User Manual of KPS/KGW Series Products

Date of publication: February 2023

Version: V1.3

KYLAND

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Catalog

1 Product Introduction

The product name prefix of KPS/KGW 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;

1.1 Brief

1.1.1KPS/KGW310X&320XA Series

KPS/KGW 310XA-320XA series is an industrial gateway product based on Linux system architecture and ARM9 processor, which is mainly used to connect serial devices to Ethernet, read serial device data through the network and remotely control serial devices.

This series can be divided into RS-232 and RS-485 serial communication modes. RS-485 provides 120Ω 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:

- 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

Figure 1: KPS/KGW 3102A, KPS/KGW3204A and KPS/KGW3208A RS-485 Physical Drawing

1.1.2KPS/KGW3224A Series

KPS3224A/KGW3224A series is an industrial-grade high-performance 24-port rack product based on Linux system architecture and 4-core A53 processor, which is mainly used for the conversion of communication protocols. Through data collection, storage and control, online real-time monitoring and remote control can be realized, and it can be used as the terminal equipment of industrial Internet platform. The equipment can meet the needs 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 to three serial communication modes: RS-232, RS-485 and RS422. The RS-485 serial interface of this series of equipment provides a switchable terminal resistance of 120Ω, 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

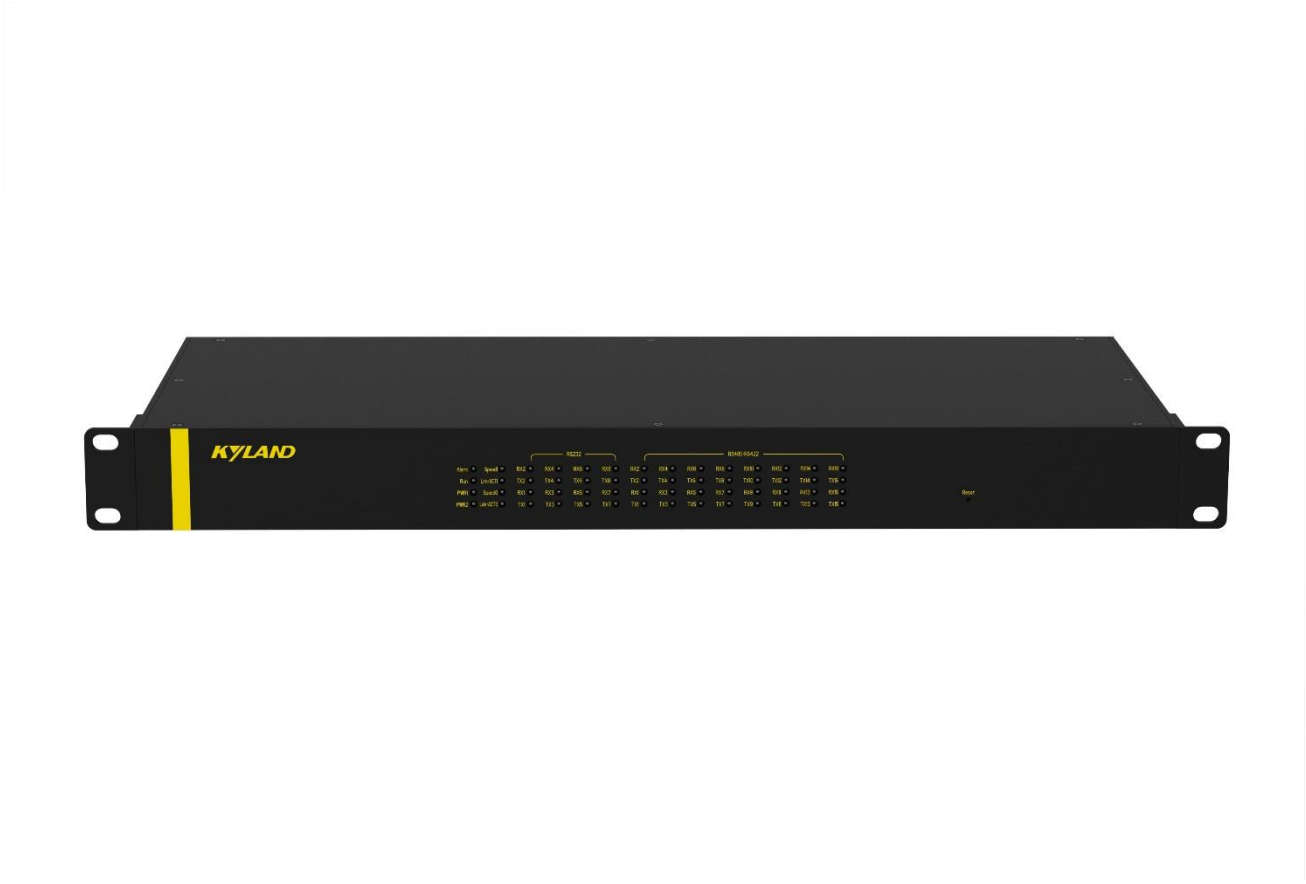


Figure 2: KPS 3224a/KGW 3224a Physical Drawing

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 equipment of industrial Internet platform.

4G wireless gateway can support RS-232, RS-485 and RS-422 serial communication modes. Two Ethernet interfaces and one 4G are provided to meet the requirements of wired and wireless communication. Providing a switchable terminal resistance of 120Ω 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

Figure 3: KGW 3204a-2t4d-232/485-4g-L17 Physical Drawing

1.2 Product Features

Data transmission:	Support Socket operation mode, including TCP Server, TCP Client and UDP.
Transmission protocol:	KPS series supports transparent transmission and Modbus RTU data transmission protocol; KGW series additionally supports Modbus, OPC UA, DNP, IEC101, IEC103, IEC104, IEC61850, DL/T645-1997, DL/T645-2007 and Siemens S7 data transmission protocols, and supports advanced application-script calculation.
Routing:	Support static routing.
Security function:	Support SSH, MAC address binding, user classification, AES\DES\3DES data encryption.
Device management:	Support Web management (HTTP/HTTPS)

	Support KyCMT integrated debugging management tools (equipment search, IP address configuration and other functions) Support KyPMT integrated configuration tool (EDPS protocol engineering configuration) Support ICMP control message Support SNMP v2c Support SNMP Trap Support ARP, DNS, DHCP Client.
Equipment maintenance:	Support upgrading through WEB software. Support FTP, TFTP and Syslog. Support SMTP mail alarm Support device alarm indicator light Support breakpoint reconnection Support telnet management
Clock characteristics:	Support NTPv3 Client.

2 Specification Parameters and Pin Definition

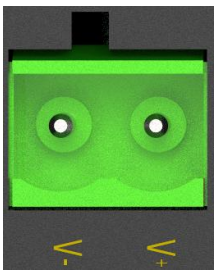
2.1 Power Source Pin

Table 1 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: 1.0W KGW3101A: 2.0W KPS3102A: 1.0W 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	15.0w	√
KGW3204A 4G series	24V DC (12-48V DC)	2-core plug-in type	8.0w	√

KPS/KGW3x0xA series and KGW3204A-4G series use a 2-core plug-in terminal to connect to the power supply. The equipment has anti-reverse connection protection, and the line sequence is subject to the mask screen printing instructions.

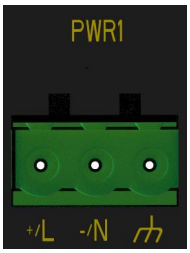
Table 2 Definition of Power Interface



Power	Pin	Description
PWR	V+	Power supply
	V-	Power supply

KPS/KGW3224A series rack serial server uses two 3-core plug-in terminals to connect to the power supply.

Table 3 Definition of Power Interface



Power	Pin	Description
PWR	-/N	Zero curve
	+/L	Live wire
	GND	Earth wire

2.2 Serial Interface

2.2.1 RS-485 terminal resistance

Table 4 Resistance Information

Products	120Ω terminal resistance setting mode
KPS/KGW3x0xA series	DIP switch
KPS/KGW3224A series	WEB page configuration
KGW3204A 4G series	DIP switch

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

DIP switch is set with 120Ω terminal resistance: ID n of DIP switch corresponds to serial port Sn respectively. When dip switch No. N is turned ON, the terminal resistance of Sn serial port is enabled; When dip switch No. N is turned OFF, the terminal resistance of Sn serial port is not enabled; The termination resistor is not enabled by default.

WEB page setting 120Ω terminal resistance: When the serial terminal resistance of the serial server-additional configuration page is set to ON, the terminal resistance of the serial port is enabled;

When set to OFF, the terminal resistance of the serial port is not enabled; The device does not enable the termination resistor by default.

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 type and RS-485 type, and each type of gateway only supports one communication mode of serial interface.

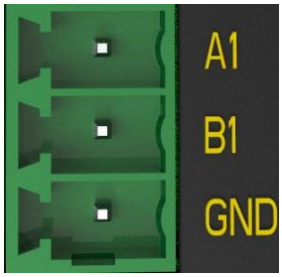


Table 5 Definition of KPS/KGW 3101a Terminal

Pin	Serial number	RS-232	RS-485
GND	S1	GND	GND
B1		RxD	Data-(B)
A1		TxD	Data+(A)

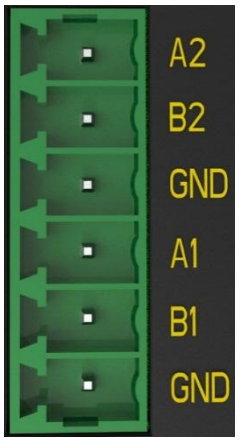


Table 6 Definition of KPS/KGW 3102a Terminal

Pin	Serial number	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)

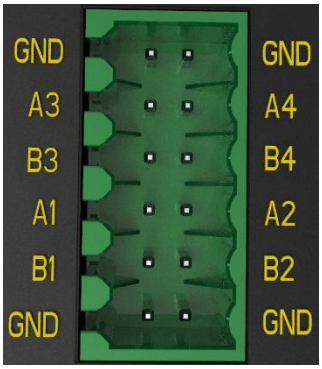
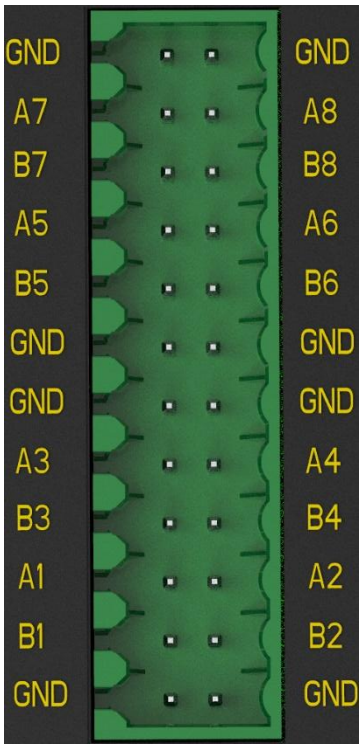


Table 7 Definition ofKPS/KGW 3204a Terminal

Pin	Serial number	RS-232	RS-485
GND	S1	GND	GND
B1		RxD	Data-(B)
A1		TxD	Data+(A)
B3	S3	RxD	Data-(B)
A3		TxD	Data+(A)
GND		GND	GND
GND	S2	GND	GND

B2		RxD	Data-(B)
A2		TxD	Data+(A)
B4	S4	RxD	Data-(B)
A4		TxD	Data+(A)
GND		GND	GND

Table 8 Definition of KPS/KGW 3208a Terminal



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

2.2.2.2 KPS/KGW3224A

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

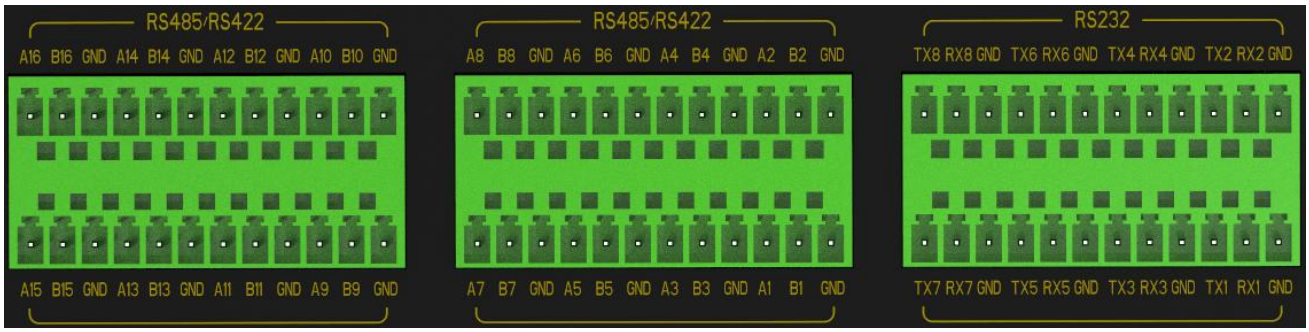


Figure 4 Serial terminal diagram

Table 9 Definition of KPS 3224a/KGW 3224a RS-485 Terminal

Pin	Serial number	RS-232	RS422	RS-485
GND	S1	-	GND	GND
B1		-	TxD1-	B1
A1		-	TxD1+	A1
GND	S3	-	GND	GND
B3		-	TxD2-	B3
A3		-	TxD2+	A3
GND	S5	-	GND	GND
B5		-	TxD3-	B5
A5		-	TxD3+	A5
GND	S7	-	GND	GND
B7		-	TxD4-	B7
A7		-	TxD4+	A7
GND	S2	-	GND	GND
B2		-	RxD1-	B2
A2		-	RxD1+	A2
GND	S4	-	GND	GND
B4		-	RxD2-	B4

A4		-	RxD2+	A4
GND	S6	-	GND	GND
B6		-	RxD3-	B6
A6		-	RxD3+	A6
GND	S8	-	GND	GND
B8		-	RxD4-	B8
A8		-	RxD4+	A8
GND	S9	-	GND	GND
B9		-	TxD5-	B9
A9		-	TxD5+	A9
GND	S11	-	GND	GND
B11		-	TxD6-	B11
A11		-	TxD6+	A11
GND	S13	-	GND	GND
B13		-	TxD7-	B13
A13		-	TxD7+	A13
GND	S15	-	GND	GND
B15		-	TxD8-	B15
A15		-	TxD8+	A15
GND	S10	-	GND	GND
B10		-	RxD5-	B10
A10		-	RxD5+	A10
GND	S12	-	GND	GND
B12		-	RxD6-	B12
A12		-	RxD6+	A12
GND	S14	-	GND	GND
B14		-	RxD7-	B14
A14		-	RxD7+	A14
GND	S16	-	GND	GND
B16		-	RxD8-	B16
A16		-	RxD8+	A16

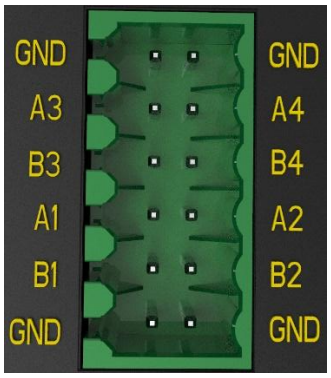
Table 10 Definition of KPS 3224a/KGW 3224a RS-232 Terminal

Pin	Serial number	RS-232	RS422	RS-485
GND	S1	GND	-	-
RX1		Rx1	-	-
TX1		Tx1	-	-
GND	S3	GND	-	-
RX3		Rx3	-	-
TX3		Tx3	-	-
GND	S5	GND	-	-
RX5		Rx5	-	-
TX5		Tx5	-	-
GND	S7	GND	-	-
RX7		Rx7	-	-
TX7		Tx7	-	-
GND	S2	GND	-	-
RX2		Rx2	-	-
TX2		Tx2	-	-
GND	S4	GND	-	-
RX4		Rx4	-	-
TX4		Tx4	-	-
GND	S6	GND	-	-
RX6		Rx6	-	-
TX6		Tx6	-	-
GND	S8	GND	-	-
RX8		Rx8	-	-
TX8		Tx8	-	-

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

The serial ports of this series can be divided into RS-232, RS-485 and RS-422, and each serial port only supports one of the communication modes of serial interfaces. According to the settings of serial port server-serial interface, RS-485 terminal can be configured as RS-422 terminal.

Table 11 Definition of KGW3204a-2t4d-232/485-4g-L17 Terminal



Pin	Serial numbe	RS-485	RS-232	RS-422
GND	S1	GND	-	-
B1		Data-(B)	-	-
A1		Data+(A)	-	-
B3	S3	Data-(B)	RxD	TxD-
A3		Data+(A)	TxD	TxD+
GND		GND	GND	GND
GND	S2	GND	-	-
B2		Data-(B)	-	-
A2		Data+(A)	-	-
B4	S4	Data-(B)	RxD	RxD-
A4		Data+(A)	TxD	RxD+
GND		GND	GND	GND

2.3 Network Port

Table 12 Network Interface Information

Products	Network interface
KPS/KGW3x0xA series	KPS/KGW310XA: 1 10/100Mbps KPS/KGW320XA: 2 10/100Mbps
KPS/KGW3224A series	2 x 10/100Mbps
KGW3204A 4G series	2 x 10/100Mbps

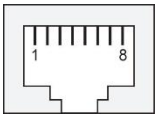
When working normally, you can directly connect the equipment to the network by using the network cable. When initialization and fault detection are needed, it can be directly connected to the PC through the network cable. When the equipment is running, the network port indicator lights up, so it can be judged whether it has been connected to the network and the rate of access to 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 side, 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.

The port pins are defined as follows:

Table 13 Definition of Network Ports



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

2.4 Light emitting diode

Table 14 LED Indicators

LED Indicator light	Color	Description
Reset	Green	Flashing: the Reset button is pressed for more than 3 seconds.
		On: Press the Reset button for less than 3 seconds.
		Off: the Reset button is not pressed.
Power	Green	Always on: the input power supply is connected normally and the equipment is running normally.
		Off: the input power supply is not connected or abnormal.
PWR1	Green	On: power on
		Off: No electricity.
PWR2	Green	On: power on
		Off: No electricity.
Run	Green	Always on: the serial server is starting.
		Flash: The frequency is about once every second, and the system is running normally.
		Flash (no Reset indicator): When the reset key is pressed (for 3-10 seconds), the system will return to the factory settings.
		Off: the main state is abnormal or not powered on.
4G	Green	On: the port has established a valid network connection.
		Flash: There is network activity on the port.
		Off: the port has not established a valid network connection.
Alarm	Green	Flash: The frequency is about 2 times per second, and the system

		crashes or runs abnormally.
		Off: the system is normal
		Always on: KGW series non-agreement project KPS serial port is not started.
Link/ACT	Green	On: the port has established a valid network connection.
		Flash: There is network activity on the port.
		Off: the port has not established a valid network connection.
Speed	Green	On: 100M working state (i.e. 100Base-TX).
		Off: 10M working state (i.e. 10Base-TX)
RJ45 (Link/ACT)	Green	On: the port has established a valid network connection.
		Flash: There is network activity on the port.
		Off: the port has not established a valid network connection.
RJ45 (10/100M)	Yellow	On: 100M working 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 serial number of serial port, such as Tx1 for serial port 1.

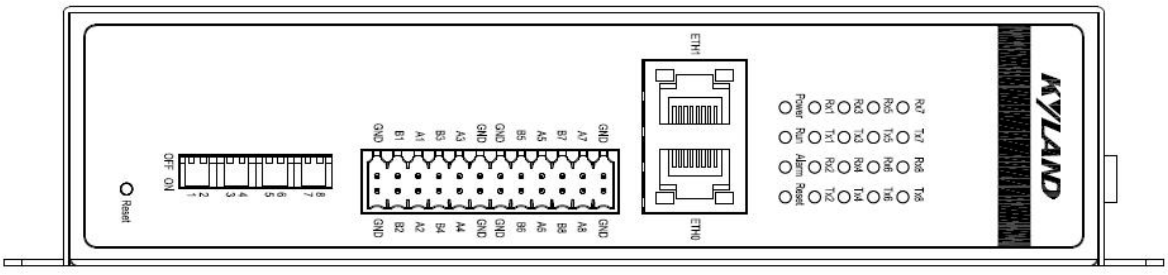


Figure 5 Line Diagram of KPS/kg w3x0xa Series Indicator Panel (taking KPS3208A as an example)

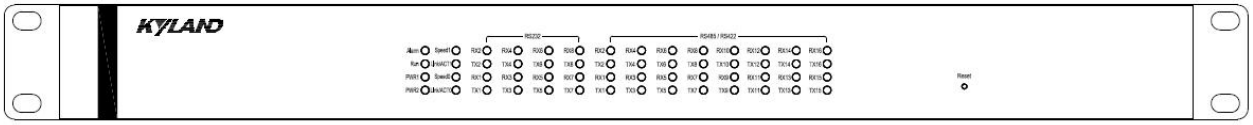


Figure 6 Line Diagram of KPS/kgw3224a Indicator Panel

Note: KPS/KGW3224A series equipment supports configuring RS485 serial port in RS422 mode. When the RS-422 serial port N is enabled, the RX 2n indicator will always be on, indicating that the RS-422 serial port N has been turned on. At this time, RX/TX(2n-1) is the serial port indicator of RS-422 port n.

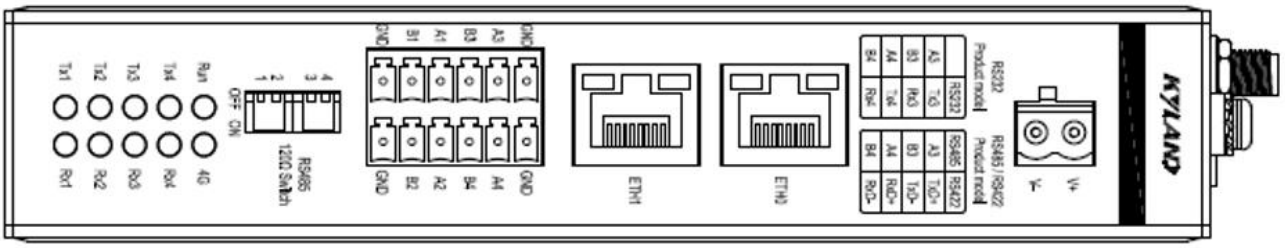


Figure 7 KGW3204A-4G Series Indicator Panel Line Diagram

2.5 Console Interface

Note: Console interface is applicable to KPS/KGW3224A.

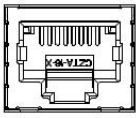


Table 15 Definition of Console Port

Pin	MDI-X signal	MDI signal
2	Tx	Tx
3	Rx	Rx
5	GND	GND
1	to be defined	to be defined
4	to be defined	to be defined
6-8	to be defined	to be defined

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

Table 16 RF Parameters of EC 200a-CN Mini PCLE

Network standard	Frequency band	Max downlink	Max uplink
LTE-FDD	B1/ B3/ B5/ B8	150	50
LTE-TDD	B34/ B38/ B39/B40/ B41	130	30
WCDMA	B1/B5/ B8	384	384

Table 17 Emission Power of EC 200a-CN Mini PCLE

Network standard	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

Table 18 RF Parameters of EG25-G Mini PCLE

Network standard	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

Table 19 Emission Power of EC 200a-CN Mini PCLE

Network standard	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

Table 20 Network Interface Parameters

Products	KPS/KGW3x0xA series	KPS/KGW3224A series	KGW3204A 4G series
Number of network interfaces	one KPS/KGW310XA and two KPS/KGW320XA.	2	2
Rate	10/100Mbps, adaptive	10/100Mbps, adaptive	10/100Mbps, adaptive
Connector	RJ45	RJ45	RJ45
4G	None	None	1 road
ESD	Air 8 kV, contact 6 kV	Air 8 kV, contact 6 kV	Air 8 kV, contact 6 kV

protection	electrostatic protection	electrostatic protection	electrostatic protection
Isolation protection	Built-in 1.5KV	Built-in 1.5KV	Built-in 1.5KV

Note: it is recommended to use shielded wire for network interface wiring to improve anti-interference ability.

3.2 Serial Interface

Table 21 Serial Interface Parameters

product	KPS/KGW3x0xA series	KPS/KGW3224A series	KGW3204A 4G series
Number of serial interfaces	KPS/KGW 3101a: 1 KPS/KGW 3202a: 2 KPS/KGW 3204a: 4 KPS/KGW 3208a: 8.	24	4
Serial port type	RS-232/RS-485 product models are available.	8 RS-232 models and 16 RS-485 models (8 RS-422 models can be configured).	2 RS485, 2 RS232/RS485 or 1 RS422.
Connector	Terminal	Terminal	Terminal
DIP switch	Enable/disable the 120Ω terminal resistance of RS-485 equipment.	No DIP switch, controlled by software	Enable/disable the 120Ω terminal resistance of RS-485 equipment.
EMC	Emc level 3 b	Emc level 4 b	Emc level 4 b
Isolation protection	Built-in 3KV	Built-in 3KV	Built-in 3KV

Note: Shielded wires are recommended for serial interface wiring to improve anti-interference ability.

3.3 Serial Communication Parameters

Table 22 Serial Communication Parameters

Products	KPS/KGW3x0xA series	KPS/KGW3224A series	KGW3204A 4Gseries
data bit	5, 6, 7, 8	5, 6, 7, 8	5, 6, 7, 8
Stop position	1, 2	1, 2	1, 2
Check Digit	None, Even, Odd	None, Even, Odd	None, Even, Odd

Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, Customize (nonstandard baud rate)	110, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, Customize (nonstandard baud rate) **Note: The baud rate of 230400 is only applicable to RS-485 13-16 and RS-422 7-8.**	50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, Customize (nonstandard baud rate)

3.4 Button

Reset: Within 3S of short press, the equipment will be restarted without restoring the factory settings; Long press 3S-10S to restore the factory settings; For more than 10S, do nothing.

3.5 Environmental Conditions

Working temperature:-40℃ ~ 75℃

Storage temperature:-40℃ ~ 85℃

Relative humidity: 5 ~ 95% without condensation.

Cooling mode: natural cooling, no fan.

3.6 Micro SD

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

Support SDIO3.0 standard

3.7 SIM card

KGW3204A-2T4D-232/485-4G-L17 series supports SIM cards.

Micro card: Size 12mm*15mm

Domestic version support: Mobile, Telecom and Unicom.

Global version:

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

Compulsory/conformity certification: GCF (global), CE (Europe), UKCA (United Kingdom), PTCRB (North America), FCC (United States), 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 has a Web management configuration page, which can be opened by browsers such as Chrome and Firefox to set the device.

Note: The following general functional modules are exemplified by KGW3204A, and the specific functional modules are illustrated by corresponding models.

4.1 WEB Login and Password

Connect to the Web console: open a browser and enter the IP address of the device. Default IP address: network port-eth0: 192.168.0.249; Network port-eth1: 192.168.1.249.

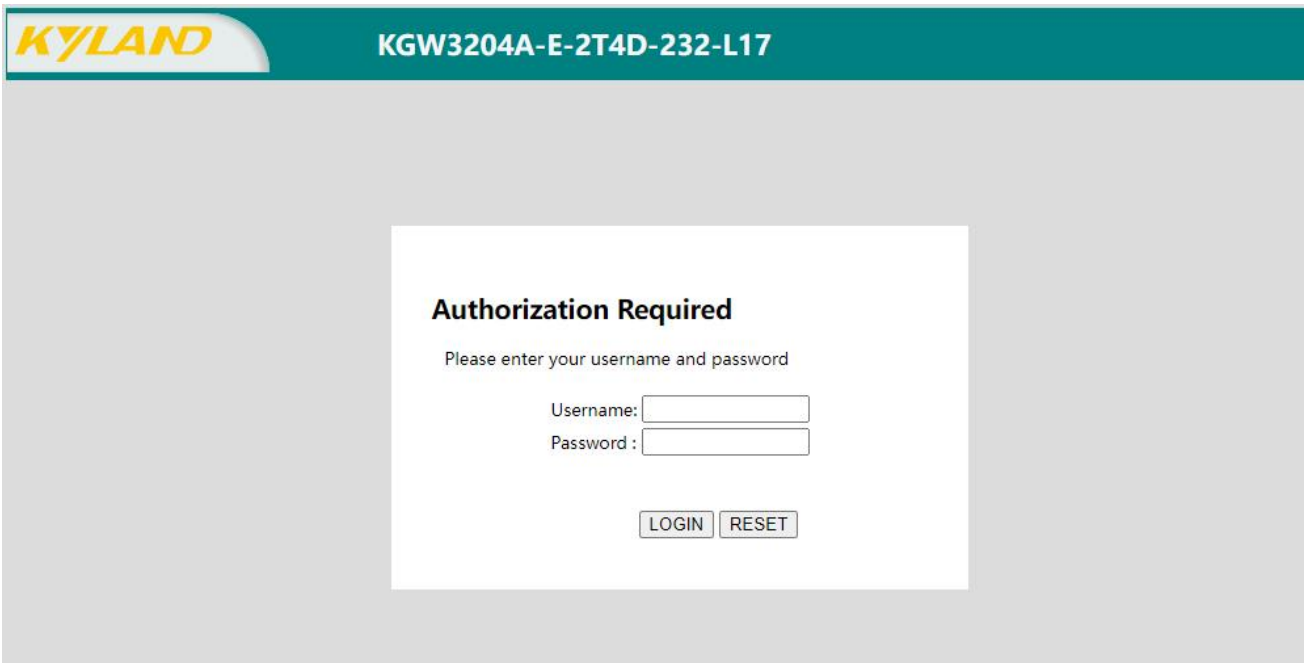


Figure 8 Login Page

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

4.2 Home Page

The homepage interface is used to display equipment information, including serial number, host name, software version, hardware version and equipment time.

Figure 9 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 the running time of the device, MAC address, data received/sent, IP address, etc.

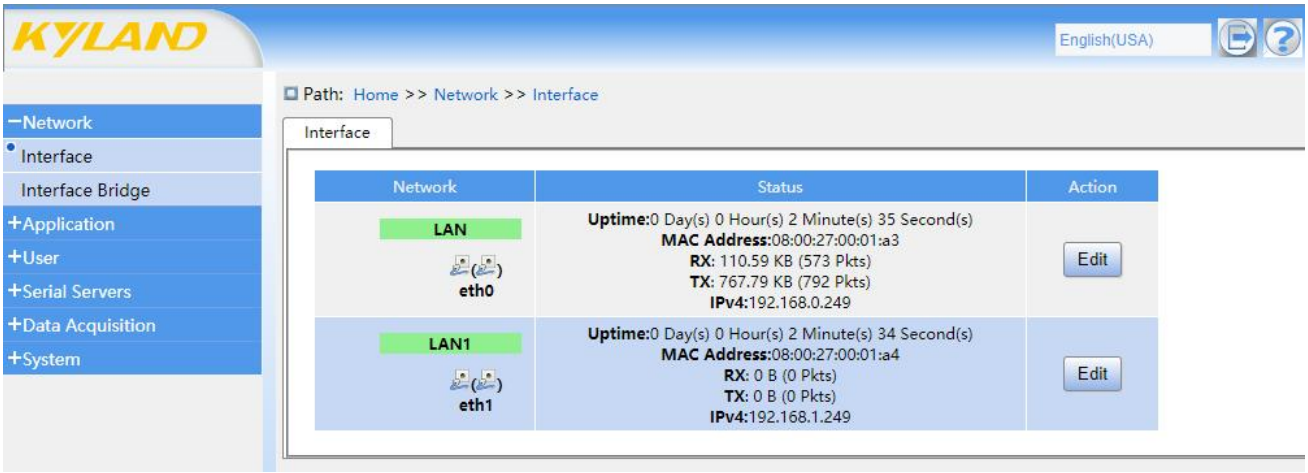


Figure 10 Network Page

After clicking the Network-Interface menu, the "Edit" button appears on the network interface page. Click the "Edit" button to enter the network interface editing interface, where the user can set the IP address, subnet mask, gateway, customized DNS and multi-IP address of the gateway -LAN (eth0) and gateway -LAN1 (eth1). When all parameters are set, click "Apply" and the network function will take effect after automatic restart.

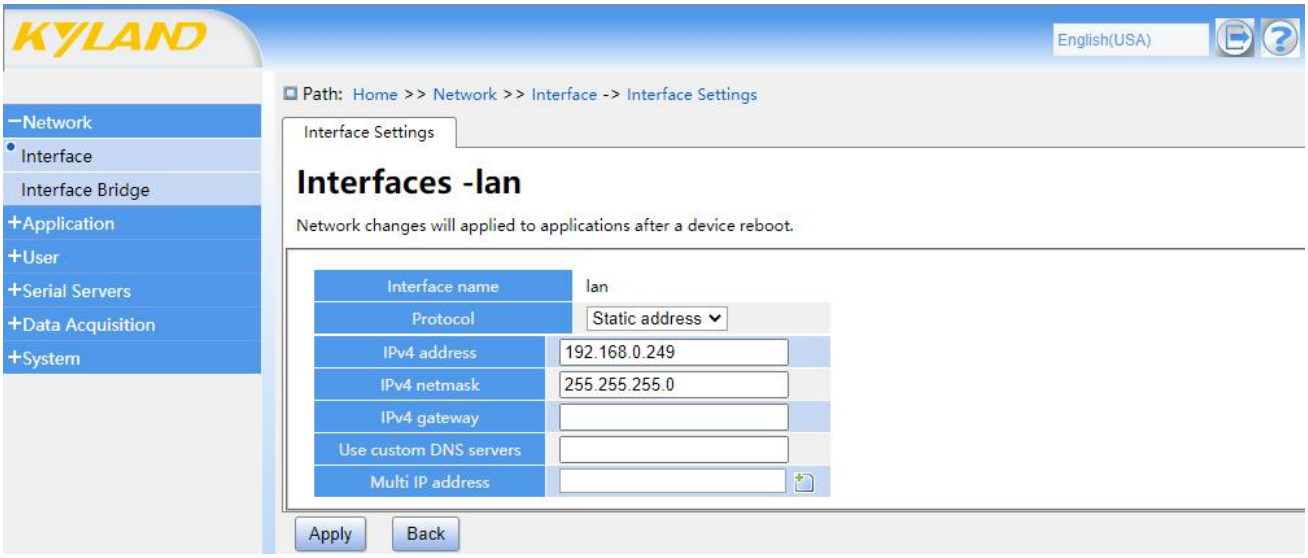


Figure 11. Website Editing Page

Table 23 Editing Parameters of Network Port

Parameter	Value	Description
Protocol	Static address, DHCP client	Select 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 whether the server belongs to a, b or c network.
Default gateway	0.0.0.0	The IP address of the router that provides network access outside the LAN of the device.
Custom DNS	IP address	domain name system
Multiple IP addresses	IP address	You must be in the same network segment as the current network port to add successfully, and you can access the device through the added multi-IP address.

4.3.2 Network port bridging

The network-gateway bridge page is used to display the network parameters related to gateway bridge, including enabling bridge, IPv4 address, IPv4 subnet mask, using customized DNS server, multiple IP addresses, etc.

Network interface bridging is divided into LAN-LAN and LAN-WAN.

LAN-LAN bridging mode. Tick Enable Bridging, tick "Ethernet Adapter eth1", turn on the

bridging function, set the IP address and subnet mask, and click "Apply". The bridge function between the network port -LAN(eth0) and the network port -LAN1(eth1) has been successfully enabled, and both networks can access this equipment or transmit data with this equipment with the set IPv4 address.

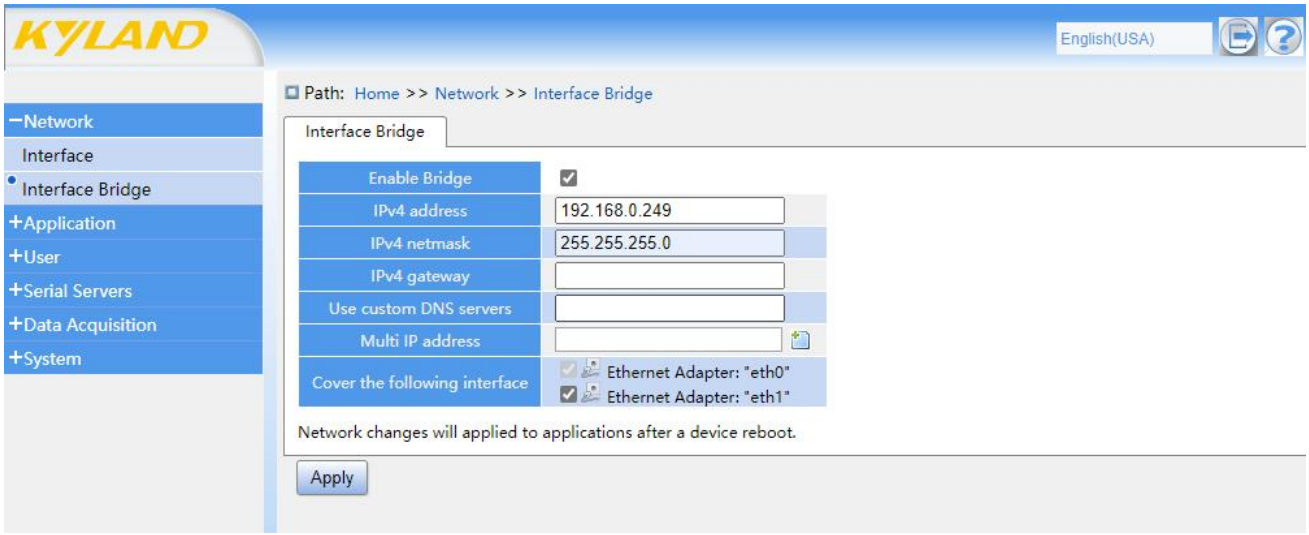


Figure 12 LAN-LAN Gateway Bridge Page

Table 24 LAN-LAN Interface 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, b or c network.
Use a custom DNS server	IP address	Domain name system
Multiple IP addresses	IP address	You must be in the same network segment as the current network port to add successfully, and you can access the device through the added multi-IP address.

Bridge mode of LAN-WAN. Check Enable Bridging, uncheck “Ethernet Adapter eth1”, select the protocol (WAN), set the IP address and subnet mask of the gateway -LAN(eth0) and gateway -WAN (eth1) respectively, and click Apply. The routing function is enabled, and the IP of different network segments can be accessed through the WAN port of this device.

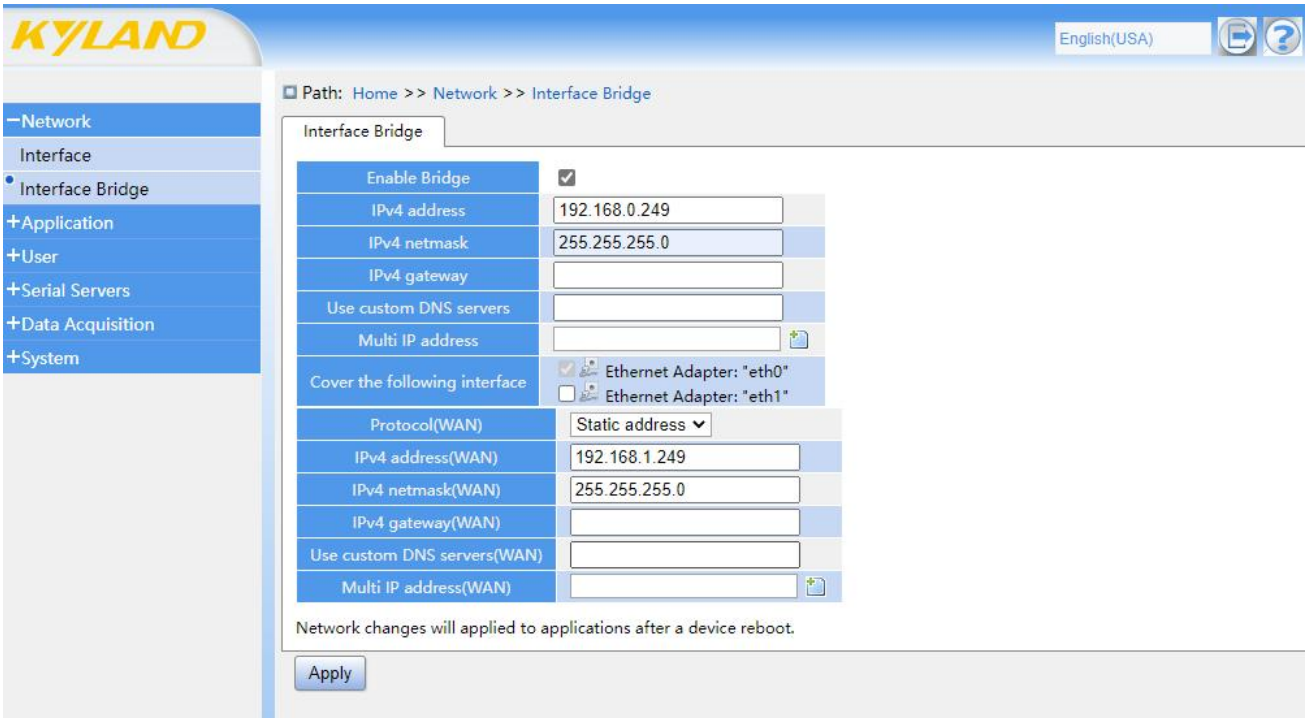


Figure 13 LAN-WAN Interface Bridge Page

Table 25 LAN-WAN Interface Bridging Parameters

Parameter	Value	Description
Protocol	Static address, DHCP client	Select 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, b or c network.
IPv4 gateway	IP address	Default gateway
Use a custom DNS server	IP address	Domain name system
Multiple IP addresses	IP address	The LAN port has multiple IPS, and it must be in the same network segment as the current network port to be added successfully, and the device can be accessed through the added multiple IP addresses.
Multi-IP address (WAN)	IP address	WAN port has multiple IPS, and it must be in the same network segment as the current network port to be added successfully, and the device can be

		accessed through the added multiple IP addresses.

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

4.4 Mobile Network Settings

Note: KGW3204A-2T4D-232/485-4G-L17 unique function module.

4.4.1 Mobile network enabling

The mobile network enabling page is used to display and set relevant parameters of mobile network settings, 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 the 4G network to realize the function of wireless communication. When the access point name, user name and password are correctly filled in, the system will register 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 will register with the default access point name, user name and password.

Note: APN is not required for non-private network.

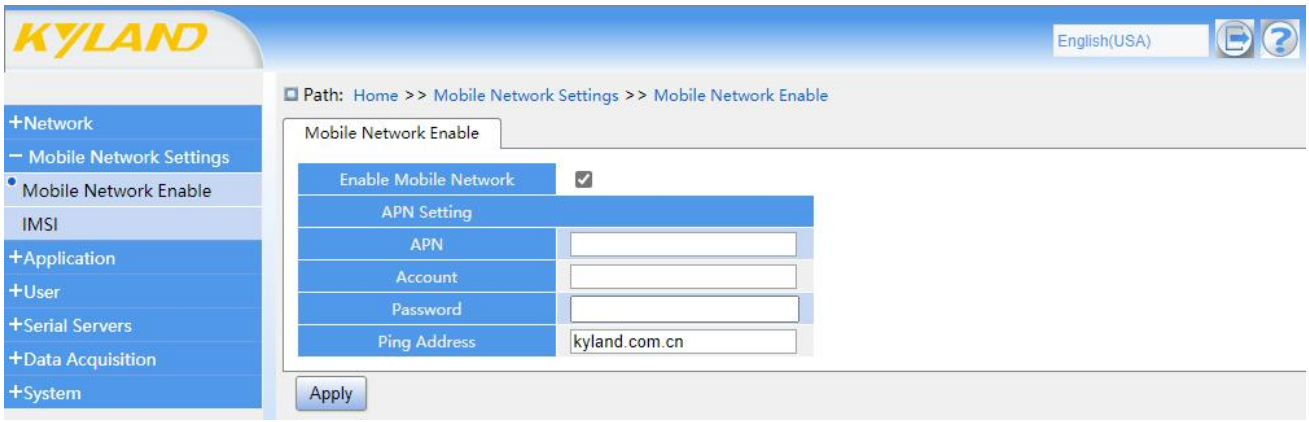


Figure 14 Mobile Network Enabling Page

Table 26 Enabling Parameters of Mobile Network

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 address filled in

		cannot be pinged, the 4G module will be restarted. If this function is not enabled, fill in 127.0.0.1.

4.4.2 IMSI

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

When the mobile network function is enabled, IMEI information, IMSI information and firmware information will be displayed on the IMSI page. 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, IMSI page displays IMEI information and firmware information, and IMSI is displayed as no sim card.

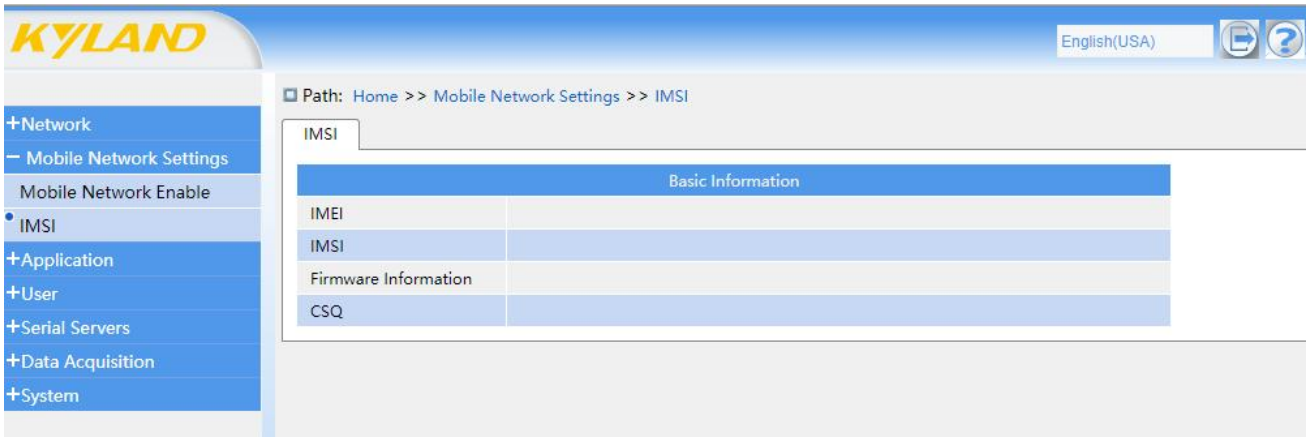


Figure 15 IMSI Page

Table 27 IMSI Parameters

Parameter	Value	Description
IMEI	IMEI information is empty.	Information of 4G module
IMSI	IMSI information is either empty or no sim card.	SIM card information
Firmware information	Firmware information is empty.	4G module firmware
Signal strength	Signal strength and bit error rate	4G signal strength in * *, # # * * It should be between 0 and 31 (99 indicates no signal), and the larger the value, the better the signal quality. # # is the error rate, and the value is between 0 and 99.

		Otherwise, check whether the antenna or SIM card is installed correctly.

4.5 Application

4.5.1 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: manually synchronize the local time to the device, and the synchronized gateway device time is consistent with the local time.

Setting time: manually set the time parameter by year, month, day, hour and minute, and the time of gateway equipment after application is the set time.

Relevant parameters of time synchronization, including NTP client, calibration interval and candidate NTP servers. When the time synchronization function is enabled, the equipment will regularly check the time with NTP server with the time checking interval as the time checking cycle. When multiple NTP servers are set up, if the device fails to correct the time with the first candidate NTP server, the device will automatically correct the time with the second candidate NTP server, and so on.

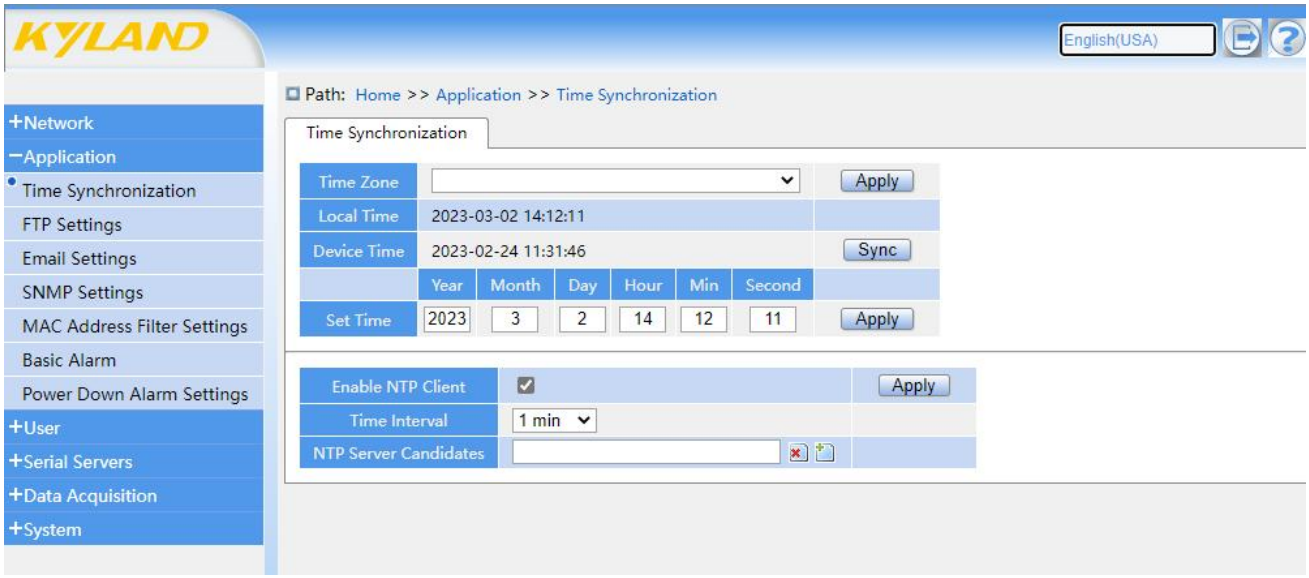


Figure 16 Time Synchronization Page

Table 28 Time Synchronization Parameters

Parameter	Value	Description

Time interval	1min, 5min, 20min	Time correction request interval
Candidate NTP server	Target NTP server	The device sends a time correction request to the NTP server.
Time zone	UTC-12:00~UTC+12:00	World time zone time
Equipment time	Local time	After synchronization, the device time is consistent with the local time.
Set-up time	Month: 1-12, day: 1-31, hour: 0-23, minute: 0-59, and second: 0-59.	Set the time manually

4.5.2 FTP settings

The FTP Settings 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.

Enable the FTP server function, and you can use the device as an FTP server to store and download files.

Note: The file storage space of FTP function of KPS\KGW3224A and KGW3204A-2T4D-232/485-4G-L17 models is the built-in SD card of the device, and the FTP function is not available when the SD card is not inserted.

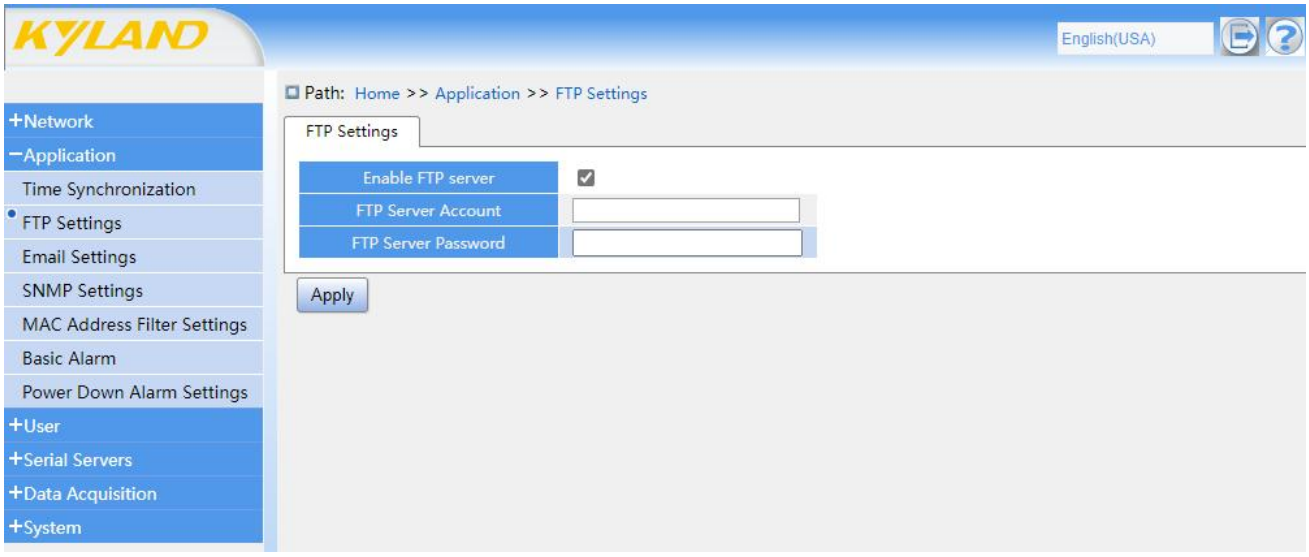


Figure 17 FTP Settings Page

Table 29 FTP Settings Parameters

Parameter	Value	Description

FTP account	Custom (non-root)	User login FTP server account
FTP account password	Customize	Password of user login FTP server

4.5.3 Mail alert settings

The e-mail alarm setting page is used to display the relevant parameters of e-mail alarm setting, including enabling e-mail alarm client, address of e-mail sending server, e-mail account and password of e-mail account, etc.

E-mail alarm setting can regularly send alarm information to the mailbox designated by the user, and the alarm content includes equipment IP, CPU and memory information.

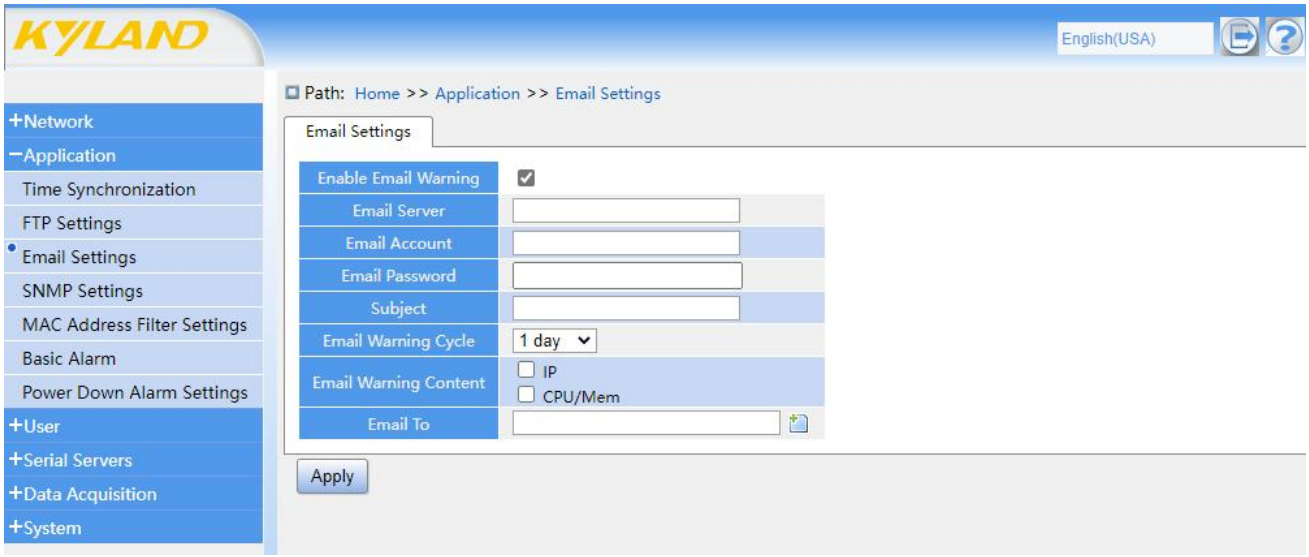


Figure 18 Email Alarm Settings

Table 30 Email Alarm Settings

Parameter	Value	Description
Mail delivery address	Server IP address	Mail alert server address
Mail account	Mailbox account	The login account of the sender of the mail.
Mail account password	Email password	Password of the login account of the mail sender.
Mail theme	Customize	Mail theme
E-mail alert period	1day, 20hour, 20min, 5min, 1min	The interval between mail sending.
Email alert content	Checked/Unchecked	Email alarm content can be checked with IP, CPU/Mem.

Alarm mail receiver	Mailbox account	Mail recipient's mailbox account

4.5.4 SNMP settings

The SNMP Settings page is used to display the related parameters of SNMP settings, including enabling SNMP, service port, community, Trap IP and Trap port.

After successful SNMP setting, you can get the device information, including device time, network information, memory information, etc. At the same time, the device can regularly specify the IP to upload the device information to the user.

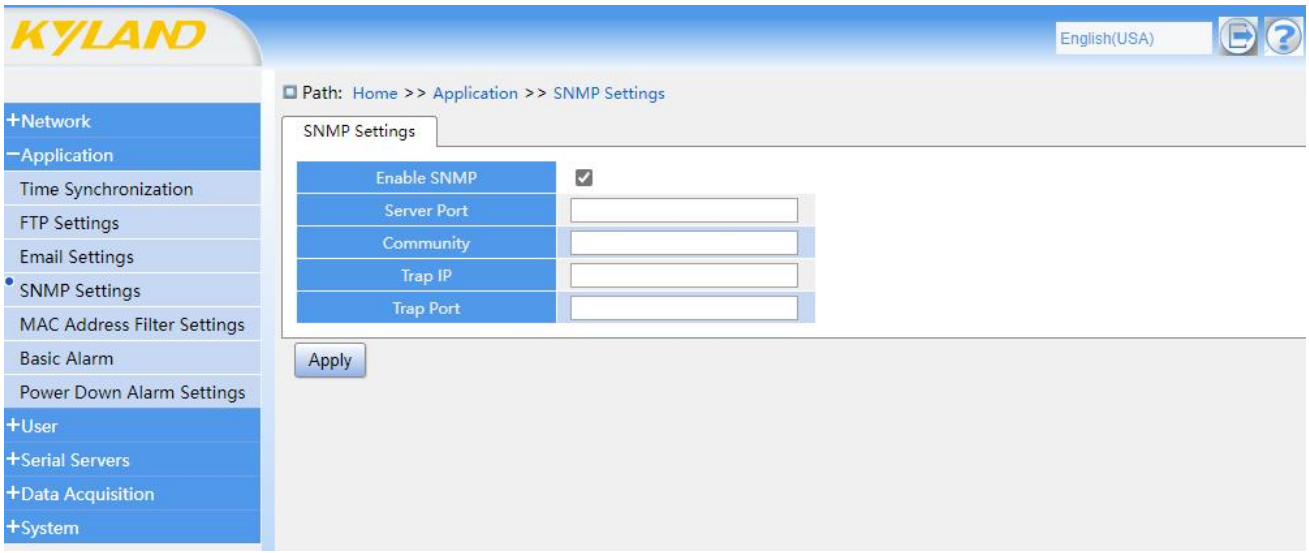


Figure 19 SNMP Settings

Table 31 SNMP Settings

Parameter	Value	Description
Service port	Port number	Port number of the SNMP service of the device.
community	Customize	Community of communication between devices and SNMP protocol
Trap IP	Ip address	The destination IP address of the information uploaded by the device.
Trap port	Port number	The destination port number of information uploaded by the device.

4.5.5 Address filtering settings

The MAC address setting page is used to display relevant parameters of MAC address filtering settings, including enabling MAC address filtering, MAC address filtering mode and MAC address.

The MAC address filtering setting function is used to set the firewall. By setting the white list, only MAC addresses added to the white list are allowed to access this device. By setting the blacklist,

the MAC address added to the blacklist will not be able to access this device.

Note: Please use black/white list carefully. When the wrong setting of black/white list makes it impossible to access this device, press and hold the Reset button to restore the factory settings to reset the black/white list.

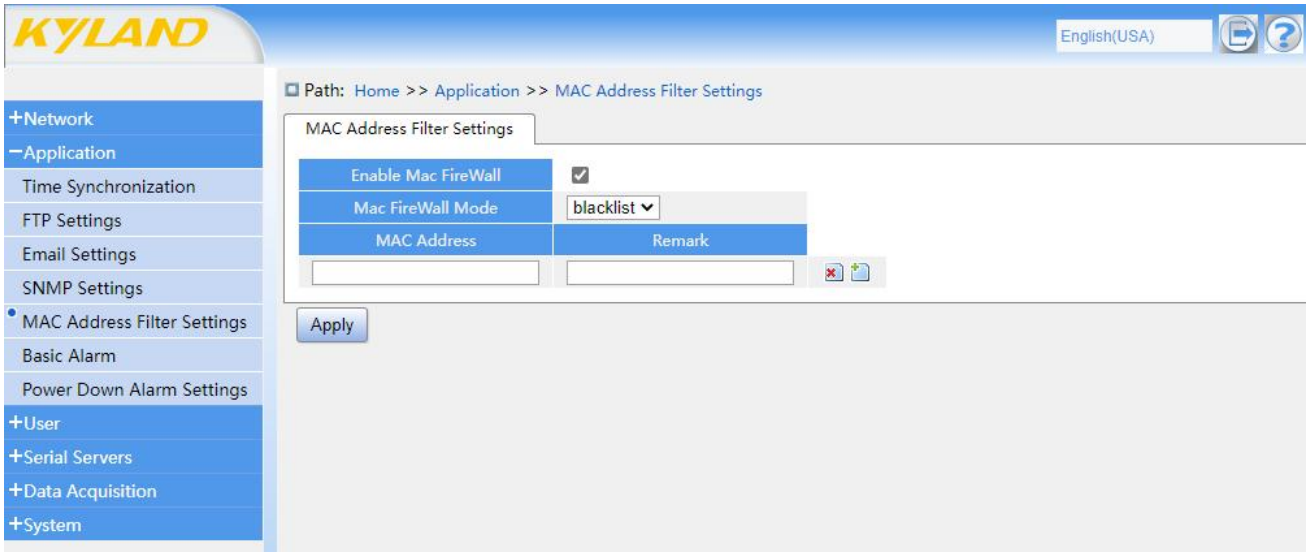


Figure 20 MAC Address Filtering Settings Page

Table 32 MAC Address Filtering Setting Parameters

Parameter	Value	Description
Mac address filtering mode	White list, blacklist	Select white list or black list for filtering mode.
Mac address	Mac address	MAC address to add to the list.

4.5.6 Basic alarm

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

The basic alarm function can be used for users to manage equipment, monitor equipment status and set alarm conditions. When the utilization rate of CPU or memory is higher than the threshold set by users, alarm information will be sent to the designated external server.

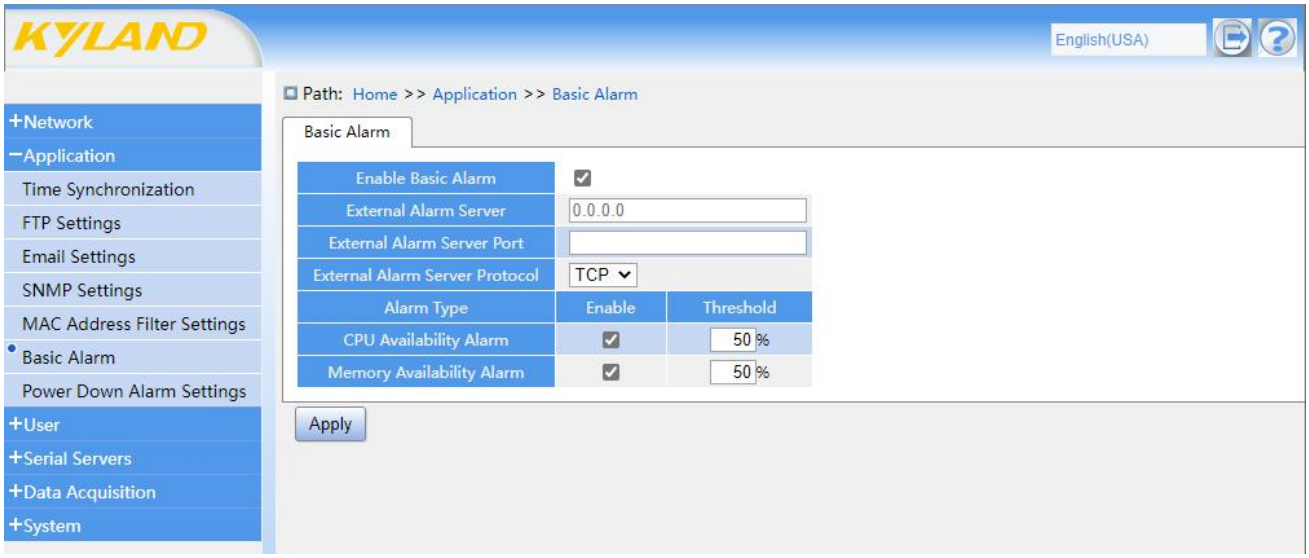


Figure 21 Basic Alarm Settings Page

Table 33 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 and UDP.
Alarm type	Checked/Unchecked	Alarm trigger content and conditions

4.5.7 Power failure alarm setting

The power failure alarm page is used to display the relevant parameters of power failure alarm, including enabling power failure alarm, external alarm protocol, external alarm server and port, and alarm content.

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

Note: Power failure alarm needs to be correctly connected to the power supply.

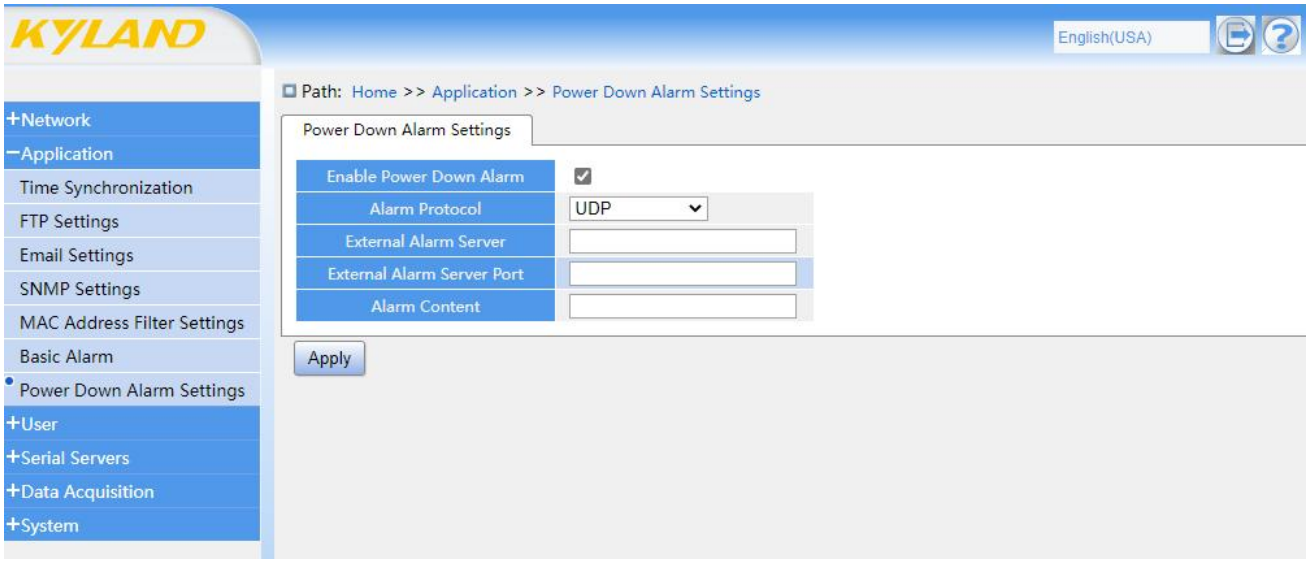


Figure 22 Power Failure Alarm Settings

Table 34 Power Failure Alarm Settings

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 related parameters of user accounts, including user name, password, permission level, etc.

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

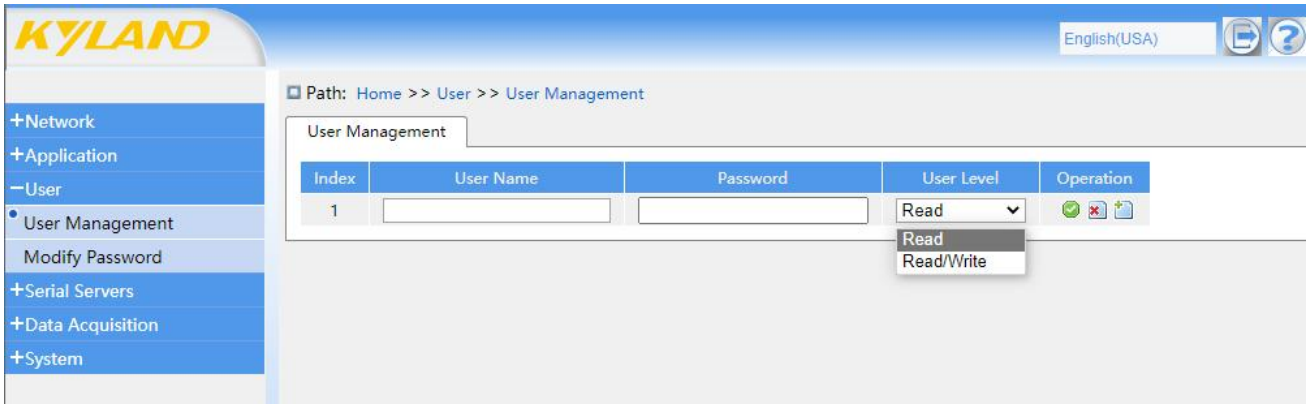


Figure 23 User Management Page

4.6.2 Modify password

User-Modify Password page is used to display relevant parameters of user password, including user name, current password, new password, etc.

On the User-Modify Password page, you can modify the user password. The default user name is admin and the password is pwd4Kyland.

Modify password: enter the current password, enter the new password, enter the new password again for confirmation, and click "Apply" to show that the password is successfully modified. If you forget the administrator password, press and hold the Reset button to restore the factory settings, you can log in to the page with the initial user name admin and password pwd4Kyland.

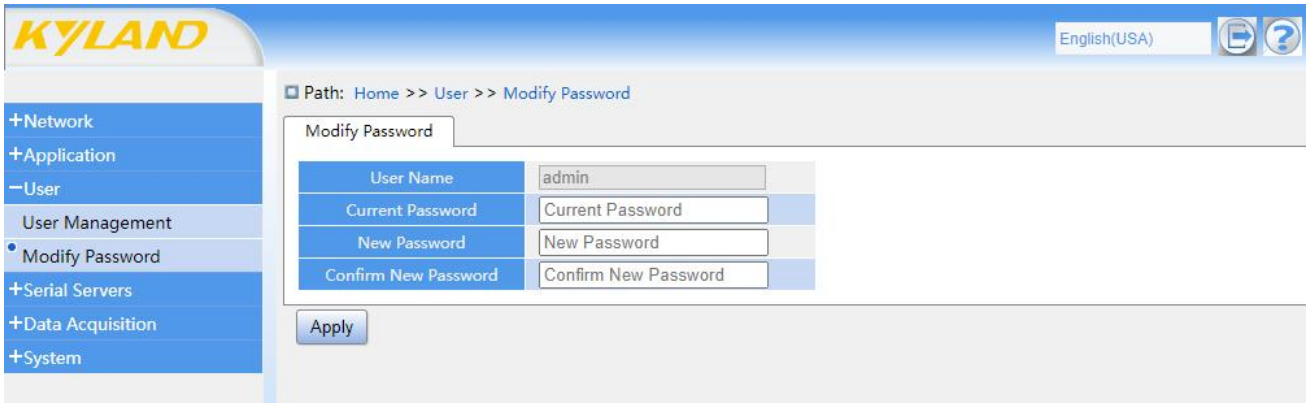


Figure 24 Modify Password Page

4.7 Serial server

4.7.1 Serial interface settings

The serial port setting page can set the relevant parameters of the device, which is used to set baud rate, data bit, parity bit, stop bit, serial port mode, etc. Standard and nonstandard baud rates are supported. Select the existing standard baud rate from the Baud Rate drop-down box. If you need to Customize the nonstandard baud rate, select Customize from 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 parameters are set, click "Apply" and the parameters will take effect immediately. The configuration of serial communication parameters needs to be consistent with the lower computer; The serial port mode can be selected from four modes: TCP Server, TCP Client, UDP Server and UDP Client. Refer to Chapter 4 for the specific configuration method of serial port parameters.

The local port should be configured above 1024 as far as possible to avoid occupying the system port. If the local port number is not filled in in TCP Client and UDP Client modes, the system will automatically assign the port number. The maximum number of sessions represents the maximum number of allowed upper computers to connect to the serial server. Only 8 links are allowed to be established in TCP Server mode, and only 8 newly established session connections are maintained in UDP Server mode.

Note: Serial interface page and protocol project cannot use the same Serial number at the same time. For example, if serial port 1 is set to TCP Server mode, it is necessary to avoid using COM1 port in protocol project.

Transmission modes are Transparent and Modbus RTU.

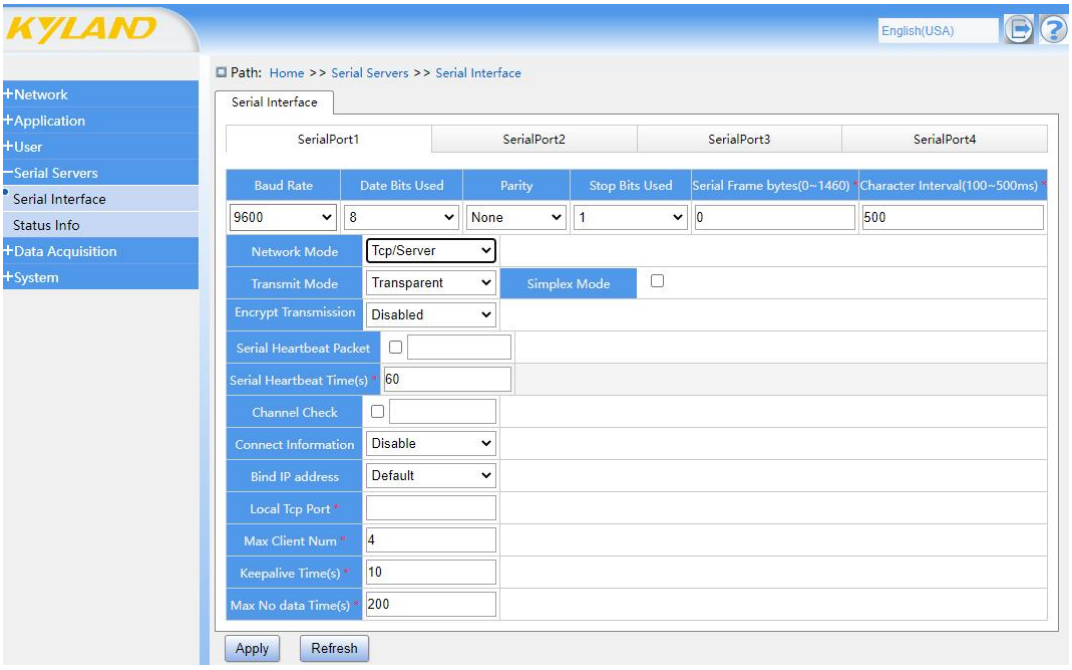


Figure 25 Transparent Transmission Mode TCP Server mode

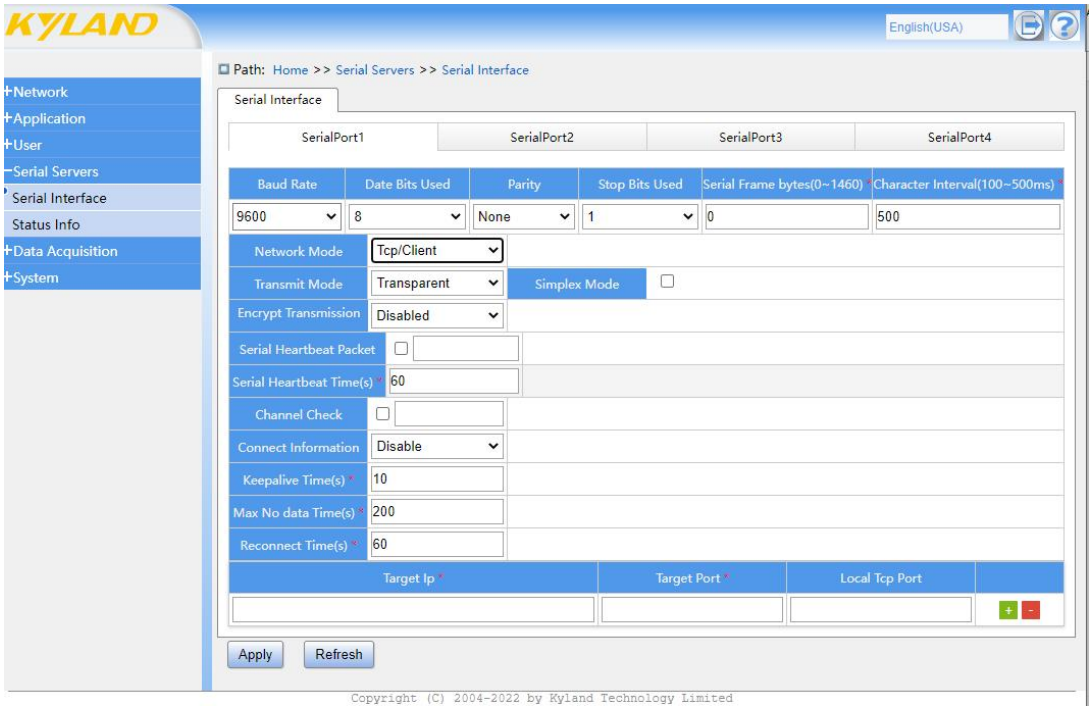


Figure 26 Transparent Transmission Mode TCP Client Mode

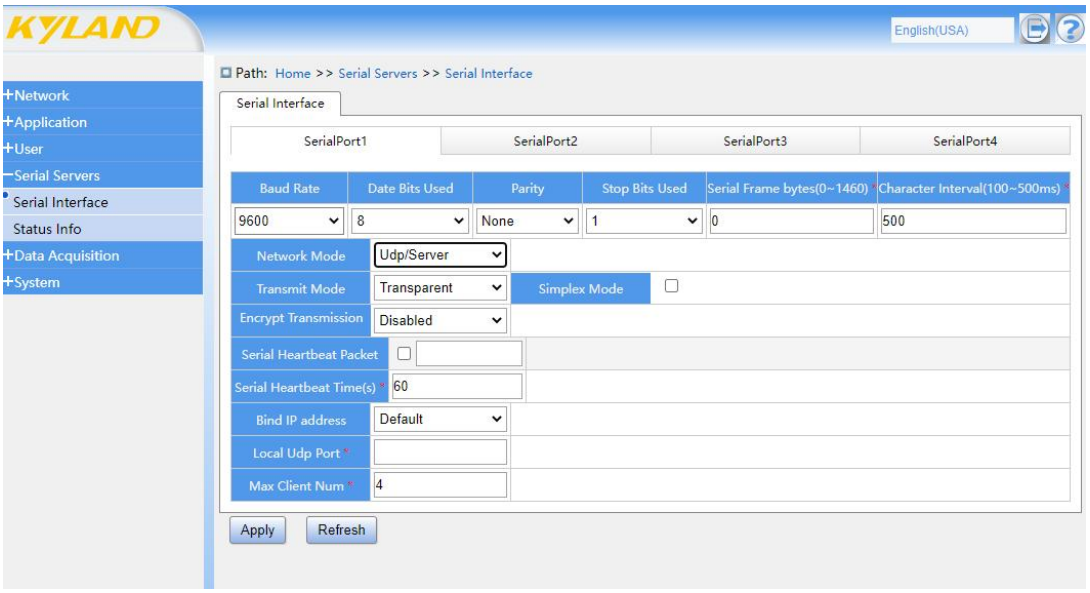


Figure 27 Transparent Transmission Mode UDP Server Mode

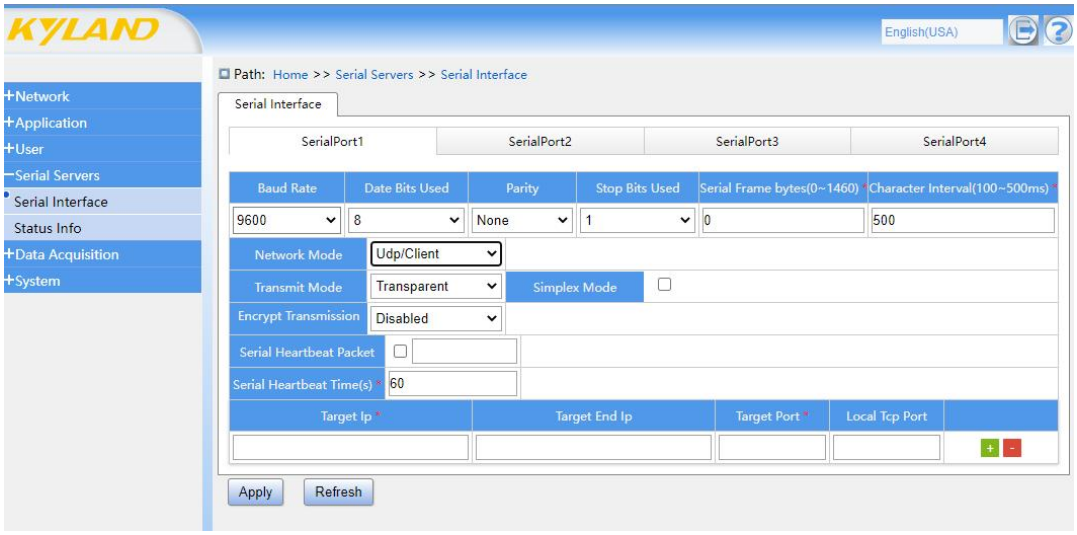


Figure 28 Transparent Transmission Mode UDP Client Mode

Table 35 Transparent Setting Parameters

Parameter	Value	Description
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, Customize(nonstandard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200 and 1800, and only RS-485 13-16 port supports 230400.**	Configuration of baud rate of serial port: 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 nonstandard baud rate, use the following calculation formula to check the error rate. If the error rate is less than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT(33333333/16/n) N=INT(33333333/M/16) error=abs((N-n)/n)
Data bit	5, 6, 7, 8	Configuration of serial data bits
Check Digit	None, Odd, Even	Configuration of serial port parity bit
Stop position	1, 2	Configuration of serial port stop bit

Serial data frame	Unit bytes, the default is 0. Setting range 0-1460 bytes	Not enabled when set to 0; When the setting value is not 0, the maximum length of data sent by the serial port at a time, and when the data received by the network port of the equipment does not exceed this length, wait for the character interval time until the serial port data frame length is reached or exceeds the waiting character interval, and directly send the data; When it exceeds this length, the serial port will split the data and send it in packets.
Character spacing	Unit ms, the default is 500. Setting range is 100-500ms.	When the serial port data frame is not 0, if the data length received by the network port at one time is less than the set value of the serial port data frame, the device waits for the character interval until the serial port data frame length is reached or exceeds the waiting character interval, and the serial port sends data to the outside.
Network mode	TCP/Server, TCP/Client, UDP/Server, UDP/Client	Select the network mode of serial port operation.
Transmission mode	Transparent	Communication mode and transparent transmission mode of serial port data.
Unidirectional data transmission	Checked/Unchecked	Checked: Only the serial port is allowed to send data to the network port. Unchecked: the data of serial port and network port can be transmitted in both directions.
Encrypted transmission	DES, 3DES, AES	Select the encryption method for encrypted transmission.
Encryption mode	ECB, CBC	Select the encryption mode for

		encrypted transmission.
Encrypted filling	PKCS7, Zero	Select the filling form of encrypted transmission.
Key length	128, 192, 256	AES encryption method can choose the key length.
Encryption key	Custom fill-in key	The key length is between 1 and 32 characters.
Encrypted IV	Custom filling	Encryption IV requires input only when encryption mode is CBC.
Serial port heartbeat packet	Checked/Unchecked Customizable information content	Enable the serial port heartbeat packet, and the serial port will regularly send customized information content.
Heartbeat packet interval of serial port	Unit s, the default is 60.	Enable serial port heartbeat packet and send the time period of serial port heartbeat packet.
Channel check (optional)	Not enabled by default Information content is empty.	Before the device communicates, the network side needs to check the information once. Establish communication connection when receiving correct check information; Disconnect as soon as you receive the error check information.
Connection information (optional)	The default is empty. IP information and Device information are optional.	After the communication connection is established, the device network actively sends the device IP address or device name.
Local port (optional)	Port number	Local port numbers of TCP and UDP Client mode can be automatically assigned by the system by default.
Maximum number of sessions	1~8	Maximum number of sessions in Server mode.
Keep-alive interval	Unit: S, the default is 10 s.	When the device has no data communication, the network sends Keep Alive information frames regularly until the device judges that there is no data

		disconnection.
No data disconnection	Unit: S, 200 s by default.	If the set time is exceeded, the communication connection will be disconnected actively when the device has no data communication.
Reconnection time	Unit: S, default is 60s.	In TCP Client mode, the time period for reconnecting devices can reduce the network connection time of TCP Client. If channel check is set, it needs to be checked again after reconnection.
Target IP	Ip address	Target IP address
Destination end IP (optional)	Ip address	In UDP Client mode, the set destination end IP address of the destination IP segment can be used to send serial port information to multiple consecutive UDP Server servers.
Target port	Port number	Target 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 will allocate an idle port number for communication.
Binding network port	eth0, eth1	Select the bound network port (effective only when two network ports belong to the same network segment and have different IP).
Bind an IP address	Primary IP, multi-IP	Select the IP to bind, and multiple different IPS can bind the same port (only in Tcp/Server and Udp/Server modes).

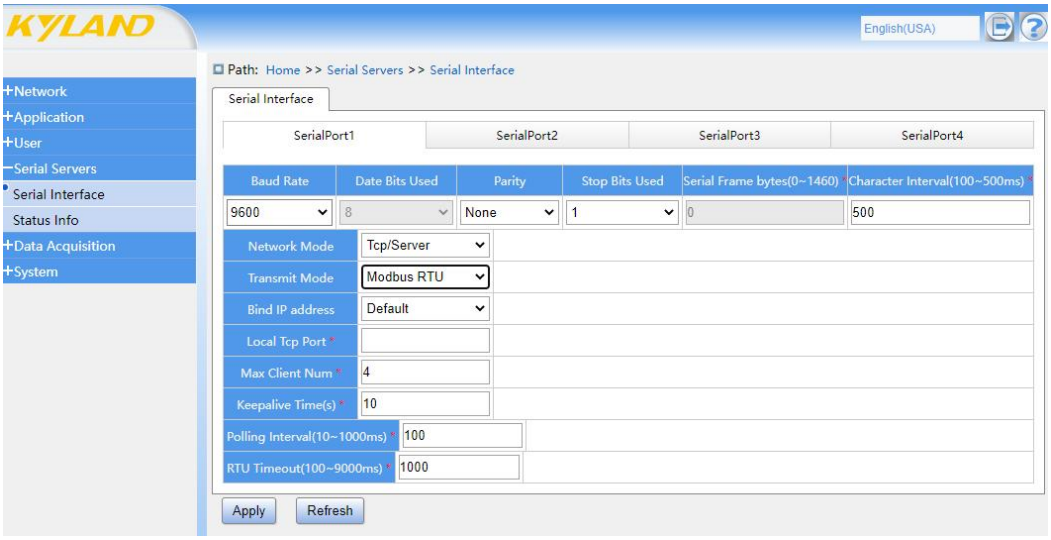


Figure 29 Modbus RTU Transmission Mode TCP Server Mode

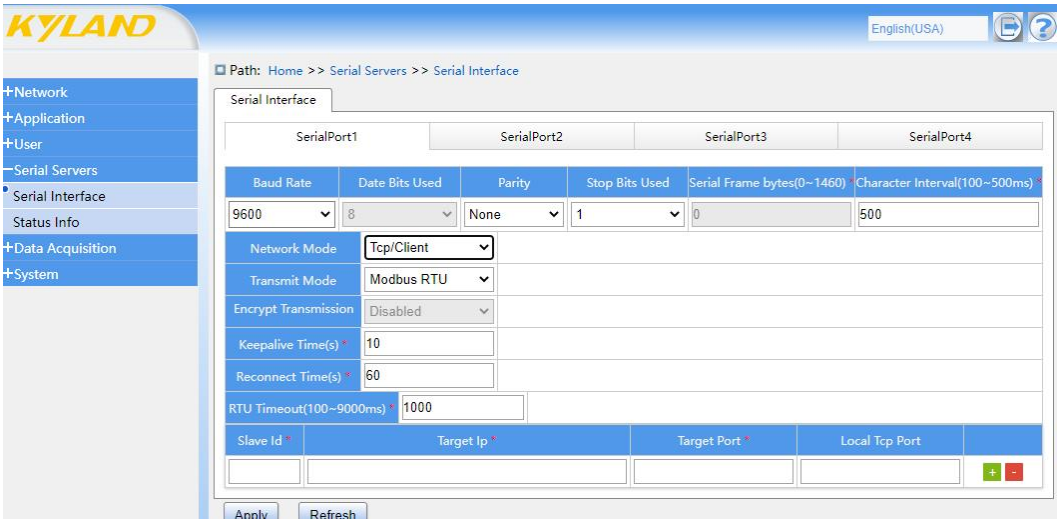


Figure 30 Modbus RTU Transmission Mode TCP Client Mode

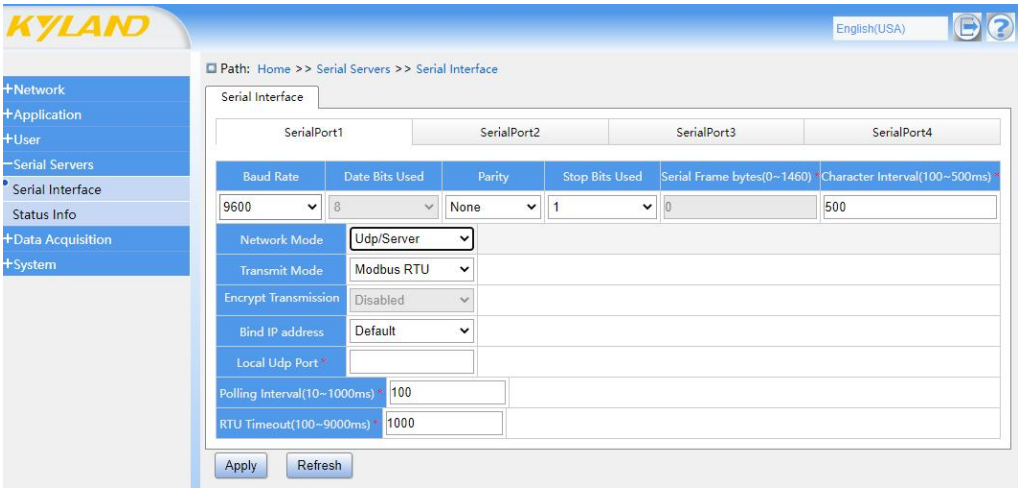


Figure 31 Modbus RTU Transmission Mode UDP Server Mode

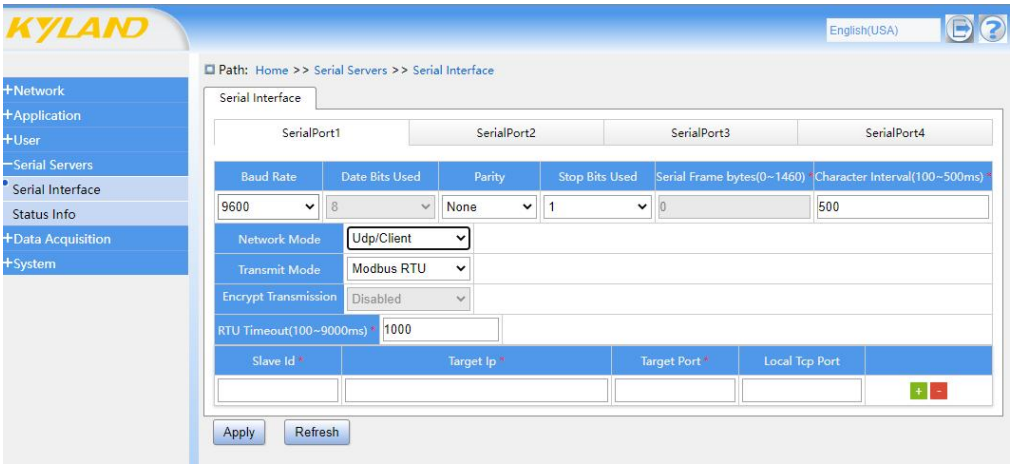


Figure 32 Modbus RTU Transmission Mode UDP Client Mode

Table 36 Modbus RTU Setting Parameters

Parameter	Value	Description
Baud rate	50, 75, 110, 134, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600, 19200, 38400, 57600, 115200, 230400, Customize (nonstandard baud rate) **Note: KPS/KGW3224A model does not support 50, 75, 134, 200 and 1800, and only RS-485 13-16 port supports 230400.**	Configuration of baud rate of serial port: 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 nonstandard baud rate, use the following calculation formula to check the error rate. If the error rate is less than 0.003, configuration is allowed.** Calculation formula: If the baud rate is n, the error rate error is: M=INT(33333333/16/n) N=INT(33333333/M/16) error=abs((N-n)/n)
Data bit	8	Not configurable
Check Digit	None, Odd, Even	Configuration of serial port parity bit
Stop position	1, 2	Configuration of serial port stop bit
Serial data frame	Unit bytes, the default is 0.	Not configurable

Character spacing	Unit ms, the default is 500. Setting range is 100-500ms.	Not effective
Network mode	TCP/Server, TCP/Client, UDP/Server, UDP/Client	Select the network mode of serial port operation.
Transmission mode	Modbus RTU	Communication mode of serial port data, Modbus RTU mode.
Local port (optional)	Port number	Local port numbers of TCP and UDP Client mode can be automatically assigned by the system by default.
Maximum number of sessions	1~8	Maximum number of sessions in Server mode.
Keep-alive interval	Unit: S, the default is 10 s.	When the device has no data communication, the network sends Keep Alive information frames regularly until the device judges that there is no data disconnection.
Reconnection time	Unit: S, default is 60s.	In TCP Client mode, the time period for reconnecting devices can reduce the network connection time of TCP Client. If channel check is set, it needs to be checked again after reconnection.
Target IP	Ip address	Target IP address
Target port	Port number	Target 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 will allocate an idle port number for communication.
Binding network port	eth0, eth1	Select the bound network port (effective only when two network ports belong to the same network segment and have

		different IP).
Slave Id	1-255	Slave Id value of TCP and UDP Client, that is, slave station 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 time requested by the upper computer is greater than the set value, the value setting is invalid.
RTU timeout	100-9000ms	The upper computer sends a request message, and if the lower computer fails to reply after the set time, the serial server will send a timeout message to the upper computer. This value needs to be less than the timeout set by the upper computer.
Bind an IP address	Primary IP, multi-IP	Select the IP to bind, and multiple different IPS can bind the same port (only in Tcp/Server and Udp/Server modes).

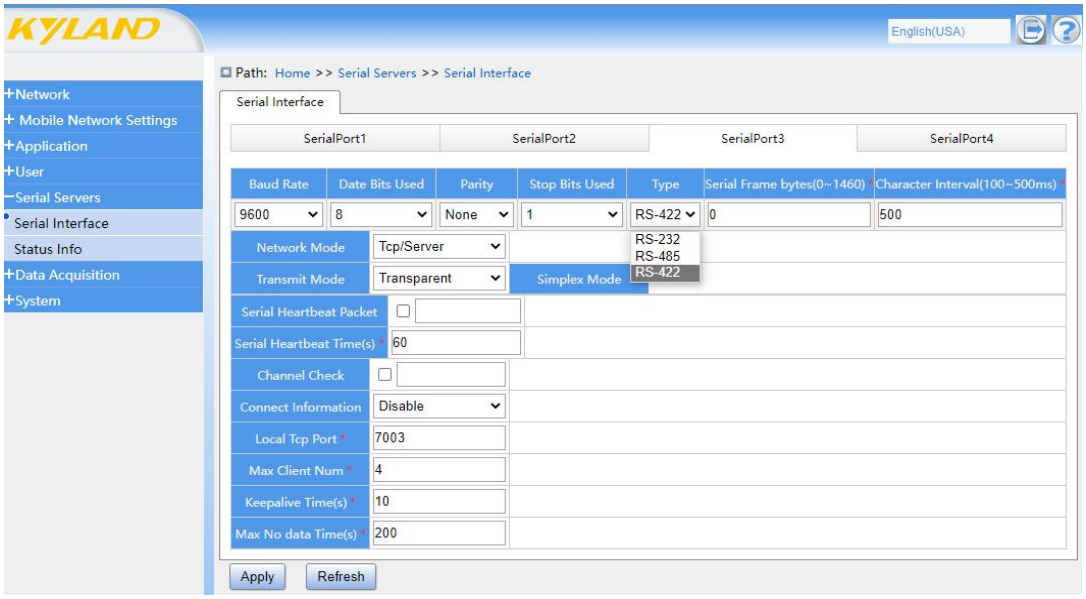


Figure 33 Serial Ports 3 and 4 Configured as RS-422.

Note: Serial ports 1-2 of KGW3204A-2T4D-232/485-4G-L17 series products are fixed as RS-485, and serial ports 3-4 are fixed as RS-232 or RS-485 when they leave the factory, and cannot be changed after leaving the factory. If the serial port 3-4 is set as RS-485 in the factory, two RS-485s can be configured as one RS-422 on the serial port server-serial interface setting page.

Table 37 Serial Port Type Parameters

Parameter	Value	Description
Type	RS-232\RS-485\RS-422	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 it will not take effect when the type is RS-232.

4.7.2 Status messages

The status information page is used to record the running information of the serial port of the equipment, including the sending and receiving information of the serial port and the connection information of the TCP transmission mode, and can be used to observe the connection status of the serial port of the equipment.

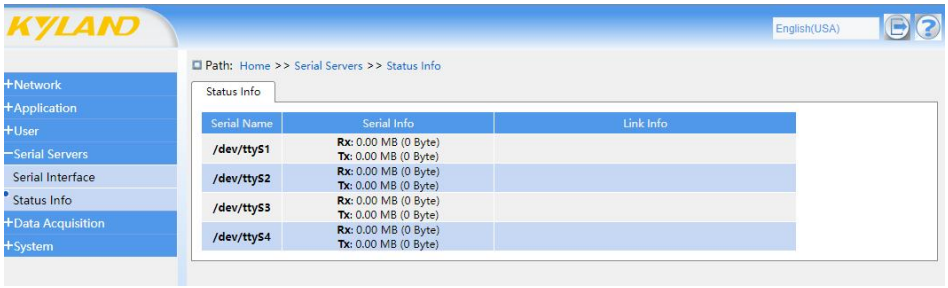


Figure 37 Status Information Mode

4.7.3 Extra configuration

Note: KPS/KGW3224A unique function module.

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

RS-485 120Ω configuration

By default, the 120Ω resistor is not enabled for RS-485 serial port. When port N and port n+1 are set to on on the page, the 120Ω resistor is enabled for two consecutive 485 ports. When the page setting port n and port n+1 are off, the 120Ω resistor is disabled for two consecutive 485 ports.

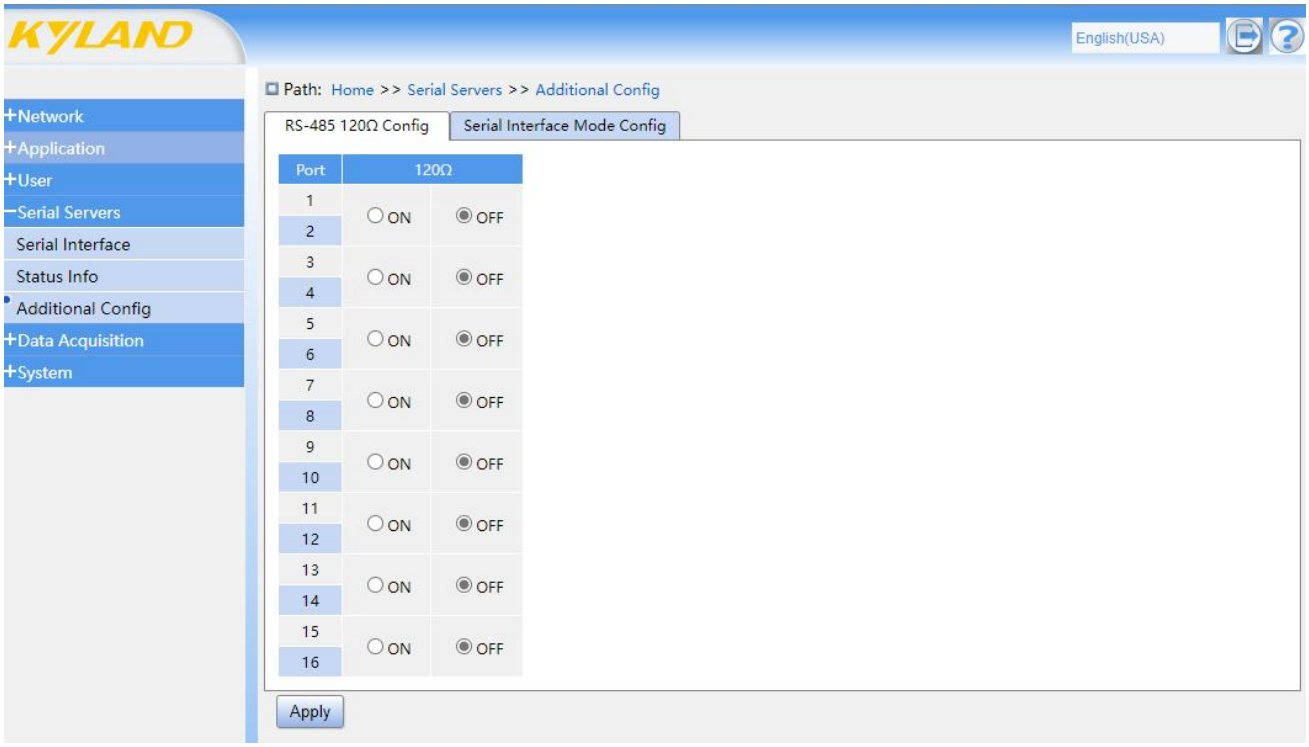


Figure 35 RS-485 120Ω Configuration

Serial port mode configuration

By default, the RS-485 serial port is RS485 mode. When the page sets port n as enabled, two consecutive RS485 ports 2n-1 and 2n are enabled as RS422 mode. When the page setting port n is not enabled, two consecutive ports 2n-1 and 2n are in RS485 mode.

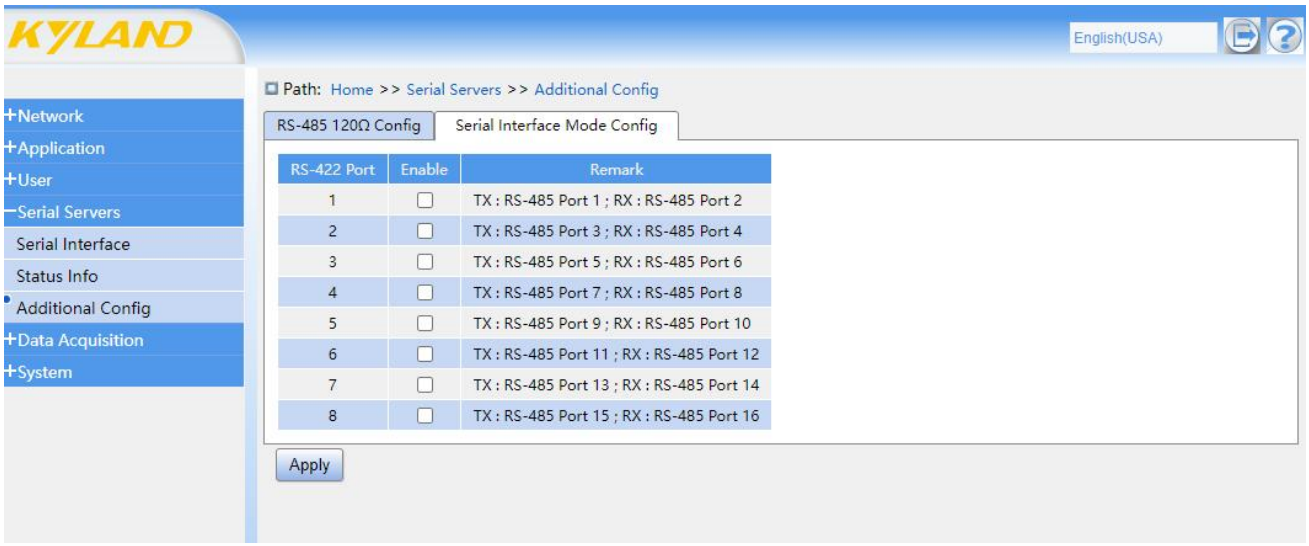


Figure 36 Serial Port Mode Configuration

4.8 Data acquisition

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

Note: this page will only be displayed for KGW310XA, KGW320XA, KGW3224A and KGW3204A-4G series products.

4.8.1 Overview of protocol configuration

The protocol configuration overview page is mainly used to display and set the configuration information related to device communication protocols, including three parts: running project configuration, protocol engineering list and protocol driver list.

Run project configuration

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

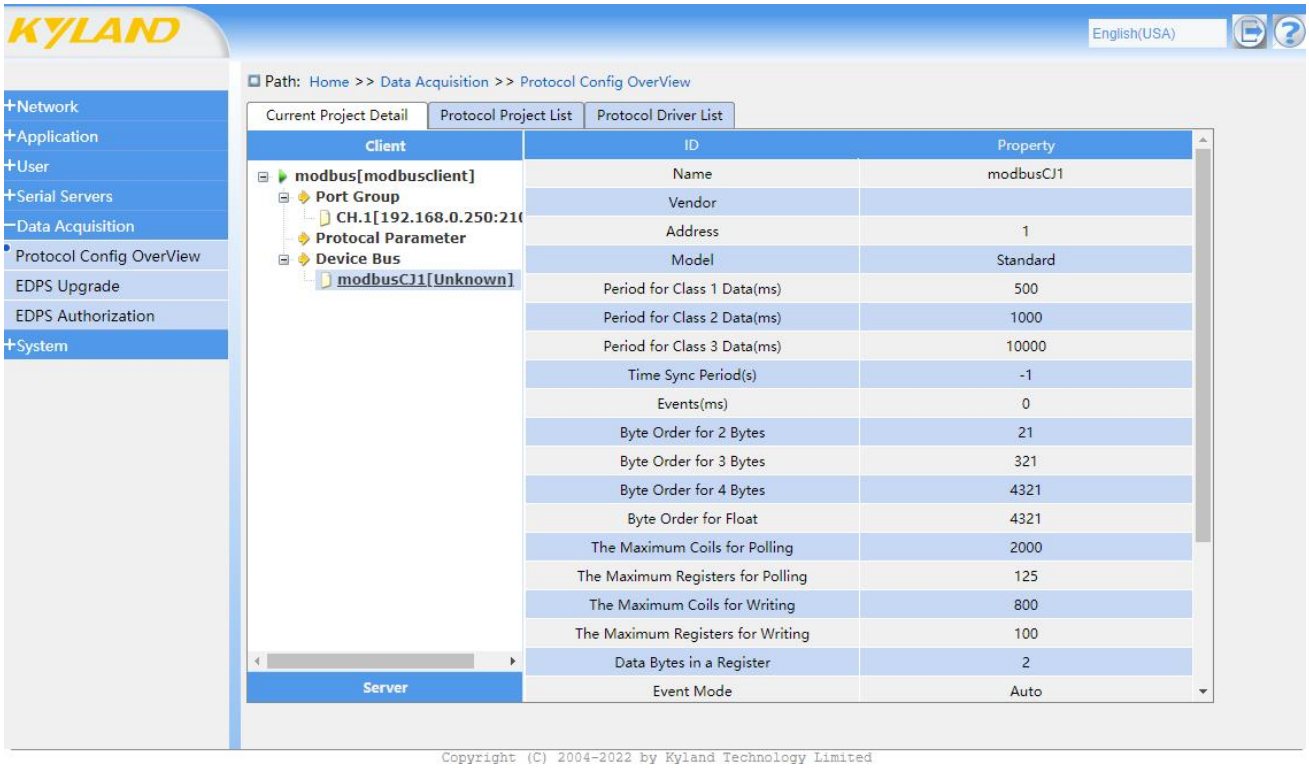


Figure 37 Running Project Configuration

Protocol engineering list

In the list of protocol projects, you can view and manage protocol projects, and enable, download, delete and import them.

The project displayed in the protocol project list is called the downloaded protocol project in the equipment.

After downloading the protocol project, click the "Enable" button, and the page shows that the operation is successful. The enabling box of the protocol project is in a checked state, and the current protocol project is activated and immediately runs. Only one protocol project can be enabled, and multiple protocol projects cannot be enabled 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 list of protocol projects, click the "Delete" button of the inactive protocol project, and click "Confirm" to delete the project. The page shows that the operation is successful and the protocol project will be deleted from the equipment. In order to ensure the normal operation of equipment functions, it is not allowed to delete the enabled protocol projects in the equipment.

Click "Browse" button, select the path of the protocol project file stored in the local computer, and then click "Import" button to import the selected protocol project into the protocol gateway and start running immediately.

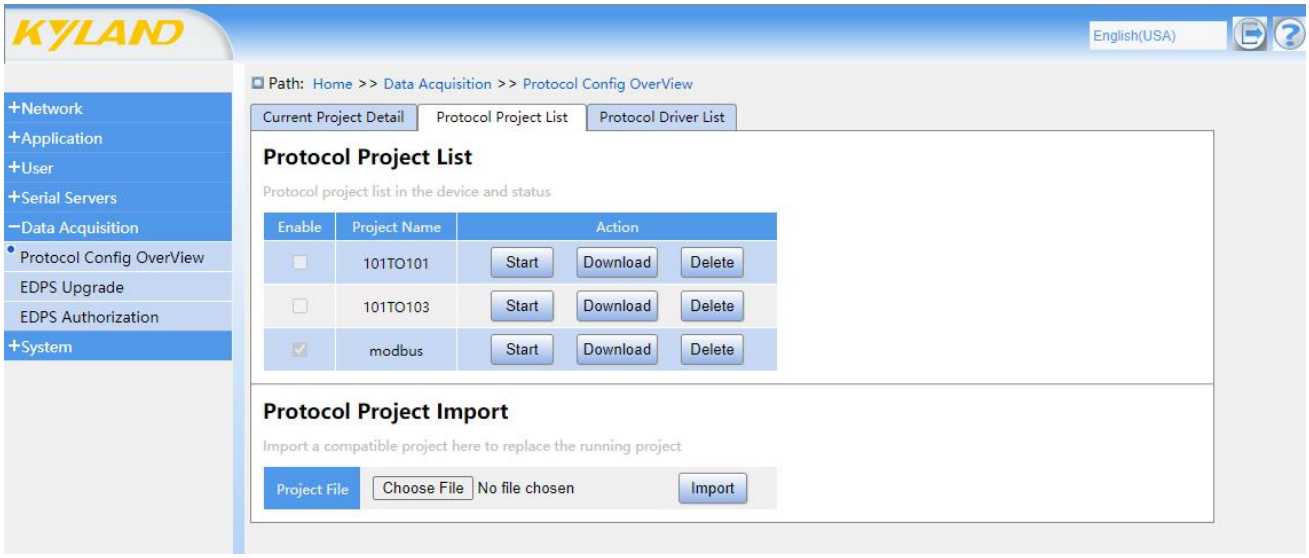


Figure 38 Protocol Engineering List

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.

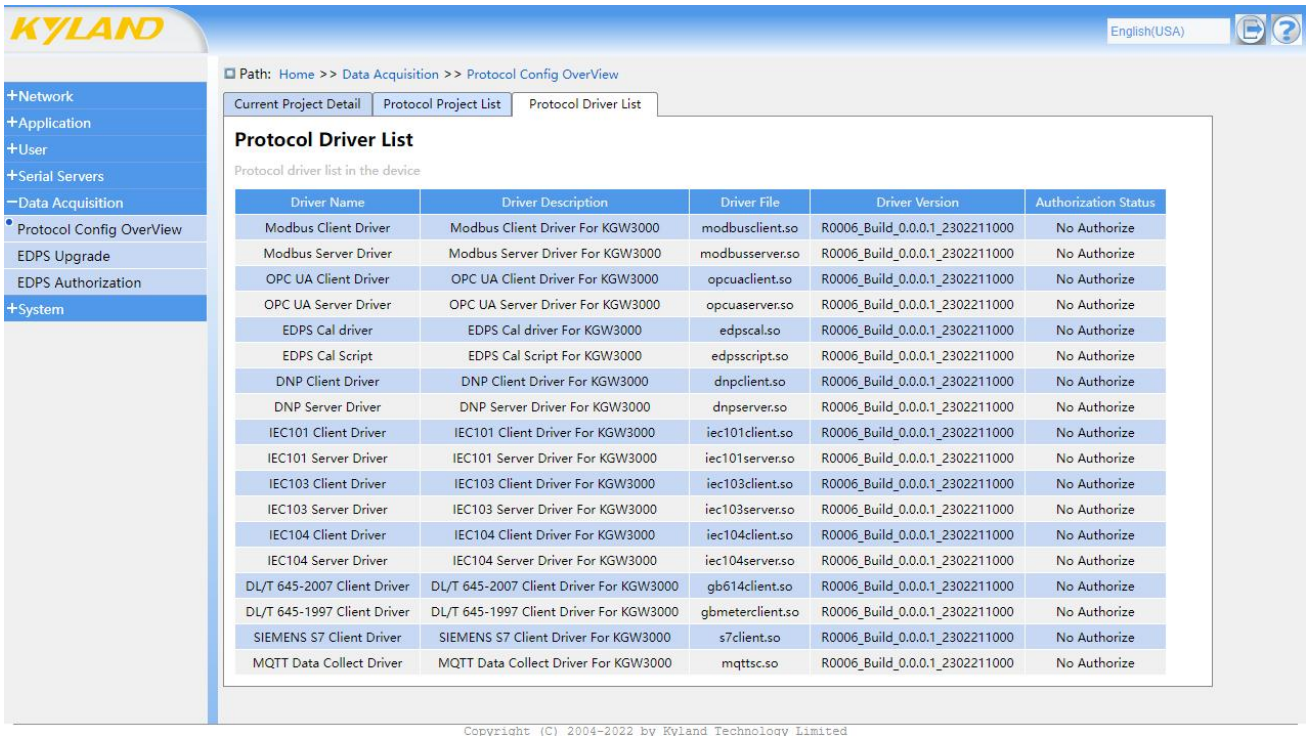


Figure 39 Protocol Driver List

4.8.2 EDPS upgrade

The 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 EDPS of the webpage. When the page shows that the upgrade is successful, the

device EDPS function is successfully updated and upgraded.

The EDPS upgrade function does not affect the existing protocol engineering files in the equipment and the authorization of EDPS.

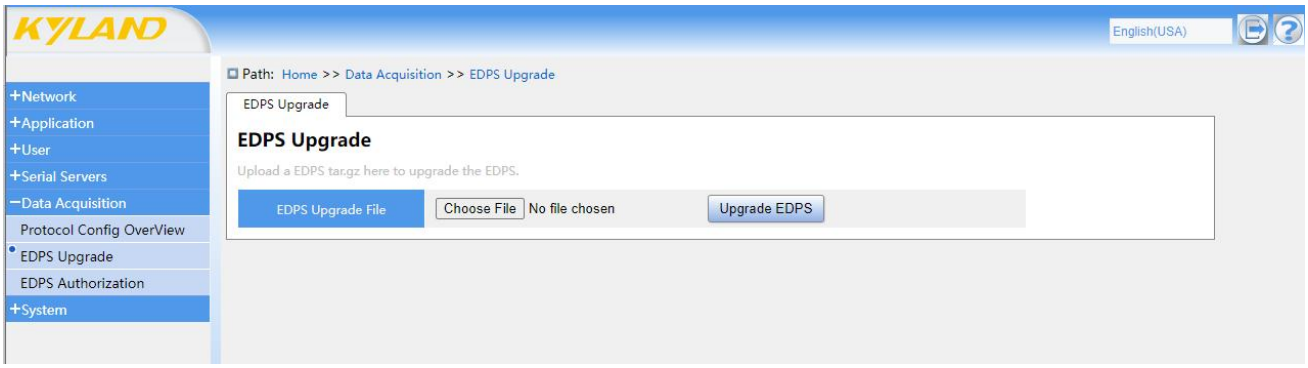


Figure 40 EDPS Upgrade

4.8.3 EDPS authorization

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

Click the "Export" button to export the machine code file to the local computer. Then, submit the machine code file 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 display operation is successful, the EDPS authorization of the device is successful.

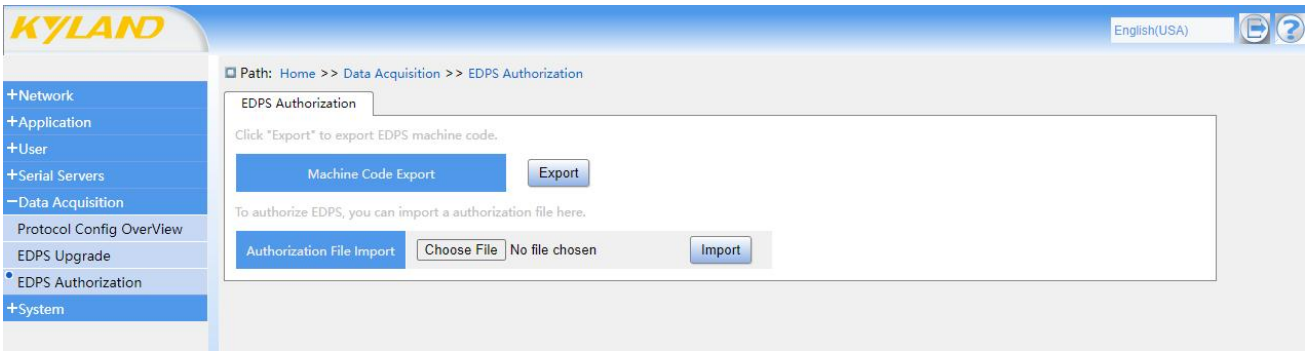


Figure 41 EDPS Authorization

4.9 System

4.9.1 Log

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

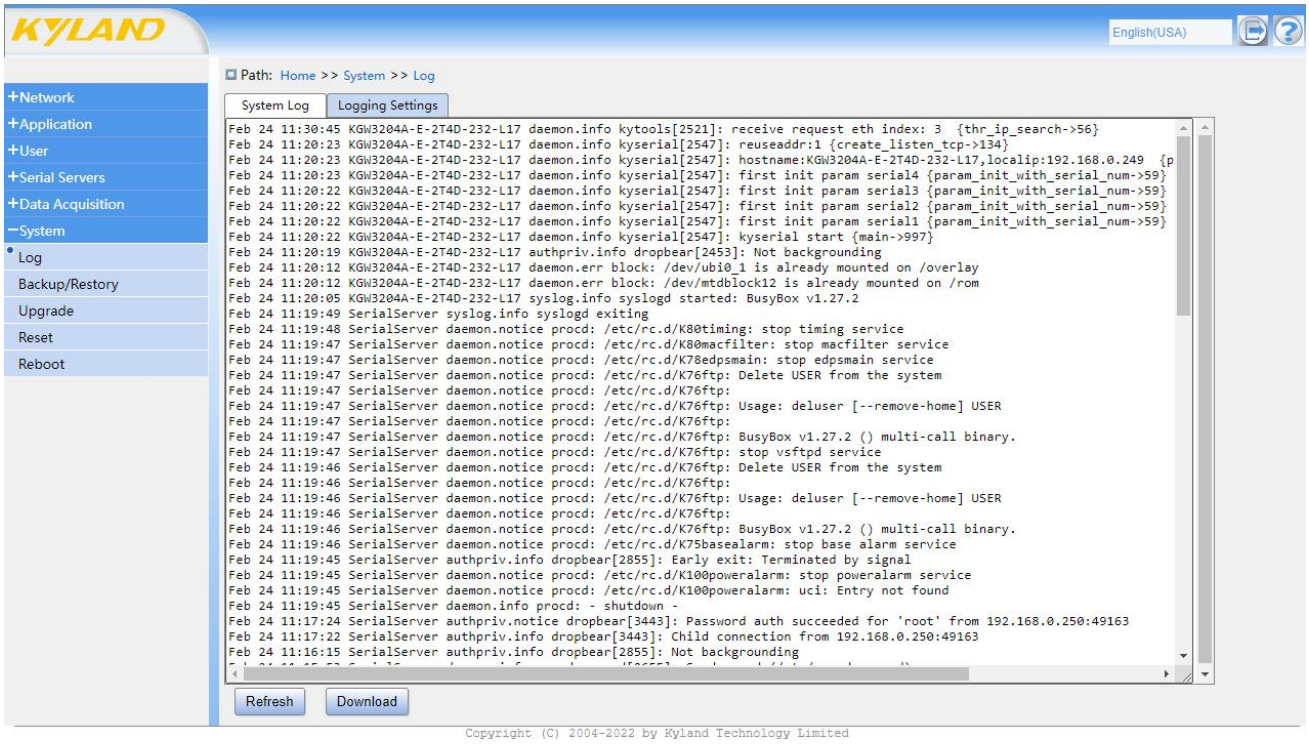


Figure 42 System Log

Log settings are used to send log information to the designated external server, and can be used to remotely monitor equipment operation information.

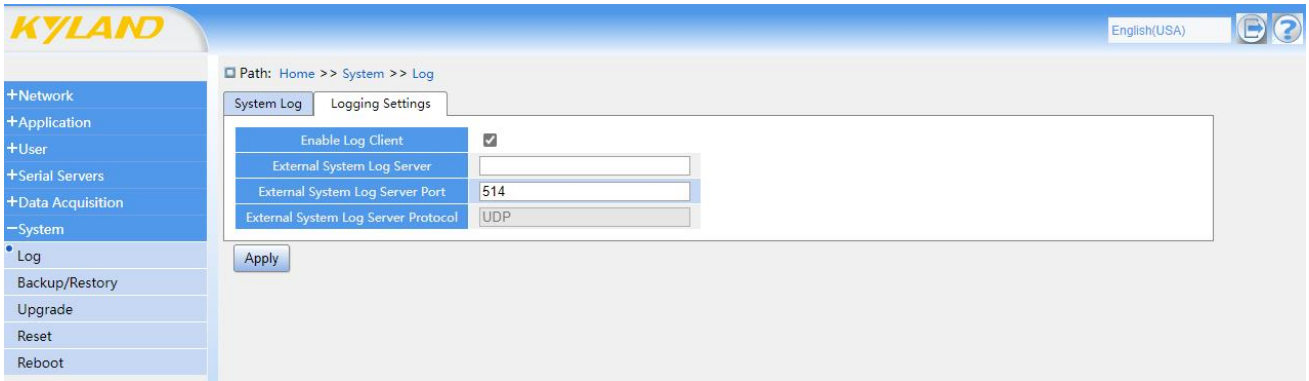


Figure 43 Log Settings

Table 38 Log Settings

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/recovery

The backup and recovery page can be used for configuration backup and upload.

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

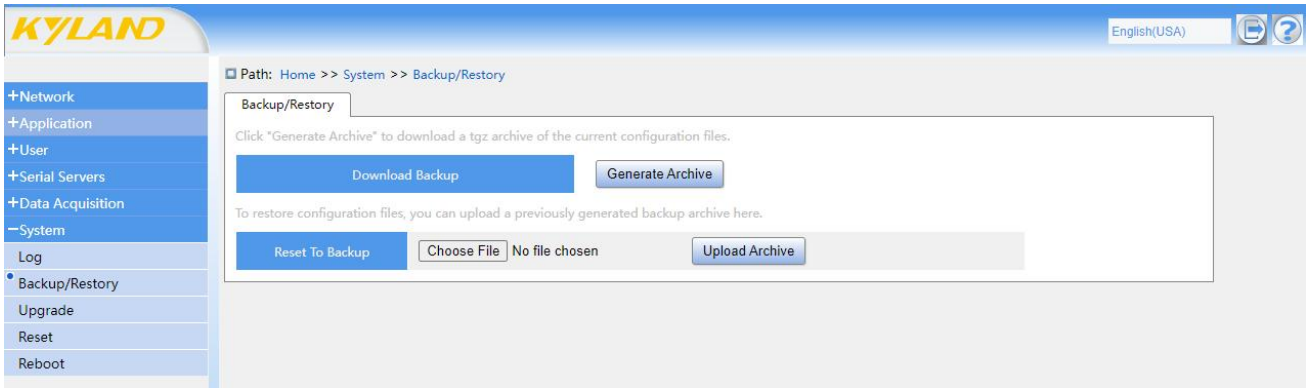


Figure 44 Backup and Recovery Page

4.9.3 Upgrade

The upgrade page can be used for firmware upgrade and update.

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

Check the "Keep Configuration" button, and the configuration will be kept after the upgrade. 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 status.

Note: When upgrading the firmware of KPS/KGW3x0xA series, the EDPS firmware will be upgraded at the same time.

Note: The upgrade will stop the related business procedures. If the related business is used after the upgrade fails, the machine needs to be restarted.

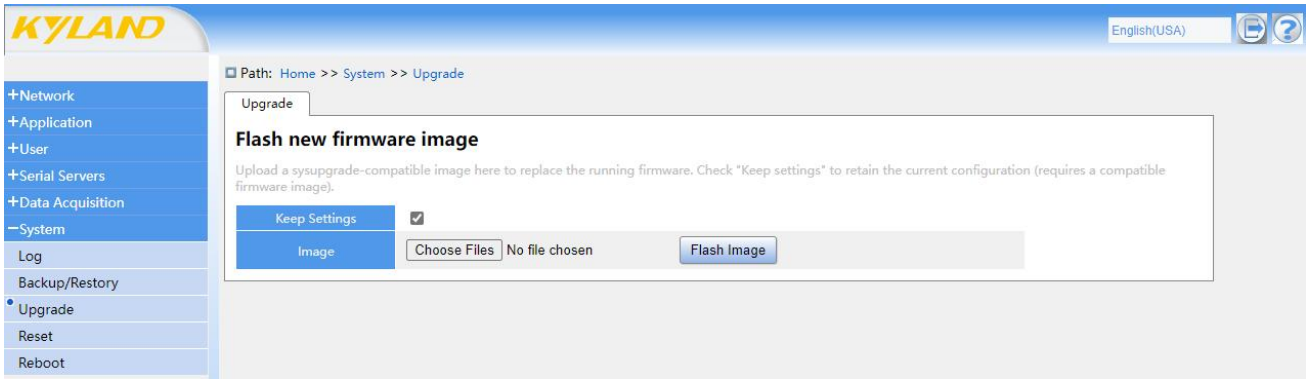


Figure 45 Upgrade page

4.9.4 System reset

The system reset page is used to restore this equipment to the factory setting state.

When all the setting information on the device needs to be cleared, click the "Perform Reset" button to restore the new generation gateway to the factory default settings.

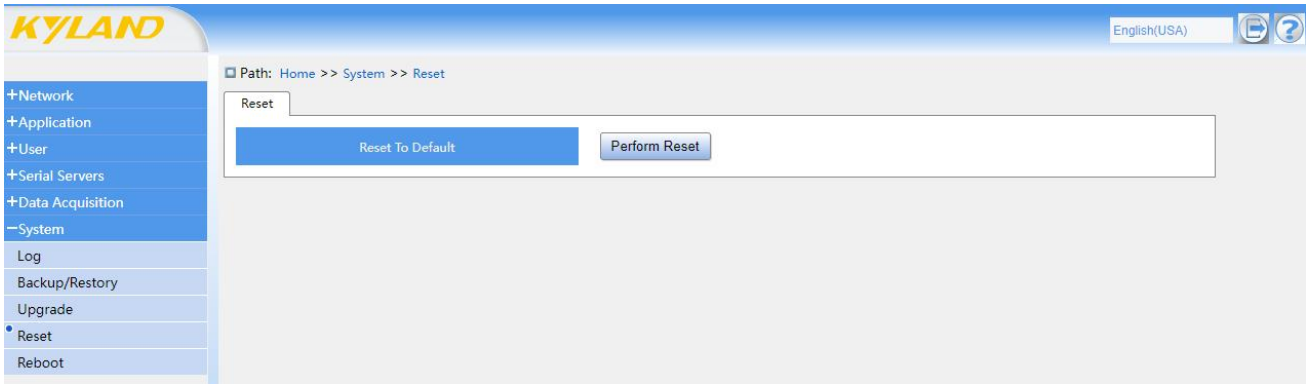


Figure 46 System Reset Page

Note: Restoring the factory settings will completely reset the equipment, and the equipment configuration parameters will be restored to the factory default configuration state. Please back up the important configuration information of the equipment before using to restore the factory settings.

4.9.5 Restart

The restart page is used to restart this device.

When it is necessary to restart the equipment, click the "Execute Restart" button to restart the equipment.

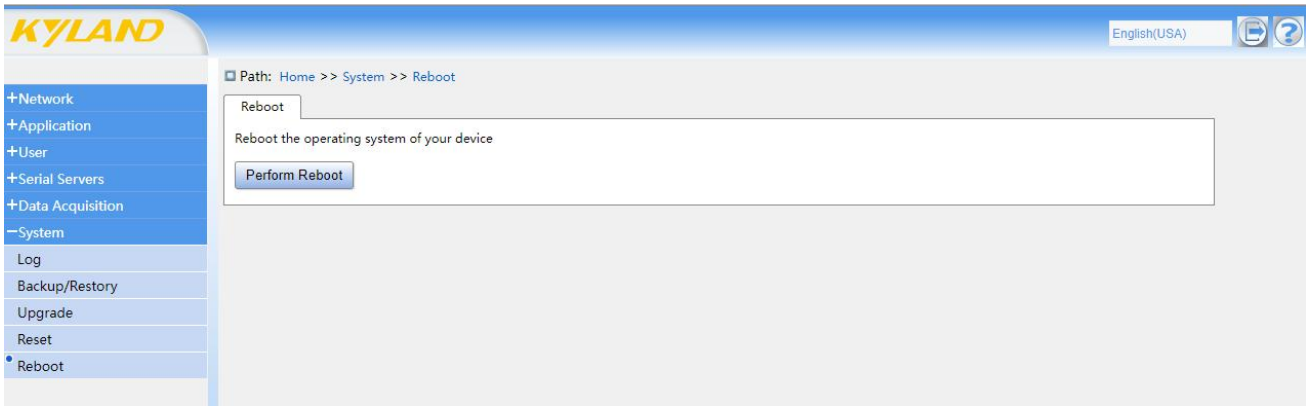


Figure 47 Restart the Page

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.

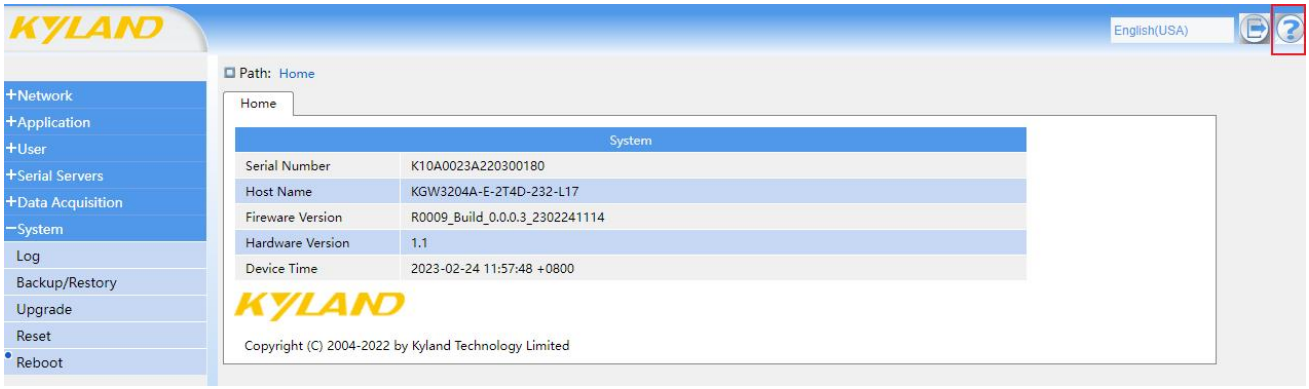


Figure 48 Help Page

4.11 Quit

After logging in to the Web page and completing the page configuration, click the exit button to exit the Web login state, 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.

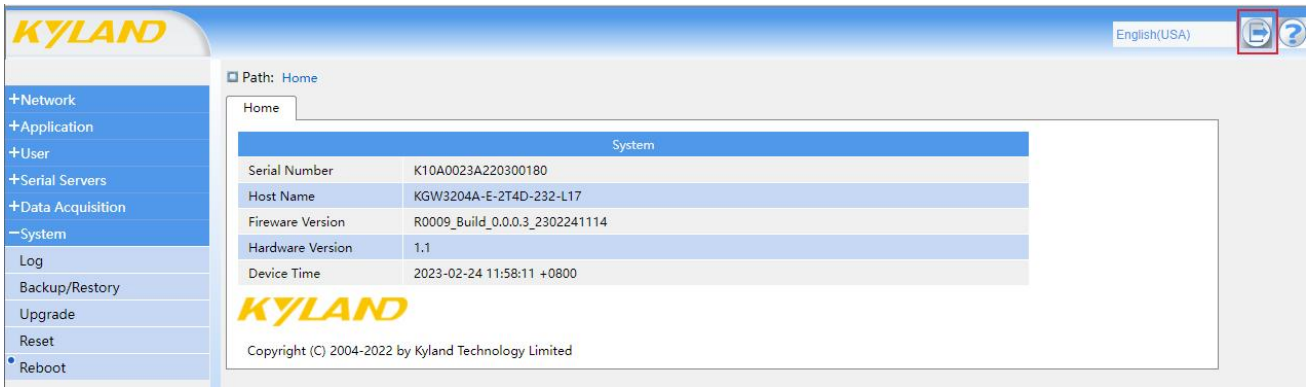


Figure 49 Exit the Page

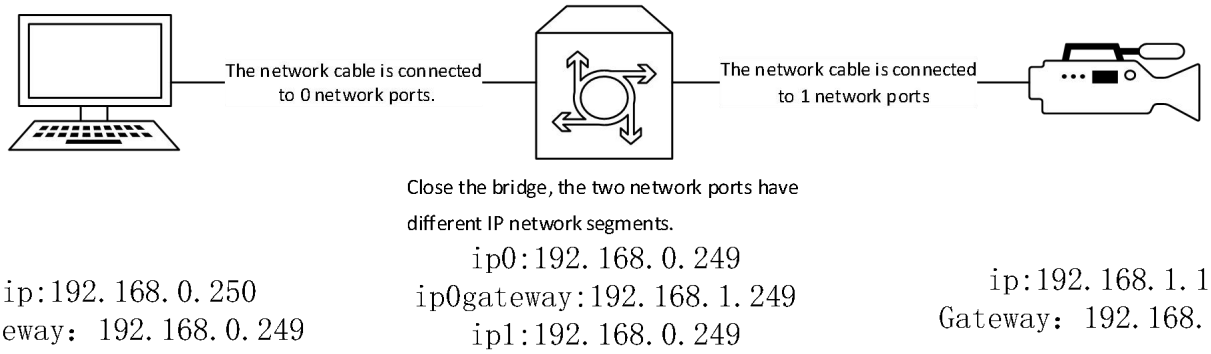
5 Operational Use Case

5.1 Network Port Bridging Operation Case

Bridge function is not enabled

A. Network port 0 and network port 1 are different network segments

Without configuring a gateway, you cannot communicate with each other. When two network ports need to be able to communicate with each other, you need to configure one of the network ports as the gateway of the other network port (for example, configure the gateway of network port 0:192.168.0.249 to network port 1:192.168.1.249)



B. Network port 0 and network port 1 are the same CIDR segments

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

Bridge function is enabled

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

When two devices need to be able to access and communicate with each other on the same network segment, choose LAN-LAN mode. Check Enable Bridging, and check "Ethernet Adapter eth1". At this time, the ports 0 and 1 are LAN ports.

When different network segments need to be able to access each other for communication, choose LAN-WAN mode. Check enable bridging, and uncheck "Ethernet adapter eth1". At this time, Ethernet port 0(eth0) is LAN port and Ethernet port 1(eth1) is WAN port.

A. bridging with the same network segment

Physical connection:

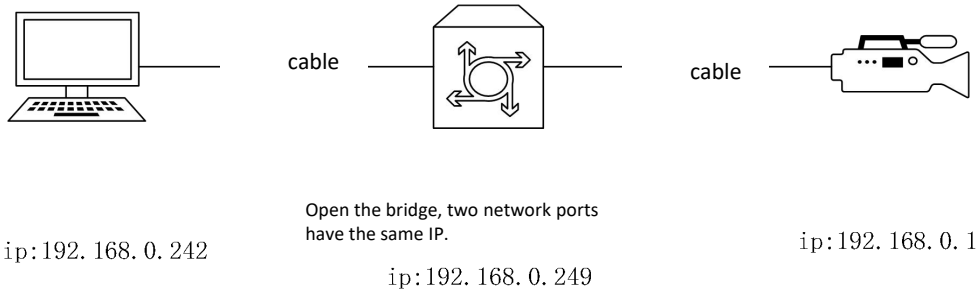


Figure 50 Physical connection

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

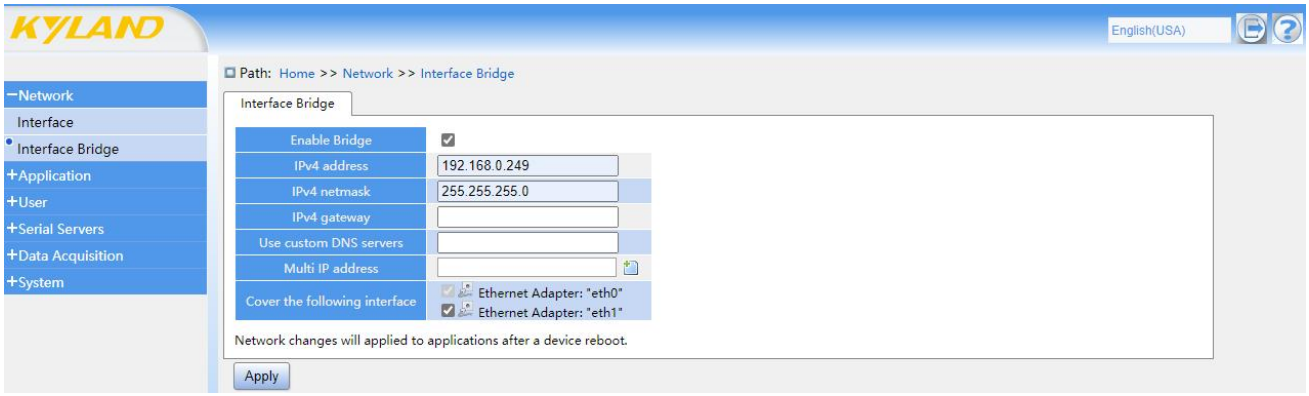
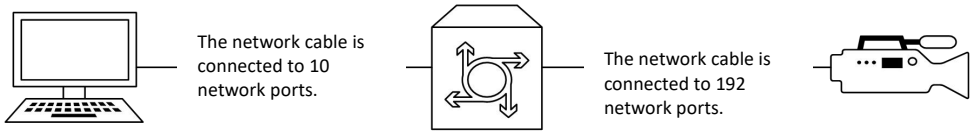


Figure 51 Bridging the network ports of the same network segment

Ping another device (IP: 192.168.0.111) on a PC with an IP of 192.168.0.242, and you can ping.

B. Bridging different network segments

Physical connection:



ip:10. 12. 2. 233
Gateway : 10. 12. 2. 249

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

ip0:10. 12. 2. 249
ip1:192. 168. 0. 249

ip:192. 168. 0. 111
Gateway 192. 168. 0. 249

Figure 52 Physical connection

Leave "Ethernet adapter eth1" unchecked on the Web page, select the protocol, set the IP address and subnet mask, and click "Apply" to enable two devices with different network segments to communicate with each other.

Note: the gateway must be configured correctly, otherwise communication cannot be carried out.

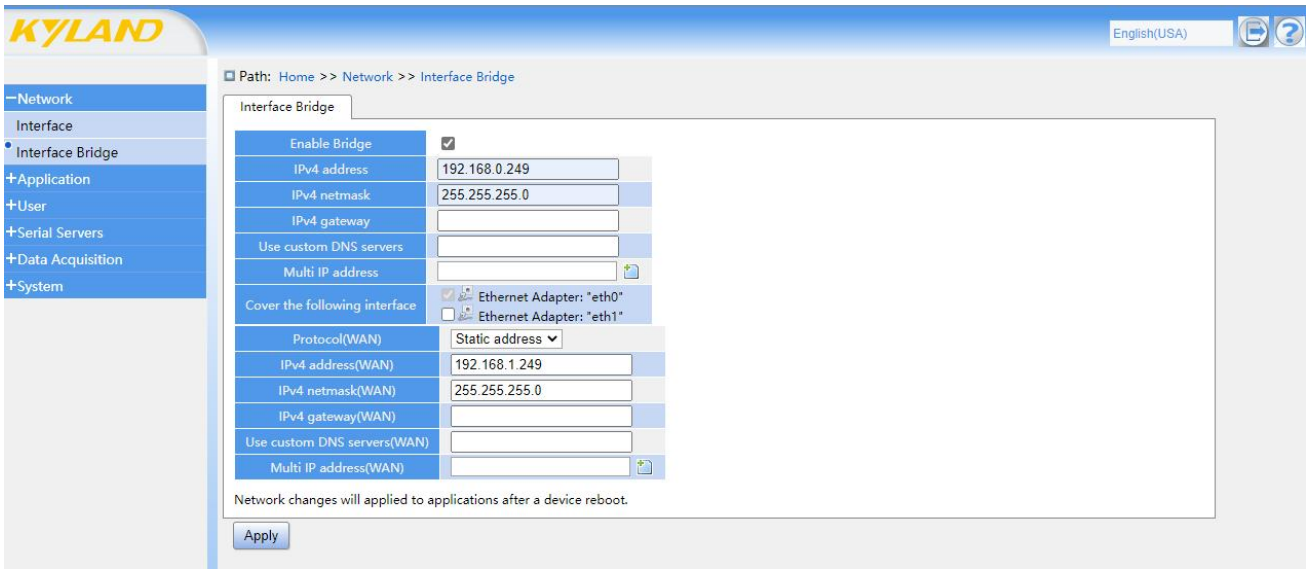


Figure 53 Bridge of Network Ports of Different Network Segments

Ping another device (IP:192.168.0.111) on a PC with an IP of 10.12.2.233, and you can ping.

5.2 Transparent Transfer Operation Cases

A KGW3204A and a computer are used, and the serial interface type of the gateway is RS-232. As a TCP Server, the gateway uses a USB-to-RS-232 serial communication line at the USB end of the computer, and the DB9 port of the USB-to-RS-232 serial communication line is connected to the serial port S1 of the terminal of this equipment.

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 TCPClient network communication mode. If the serial port is an RS-485 cable 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 name and password to log in to the Web page.

Click "serial server"-"serial interface settings" in the navigation bar, select serial port 1, TCP Server for network mode, Transparent for transmission mode, fill in the local port with more than 1024, and the maximum number of connections is 4, set the serial port baud rate, data bits, parity bits, stop bits and other configuration applications, and click "Apply" to save.

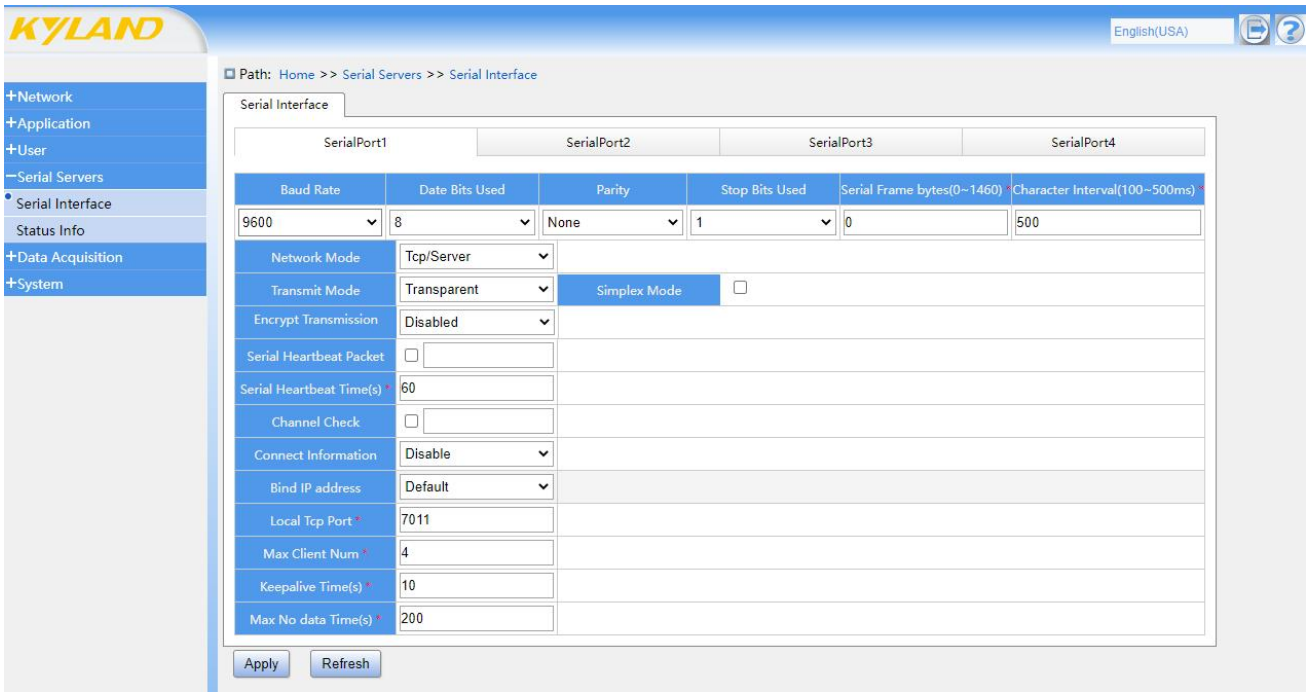


Figure 54 Web Configuration TCP Server Page

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 the terminal of KGW3204A to connect the PC with the device S1.

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

After the above operations are completed, enter the numerical value 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 two-way communication of data is successful, as shown in the following figure.

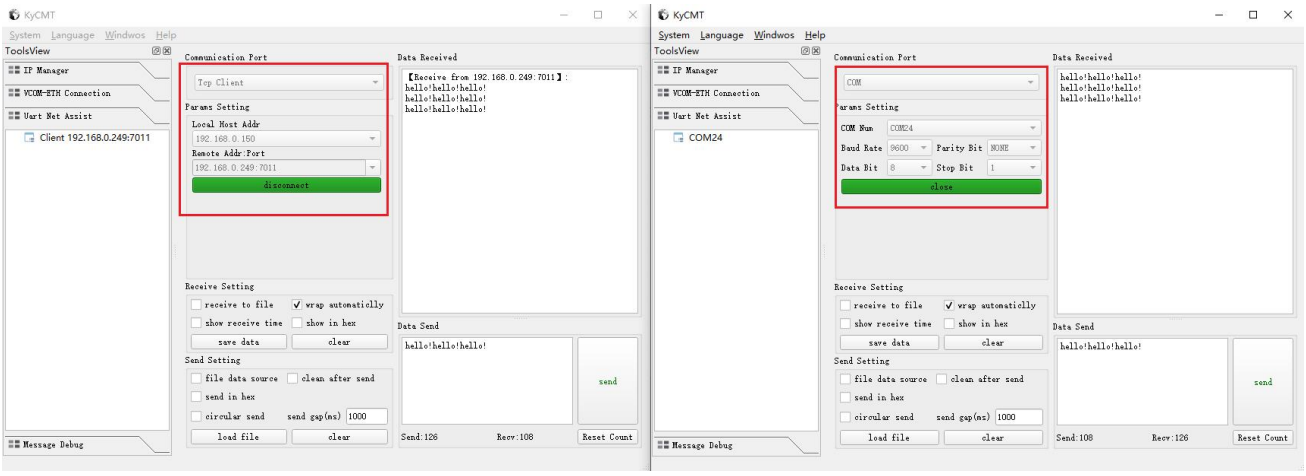


Figure 55 Configuration of Integrated Debugging Management Tool Parameters

5.2.2 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 the terminal of KGW3204A to connect the PC with the device S1.

Open the integrated debugging management tool "KyCMT", right-click the serial network debugging assistant column to create a new debugging assistant, select TCP Server as the communication port, fill in the local host address, and click Connect if the local port is above 1024.

Right-click to create a new debugging assistant, select COM as the communication port, and configure the parameters related to the serial port to be the same as those of the serial port S1 of KGW3204A equipment. Click Open after the configuration is completed.

B. Configuring the Web console

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

Click "serial server"-"serial interface settings" in the navigation bar, select serial port 1, TCP Client for network mode, Transparent for transmission mode, and fill in the IP and port configured in step a for the destination IP and port. The local port can be left blank (KGW3204A uses the filled-in port to establish connection), and up to four non-repetitive links can be added, and configuration applications such as serial port baud rate, data bits, parity bits and stop bits can be set.

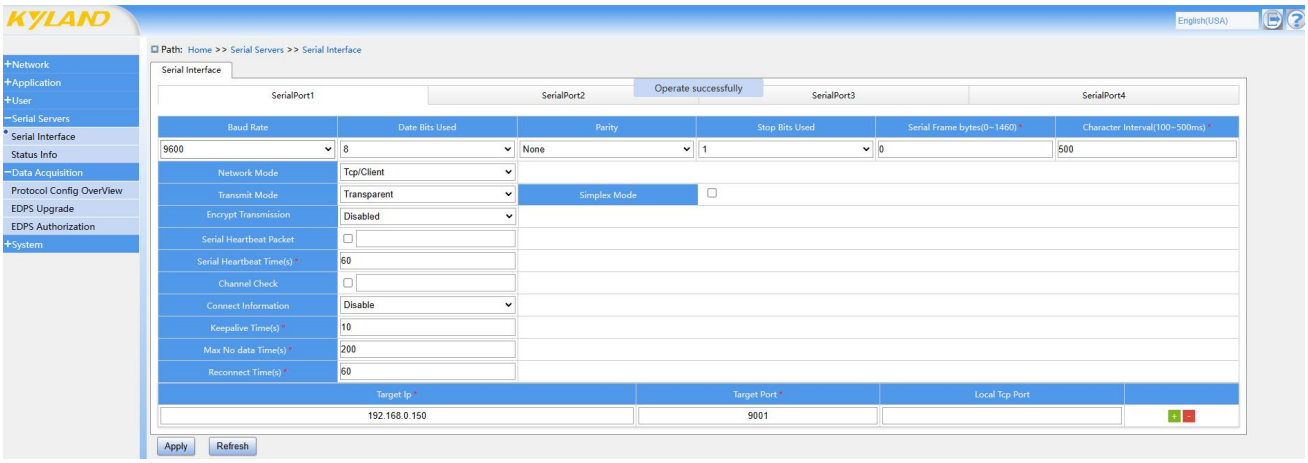


Figure 56 Web Configuration TCP Client Page

After the above operations are completed, enter the numerical value 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 two-way communication of data is successful, as shown in the following figure.

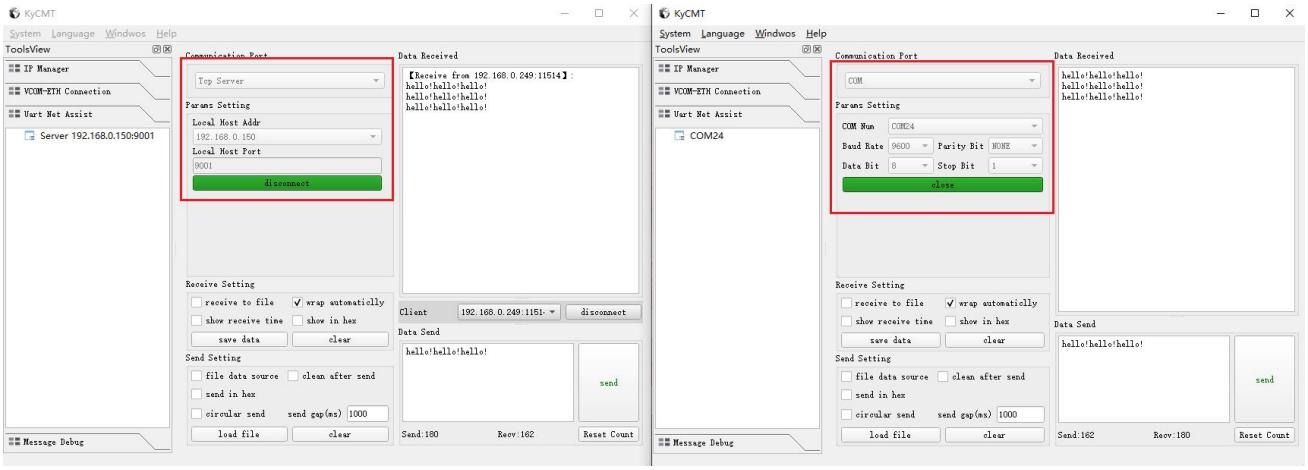


Figure 57 Configuration of Integrated Debugging Management Tool Parameters

5.2 ModbusRTU operation case

A KGW3204A and a computer are used, and the serial interface type of the device is RS-232. KGW3204A is a TCP Server. The USB end of the computer uses a USB-to-RS-232 serial communication line, and the DB9 port of the USB-to-RS-232 serial communication line is connected to the serial port S1 of the terminal of this equipment.

Note: In this operation case, Modbus RTU communication protocol and RS-232 serial connection mode are 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 an RS-485 cable, 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 name and password to log in to the Web page.

Click "Serial Server"-"Serial Interface Settings" in the navigation bar, select serial port 1, TCP Server for network mode, Modbus RTU for transmission mode, and fill in the local port with more than 1024, and the maximum number of connections is 4. Set the serial port baud rate, data bits, parity bits, stop bits and other configuration applications, and click "Apply" to save.

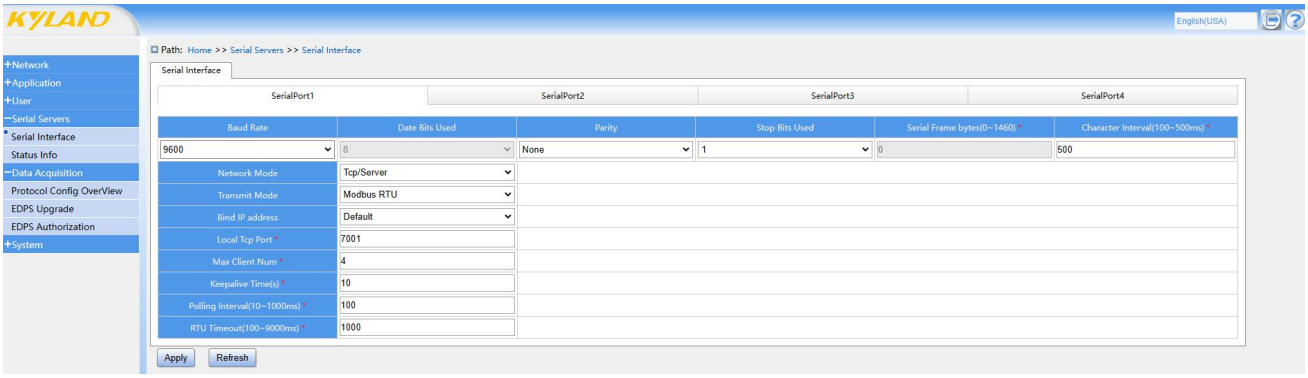


Figure 58 Configuring a Web Page

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 is connected to the terminal of KGW3204A, which connects the PC with the device S1.

Open the software "Modbus Slave", create a new Mbslave window, click the menu bar Connection-Connection Setup, select Serial Port as the communication port, and configure the parameters related to the serial port to be the same as those of the device serial port S1, and click OK after configuration.

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

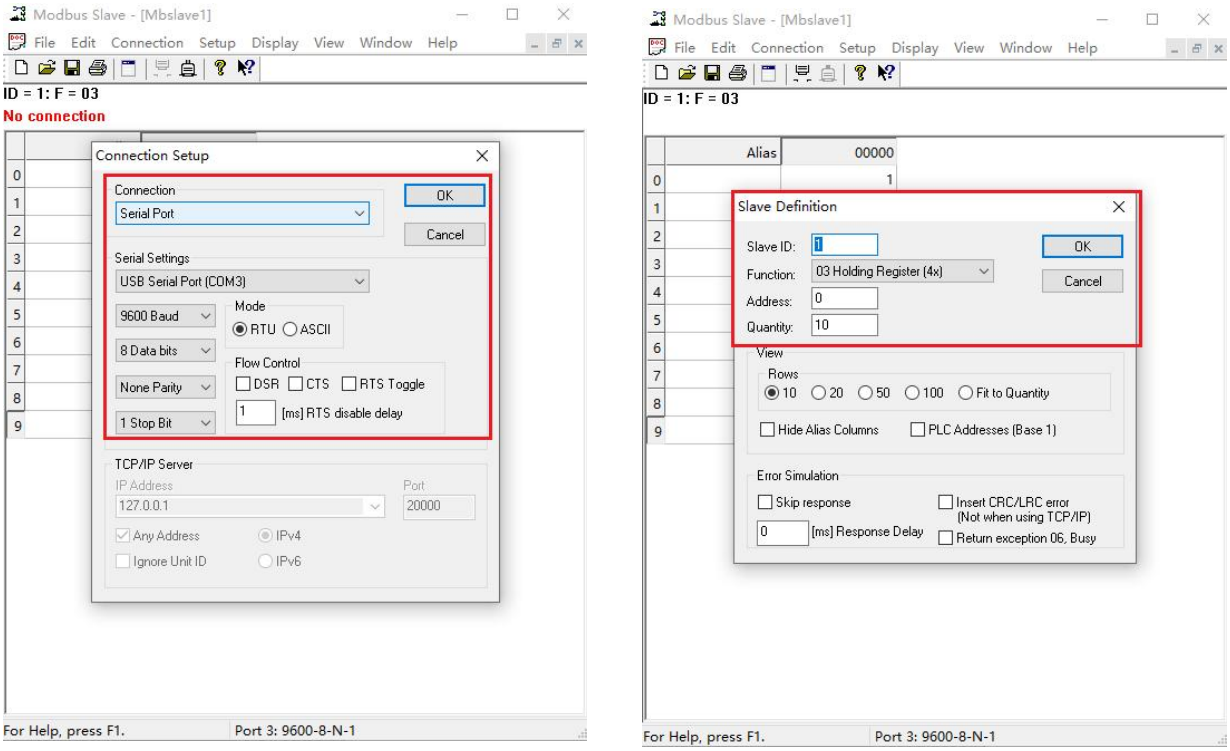


Figure 59 Configure Modbus Slave Tool Parameters

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

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

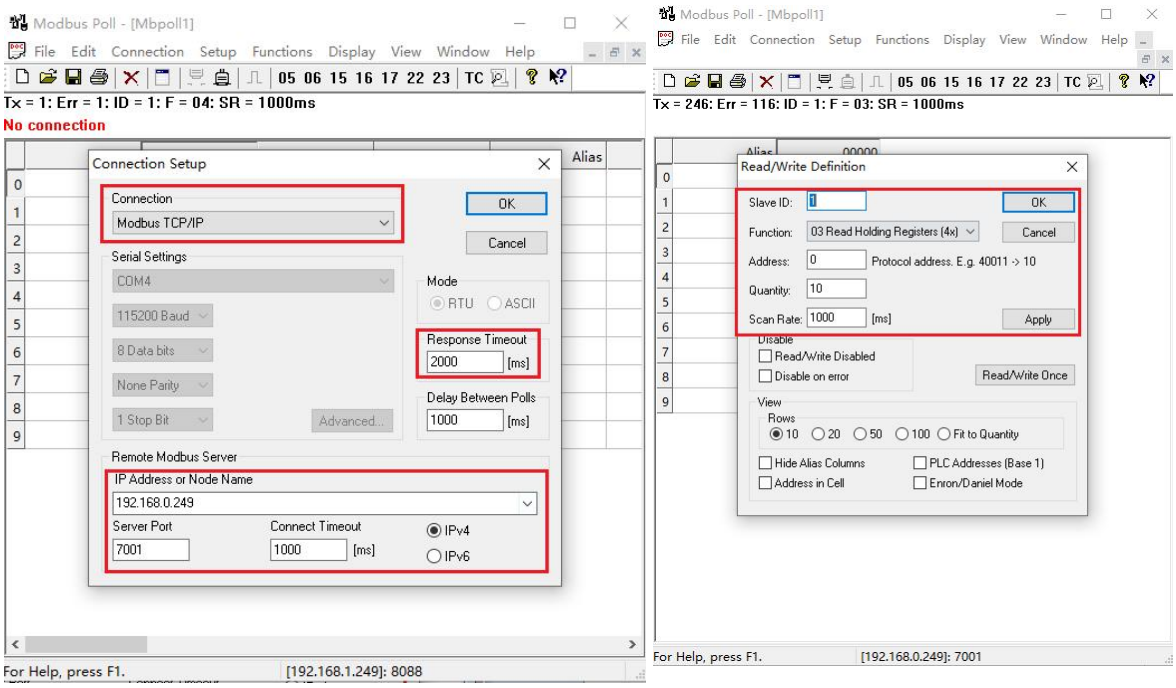


Figure 60 Configuring Modbus Poll Tool Parameters

After the above operations are completed, enter the numerical value in the data sending area of Modbus Slave tool to send, and you can see that the corresponding data can be received in the data receiving area of Modbus Poll tool, and the two-way communication of data is successful, as shown in the figure below.

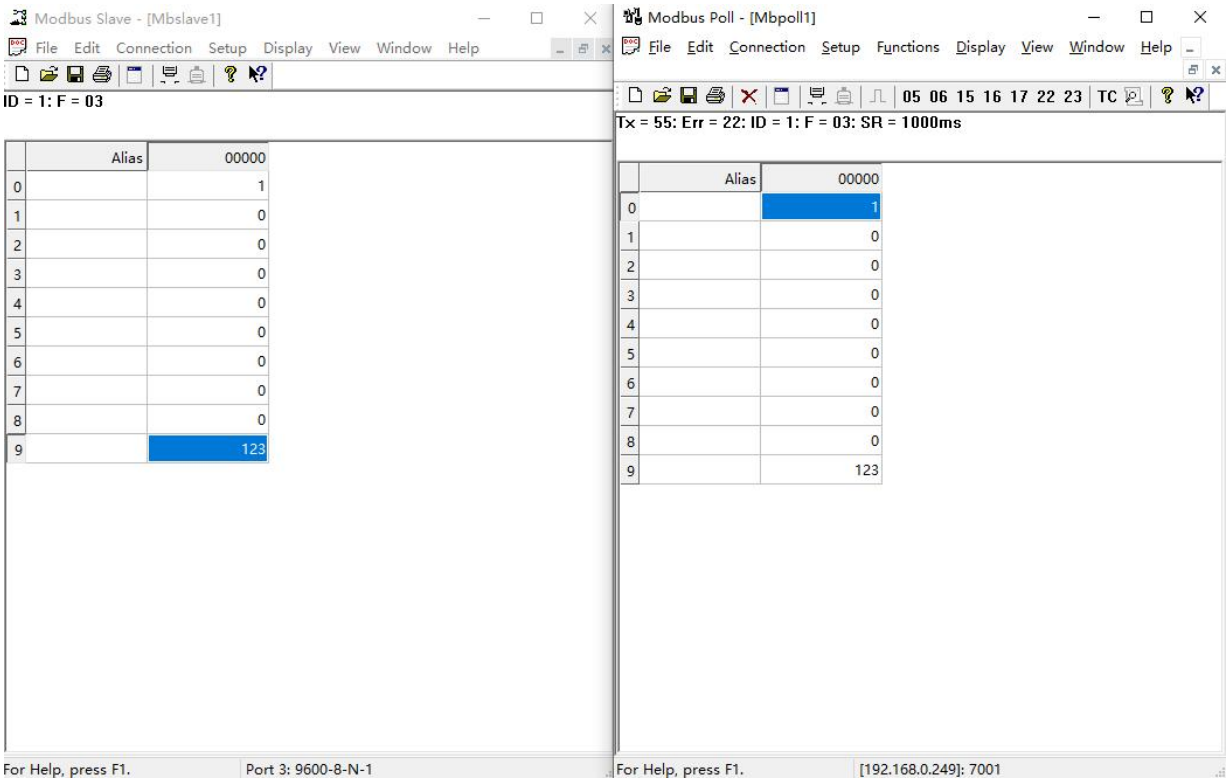


Figure 61 Successful Communication between Modbus slave and Modbus Poll Tool

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 is connected to the terminal of KGW3204A, which connects the PC with the device S1.

Open the software "Modbus Slave", create a new Mbslave window, click the menu bar Connection-Connection Setup, select Modbus TCP/IP as the communication port, IP Adress as the IP of the network port connected with KGW3204Al, and click OK after the configuration.

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

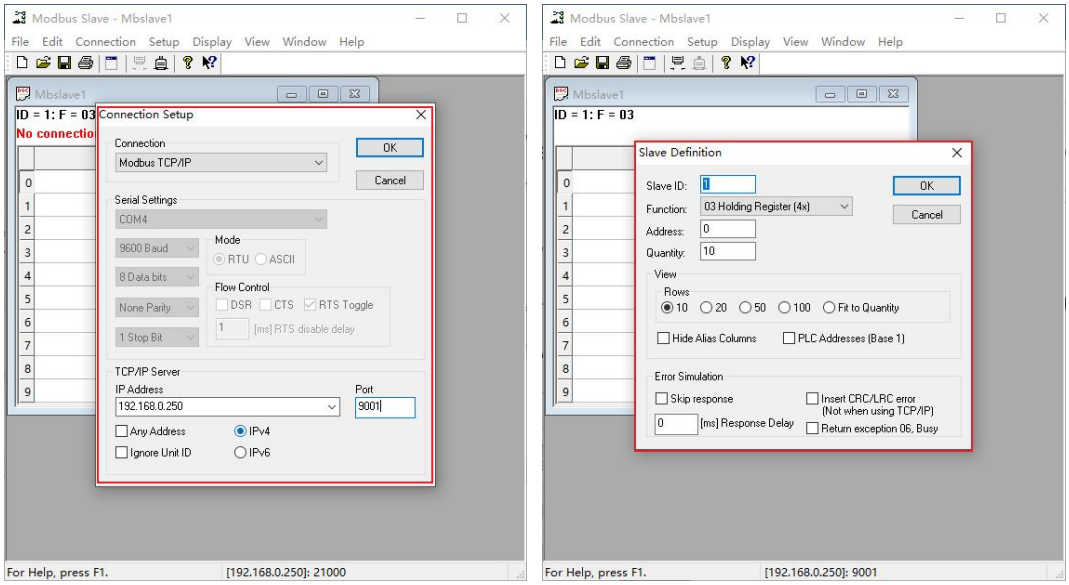


Figure 62 Configure Modbus Slave Tool Parameters

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

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

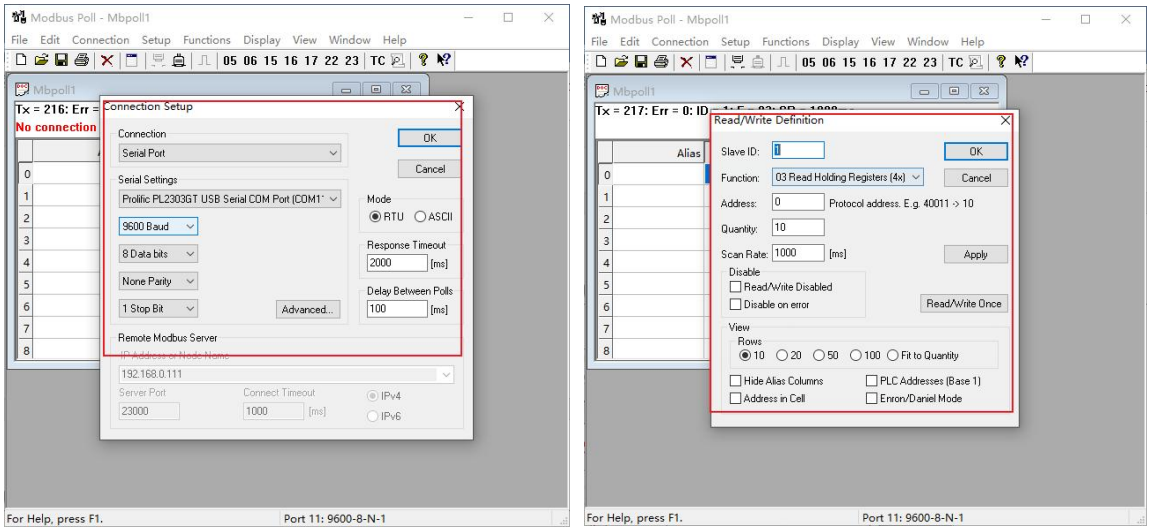


Figure 63 Configuring Modbus Poll Tool Parameters

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 settings" in the navigation bar, select serial port 1, TCP Client for network mode and Modbus RTU for transmission mode, add a link, and the Slave Id, target IP and target port settings in the link are consistent with those in Modbus Slave tool settings, set serial port baud rate, data bits, check bits and stop bits, and click "Apply" to save.

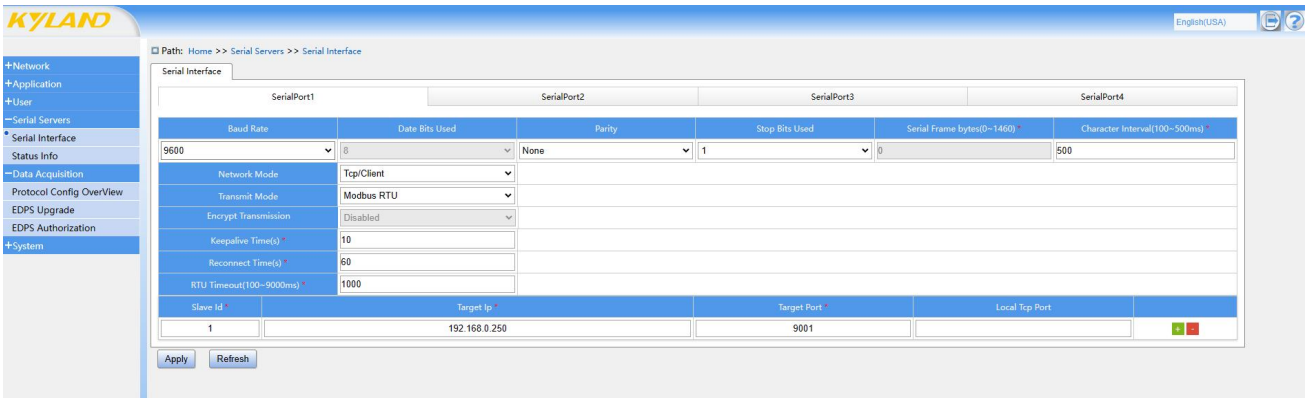


Figure 64 Configuring a Web Page

After the above operations are completed, enter the numerical value in the data sending area of Modbus Slave tool to send, and you can see that the corresponding data can be received in the data receiving area of Modbus Poll tool, and the two-way communication of data is successful, as shown in the figure below.

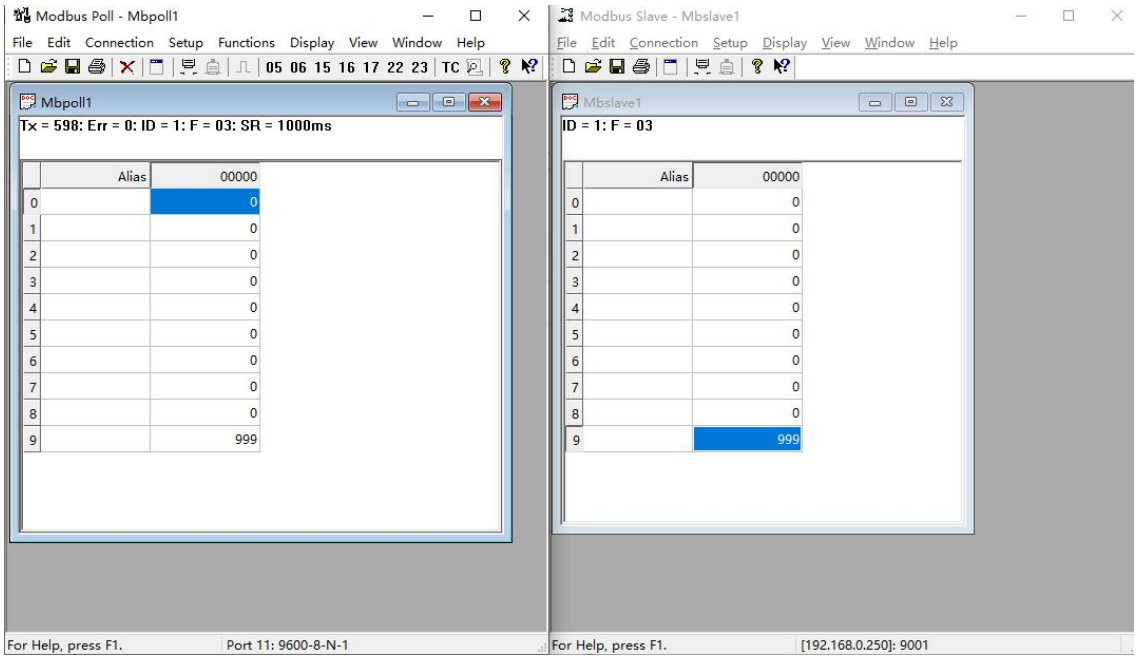


Figure 65 Communication between Modbus slave and Modbus Poll tool is successful.

5.3 Modbus Protocol Engineering Operation Case

A.KyPMT configuration protocol project

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, and the specific operations are as follows:

1. New construction
   a. New engineering and engineering space;
   b. Click the project name, right-click to create a new project, and select the running platform NUC980 KPS3000.

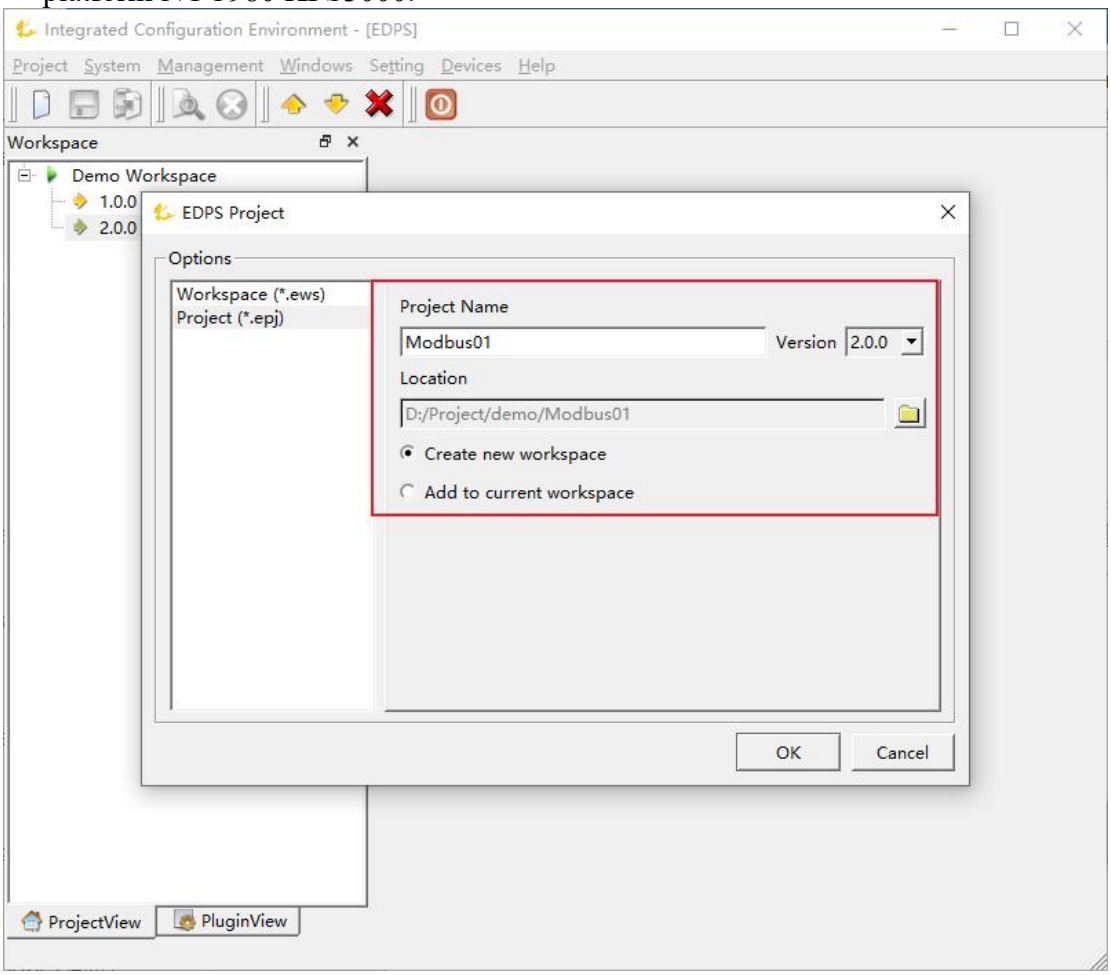


Figure 66 Creating a Project

2. New acquisition service
   a. In the blank area of acquisition service, right-click to create a new one;
   b. The new Modbus running port of the 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 select RTU here;
   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.

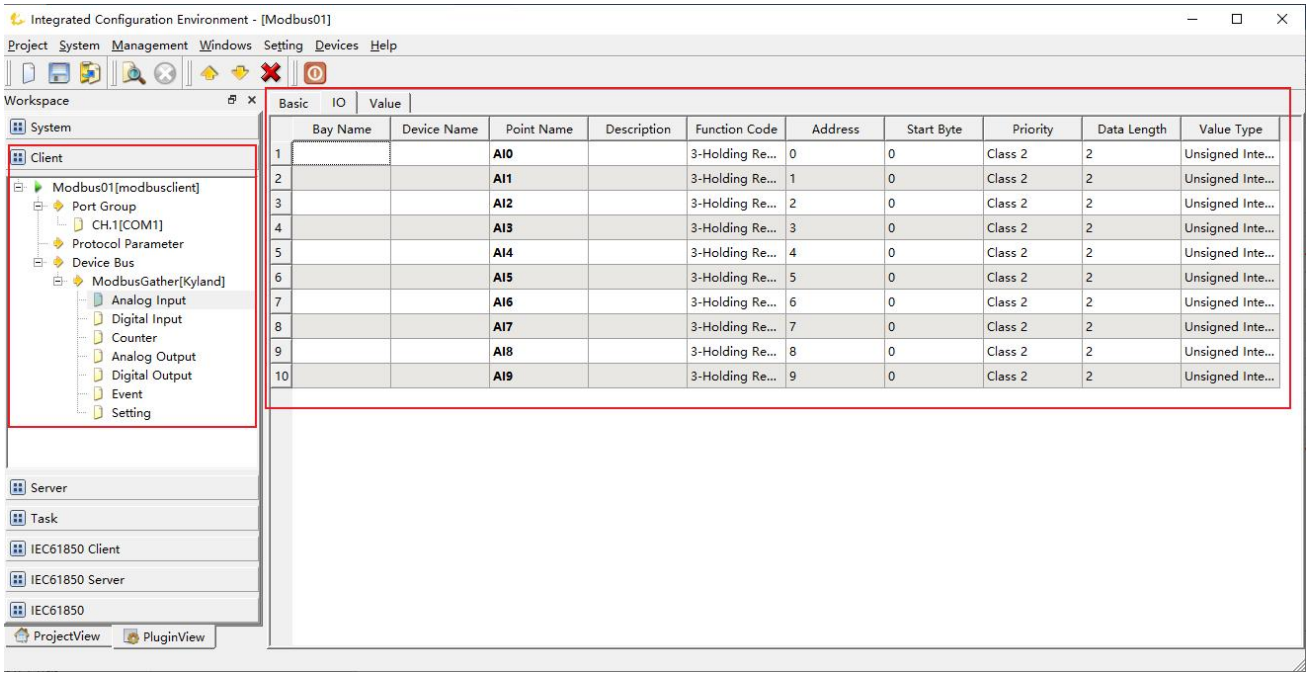


Figure 67 Modbus Acquisition Service

3. New forwarding service

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

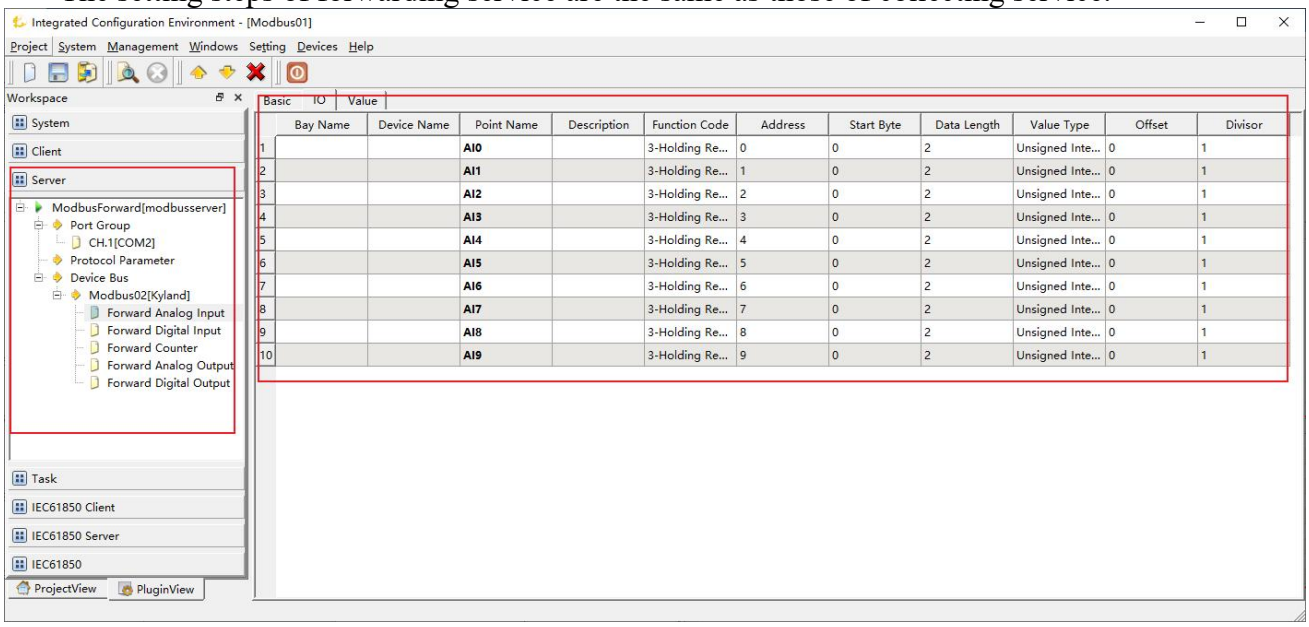


Figure 68 Modbus Forwarding Service

4. Download project

Click, download the project, and enter the user name 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 and IEC61850, please refer to the protocol configuration manual under the help menu of KyPMT tools.

Note: Before this device is connected to a PC and communicates, please ensure that the firewall and security protection software on the PC are closed, otherwise the communication

connection may be abnormal.

B.Web page enables engineering

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

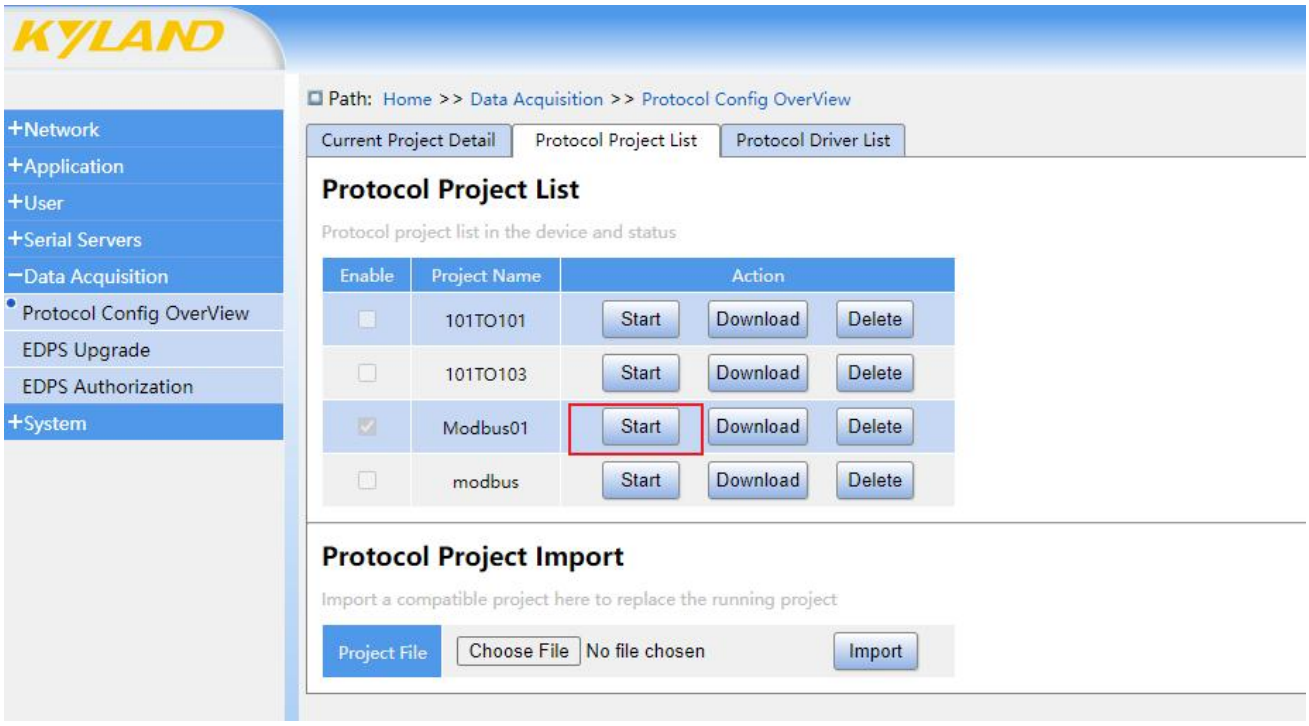


Figure 69 Enabling Project

C. Software simulates the lower computer and the upper computer.

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

Open the software "Modbus Slave", create a new Mbslave window, click the menu bar Connection-Connection Setup, and select Serial Port as the communication port. The configuration parameters of serial port should be consistent with those of Modbus acquisition service, and click OK after configuration.

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

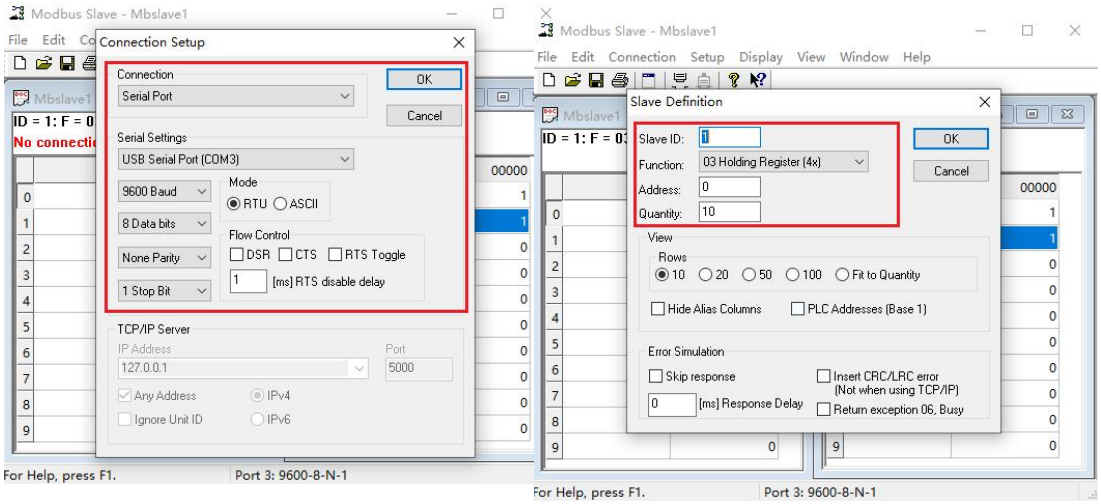


Figure 70 Configure Modbus Slave Tool Parameters

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

Open the software "Modbus Poll", create a new Mbpoll window, click the menu bar Connection-Connection Setup, and select Serial Port as the communication port. The configuration parameters of serial port should be consistent with those of Modbus forwarding service, and click OK after configuration.

Then click the menu bar Setup-Read/Write Definition to configure the device Address (Slave ID), Function code (function), starting address (address) and Quantity (quantity). Modbus Poll configuration parameters need to be consistent with those of Modbus forwarding service.

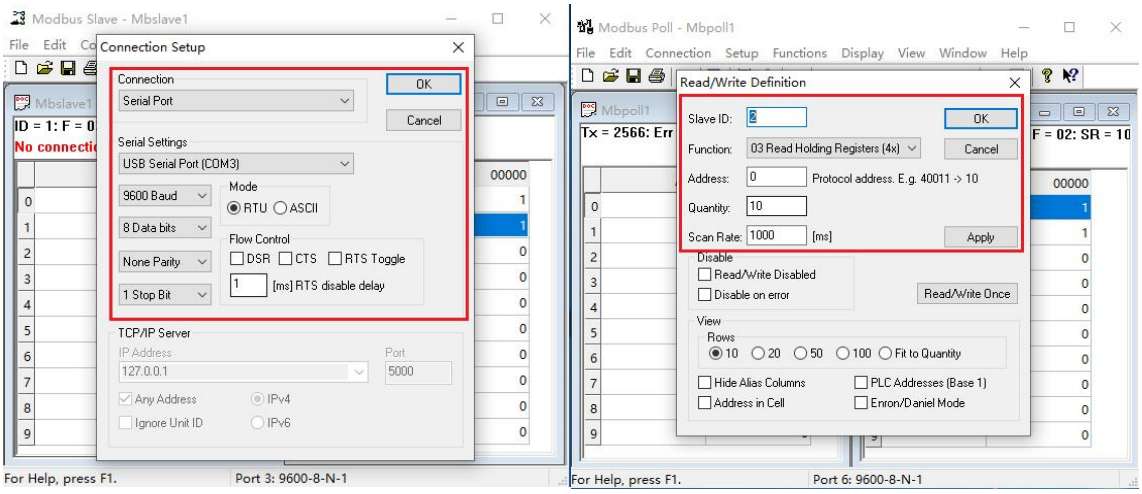


Figure 71 Configuring Modbus Poll Tool Parameters

After the above operations are completed, enter the numerical value in the data sending area of Modbus Slave tool to send, and you can see that the corresponding data can be received in the data receiving area of Modbus Poll tool, and the two-way communication of data is successful, as shown

in the following figure.

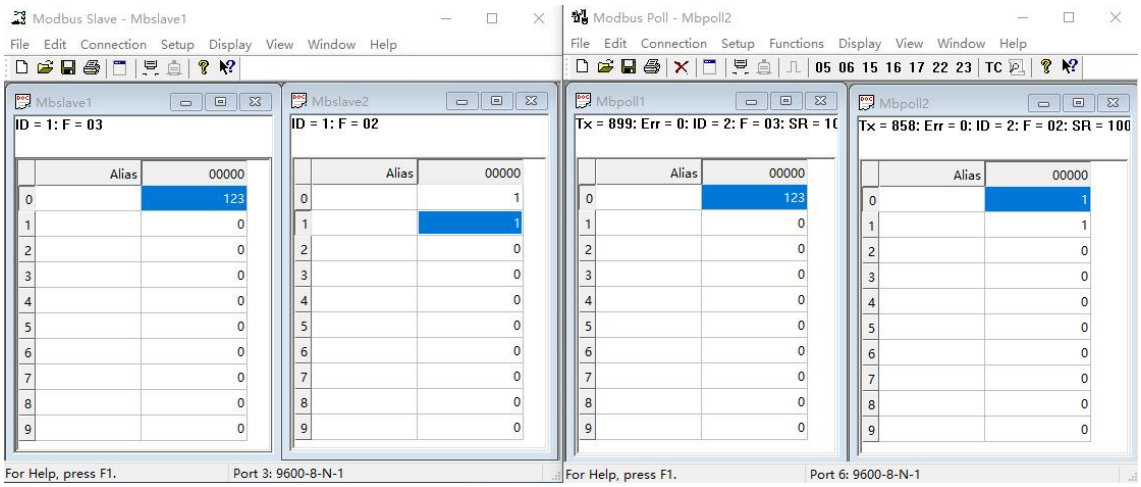


Figure 72 Communication between Modbus slave and Modbus Poll tool is successful.

D.KyPMT observation information point

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

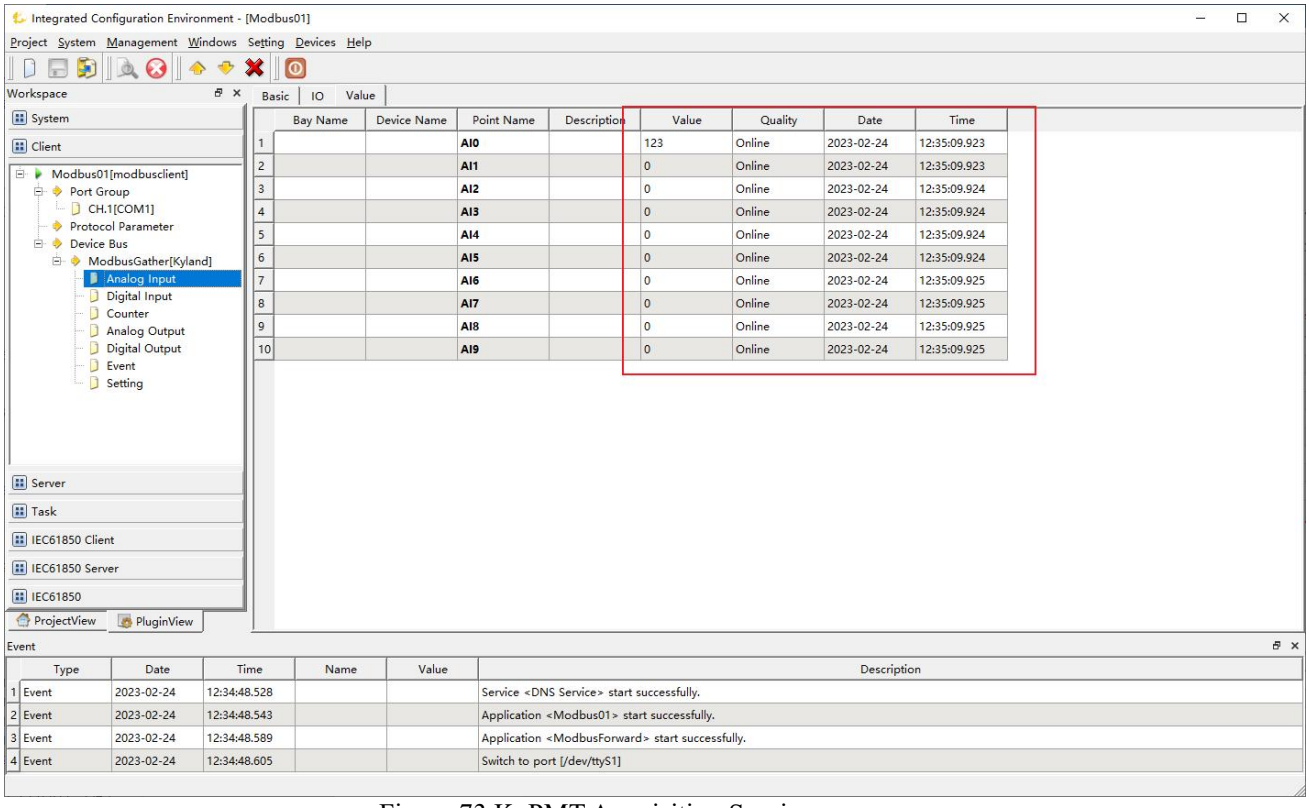


Figure 73 KyPMT Acquisition Service

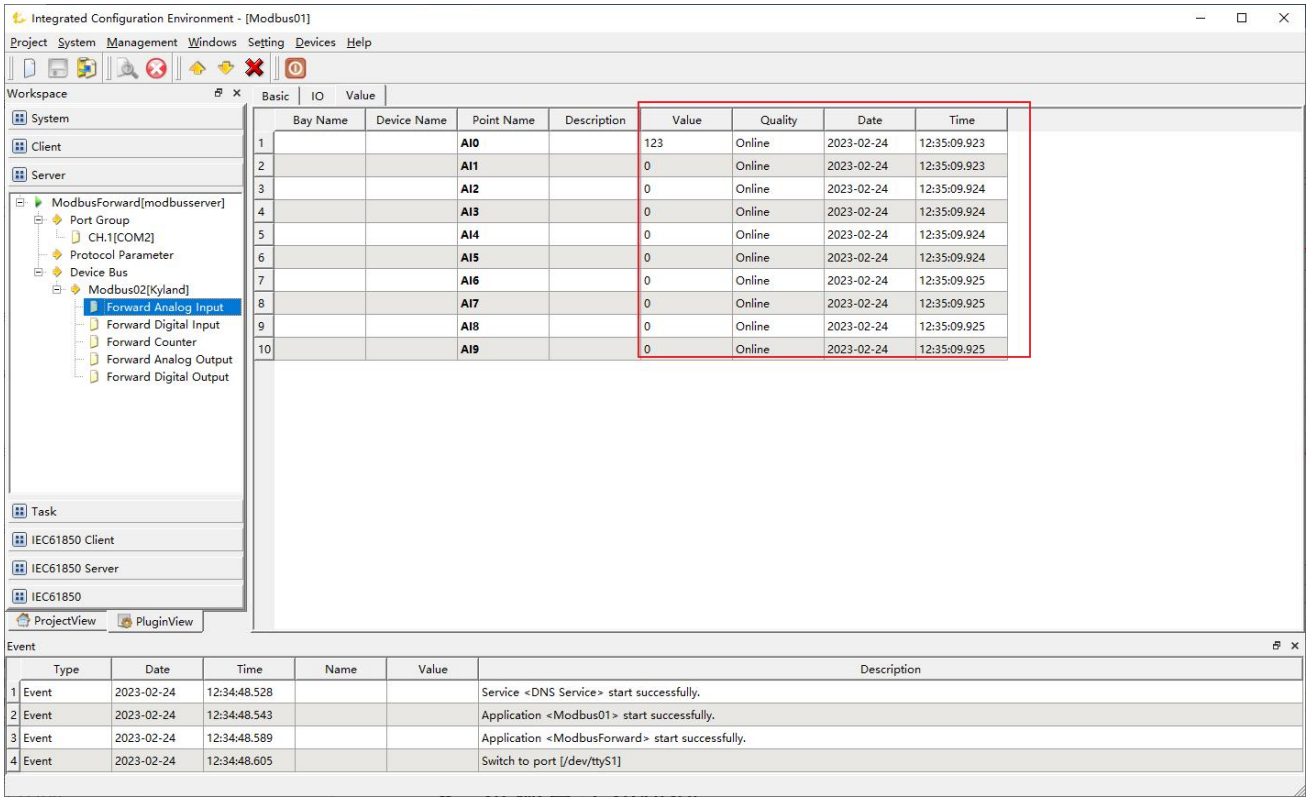


Figure 74 KyPMT Forwarding Service

6 Mechanical Dimensions and Packaging

6.1 Mechanical Structure

Table 38 Mechanical Structure Parameters

Products	KPS/KGW3x0xA series	KPS/KGW3224A series	KGW3204A 4G series
Shell	SECC electrolytic galvanized steel sheet	SECC electrolytic galvanized steel sheet and 6063 aluminum	SECC electrolytic galvanized steel sheet and AL5052
Protect grade	IP40	IP30 and above	IP30 and above
Installation mode	DIN rail or wall-mounted	Use four screws to fix the device to the vertical rails on both sides of the cabinet, and ensure that the grounding terminal of the device is in good contact with the cabinet grounding wire. The installation method is shown in the following figure:	DIN rail or wall-mounted

6.2 Dimensional Drawing

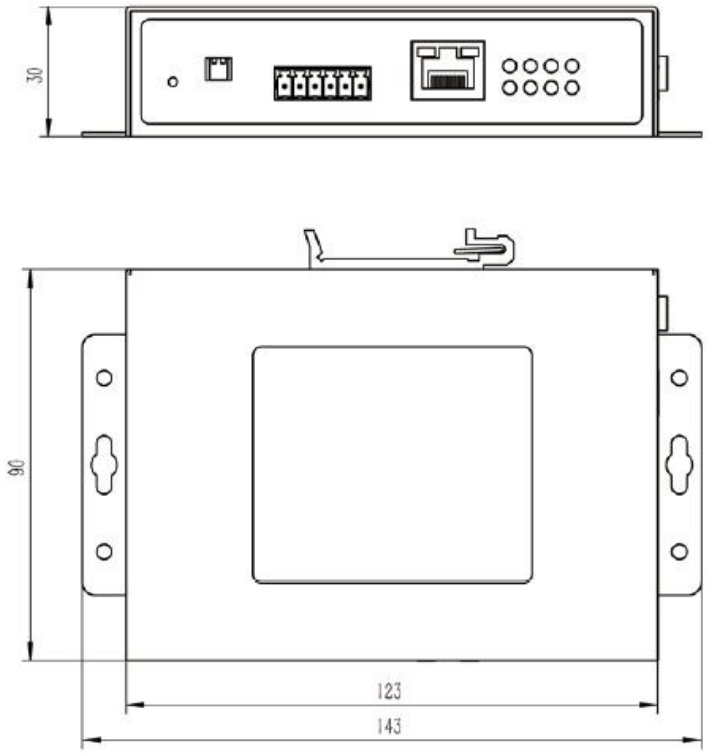
6.2.1 KPS/KGW310XA&320XA

Overall dimensions: KPS/KGW3101A: 123x90x30 mm

KPS/KGW3102A: 123x90x30 mm

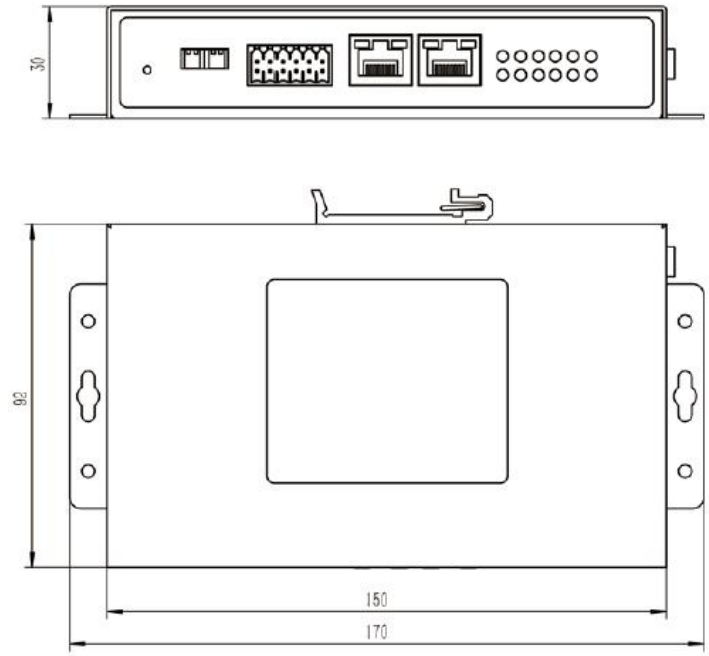
KPS/KGW3204A: 150x92x30 mm

KPS/KGW3208A: 177x100x44 mm



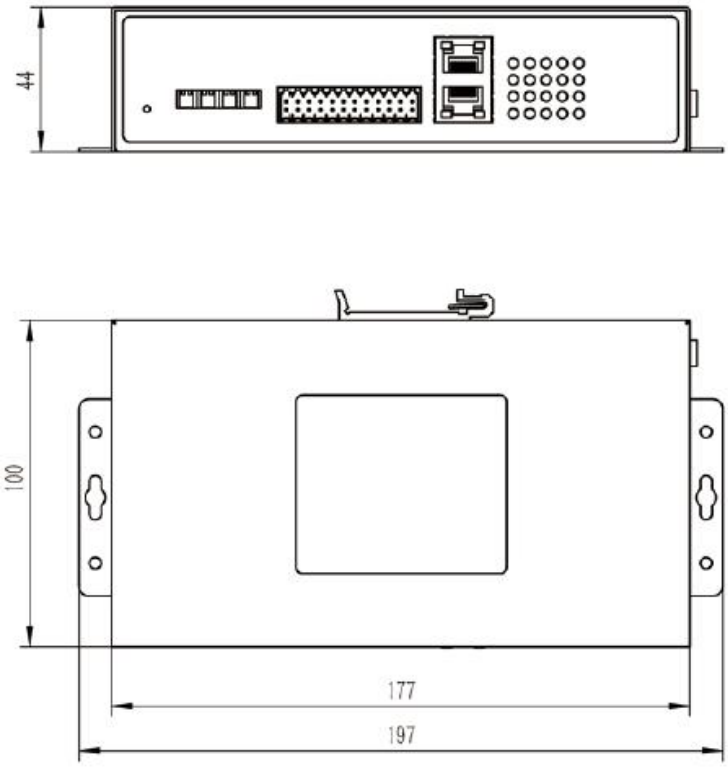
Unit: mm

Figure 75 Dimensions of KPS/KGW 3101a/3102a



Unit: mm

Figure 76 KPS/KGW3204A Dimension Drawing

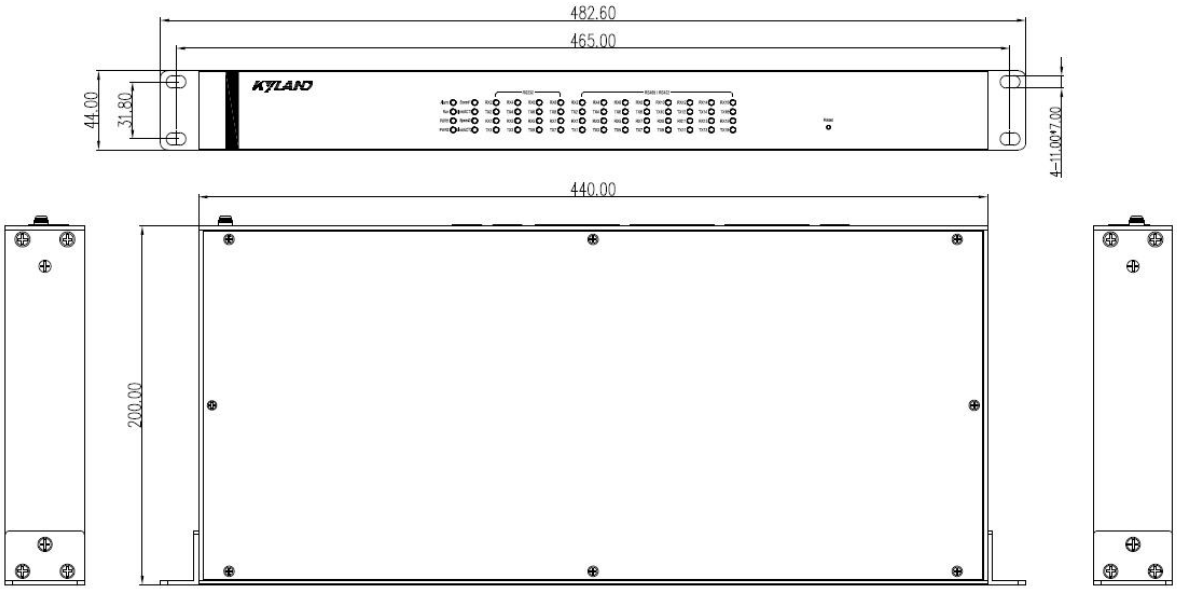


Unit: mm

Figure 77 KPS/KGW3208A Dimension Drawing

6.2.2 KPS3224A/KGW3224A

Overall dimensions: 482.6x200x44 mm

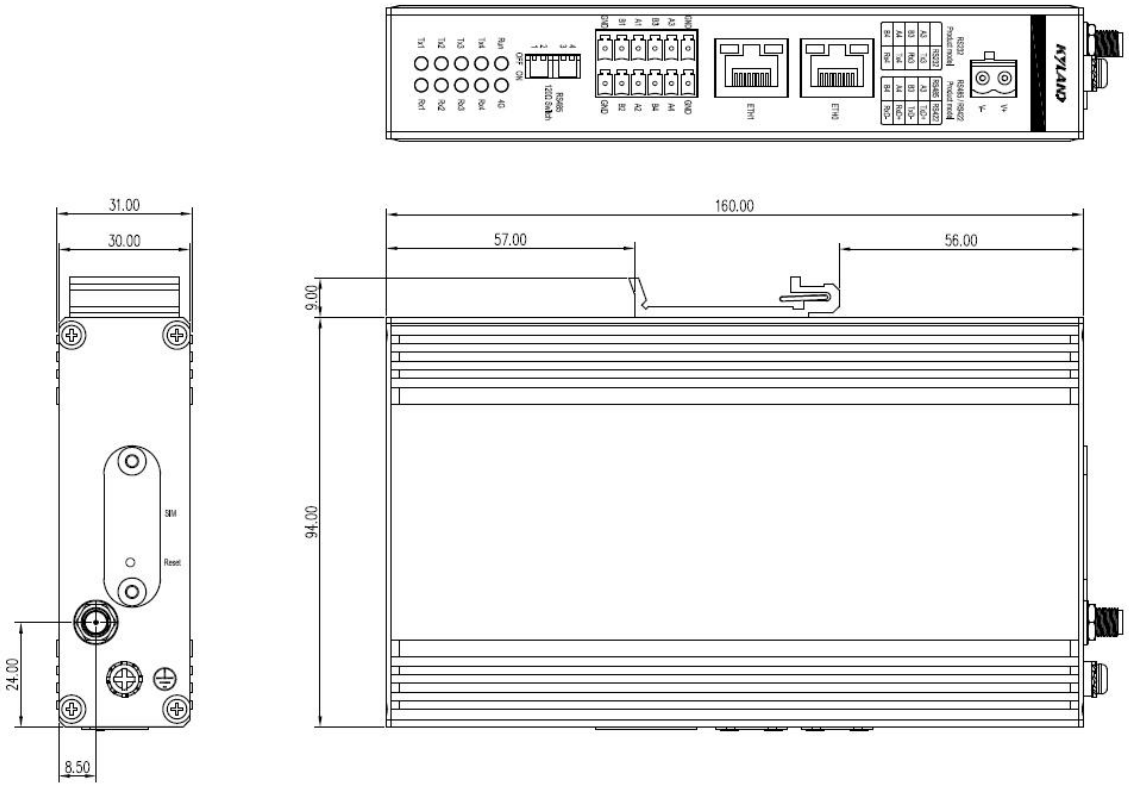


Unit: mm

Figure 78 KPS3224A/KGW3224A Dimension Drawing

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

Overall dimensions: 160x103x31 mm



Unit: mm

Figure 79 KGW3204A-2T4D-232/485-4G-l17 Dimension Drawing

6.3 Packing List

Product packaging includes the following accessories:

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

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

6.4 Quality Assurance

Warranty period: 5 years