



Ethernet----WIEGAND Bidirectional converter

Manual

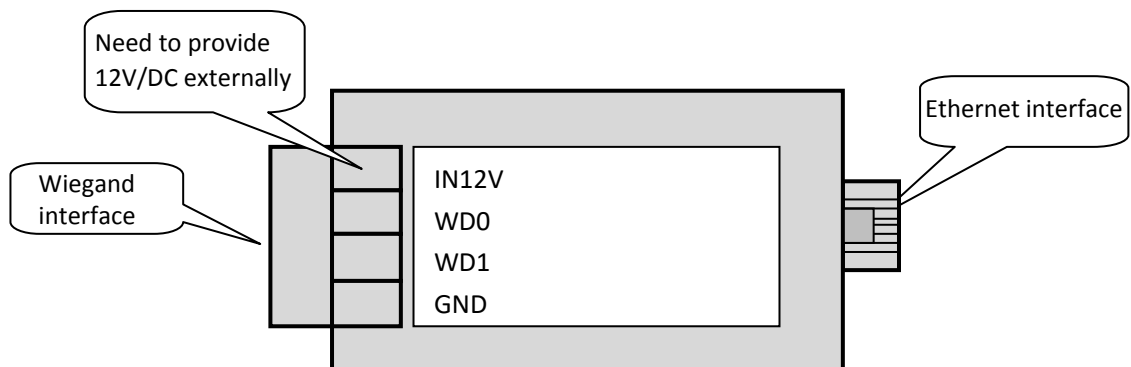
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1. Introduction

This converter supports two-way conversion between Wiegand signal and network (TCP/IP). The Wiegand output supports standard WG 26bit and 34bit signal format receiving and sending, and the network adopts text (ASCII) format for receiving and sending.

WIEGAND—Ethernet



2. Function parameter:

Dimensions: length*width*height=73*39*27 (mm)

Weight: <50g

Power supply: 12V/DC±5% 500mA

Working current: <130mA

Interface: Wiegand, TCP/IP network

Color: black

Built-in webpage: support

Network module: USR-K2\RSR-K3 optional

Protocol: Wiegand, TCP/IP

Wiegand input format: 26bit, 34bit, 4bit, 8bit

Wiegand output format: 34bit, 8bit

Network input format: ASCII

Network output format: ASCII+0D+0A

Network port serial communication parameters: 9600BPS, N, 8, 1

Network mode: (Tcp client\Tcp server\UDP Client\UDP Server\HTTDP Client)
optional

3. Communication details:

3.1 Network receiving

The ASCII code between 0X30---0X39 is required, and the maximum number of bytes input is 20 bytes; (or 1 byte hexadecimal code)

The time interval between byte and byte is within 25ms. If it exceeds 25ms, data will be processed. Then it is sent with Wiegand 34bit, if the serial port only receives one byte of data, it will be considered as a keyboard Data will be sent in Wigan 8bit

For example: After receiving 31 32 33 34 37 38, the serial port will convert these bytes of data into 16 The base is sent in Wiegand 34bit: 0001E256

Detailed explanation: Wiegand 34bit can send a maximum of 4 bytes of hexadecimal code, which means that the serial port input The largest number of data in hexadecimal is FFFFFFFF, which is 4294967295 in decimal (a total of 10 bits, it means there are 10 bytes in ascii code), so the data value input by the serial port should be in Between 0---4294967295.

The maximum number of bytes input by this converter is 20 bytes. If it exceeds Wiegand after being combined into hexadecimal 34bit output standard, the excess part will be intercepted and sent

For example: the data (ASCII code) received by the serial port is 31 32 33 34 35 36 37 38 39

30 31 32 33 34 35 and a total of 15 bytes, then the hexadecimal number is 7048860DDDF79. The data sent through Wiegand 34bit is 860DDDF79 , The high part of the front is lost.

If only one byte is received and the delay exceeds 25ms, it will be considered as a keyboard data, and the byte will be sent as Wiegand 8bit.

For example: if the serial port receives 32 (HEX), it will send 32

3.2 Network output:

Decode the data received from Wiegand and output it in ASCII format

Format: (10 ASCII codes) + 0D+0A

For example: the data received by Wigan is 1E256 (HEX), then when sending it through the serial port, it is

30 30 30 30 31 32 33 34 37 38 0D 0A

If only one byte of Wiegand data (think keyboard data) is received, one byte will be output without the suffix 0D 0A; there are two cases:

1. The received is 4bit, then output the byte in ASCII format
2. The received is 8bit, then send it as it is

For example: if Wiegand receives a 4bit 3, then it sends ASCII 33 through the serial port, and receives a 4bit A, then sends ASCII 41 through the serial port;

If Wiegand receives an 8bit 45 (hex), it sends 45 (hex) as it is from the serial port.);

3.3 Wiegand end reception

Support Wiegand 4bit, 8bit, 26bit, 34bit input.

3.4 Wiegand terminal output

The output format is 8bit and 34bit (8bit means key signal).

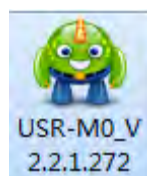
4. Set up a computer network



When connecting the device to the LAN, you need to set the network segment of the computer to be the same as the network segment of the device. The default IP address of the device is 192.168.0.7, so the computer is also set to 0. The network segment IP is 192.168.0.201 ; Because this device has a built-in web page, you can directly enter 192.168.0.7 in the IE browser to set it up, as described in the following chapters.

5. USR-K2/USR-K3 different computer software

Connect one end of the device to the computer's network interface, and the other end to the output of the Wiegand device, and connect the device with 12V/DC power. If the internal network



module of the device is USR-K2, open the software.

If the internal network module of



he device is USR-K3, Then open the software;
or URS-K3,

how to know whether the internal module is USR-K2

Turn on the device



Write USR-K3



Write USR-K2

Find the software interface of USR-K2

File Language Help

Operate Via LAN Operate Via COM

Device IP	Device Name	MAC	Ve...
192.168.0.7	USR-K2	D8 BO 4C E2 2D C4	4012

Search Device

Click here to find modules on the Internet

After finding the network module, click the mouse here to display the content on the right

Base Param (which is without ★, usually keep default)

IP Type ★ Static IP Port 80

ModuleStaticIP ★ 192.168.0.7 User Name admin

SubnetMask ★ 255.255.255.0 Password admin

Gateway ★ 192.168.0.1 Device Name USR-K2

DNS Address 0.0.0.0 Index

User MAC D8 BO 4C E2 2D C4 Reset

Reset Timeout(s) 0 Link

Clear Buffer Data Before Connected RFC2217

UART Set Parameter

Port Param

Parity/Data/Stop NONE 8 1 Baudrate 9600

Module work mode TCP Client Local Port 20108

RemoteIP 192.168.0.201 Remote Port 8234

Short Connection time 0

Short Connection

TCP Server-kick off old connection

Heartbeat

Heartbeat Packet Type

Heartbeat Time(s)

Heartbeat Packet Hex

Register

Register Packet Type None

Save Config

You can set the corresponding module parameters on the right button.

1: Configure the IP address, subnet mask, and gateway; the factory default IP of the device is static IP 192.168.0.7

2: Configure web login password; factory default user name: admin password: admin

3: Add configuration serial port parameters; factory default: invalid inspection, 8 data bits, 1 stop bit; network module is guest

In client mode, the server IP defaults to 192.168.0.201, where you can enter the domain name address.

4: Configure serial port baud rate, local port, remote port

The factory default of the device is 9600BPS, 20108, 8234

It should be noted that the port IP can be modified, but the baud rate cannot be modified at will, but only 9600BPS

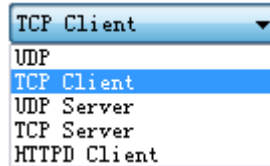
5: Click here to save after setting all items.

Find the software interface of USR-K2

1. Set the IP address, subnet mask and gateway of the current network module, click after setting

2  Save it.

3 A very important point is that you should not change the baud rate arbitrarily. This is related to the Wiegand conversion communication within the device, and Wiegand signals cannot be transmitted after random modification. The factory default is 9600.



4. Network communication mode selection, there are 5 communication methods

4.1 UDP, is a connectionless transmission communication protocol, here is the UDP CLIENT mode, providing simple and unreliable Information transfer service, no connection establishment and disconnection, small data packets and high transmission frequency, there is no requirement for packet loss. data to be transmitted to the specified IP. This mode is not recommended.

4.2 TCP Client The factory default mode of this device is to provide client connections for TCP network services and actively connect to the server. There is a difference between connection and disconnection, thus ensuring reliable data exchange.

4.3 UDP Server UDP server mode, opposite to UDP Client. Setting this mode is the UDP server mode. It is also an unreliable connection. It is not recommended to work in this mode.

4.4 TCP Server TCP server mode, corresponding to TCP Client mode, if set to this mode, this device will serve to use the server, the computer needs to be set to the client mode for communication and actively connect to this device.

4.5 HTTPD Client needs an HTTP server. The URL, header, domain name, port and other information needed to send data can be

It can be set through software. When sending data, you only need to send the request data.

The device comes with the URL and header, and the returned data the user can choose whether to remove the header.

The above 4.1-4.5 only briefly explained these communication methods. For more detailed information, please refer to the USR-K3 software setup manual book.

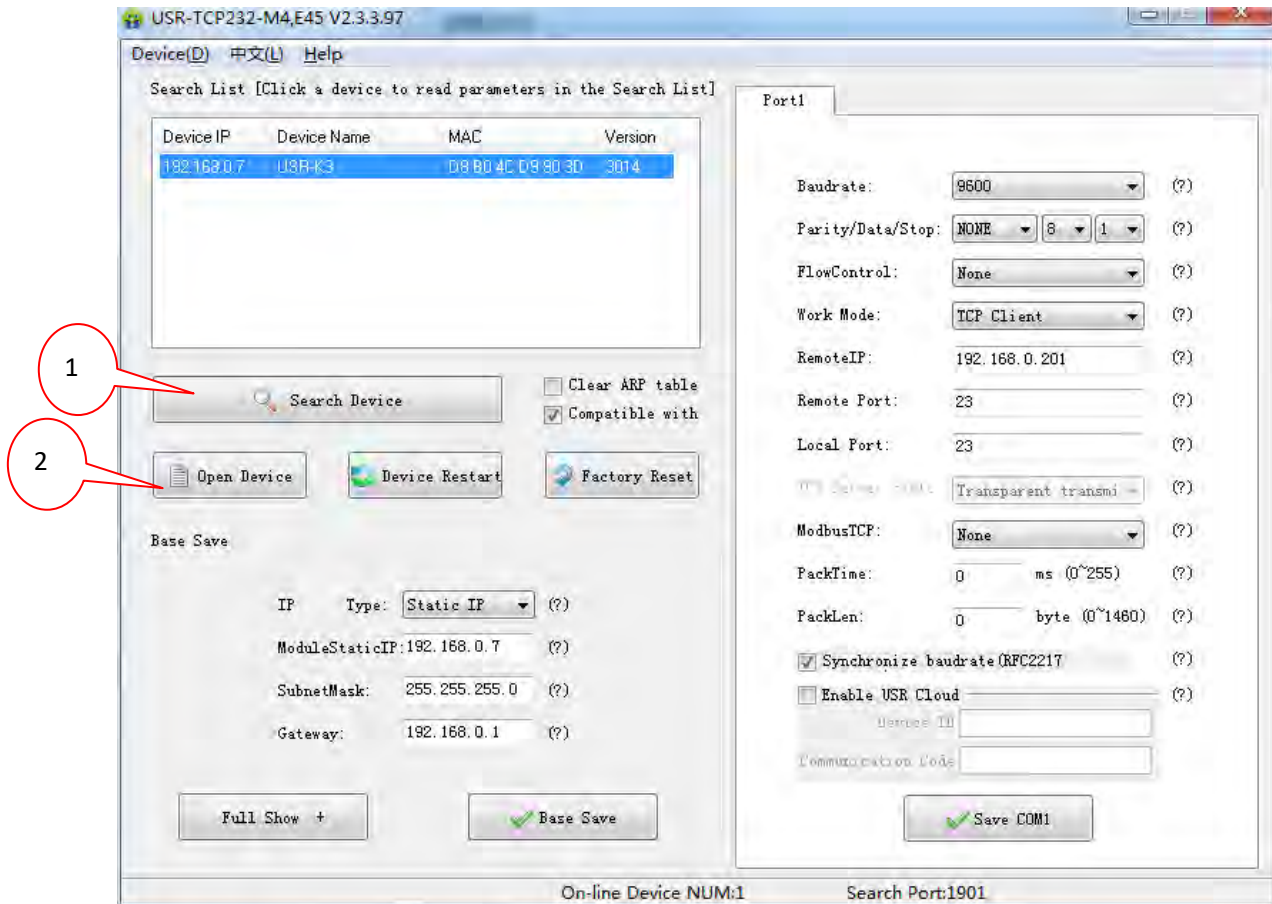
The factory default is TCP Client mode.

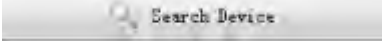
Then set the remote IP remote port and local port. The remote port supports the way to enter the domain name: for example www.xxx.com can also directly enter the IP address. The remote port refers to the port allowed to connect to the server.

Note: When doing experiments in a local area network, make sure that the device and the communicating computer are in the same network segment

6. Web configuration method

When using USR-K2, you need to enter the IP address in the browser to enter the web mode



1. Click  After finding the module
2. Click  Enter web configuration mode, as shown below:

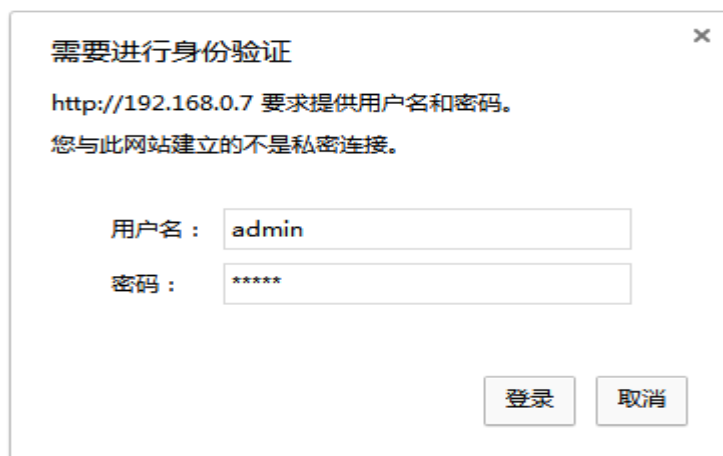


Figure 5

Enter the default username: admin and the default password admin

When using USR-K3 to enter the web page, the following is displayed. Click TTL1 to enter the setting page

The screenshot shows the USR IOT web interface. At the top, it displays 'Firmware Version: V3014' and the slogan 'Be Honest, Do Best!'. The main content area is divided into three columns: 'Current Status', 'parameter', and 'help'. The 'Current Status' column contains a menu with items: 'Local IP Config', 'TTL1', 'Web to Serial', 'Misc Config', and 'Reboot'. A callout bubble labeled 'Here' points to the 'TTL1' item. The 'parameter' column displays the following information: Module Name: USR-K3, Firmware Revision: 3014, Current IP Address: 192.168.0.7, MAC Address: d8-b0-4c-d9-90-3d, Run Time: 0day: 0hour: 59min:37, TX Count(ETH) : 0 bytes, RX Count(ETH) : 0 bytes, Conn Status(ETH)A: CONNECTING, and Conn Status(ETH)B: IDLE. The 'help' column contains two bullet points: 'Run time: run time means the minutes since latest reboot' and 'TX/RX Count: TX/RX count give us a calculation of the total byte we have been received or send.' The footer contains copyright information and the website URL 'www.usriot.com'.

Current Status	parameter	help
Local IP Config	Module Name: USR-K3	<ul style="list-style-type: none">• Run time: run time means the minutes since latest reboot• TX/RX Count: TX/RX count give us a calculation of the total byte we have been received or send.
TTL1	Firmware Revision: 3014	
Web to Serial	Current IP Address: 192.168.0.7	
Misc Config	MAC Address: d8-b0-4c-d9-90-3d	
Reboot	Run Time: 0day: 0hour: 59min:37	
	TX Count(ETH) : 0 bytes	
	RX Count(ETH) : 0 bytes	
	Conn Status(ETH)A: CONNECTING	
	Conn Status(ETH)B: IDLE	

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The following figure appears:

USR-K3 × +

firmware revision: v3013 中文

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Current Status	parameter	help
Local IP Config	Baud Rate: <input type="text" value="9600"/> bps(600~230400)bps Data Size: <input type="text" value="8"/> bit Parity: <input type="text" value="None"/> Stop Bits: <input type="text" value="1"/> bit Flow Control: <input type="text" value="None"/> UART Packet Time: <input type="text" value="0"/> (0~255)ms UART Packet Length: <input type="text" value="0"/> (0~1460)chars Sync Baudrate(RF2217 Similar): <input checked="" type="checkbox"/> Enable Uart Heartbeat Packet: <input type="checkbox"/>	<ul style="list-style-type: none"> • local port 1~65535. when TCP Client, set this to 0 means use random local port • remote port 1~65535 • packet time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value
TTL 1	Socket A Parameters	
Web to Serial	Work Mode: <input type="text" value="TCP Client"/> <input type="text" value="None"/> Remote Server Addr: <input type="text" value="UDP Client"/> [0.0.0.0] Local/Remote Port Number: <input type="text" value="TCP Client"/> (1~65535) Timeout Reconnection : <input type="text" value="UDP Server"/> (1~65535) <input type="text" value="TCP Server"/> (1~65535) <input type="text" value="Httpd Client"/> (1~99999)s PRINT: <input type="checkbox"/> ModbusTCP Poll: <input type="checkbox"/> Poll Timeout : <input type="text" value="200"/> (200~9999) ms Enable Net Heartbeat Packet: <input type="checkbox"/> Registry Type: <input type="text" value="None"/> Location <input type="text" value="Connect With"/>	
Misc Config	Socket B Parameters	
Reboot	Work Mode: <input type="text" value="NONE"/>	


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It can be polished from the picture above: the setting in the picture has the same effect as the software setting, just fill in the picture above. After the input is complete, click the save button

It should be noted that there are 5 optional modes in the working mode; but there is no last item in the web configuration mode of USR-K2: Httpd Client as shown in the figure below

USR-K2 × +

firmware revision: v4012 虫文

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Local IP Config
RS232/RS485
Misc Config
Reboot


parameter

Baud Rate: 9600 bps
Data Size: 8 bit
Parity: None
Stop Bits: 1 bit
Local Port Number: 20108 (1~65535)
Remote Port Number: 8234 (1~65535)
Work Mode: TCP Client
Remote Server Addr: TCP Client
RS485: UDP Server
RESET: TCP Server
LINK:
INDEX:
Sync Baudrate(RF2217 similar):
Send device ID when connected:
Send data with device ID:
Cloud passthrough:
Cloud ID:
Cloud Password:

Save Cancel

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Firmware Version: V3014 中文



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<ul style="list-style-type: none"> Current Status Local IP Config <li style="background-color: #f4a460;">TTL1 Web to Serial Misc Config Reboot 	<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>Parity: None ▼</p> <p>Stop Bits: 1 bit</p> <p>Flow Control: None ▼</p> <p>UART Packet Time: 0 (0~255)ms</p> <p>UART Packet Length: 0 (0~1460)chars</p> <p>Sync Baudrate(RF2217 Similar): <input checked="" type="checkbox"/></p> <p>Enable Uart Heartbeat Packet: <input type="checkbox"/></p> </div> <div style="width: 45%; border: 1px solid #ccc; padding: 5px;"> <p style="text-align: center; background-color: #0056b3; color: white; margin: -1px -1px 1px -1px;">Socket A Parameters</p> <p>Work Mode: TCP Client ▼ None ▼</p> <p>Remote Server Addr: 192.168.0.201 [192.168.0.201]</p> <p>Local/Remote Port Number: 23 23 (1~65535)</p> <p>Timeout Reconnection : 86400 (1~99999)s</p> <p>PRINT: <input type="checkbox"/></p> <p>ModbusTCP Poll: <input type="checkbox"/> Poll Timeout : 200 (200~9999) ms</p> <p>Enable Net Heartbeat Packet: <input type="checkbox"/></p> <p>Registry Type: None ▼ Location Connect With ▼</p> </div> </div> <div style="margin-top: 10px;"> <p style="text-align: center; background-color: #0056b3; color: white; margin: -1px -1px 1px -1px;">Socket B Parameters</p> <p>Work Mode: NONE ▼</p> </div> <div style="text-align: right; margin-top: 10px;"> <p>Save Cancel</p> </div>	<p>TCP Client, set this to 0 means use random local port</p> <ul style="list-style-type: none"> • remote port 1~65535 • packet time/length default 0/0, means automatic packet mechanism; you can modify it as a none-zero value
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Save

After setting, click the save button to save. After clicking, a button to restart the network device appears,

Firmware Version: V3014 中文



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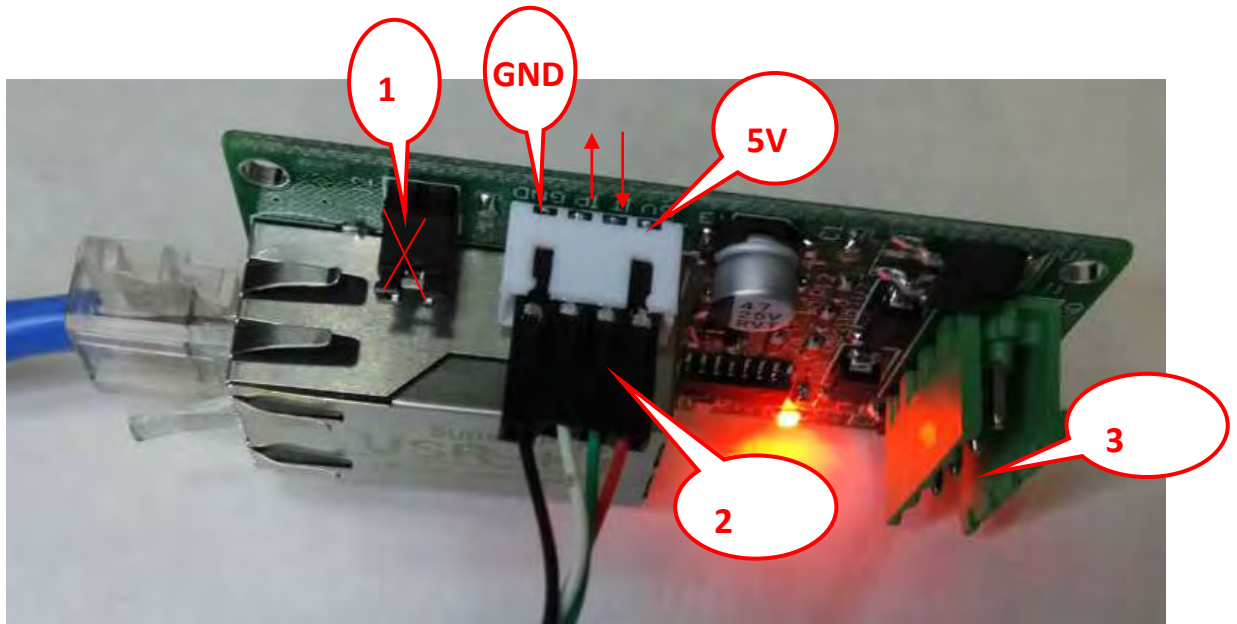
Be Honest, Do Best!

<ul style="list-style-type: none"> Current Status Local IP Config <li style="background-color: #f4a460;">TTL1 Web to Serial Misc Config Reboot 	<p style="background-color: #0056b3; color: white; padding: 5px; margin: -1px -1px 1px -1px;">Reboot/Reset</p> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> Restart Module Restart Module </div>	<p>help</p> <ul style="list-style-type: none"> • Reboot: Click to make your config take effect
--	---	--

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Click here to restart

7. The network port communicates directly with the TTL permanent serial port



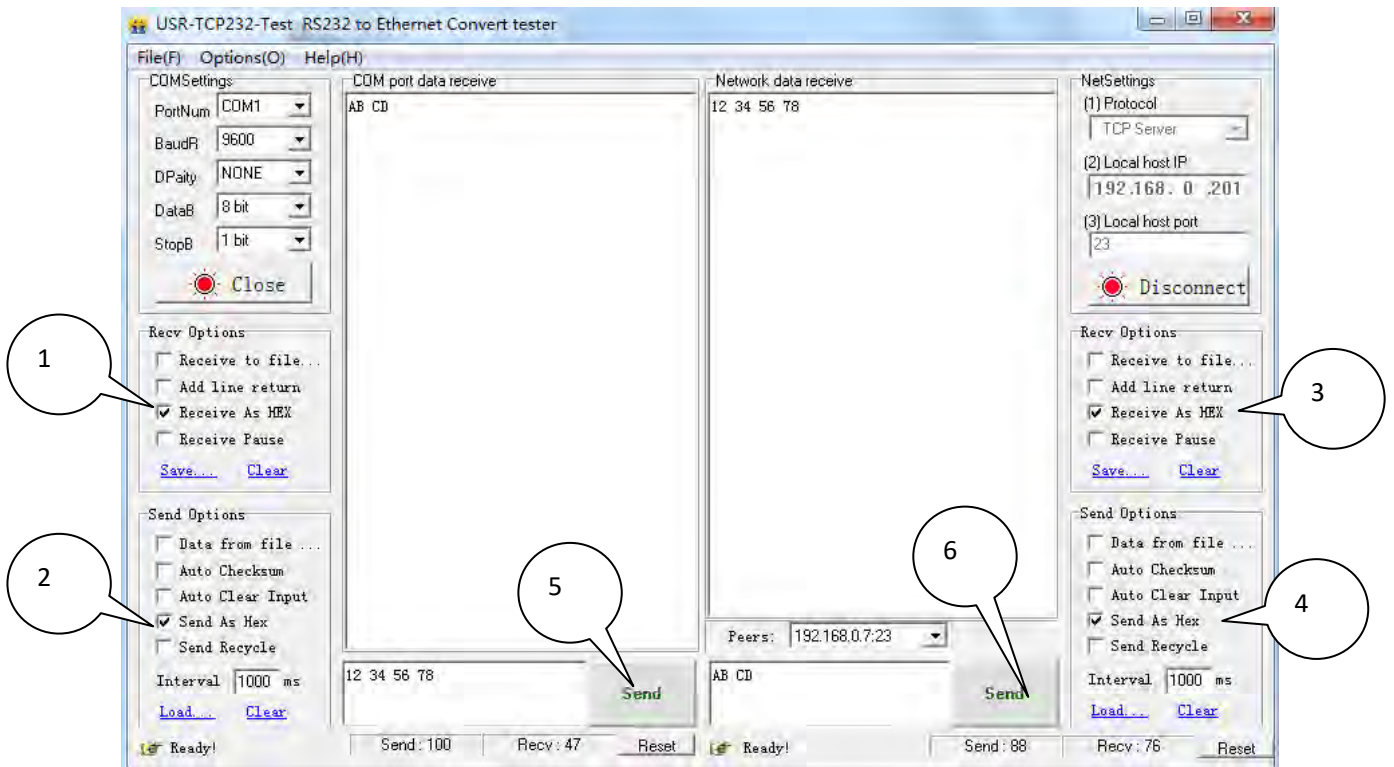
1. Connect a TTL communication connector to the white 4P plug. If the connector provides 5V power, then do not provide power at 3 again. Otherwise, 12V/DC needs to be provided at 3 places to facilitate the power supply of the equipment.

This TTL adapter cable needs to be provided by the user, that is, the TTL to RS232 adapter cable, which is usually a USB interface, and a virtual serial port is created on the computer. The direction indicated by the arrow in the figure is the direction of data transmission (the opposite of the Wiegand conversion TTL output described below).

2. After you are ready, you can communicate via serial and network ports.

3. Note that the jumper in place 1 should be removed.

4. The figure below is the data of the network interface directly communicating with the UART serial port

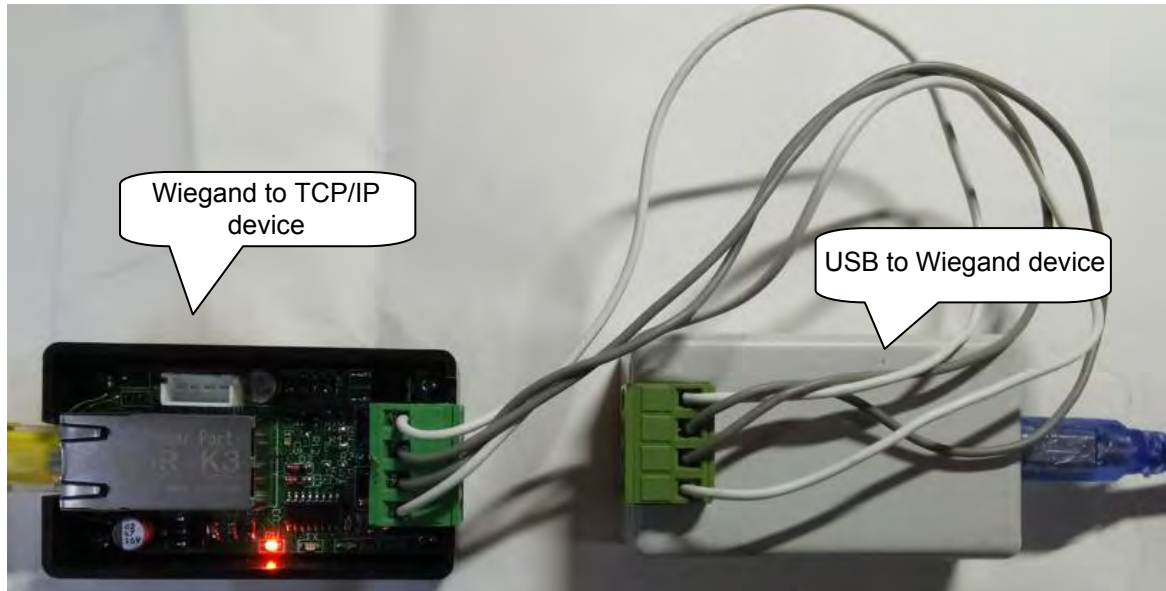


It should be noted that the 1-4 marked in the above figure should be selected as the HEX method, so that the data can be analyzed more intuitively.

Click Send at the label 5 to send the data to the TCP through the serial port, and click Send at the label 6 to transmit the data from the TCP to the serial port. This is actually the inherent function of USR-K2 \ USR-K3-transparent transmission.

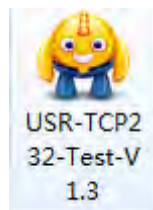
8. Network interface and Wiegand interface communication

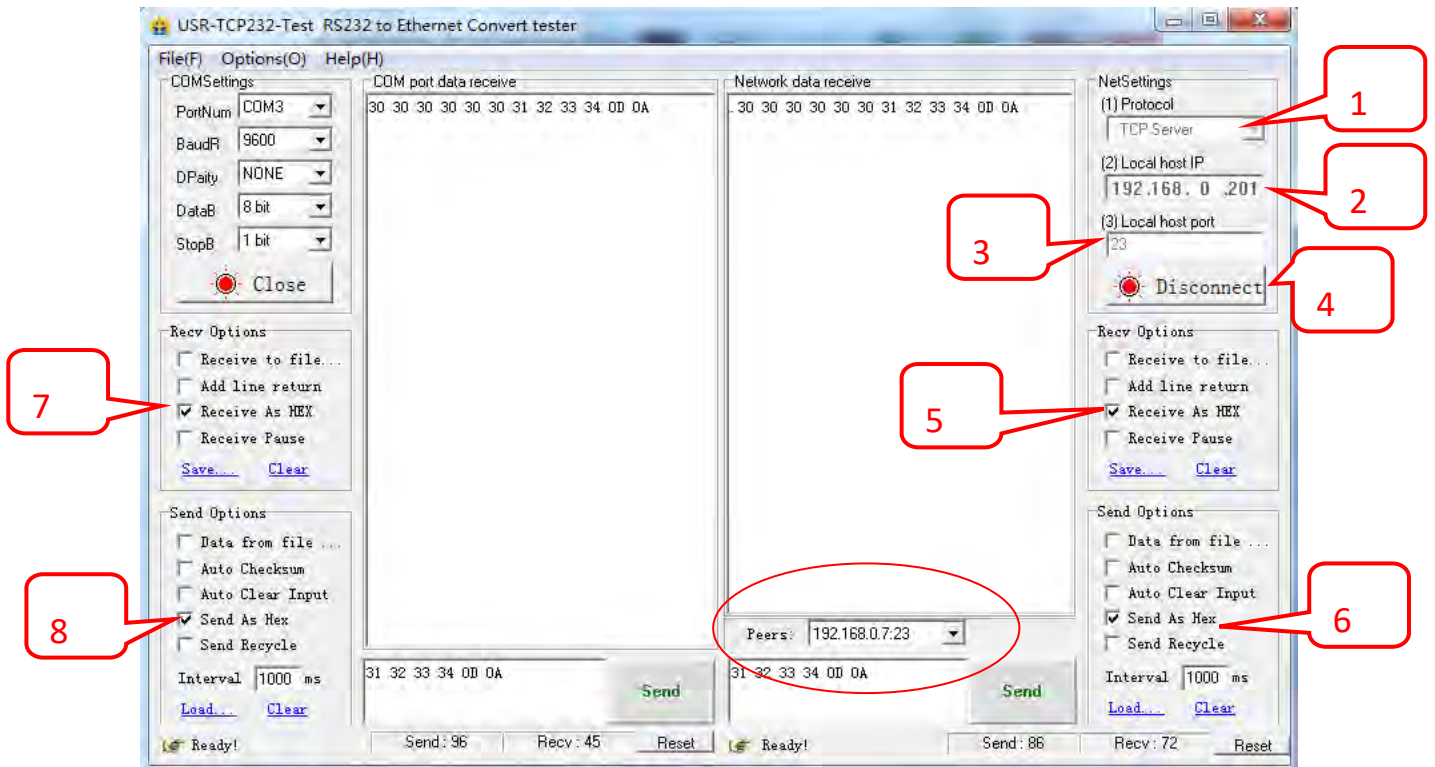
The connection is shown in the figure below,



Picture 12



Open the test software





Follow the instructions of the illustration below to explain

1. Select TCP Server server mode, here is the working mode for the computer, because the above is a converter The setting is the client mode, so here is the setting.
2. The local IP setting is the IP of the computer
3. The 23 here is the remote address mentioned above.

4. After clicking  Listening , it becomes  Disconnect , The most important thing is to look at the content in the red circle below. It needs to be the same as that in the circle, that is, it will be displayed like this when the converter is connected to the computer. Only in this way can you set 5, 6, 7, and 8 to be the same as those marked in the above figure, and then you can operate.

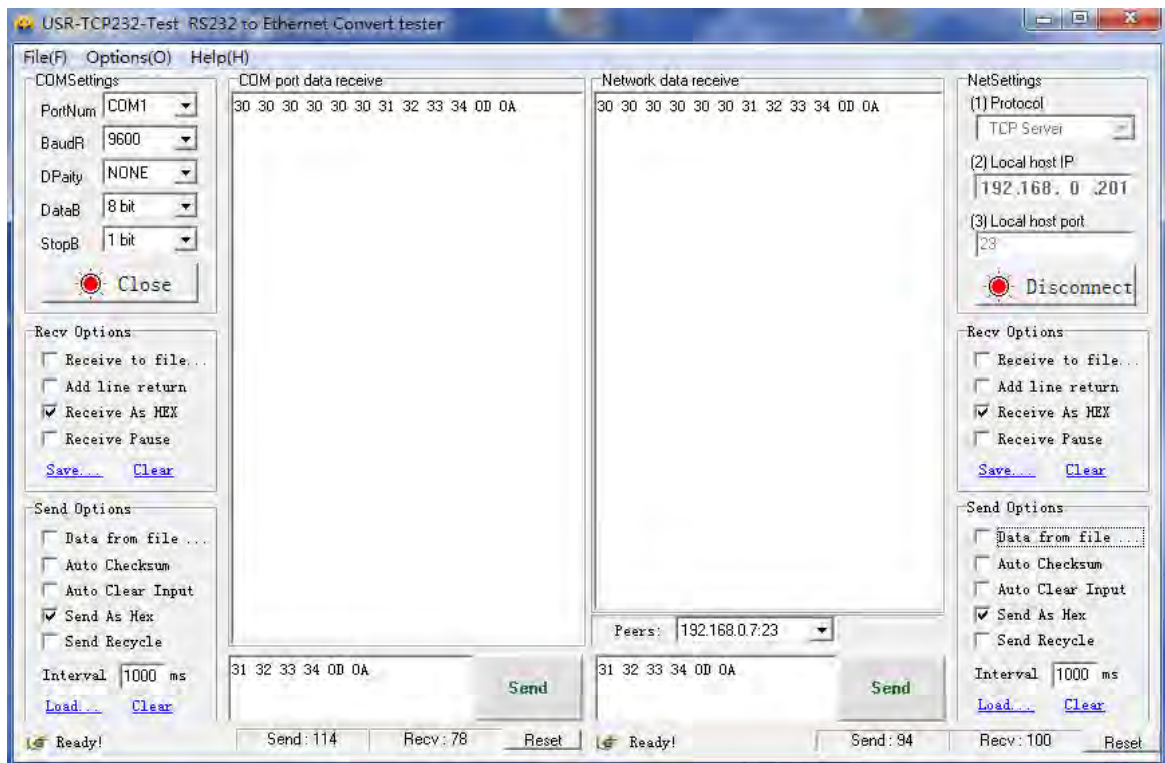
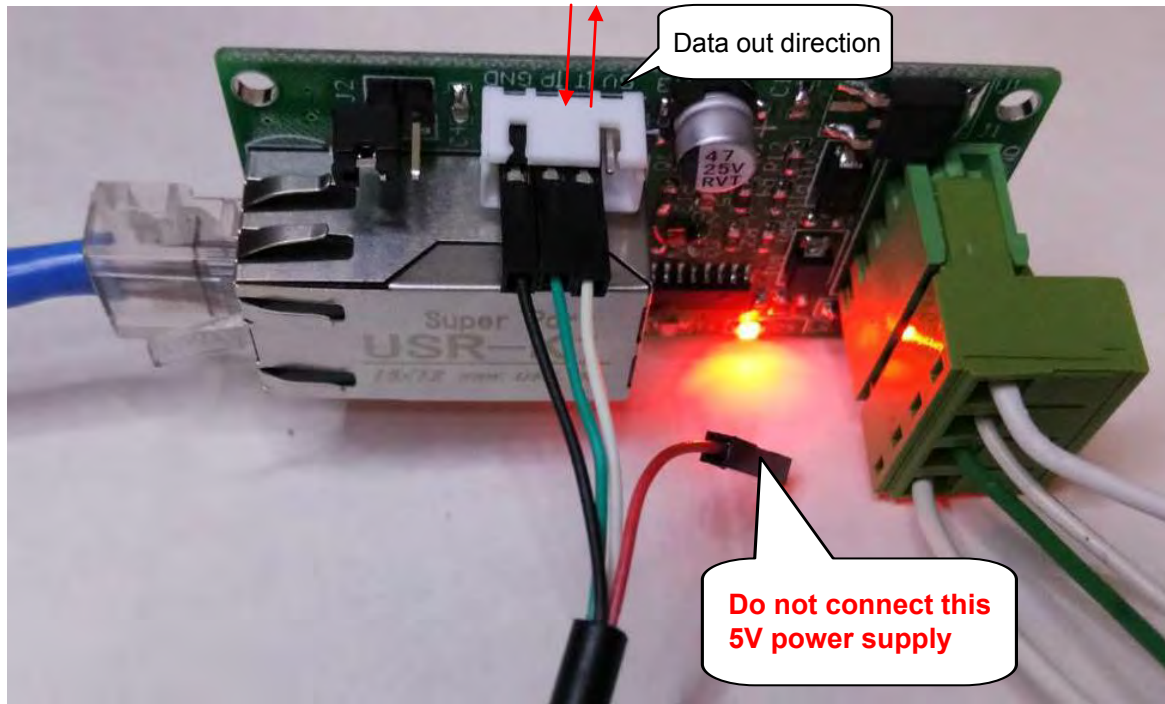
If it does not appear the same as or similar to the ones in the circle (the format is the same after modifying the IP and port). Then check whether the previous settings are consistent with the description in this article.

If the information in the red circle appears, then the following communication experiment can be carried out:

5. Through Wiegand transmission, connect the Wiegand device to the converter, swipe the card or enter the password, etc., and you can receive the content through the network port as shown above
6. If the 4P TTL to serial port is also connected at this time, then the data can also be seen on the serial port at the same time, this is the content to be discussed below

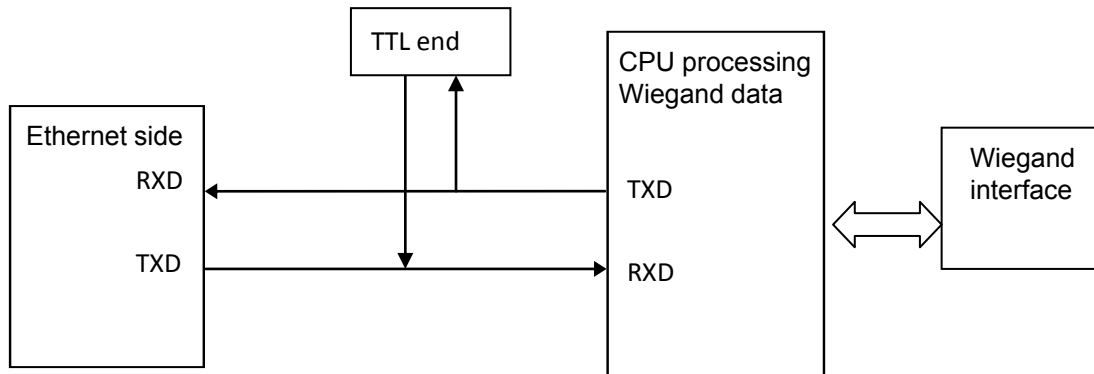
9. Network interface, TTL initial serial port to receive Wiegand data at the same time

Note that this time is opposite to the direction of sending and receiving data through TTL to connect to the network port. The position of the outside receiving and sending data lines must be exchanged, that is, the white line and the green line must be exchanged.



The picture above shows the data that Wiegand transfers to TTL and network at the same time.

The figure below is the schematic diagram of the data transmission direction of this converter (the data communication direction of the circuit board drawing)



10. The picture of the webpage when the network module USR-K2 is used in the attached picture

USR-K2

firmware revision: v4012

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Local IP Config

RS232/RS485

Misc Config

Reboot

parameter

IP type: Static IP

Static IP: 192 . 168 . 0 . 7

Submask: 255 . 255 . 255 . 0

Gateway: 192 . 168 . 0 . 1

Module Name: USR-K2

Current IP Address: 192.168.0.7


MAC Address: d8-b0-4c-b2-2d-c4

Save Cancel

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Local IP Config

RS232/RS485

Misc Config

Reboot

parameter

Baud Rate: 9600 bps

Data Size: 8 bit

Parity: None

Stop Bits: 1 bit

Local Port Number: 20108 (1~65535)

Remote Port Number: 8234 (1~65535)

Work Mode: TCP Client

Remote Server Addr: 192.168.0.201

RS485:

RESET:

LINK:

INDEX:

Sync Baudrate(RF2217 similar):

Send device ID when connected:

Send data with device ID:

Cloud passthrough:

Cloud ID:

Cloud Password:

Save Cancel

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Local IP Config

RS232/RS485

Misc Config

Reboot

parameter

Baud Rate: 9600 bps

Data Size: 8 bit

Parity: None

Stop Bits: 1 bit

Local Port Number: 20108 (1~65535)

Remote Port Number: 8234 (1~65535)

Work Mode: TCP Client

Remote Server Addr:

RS485: UDP Server

RESET: TCP Server

LINK:

INDEX:

Sync Baudrate(RF2217 similar):

Send device ID when connected:

Send data with device ID:


Cloud passthrough:

Cloud ID:

Cloud Password:

USR-K2

firmware revision: v4012 中文


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Local IP Config		
RS232/RS485		
Misc Config		
Reboot		

parameter

Module Name:

weberver port number:

Module Id(use for indentify modue): (1~65535)

extended function:

User name:

Pass word:

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