KPS3102 Serial Server User Manual

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KYLAND

KPS3102 Serial Server User Manual

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Conents

1 Product Introduction

Welcome to use Kyland KPS3102 serial port server product, this serial port server has the function of power redundancy, it can realize the conversion between network port data and serial port data. KPS3102 serial port server has dual power input, serial port built-in 2 KV electromagnetic isolation protection.

We will introduce KPS3102 serial server product in this section, including the following:

- Summary
- Package list
- Product characteristics

1.1 Summary

KPS3102 serial server is a serial port server device with redundant power supply function, which can realize the conversion between TCP/UDP protocol and RTU protocol. The device serial port provides 2KV serial port isolation protection, each RS-232/RS-422/RS-485 serial port can be configured as serial port operation mode and different baud rate separately, and allows these two types of network to be integrated through one network port of serial port server. The serial port server will directly convert the data of the network port.

The network port can be configured as TCP Client, TCP Server and UDP modes, and serial port can choose RS-232/RS-422/RS-485 three modes.

1.2 Package List

KPS3102 includes the following accessories:

- One KPS3102 serial server device
- Installation manual
- CD-ROM
- Qualified certificate
-

Note:

If any of the above items are lost or damaged, please contact the sales representative.

1.3 Product Characteristics

- Realize data conversion between TCP/UDP protocol and RTU protocol
- Two 100Mbps electric ports, one RS-232/RS-422/RS-485 serial port
- 15 KV ESD protection circuit at serial port
- 2 KV isolation protection at serial port
- Support HTTPS, SSH2 security configuration protocol
- Support redundant 12~48 Vdc power input
- Support one-click recovery
- IP40 protection class
- CE，FCC，UL61010，C1D2，RoHS certifications

2 Accidence

We will provide KPS3102 serial server basic operation instructions for installation in this chapter, including the following:

- Connect power supply
- Connect serial device
  - RS-485 terminal resistor
  - Connect to host or network
- LED indicators
- Dimension
- Pin definition
  - Network interface (RJ45)
  - Serial interface (DB9 male)
  - Power supply input interface
- Specification parameters

2.1 Connect Power Supply

KPS3102 serial server connect power supply through terminal block.

Connect power supply

1. loosen or remove the screws on the power terminals;
2. Connect 12-48VDC power cord to power terminals;
3. Tighten the screws on the power terminals.

Caution:

The serial server device has no power switch. When there is a power input, the device immediately starts to run, and the power indicator on the front panel of the device will shine. The serial port server device has two redundant DC power input.

2.2 Connect Serial Device

The serial port of the serial server device is located on the front panel of the device. To connect multiple devices to the network, note the following

1. all devices are connected to a single serial port, the same protocol must be used;
2. each master device on the serial server device must be connected to its own port.
3. Serial port PIN description please refer to section 2.5: pin definition.

2.2.1 Set RS-485 terminal resistor

If you use RS-485 transmission mode in a relatively harsh environment, you may need to increase the terminal resistance to prevent the reflection of serial signals. KPS3102 serial server serial port default pull Up/down resistor is 120 KΩ. The DIP switch on the top panel of the serial server for each serial port is used to enable/disable RS-485 120Ω terminal resistors.

Set 120Ω terminal resistor: DIP switch identification 1 corresponds to serial port S1. When the DIP switch to the ON, the terminal resistor of the corresponding serial port is enabled; when the DIP switch to the OFF, the terminal resistor of the corresponding serial port is disabled; and the terminal resistor is disabled by default.

2.2.2 Connect to host or network

KPS3102 serial server has one 10/100Mbps network port, it is located in the front panel of the serial server device. When the serial server works normally, it can be connected to the network directly using the network cable. When initialization and fault detection are required, the PC can be connected directly through the network cable. When the serial port server is running,

the two green LEDs on the network port will shine, so as to determine whether the serial port server has been connected to the network and the rate of access to the network.

KPS3102 serial server has a network port and a mac address, users can change the IP address, mac address cannot be changed.

2.3 LED indicator

Table 1 Panel operation and indicator status

Item	**Description**	
Reset button	Press Reset button for 5 seconds, the serial server device will restart and return to factory configuration.	
LED indicator		
PWR1, PWR2	Green	ON: the corresponding input power supply is connected and running normally
		OFF: power supply does not connect or running abnormally
Run	Green	Flashing: Main board and CPU system running normally (1 Hz frequency)
		ON: device power-up process
		OFF: device no power
E1（Link/ACT）	Green	ON: The port has established an effective network connection
		Flashing: Port is active
		OFF:The port has not established an effective network connection
E1（10/100M）	Yellow	ON: 100M working status (100Base-TX)
		OFF: 10M working status (10Base-TX) or no connection
E2（Link/ACT）	Green	ON: The port has established an effective network connection
		Flashing: Port is active
		OFF:The port has not established an effective network connection
E2（10/100M）	Yellow	ON: 100M working status (100Base-TX)
		OFF: 10M working status (10Base-TX) or no connection
S1-T	Green	Flashing: Serial port 1 is sending the data signal
		OFF: serial port 1 no data transmission
S1-R	Green	Flashing: Serial Port 1 is receiving data signal
		OFF: serial port 1 no data transmission

2.4 Dimensions

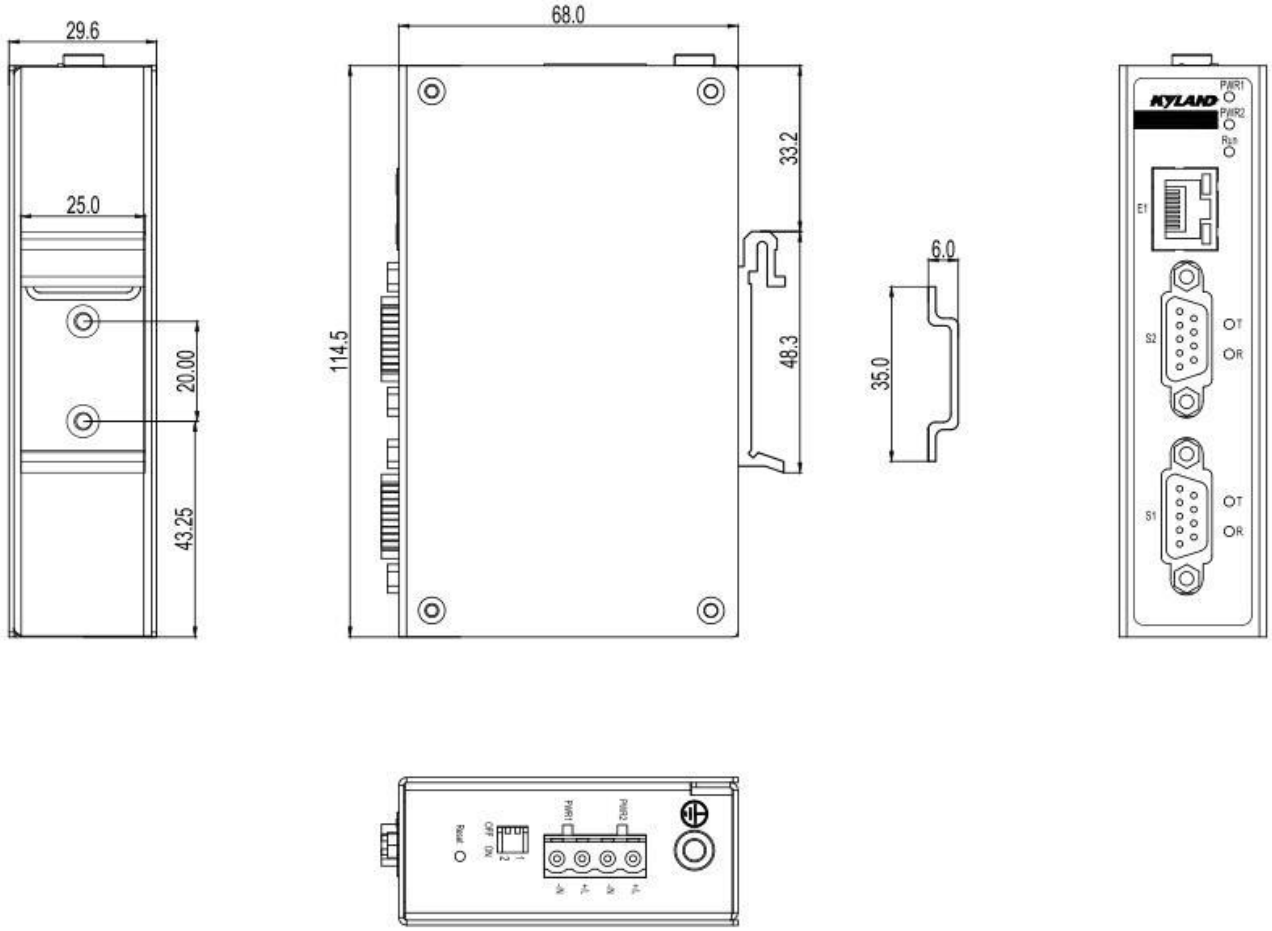

Figure 1 KPS3102 (unit: mm)

2.5 PIN Definition

2.5.1 Network interface (RJ45)

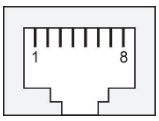

Figure 2 RJ45 wire number

Table 2 RJ45 wire definition

Pin	MDI-X Signal	MDI Signal

1	Rx+	Tx+
2	Rx-	Tx-
3	Tx+	Rx+
6	Tx-	Rx-
4，5，	No definition	No definition

2.5.2 Serial interface（DB9 male）

KPS3102 serial server uses DB9 serial port interface to connect to serial device. Each serial port supports three serial interfaces: RS-232, RS-422, RS-485, it can be selected by software

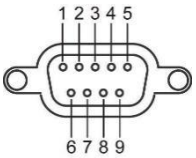

Figure 3 DB9 wire number

Table 3 DB9 wire definition

Pin	RS-232	RS-422	RS-485
1	CTS	RxD-(B)	-
2	RxD	RxD+(A)	-
3	TxD	TxD-(Z)	Data-(B)
4	RTS	TxD+(Y)	Data+(A)
5	GND	GND	GND
6	–		–
7	–		–
8	–		–
9	–	–	–

2.5.3 Power input interface

KPS3102 serial server uses a plug-in terminal with 5.08 mm spacing to connect the power supply, with dual power input PWR1 and PWR2.

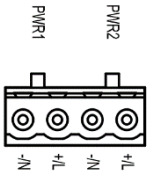

Figure 4 Power input

表 4

Power	PIN	Description
PWR1	+/L	PWR1 connect to positive
	-/N	PWR1 connect to negative
PWR2	+/L	PWR2 connect to positive
	-/N	PWR2 connect to negative

2.6 Specification parameters

Network interface

Network interface: 2

Rate: 10/100Mbps, Auto MDI/MDIX

Connector: RJ45×1

Protocol: TCP/UDP

Isolation Protection: Built-in 1.5KV

Serial interface

Serial interface: 1

Serial type: RS-232/RS-422/RS-485, Software is optional

Connector: DB9 male

ESD protective: 15KV ESD

Isolation Protection: 2KV

DIP: enable/disableRS-485 with 120Ω terminal resistor.

Serial communication parameters

Data bit: 7, 8

Stop bit: 1, 2

Parity: None、Even、Odd、Space、Mark

Flow control: XON/XOFF、RTS/CTS、None

baud rate: 300bps～460.8kbps

Serial signal

RS-232: TxD, RxD, RTS, CTS, GND

RS-422: Tx+, Tx-, Rx+, Rx-, GND

RS-485: Data+, Data-, GND

Software

Security configuration protocol: HTTPS、SSH2

LED indicator

System: PWR1, PWR2, Run

Serial port: S1-T/R

Network: SPEED，ACT/LINK (RJ45)

Button

Reset: support “recovery factory configuration”

Mechanical

Enclosure: Aluminum

Weight: 165g

Dimension: 30×115×68 mm (1.8×5.3×7.3 in)

Protection class: IP40

Mounting: DIN

Environment

Operating temperature: -40℃~75℃

Storage temperature: -40℃~85℃

Relative humidity: 5~95% no condensation

Power requirement

Input voltage: 24VDC (12-48VDC)

Terminal block: 4-pin 5.08 mm spaced plug terminal block

Consumption: 1.8W

Overload protection: Support

Reverse protection: Support

Redundant Power: Support

Industry standards

Certifications: CE, FCC, UL61010, C1D2, RoHS

EMI: EN 55032 Class A

FCC Part 15 Subpart B Class A

EN 55024

EMS: IEC61000-4-2(ESD): ±6kV(contact), ±8kV(air)

IEC61000-4-3(RS): 10V/m (80MHz–2GHz)

IEC61000-4-4(EFT): Power Port: ±2kV; Data Port:±1kV

IEC61000-4-5(Surge): PowerPort: ±1kV/DM, ±2kV/CM; Data Port:±1kV

IEC61000-4-6 (CS): 10V(150KHz-80MHz)

Mechanical standards:

Vibration: IEC60068-2-6

Impact: IEC60068-2-27

Free fall: IEC60068-2-32

Warranty

Warranty: 5 years

3 Web Console Configuration

KPS3102 serial server has a web page, can open the web page through the browser to set the serial server device, such as Firefox browser, IE browser. in this chapter, we will introduce web console function groups and function definitions.

This chapter includes the following:

- Login
- Device information
- Network configuration
- Serial server configuration
- Software upgrade
- Restart
- Exit

3.1 Login

Connect to KPS3102 serial server web console: open the browser and enter the IP address of the device.

Default IP address: E1:192.168.0.249

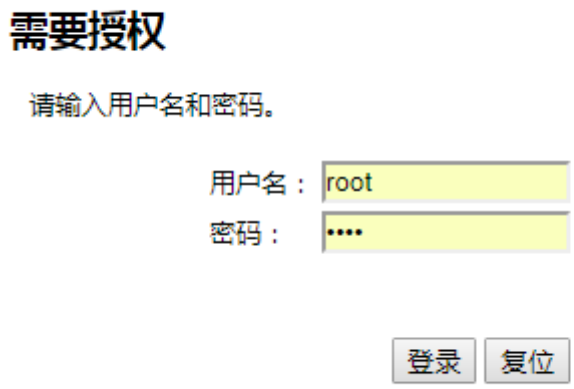

Figure 5 Account Login Interface

Default login username: root, login password: root. Enter user name and password and click "login" to enter into the serial server's web console. The language can be chosen, optional English and Chinese.

3.2 Device information

Device information interface shows the current device information of KPS3102 serial server, such as host name, software version, hardware version and local time.

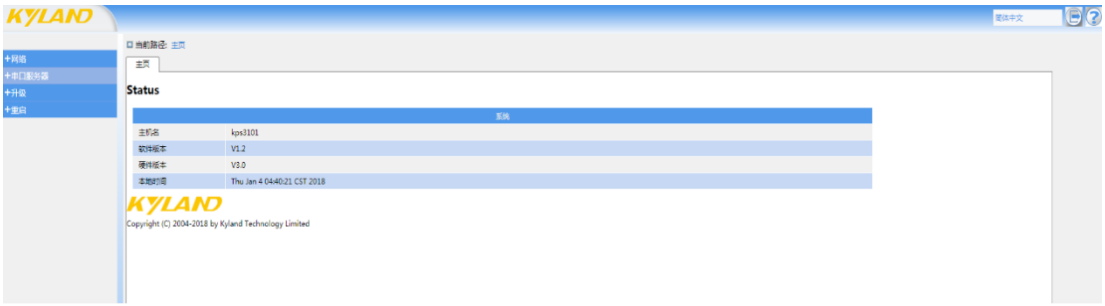

Figure 6 homepage information

3.3 Network configuration

Click Homepage >> Network >> Interface >> Interface: Interface -> Interface configuration, relevant network parameters of the device can be set in this page. The network mode, IP address and subnet mask can be set. After all parameter configuration are complete, click “apply” to automatically refresh the web page to the login interface, and the parameters take effect immediately.

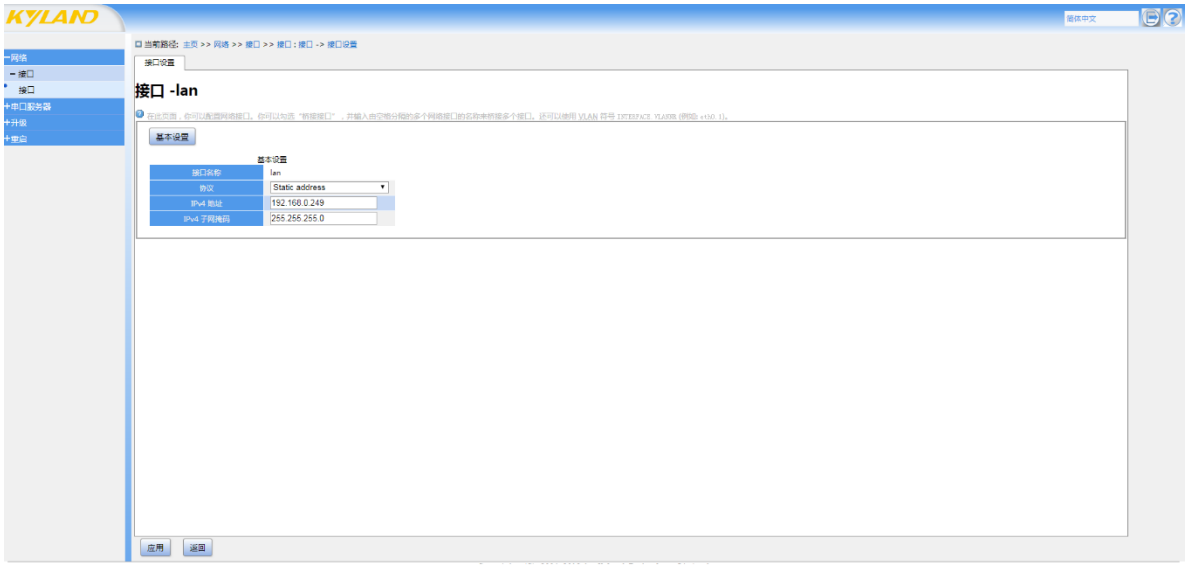

Figure 7 Network port configuration

Table 5 Network port parameters

Parameter	Value	Description
Protocol	Static, DHCP	Select Static if IP address is fixed, select DHCP if IP address is dynamic

IPv4 address	E1:192.168.0.249 (Or other 32 digits)	IP address of serial server.
Subnet mask	255.255.255.0 (Or other 32 digits)	To identify server belongs to A, B or C network.

3.4 Serial server configuration

Click Homepage >> Serial server >> Serial port configuration, serial port and network port related parameters of serial server can be set in this page. The baud rate, data bit, stop bit, Parity bit, flow control, hardware interface type and forwarding delay of serial port can be set. Also, the protocol type, mode, IP address and port of the network port can be set. When all parameter configurations are complete, click “apply” and the parameter takes effect immediately.

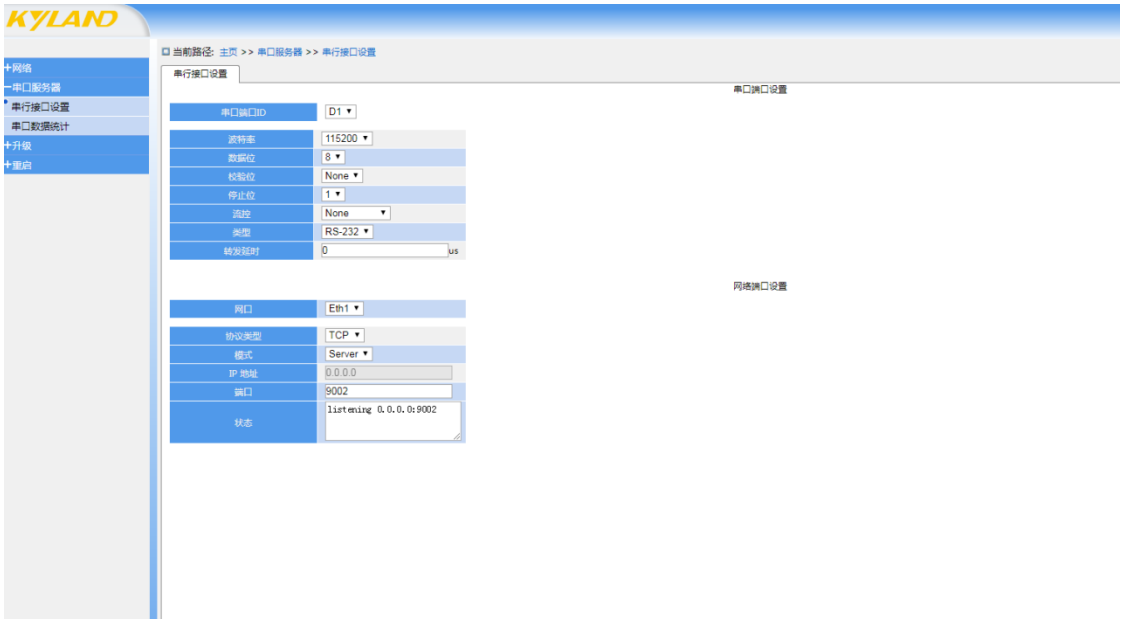

Figure 8 Serial port configuration

Table 6 Serial port parameter

Parameter	Value

Band rate	300bps～460800bps
Data bit	5，6，7, 8
Stop bit	1,2
Parity bit	None, Even, Odd,
Flow control	None, XON/XOFF
Interface	RS-232, RS-485, RS-422
Protocol	TCP or UDP
Mode	Server, client
IP address	The server IP should be filled in if the device is client mode
Port	Port number for device communication
Status	Display the communication status of the device

3.5 Serial Port Data Statistics

Click Homepage >> Serial server >> serial port data statistics, the serial port data statistics information such as the number of serial port packets of device can be viewed.

Figure 9 Serial port data statistics

3.6 Software Upgrade

The serial server can be upgraded and updated in upgrade page. Click the

“Select File” button, select the upgrade file, and then click the “Upgrade” button to upgrade. After the upgrade is successful, restart the serial server and the system will start with a new firmware

Figure 10 System upgrade

3.7 Restart

The other parameters modification except firmware upgrade, click "Apply", parameters immediately effective, no need to restart the device. In case of special circumstances, need to restart the device, click “Restart” button in the restart page to restart the device.

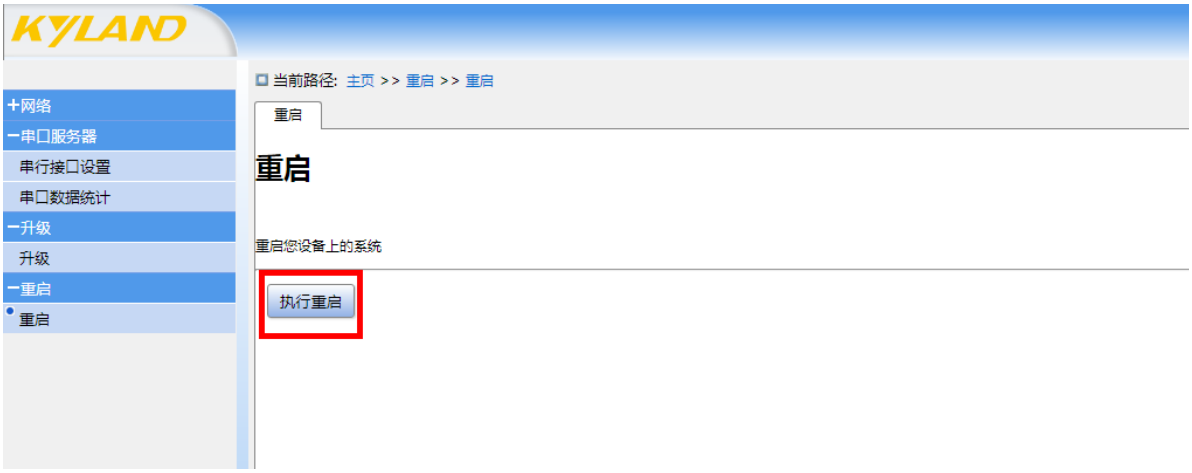

Figure 7 Restart

3.8 Exit

To be safe, please exit the Web program after the web console runs out to prevent those who do not have access to operate the serial server device. The “Exit” button is located in the upper right corner of the interface.

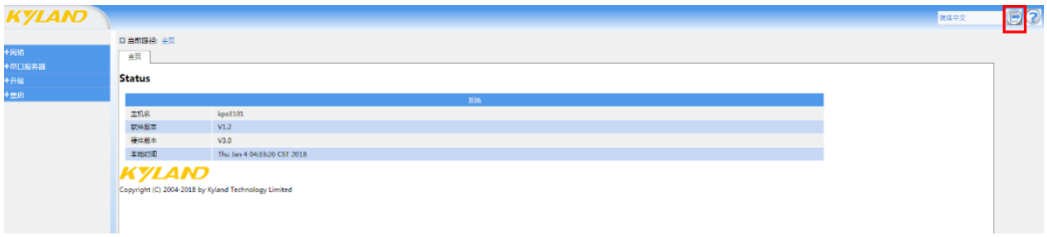

Figure 8 Account exit button

Tip: the working mode of this device is transparent mode; it works normally after all master-slave station need to be connected. The device can be connected after debug pass through the test software. When the serial port data statistics interface sees the following data receiving and forwarding, it is proved that the whole network has passed

Figure 13 Debugging completed