/RS-485 or 1 RS-422	Model RS-485 can be configured as RS-422	Switch RS-232/RS-485/RS-422 by software
Connector	Terminal	Terminal	Terminal	Terminal	Terminal
DIP switch	Enable/disable 120 Ω terminal resistors for RS-485 devices	No DIP switch, controlled by software	Enable/disable 120 Ω terminal resistor of RS-485 device	No DIP switch, controlled by software	DIP switch to enable/disable RS-485 device 120 Ω terminal resistor
EMC	EMC Class 3 B	EMC Class 4 B	EMC Class 4 B	EMC Class 3 B	EMC Class 3 B
Isolation protection	Built-in 3KV	Built-in 3KV	Built-in 3KV	None	Built-in 2KV

Note: It is recommended to use shielded wires for serial interface wiring to improve anti-interference ability.

3.3 Serial Communication Parameters

Table26Serial Communication Parameters

Products	KPS/KGW3x0xA Series	KPS3x0xAL Series	KGW3204A 4G Series	KPS/KGW320xA-232-485-422 Series	KPS/KGW3224A Series
Data bit	5, 6, 7, 8				
Stop bit	1, 2				
Parity bit	None, Even, Odd				
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 120, 180, 2400, 480, 960, 19200, 384 00, 576 00, 115 200, 230 400, Customize (non-standard baud rate) **Note: Among them, KPS/KGW3224A series does not support 50, 75,**				

	134, 150, 200 baud rate, and 230400 baud rate only applies to RS-485 13-16 and RS-422 7-8

3.4 Button

Reset: within 3S of short press, the device will restart without restoring the factory Setting; Press 3S-10S for a long time to restore the factory Setting; More than 10S, do not do any operation.

3.5 Environmental conditions

Working temperature: -40 ℃ ~ 75 ℃

Storage temperature: -40 ℃ ~ 85 ℃

Relative humidity: 5 ~ 95% without condensation

Heat dissipation mode: natural cooling without fan

3.6 Micro SD

KPS\ KGW3224A, KGW3204A-2T4D-232/485-4G-L17 series support Micro SD card expansion.

Support SDIO 3.0 standard

3.7 SIM Card

The KGW3204A-2T4D-232/485-4G-L17 Series supports SIM cards

Micro card: size 12mm*15mm

Domestic version support: Mobile, Telecom and Unicom

Global version:

Carrier certification: Deutsche Telekom (Europe), Verizon/AT&T/U.S. Cellular (USA), Telus/Rogers* (Canada)

Mandatory/Conformance Certification: GCF (Global), CE (Europe), UKCA (UK), PTCRB (North America), FCC (USA), IC (Canada), Anatel (Brazil), IFETEL (Mexico), KC (Korea), NCC (China), JATE/TELEC (Japan), RCM (Australia & New Zealand), ICASA (South Africa)

4 Software Function

The device is equipped with a Web management configuration page, which can be opened by browsers such as Chrome and Firefox to set up the device.

Note: The following general function module uses KGW3204A as an example, and the specific function module uses corresponding model as an example.

4.1 WEB Log in and Password

Connect to the Web console: Open the browser and enter the IP address of the device. Default

IP address: network port-eth0: 192.168. 0.249; Net port-eth1: 192.168. 1.249.

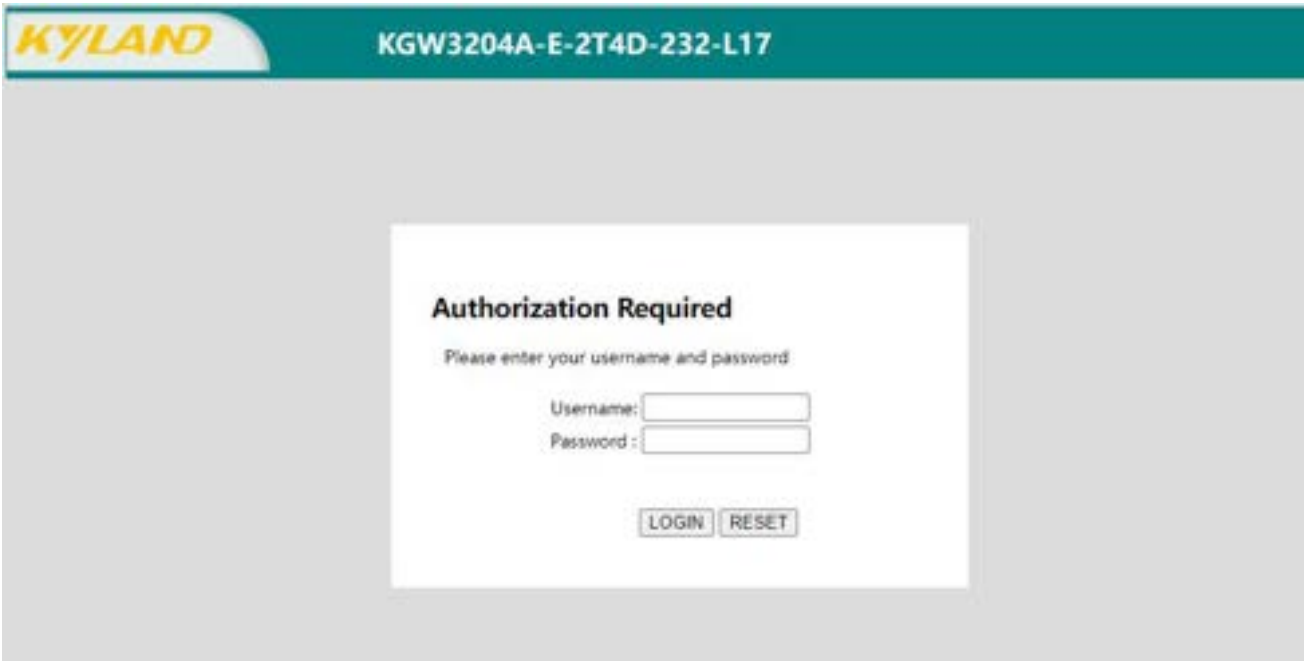


Figure13 Login Page

Default login username: admin, login password: pwd4Kyland. Enter your username and password and click "Log in" to enter the Web console. After logging in to the home page, you can choose the page display language, and the page text can be switched between English and Simplified Chinese.

Note: KPS/KGW320xA-232-485-422 Series, please use the login password: admin.

4.2 Home Page

The home interface is used to display device information, including: serial number, host name, software version, hardware version, and device time.

Figure14 Home Page

4.3 Network

4.3.1 Interface

The Network-Interface page is used to display the relevant network parameters of the serial server device, including device running time, MAC address, received/sent data volume, IP address, and so on.

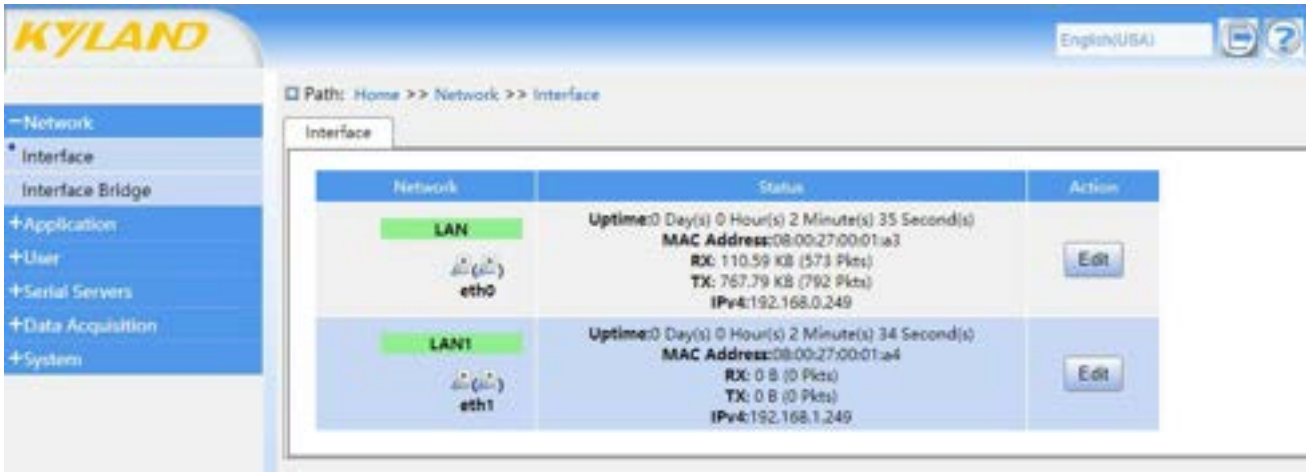


Figure15 Web Page

After clicking the Network-Interface menu, the Edit button appears on the Network Interface page. Click the "edit" button, then enter the network interface editing interface, and the user can set network port-LAN (eth0) and network port-LAN1 (eth1) IP address, subnet mask, gateway] DNS and multiple IP addresses. When all parameters are set, click "Apply", and the network function of will automatically restart and take effect.

Figure16 Interface Edit Page

Table27 Net Port Editing Parameters

Parameter	Value	Description

Agreement	Static address, DHCP client	Choose static IP or DHCP
IP address	eth0: 192.168. 0.249 eth1: 192.168. 1.249	IP address
Subnet mask	255.255. 255.0	Identifies that the server belongs to a Class A, B, or C network.
Default gateway	0.0. 0.0	IP address of the router that provides network access outside the LAN of the device.
Custom DNS	IP address	DNS Server
Multiple IP addresses	IP address	Must be in the same network segment as the current network port to be successfully added, and can access the device through the added multiple IP addresses.

4.3.2 Network Port Bridging

The network port bridging page displays network parameters for port bridging, including enabling bridging, IPv4 addresses, IPv4 subnet masks, using custom DNS servers, multiple IP addresses, and more.

Network port bridging can be divided into two bridging modes: LAN-LAN and LAN-WAN.

LAN-LAN bridging mode. Check Enable bridging, Check "Ethernet adaptereth1", turn on bridging, set IP address and subnet mask, and click "Apply". The bridging function of network port-LAN (eth0) and network port-LAN1 (eth1) is enabled successfully, and both network ports can access this device or transmit data with this device with the set IPv4 address.

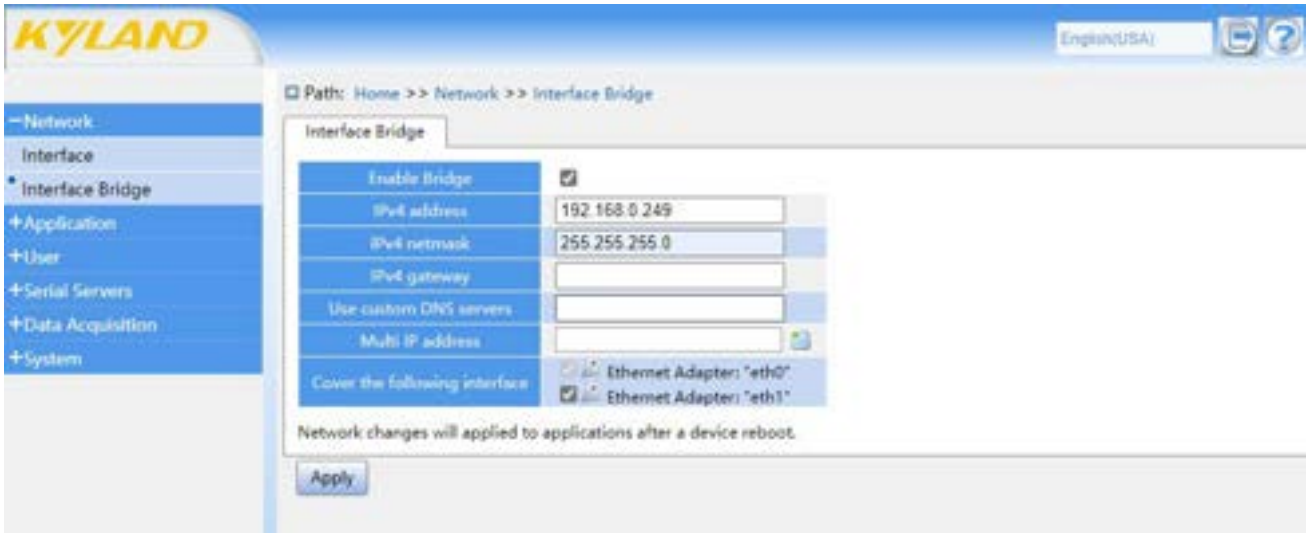


Figure17 LAN-Lan interface Bridge Page

Table28 LAN-LAN Port Bridging Parameters

Parameter	Value	Description

IPv4 Address	IP address	IP address
IPv4 Subnet Mask	255.255. 255.0	Identifies that the server belongs to a Class A, B, or C network.
Use a custom DNS server	IP address	DNS Server
Multiple IP addresses	IP address	Must be in the same network segment as the current network port to be successfully added, and can access the device through the added multiple IP addresses.

LAN-WAN bridging mode. check to enable bridging, do not check "Ethernet adaptereth1", select protocol (WAN), and set-LAN (eth0) and-WAN port (eth1) respectively the routing function is enabled, and the IP of different network segments can be accessed through the WAN port of this device.

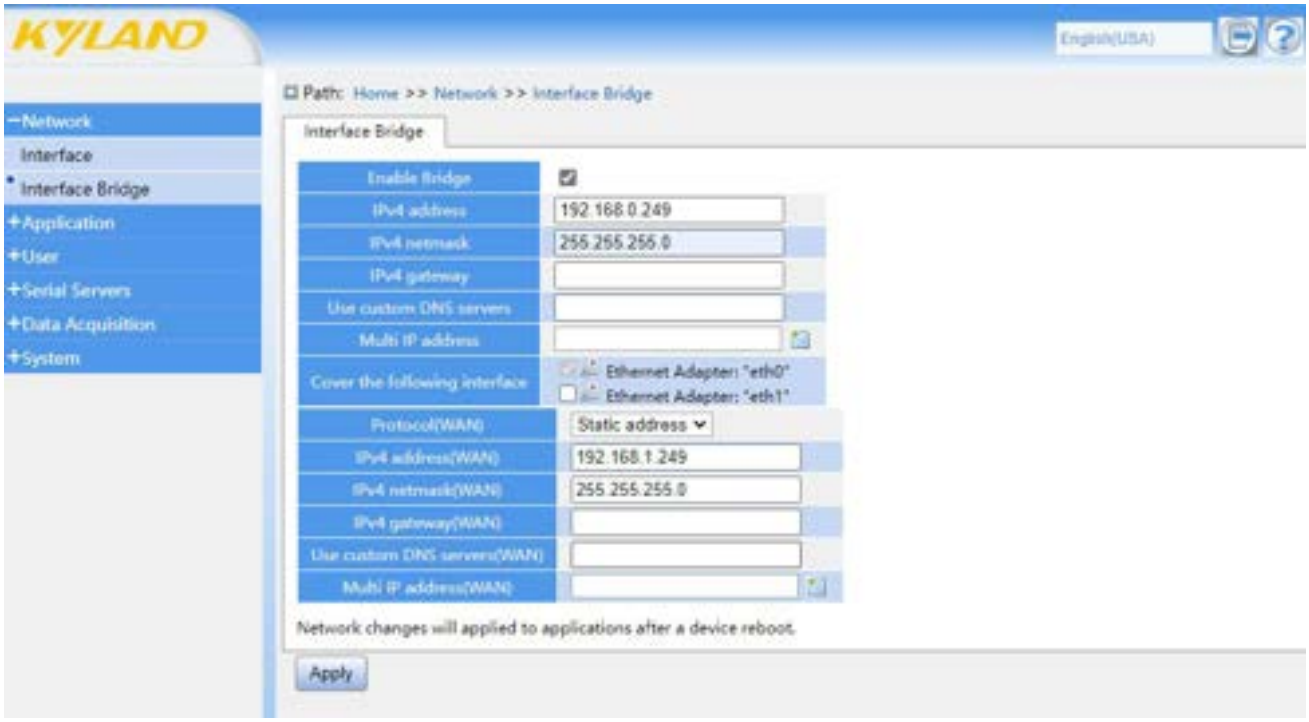


Figure 18 LAN-Waninterface Bridge Page

Table29 LAN-WAN Port Bridging Parameters

Parameter	Value	Description
Protocol	Static address, DHCP client	Choose static IP or DHCP
IPv4 Address	IP address	IP address
IPv4 Subnet Mask	255.255. 255.0	Identifies that the server belongs to a Class A, B, or C network.
IPv4 Gateway	IP address	Default gateway

Use a custom DNS server	IP address	DNS Server
Multiple IP addresses	IP address	LAN port multi-IP, must be with the current network segment can be added successfully, can access the device through the added multi-IP address.
Multiple IP Address (WAN)	IP address	WAN port multi-IP, must be the same network segment as the current network port to be successfully added, and can access devices through the added multi-IP address.

Note: A single network port device does not support bridging.

4.3.3 Network Diagnosis

The network diagnostics function is used to diagnose whether the network communication between the gateway and the target IP device is normal. Normal communication: After waiting for 5s, print 5 short ping results to indicate that you can ping the opposite device; Unable to communicate: Wait 15s and print "100% packet loss". The configuration of network diagnostics function is shown in the following figure:

Figure19 Network Diagnostic Configuration

Configuration range: A.B.C.D, legal IP address

Function: Configure the IP address of external devices

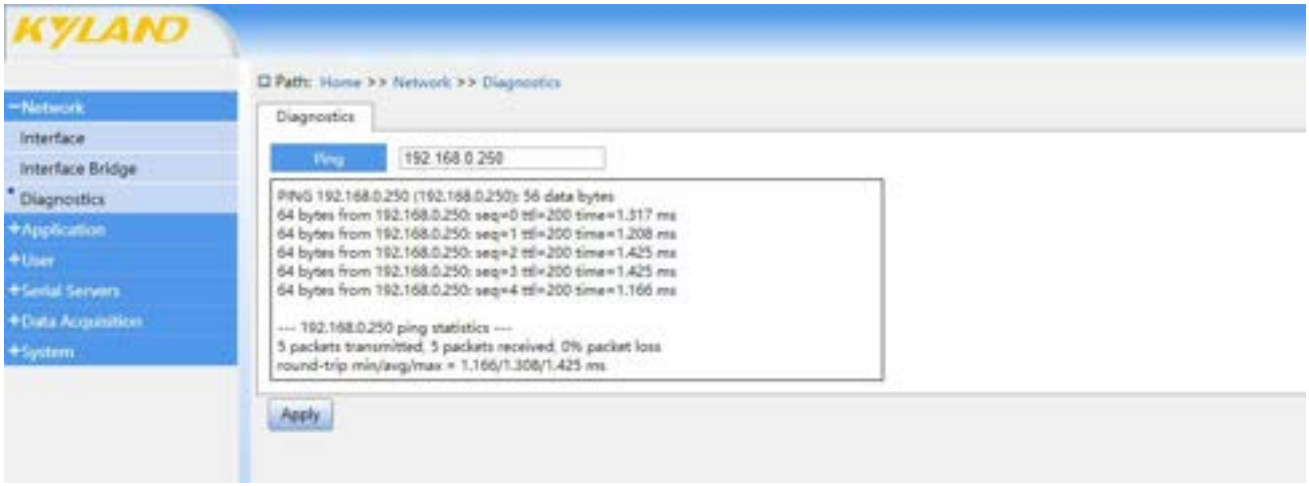


Figure20 Network Diagnostic Configuration Example

4.3.4 Static Routing

Note: KGW3204A-2T4D-232/485-4G-L17 Special Function Module

Static routing function is divided into two parts: static routing and routing state. Static routing configuration includes destination network, subnet mask, gateway and interface. You can choose to specify network interface or default, and configure up to 10 static routes. The static routing function is configured as shown in the following figure:

Figure21 Example of Static Routing Configuration

The Route Status feature is used to view existing routes for the device. The routing status is shown in the following figure:

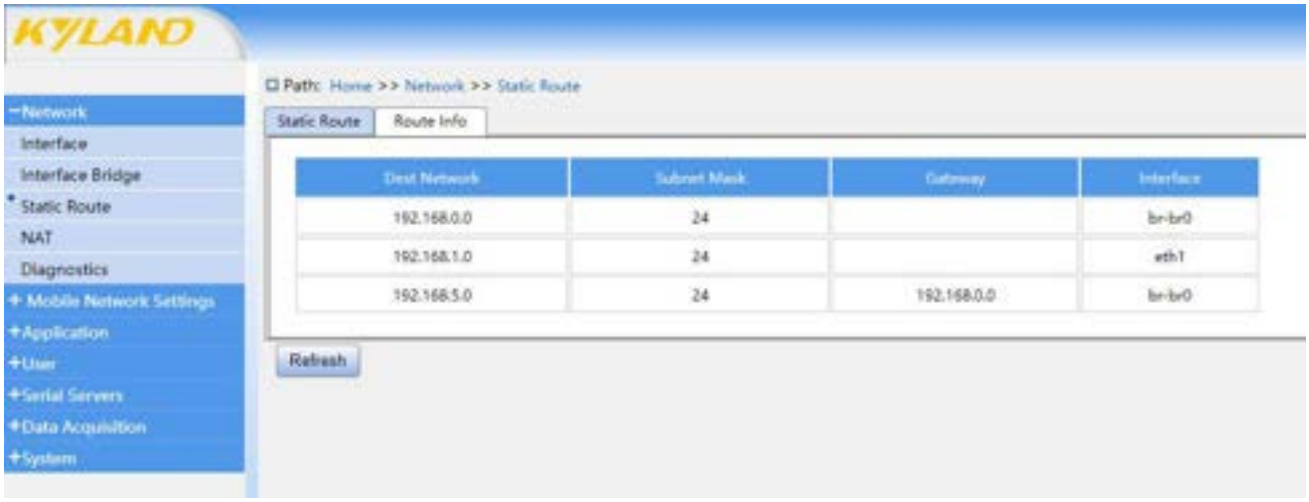


Figure22 Routing Status Page

Table30 Static Routing Parameters

Parameter	Value	Description
Destination network	IP segment	IP address where the data arrives
IPv4 Subnet Mask	255.255. 255.0	Identifies that the server belongs to a Class A, B, or C network
Gateway	IP Gateway	The IP address of the next routing device through which the data passes before reaching the destination address
Interface	Default, LAN, LAN1, 4G, VPN	The current route takes effect on the selected interface (the gateway configuration must be on the same network segment as the current interface in order to apply normally)

4.3.5 Network Address Translation

Note: KGW3204A-2T4D-232/485-4G-L17 Special Function Module

Network address translation is divided into source address translation and destination address translation. When a device sends a data packet to an external network, SNAT will convert the source IP to the exit IP of the device according to the configured rules; When packets on the external network pass through the gateway device, DNAT translates the destination IP address to the private IP address of the internal network according to the configured rules. The maximum number is 32, including pre-conversion IP/port, post-conversion IP/port and protocol.

Source Address Translation Configuration: The IP before translation is the IP of the source device, and the IP after translation is the IP of the gateway port connected to the destination device. An example of source address translation configuration is as follows:

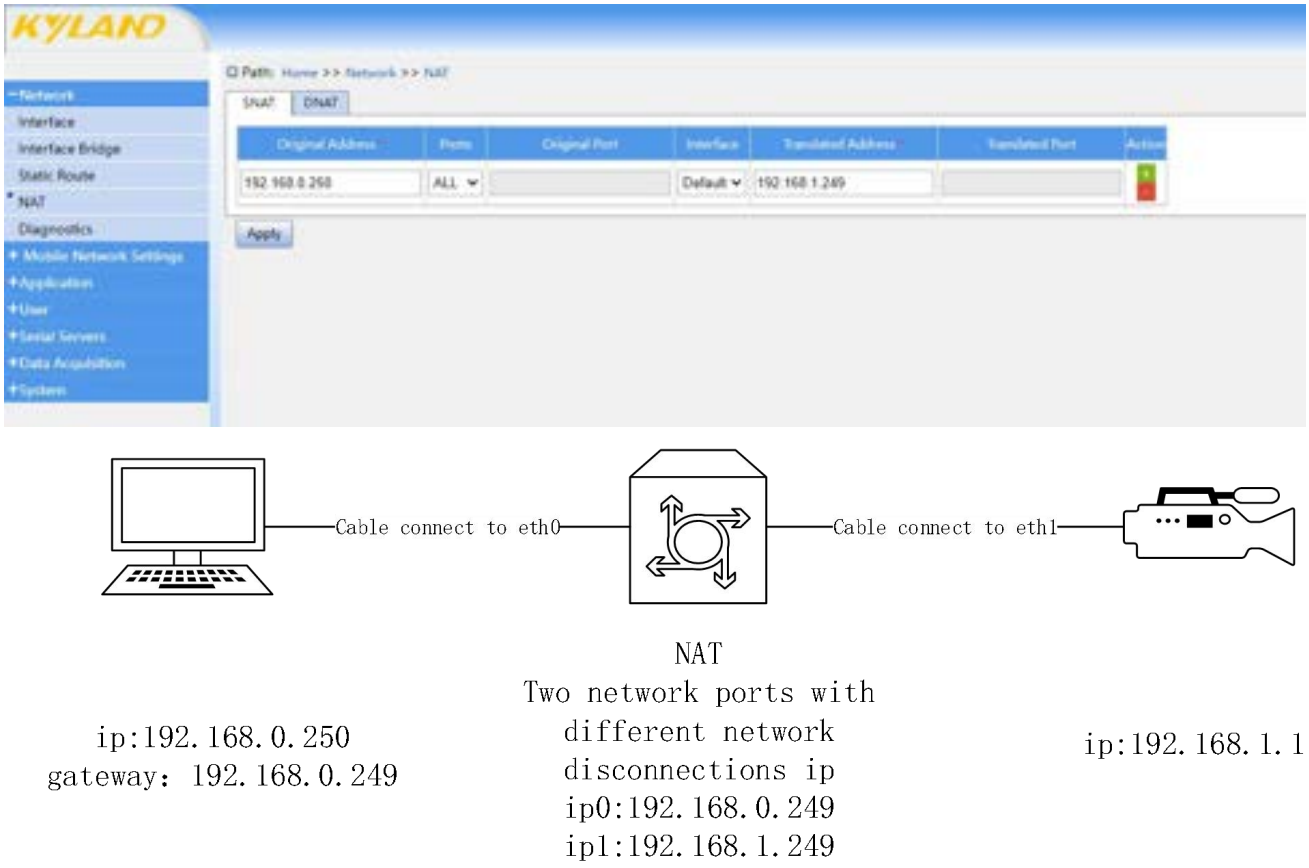


Figure23 Source Address Translation Configuration Page

Destination Address Translation Configuration: The IP after translation is internal private IP, and the IP before translation is the IP of the gateway port connected to the external device. An example of destination address translation configuration is shown in the following figure:

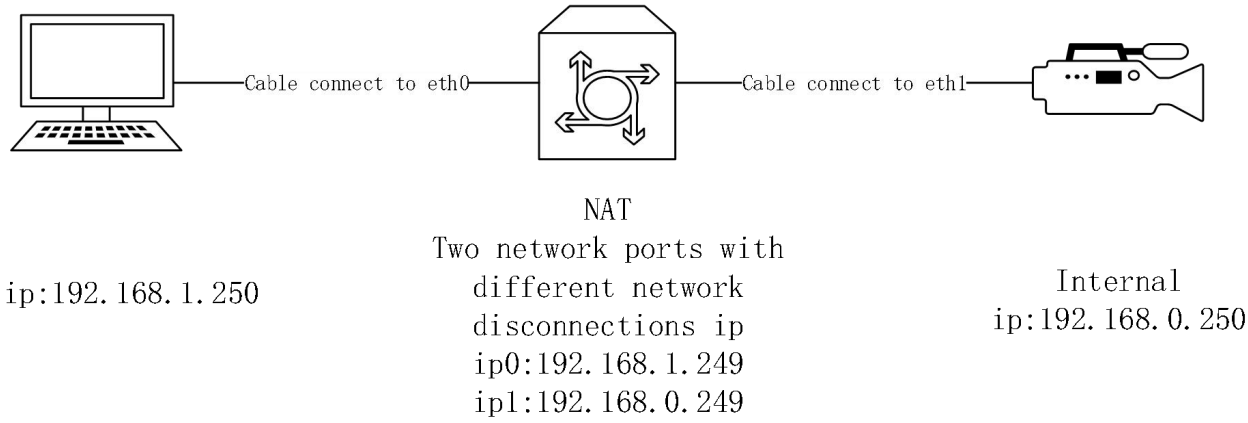


Figure24 Destination Address Translation Configuration Page

Table31 Network Address Translation Parameters

Parameter	Value	Description
IP before conversion	IP address	IP address
Protocol	ALL, TCP, UDP	When ALL is selected, ALL ports of TCP and UDP can be converted. When using TCP and UDP, you need to fill in the before/after port conversion
Switch front port	Integer between 1 and 65535	Port number
Interface	Default, LAN, LAN1, 4G, VPN	Select the interface to use for address translation (it must be on the same network segment as the current interface for normal application)
IP after conversion	IP address	IP address
Port after conversion	Integer between 1 and 65535	Port number

4.4 Mobile Network Setting

Note: KGW3204A-2T4D-232/485-4G-L17 Special Function Module

4.4.1 Mobile Network Enabled

The Mobile Network Enabling page is used to display and set relevant parameters of mobile network Setting, including enabling mobile network, access point name, user name, password and Ping address.

When the mobile network function is enabled, the device will communicate with 4G network to realize the wireless communication function. When the access point name, user name, and password are correctly filled in, the system registers with the correct access point name, user name, and password. When the access point name, user name, and password are not filled in, the system

registers with the default access point name, user name, and password.

Note: There is no need to set APN for non-private network.

Figure25 Mobile Network Enable Page

Parameter	Value	Description
Access point name	Access point name or empty	APN
User name	User name or empty	User name
Password	Password or empty	Password
Ping address	Ping address	Ping address is used to judge whether the current network communication is normal. If the filled address cannot be Ping, the 4G module will be restarted. If this function is not enabled, fill in 127.0. 0.1

Table32 Mobile Network Enable Parameters

4.4.2 IMSI

The IMSI page is used to display basic IMSI information, including IMEI, IMSI, and firmware information.

When mobile networking is enabled, the IMSI page displays IMEI information, IMSI information, and firmware information. Turn off the mobile network function, and the basic information of IMSI page will not be displayed. When the mobile network function is enabled but the SIM card is not inserted, the IMSI page displays IMEI information and firmware information, and the IMSI is displayed as no sim card.

Figure26 IMSI Page

Parameter	Value	Description
IMEI	IMEI information or null	International Mobile device Identification Code Globally unique ID, which is used to distinguish each mobile communication device
IMSI	IMSI information is either empty or no sim card	International Mobile Subscriber Identity It is a binding relationship with SIM card, which is used to distinguish each mobile user
Firmware information	Firmware information or null	4G Module Firmware Information
Signal strength	Signal strength and bit error rate	4G signal strength, format * *, # # ** It should be between 0 and 31 (99 indicates no signal), and the higher the value, the better the signal quality # # is the bit error rate, and the value is between 0 and 99. Otherwise, check whether the antenna or SIM card is installed correctly

Table33 IMSI Parameters

4.5 Application

4.5.1 Device Cloud Platform

Note: KGW3204A-2T4D-232/485-4G-L17 Special Function Module

The device cloud platform supports docking the device management cloud platform developed by Kyland through MQTT service. Through device management, the cloud platform can monitor the online status and other information of gateway device in real time, and use VPN channel with cloud platform to realize access control of gateway device and its terminal device through virtual/real IP.

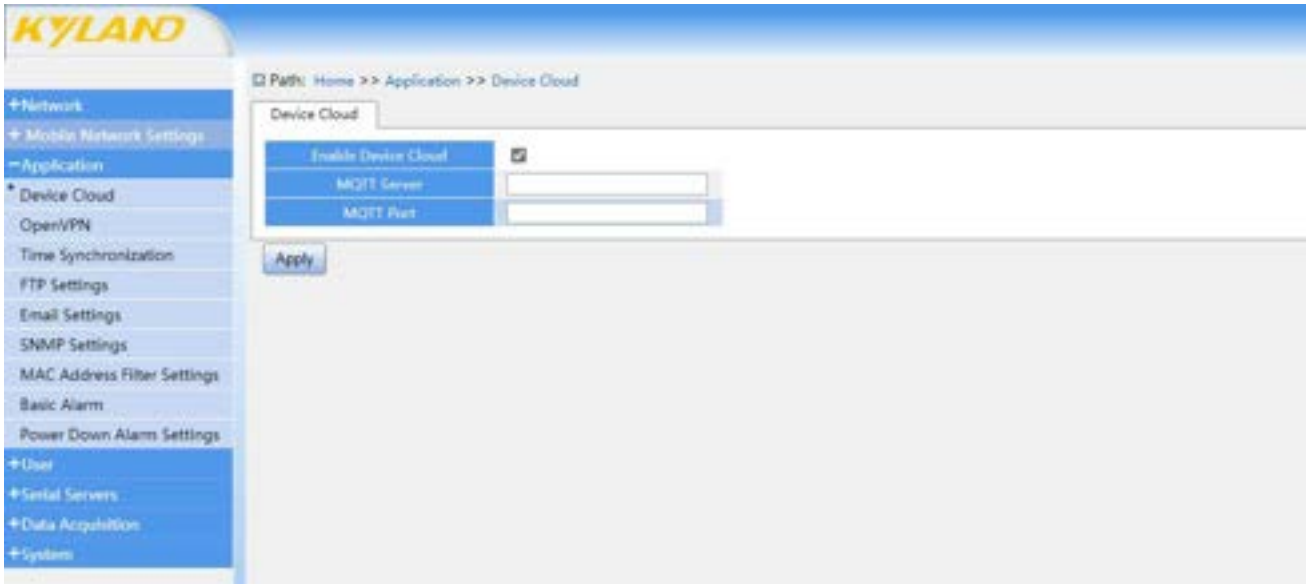


Figure27 Device Cloud Platform Page

Parameter	Value	Description
MQTT Server	IP address	IP address of the MQTT server
MQTT Port	Integer from 1 to 65535	Server port number

Table34 Device Cloud Platform Parameters

4.5.2 OpenVPN

Without enabling the device cloud platform, it supports manual configuration of independent OpenVPN, allowing manual addition of VPN services. After successful connection, all devices accessing VPN servers can be remotely accessed and communicated through OpenVPN.

Figure28 Device Cloud Platform Page

Table35 OpenVPN Parameters

Parameter	Value	Description
Server address	IP address	IP address of the server
Server port	Integer between 1 and 65535	Port number of the server
Topological type	Subnet, net30, p2p	Subnet: Only traffic from the specified Subnet can pass through the VPN net30: Mainly used in P2P networks, each pair of connections consumes 4 IP addresses p2p: Allows direct point-to-point connections between the server and the client without the need for a central server
Proto	TCP, UDP	Protocols used
Encryption algorithm	DES-CFB, DES-CBC, RC2-CBC, RC2-CFB, RC2-OFB, DES-EDE-CBC, DES-EDE3-CBC, DES-OFB, DES-EDE3-CFB, DES-EDE-OFB, DESX-CBC, BF-CBC, BF-CFB, BF-OFB, RC2-40-CBC, CAST5-CBC, CAST5-CFB, CAST5-OFB, RC2-64-CBC, AES-128-CBC, AES-128-CFB, AES-192-CBC, AES192-OFB, AES192-CFB, 256-CBC, AES-256-OFB, AES-256-CFB, AES-128-CFB1, AES-192-CFB1, AES_256_CFB1, AES-128-CFB8, AES-192-CFB8, AES-256-CFB8, DES-CFB1, DES-CFB8	Select the encryption algorithm you want to use

Authentication algorithm	Sha1, MD5, Sha256, Sha384, Sha512	Select the desired authentication algorithm
LZO compression	Check/Uncheck	Enable LZO compression algorithm
CA	CA File	Select a valid CA file to upload
Certificate	Certificate	Select a valid certificate to upload
Private key	Private key	Select a valid private key to upload

4.5.3 Time Synchronization

The Time Synchronization page is used to display and set time, including enabling time zone selection application, device time synchronization, and setting time application.

Time Zone Setting: Select the corresponding time zone from the drop-down box and click Apply

Device time: Synchronize local time to device manually. Gateway device time is consistent with local time after synchronization

Setting time: Manually set the time parameter according to year, month, day, hours, seconds, and the time of gateway device after application is the set time

Time synchronization related parameters, including NTP client, calibration time interval, candidate NTP server. Enable the time synchronization function, this device will take the calibration time interval as the calibration period, and calibrate the time to the NTP server regularly. When multiple NTP servers are set up, if the device is not successfully calibrated with the first candidate NTP server, the device will automatically calibrate to the second candidate NTP server, and so on.

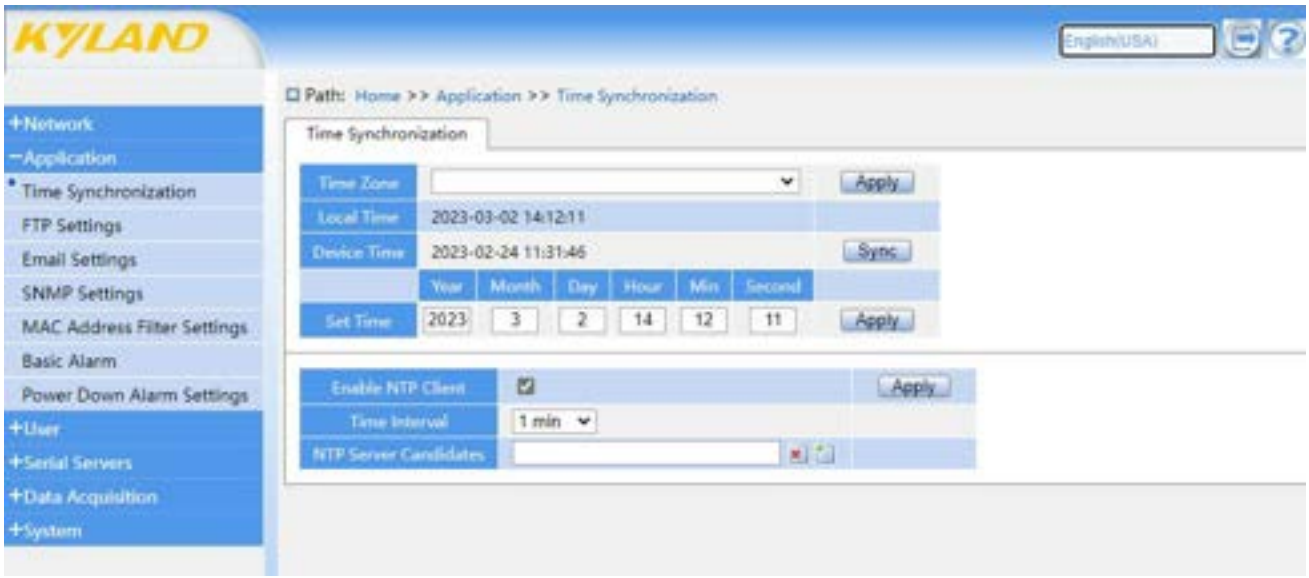


Figure29 Time Synchronization Page

Table36 Time Synchronization Parameters

Parameter	Value	Description
Calibration time interval	1min, 5min, 20min	Timing request interval
Candidate NTP server	Target NTP server	The device sends a timing request to the NTP server
Time zone	UTC-12: 00 ~ UTC+12: 00	Universal time zone time
Device time	Local time	The device time is consistent with the local time after synchronization
Setting time	Month: 1-12, day: 1-31, hour: 0-23, minute: 0-59, second: 0-59	Set the time manually

4.5.4 FTP Setting

FTP Setup page is used to display the relevant parameters of this device as an FTP server, including enabling FTP server, FTP account and FTP account password.

Enables FTP server functionality to use devices as FTP servers, for storing and downloading files.

Note: The file storage space of FTP function of KPS\ KGW3224A and KGW3204A-2T4D-232/485-4G-L17 Device is built-in SD card, and FTP function is unavailable without inserting SD card. KPS/KGW3204A-2T4D-232/485/422-L17 model device does not have built-in SD card.

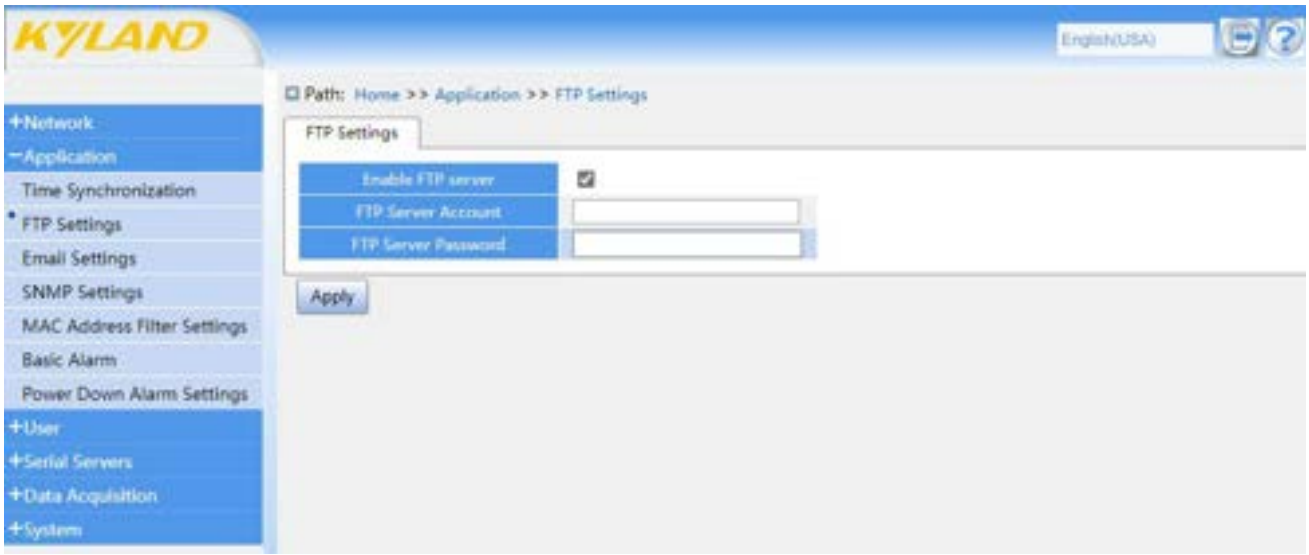


Figure30 FTP Setup Page

Table37 FTP Setting Parameters

Parameter	Value	Description
FTP account number	Custom (non-root)	User logs in to FTP server account

FTP account password	Customize	User Login FTP Server Password

4.5.5 Mail Alarm Setting

The Mail Alert Setup page is used to display the parameters related to the Mail Alert Setup, including Enable Mail Alert Client, Mail Sending Server Address, Mail Account and Mail Account Password, etc.

The mail alarm setting regularly sends alarm information to the mailbox designated by the user, including device IP, CPU and memory information.

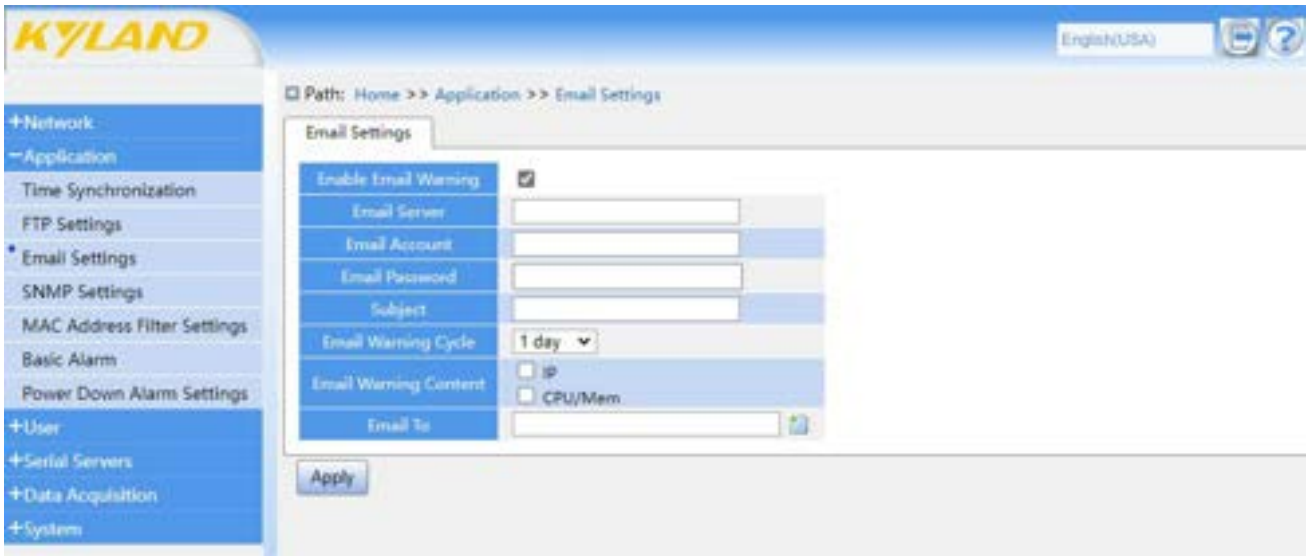


Figure31 Mail Alarm Setting

Parameter	Value	Description
Mail sending address	Server IP Address	Mail alert server address
Mail account	E-mail account	Login account of the mail sender
Mail account password	Mailbox password	Login account password of the message sender
Mail Subject	Customize	Mail Subject
Mail alarm cycle	1day, 20hour, 20min, 5min, 1min	The interval between messages sent
Mail alarm content	Check/Uncheck	IP, CPU/Mem can be checked for email alarm content
Alarm mail recipient	E-mail account	Mailbox account of the recipient of the message

Table38 Mail Alarm Setting

4.5.6 SNMP Setting

Note: SNMP Trap function is not supported on KPS/KGW3204A-2T4D-232/485/422-L17

models

The SNMP Setting page is used to display parameters related to SNMP Setting, including enabling SNMP, service port, community, Trap IP, Trap port, and so on.

After SNMP is successfully set, you can obtain device information, including device time, network information, memory information, etc. At the same time, device can periodically upload device information to user by specifying IP.

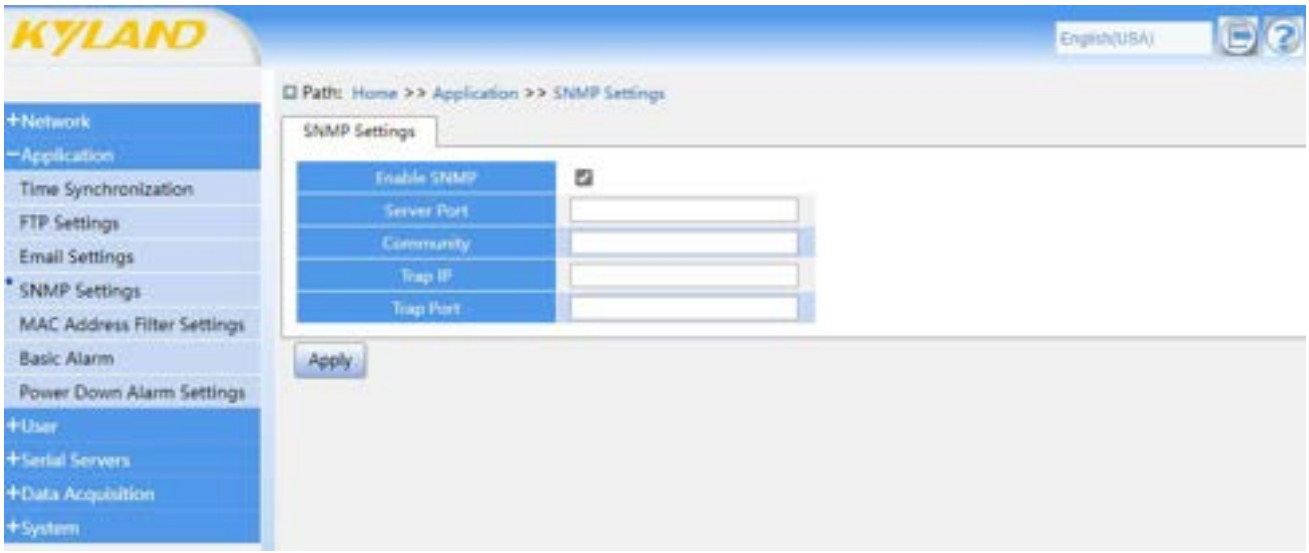


Figure32 SNMP Setting

Parameter	Value	Description
Service port	Port number	Port number of device SNMP service
Community	Customize	Community of communication between devices and SNMP protocol
Trap IP	IP address	Destination IP address of device uploading information
Trap port	Port number	Port number where the device uploads information

Table39 SNMP Setting

4.5.7 Address Filtering Setting

The MAC Address Setup page is used to display parameters related to MAC Address Filtering Setting, including MAC Address Filtering Enabled, MAC Address Filtering Mode, and MAC Address.

The MAC address filtering setup function is used to set up the firewall. By setting the whitelist, only MAC addresses added to the whitelist are allowed to access this device. By setting a blacklist, the MAC address added to the blacklist will not be able to access this device.

Note: Please use the black/white list carefully. When the wrong setting of the black/white

list leads to the inability to access this device, press the Reset button to restore the factory setting to Reset the black/white list.

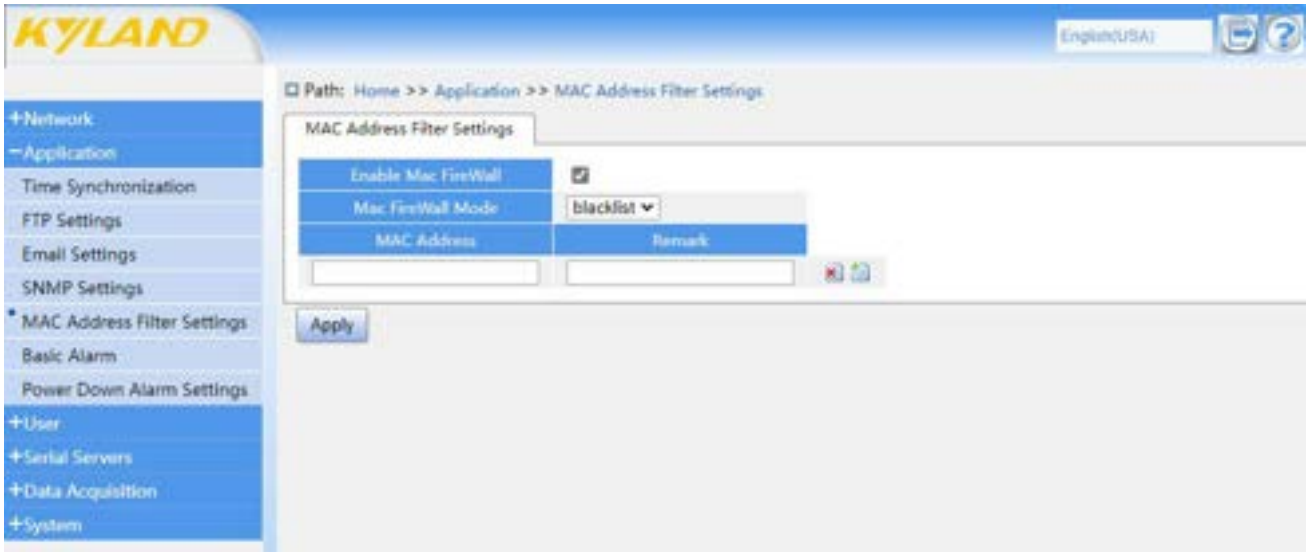


Figure33 MAC Address Filter Setup Page

Table40 MAC Address Filter Setup Parameter

Parameter	Value	Description
Mac Address Filtering Mode	White list, black list	Select white list or black list for filtering mode
Mac address	MAC address	MAC address to add to the list

4.5.8 Basic Alarm

The Basic Alarm page is used to display the relevant parameters of Basic Alarm, including enabling Basic Alarm, external Alarm server and port, external alarm server protocol, alarm threshold, etc.

Basic alarm function can be used by users to manage devices, monitor device status and set alarm conditions. When CPU or memory utilization is higher than the threshold value set by users, alarm information will be sent to designated external servers.

Figure34 Basic Alarm Setup Page

Table41 Basic Alarm Setting Parameters

Parameter	Value	Description
External alarm server	IP address	External server IP address
External alarm server port	Port number	External address port number
External Alarm Server Protocol	TCP, UDP	The receiver uses the protocols TCP, UDP
Alarm type	Check/Uncheck	Contents and conditions of alarm triggering

4.5.9 Power Failure Alarm Setting

The Power Alarm page is used to display the relevant parameters of Power Alarm, including enabling Power Alarm, External Alarm Protocol, External Alarm Server and Port, Alarm Content.

Power failure alarm is used to send the prompt information of power failure to the designated external server when the device is powered down.

Note: Power failure alarm should be connected correctly.

Figure35 Power-down Alarm Setting

Table42 Power-down Alarm Setting

Parameter	Value	Description
Alarm protocol	UDP, SNMP	Alarm Protocol UDP or SNMP
External alarm server	IP address	External server IP address
External alarm server port	Port number	External server port number
Alarm content	Customize	Alarm information content

4.6 User

4.6.1 User Management

The user management page is used to display and manage the relevant parameters of the user account, including user name, password, permission level, and so on.

Using admin user login page, you can add or delete users, modify user passwords, and modify user read and write permissions on user management page. Read-only users can only browse Web page information, can't modify device configuration parameters, and can't manage users. Read-write users can browse and modify the device configuration parameters of Web pages, but cannot manage users.

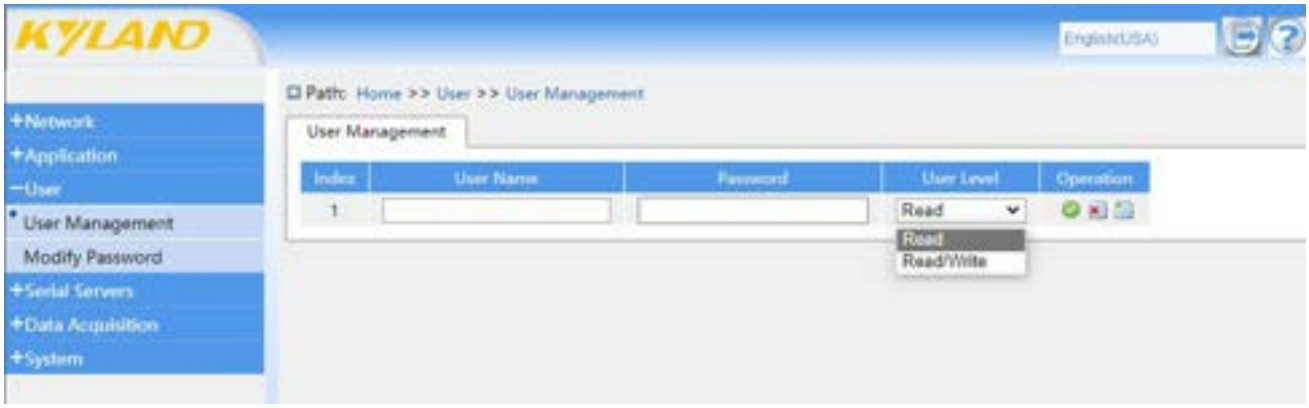


Figure36 User Administration Page

4.6.2 Change Password

The user-change password page is used to display parameters for the user password, including user name, current password, new password, and so on.

On the User-Change Password page, you can change the user password, which defaults to admin and pwd4Kyland.

Change password: Enter the current password, enter the new password, enter the new password again to confirm, click "Apply", and show that if the application is successful, the password will be changed successfully. If you forget your administrator password, after you press Therese button long enough to restore your factory Setting, you can log in to the page with your initial username admin and password pwd4Kyland.

Figure37 Change Password Page

4.7 Serial Port Server

4.7.1 Serial Port Interface Setting

The serial port setting page can set the relevant parameters of the device, which is used to set baud rate, data bit, check bit, stop bit, serial port mode and so on. Support standard and non-standard baud rate. Select the existing standard baud rate in the "Baud Rate" drop-down box. If you need to Customize the non-standard baud rate, select "Customize" in the drop-down box or double-click the

baud rate input box, and then manually enter the required baud rate. Transparent transmission mode supports encrypted transmission, and the modes are DES, 3DES and AES. Select the mode to be encrypted in the drop-down box corresponding to "encrypted transmission", or select "Disabled" without encryption.

When the parameter setting is completed, click Apply, and the parameter will take effect immediately. Serial communication parameter configuration should be consistent with the lower computer; Serial port mode is TCP Server, TCP Client, UDP Server and UDP Client, which can be selected. KPS/KGW310xA & 320xA series, KPS3x0xAL series and KPS/KGW320xA-232-485-422 series also support SSH Mode transparent transmission mode. Rtelnet and Realport modes are supported. The specific configuration method of serial port parameters can refer to Chapter 5.

The local port should be configured above 1024 as far as possible to avoid occupying the system port. When the local port number is not filled in in TCP Client and UDP Client mode, the system will automatically allocate the port number. The maximum number of sessions represents the maximum limit that the host computer is allowed to connect to the serial server. Only 8 links are allowed in TCP Server mode, and only 8 newly established session connections are maintained in UDP Server mode. The first serial port "batch application" can configure all serial ports to the same mode at one time. If local ports need to be configured, they will be incremented by 1 in turn on the basis of the first one. Import can configure all the serial port information exported as a file save, import can configure the file into the serial port server so that the serial port according to the file configuration takes effect. The refresh function can immediately display the actual configuration of serial port.

Note: Serial interface page and protocol engineering cannot use the same serial number at the same time. For example, if serial port 1 is set to TCP Server mode, COM1 port should be avoided in protocol engineering.

Transport modes are Transparent and Modbus RTU.

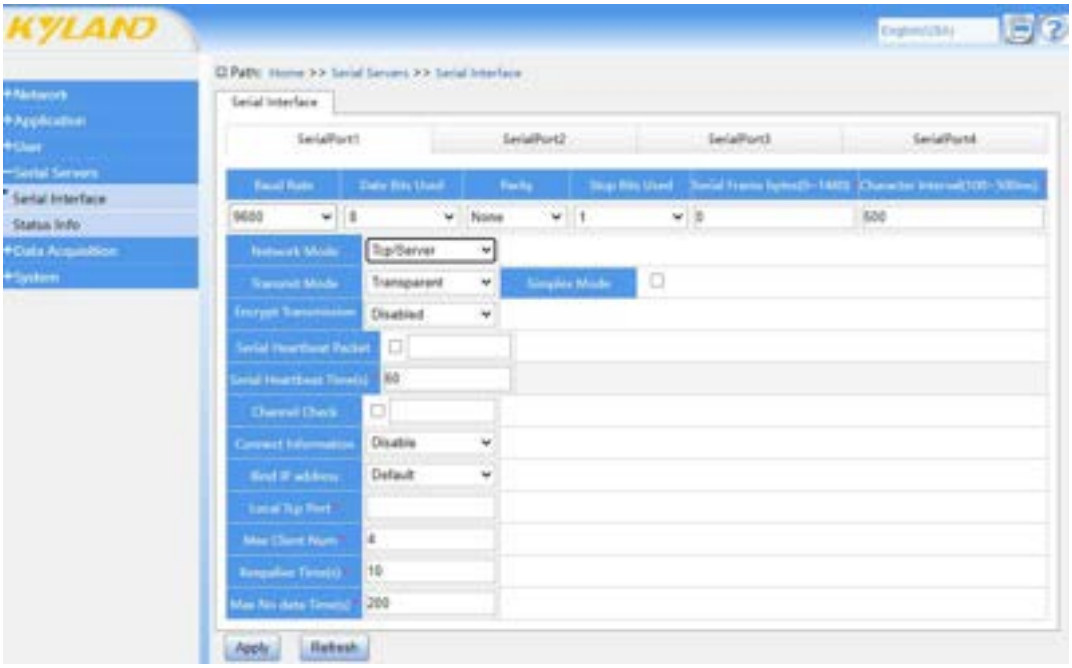
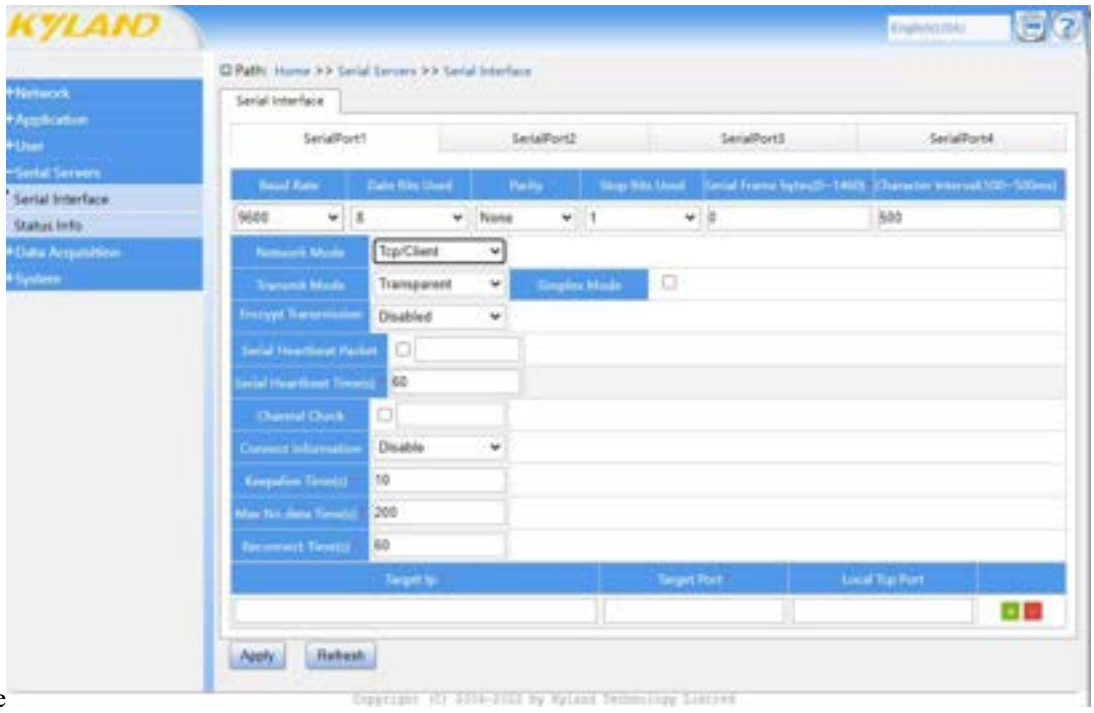


Figure38 Transparent Transport Mode TCP Server



Mode

Figure39 Transparent Transport Mode TCP Client Mode

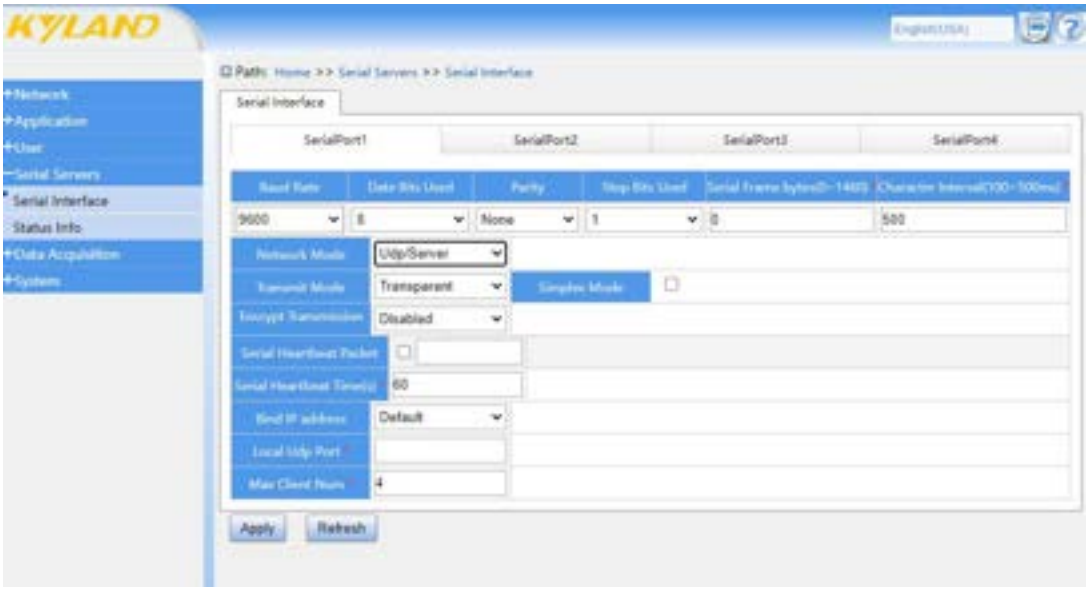


Figure40 Transparent Transport Mode UDP Server Mode

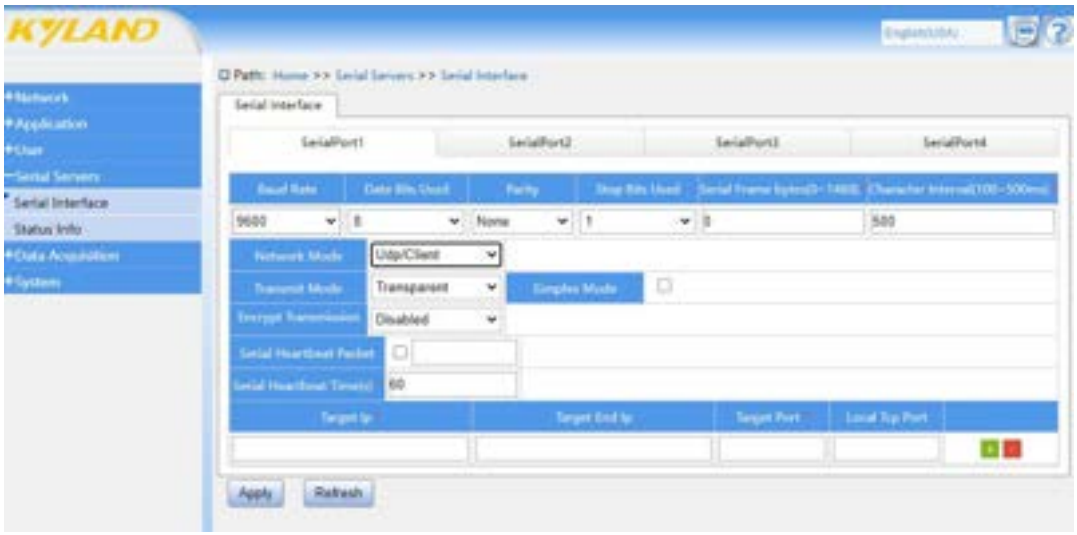


Figure41 Transparent Transport Mode UDP Client Mode

Table43 Transparent Set Parameter

Parameter	Value	Description
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 120, 1800, 240, 480, 960, 192, 384, 576, 115, 230, Customize (non-standard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200, 1800, only RS-485 13-16 port supports 230400**	Configuration of serial port baud rate: After selecting Customize, manually enter the baud rate in the input box, ranging from 50 to 250000 **Note: When KPS/KGW3224A and KGW3204A-4G models are configured with non-standard baud rate, the following calculation formula is used to check the error rate. If the error rate is lower than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT (3333333/16/n) N=INT (3333333/M/16) error=abs (N-n)/n)

Data bit	5, 6, 7, 8	Configuration of Serial Port Data Bits
Parity bit	None, Odd, Even	Configuration of serial port parity bit
Stop bit	1, 2	Configuration of Serial Port Stop Bit
Maximum byte of serial data frame	0 ~ 8096	The combination of the two takes effect, and it is not enabled when the maximum byte of serial data frame is set to 0; When the setting value is not 0: Forced transfer time: When the serial server receives the data stream. It is timed from the beginning of receipt, and when the transmission time is reached, the data in the buffer is sent out. This mode is used when the opposite device has a small buffer but may need to receive a large amount of instantaneous data. Receive interval: When the serial server receives the data stream. Beginning with the receipt of the last byte, a transmission time is counted, during which time, if any data stream is received, the transmission time is renewed, and if no data stream is received during the time, the previously buffered data is transmitted from the network Maximum bytes of serial data frame: 0 ~ 8096. Maximum packet length allowed 8096 bytes. Packing is completed when any condition of package length and time is met. It is not necessary to repackage when both conditions are met.
Packing time of serial data frame	Character interval, forced transfer Unit ms, default to 0 Set range 0-60000ms	
Network mode	TCP/Server, TCP/Client, UDP/Server, UDP/Client	Choose the network mode in which serial port works
Transmission mode	Transparent	Communication mode and transparent transmission mode of serial port data
Unidirectional data transmission	Check/Uncheck	Check: Only serial port is allowed to send data to network port Unchecked: Data from serial port and network port can be transmitted bidirectionally
Encrypted transmission	DES, 3DES, AES	Choose the encryption method for encrypted transmission
Encryption mode	ECB, CBC	Select the encryption mode for encrypted transmission
Encryption padding	PKCS7, Zero	Select the padding form of encrypted transmission
Key length	128,192,256	You can choose the key length for AES encryption
Encryption key	Custom Fill-in Key	The key length is between 1 and 32 characters

Encryption IV	Custom Fill	Encryption IV requires input only when the encryption mode is CBC
Serial heartbeat packet	Check/Uncheck Customizable information content	Enable Serial Heartbeat Packet, Serial Port will send custom information content regularly
Serial heartbeat packet interval	Unit s, default to 60	Enable Serial Heartbeat packets, the time period for sending Serial Heartbeat packets
Channel check (optional)	Not enabled by default The information content is empty	Before the device communicates, the network terminal needs to check the information once. Establish communication connection when receiving correct verification information; Disconnect as soon as you receive an error check message.
Connection information (optional)	Default to null IP information and device information are optional	After the communication connection is established, the device network terminal actively sends the device IP address or the device name
Local port (optional)	Port number	Local port number for TCP and UDP Client mode can be automatically assigned by the system by default
Maximum number of sessions	1 ~ 8	Maximum number of conversations in Server mode
Keep-alive interval	Unit: s, default is 10 s	When the device has no data communication, the network terminal regularly sends Keep Alive information frames until the device judges that there is no data disconnection
No data disconnection	Unit: s, default 200 s	If the set time is exceeded, the device will actively disconnect the communication connection when there is no data communication
Reconnection time	Unit: s, default 60s	In TCP Client mode, the time period for devices to reconnect can reduce the network connection time of TCP Client. If channel verification is set, channel verification needs to be performed again after reconnection
Destination IP	IP address	Destination IP address
Destination End IP (Optional)	IP address	In UDP Client mode, the destination end IP address of the destination IP segment is set, which can be used to send serial port information to multiple consecutive UDP Server servers
Destination port	Port number	Destination port number
Local port (optional)	Port number	When setting the local port, a fixed port number will be used for communication; When the port is empty, the system assigns an idle port number for communication
Binding port	eth0, eth1	Select the bound network port (only takes effect when 2 network ports are the same network segment and different IP)

Bind IP address	Master IP, Multiple IP	Select the IP to bind to, you can bind multiple different IPs to the same port (only in Tcp/Server and Udp/Server modes)

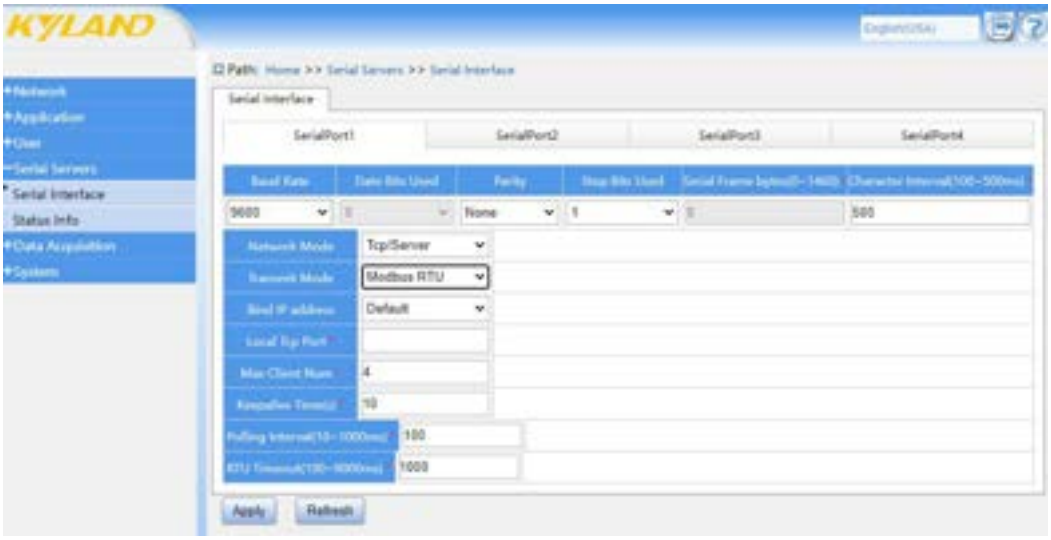


Figure42 Modbus RTU Transport Mode TCP Server Mode

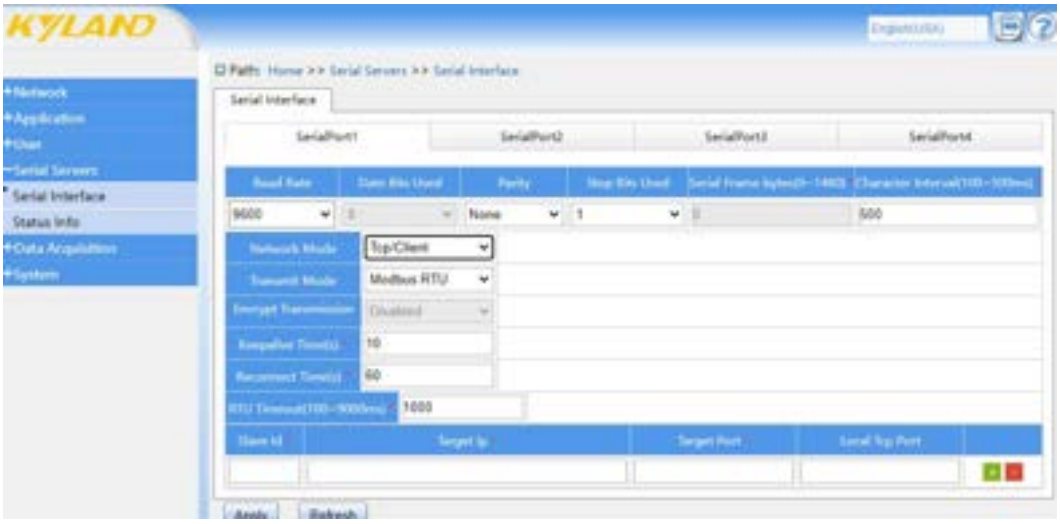


Figure43 Modbus RTU Transport Mode TCP Client Mode

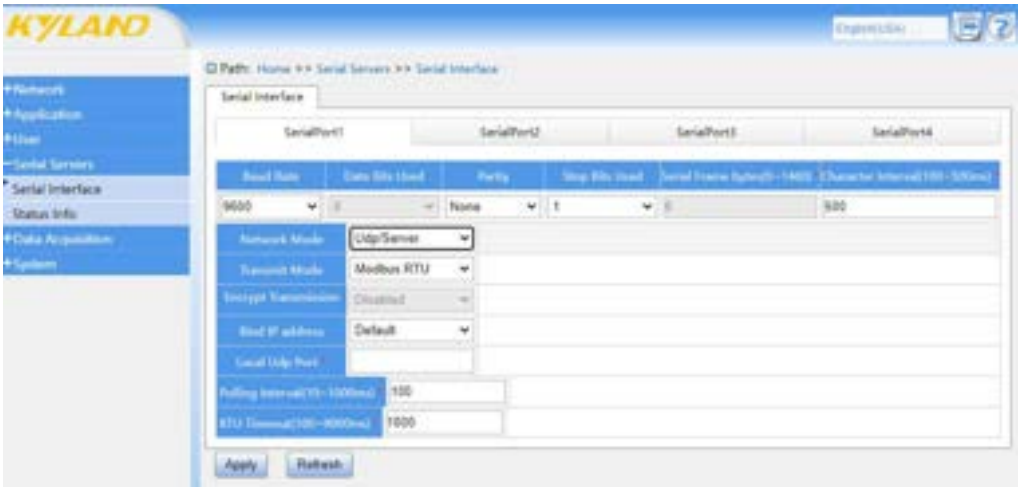


Figure44 Modbus RTU Transport Mode UDP Server Mode

Figure45 Modbus RTU Transport Mode UDP Client Mode

Table44 Modbus RTU Setup Parameter

Parameter	Value	Description
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 120, 1800, 240, 480, 960, 192, 384, 576, 115, 230, Customize (non-standard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200, 1800, only RS-485 13-16 port supports 230400**	Configuration of serial port baud rate: After selecting Customize, manually enter the baud rate in the input box, ranging from 50 to 250000 **Note: When KPS/KGW3224A and KGW3204A-4G models are configured with non-standard baud rate, the following calculation formula is used to check the error rate. If the error rate is lower than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT (3333333/16/n) n=INT (3333333/M/16) error=abs (N-n)/n)
Data bit	8	Not configurable
Parity bit	None, Odd, Even	Configuration of serial port parity bit
Stop bit	1, 2	Configuration of Serial Port Stop Bit
Network mode	TCP/Server, TCP/Client, UDP/Server, UDP/Client	Choose the network mode in which serial port works
Transmission mode	Modbus RTU	Serial port data communication mode, Modbus RTU mode
Local port (optional)	Port number	Local port number for TCP and UDP Client mode can be automatically assigned by the system by default
Maximum number of sessions	1 ~ 8	Maximum number of conversations in Server mode
Keep-alive interval	Unit: s, default is 10 s	When the device has no data communication, the network terminal

		regularly sends Keep Alive information frames until the device judges that there is no data disconnection
Reconnection time	Unit: s, default 60s	In TCP Client mode, the time period for devices to reconnect can reduce the network connection time of TCP Client. If channel verification is set, channel verification needs to be performed again after reconnection
Destination IP	IP address	Destination IP address
Destination port	Port number	Destination port number
Local port (optional)	Port number	When setting the local port, a fixed port number will be used for communication; When the port is empty, the system assigns an idle port number for communication
Binding port	eth0, eth1	Select the bound network port (only takes effect when 2 network ports are the same network segment and different IP)
Slave Id	1-255	The Slave Id value of the TCP, UDP Client, which is the slave address
Polling interval	10-1000ms	TCP/UDP Server network mode, when the request time of the upper computer is less than the set value, the time interval for the device to send continuous requests to the lower computer is the sum of the set value and the request processing time; When the request time of the upper computer is greater than the set value, the value setting is invalid.
RTU timeout	100-9000ms	The upper computer sends the request information. If the lower computer does not reply to the information beyond the set time, the serial port server will send the hyper-time message to the upper computer. This value needs to be less than the timeout set by the upper computer.
Bind IP address	Master IP, Multiple IP	Select the IP to bind to, you can bind multiple different IPs to the same port (only in Tcp/Server and Udp/Server modes)

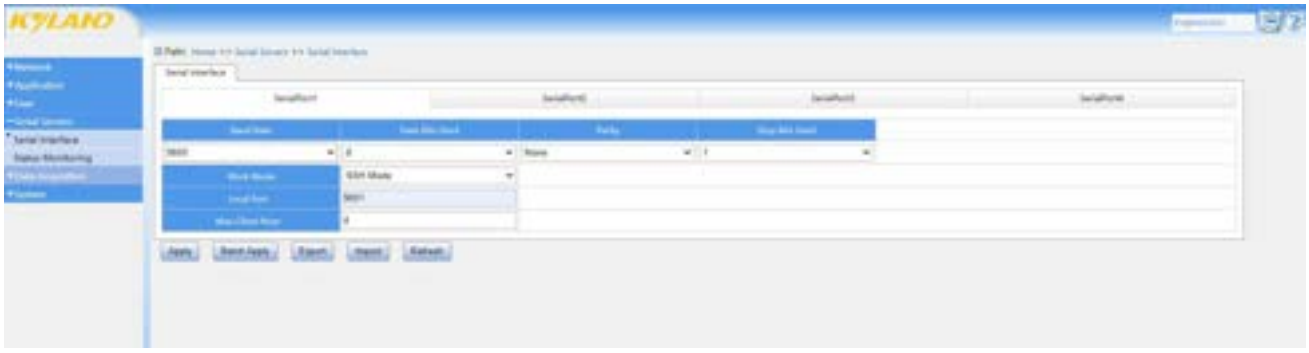


Figure46 SSH Mode Mode

Table45 SSH Mode Setting Parameters

Parameter	Value	Description
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 120, 1800, 240, 480, 960, 192, 384, 576, 115, 230, Customize (non-standard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200, 1800, only RS-485 13-16 port supports 230400**	Configuration of serial port baud rate: After selecting Customize, manually enter the baud rate in the input box, ranging from 50 to 250000 **Note: When KPS/KGW3224A and KGW3204A-4G models are configured with non-standard baud rate, the following calculation formula is used to check the error rate. If the error rate is lower than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT (3333333/16/n) n=INT (3333333/M/16) error=abs (N-n)/n)
Data bit	5, 6, 7, 8	Configuration of Serial Port Data Bits
Parity bit	None, Odd, Even	Configuration of serial port parity bit
Stop bit	1, 2	Configuration of Serial Port Stop Bit
Local port	Port number	Local port number for SSH Mode background connection
Maximum number of sessions	1 ~ 8	Maximum number of conversations in SSH Mode mode
Transmission mode	SSH Mode	Serial port data communication mode, SSH Mode mode, user name and password for WEB interface login user name and password

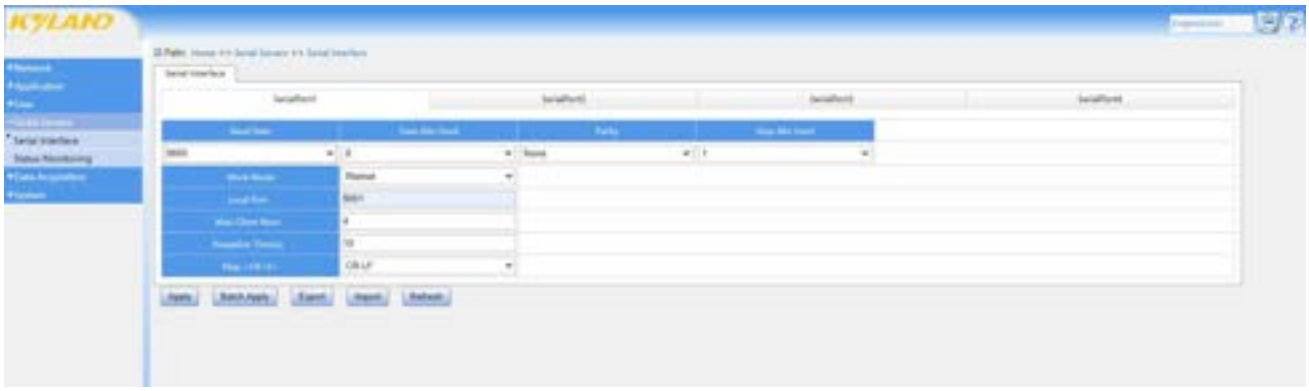


Figure47 Rtelnet Mode

Table46 Rtelnet Setting Parameters

Parameter	Value	Description

Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 120, 1800, 240, 480, 960, 192, 384, 576, 115, 230, Customize (non-standard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200, 1800, only RS-485 13-16 port supports 230400**	Configuration of serial port baud rate: After selecting Customize, manually enter the baud rate in the input box, ranging from 50 to 250000 **Note: When KPS/KGW3224A and KGW3204A-4G models are configured with non-standard baud rate, the following calculation formula is used to check the error rate. If the error rate is lower than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT (3333333/16/n) n=INT (3333333/M/16) error=abs (N-n)/n)
Data bit	5, 6, 7, 8	Configuration of Serial Port Data Bits
Parity bit	None, Odd, Even	Configuration of serial port parity bit
Stop bit	1, 2	Configuration of Serial Port Stop Bit
Local port	Port number	Local port number for Rtelnet Connection
Maximum number of sessions	1 ~ 8	Maximum number of sessions in Rtelnet mode
Keep-alive interval	Unit: s, default is 10 s	When the device has no data communication, the network terminal regularly sends Keep Alive information frames until the device judges that there is no data disconnection
Transmission mode	Rtelnet	Serial Data Communication Mode, Rtelnet Mode
Mapping < CR-LF >	CR, LF, CR-LF	CR for carriage return for ASCII hexadecimal 0d, LF for line break/new line for ASCII hexadecimal 0a CR mapping: After 0d, the data received by the serial port of the device is added with 00, and the data sent by the serial port of the device is removed from the continuous 0d 0a by 0a LF mapping: After 0d, the data received by the serial port of the device is added with 00, and the data sent by the serial port of the device is removed from the continuous 0d 0a by 0d CR-LF mapping: The data received by the serial port of the device is added with 00 after 0d, and the data sent by the serial port of the device is not processed

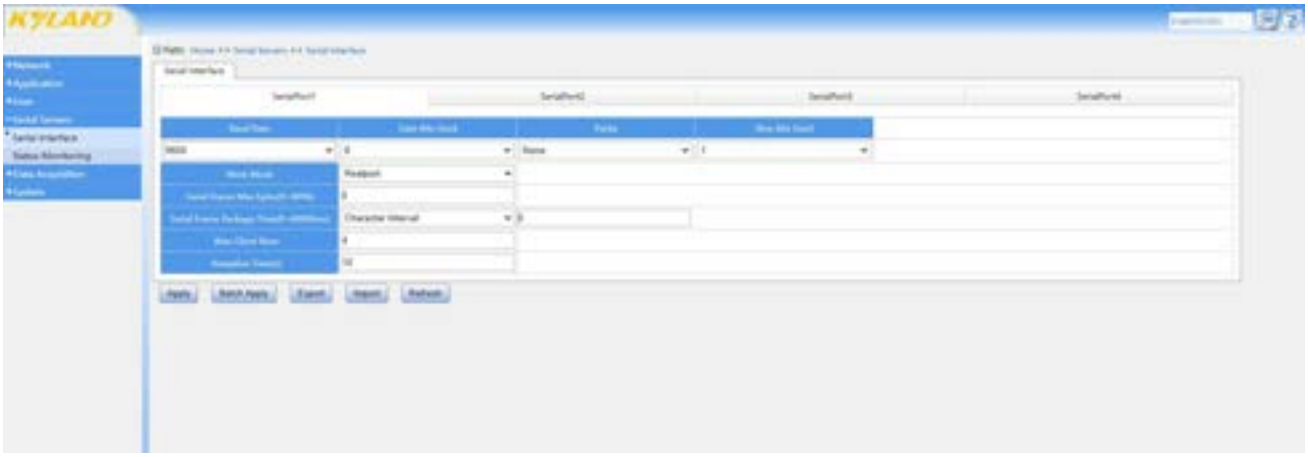


Figure48 Realport Mode

Table47 Realport Set Parameter

Parameter	Value	Description
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 120, 1800, 240, 480, 960, 192, 384, 576, 115, 230, Customize (non-standard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200, 1800, only RS-485 13-16 port supports 230400**	Configuration of serial port baud rate: After selecting Customize, manually enter the baud rate in the input box, ranging from 50 to 250000 **Note: When KPS/KGW3224A and KGW3204A-4G models are configured with non-standard baud rate, the following calculation formula is used to check the error rate. If the error rate is lower than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT (3333333/16/n) n=INT (3333333/M/16) error=abs (N-n)/n)
Data bit	5, 6, 7, 8	Configuration of Serial Port Data Bits
Parity bit	None, Odd, Even	Configuration of serial port parity bit
Stop bit	1, 2	Configuration of Serial Port Stop Bit
Maximum byte of serial data frame	0 ~ 8096	The combination of the two takes effect, and it is not enabled when the maximum byte of serial data frame is set to 0; When the setting value is not 0: Forced transfer time: When the serial server receives the data stream. It is timed from the beginning of receipt, and when the transmission time is reached, the data in the buffer is sent out. This mode is used when the opposite device has a small buffer but may need to receive a large amount of instantaneous data. Receive interval: When the serial server receives the data stream. Beginning with the

Packing time of serial data frame	Character interval, forced transfer Unit ms, default to 0 Set range 0-60000ms	receipt of the last byte, a transmission time is counted, during which time, if any data stream is received, the transmission time is renewed, and if no data stream is received during the time, the previously buffered data is transmitted from the network Maximum bytes of serial data frame: 0 ~ 8096. Maximum packet length allowed 8096 bytes. Packing is completed when any condition of package length and time is met. It is not necessary to repackage when both conditions are met.
Maximum number of sessions	1 ~ 8	Maximum number of sessions in Real port mode
Transmission mode	Realport	Serial Data Communication Mode, Real port Mode
Keep-alive interval	Unit: s, default is 10 s	When the device has no data communication, the network terminal regularly sends Keep Alive information frames

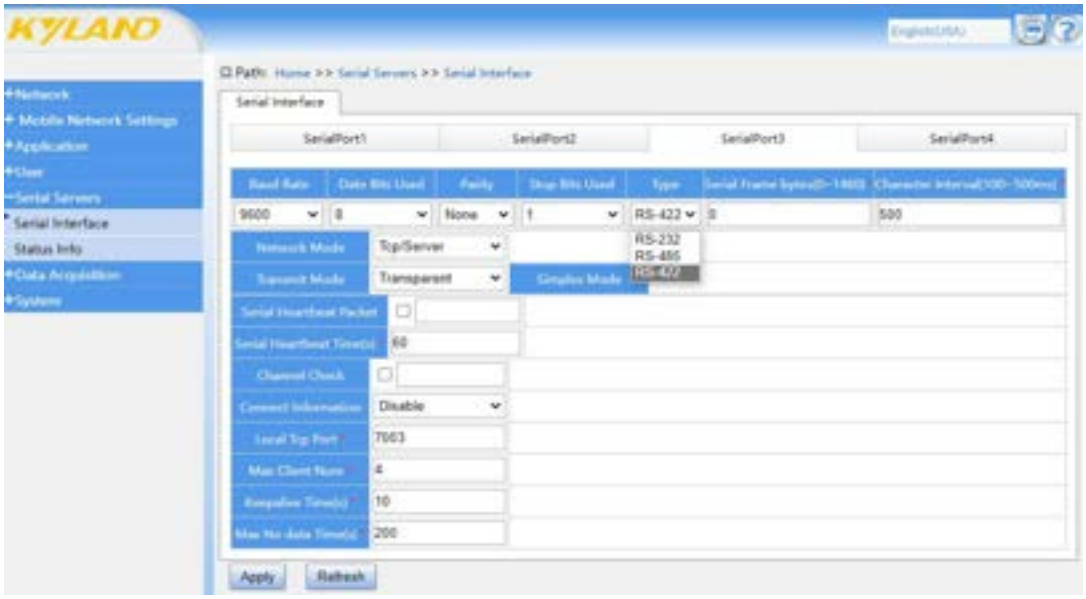


Figure49 KGW3204A-2T4D-232/485-4G-L17 Serial Port 3, 4 Configured As RS-422

Note: The serial port 1-2 of KGW3204A-2T4D-232/485-4G-L17 series products is fixed as RS-485, and the serial port 3-4 is fixed as RS-232 or RS-485 when leaving the factory, which cannot be changed after leaving the factory. If the serial port 3-4 is set as RS-485, you can configure two RS-485 to one RS-422 on the Serial Server-Serial Interface Setting page.

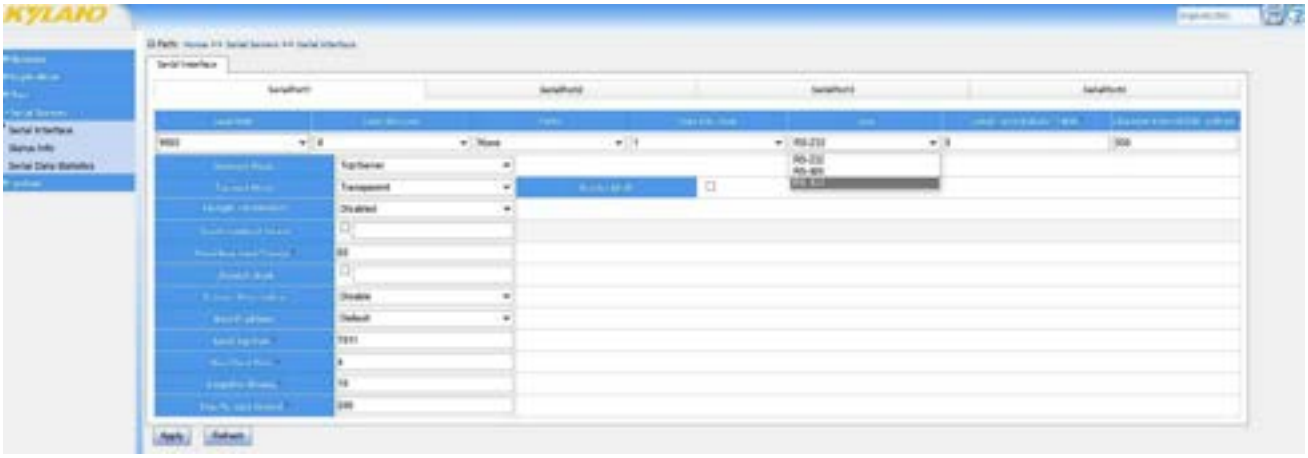


Figure50KPS/KGW3204A-2T4D-232/485/422-L17-L17 Switch Configuration to RS232/RS485/RS422

Note: KPS/KGW3204A-2T4D-232/485/422-L17-L17 series products can switch the configuration of RS232/RS485/RS422 on the Serial Server-Serial Interface Setup page.

Table48 Serial Type Parameters

Parameter	Value	Description
Type	RS-232/RS-485/RS-422	KGW3204A-2T4D-232/485-4G-L17 series products: if the hardware is set to RS-232, the type should be RS-232, and the other two options will not take effect; If the hardware is set to RS-485, the serial port mode is 485 when the type is RS-485, 422 when the type is RS-422, and does not take effect when the type is RS-232. KPS/KGW3204A-2T4D-232/485/422-L17-L17 Series: Page configuration RS-232, RS-485, RS-422 mode.

4.7.2 Status Information

The status information page is used to record the running information of the serial port of the device, including the sending and receiving information of the serial port and the connection information of TCP transmission mode, and can be used to observe the connection status of the serial port of the device. And diagnose the serial network communication failure.

Figure51 State Information Mode

4.7.3 Condition Monitoring

The status monitoring page is a functional upgrade of the status information page, which is available on the latest software. is used to record device operation information, including serial port status and parameters, network port and status, maximum connection number, sending and receiving information, connection information of TCP transmission mode, can be used to observe device serial port connection status, and can also record serial port sending and receiving data after reset. Wherein, "reset Tx" and "reset Rx" respectively reset the sending and receiving data under the current connection. Without reset, the data of Tx and Rx will be cleared after reconnection. "Reset Tx Total" and "Reset Rx Total" respectively reset the historical data sent and received by the serial port. Without reset, the data of Tx Total and Rx Total will not be cleared after reconnection.

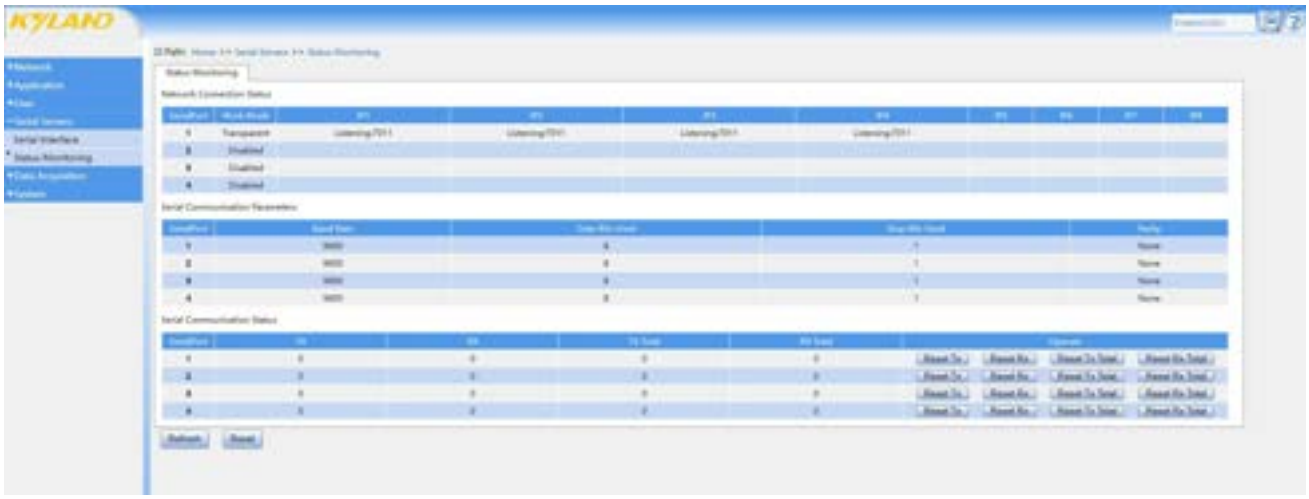


Figure52 Condition Monitoring Mode

4.7.4 Additional Configuration

Note: KPS/KGW3224A, KPS3x0xAL Special Function Module

The Additional Configuration page is used to set up the running configuration of the device serial port, including enabling/disabling the 120 Ω resistor in RS-485 mode and enabling/disabling the RS422 port configuration, and can be used to set additional configuration items of the device

serial port.

RS-485 120 Ω Configuration

RS-485 serial port does not enable 120 Ω resistance by default. When the page sets port n and port n+1 to on, 120 Ω resistance is enabled for two consecutive 485 ports; When the page sets Port n and Port n+1 to off, the 120 Ω resistor is disabled for two consecutive 485 ports.

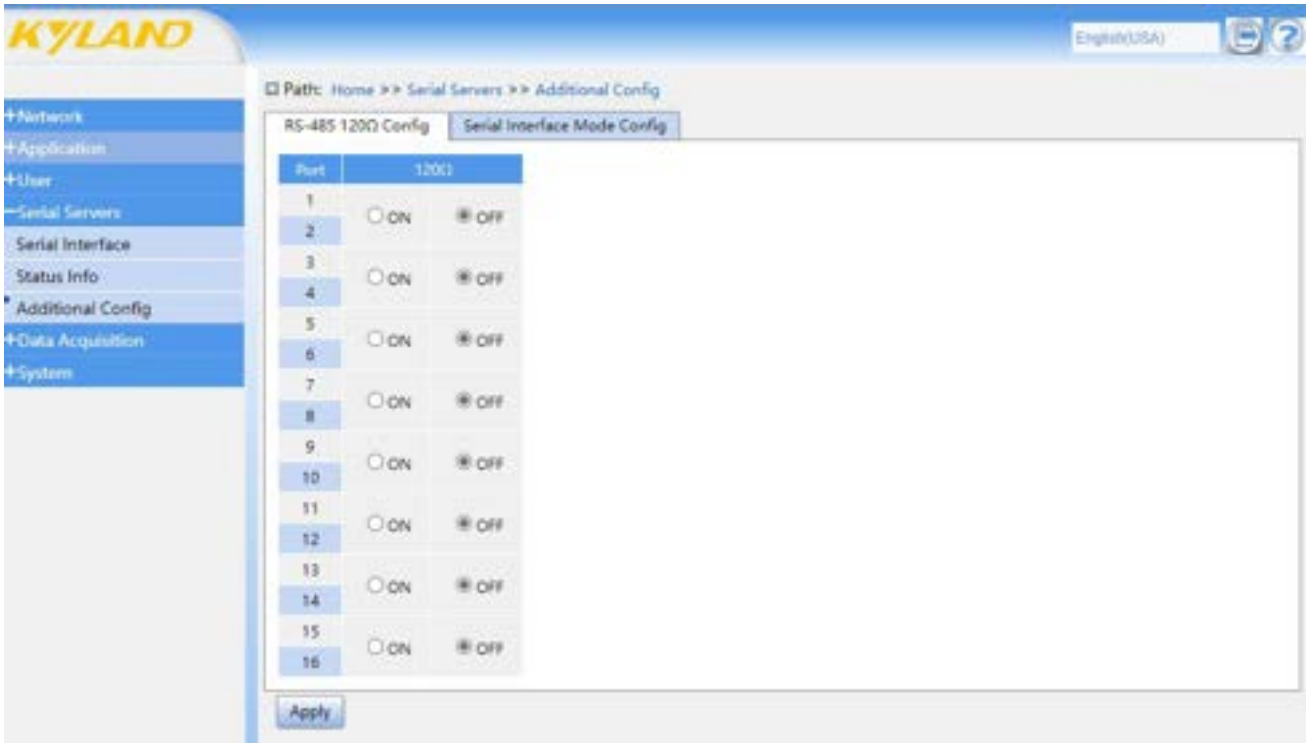


Figure53 RS-485 120 Ω Configuration

Serial Port Mode Configuration

RS-485 serial port defaults to RS485 mode. When the page sets port n to enable, two consecutive RS485 ports 2n-1 and 2n are enabled to RS422 mode; When page setup port n is not enabled, two consecutive ports 2n-1 and 2n are in RS485 mode.

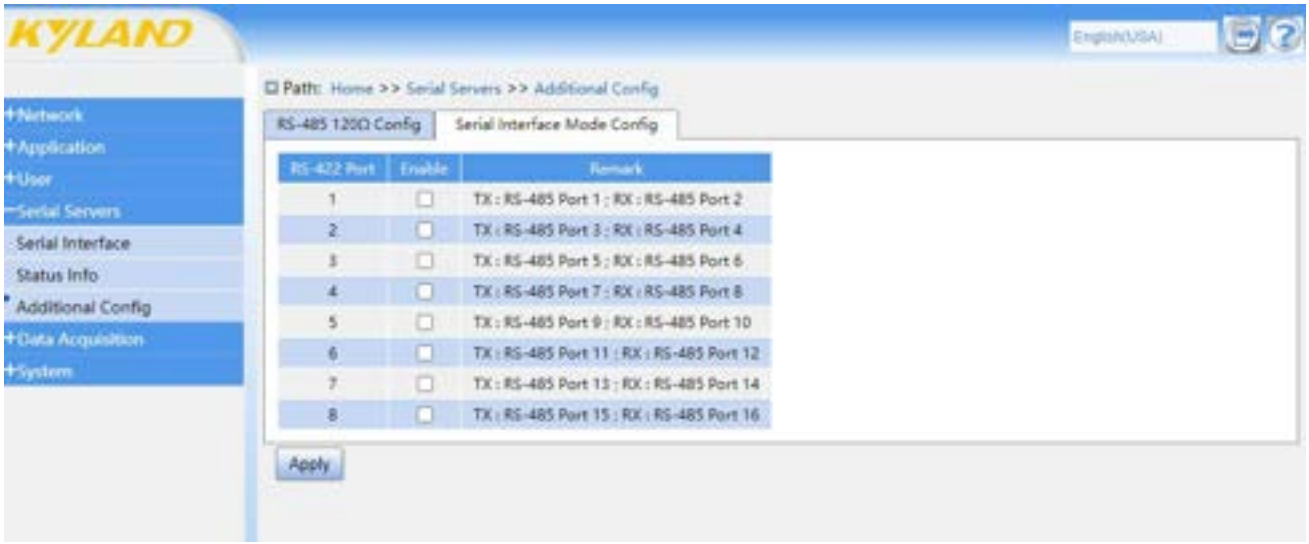


Figure54 Serial Mode Configuration

4.7. 4 Serial Port Data Statistics

Note: KPS/KGW320XA-232-485-422 Special Function Module

Serial port data statistics page is used to view the receiving and sending data of the device serial port. Take/dev/ttyS1 serial port as an example: RX: serial port-received data; TX: Serial port to send out the data, AllRX Serial port to receive all the data, ALLTX: Serial port to send out all the data.

The difference between ALLRX and RX/ALLTX and TX: After clicking "Apply" on WEB serial port setting, the data of RX/TX will be cleared, but the data of ALLRX/ALLTX will not be cleared. The corresponding "reset" button behind RX, TX, ALLRX and ALLTX will clear the corresponding data. After clicking the "Reset" button at the bottom, the data of all serial ports will be cleared. After restarting the device, all serial port data will be cleared.

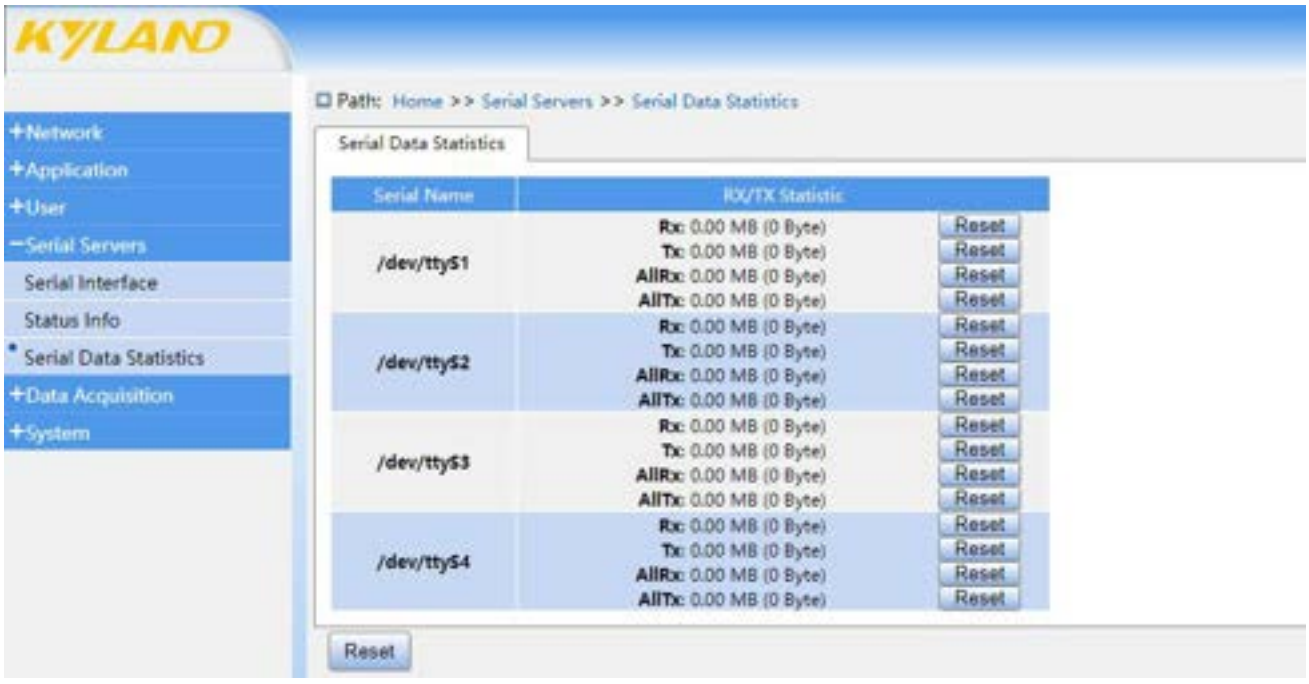


Figure55 Serial Port Data Statistics

4.8 Data Acquisition

The data collection page is used to display and set the configuration information of the protocol gateway, and can view the general situation of protocol configuration through the Web page, enable, delete, download and import the protocol project, upgrade the EDPS file, authorize the EDPS and so on.

Note: KGW310XA, KGW320XA, KGW3224A, KGW3204A-4G, KGW320xA-232-485-422 series products will only display this page

4.8.1 Overview of Protocol Configuration

The Protocol Configuration Overview page is mainly used to display and set the configuration information of device communication protocol, including three parts: running project configuration, protocol project list and protocol driver list.

Run Project Configuration

In running project configuration, click the configuration items of collection service and forwarding service to view the current project configuration parameters of the device, including port information, protocol parameters and device information of the project configuration.

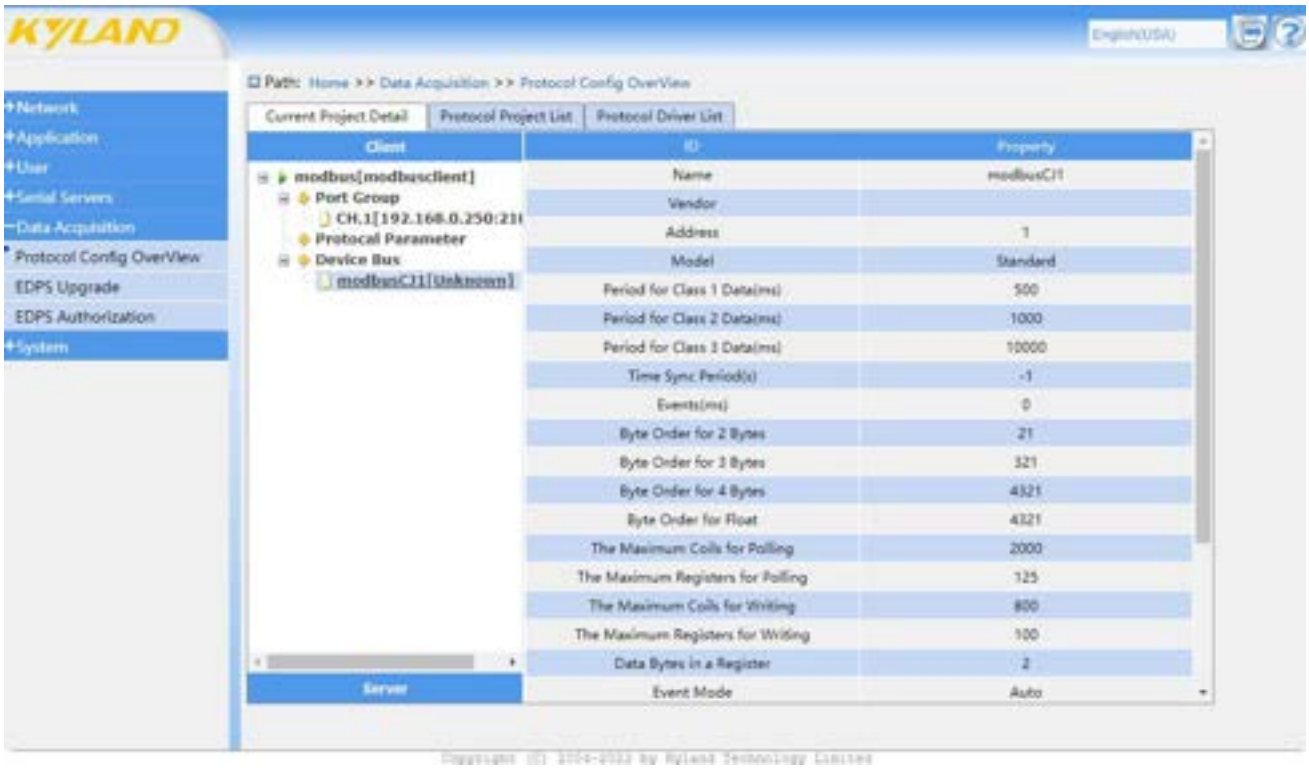


Figure56 Run Project Configuration

Protocol Project List

Protocol projects list, you can view and manage protocol projects, enable, download, delete, and

import protocol projects.

The name of the project displayed in the protocol project list is the downloaded protocol project in the device.

After downloading the protocol project, click the "Enable" button, the page shows that the operation was successful, the enabling box of the protocol project is checked, and the current protocol project is activated and run immediately. Only one protocol project is allowed to be enabled, and multiple protocol projects are not supported at the same time.

In the protocol project list, click the "Download" button of the protocol project, and the protocol project will be saved to the local computer.

In the protocol project list, click the "Delete" button of the unenabled protocol project, and click "Confirm" to delete the project. The page shows that the operation was successful and the protocol project will be deleted from the device. In order to ensure the normal operation of the device function, it is not allowed to delete the protocol engineering in the enabled state in the device.

Click the "Browse" button, select the path of the protocol project file stored on the local computer, and then click the "Import" button to import the selected protocol project into the protocol gateway, and immediately enable it to run.

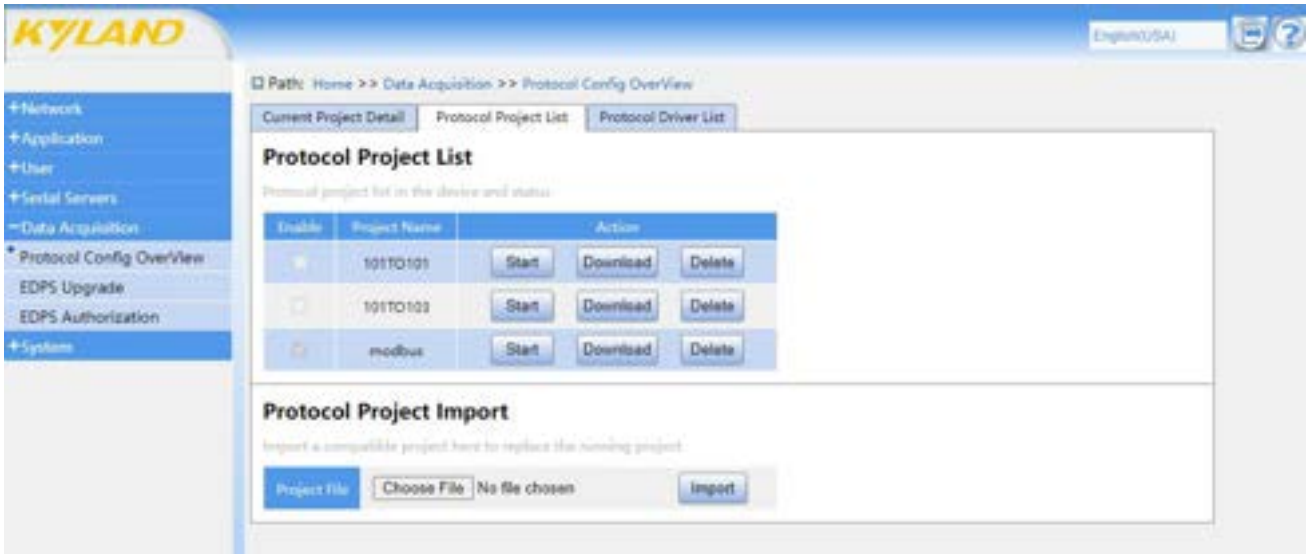


Figure57 Protocol Engineering List

Protocol Driver List

In the protocol driver list, you can view the communication protocol driver information supported by this device, including driver name, driver description, driver file name, driver version and authorization status.

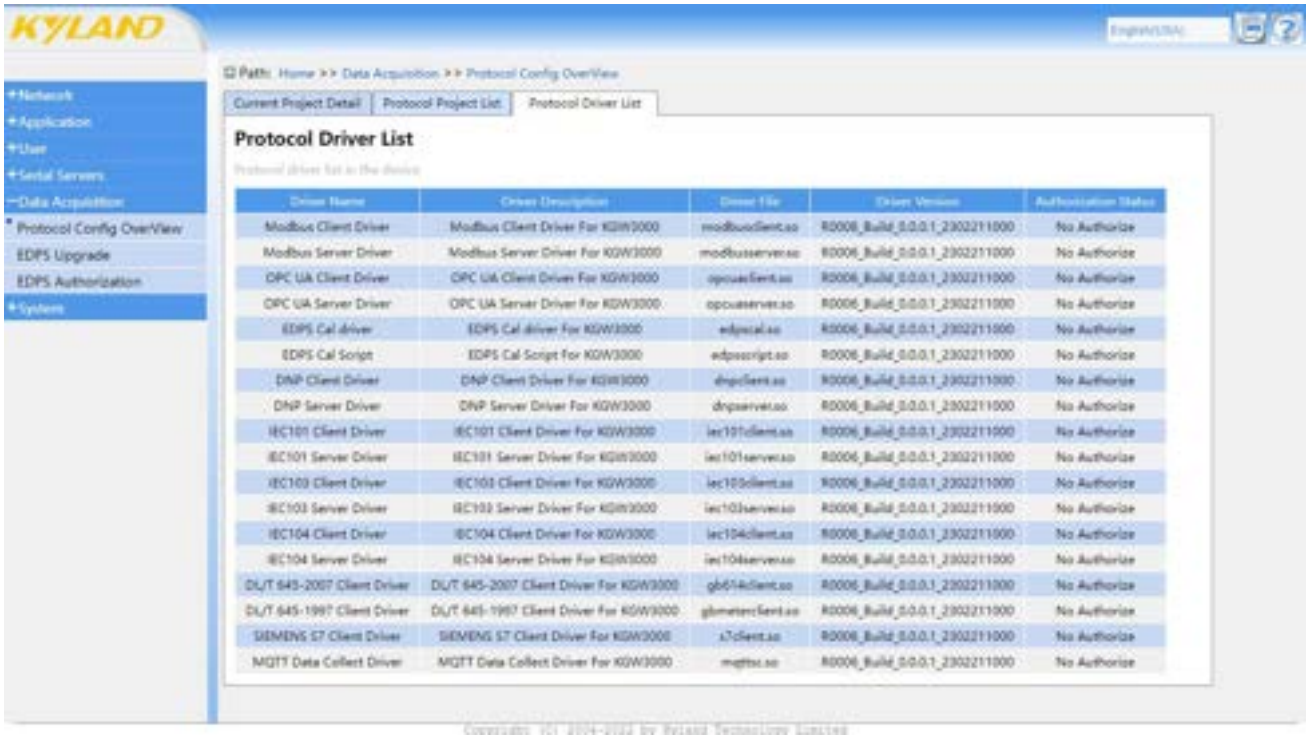


Figure58 Protocol Driver List

4.8.2 EDPS Upgrade

EDPS Upgrade page is mainly used for updating and upgrading EDPS functions.

Click the "Browse" button, select the upgrade file path, and then click the "Upgrade EDPS" button to upgrade the web EDPS. When the page shows that the upgrade is successful, the EDPS function of the device is updated and upgraded successfully.

EDPS upgrade function does not affect the existing protocol engineering documents and EDPS authorization in the device.

Figure59 EDPS Upgrade

4.8.3 EDPS Authorization

EDPS authorization page is mainly used for EDPS authorization authentication, and only after authorization authentication can it run normally and stably.

Click the "Export" button to export the machine code file to the local computer. Then, the

machine code file is submitted to the manufacturer to generate the authorization file.

Click the "Browse" button, Select the path of the authorization file, and click the "Import" button to import the authorization file into the device. When the page shows that the operation is successful, the device EDPS authorization is successful.

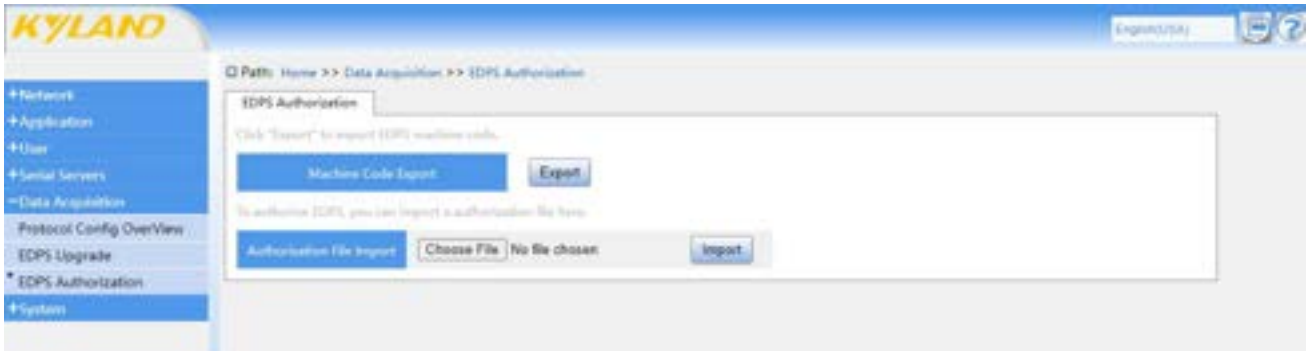


Figure60EDPS License

4.9 System

4.9.1 Log

The system log page is used to record the running information of device, and can download the log, which is convenient for daily maintenance and fault detection of device.

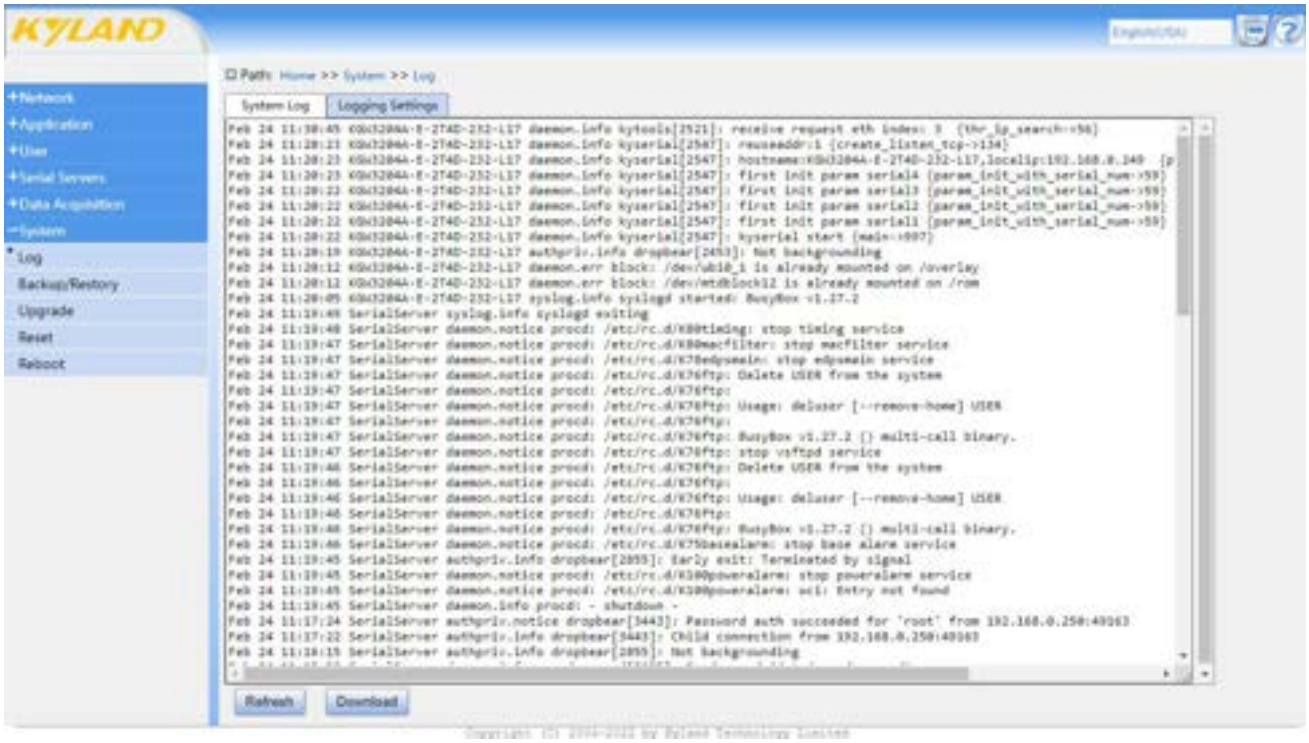


Figure61 System Log

Log Setting are used to send log information to specified external servers, and can be used to remotely monitor device operation information.

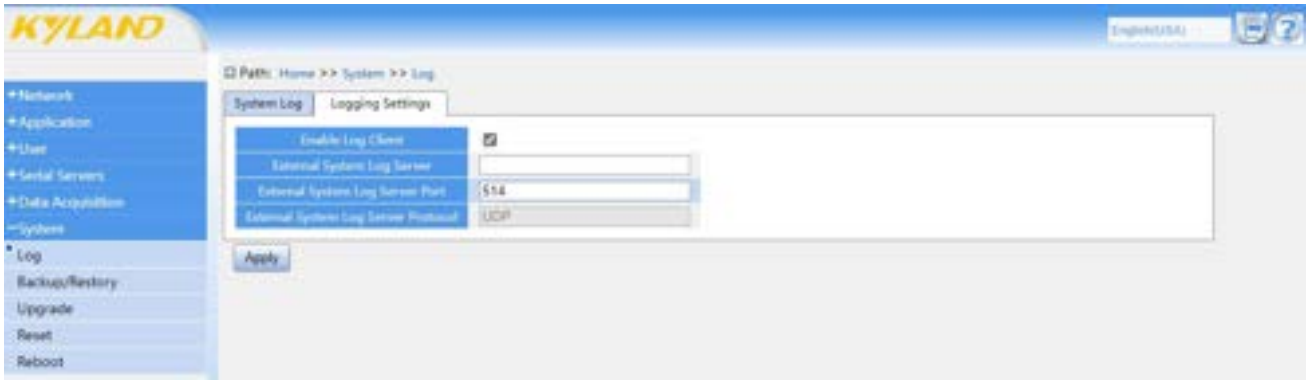


Figure62 Log Setting

Table49 Log Setting

Parameter	Value	Description
External log server	IP address	External server IP address
External log server port	Port number	External server port number
External log server protocol	UDP	Only UDP protocol is supported

4.9.2 Backup/Restore

The Backup Recovery page allows you to backup and upload configurations.

Click "Generate Backup" to download the current configuration file and archive it locally. Click the "Browse" button, select the local configuration file path, and click "Upload Backup" to import the local configuration file and use the local configuration file to restore the device configuration information.

Figure63 Backup and Restore Page

4.9.3 Upgrade

The Upgrade page allows firmware upgrades and updates.

Click the "Select File" button, select the upgrade file path, and then click the "Upgrade" button to upgrade the web firmware. After the upgrade is successful, the gateway device will restart automatically and the system will be updated successfully.

Check the "Keep Configuration" button, and the configuration will be kept after upgrading. If "Keep Configuration" is not checked, the configuration will not be kept after upgrading, and the configuration information will be restored to the factory default configuration state.

Note: The KPS/KGW3x0xA firmware upgrade will be accompanied by the EDPS firmware upgrade.

Note: Upgrade will stop related business programs. If related business is used after the upgrade fails, you need to restart the machine.

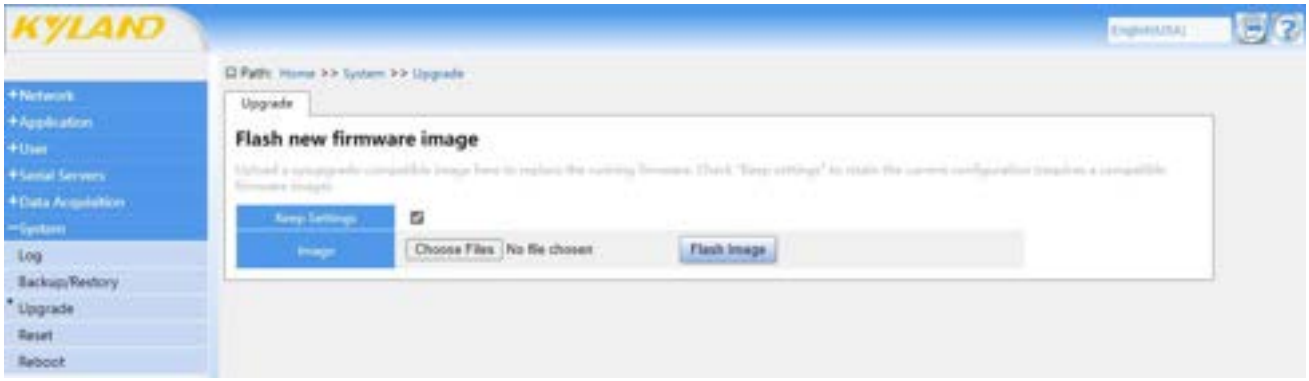


Figure64 Upgrade Page

4.9.4 System Reset

The System Reset page is used to restore this device to the factory setting state.

When you need to clear all the setting information on the device, click the "Reset" button to restore the new generation gateway to the factory default Setting.

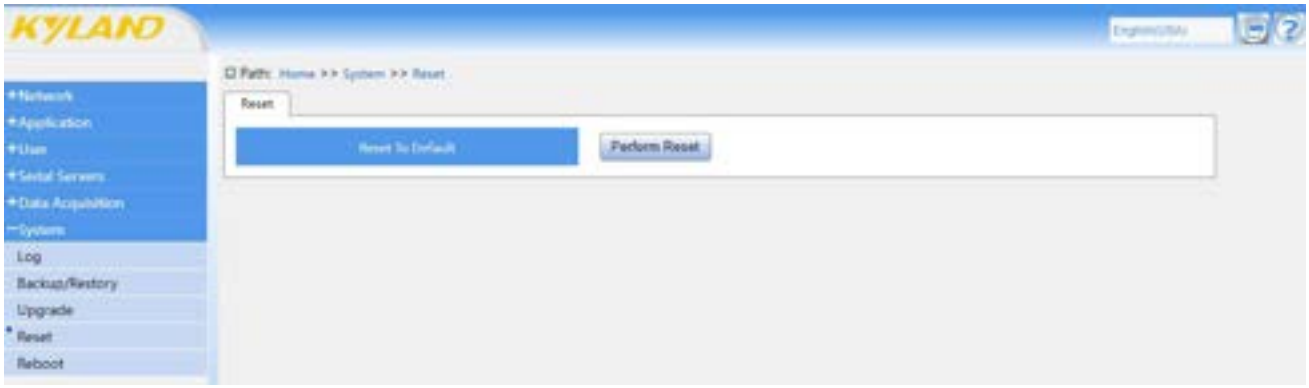


Figure65 System Reset Page

Note: Restoring factory Setting will completely reset the device, and the device configuration parameters will be restored to the factory default configuration state. Back up important device configuration information before using Restore Factory Setting.

4.9.5 Restart

The Restart page is used to restart this device.

When you need to restart the device, you can click the "Execute Restart" button to restart the device.

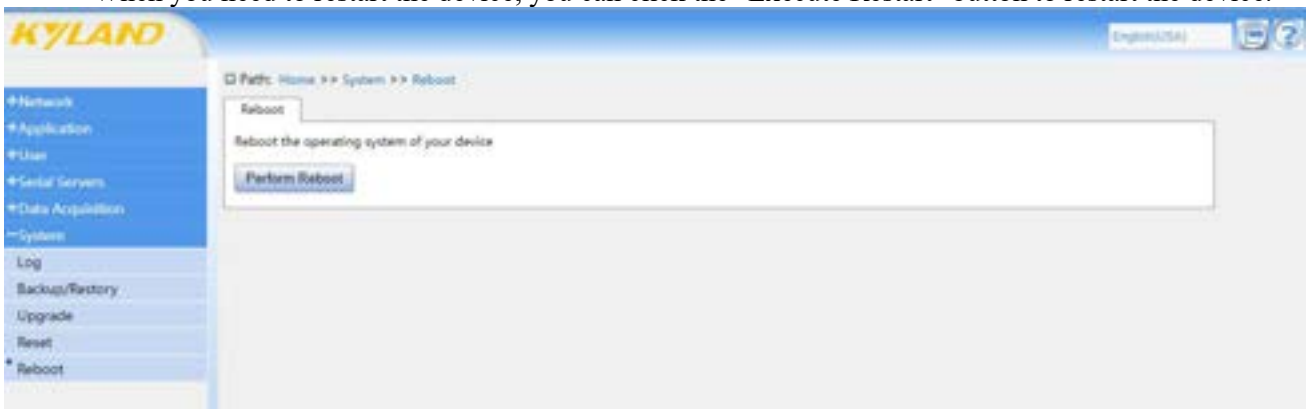


Figure66Restart Page

4.10 Help

There is a "Help" button in the upper right corner of the Web interface. Click "Help" to jump to the official page of Kyland Technology.

Figure67 Help Page

4.11 Exit

After logging in to the Web page and completing the page configuration, click the exit button to exit the Web login status, so as to prevent the abnormal function of the device caused by wrong operation. The "Exit" button is located in the upper right corner of the interface.

Figure68 Exit Page

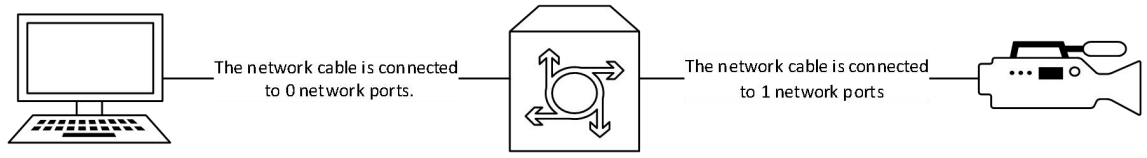
5 Operational Use Case

5.1 Use Case of Network Port Bridging Operation

Do Not Enable Bridging

A. Port 0 and Port 1 are different network segments

You can't access each other without configuring a gateway. When two ports are required to be able to access and communicate with each other, one of them needs to be configured as the gateway of the other (for example, the gateway of port 0: 192.168. 0.249 is configured as port 1: 192.168. 1.249).



Close the bridge, the two network ports have different IP network segments.

ip:192. 168. 0. 250
Gateway: 192. 168. 0. 249

ip0:192. 168. 0. 249
ip0gateway:192. 168. 1. 249
ip1:192. 168. 0. 249

ip:192. 168. 1. 111
Gateway: 192. 168. 1. 249

B. Port 0 and Port 1 are the same network segment

The two network ports cannot access each other, and the network port 0 and the network port 1 are in an independent working mode.

Enable bridging

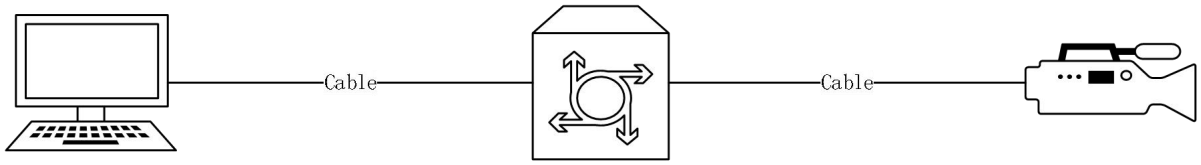
When network mode is bridging enabled, the serial server can work in LAN-LAN or LAN-WAN mode.

Select LAN-LAN mode when two devices on the same network segment are required to have access to each other. Check Enable bridging, Check "Ethernet adaptereth1". At this time, network port 0 and network port 1 are all LAN ports.

Select LAN-WAN mode when different network segments need to be able to access and communicate with each other. Check Enable bridging, no Check "Ethernet adaptereth1". At this time, network port 0 (eth0) is LAN port and network port 1 (eth1) is WAN port.

A. Same network segment bridging

Physical connection:



Open the bridge, two network ports have the same IP.

ip:192. 168. 0. 242

ip:192. 168. 0. 111

ip:192. 168. 0. 249

On the Web page, check Enable Bridging, turn on bridging function, check "Ethernet Adapter eth1", set IP address and subnet mask, and click "Apply", so that two devices in the same network segment can communicate with each other.

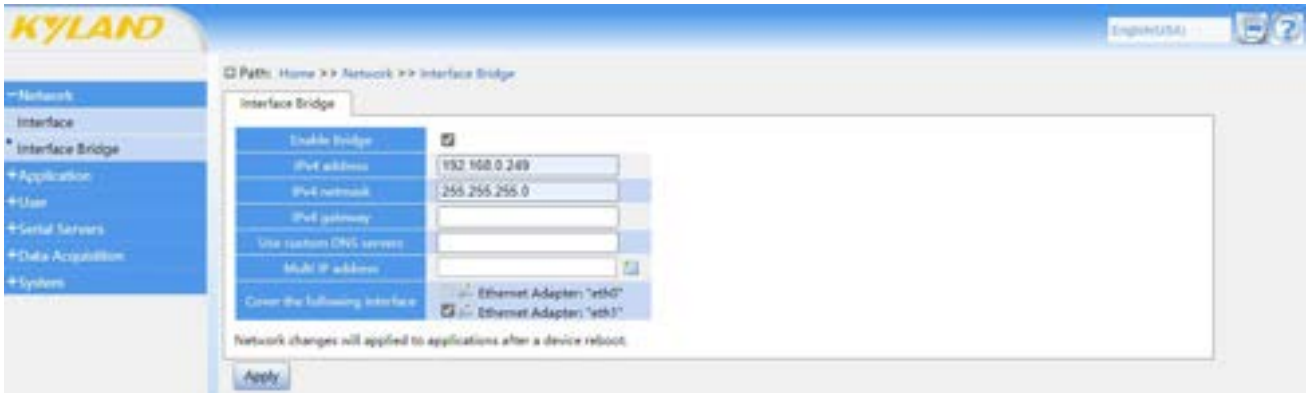
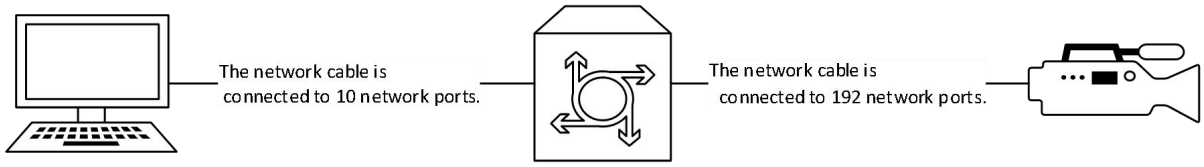


Figure69 Bridges with Network Segment Port

ping another device on a PC with Ip 192.168. 0.242 (Ip: 192.168. 0.111), and you can ping.

B. Bridging of Different Network Segments

Physical connection:



Open the bridge, the two network ports have different IP network segments.

ip:10. 12. 2. 233

Gateway： 10. 12. 2. 249

ip0:10. 12. 2. 249

ip1:192. 168. 0. 249

ip:192. 168. 0. 111

Gateway： 192. 168. 0. 249

Web page does not check "Ethernet adapter eth1", select protocol, set IP address and subnet mask, click "Apply", two different network segment devices can communicate with each other.

Note: The gateway must be configured correctly, otherwise it cannot communicate.

Figure70 Different Network Segment Port Bridging

On the PC with IP 10.12.2.233, a ping to another device (IP: 192.168.0.111) is successful.

5.2 Transparent Transport Operation Use Case

Using a KGW3204A and a computer, the serial interface type of the gateway is RS-232. The gateway acts as TCP Server, the USB terminal of the computer uses the USB to RS-232 serial communication line, and theDB9 port of the USB to RS-232 serial communication line is connected to the serial port S1 of the terminal of the device.

Note: This operation case is that the serial port uses transparent transmission communication protocol, RS-232 serial port connection mode, and the network port uses TCP Server and TCP Client network communication mode. If the serial port is RS-485 connection line or the network mode adopts other modes, the configuration item can be changed to the corresponding mode, and the operation method is similar.

5.2.1 TCP Server Mode

A. Configuring the Web Console

Start KGW3204A, enter the IP address in the browser, and enter the user's name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select TCP Server in network mode, select Transparent in transmission mode, fill inabove1024 in local port, and the maximum number of connections is 4. Set serial port baud rate, data bit, check bit, stop bit and other configuration applications, and click "Application" to save.

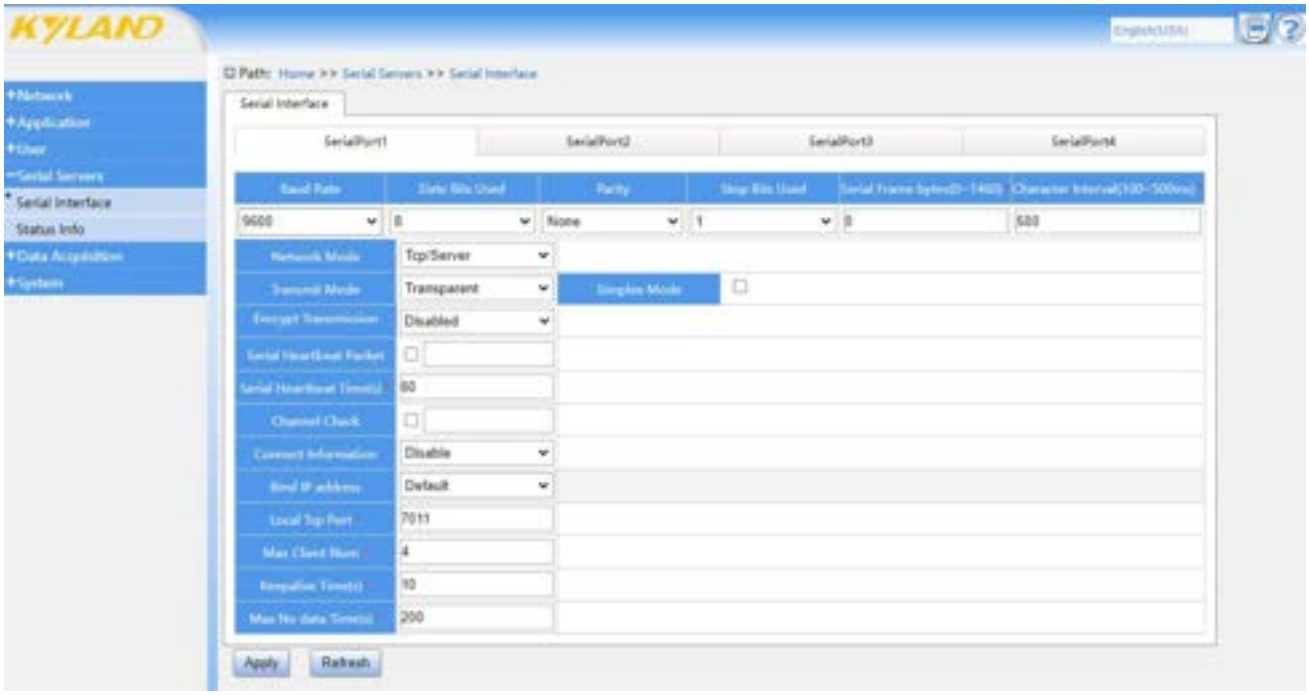


Figure71 Web Configuration Tcp Server Page

B. Configure Pc-Side Parameters

The PC is connected with the device S1 by connecting USB to RS-232 serial port communication line and connecting KGW3204A at the serial port of the serial port communication line.

Open the integrated debugging management tool "KyCMT", right-click on the serial network debugging assistant bar to create a new debugging assistant, select TCP Client for communication port, fill in the local host address, fill in KGW3204A device IP and port number for remote address, and click Connect. Then right-click to create a new debugging assistant, select COM for communication port, and configure the relevant parameters of serial port to the same parameters as serial port S1 of KGW3204A device. Click Open after configuration.

After completing the above operations, input the value to send in the data sending area of KyCMT, and you can see that the data receiving area of the integrated debugging management tool can receive the corresponding data, and the data bidirectional communication is successful, as shown in the following figure.

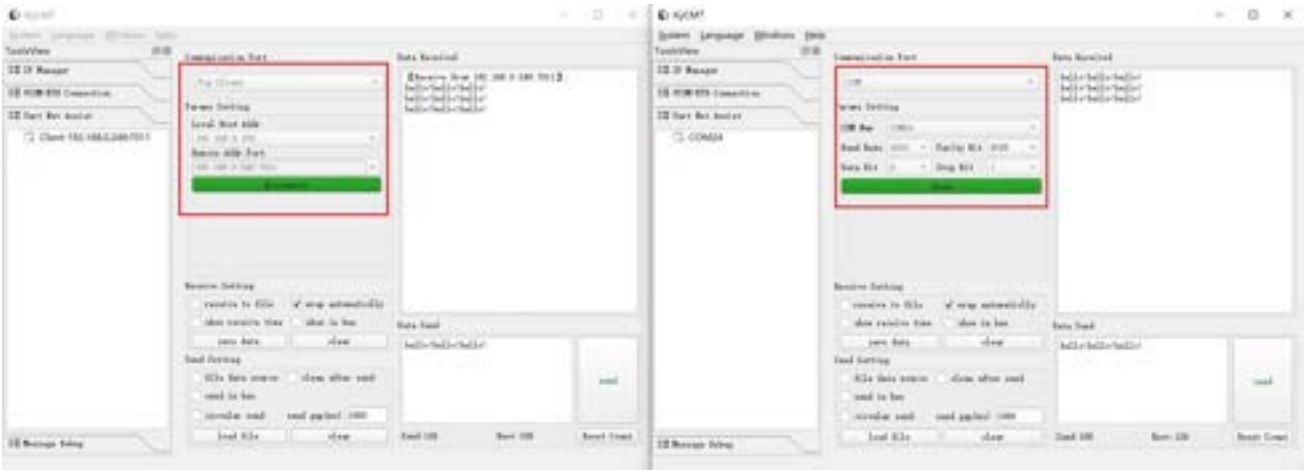


Figure72 Configuring Integrated Debug Management Tool Parameters

5.2.2 Tcp Client Mode

A. Configure Pc-Side Parameters

The PC is connected with the device S1 by connecting USB to RS-232 serial port communication line and connecting KGW3204A at the serial port of the serial port communication line.

Open the integrated debugging management tool "KyCMT", right-click in the Serial Network Debugging Assistant bar to create a new debugging assistant, select TCP Server as the communication port, fill in the local host address, select the local port above 1024, and click Connect. Then right-click to create a new debugging assistant, select COM for communication port, and configure the relevant parameters of serial port to the same parameters as serial port S1 of KGW3204A Device. Click Open after configuration.

B. Configuring the Web Console

Start KGW3204A, enter the IP address in the browser, and enter the user's name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select TCP Client in network mode, select Transparent in transmission mode, fill in the IP, port and local port configured in step A for target IP and port, but not fill in (KGW3204A uses the filled port to establish connection after filling in), and can add up to 4 non-repeated links, set up configuration applications such as serial port baud rate, data bit, check bit and stop bit, and click "Application" to save.

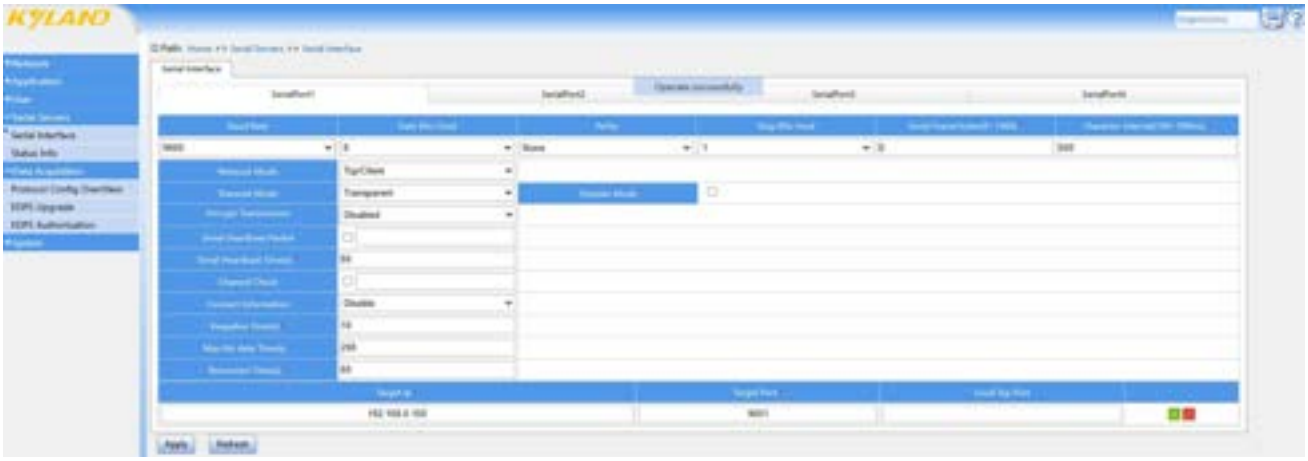


Figure73 Web Configuration TCP Client Page

After completing the above operations, input the value to send in the data sending area of KyCMT, and you can see that the data receiving area of the integrated debugging management tool can receive the corresponding data, and the data bidirectional communication is successful, as shown in the following figure.

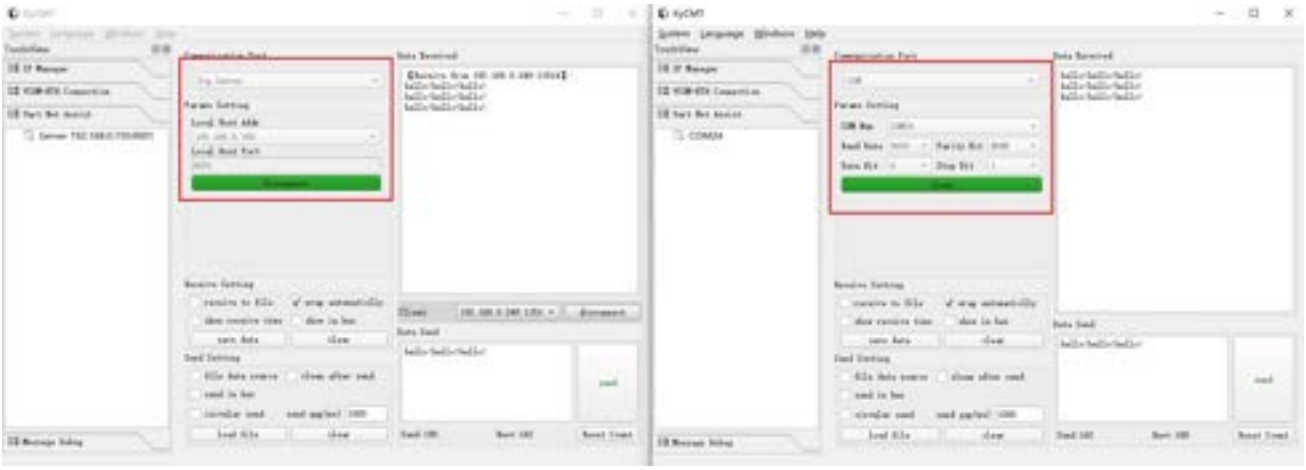


Figure74 Configuring Integrated Debug Management Tool Parameters

5.3 ModbusRTU Operation Use Case

Using a KGW3204A and a computer, the serial interface type of the device is RS-232. KGW3204A is used as TCP Server. The USB terminal of the computer uses USB to RS-232 serial communication line. TheDB9 port of the USB to RS-232 serial communication line is connected to the serial port S1 of the terminal of the device.

Note: In this operation case, the communication protocol of Modbus RTU and RS-232 serial port is used at the serial port, and the network communication mode of TCP Server and TCP Client is used at the network port. If the serial port is RS-485 connection line, or the network mode adopts other modes, the configuration item can be changed to the corresponding

mode, and the operation method is similar.

5.3.1 TCP Server Mode

A. Configuring the Web Console

Start KGW3204A, enter the IP address of the serial server in the browser, and enter the user's name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select TCP Server in network mode, select Modbus RTU in transmission mode, fill inabove1024 in local port, and the maximum number of connections is 4. Set serial port baud rate, data bit, check bit, stop bit and other configuration applications, and click "Application" to save.

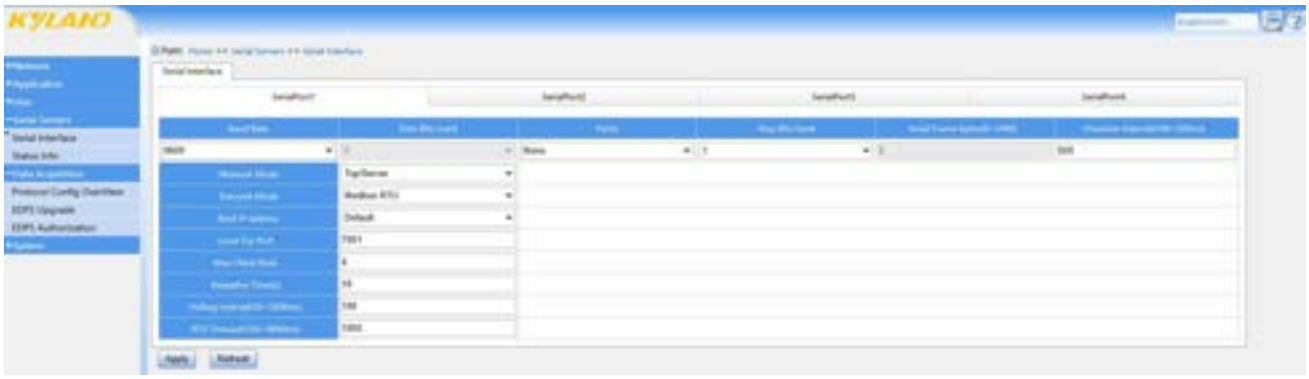


Figure75 Configuration Web Page

B. Configure Pc-Side Parameters

The PC end uses USB to RS-232 serial communication line, and the serial end of the serial communication line connects with the terminal of KGW3204A to connect the PC with the device S1.

Open the software "Modbus Slave", create a new Mbslave window, click on the menu bar Connection-Connection Setup, select Serial Port, configure the relevant parameters of Serial Port to the same parameters as the Serial Port S1 of the device, and click OK after the configuration is completed.

Then click on the menu bar Setup-Slave Definition to configure the device Address (Slave ID), Function code, starting Address (Address) and Quantity.

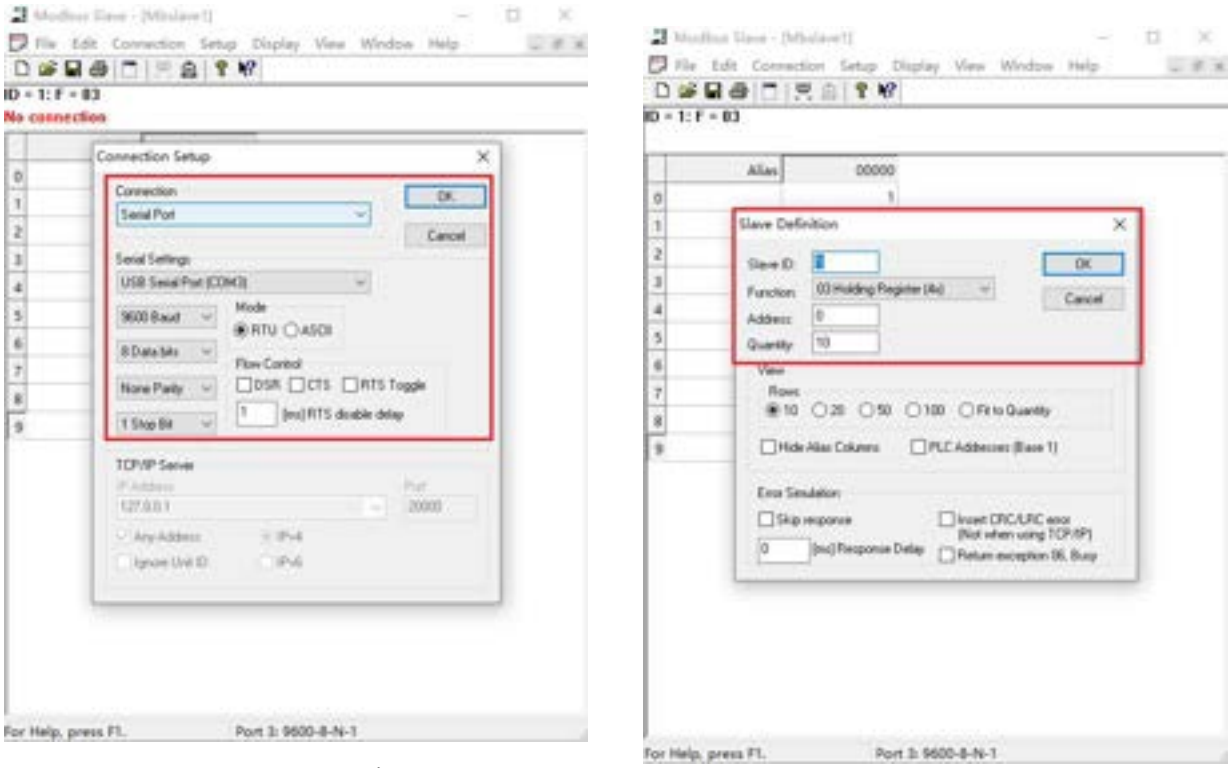


Figure76 Configure Modbus Slave Tool Parameters

Open the software "Modbus Poll", create a new Mbpoll window, click on the menu bar Connection-Connection Setup, select Modbus TCP/IP, fill in the device IP of KGW3204A and the port number set instep A at the remote address, and the Response Timeout setting value of the upper computer needs to be greater than the timeout set by the WEB page. Click OK.

Then click on the menu bar Setup-Read/Write Definition to configure the device Address (Slave ID), Function code, Start Address and Quantity. The Modbus Poll configuration parameters need to be consistent with the Modbus Slave configuration parameters.

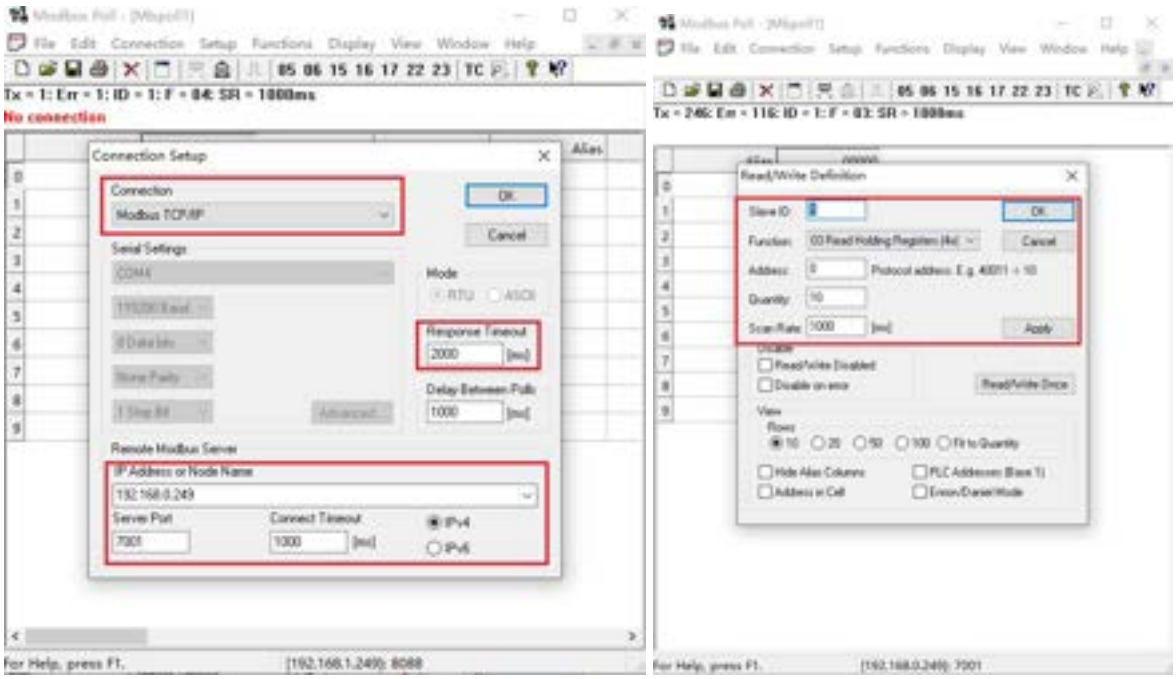


Figure77Configure Modbus Poll tool parameters

After completing the above operations, enter the value in the data sending area of Modbus Slave tool to send, and you can see that the data receiving area of Modbus Poll tool can receive the corresponding data, and the data bidirectional communication is successful, as shown in the following figure.

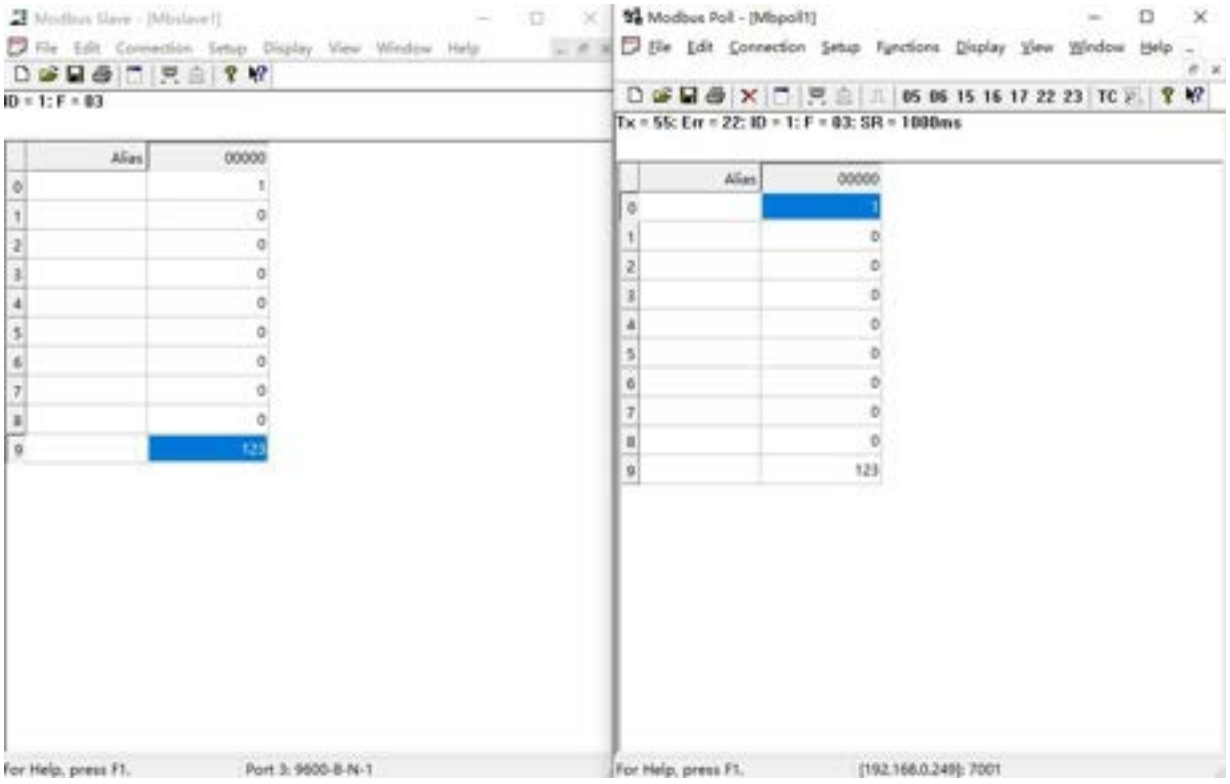


Figure78 Modbus Slave Communicates Successfully with Modbus Poll Tool

5.3.2 TCP Client Mode

A. Configure PC-side parameters

The PC end uses USB to RS-232 serial communication line, and the serial end of the serial communication line connects with the terminal of KGW3204A to connect the PC with the device S1.

Open the software "Modbus Slave", create a new Mbslave window, click on the menu bar Connection-Connection Setup, select Modbus TCP/IP for the communication port, select the IP of the network port connected with KGW3204Al for IP Adress, fill in the port above 1024, and click OK after the configuration is completed.

Then click on the menu bar Setup-Slave Definition to configure the device Address (Slave ID), Function code, starting Address (Address) and Quantity.

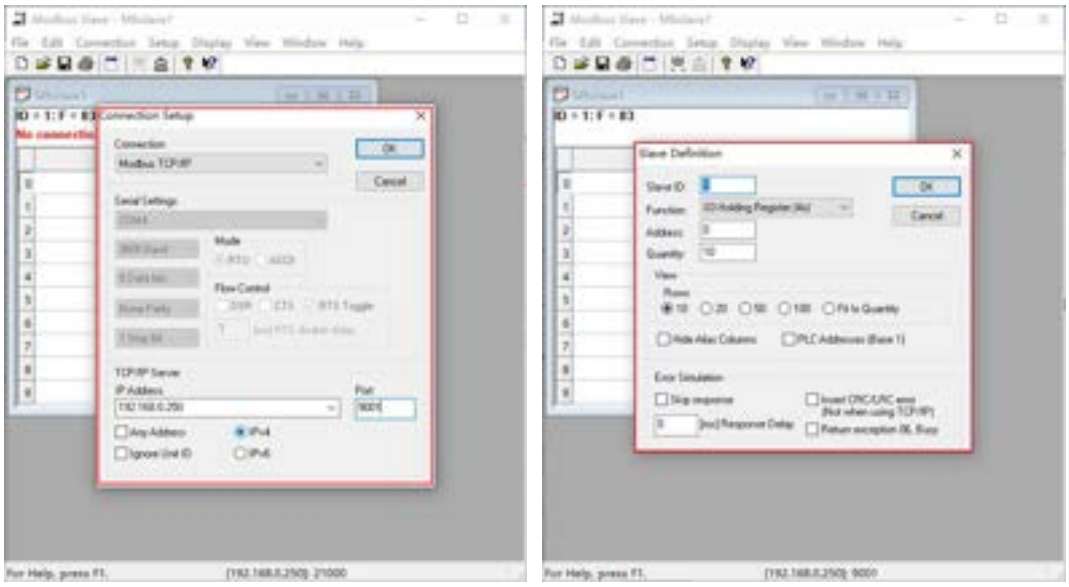


Figure79 Configure Modbus Slave Tool Parameters

Open the software "Modbus Poll", create a new Mbpoll window, click on the menu bar Connection-Connection Setup, select Serial Port for the communication port, and configure the relevant parameters of the Serial Port of to the same parameters as the Serial Port of the device S1. The upper computer Response Timeout setting value needs to be greater than the WEB page setting timeout, click OK.

Then click on the menu bar Setup-Read/Write Definition to configure the device Address (Slave ID), Function code, Start Address and Quantity. The Modbus Poll configuration parameters need to be consistent with the Modbus Slave configuration parameters.

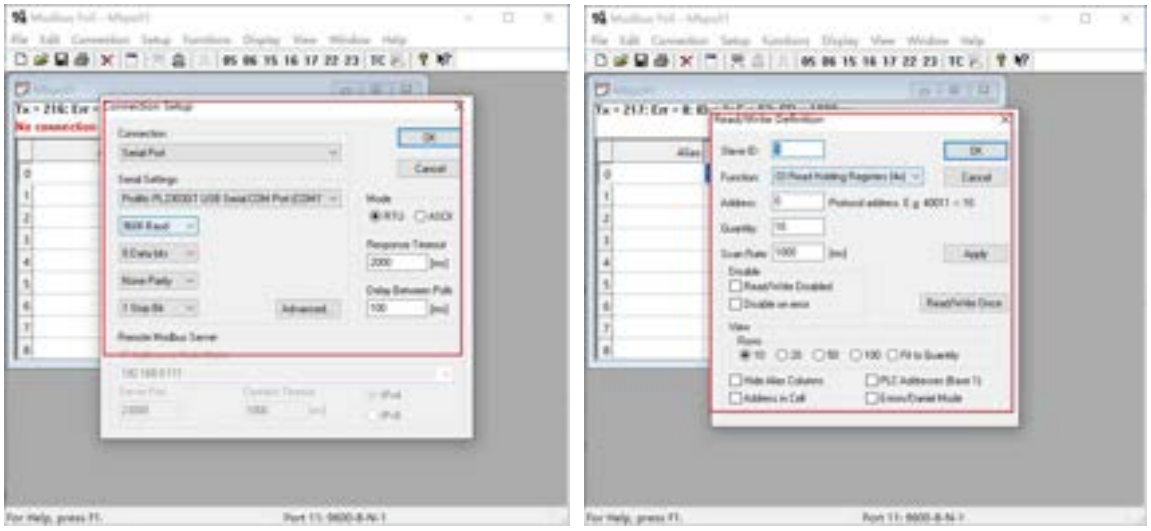


Figure80 Configure Modbus Poll tool parameters

B. Configuring the Web Console

Start KGW3204A, enter the IP address of the serial server in the browser, and enter the user name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select TCP Client in network mode, select Modbus RTU in transmission mode, add connection link, Slave Id, target IP and target port Setting in the link are consistent with Modbus Slave tool Setting, set serial port baud rate, data bit, check bit, stop bit and other configurations, and click "Application" to save.

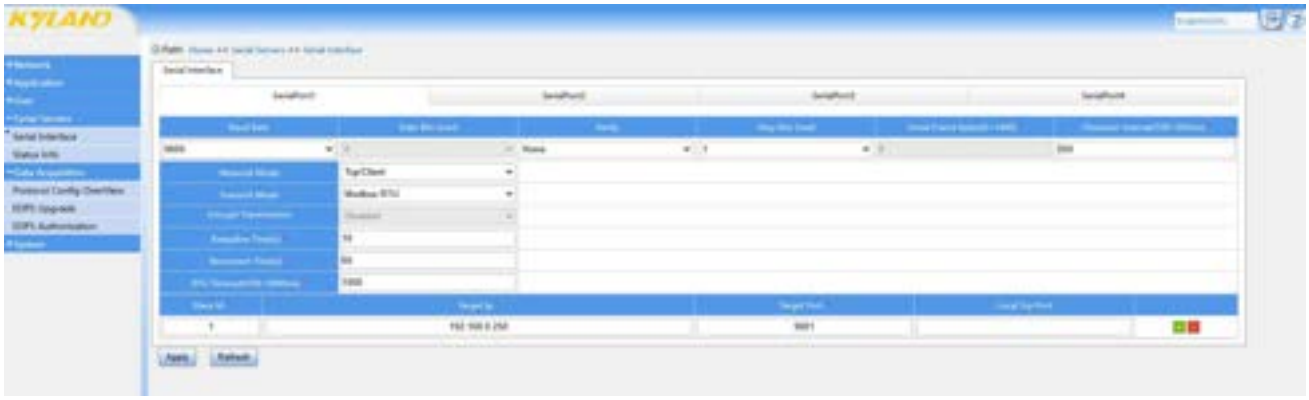


Figure81 Configuration Web Page

After completing the above operations, enter the value in the data sending area of Modbus Slave tool to send, and you can see that the data receiving area of Modbus Poll tool can receive the corresponding data, and the data bidirectional communication is successful, as shown in the following figure.

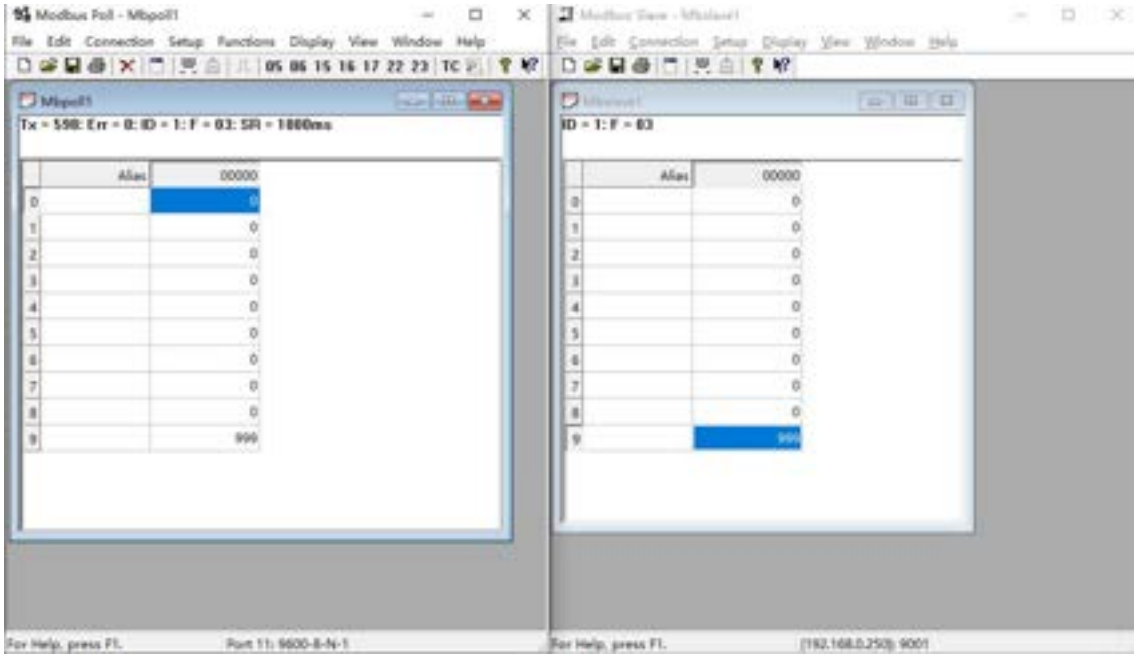


Figure82 Modbus Slave communicates successfully with Modbus Poll tool

5.4 SSH Mode Operation Use Case

Using a KGW3204A and a computer, the serial interface type of the device is RS-232. KGW3204A is used as SSH Server. The USB terminal of the computer uses USB to RS-232 serial communication line, and theDB9 port of the USB to RS-232 serial communication line is connected to the serial port S1 of the terminal of the device.

Note: In this operation case, the communication protocol of Modbus RTU and RS-232 serial port are used at the serial port, and the network communication mode of TCP Server and TCP Client is used at the network port. If the serial port is RS-485 connection line, or the network mode adopts other modes, the configuration item can be changed to the corresponding mode, and the operation method is similar.

A. Configuring the Web Console

Start KGW3204A, enter the IP address of the serial server in the browser, and enter the user name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select SSH Mode in network mode, fill inabove1024 in local port, set serial port baud rate, data bit, check bit, stop bit and other configuration applications, and click "Application" to save.

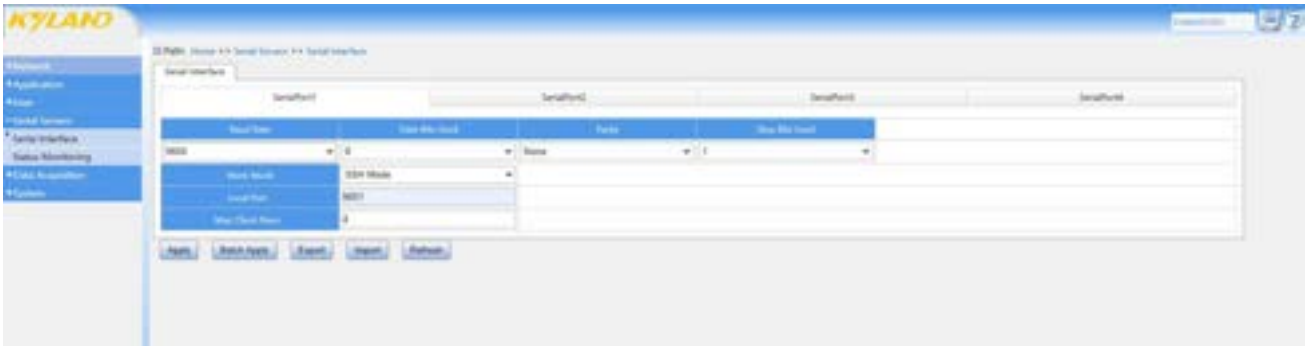


Figure83 Configuration Web Page

B. Configure Pc-Side Parameters

The PC end uses USB to RS-232 serial communication line, and the serial end of the serial communication line connects with the terminal of KGW3204A to connect the PC with the device S1.

Open the software MobaXterm, create a new SSH connection, fill in the device IP for the remote host IP, and the port number is the same as the device WEB page configuration. The user's name and password are consistent with the user name and password of WEB page login.

Open the integrated debugging management tool "KyCMT", right-click to create a new debugging assistant in the serial network debugging assistant bar, right-click to create a new debugging assistant, select COM for the communication port, configure the serial port related parameters to the same parameters as the serial port S1 of KGW3204A device, and click Open after configuration.

After completing the above operations, input data and send it in the data sending area of KyCMT software, and you can see that MobaXterm software can receive the corresponding data, and the two-way communication of data is successful.

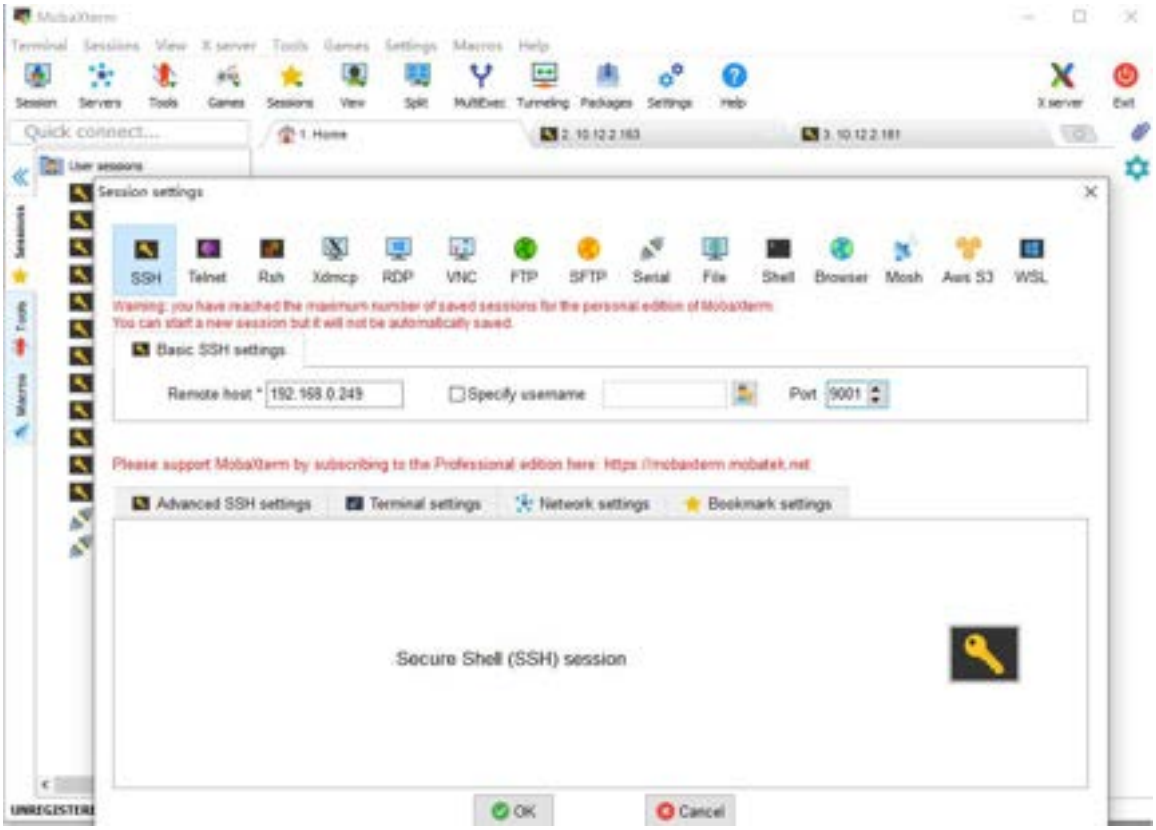


Figure84 Configuring SSH Client Tools

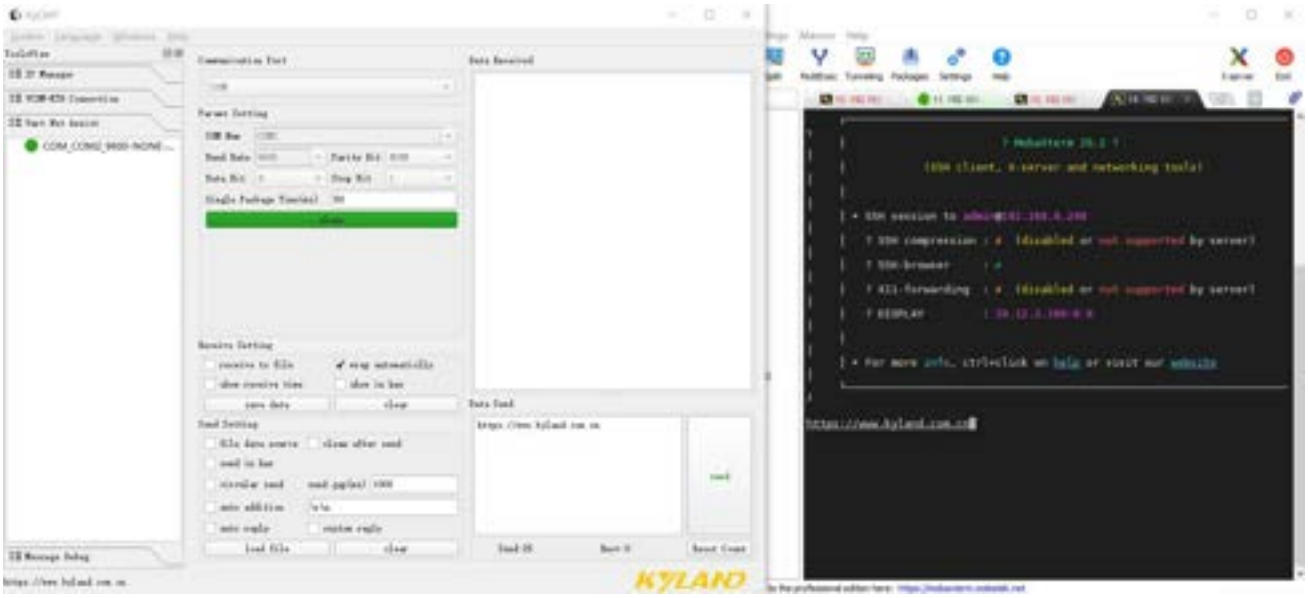


Figure85 SSH Client Tool Communicates Successfully with Serial Tool

5.5 Rtelnet Action Use Case

A KGW3204A, an external device and a computer are used. The serial interface type of the device is RS-232. KGW3204A is used as Rtelnet Server. The debugging serial port of external device is connected to the serial port of KGW3204A, and the network port of KGW3204A is connected to the computer through the network cable. Enter commands to the debugging serial port

of external device by opening Telnet on the computer side. Here, the external device is simulated by integrating the debugging management tool "KyCMT".

Note: In this operation case, Rtelnet communication protocol and RS-232 serial port connection is used at the serial port, and TCP Server and TCP Client network communication mode are used at the network port. If the serial port is RS-485 connection line, or the network mode adopts other modes, the configuration item can be changed to the corresponding mode, and the operation method is similar.

A. Configuring the Web Console

Start KGW3204A, enter the IP address of the serial server in the browser, and enter the user's name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select Rtelnet in network mode, fill in10001 and above in local port, set serial port baud rate, data bit, check bit, stop bit and other configuration applications, set mapping, and click "Application" to save.

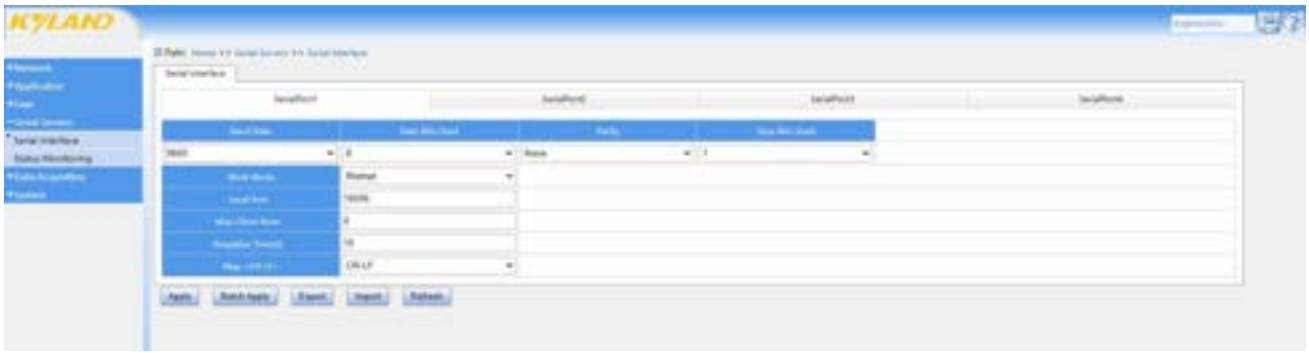


Figure86 Configuration Web Page

B. Configure PC-Side Parameters

The PC end connects the network port of KGW3204A through the network end with a network cable to connect the network port of the PC and the device. The PC end uses USB to RS-232 serial communication line, and the serial end of the serial communication line connects with the terminal of KGW3204A to connect the PC with the device S1.

Open the software MobaXterm, create a new Telnet connection, fill in the device IP for the remote host IP, and the port number is the same as the device WEB page configuration. You do not need to fill in a user name and password.

Open the integrated debugging management tool "KyCMT", right-click to create a new debugging assistant in the serial network debugging assistant bar, right-click to create a new debugging assistant, select COM for the communication port, configure the serial port related parameters to the same parameters as the serial port S1 of KGW3204A device, and click Open after

configuration.

After completing the above operations, input data and send it in the data sending area of KyCMT software, and you can see that MobaXterm software can receive the corresponding data, and the two-way communication of data is successful.

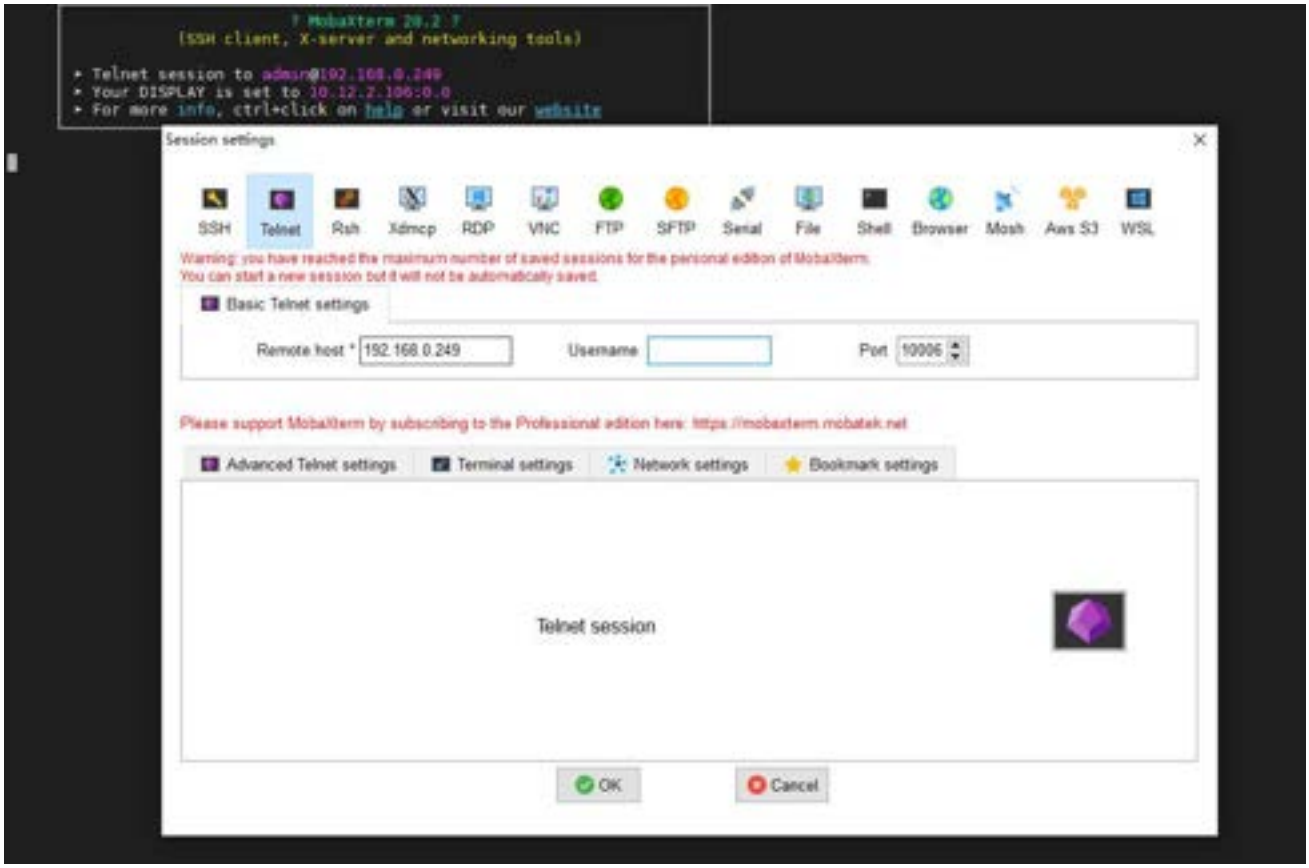


Figure87 Configuring Telnet Client Tools

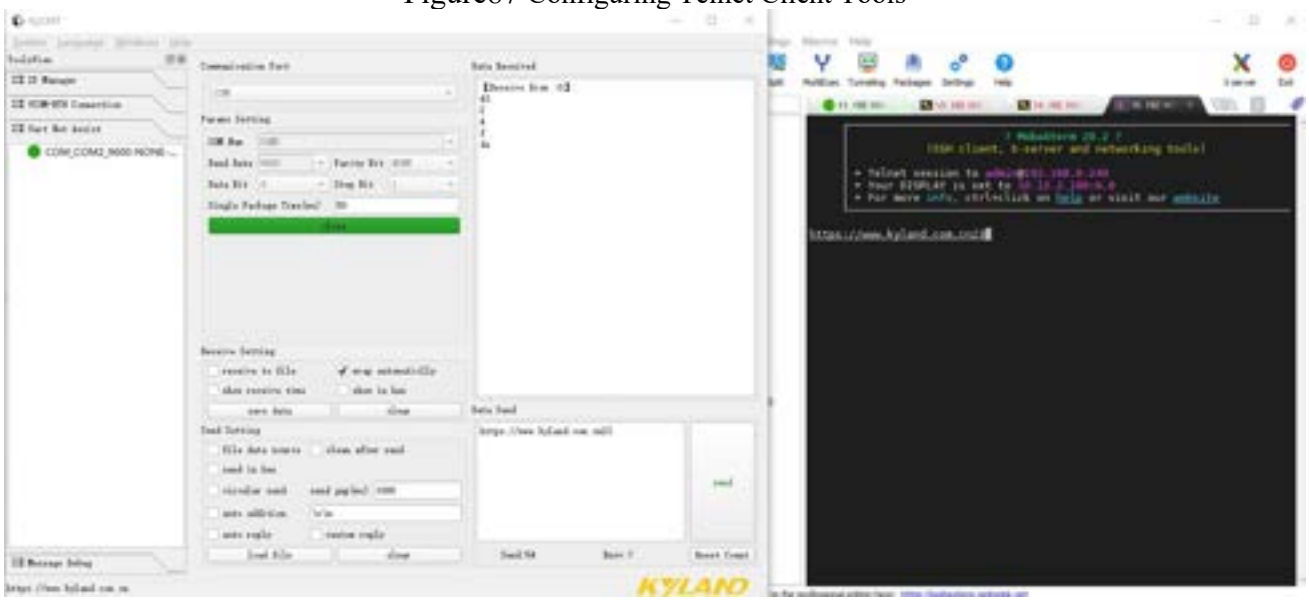


Figure88 Telnet Client Tool Communicates Successfully with Serial Tool

5.6 Realport Action Use Case

A KGW3204A, an external device and a computer are used. The serial interface type of the device is RS-232. The serial port of external device is connected to the serial port of KGW3204A, and the network port of KGW3204A is connected to the computer end through the network cable. Open the integrated debugging management tool "KyCMT" through the computer, build a new virtual serial port, and send data to external devices through the serial port. Here, the external device is simulated by integrating the debugging management tool "KyCMT".

Note: In this operation case, Real port communication protocol and RS-232 serial port connection is used at serial port, and TCP Server and TCP Client network communication mode are used at network port. If the serial port is RS-485 connection line, or the network mode adopts other modes, the configuration item can be changed to the corresponding mode, and the operation method is similar.

A. Configuring the Web Console

Start KGW3204A, enter the IP address of the serial server in the browser, and enter the user's name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Setting" in the navigation bar, select Serial Port 1, select Real port in network mode, fill inabove1024 in local port, set serial port baud rate, data bit, check bit, stop bit and other configuration applications, and click "Application" to save.

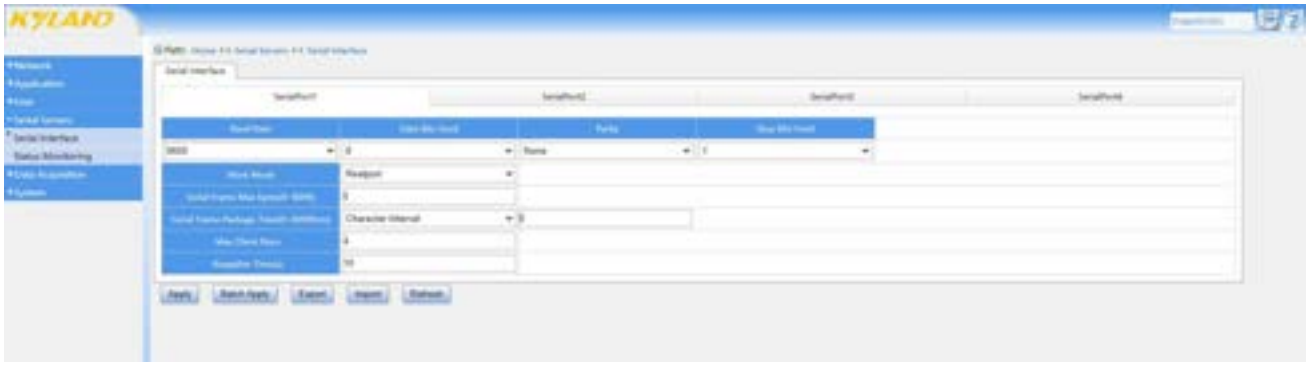


Figure89Configuration Web Page

B. Configure Pc-Side Parameters

The PC end uses USB to RS-232 serial communication line, and the serial end of the serial communication line connects with the terminal of KGW3204A to connect the PC with the device S1.

Open the software integration debugging management tool "KyCMT", search the IP connected to KGW3204A in the IP management tool, click the right mouse button after selection, select "Create Virtual Serial Port", jump to "Virtual Serial Port-Network Connection" and create the same number

of virtual serial ports as KGW3204A serial ports.

Open the integrated debugging management tool "KyCMT", right-click to create a new debugging assistant in the serial network debugging assistant bar, right-click to create a new debugging assistant, select COM for the communication port, configure the serial port related parameters to the same parameters as the serial port S1 of KGW3204A device, and click Open after configuration.

After completing the above operations, input data and send it in the data sending area of the virtual serial port of KyCMT software, and you can see that the corresponding data can be received in the real serial port of KyCMT software, and the two-way communication of data is successful.

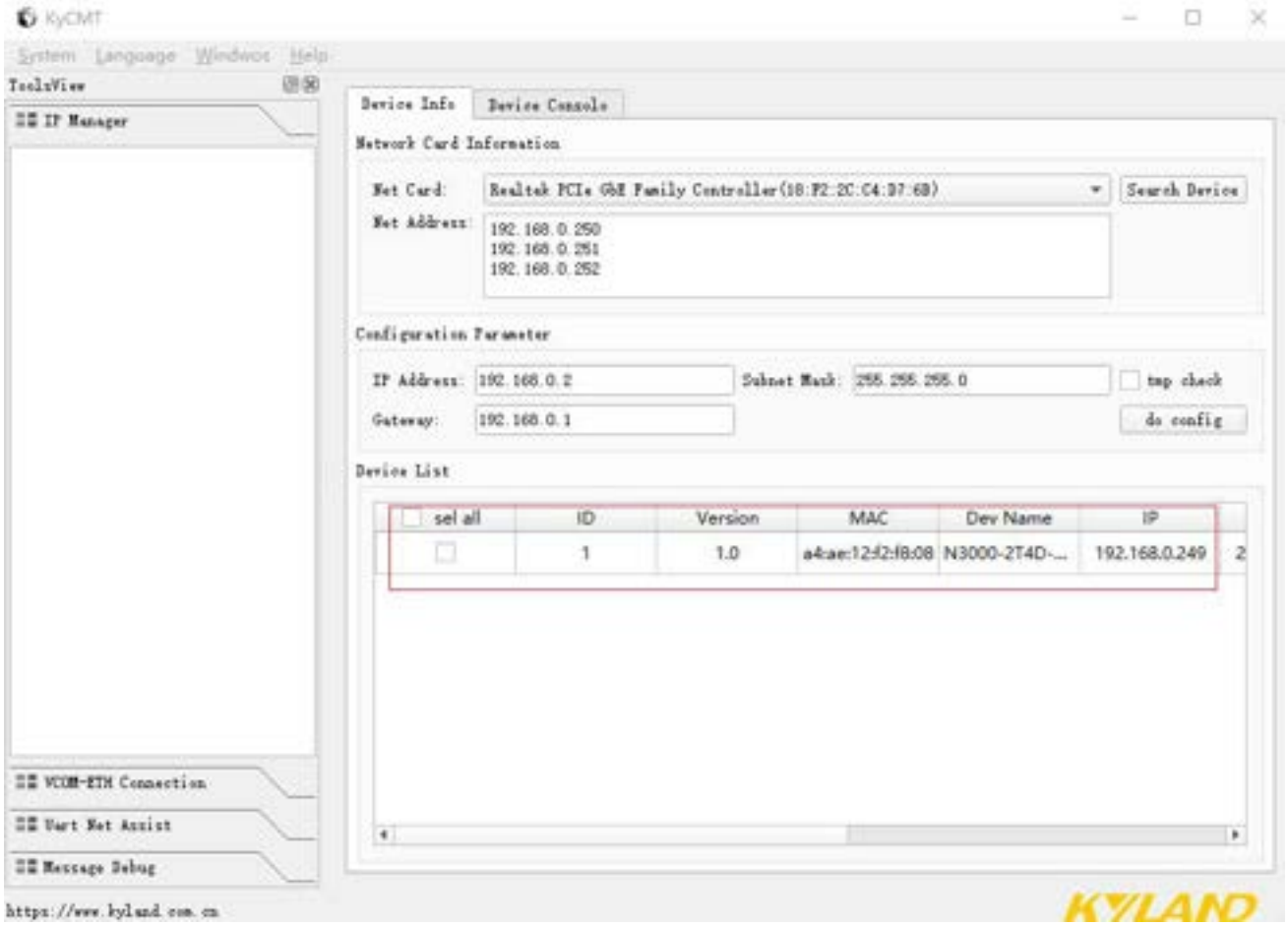


Figure90 Search for IP Connected to KGW3204A

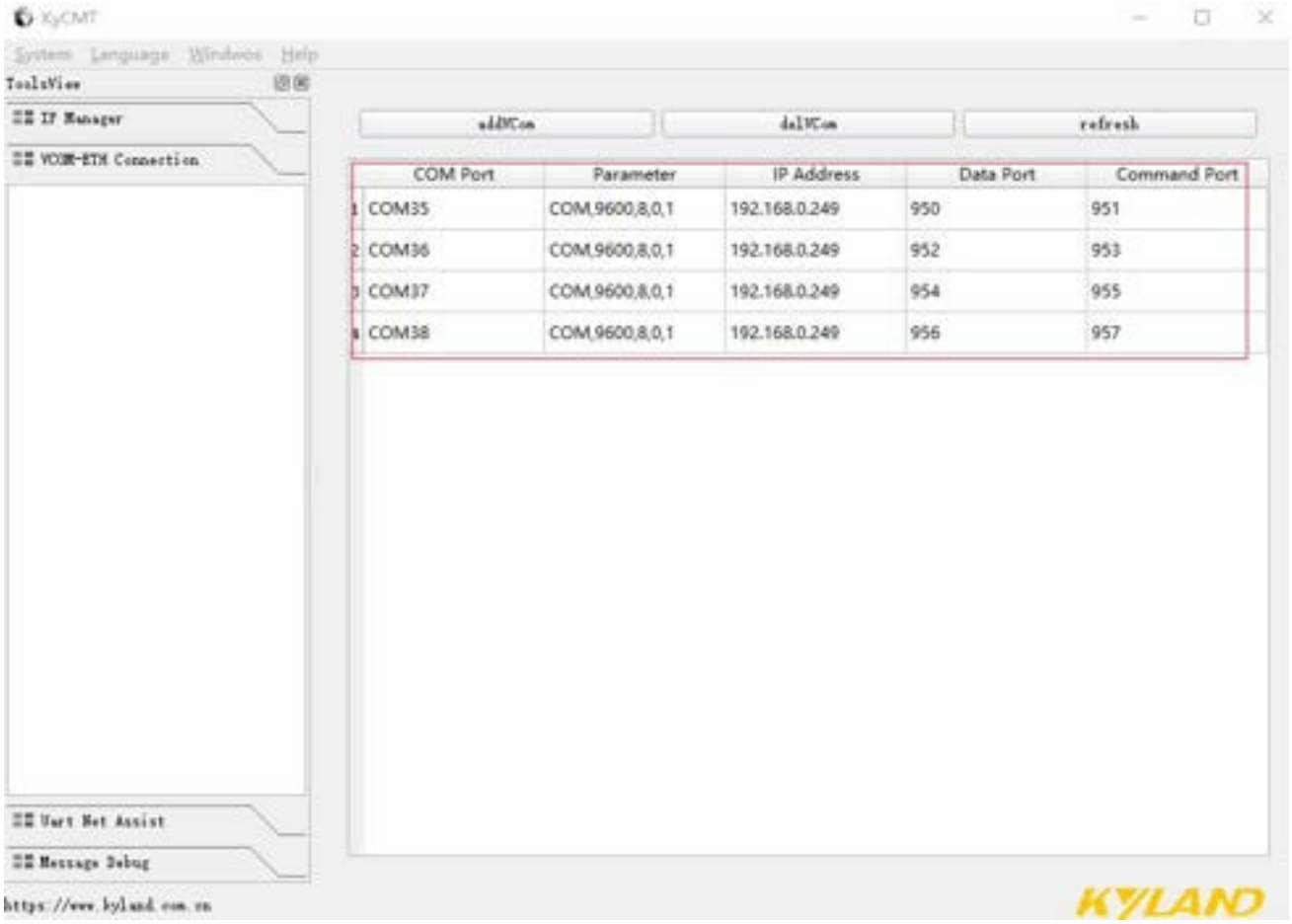


Figure91 New Virtual Serial Port

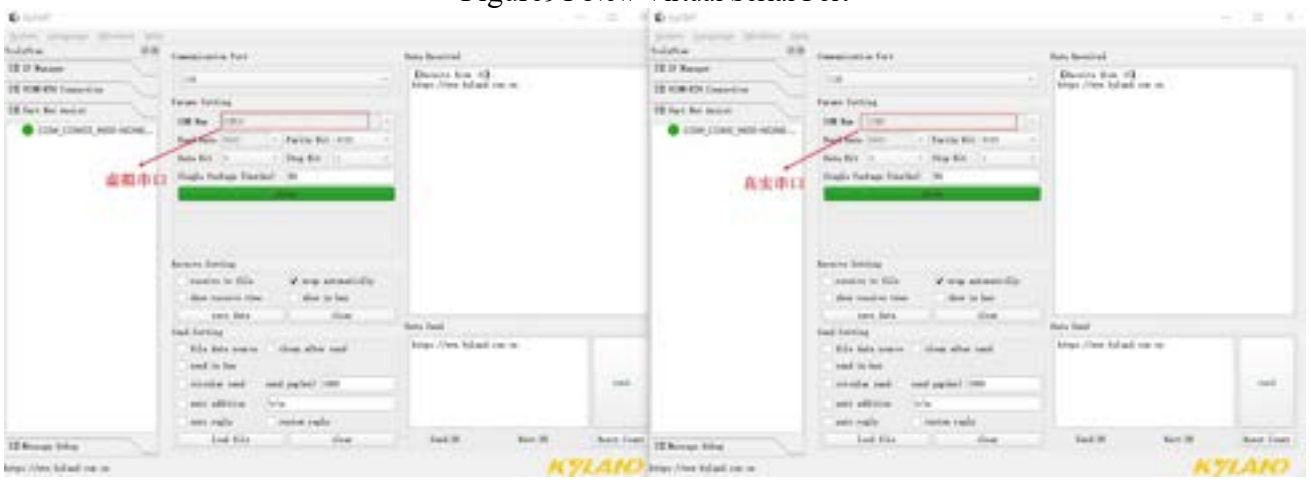


Figure92 The newly created virtual serial port communicates successfully with the actual connected serial port

5.7 Modbus Protocol Engineering Operation Case

A.KyPMT Configuration Protocol Engineering

The configuration protocol project needs to be carried out in the integrated software KyPMT. Taking the Modbus protocol project as an example, the Modbus RTU acquisition service and Modbus RTU forwarding service are configured. The specific operations are as follows:

1. New construction
   a. New construction and engineering space;
   b. Click on the project name, right mouse button new, select running platform NUC980 KPS3000.

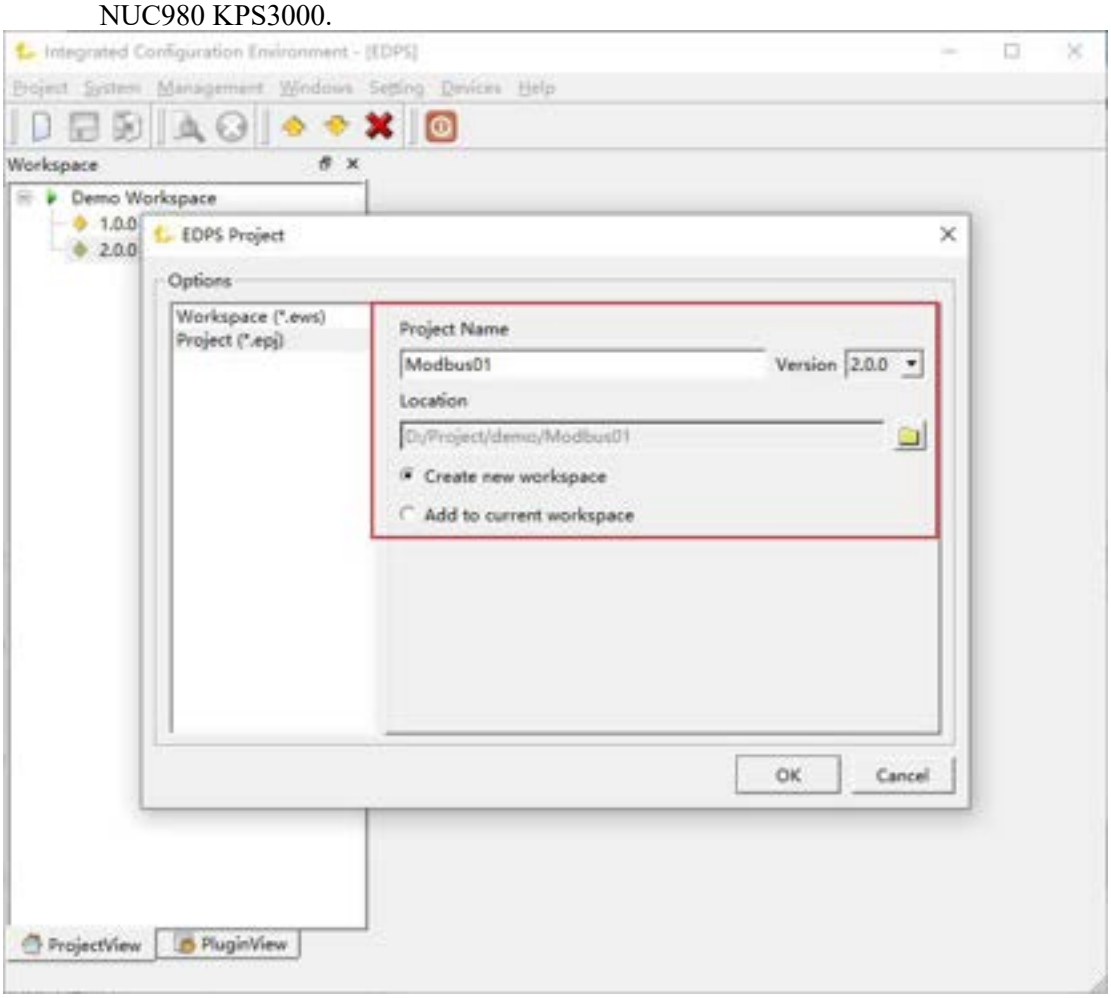


Figure93 Create Project

2. New Collection Service
   a. In the blank area of collection service, right-click New;
   b. The new Modbus running port of port group is a serial port, which needs to be consistent with the setting of the lower computer;
   c. Set the frame type in the protocol parameters, and selectRTU;
   d. Click on the device bus, right-click New, and set the device address, which needs to be consistent with the address of the lower computer;
   e. New analog input;
   f. Create a new status input.

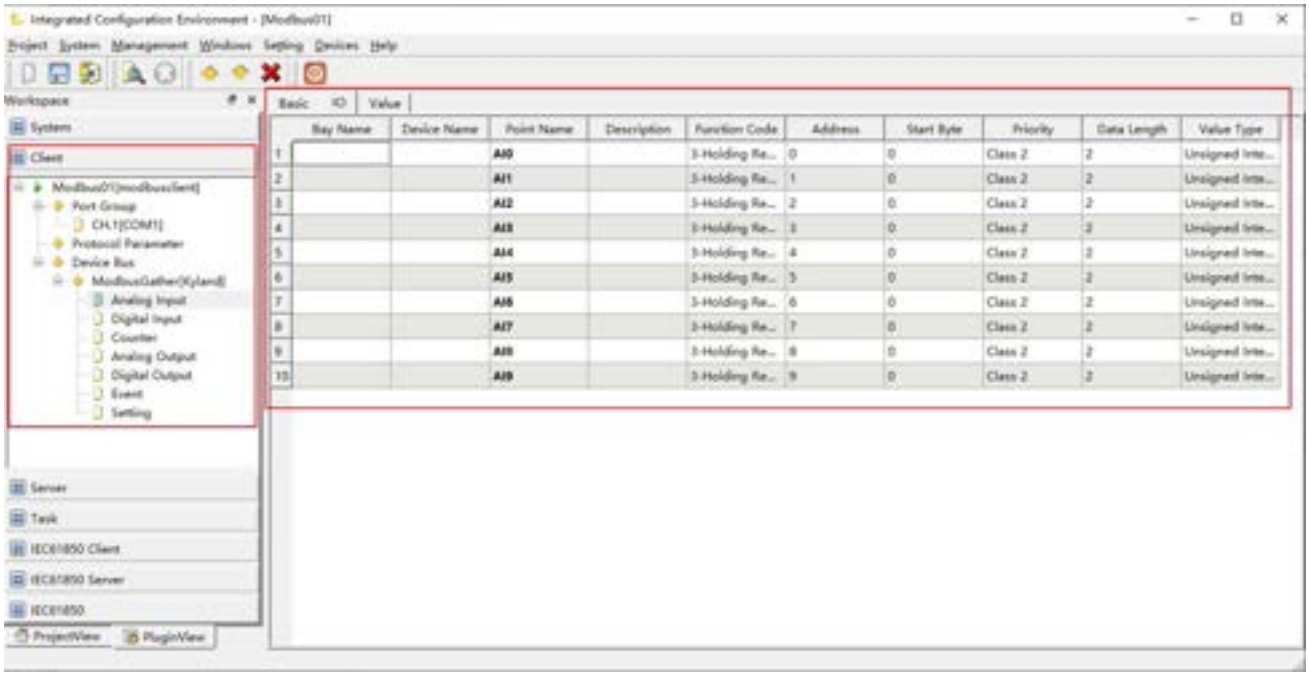


Figure94 Modbus Acquisition Service

3. New Forwarding Service

The setting steps of forwarding service are the same as those of collecting service.

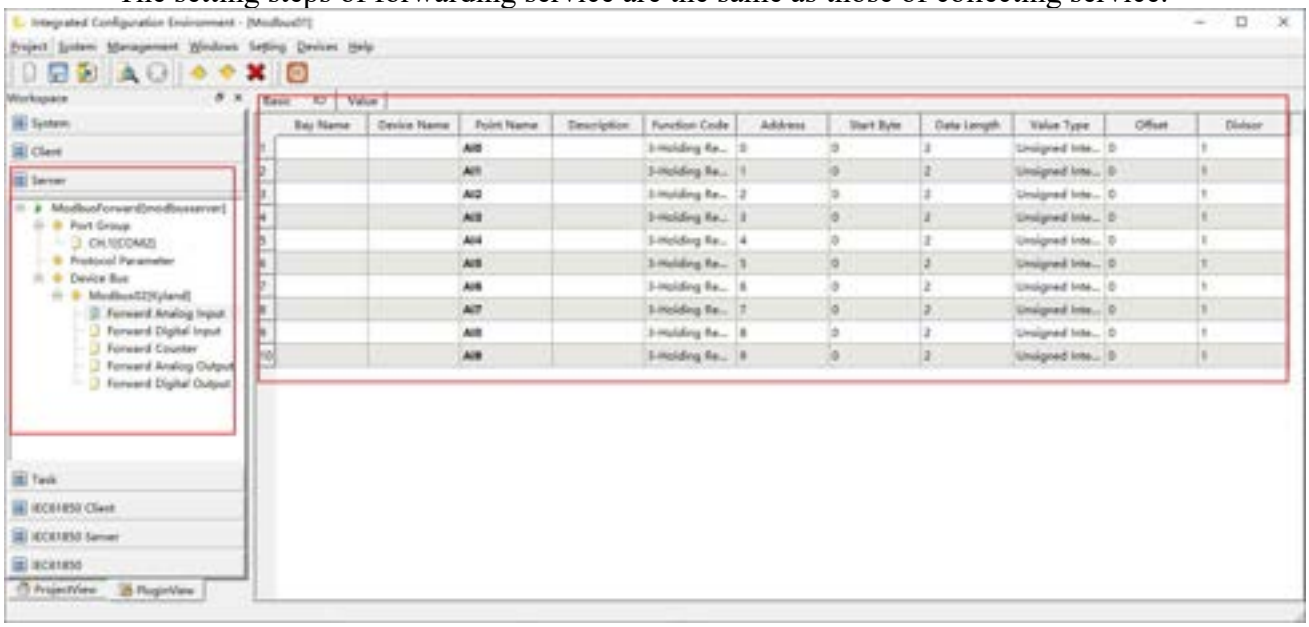


Figure95Modbus Forwarding Service

4. Download project

Click , download the project, enter the username edps and password yckyedps.

Note: For the specific configuration methods of Modbus, DNP, IEC101, IEC103, IEC104, DL/T654-1997, DL/T654-2007, Siemens S7, OPCUA, IEC61850 and other protocols, please refer to the Protocol Configuration Manual under the KyPMT Tools Help menu.

Note: Before connecting and communicating with PC, please ensure that the firewall and security protection software on PC are closed, otherwise it may cause abnormal

communication connection.

B.Web Page Enabling Project

Enter the device IP in the browser, enter the device Web page, click the data acquisition-protocol project list, select the project name as Modbus project, and click Enable to activate and run the protocol project;

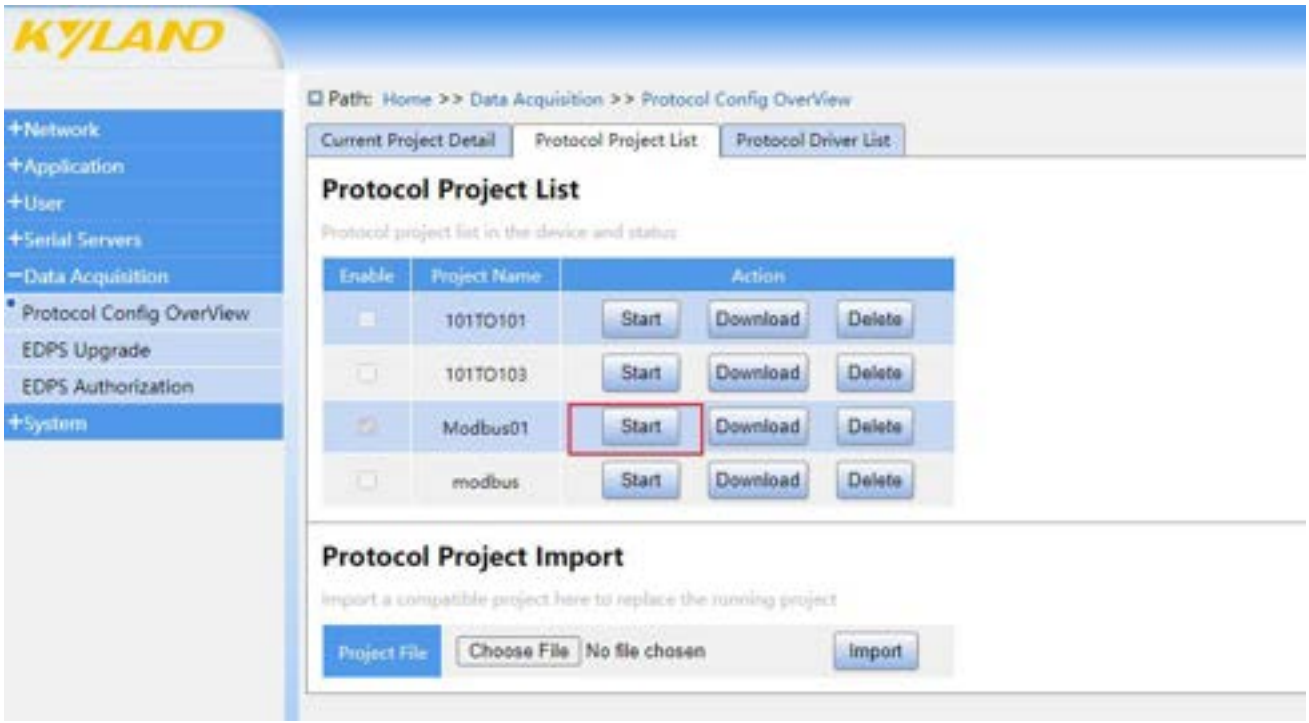


Figure96 Enable Project

C. Software simulation of lower computer and upper computer

The PC end uses USB to RS-485 serial port communication line, and the serial port of the serial port communication line connects with the connection terminal of the new generation gateway, connecting the PC with the serial port 1, that is, S1 of gateway device.

Open the software "Modbus Slave", create a new Mb slave window, click Connection-Connection Setup in the menu bar, and select Serial Port for the communication port. The configuration parameters related to Serial Port need to be consistent with those of Modbus acquisition service. Click OK after configuration.

Then click on the menu bar Setup-Slave Definition to configure the device Address (Slave ID), Function code, starting Address (Address) and Quantity. The Modbus Slave configuration parameters need to be consistent with the Modbus collection service configuration parameters.

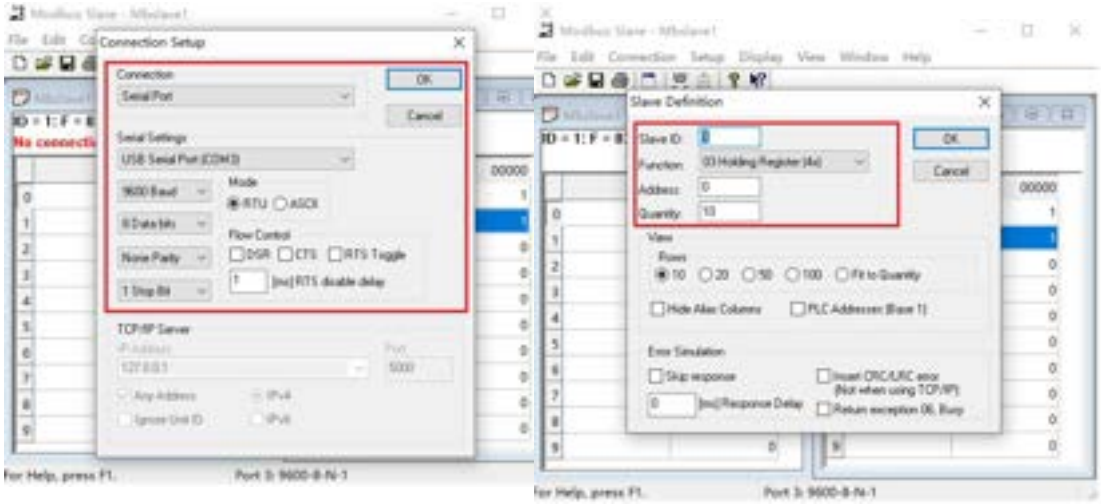


Figure97 Configure Modbus Slave Tool Parameters

The PC end uses USB to RS-485 serial communication line, and the serial port of the serial port communication line connects the connection terminal of the gateway, connecting the PC with the serial port 2 of the gateway device, that is, S2.

Open the software "Modbus Poll", create a new Mbpoll window, click Connection-Connection Setup in the menu bar, select Serial Port for the Communication Port, and the configuration parameters related to the Serial Port of need to be consistent with those of Modbus forwarding service. Click Oater the configuration is completed.

Then click on the menu bar Setup-Read/Write Definition to configure the device Address (Slave ID), Function code, Start Address and Quantity. The Modbus Poll configuration parameters need to be consistent with the Modbus Forwarding Service configuration parameters.

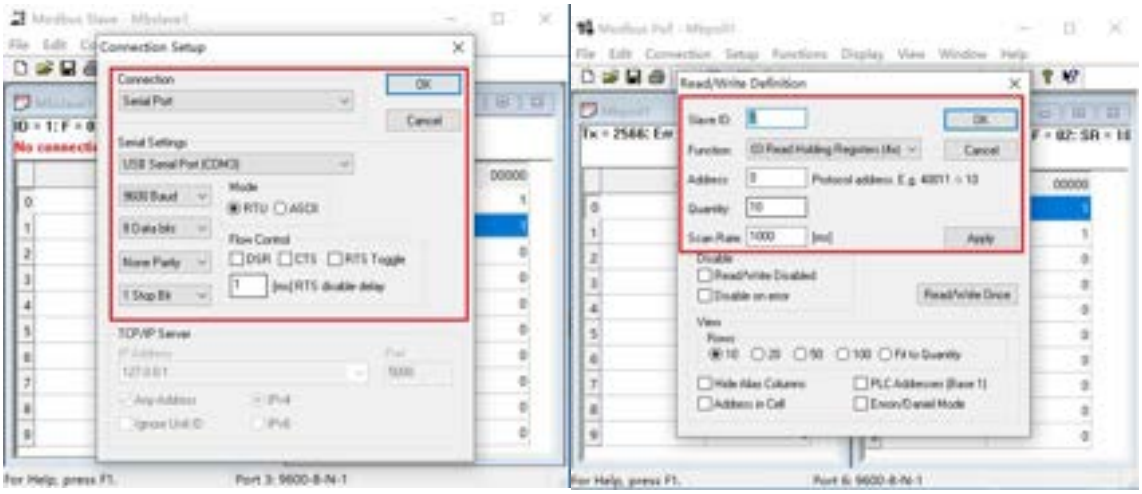


Figure98 Configure Modbus Poll tool parameters

After completing the above operations, enter the value in the data sending area of Modbus Slave tool to send, and you can see that the data receiving area of Modbus Poll tool can receive the

corresponding data, and the data bidirectional communication is successful, as shown in the following figure.

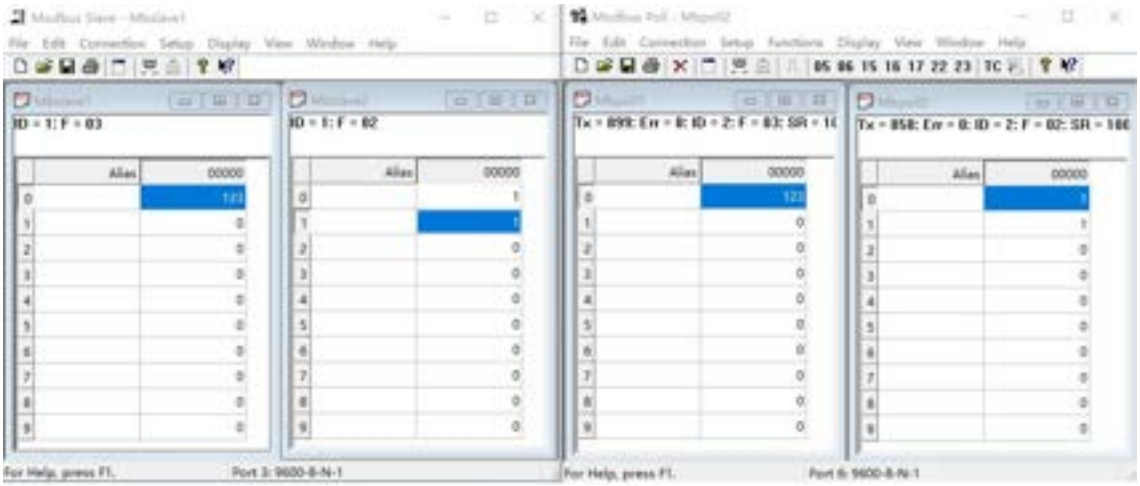


Figure99 Modbus Slave communicates successfully with Modbus Poll tool

D.KyPMT Observation Information Points

After the project is activated on the Web page, click Connect on the KyPMT tool, enter the user name admin, and click OK to view the information such as the value, quality and value update time of information points in the collection service and forwarding service.

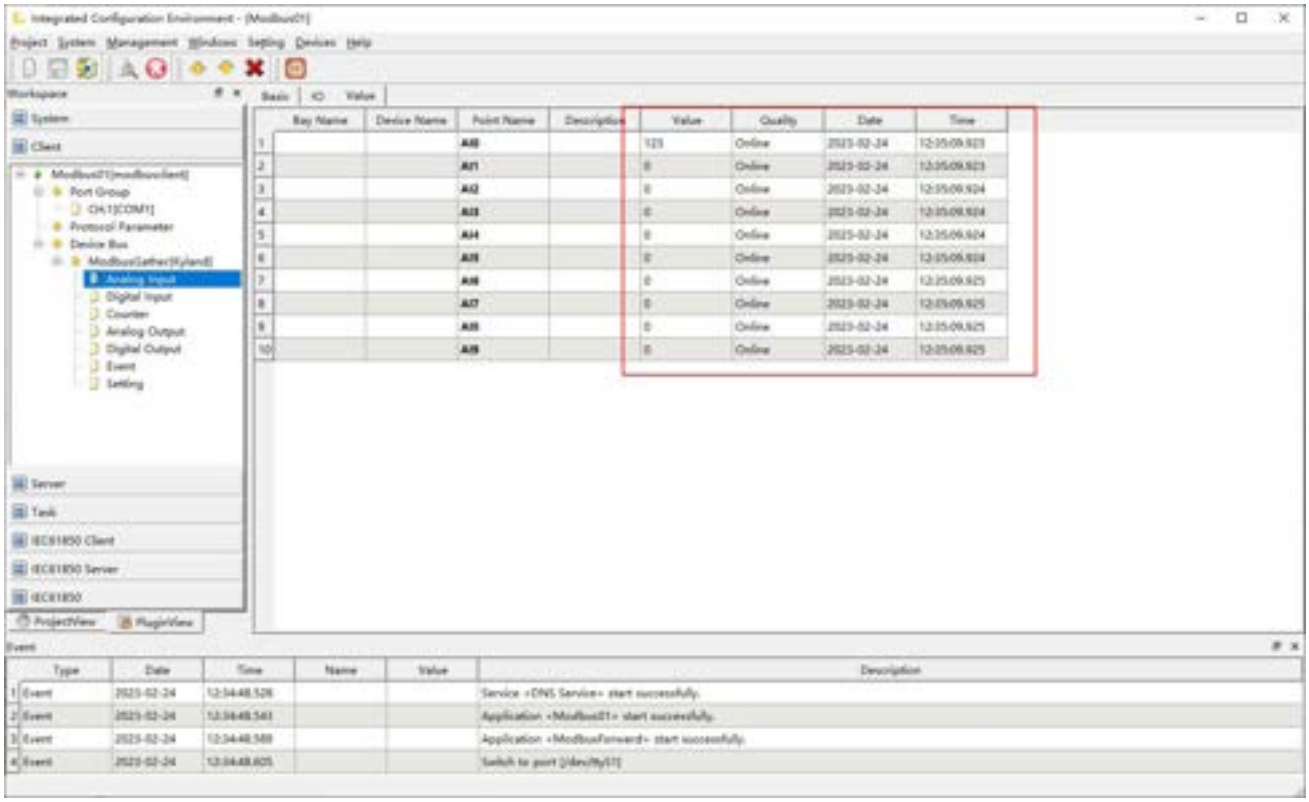


Figure100 KyPMT Acquisition Service

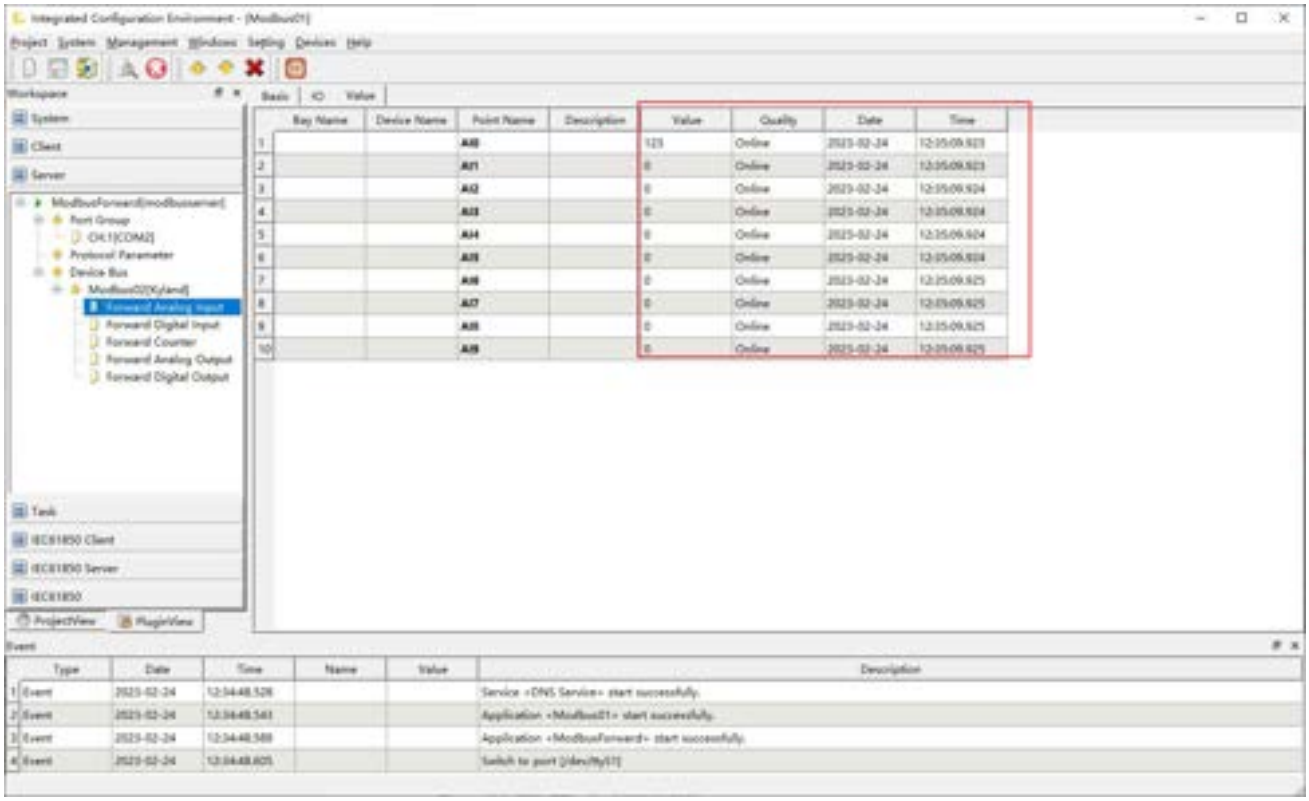
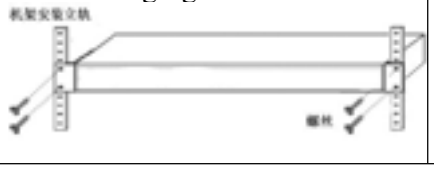


Figure101 KyPMT Forwarding Service

6 Mechanical Dimensions and Packaging

6.1 Mechanical Structure

Table 50Mechanical structure parameters

Products	KPS/KGW3x0xA Series	KGW3204A 4G Series	KPS3x0xAL Series	KPS/KGW3224A Series	KPS/KGW320xA-232-485-422 Series
Shell	SECC Electrolytic Galvanized Steel Sheet	SECC electrolytic galvanized steel sheet and AL5052	SECC Electrolytic Galvanized Steel Sheet	SECC Electrolytic Galvanized Steel Sheet and 6063 Aluminum	ECC Electrogalvanized Steel Sheet and Aluminum Shell
Protection level	IP40	IP30 and above	IP40	IP30 and above	IP30 and above
Installation mode	DIN clamping rail type or wall hanging type	DIN clamping rail type or wall hanging type	DIN clamping rail type or wall hanging type	Fix the device to the mounting upright rails on both sides of the cabinet with 4 screws, and ensure that the device ground terminal is in good contact with the cabinet ground wire. The installation mode is shown in the following figure: 	DIN clamping rail type or wall hanging type

6.2 Dimension Figure

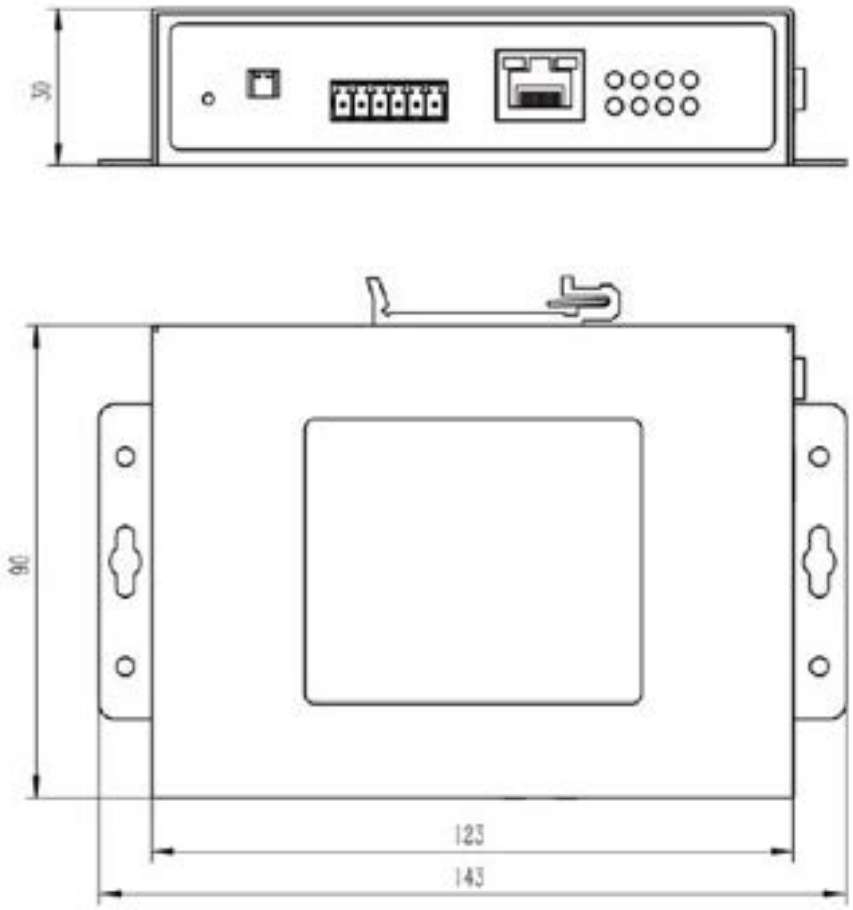
6.2.1 KPS/KGW310XA & 320XA

Overall dimensions: KPS/KGW3101A: 123x90x30 mm

KPS/KGW3102A: 123x90x30 mm

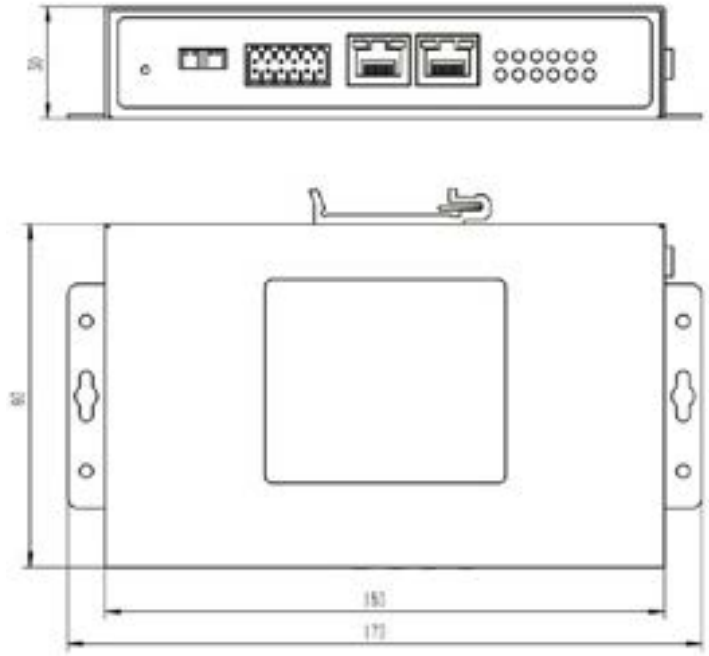
KPS/KGW3204A: 150x92x30 mm

KPS/KGW3208A: 177x100x44 mm



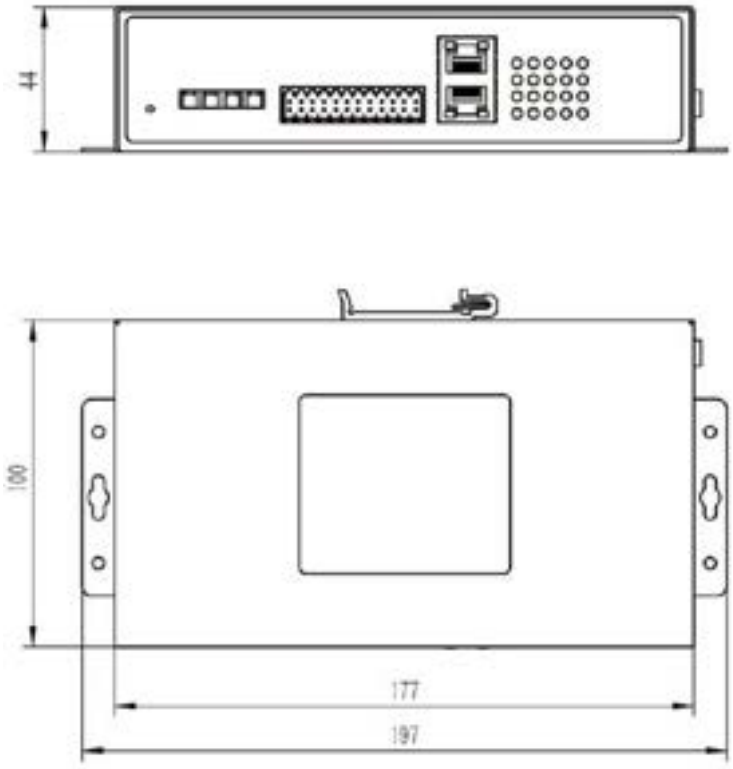
Unit: mm

Figure102 KPS/KGW3101A/3102A Dimension Figure



Unit: mm

Figure103KPS/KGW3204A Dimension Figure

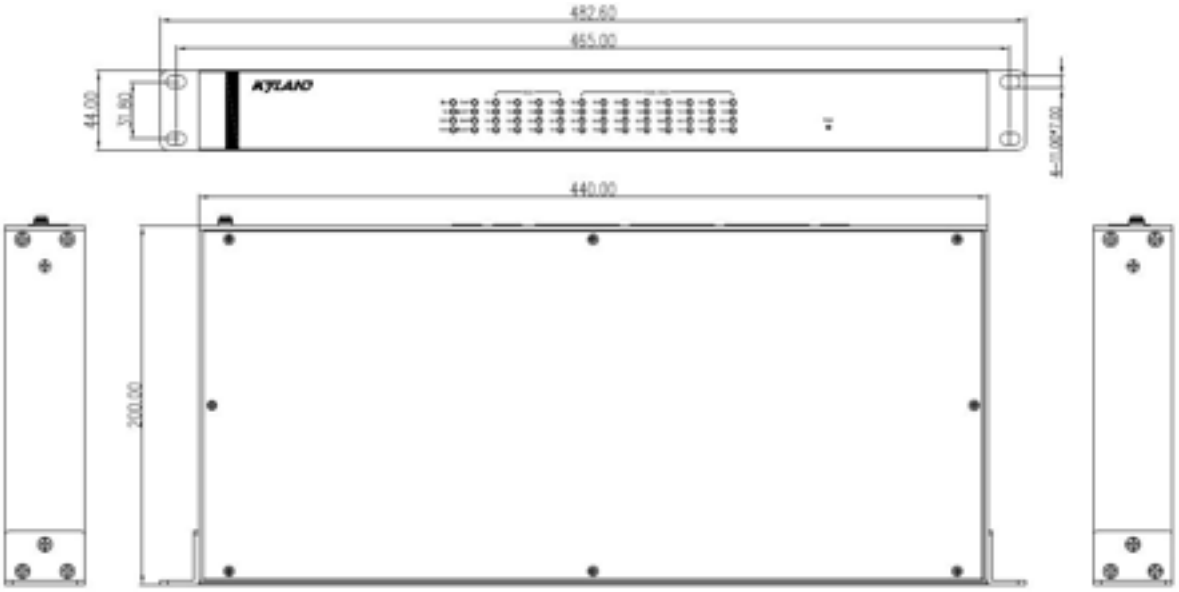


Unit: mm

Figure104 KPS/KGW3208A Dimension Figure

6.2.2 KPS3224A/KGW3224A

Overall dimensions: 482.6 x200x44 mm

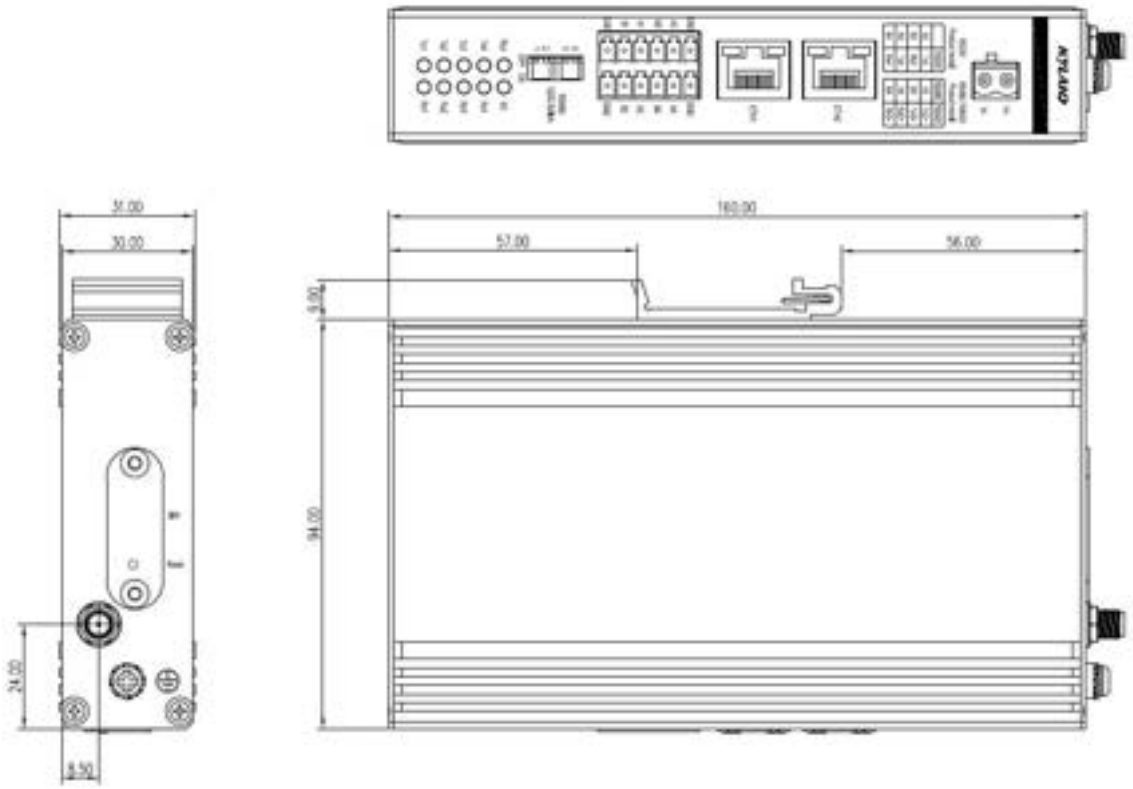


Unit: mm

Figure105 KPS3224A/KGW3224A Dimension Figure

6.2.3 KGW3204A-2T4D-232/485-4G-L17

Overall dimensions: 160x103x31 mm



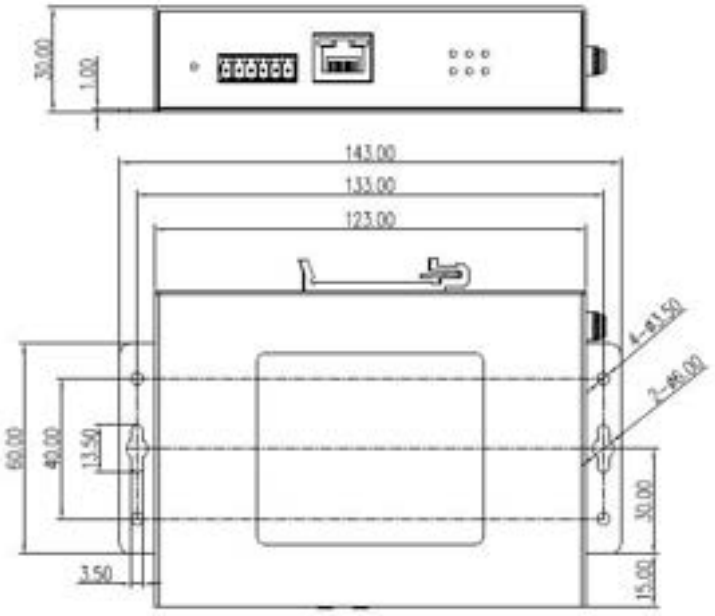
Unit: mm

Figure106 KGW3204A-2T4D-232/485-4G-L17 Dimension Figure

6.2.4 KPS3102AL & KPS3204AL

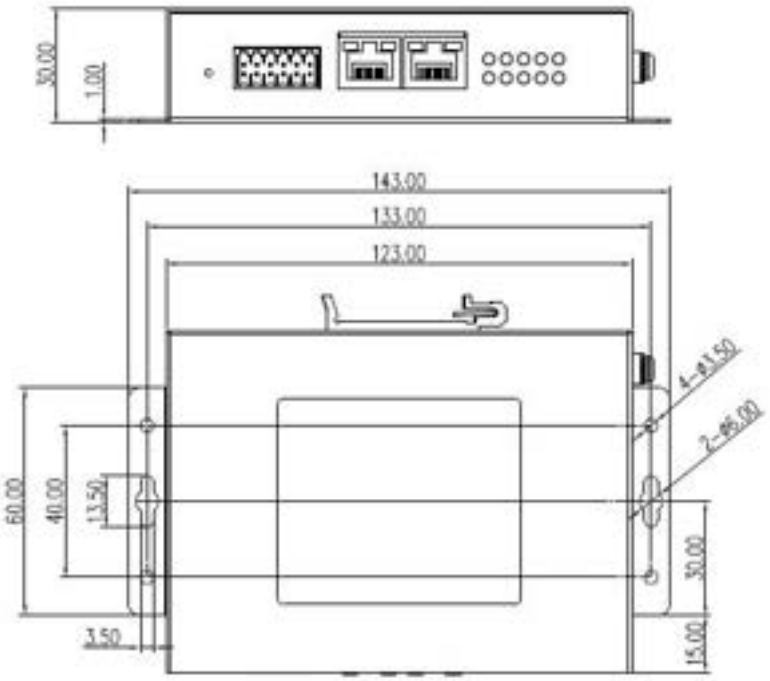
Overall dimensions: KPS3102AL: 123x90x30 mm

KPS3204AL: 150x92x30 mm



Unit: mm

Figure107 KPS3102AL Dimension Figure

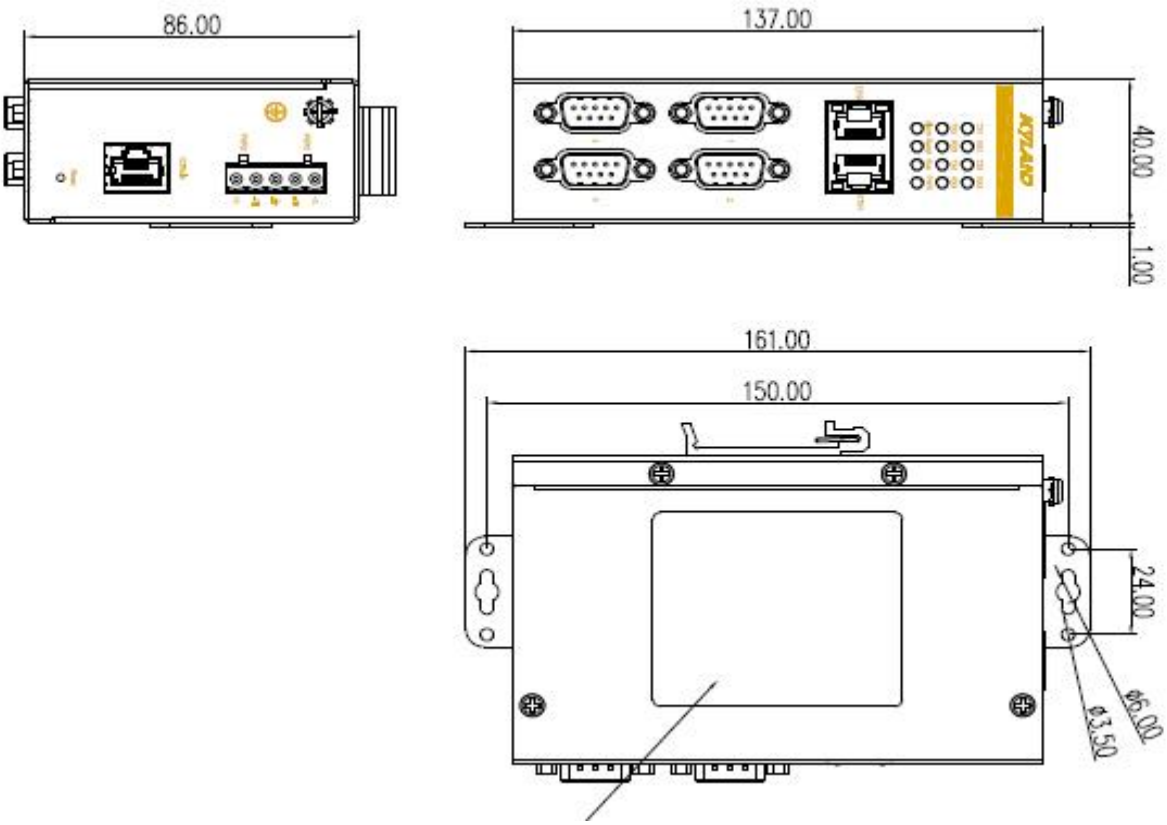


Unit: mm

Figure108 KPS3204AL Dimension Figure

6.2. 5 KPS/KGW3204A-2T4D-232/485/422-L17-L17

Overall dimensions: 137x86x41 mm



Unit: mm

Figure109KPS/KGW3204A-2T4D-232/485/422-L17-L17 Dimension Figure

6.3 Packing List

Product packaging includes the following accessories:

- 1 device (4G gateway device includes 4G antenna)
- Packing list
- Certificate of Conformity

Note: The user manual can be obtained through QR code. If any of the above items are lost or damaged, please contact the sales representative.

6.4 Quality Assurance

Warranty period: 5 years