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Make network communication more reliable

NP Series Serial Device Server

User Manual

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Preface

NP series serial device server user manual has introduced:

- Product features
- Network management method
- Network management relative principle overview

Note

The screenshot reference model for this manual is NP302T-2D(RS-485). Other types of products in addition t/o the supported serial type (RS-232, RS-422, RS-485), and the number of network ports and the number of serial ports are different, the interface functions and operation are the same.

Audience

This manual mainly suits for engineers as follows:

- Network administrator responsible for network configuration and maintenance
- On-site technical support and maintenance staff
- Hardware engineer

Text Format Convention

Format	Description
“”	Words with “” represent the interface words. e.g.: "The port number".
>	Multi-level paths are separated by ">". Such as opening the local connection path description: Open "Control Panel> Network Connection> Local Area Connection".
Light Blue Font	It represents the words clicked to achieve hyperlink. The font color is as follows: ‘Light Blue’.
About this chapter	The section ‘about this chapter’ provides links to various

Format	Description
	sections of this chapter, as well as links to the Principles Operations Section of this chapter.

Symbols

Format	Description
 Notice	Remind the announcements in the operation, improper operation may result in data loss or equipment damage.
 Warning	Pay attention to the notes on the mark, improper operation may cause personal injury.
	Make a necessary supplementary instruction for operation description.
	Configuration, operation, or tips for device usage.
	Pay attention to the operation or information to ensure success device configuration or normal working.

Revision Record

Version No.	Revision Date	Revision Description
01	2017-06-09	Manual development
02	2017-10-10	Add Password Verification Function
03	2018-08-28	Change screenshots
04	2020-10-30	Upgrade

Content

The First Part: Operation

1 Log in the Web Interface

1.1 WEB Browsing System Requirements

Using the serial device server, the system should meet the following conditions.

Hardware and Software	System Requirements
CPU	Above Pentium 586
Memory	Above 128MB
Resolution	Above 1024x768
Color	256 color or above
Browser	Internet Explorer 8.0 or above
Operating system	• Windows XP • Windows 7

1.2 Set the IP Address of the Computer

The default management of the serial device server is as follows:

IP Settings	Default Value
IP address	192.168.1.254
Subnet mask	255.255.255.0

When configuring a serial server through the Web:

- Before remote configuration, please make sure the route between computer and switch is reachable.
- Before making a local configuration, make sure that the IP address of the computer and the serial server are on the same subnet.

Notes:
When the serial server is first configured. If it is configured locally, make sure the current computer network segment is 1.

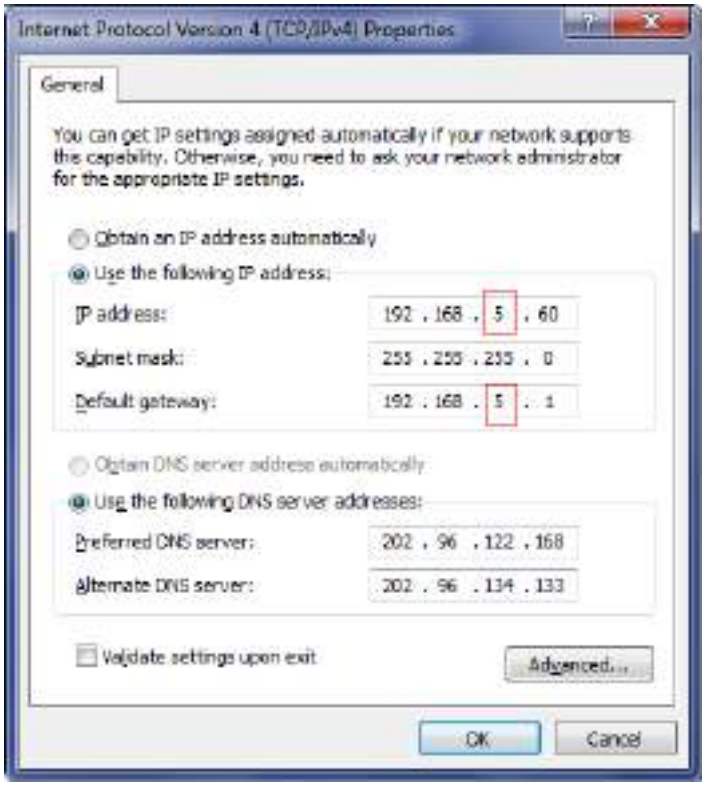
Eg: Assume that the IP address of the current PC is 192.168.5.60, change the network segment "5" of the IP address to "1".

Operation Steps

Amendment steps as follows:

Step 1 Open "Control Panel> Network Connection> Local Area Connection> Properties> Internet Protocol Version 4 (TCP / Ipv4)> Properties".

Step 2 Change the selected "5" in red frame of the picture below to "1".



Step 3 Click “OK”, IP address is modified successfully.

Step 4 End.

1.3 Log in the Web Configuration Interface

Operation Steps

Login in the web configuration interface as follow:

Step 1 Run the computer browser.

Step 2 Enter the address of the serial server "http://192.168.1.254" in the address bar of the browser.

Step 3 Click the “Enter” key.

Step 4 Pop up a window as the figure below, enter the user name and password on the login window.

Note:

- The default username and password for the serial server are "admin", which is strictly case-sensitive when typing.
- Default user account has the administrator privileges.
- Webserver will provide 3 times opportunities to enter username and password. If user enters the error information for 3 times, the browser will display "Access denied" to reject access message. Refresh the page and try again.

Step 5 Click “OK”

Step 6 End.

After login in successfully, user can configure relative parameters and information according to demands.

Note:

After logging in to the device, you can modify the IP address of the serial server for ease of use.

1.4 WEB Overtime Processing

When the user does not operate for more than 300 seconds in the Web interface, the system will do the timeout processing:

- Reserve the configuration this login conduct;
- Cancel this login.

Notes:
After the system overtime, please login in again if post operation needs to be conducted on the Web interface.

2 Equipment Information

Function Description

Check the device name, model, description, serial NO., hardware ver, firmware ver and other information on the "Overview" page.

Operation Path

Device information> basic information

Interface Description

Basic Settings interface screenshot

The main element configuration description of basic settings interface:

Interface Element	Description
Device name	Display device name.
Device model.	The batch number used by the device to facilitate the management of device tags.
Description	Display device description.
Device serial	Display device serial number.

Interface Element	Description
number.	
Hardware Version	Current hardware version information, pay attention to the hardware version limits in software version.
Software version.	Current software version information, updated software version with more features.
Contact information.	Display the contact information of the device maintenance personnel.
Number of LAN	Display LAN port number of the Gateway device.

Network information interface screenshot

The main element configuration instructions in the network information interface

Interface Element	Description
Gets IP Mode	Display how to get an IP Address of the Gateway device.
Subnet mask.	Display the Subnet mask of the Gateway device.
DNS mode	Display how to get a DNS of the Gateway device.
MAC Address	Display device MAC address.
IP Address	Display the default IP Address of the device.
Gateway	Display the Gateway address of the Gateway device.
DNS Server	Display the DNS server address of the gateway device.

3 Network Setting

Function Description

Configure device IP address or DNS server address access method, manually configure device IP address, network mask, gateway, DNS server address and other information on the "Network Setting" page.

Operation Path

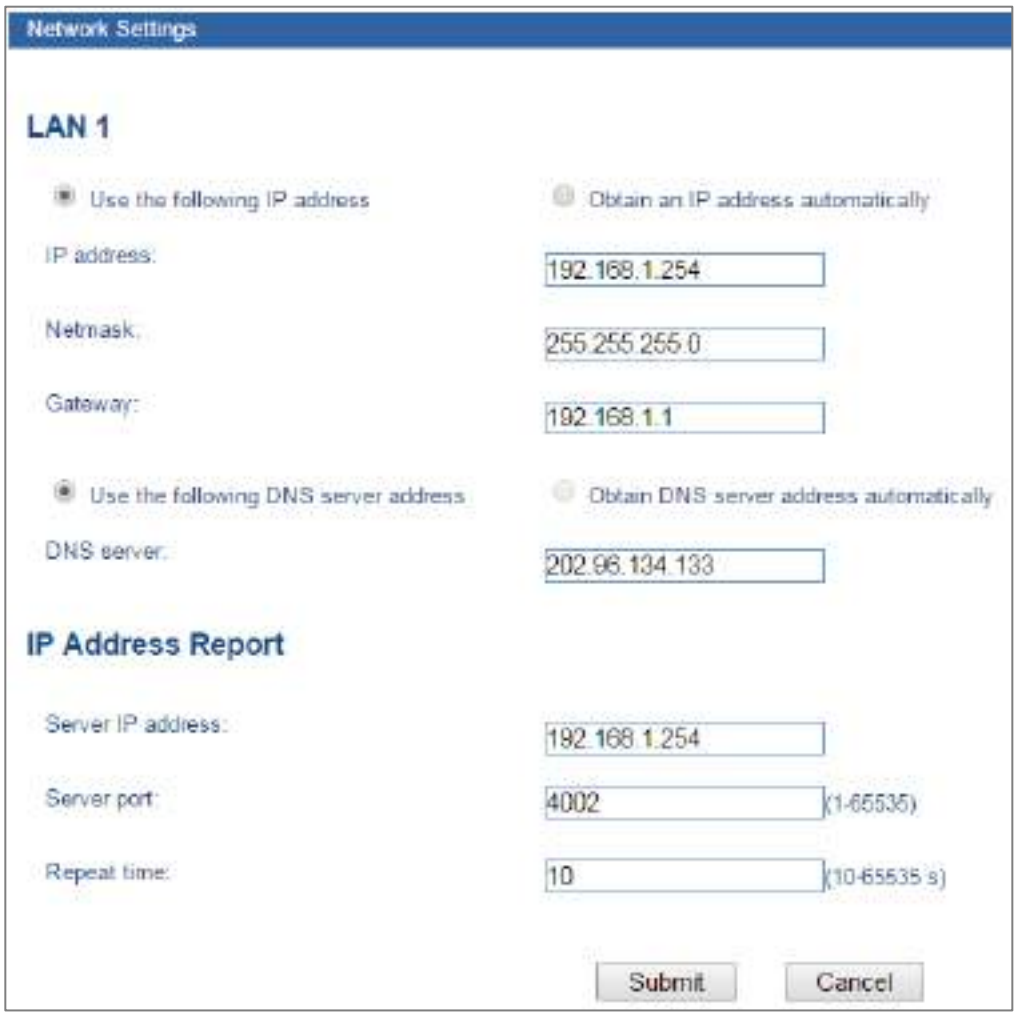
Open “Network Settings> Network Settings” in sequence.

Interface Description

Network settings interface screenshot

Note

The dual-port device displays the "Lan1" and "Lan2" columns. The single-port device displays only the "Lan1" column.



The main element configuration description of network setting interface:

Interface Element	Description
Default LAN	Enable the data from the different network segment of the device to transmit from the default network port. Note: Single network port device doesn't have this option.
Lan1	**Network configuration column of Ethernet port 1.** Note: Lan1 default IP is 192.168.1.254.
IP Access Method	• Use the following IP address: Manually configure IP address, subnet mask and default gateway. • Automatically obtain IP address: Automatic access of IP address, subnet mask and default gateway.

Interface Element	Description
IP Address	Manually configure IP address in the "IP address" text box.
Subnet Mask	Manually configure network mask in the "Network Mask" text box.
Gateway	Manually configure gateway in the "Gateway" text box.
DNS Server Address Access Method	• Use the following DNS server address: Manually configure DNS server address information. • Automatically obtain DNS server address: Automatic access of DNS server address information.
IP Report	**IP report configuration column.** Note: When the serial server adopts the "automatic IP address", it reports the IP address of the user by intermittently, so that the user knows the new IP address of the serial server in time.
Server Address	Server for receiving IP address report.
Server Port	Port for sending IP address report.
Repeat Time	The sending frequency of IP report.

4 Serial Server

4.1 COM Settings

Function Description

On the “COM settings” page, you can configure basic parameters such as baud rate, data bit, stop bit and parity bit corresponding to the serial port number. You can also configure whether the corresponding serial number is enabled for FIFO function, RTS control, DTR control and Packing length and other advanced parameter information.

Operation Path

Open “serial server > COM settings” in sequence.

Interface Description

COM settings interface screenshot

The main elements configuration instructions in COM settings

Interface Element	Description
Serial No	Select corresponding serial number of the device.
Alias	Enter the alias for the corresponding serial number in the "Alias" text box.
Baud Rate	Select baud rate of corresponding serial number. Options: 300/600/1200/2400/4800/9600/19200/38400/57600/115200
Data Bits	Select data bits of corresponding serial number. Options: • 5 bits • 6 bits • 7 bits • 8 bits
Stop Bits	Select stop bits of corresponding serial number. Options: • 1 bit • 2 bits

Interface Element	Description
Parity	Select parity bits of corresponding serial number. Options: • None • Odd • Even • Mark • Space
Flow control	Flow control is used in two data transmission speed of different devices in the control of data flow technology to ensure that two devices communicate with each other to avoid data loss. Click the "flow control" drop-down list box, select the flow control parameters, the options are: • No • RTS/CTS • XON/XOFF • DTR/DSR
Working mode	It's jointly determined by software and hardware, 3IN1 products RS232 and RS485/RS422 optional, RS485/RS422 and RS232 can be automatically identified by the hardware. Note: There are differences in the mode selected by different products.
FIFO Enable	Enable or disable the FIFO function, if the serial device does not support data transceiver cache FIFO, FIFO function can be disabled to avoid data transmission errors.
RTS Ctrl	RTS pin can be controlled, the options are: • Auto • Force ON • Force OFF
DTR Ctrl	DTR pin can be controlled, the options are: • Auto • Force ON • Force OFF
Packing length	The frame length of serial data to Ethernet data. In the set time range, the data forwards when it is greater than or equals to the set frame length. The value range is 0~1460. It means no

Interface Element	Description
	limit on data transmission length when it' set to 0. Note: There are some slight deviations between the actual package length value and the set value.
Delimiter	If the packaging length or the forced transfer time is 0 and the number of delimited characters is greater than 0, the system would detect and process the delimiter after receiving serial data. Every time it receives matched delimiter (or combination of characters), the system would send out all cached serial data via network.
Character Handing	Select the method of delimiter processing. Options: • Retain: the system would send out the received delimiter and other data via network. • Delete: the matched delimiter (or combination of delimiter) would be deleted. The system only transmits data except delimiter.
Transmit time	If the forced transmission time is greater than 0, the system sends the serial data received within the specified time through a packet, in the range of 0 to 65535 ms. When the transfer time is 0, it means that the data transmission interval is not restricted.
Apply to all Port	Check the "Apply to all port" check box to apply the current settings to all serial ports.

Notice

- "Work mode" is corresponding to the model, there are RS232, RS485, RS422 options.
- If there are no matching characters, the data will be sent when the serial data cache is full of 1460 bytes.

4.2 Serial Port Information

Function Description

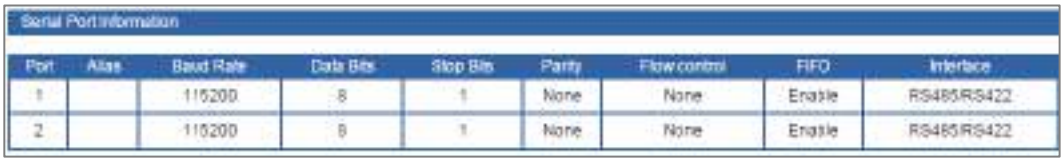
On the "COM Information" page, user can view parameter information such as serial number, alias, baud rate, data bit, stop bit, parity bit and flow control.

Operation Path

Open "Serial server> COM Information" in sequence.

Interface Description

COM information interface screenshot



COM information interface, the main elements of the configuration instructions

Interface Element	Description
Serial Port	Display device serial port number.
Alias	Display serial port alias.
Baud Rate	Display serial port baud rate.
Data Bits	Display serial port data bit.
Stop Bits	Display serial port stop bit.
Parity	Display serial port parity bit.
Flow Control	Display whether the serial port flow control function is enabled.
FIFO	Display whether the serial port FIFO function is enabled.
Working mode	Display serial port work mode.

4.3 Mode setting

Function Description

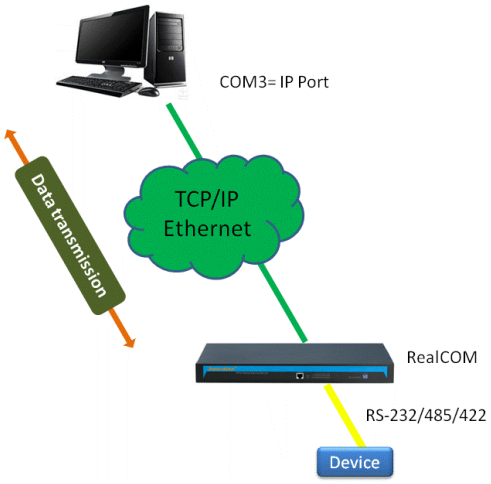
On the “COM Mode Settings” page, you can configure the operating mode of the device's serial port number.

The serial server supports the working modes such as: RealCom mode, TCP server mode, TCP client mode, UDP server mode, UDP client mode, Pair mode, UDP rang mode, and UDP multicast mode.

Operation Path

Open in sequence: "Serial Server>COM Mode Settings".

4.3.1 RealCom Mode

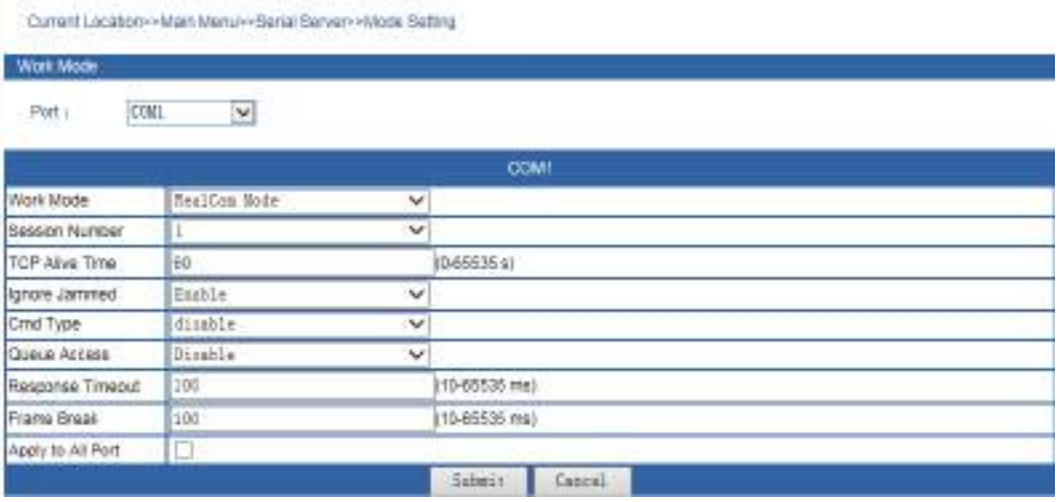


In RealCom mode, the serial port server and Windows / Linux operating system with the RealCOM drive work cooperatively. RealCom COM / TTY driver establishes a transparent network transmission connection between the host and the serial device in the operating system. Map the serial port of the serial port server to the local COM/TTY device of the host according to the user configured serial server IP address and serial port number and other parameters. The original serial device software or communication module without modification can be used directly without modification.

The RealCom driver gets the data be sent to the local COM / TTY device of the host, then sends it over Ethernet in the form of TCP / IP packet. At the other end of the transparent transmission, the serial server will receive the TCP / IP packet and analyse the packet, and after unpacking send the original data to the serial device through the corresponding serial port, and vice versa.

Interface Description

RealCom Mode interface screenshot



Main element configuration instructions in RealCom Mode interface

Interface Element	Description
Session Number	The number of hosts that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
TCP Alive Time	If there isn't any TCP activity within schedule time, the system will automatically send connection detection message and check whether the TCP connection is valid. If the reply packet of opposite side hasn't been received after sending probe packet for 3 times, system will regard the opposite side as down and forwardly close the communication connection.
Ignore jammed	Enables or disables ignore jammed connections. Options: • Enabled: The system ignores blocked network connections and continues to send data to other normal network connections. • Disabled: If the network connection is blocked or the response is lost, the system will wait until the data is successfully sent to all network connections before sending the next data.
Cmd type	Compatible with virtual serial port management softwares of other companies. Options: • Disable: means to use our company's virtual serial port

Interface Element	Description
	software VSP Management to access the serial server. • MCP: means to use MOXA's virtual serial port software to access the serial server. • CCP: means to use Kang Hai's virtual serial port software to access the serial server.
Queue access	Enable or disable queue access mode. Options: • Enabled: Multiple hosts can send or receive data from the serial port at the same time. The serial server processes the communication data in the order of FIFO (first in, first out), prioritizes requests from the first host, and returns the response to the first host. • Disabled: Means that queue access mode is not enabled.
Response time	Time interval that allows the serial server to respond to each host's request, the communication between serial server and host is deemed to be completed after schedule time, serial server continues to deal with the next host request.
Frame break	If the idle wait time after the serial and host communication is completed is longer than the frame break setting time, the serial port will consider the communication to be completed and continue processing the command from the next host. This approach is very effective in reducing latency and improving product performance.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

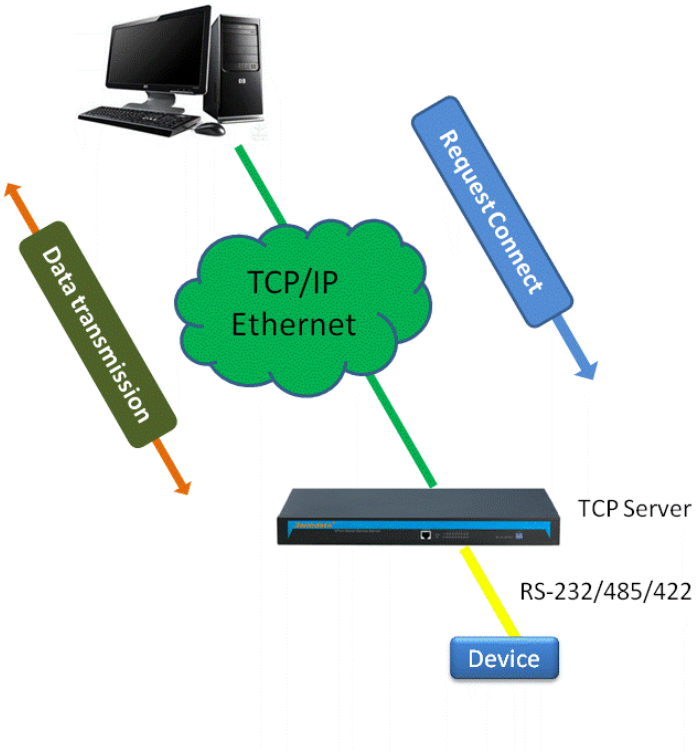
Notice

- When the maximum number of connections is greater than 1, set the parameters to be consistent when multiple hosts are connected to the same serial port, otherwise it will cause communication error.
- The communication parameters of the real serial port will automatically change according to the communication parameters of the virtual serial port. You can view the real-time communication parameters of the serial port through "COM parameter" option

under "state monitor".

- The queue access mode is a question-and-answer communication mode to ensure that the communication is normal.

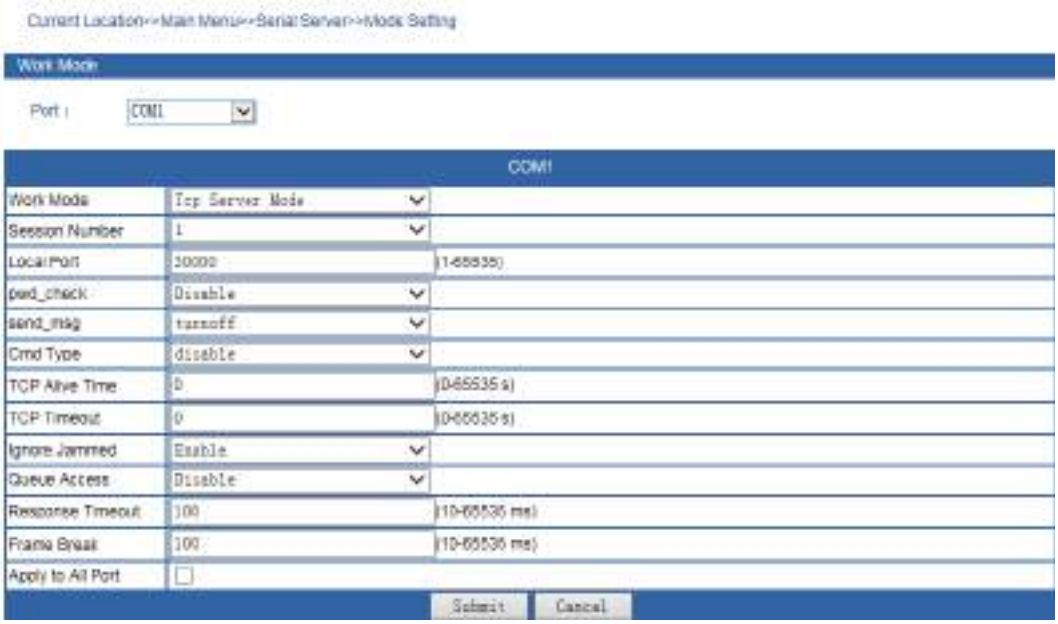
4.3.2 TCP Server Mode



In the TCP server mode, the serial device server is assigned an IP port number, passive waiting for the host connection. When the host initiates a connection request and establishes a connection with the serial device server, the host can realize bidirectional transparent data transmission through the network connection and the serial port. The TCP server mode supports up to four session connections simultaneously, allowing multiple hosts to simultaneously read or send Ethernet data to a serial device.

Interface Description

TCP server mode interface screenshot



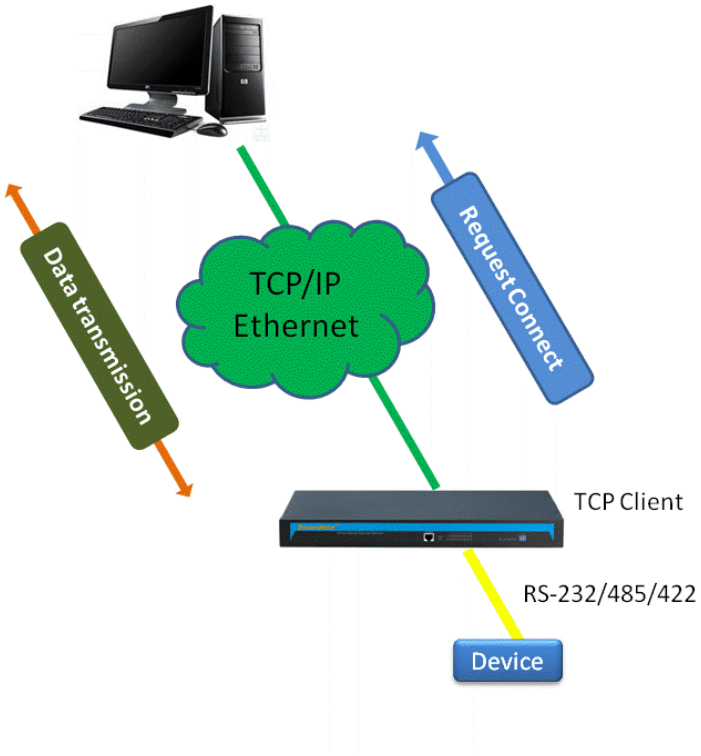
TCP server mode interface main element configuration instructions

Interface Element	Description
Session Number	The number of hosts that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
Local port	The destination connection port of TCP client.
pwd_check	After the device is connected with the remote client, the peer client needs to send the authentication password to the device. After the password is verified, the client can communicate with the device. Options: • Enable: Enable password verification function. • Disable: Disable password verification function. Note: When password verification is enabled, only users with "admin" account privileges can send / receive messages using this device. • The first data sent by the peer client to the device defaults to the check password. • Verification password is "admin" account password. • If the password is entered incorrectly, re-establish the connection and then re-enter the password.

Interface Element	Description
Send_msg	The information sent after the device is connected to the peer client. Options: • Ipaddr: After the connection is successful, send the IP address of the device to the remote client. • Devicename: After the connection is successful, send the device name of the device to the remote client. • turnoff: After the connection is successful, no information is sent to the peer client.
Cmd type	Compatible with virtual serial port management softwares of other companies. Options: • Disable: means to use our company's virtual serial port software VSP Management to access the serial server. • MCP: means to use MOXA's virtual serial port software to access the serial server. • CCP: means to use Kang Hai's virtual serial port software to access the serial server.
TCP Alive Time	If set TCP Alive Time to "0", the function will be disable. If no TCP activity occurs within the allotted time, the system would send contact-probing message to check the validity of TCP connection. If the reply packet of opposite side hasn't been received after sending probe packet for 3 times, system will regard the opposite side as down and forwardly close the communication connection.
Idle timeout	Set the TCP timeout for the serial server's current data communication link. If the idle time-out during communication is larger than 0, the system would close the TCP connection without any data transmission activity occurring in the specified time automatically; 0 means the free TCP connection would not be closed automatically.
Ignore jammed	Enables or disables ignore jammed connections. Options: • Enabled: The system ignores blocked network connections and continues to send data to other normal

Interface Element	Description
	network connections. • Disabled: If the network connection is blocked or the response is lost, the system will wait until the data is successfully sent to all network connections before sending the next data.
Queue access	Enable or disable queue access mode. Options: • Enabled: Multiple hosts can send or receive data from the serial port at the same time. The serial server processes the communication data in the order of FIFO (first in, first out), prioritizes requests from the first host, and returns the response to the first host. • Disabled: Means that queue access mode is not enabled.
Response time	Time interval that allows the serial server to respond to each host's request, the communication between serial server and host is deemed to be completed after schedule time, serial server continues to deal with the next host request.
Frame break	If the idle wait time after the serial and host communication is completed is longer than the frame break setting time, the serial port will consider the communication to be completed and continue processing the command from the next host. This approach is very effective in reducing latency and improving product performance.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

4.3.3 TCP Client Mode



In the TCP client mode, the serial device server can automatically establish a network connection with the host specified by the user when the serial data arrives. When the data transmission is completed, the serial server will automatically shut down the network connection according to the parameters such as TCP alive time and TCP idle timeout time. Similarly, TCP client mode can support up to four session connections at the same time, so that multiple hosts can simultaneously read or send Ethernet data to a serial device.

Interface Description

TCP Client mode interface screenshot

TCP client mode interface main element configuration instructions

Interface Element	Description
Session Number	The number of host that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
Destination Address	Enter the IP address of the server to be connected by the serial device server.
Dest Port	Enter the TCP port number of the server to be connected by the serial device server.
Local port	The serial server provides a local service or connection port number for the TCP connection that is used to connect and communicate with the server.
pwd_check	After the device is connected with the remote server, the peer server needs to send the authentication password to the device. After the password is verified, the server can communicate with the device. Options: • Enable: Enable password verification function.

Interface Element	Description
	• Disable: Disable password verification function. Note: When password verification is enabled, only users with "admin" account privileges can send / receive messages using this device. • The first data sent by the peer server to the device defaults to the check password. • Verification password is "admin" account password. • If the password is entered incorrectly, re-establish the connection and then re-enter the password.
Send_msg	The information sent after the device is connected to the peer server. Options: • Ipaddr: After the connection is successful, send the IP address of the device to the remote server. • Device name: After the connection succeeded, send the device name of the device to the remote server. • turnoff: After the connection is successful, no information is sent to the peer server.
Connection control	Select how the serial server initiates a connection request. Options: • Always: Immediately after the system is started, it tries to establish a connection with the target host and automatically reconnects the target host after the connection is disconnected. • Char: Automatically connects to the target host when receiving data from the serial port. • DSROn: Automatically connects to the target host when the DSR signal is detected. • DCDOn: Automatically connects to the target host when the DCD signal is detected.
Disconnection control	Select how the serial server is disconnected. Options: • None: Never shut down the network connection automatically. • DSROff: Automatically shuts down the network connection when the DSR signal is detected invalid. • DCDOff: Automatically shuts down the network

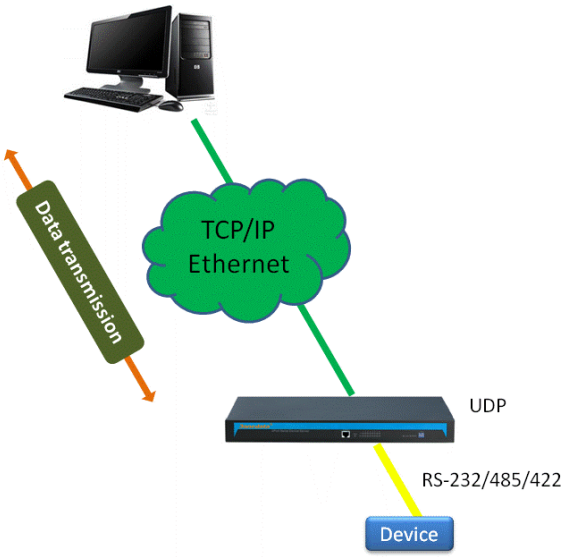
Interface Element	Description
	connection when the DCD signal is detected invalid. • Idle: If the idle timeout time is greater than 0, the system will automatically shut down TCP connections that do not have any data send and receive activity for a specified period of time.
TCP Alive Time	If no TCP activity occurs within the allotted time, the system would send contact-probing message to check the validity of TCP connection. If the reply packet of opposite side hasn't been received after sending probe packet for 3 times, system will regard the opposite side as down and forwardly close the communication connection. If set TCP Alive Time to "0", the function will be disable.
Idle timeout	Set the TCP timeout for the serial server's current data communication link. If the idle time-out during communication is larger than 0, the system would close the TCP connection without any data transmission activity occurring in the specified time automatically; 0 means the free TCP connection would not be closed automatically.
Ignore jammed	Enables or disables ignore jammed connections. Options: • Enabled: The system ignores blocked network connections and continues to send data to other normal network connections. • Disabled: If the network connection is blocked or the response is lost, the system will wait until the data is successfully sent to all network connections before sending the next data.
Queue access	Enable or disable queue access mode. Options: • Enabled: Multiple hosts can send or receive data from the serial port at the same time. The serial server processes the communication data in the order of FIFO (first in, first out), prioritizes requests from the first host, and returns the response to the first host.

Interface Element	Description
	• Disabled: Means that queue access mode is not enabled.
Response time	Time interval that allows the serial server to respond to each host's request, the communication between serial server and host is deemed to be completed after schedule time, serial server continues to deal with the next host request.
Frame break	If the idle wait time after the serial and host communication is completed is longer than the frame break setting time, the serial port will consider the communication to be completed and continue processing the command from the next host. This approach is very effective in reducing latency and improving product performance.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

Notice

The TCP timeout takes effect only when "Disconnect control" is set to "idle".

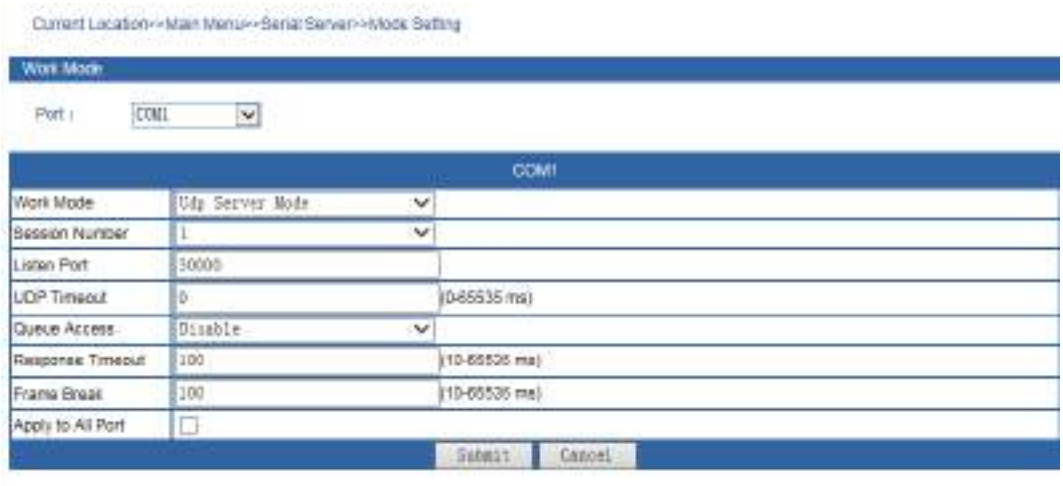
4.3.4 UDP Server Mode



In UDP server mode, the serial server through the UDP protocol and user-specified host for serial data transmission. UDP mode serial device server can transfer data from the serial device to one or more hosts, and the serial device server can also receive data from one or more hosts. Compared with TCP mode, UDP protocol is faster and more efficient.

Interface Description

UDP server mode interface screenshot



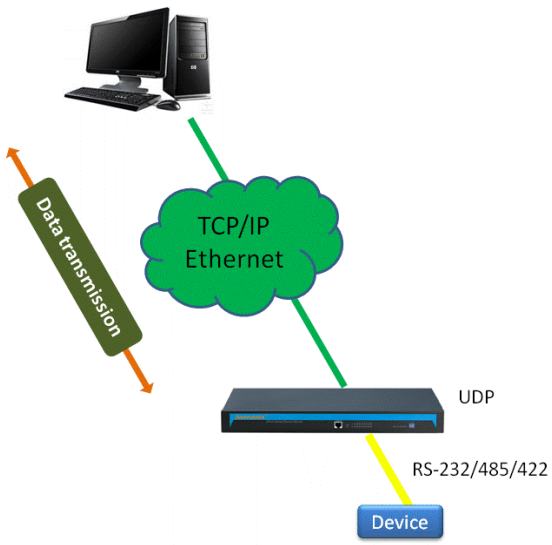
UDP server mode interface main element configuration instructions

Interface Element	Description
Session Number	The number of hosts that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
Listen port	The network receives the listening port of UDP data. The user must assign a unique listening port to each serial port so that the system can normally receive UDP data.
Idle timeout	When communicating, data communication between other hosts and serial port server is not allowed. Once the TCP timeout is met, the current IP address and port are released, allowing other hosts and serial servers to communicate.
Queue access	Enable or disable queue access mode. Options: • Enabled: Multiple hosts can send or receive data from the serial port at the same time. The serial server processes the communication data in the order of FIFO (first in, first out), prioritizes requests from the first host, and returns the response to the first host. • Disabled: Means that queue access mode is not enabled.
Response time	Time interval that allows the serial server to respond to each host's request, the communication between serial server and host is deemed to be completed after schedule time, serial server continues to deal with the next host request.
Frame break	If the idle wait time after the serial and host communication is completed is longer than the frame break setting time, the serial port will consider the communication to be completed and continue processing the command from the next host. This approach is very effective in reducing latency and improving product performance.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

Notice

The TCP timeout takes effect only when "Disconnect control" is set to "idle".

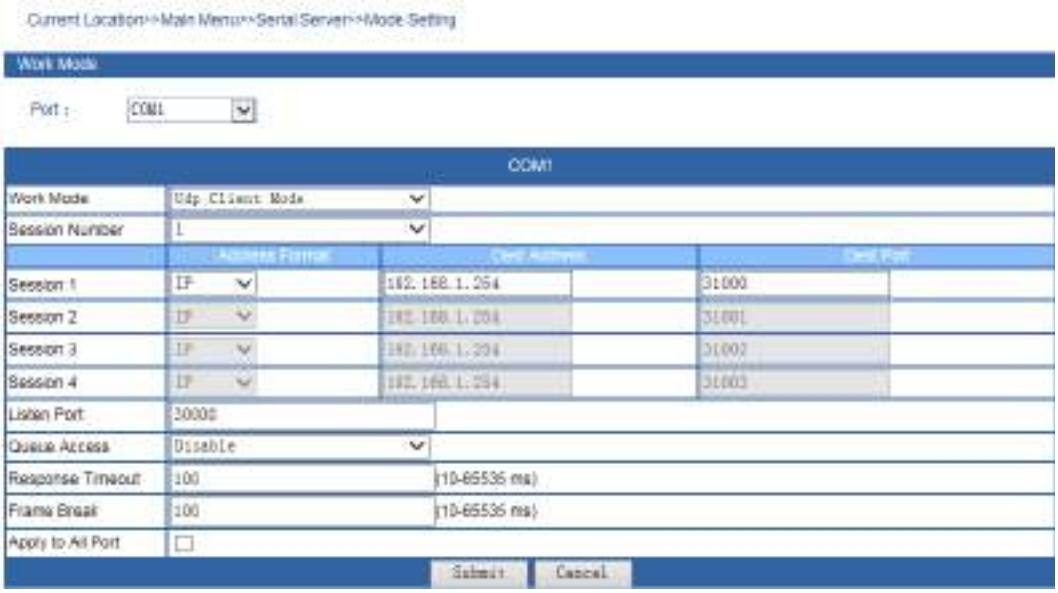
4.3.5 UDP Client Mode



In UDP server mode, the serial server through the UDP protocol and user-specified host for serial data transmission. UDP mode serial device server can transfer data from the serial device to one or more hosts, and the serial device server can also receive data from one or more hosts. Compared with TCP mode, UDP protocol is faster and more efficient.

Interface Description

UDP Client mode interface screenshot

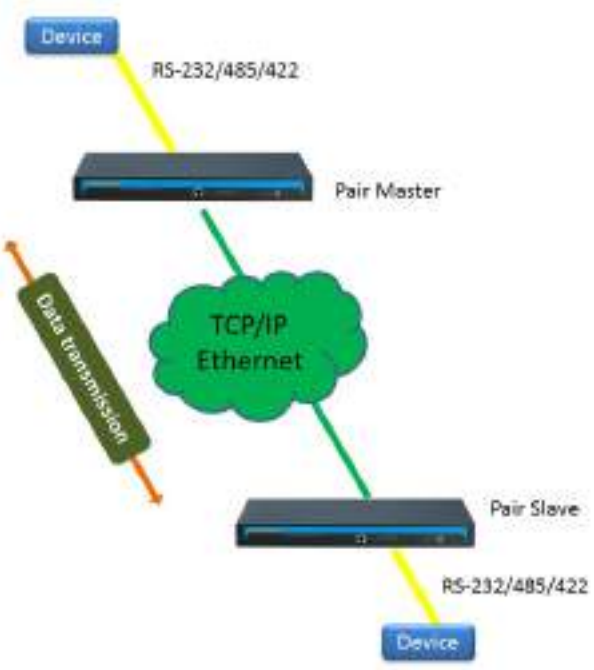


UDP client mode interface main element configuration instructions

Interface Element	Description
Session Number	The number of hosts that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
Destination Address	Enter the IP address of the host that will be connected by serial device server.
Dest Port	Enter the port number of the host that will be connected by serial device server.
Listen port	The network receives the listening port of UDP data. The user must assign a unique listening port to each serial port so that the system can normally receive UDP data.
Queue access	Enable or disable queue access mode. Options: • Enabled: Multiple hosts can send or receive data from the serial port at the same time. The serial server processes the communication data in the order of FIFO (first in, first out), prioritizes requests from the first host, and returns the response to the first host. • Disabled: Means that queue access mode is not enabled.

Interface Element	Description
Response time	Time interval that allows the serial server to respond to each host's request, the communication between serial server and host is deemed to be completed after schedule time, serial server continues to deal with the next host request.
Frame break	If the idle wait time after the serial and host communication is completed is longer than the frame break setting time, the serial port will consider the communication to be completed and continue processing the command from the next host. This approach is very effective in reducing latency and improving product performance.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

4.3.6 Pair Slave & Master Mode



Pair mode requires two serial server devices to work together to break the serial data transmission distance limit. The two serial servers in this mode establish a network

connection with each other via Ethernet and transparently transmit data from the respective serial port to each other.

In the pair mode, two serial servers need to be used in pairs. One of the serial servers for the slave mode, for the passive connection, listen to a designated port, passively waiting for the connection. Another serial server is the master mode, and the destination address is the IP address of the slave mode serial server, the destination port is the listening port of the slave mode serial server.

Interface Description

Pair mode interface screenshot

Pair mode interface main element configuration instructions

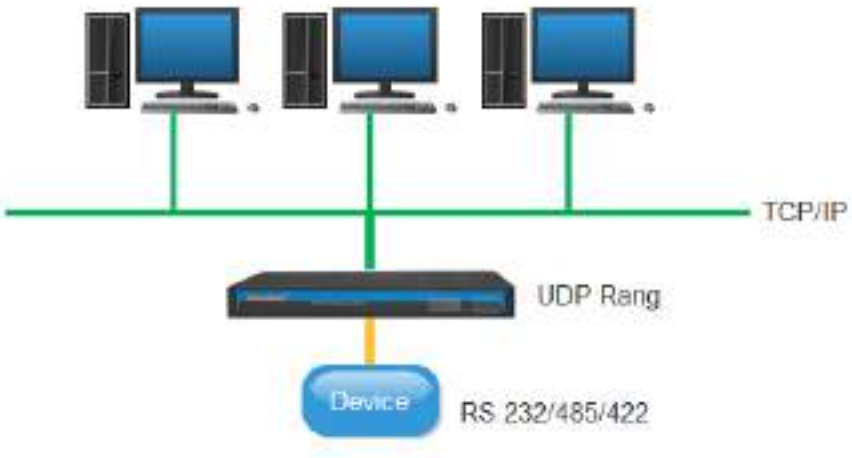
Interface Element	Description
TCP Alive Time	The device sends a heartbeat packet by setting the time interval. If the device sends a heartbeat packet three times without receiving a response, the existing connection is disconnected. If set TCP Alive Time to "0", the function will be disable.
Listen port	Applied to the pair salve mode, that is, the destination port of the pair master mode device.
Destination Address	Applied to the pair master mode, that is, the IP address of the pair slave mode device.

Interface Element	Description
Dest Port	Applied to the pair master mode, that is, the listen port of the pair slave mode device.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

Notice

- Pair Slave mode automatically changes according to the communication parameters of Pair Master mode device. During communication, it needs to configure the same parameters of the sending interface at both ends to communicate normally.
- Pair mode requires two serial devices. The IP address of the pair slave device as the destination address of the pair master mode device. The listening port of the pair slave mode device serves as the destination port for the pair master mode device.

4.3.7 UDP Rang Mode



When the routers and switches and other devices do not support multicast, but also need to achieve the multicast function, you can make the serial server in UDP rang mode. In this mode, the serial server through the UDP protocol with the user specified the same network segment of the host advance serial data transmission, to

achieve point to multipoint data communication. UDP port mode serial device can also receive data from one or more hosts.

Interface Description

UDP rang mode interface screenshot

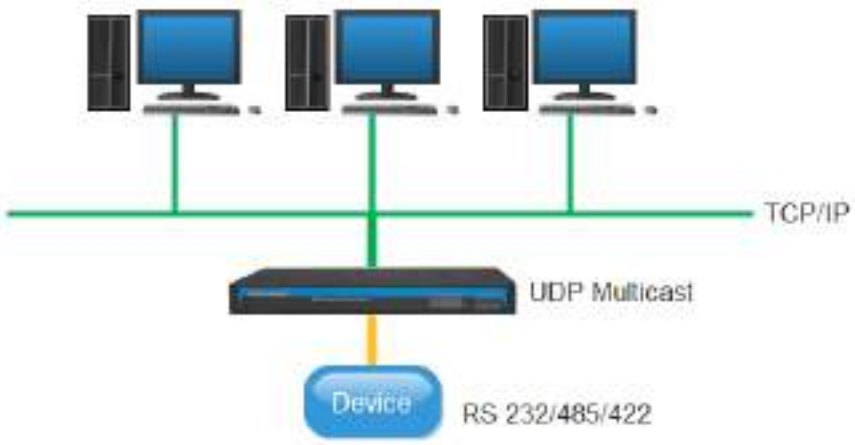
UDP rang mode interface main element configuration instructions

Interface Element	Description
Session Number	The number of hosts that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
Start Address	Enter the start IP address of the UDP rang destination address.
End Address	Enter the end IP address of the UDP rang destination address.
Dest Port	Enter the port number of the host that will be connected by serial device server.
Listen port	The network receives the listening port of UDP data. The user must assign a unique listening port to each serial port so that the system can normally receive UDP data.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

Notice

- Rang address only supports B class and C class IP address. The start addresses value and end address value of the Rang address need to be the same network segment.
- The start value of Rang address must be less than or equal to the end address value.
- If you want to ensure the normal communication, because each IP consumption of 20ms, address range to be as small as possible, the length of the package must not be 0, send the data packet length and packet assemble length consistent, packet transmission frequency can not be too fast.

4.3.8 UDP Multicast Mode



In UDP multicast mode, the serial server can send unicast or multicast data of the serial device to one or more hosts specified by the user through the UDP protocol, and can also receive unicast or multicast data from one or more devices, enabling multipoint-to-multipoint communication.

Interface Description

UDP multicast mode interface screenshot

UDP Multicast Mode interface main element configuration instructions:

Interface Element	Description
Session Number	The number of hosts that one serial port connects to. • Each host communicates with serial port in the order of first-in first-out; • The system supports up to 4 connections.
Group Number	Select the number of multicast groups and support up to four multicast groups.
Dest Address	Enter the IP address of the host that will be connected by serial device server.
Dest Port	Enter the port number of the host that will be connected by serial device server.
Multicast address	Group address is used for identifying an IP multicast group, multicast address range is: 224.0.0.0 ~ 239.255.255.255. The device can send or receive group data to or from multiple hosts.
Listen port	The network receives the listening port of UDP data. The user must assign a unique listening port to each serial port so that the system can normally receive UDP data.
Apply to all Port	Check the “Apply to all port” check box to apply the current settings to all serial ports.

4.4 CAN Mode Information

Function Description

On the "COM Mode Information" page, you can view the operating modes for each serial port number.

Operation Path

Open in sequence: "Serial Server> COM Mode Information".

Interface Description

COM mode information interface screenshot

COM Mode information interface main element configuration instructions

Interface Element	Description
Serial No	Display corresponding device serial port
Working mode	Display work mode of device serial port

4.5 Reboot Port

Function Description

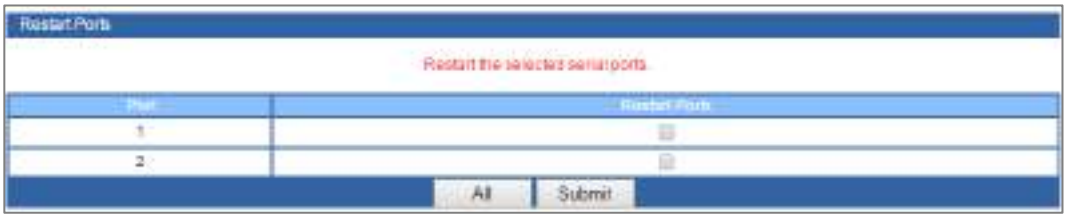
On the “Reboot Port” page, you can reboot the corresponding serial port of the device as needed.

Operation Path

Open in sequence: "Serial server> Reboot port".

Interface Description

Reboot port interface screenshot



Reboot port interface main element configuration instructions

Interface Element	Description
Serial Port	Display corresponding device serial port
Reboot Port	Check the "Reboot serial port" check box, which means restarting the device corresponding serial port.

Notice

The port restart will disconnect the corresponding serial port and Ethernet connection, serial communication will also be interrupted, the transmission of communication data may be lost.

5 State Monitor

5.1 Network Connection state

Function Description

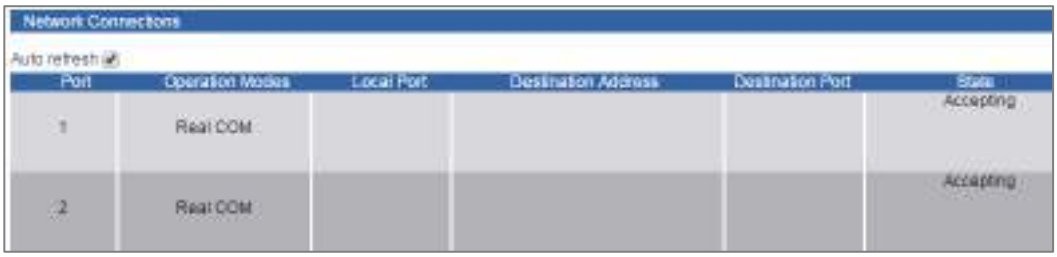
On the “Connect State” page, you can view the working mode and connection state of the device's corresponding serial port number.

Operation Path

Open in order: "State Monitor > Network Connection State".

Interface Description

Network connection state interface screenshot



Connect state interface main element configuration instructions

Interface Element	Description
Serial Port	Display corresponding device serial port
Working mode	Display work mode of the device’s serial port
Local port	Display the corresponding local port number of the device serial number
Destination Address	Display destination IP address information of connecting this serial port

Interface Element	Description
Destination port	Display destination port information of connecting this serial port
Status	The connection state of this serial port. Different serial port modes correspond to different serial port states: • Connected; • Accepting; • Listening; • Connecting; • Do not display

5.2 COM State

Function Description

On the "COM State" page, you can view the data transceiver state and pin state of the corresponding serial port of the device.

Operation Path

Open in sequence: “State Monitor> COM State”.

Interface Description

COM State interface screenshot

Main element configuration instructions in COM State interface

Interface Element	Description
Auto-refresh	Automatically refresh serial port status information after checking.
Serial Port	Display corresponding device serial port
TX, RX, TX Total, RX Total	Displays the data reception and transmission status of the serial port corresponding to the

Interface Element	Description
	Modbus gateway.
CTS, DSR, RI, DCD, DTR, RTS	Displays the pin status of the serial port to the Modbus gateway corresponding.

5.3 Serial Port Error Count

Function Description

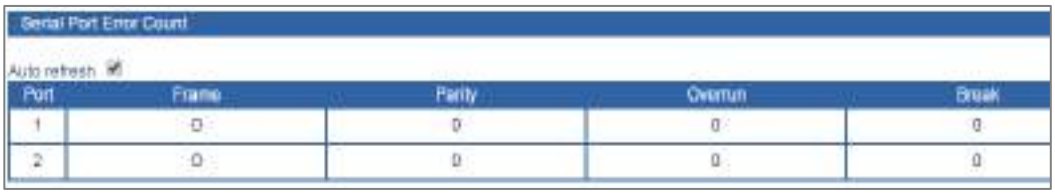
On the "Serial Port Error" page, user can check the error data count for the corresponding serial port of the device.

Operation Path

Open in order: “State Monitor> Serial Port Error Count”.

Interface Description

Serial Port Error Count interface screenshot



The main element configuration description of serial port error count:

Interface Element	Description
Auto-refresh	Automatically refresh serial port status information after checking.
Serial Port	Display corresponding device serial port
Frame, Parity, Overrun, Break	Displays the error data count for the corresponding serial port of the device.

5.4 Serial Port Parameter

Function Description

On the “COM Parameter” page, you can view information about the port number, baud rate, data bits, stop bits, parity bits, and flow control parameters for the device.

Operation Path

Open in sequence: “State Monitor> COM Parameter”.

Interface Description

COM parameter interface screenshot

COM parameter interface main element configuration instructions

Interface Element	Description
Serial Port	Display corresponding device serial port
Baud Rate	Displays the baud rate of the serial port corresponding to the device.
Data Bits	Displays the data bits of the serial port corresponding to the device.
Stop Bits	Displays the stop bits of the serial port corresponding to the device.
PairtyBits	Displays the parity bits of the serial port corresponding to the device.
Flow Control	Display whether or not flow control is enabled on the serial port of the device.

6 Access Control

6.1 Device Security

Function Description

User can enable or disable Web interface configuration, Telnet remote control, network management software search device and update the software and hardware function via Web interface or command line.

Operation Path

Open in sequence: “Access Ctrl> Device Security”.

Interface Description

Device Security interface screenshot

The main element configuration description of device security interface:

Interface Element	Description
Web Console	Enable or disable Web console function. Options: • Enabled: Users can log in to the Web interface via BlueEyes/VSP software or a browser to configure the

Interface Element	Description
	device. • Disable: Disable Web console function.
Telnet Console	Enable or disable Telnet console function. Options: • Enable: User can remotely access the system configuration interface via Telnet terminal. • Disable: Disable the Telnet console feature.
Search Device	Enable or disable the BlueEyes/VSP software search device feature. Options: • Enabled: The user can search the serial server device through the management software. • Disable: Disable BlueEyes/VSP software to search for device features.
System Upgrade	Enable or disable firmware updating function. Options: • Enable: User can update the device software and hardware via Web interface or command line. • Disable: Disable firmware update function.

6.2 IP Address Filtering

Function Description

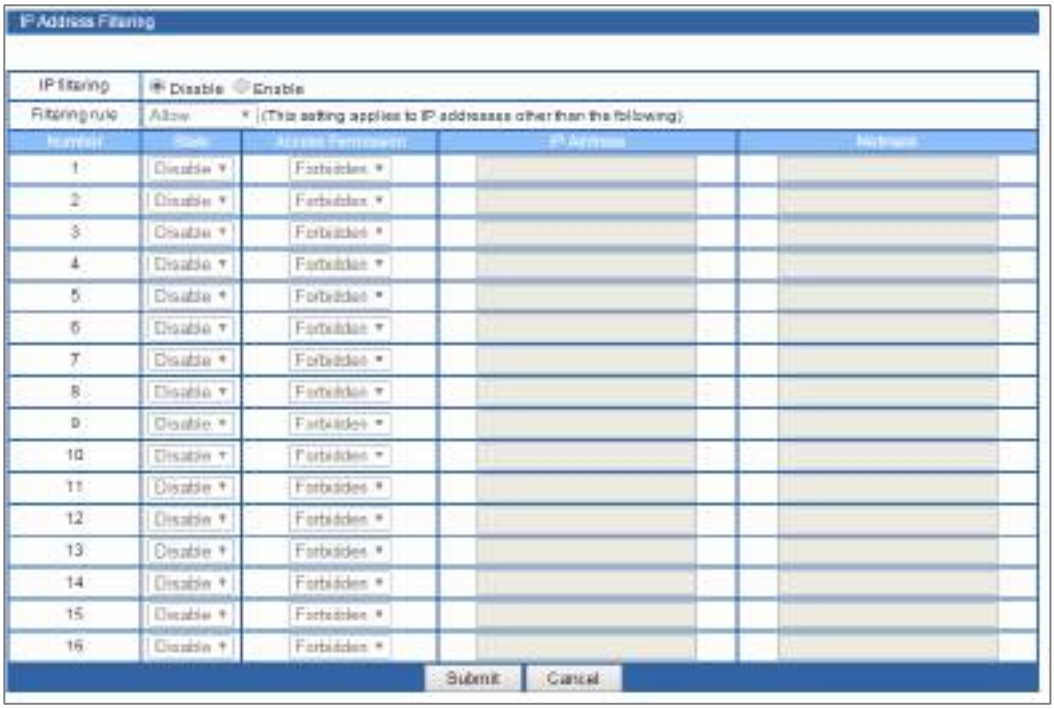
User can limit the ongoing access or connected host IP address and subnet mask via setting access rules on the "IP Filter" page.

Operation Path

Open in sequence: "Access Ctrl> IP Filter".

Interface Description

IP Filtering interface screenshot



Main element configuration instructions in IP Filtering interface

Interface Element	Description
IP Filter	Enable or disable IP Filtering rules.
Filtering rule:	Set IP filtering rules 1 to 16 other than the IP address to allow access to the system.
Number	Displays the IP address filtering rule number.
Status	Enable or disable filtering rules.
Access Permission	Set access permission, options include: • Allow: Allow access to your set IP address and subnet mask. • Forbidden: Disable access to your set IP address and subnet mask.
IP Address	Set the IP address in dotted decimal format within the filtering rule, for example "192.168.1.61".
Subnet mask	Set the subnet mask in dotted decimal format within the filtering rule, for example "255.255.255.0".

6.3 Mac Address Filtering

Function Description

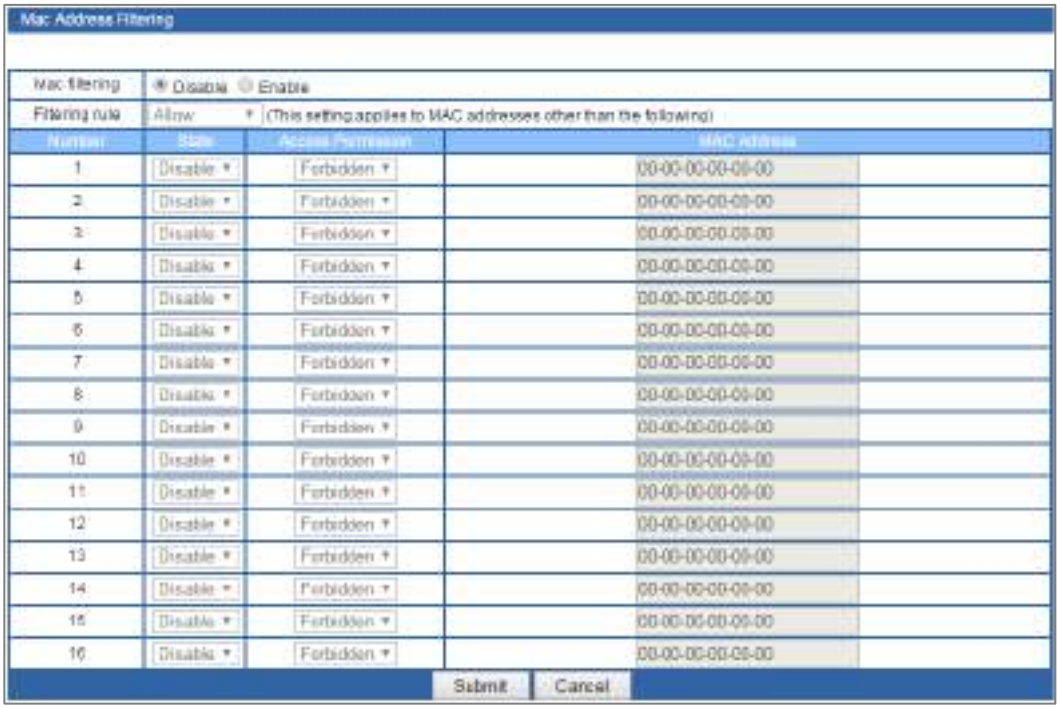
On the "MAC Filter" page, user can restrict the host MAC address to access or connect by setting access rules.

Operation Path

Open in sequence: "Access Ctrl> MAC Filter".

Interface Description

MAC Filtering interface screenshot



Main element configuration instructions in MAC Filtering interface

Interface Element	Description
MAC address filtering	Enables or disables MAC address filtering rules.
Filtering rule:	Set the access rights of the system beyond the MAC address of the filtering rule number 1~16.
Number	Displays the MAC address filtering rule number.
Status	Enable or disable filtering rules.
Access Permission	Set access permission, options include: • Allow: It's allowed to access the MAC address set by user. • Forbidden: It's forbidden to access the MAC address set by user.
MAC Address	Set the six-byte hexadecimal format MAC address in the filter rule, such as "00-22-6F-03-BD-52".

6.4 User Management

Function Description

On the "User Manage" page, user can configure the username, password and other parameter information to login in the WEB configuration interface.

The serial server provides hierarchical management: Observer permissions and administrator privileges. Observers only have the rights to view the status of the serial server, and only the system administrator can configure the parameters of the serial server.

Operation Path

Open in sequence: “Access > User Manage”.

Interface Description

User Management interface screenshot

Main element configuration instructions in User Management interface

Interface Element	Description
Authentication	Enable or disable authentication function
Number	Displays the user number.
Username.	Displays the user name of the login WEB configuration interface.
Password	The hidden text displays the user password for logging in to the WEB configuration interface.
Permission	Click the "permission" drop-down list box to select the login WEB configuration interface user permissions.
Operation	Click "Edit" to change the user name and password for logging in the WEB configuration interface.

Notice

Please keep in mind the revised user name and password, once forgetting, please conduct restore default settings through the WEB interface, the default login WEB configuration interface user name and password are "admin".

7 System Management

7.1 System information;

Function Description

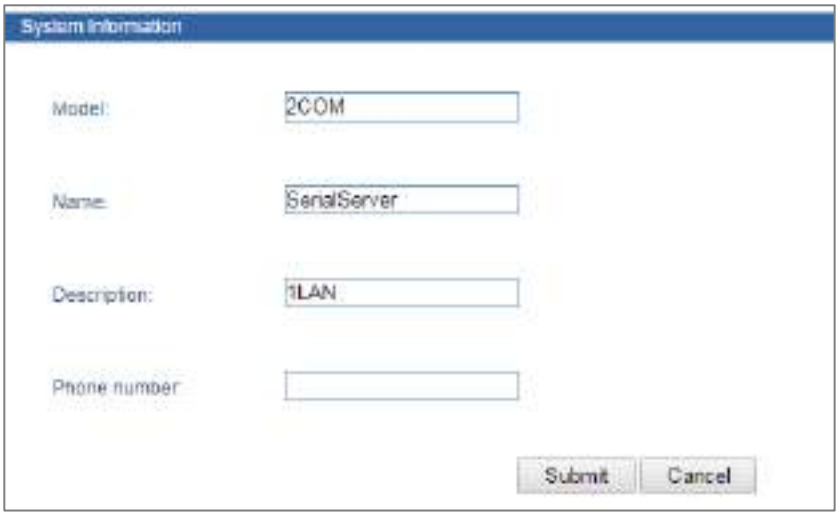
On the “System Information” page, you can configure the device module, name, description, serial number, and contact information.

Operation Path

Open in sequence: "System Manage> System Info".

Interface Description

System information interface screenshot:



The main element configuration description of state information interface:

Interface Element	Description
Device model	Enter model in the "Model" text box.
Device name.	Enter the device name in the “Name” text box. In order to identify each device in the network, Intitle different name for each device, support Chinese entering, and maximum length shouldn't overpass 16 bytes.
Description	Enter the device description in the “Description” text box. A summary of the device, no more than 16 bytes.
Device serial number.	Enter the device number in the “Serial NO.” text box. Describe the location of the device installation, no more than 30 bytes.
Contact information.	Enter the contact information of the equipment maintenance personnel in the "Contact information" text box.

7.2 File Management

Function Description

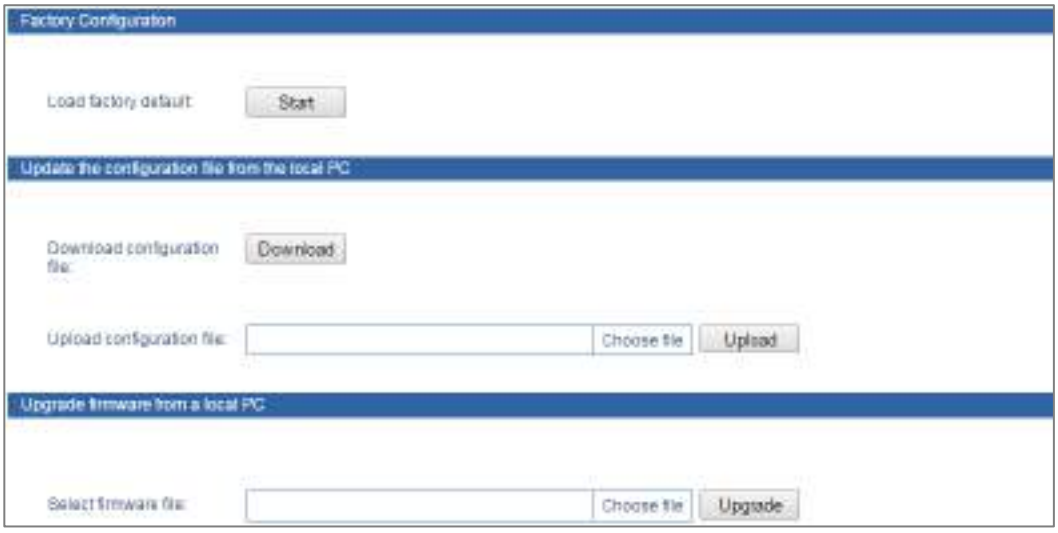
On the “System File” page, user can restore the factory settings, upload and download the configuration file, and make a firmware upgrade.

Operation Path

Open in sequence: "System Manage> System File".

Interface Description

System file interface screenshot



Main element configuration instructions in System File interface.

Interface Element	Description
Restore Factory Default	Click "Start" to restore the serial server to the factory configuration.
Download Configuration File	Click "Download" to download the current configuration file for the serial server.
Upload Configuration	Click "Choose File", select the profile you are ready, click "Upload", you can upload the existing configuration to the serial server.
Upgrade Firmware	Click "Choose File", select your prepared software upgrade file, click "Upgrade", you can achieve serial server software online upgrade.

Warning

- In the process of configuration file upload or firmware upgrade, don't click or configure other WEB page of serial server, or restart serial server; otherwise configuration file uploading or firmware upgrading will fail, which will cause serial server system breakdown and other scenes.
- Load factory default will cause all device status to be the factory status, default IP address is "192.168.1.254".

7.3 System restart

Function Description

On the “Logout & Reboot” page, you can log off and reboot the serial server system.

Operation Path

Open in sequence: "System Manage > Logout & Reboot".

Interface Description

Logout & Reboot interface screenshot

Logout & Reboot Interface main Element Configuration Instructions

Interface Element	Description
System restart	Click "reboot" in the pop-up dialog box, click "OK" to complete the system reboot.
System Log Off	Click "Start", system will be logout and skip to initial login interface.

8 CAN Mode Setting Example

8.1 RealCom Mode

Background introduction

Assume that the IP address of the serial server is: 192.168.1.250; COM1 is a real serial port, need to establish a connection with the virtual serial port COM2 in the management software VSP Manager.

The serial port information is as follows:

- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

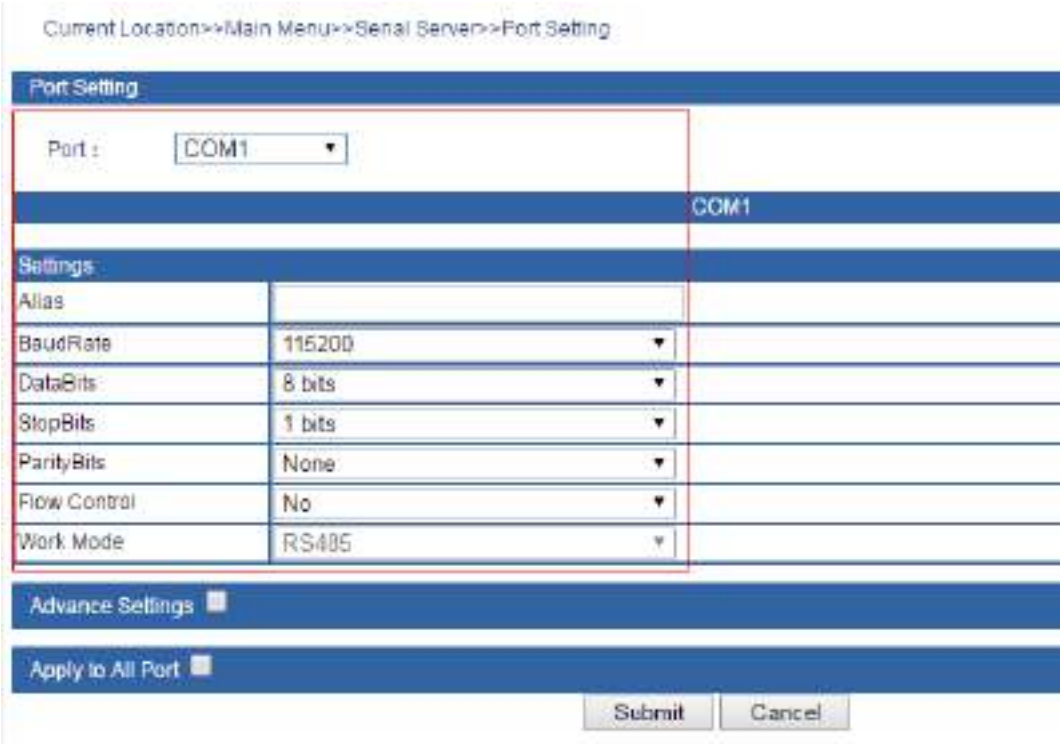
Operation Steps

Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".
2. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
3. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

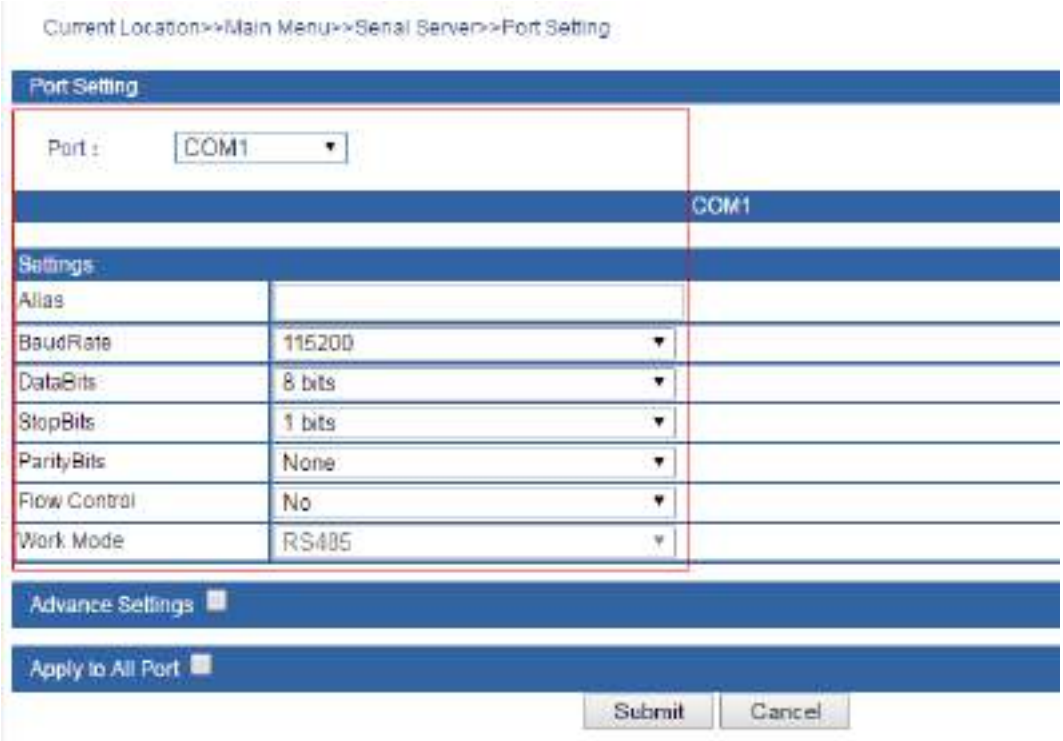
1. Log in to the Web configuration interface and select "Serial Server> COM Settings".



2. Select "COM1" from the serial port number drop-down list box.
3. Other parameters remain the default, click "Submit".
4. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option box.
5. Other parameters remain the default, click "Submit".

Step 3 Configure the working mode of the serial server.

1. Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".

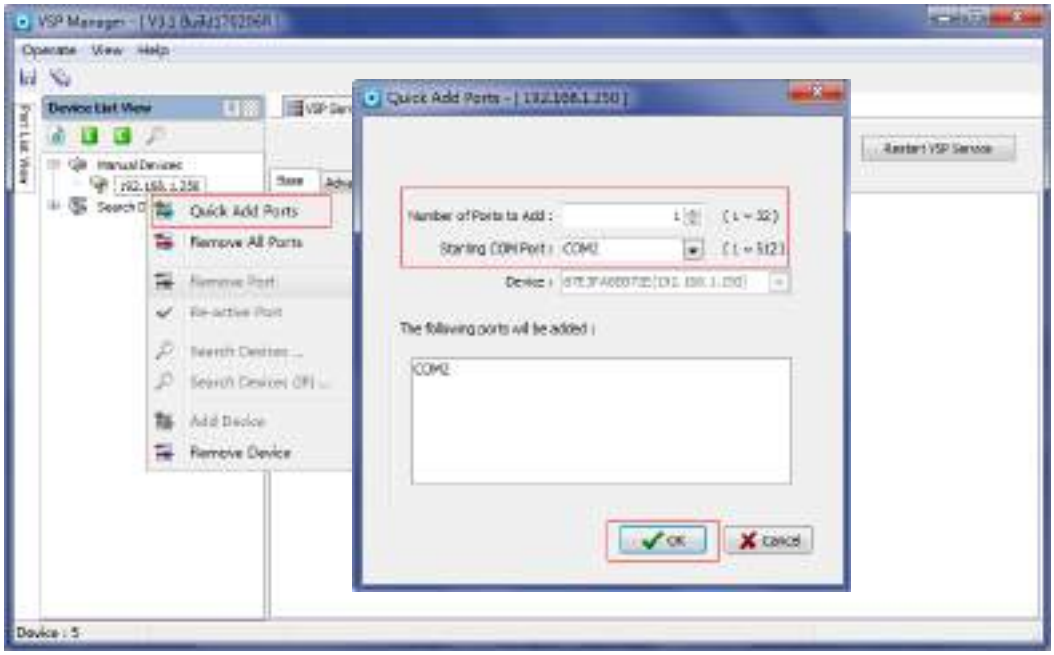


2. Select "COM1" from the serial port number drop-down list box.
3. Click the "Work Mode" drop-down list box and select "RealCom Mode".
4. Click "session number" drop-down list box, and select "1 ".
5. Other parameters remain the default, click "Submit".

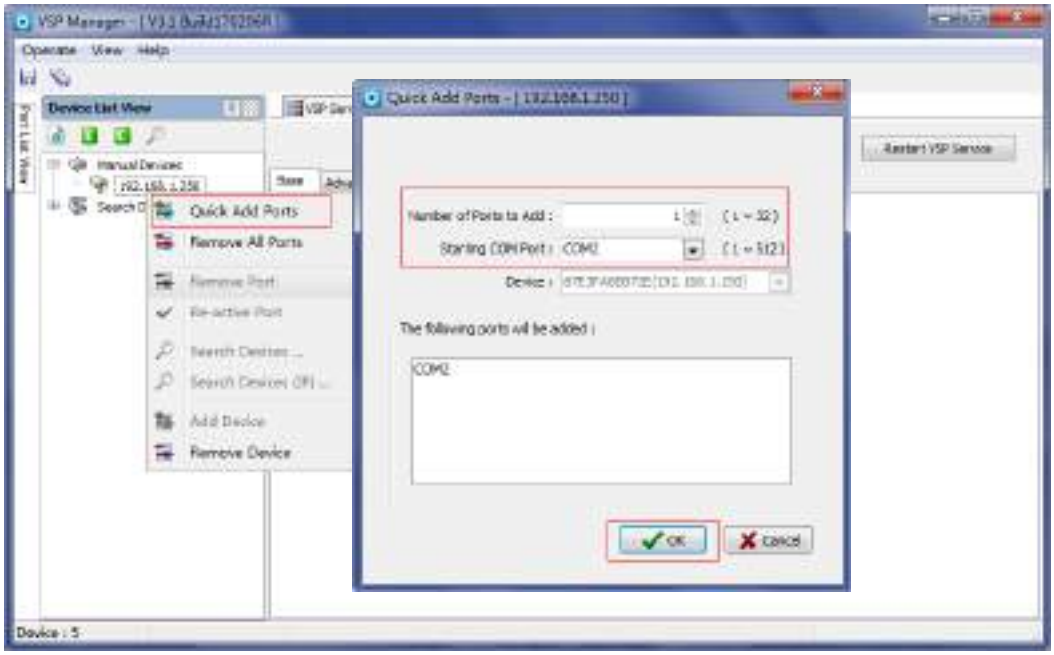
Step 4 Run "VSP Manager" software, configure the virtual serial port COM2.

1. Run the "VSP Manager" software, click "Add Device" in the left navigation bar, and then click "Add Device". Enter the IP address and subnet mask of the serial server and click "OK".

2. Right click "192.168.1.250" and select "Quick Add Ports". After creating the virtual serial port COM2, click "OK".



3. Click "Base" in the "COM2 Properties" option box, configure the virtual serial port COM2 parameter information and real COM1 match the same.

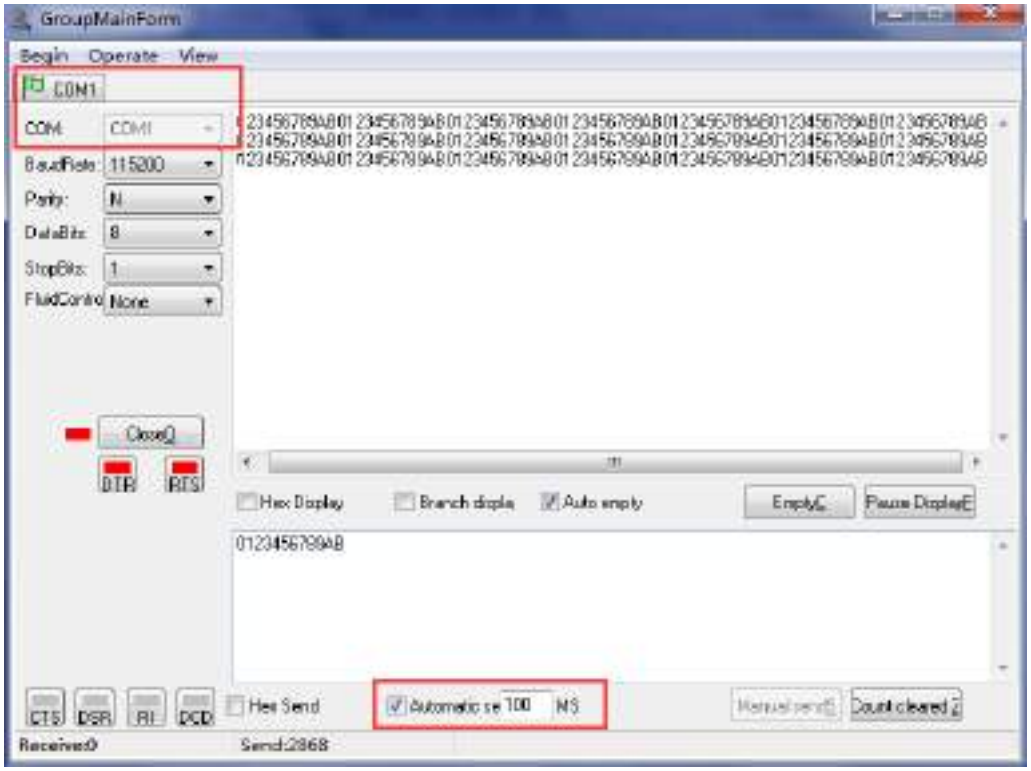


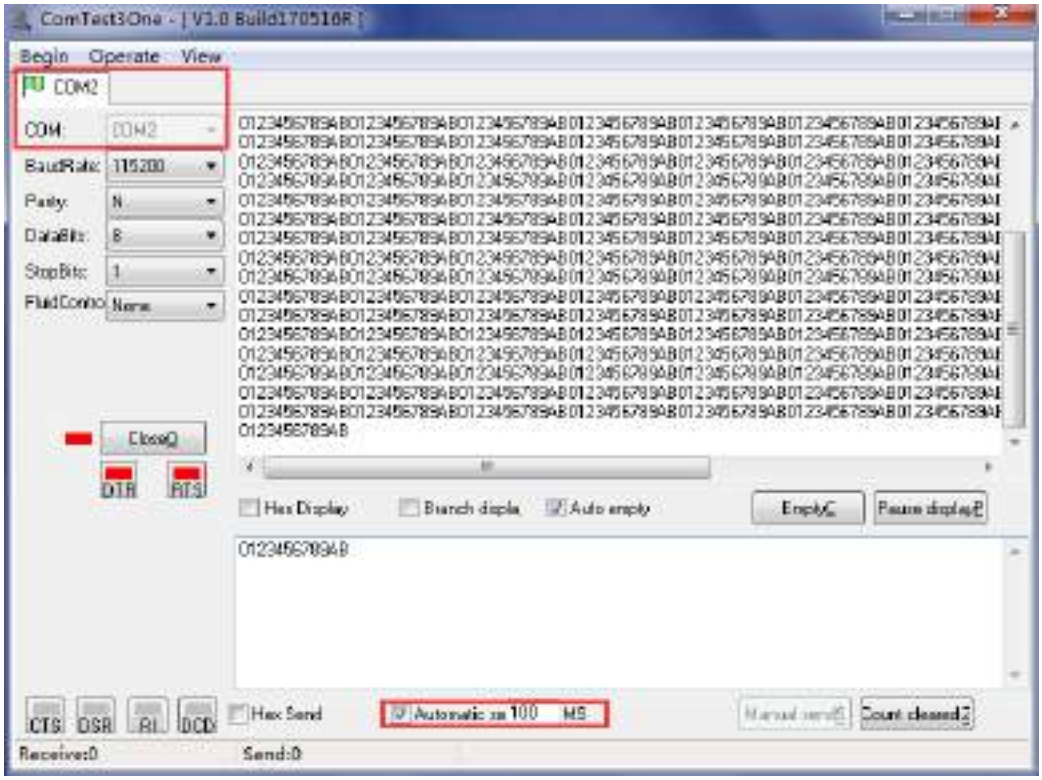
After the completion of the above configuration, between the real serial port COM1 and virtual COM2 connection can be successfully established to send data to each other.

Step 5 Run the "ComTest3One" software, test the real serial port COM1 and virtual COM2 communicate with each other.

1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".
2. Add the real serial "COM1" and virtual serial "COM2" two windows, the "COM1" and "COM2" serial port parameter information match.

3. Open "COM1" and "COM2" serial signal respectively, check "automatic sending" checkbox, test and check the data transmission status between real serial port COM1 and virtual serial port COM2.





8.2 TCP Server Mode

Background introduction

Assuming that the serial port "COM1" of the serial server is operating in the "TCP server mode", passively waiting for one host PC to connect, and the host can read or send Ethernet data to a serial device.

The parameters of the serial server (TCP server) are as follows:

- IP Address: 192.168.1.250
- Local Port: 30000
- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

Host PC (TCP client mode) parameter information as follow:

- IP address: 192.168.1.61

Operation Steps

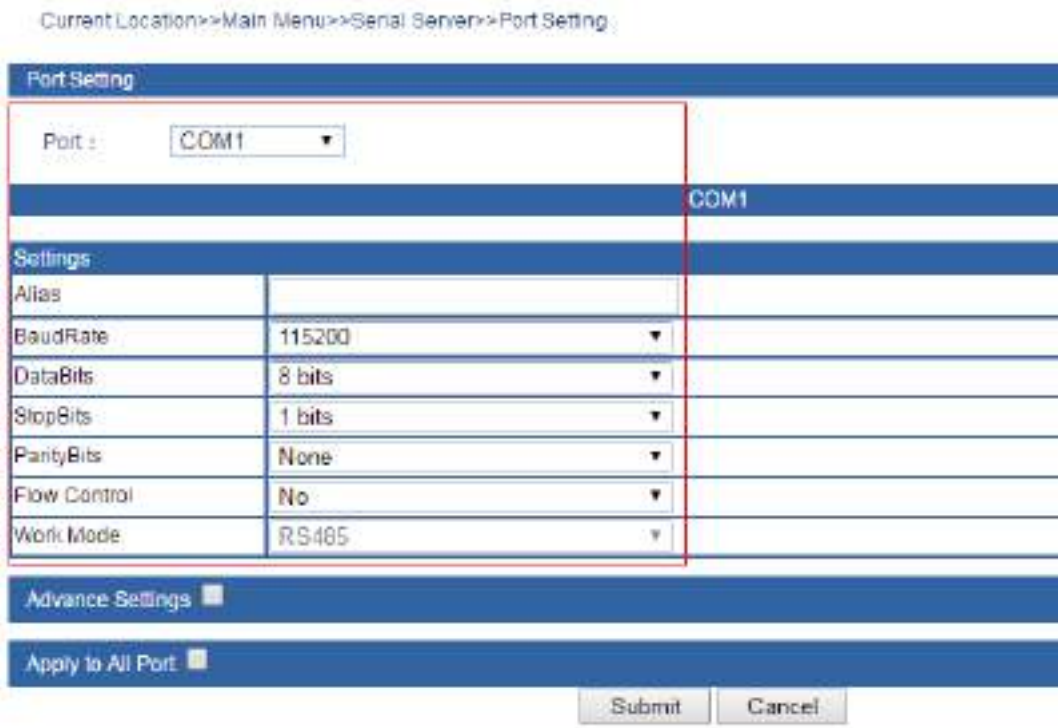
Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".

4. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
5. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

1. Log in to the Web configuration interface and select "Serial Server> COM Settings".



2. Select "COM1" from the serial port number drop-down list box.
3. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option

box.

4. Other parameters remain the default, click "Submit".

Step 3 Configure the working mode of the serial server.

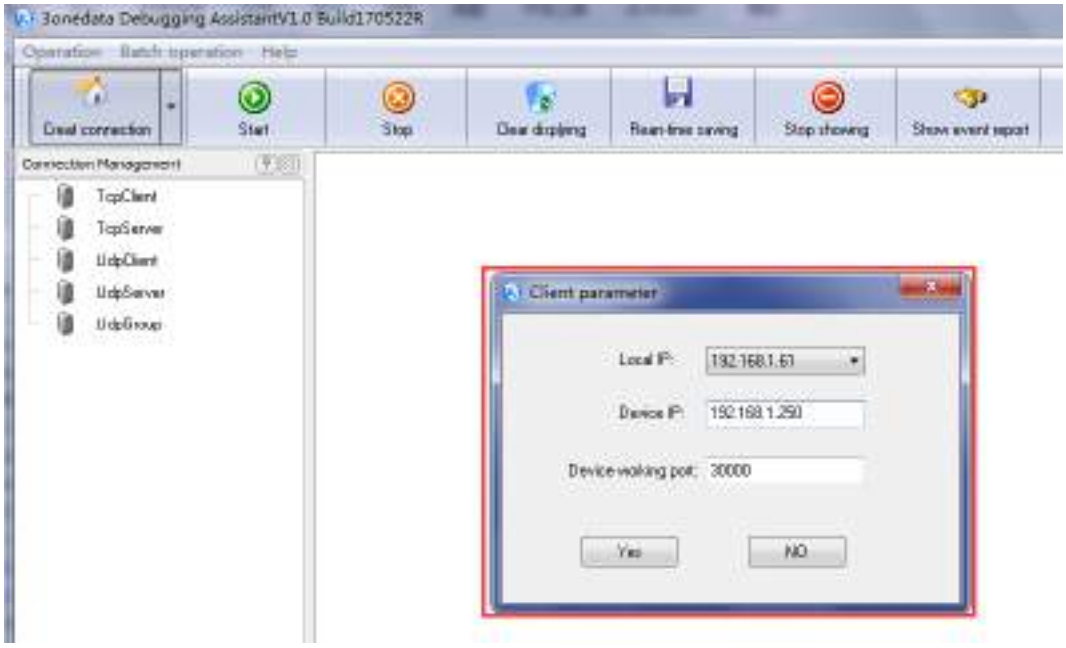
1. Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".

2. Select "COM1" from the serial port number drop-down list box.
3. Click the "Work Mode" drop-down list box and select "TCP Server Mode".
4. Click "session number" drop-down list box, and select "1 ".
5. Enter "30000" in the "Local Port" text box.
6. Other parameters remain the default, click "Submit".

Step 4 Run "3onedata Debugging Assistant" software to create TCP client for the host.

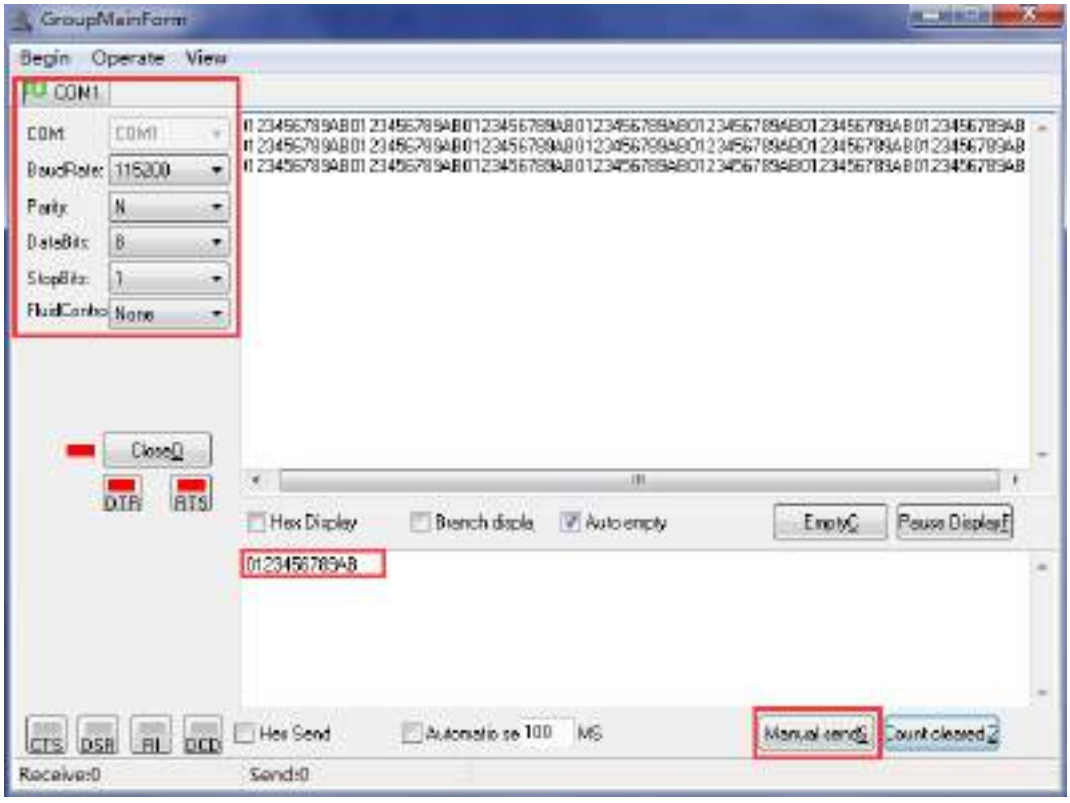
1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging> TcpClient".

2. In the "Local IP" drop-down list box, select the IP address "192.168.1.61" of the host PC (that is, the TCP client).
3. In the "Device IP" text box, enter the IP address "192.168.1.250" of the serial server (that is, the TCP server).
4. In the "Device Working Port" text box, enter the local port "30000" of the serial server (that is, the TCP server), and click "OK".



5. Select the TcpClient connection you created and click "Start".

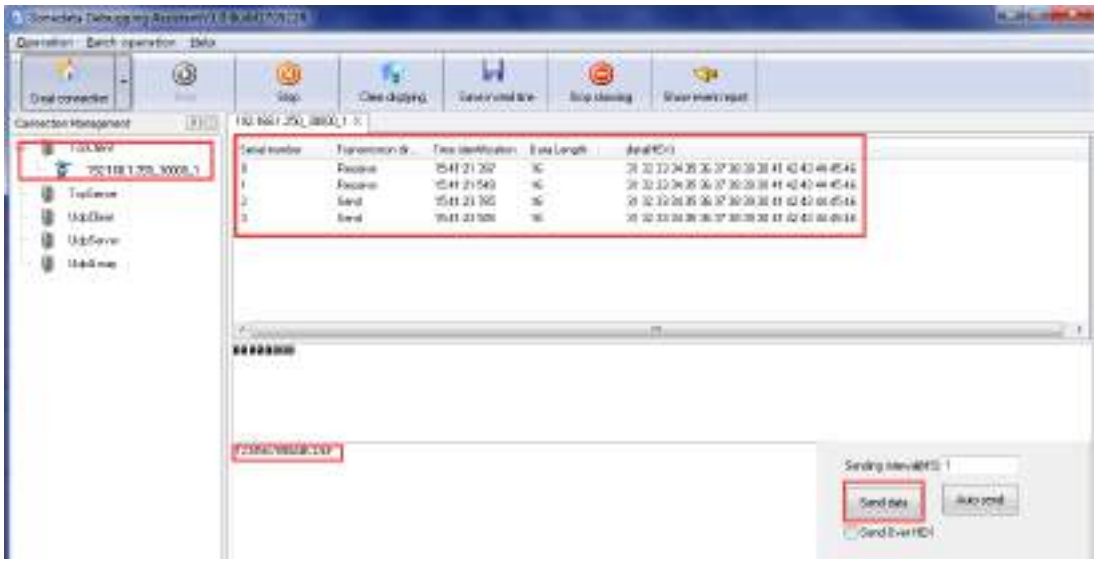
Step 5 Synchronize the operation of the "ComTest3One" and "DebugTool" software, test the serial server (TCP server) and the host PC (TCP client) to communicate with each other.



1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".
2. Add serial port "COM1" window, and configure serial port number, baud rate, check bit and data bit and other parameters consistent with "serial port configuration" of WEB interface.
3. Open the serial port signal of "COM1", for example, enter the serial port information

"0123456789AB", and click "send manually".

4. Run "3onedata Debugging Assistant" software, check the serial port information received by host PC on TcpClient option box. Similarly, the host PC can also send messages to serial port devices.



8.3 TCP Client Mode

Background introduction

Assuming that the serial port "COM1" of the serial server is working in "TCP client mode", it initiates a connection with a host PC, and the host can read or send Ethernet data to a serial device.

When the data transfer is completed, the serial server will automatically shut down the network connection after 30 seconds.

The parameters of the serial server (TCP client) are as follows:

- IP Address: 192.168.1.250
- Local Port: 30000
- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

Host PC (TCP server mode) parameter information as follow:

- IP address: 192.168.1.61

- Local Port:31000

Operation Steps

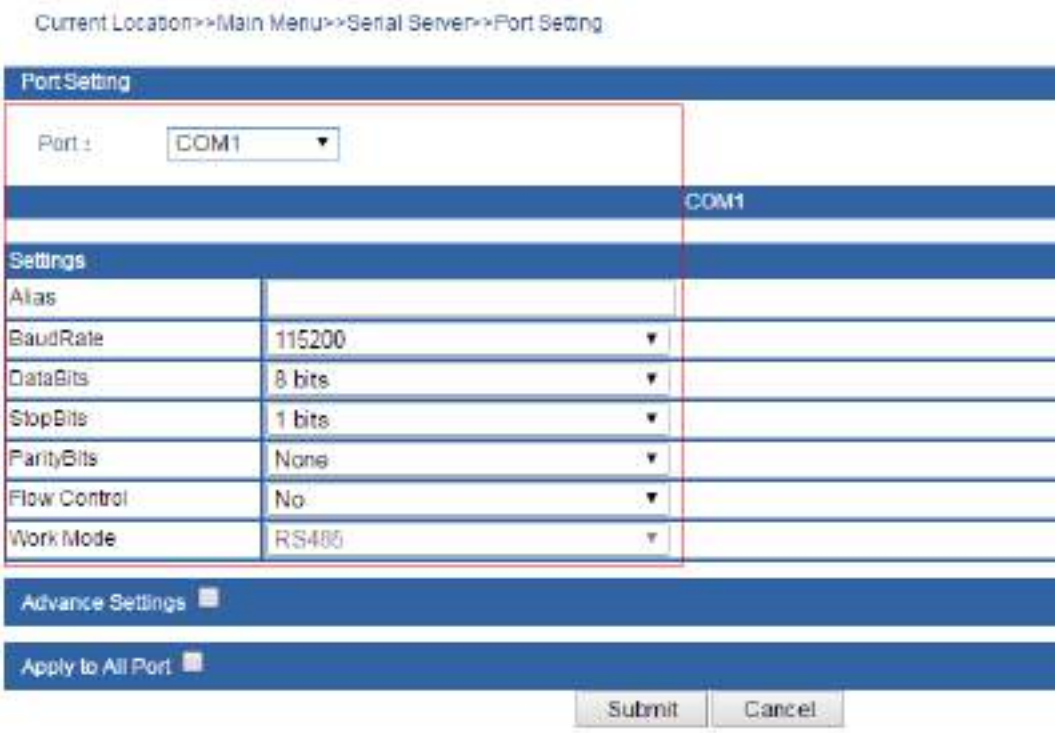
Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".

2. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
3. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

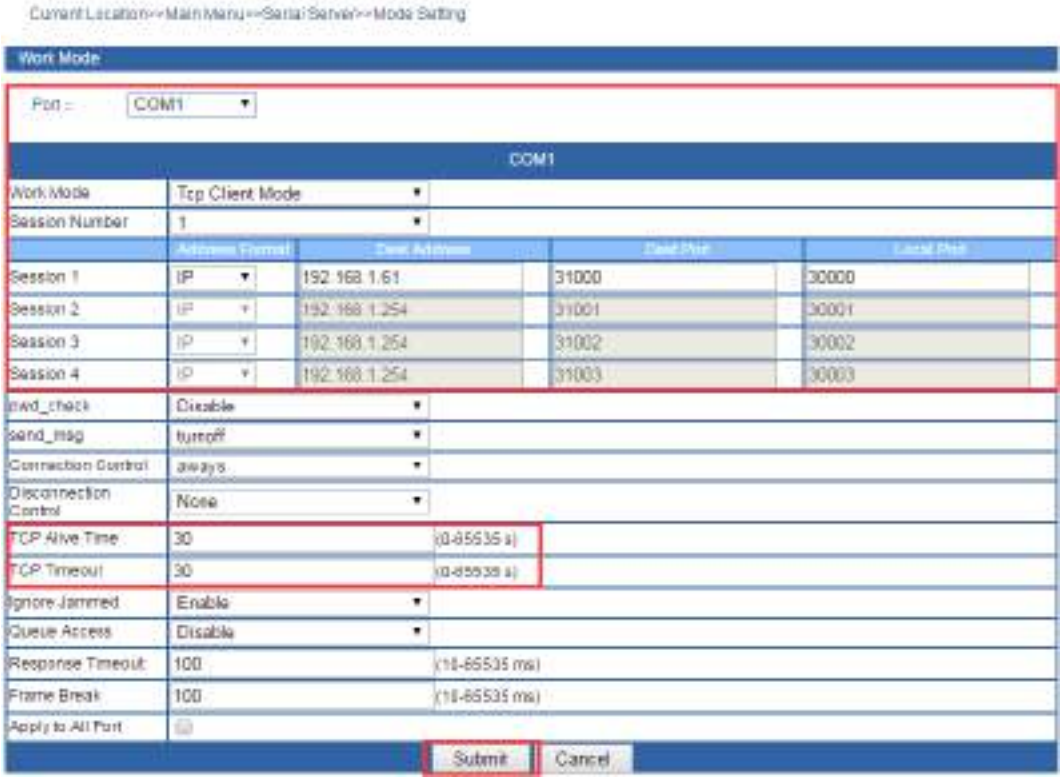
1. Log in to the Web configuration interface and select "Serial Server> COM Settings".



2. Log in to the Web configuration interface and select "Serial Server> COM Settings".
3. Select "COM1" from the serial port number drop-down list box.
4. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option box.
5. Other parameters remain the default, click "Submit".

Step 3 Configure the working mode of the serial server.

1. Select "COM1" from the serial port number drop-down list box.
2. Click the "Work Mode" drop-down list box and select "TCP Client Mode".
3. Click "session number" drop-down list box, and select "1"to establish one session connection.
4. Enter the host PC's IP address "192.168.1.61" in the destination address text box.
5. Enter the host PC's local port number, 31000, in the destination port text box.
6. Enter the local port number "30000" of the serial server in the "Local port" text box.
7. Enter "30" in the "TCP Alive Time" and "TCP Timeout" text boxes.
8. Other parameters remain the default, click "Submit".



Step 4 Run the "DebugTool" software, for the host to create TCP server.

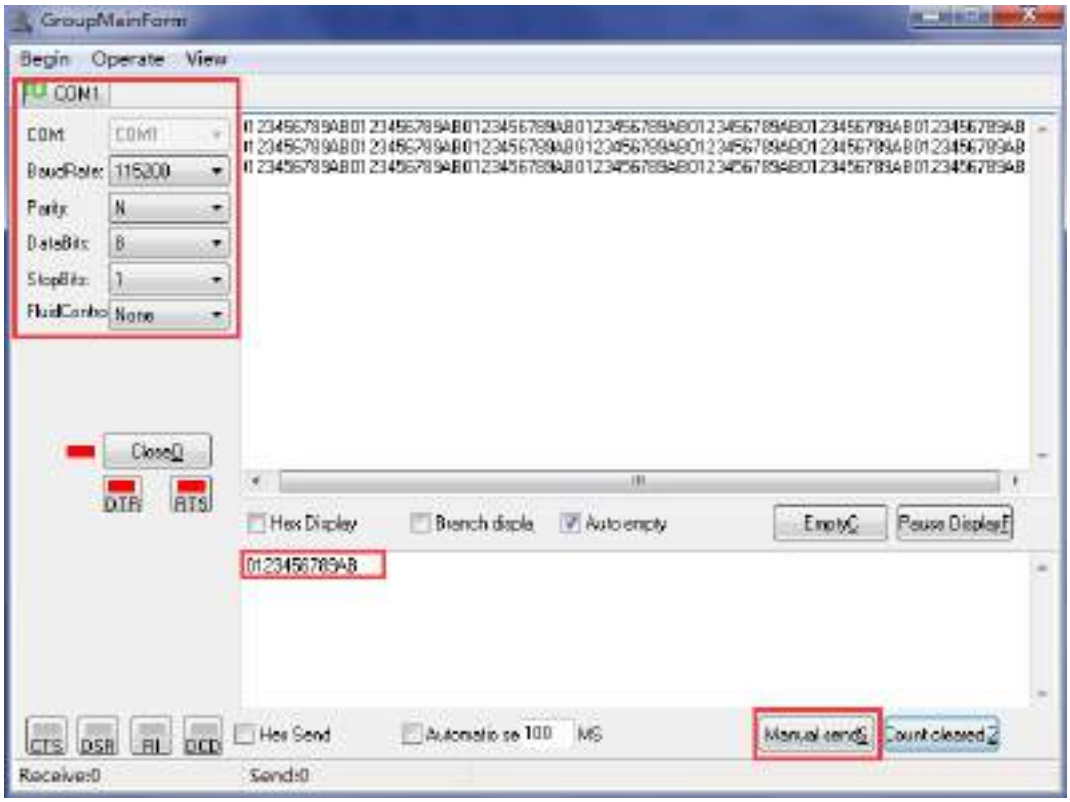
1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging> TcpServer".

2. In the "Monitoring IP" drop-down list box, select the IP address "192.168.1.61" of the host PC (that is, the TCP server).
3. In the "Local Port" text box, enter the local port "31000" of the host PC (that is, the TCP server) and click "OK".

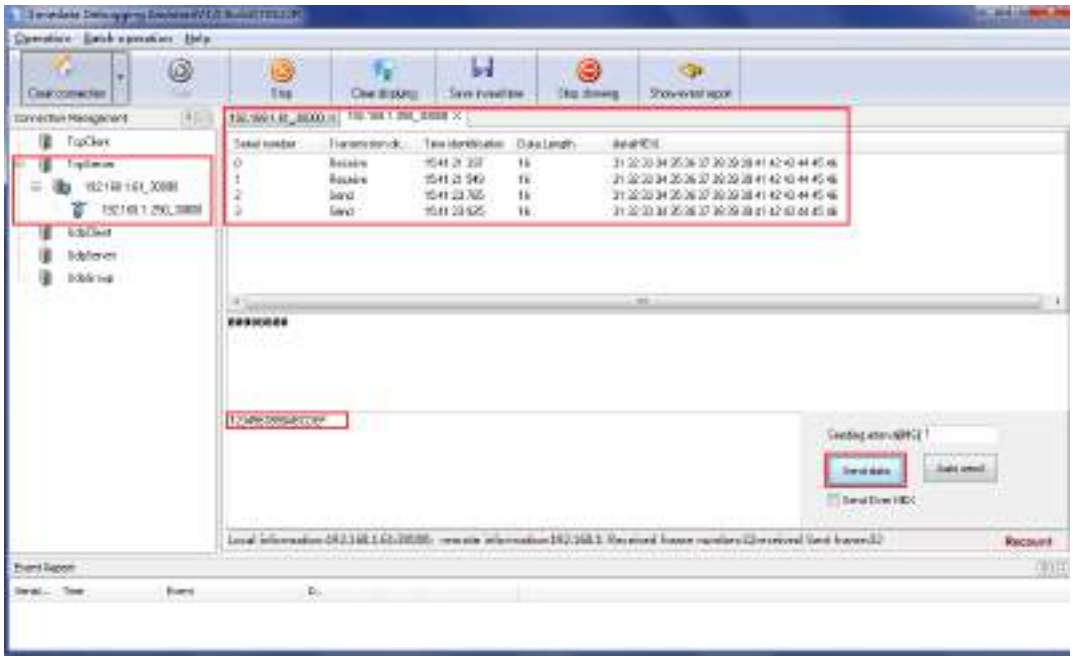
4. Select the TcpServer connection you created and click "Start".

Step 5 Simultaneous operation of the "DebugTool" and "ComTest3One" software, test the serial server (TCP client) and the host PC (TCP server) to communicate with each other.

1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".



2. Add serial port "COM1" window, and configure serial port number, baud rate, check bit and data bit and other parameters consistent with "serial port configuration" of WEB interface.
3. Open the serial port signal of "COM1", for example, enter the serial port information "0123456789AB", and click "send manually".
4. Run the "DebugTool" software, in the TcpServer option box to see the host PC to receive the serial information. Similarly, the host PC can also send messages to serial port devices.



8.4 UDP Server Mode

Background introduction

Assuming that the serial port "COM1" of the serial server is operating under "UDP server mode", passively waiting for one host PC to connect, and the host can read or send Ethernet data to a serial device. Compared with TCP mode, UDP protocol is faster and more efficient.

The parameters of the serial server (UDP server) are as follows:

- IP Address: 192.168.1.250
- Local Port: 30000
- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

Host PC (UDP client mode) parameter information as follow:

- IP address: 192.168.1.61
- Local Port:31000

Operation Steps

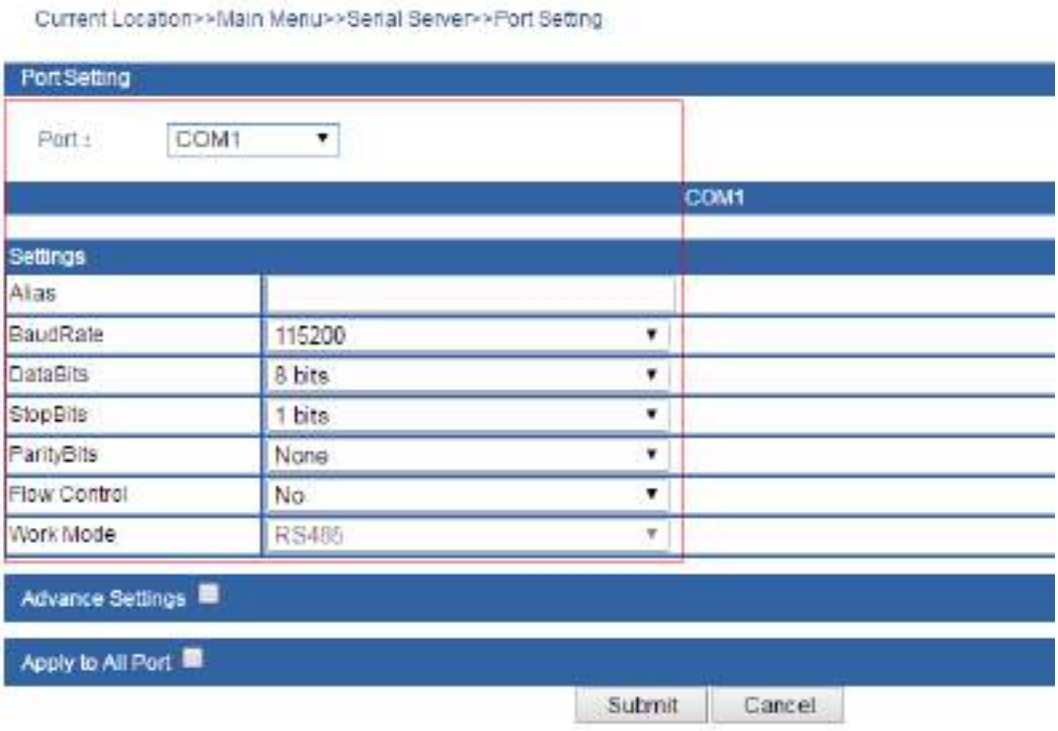
Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".

2. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
3. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

1. Log in to the Web configuration interface and select "Serial Server> COM Settings".



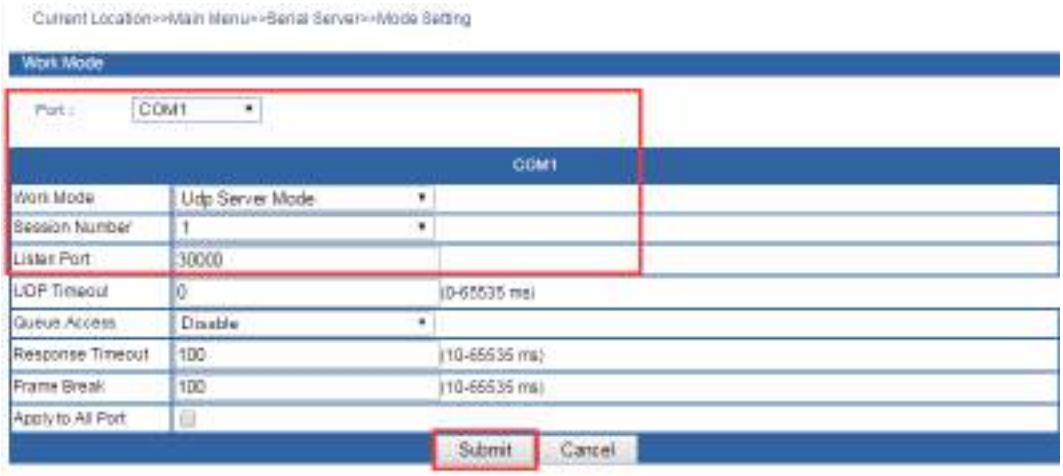
2. Select "COM1" from the serial port number drop-down list box.
3. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option

box.

4. Other parameters remain the default, click "Submit".

Step 3 Configure the working mode of the serial server.

1. Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".
2. Select "COM1" from the serial port number drop-down list box.
3. Click the "Work Mode" drop-down list box and select "Udp Server Mode".
4. Click the "Session Number" drop-down list box and select "1".
5. Enter "30000" in the "Listen port" text box.
6. Other parameters remain the default, click "submit".



Step 4 Run "3onedata Debugging Assistant" software to create Udp client for the host.

1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging>UDPClient".

2. In the "Local IP" drop-down list box, select the IP address "192.168.1.61" of the host

PC (that is, the Udp client).

3. Enter the port number "31000" for the host PC (that is, the Udp client) in the "Local Port" text box.

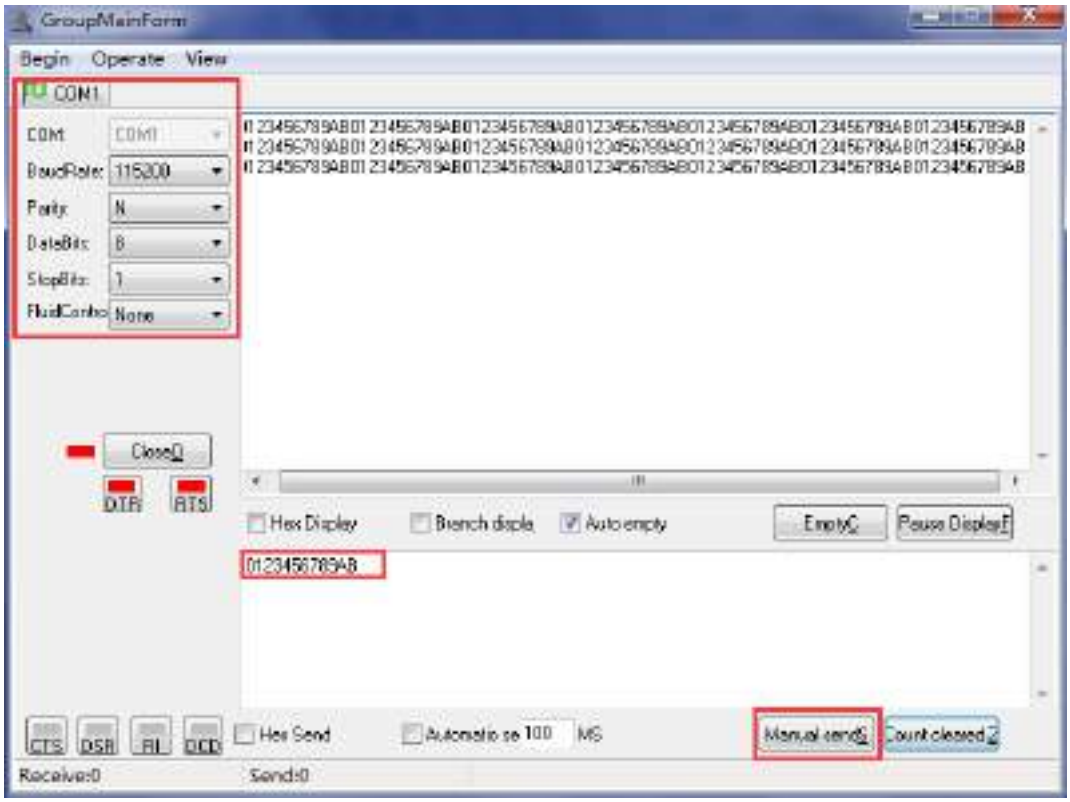
4. Enter the IP address "192.168.1.250" of the serial server (that is, the Udp server) in the "Remote IP" text box.
5. In the "Remote Port" text box, enter the port number "30000" for the serial server (that is, the Udp server), and click "OK".

Notice

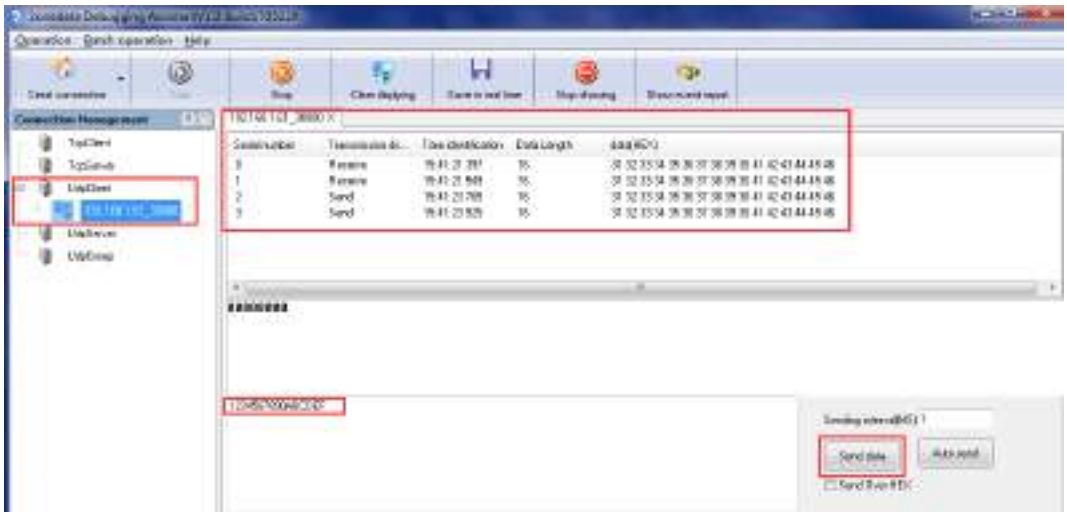
UDP (User Datagram Protocol), it's a connectionless protocol. Therefore, after successfully creating UdpClient connection, user doesn't need to click "Start".

Step 5 Simultaneous operation of the "DebugTool" and "ComTest3One" software, test the serial server (UDP server) and the host PC (UDP client) to communicate with each other.

1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".
2. Add serial port "COM1" window, and configure serial port number, baud rate, check bit and data bit and other parameters consistent with "serial port configuration" of WEB interface.
3. Open the serial port signal of "COM1", for example, enter the serial port information "0123456789AB", and click "send manually".



4. Run "3onedata Debugging Assistant" software, check the serial port information received by host PC on UdpClient option box. Similarly, the host PC can also send messages to serial port devices.



8.5 UDP Client Mode

Background introduction

Assuming that the serial port "COM1" of the serial server works in the "UDP client mode", it initiates a connection with a host PC, and the host can read or send Ethernet data to a serial device. Compared with TCP mode, UDP protocol is faster and more efficient.

The parameters of the serial server (UDP client) are as follows:

- IP Address: 192.168.1.250
- Local Port: 30000
- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

Host PC (UDP server mode) parameter information as follow:

- IP address: 192.168.1.61
- Local Port:31000

Operation Steps

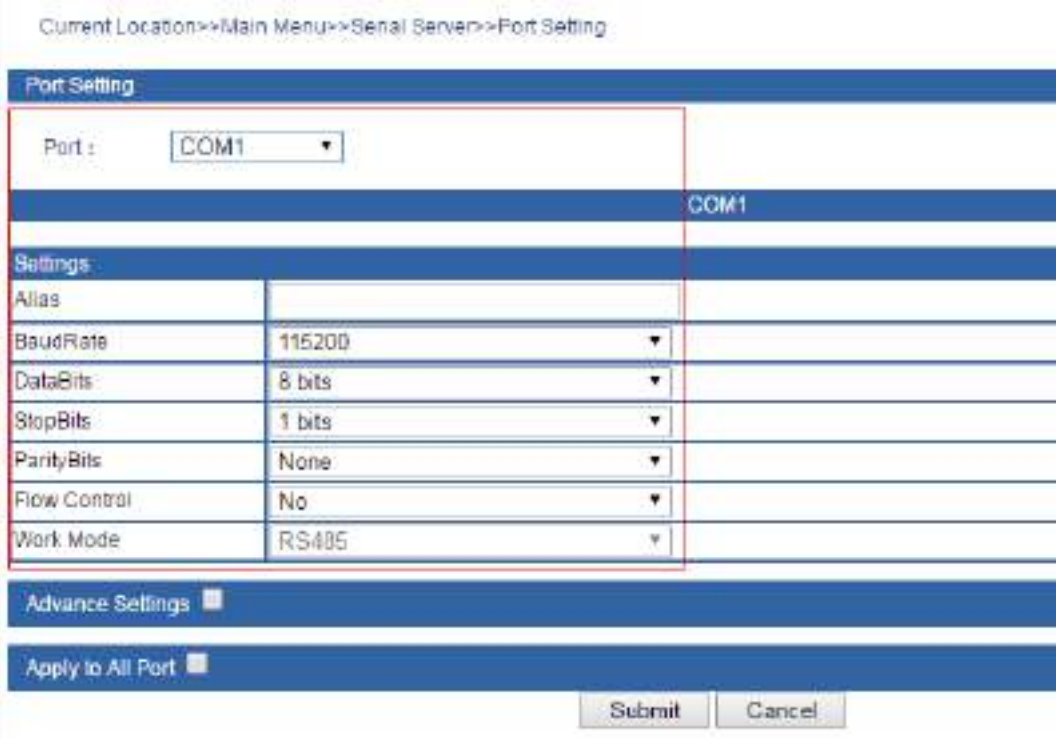
Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".

2. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
3. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

1. Log in to the Web configuration interface and select "Serial Server> COM Settings".

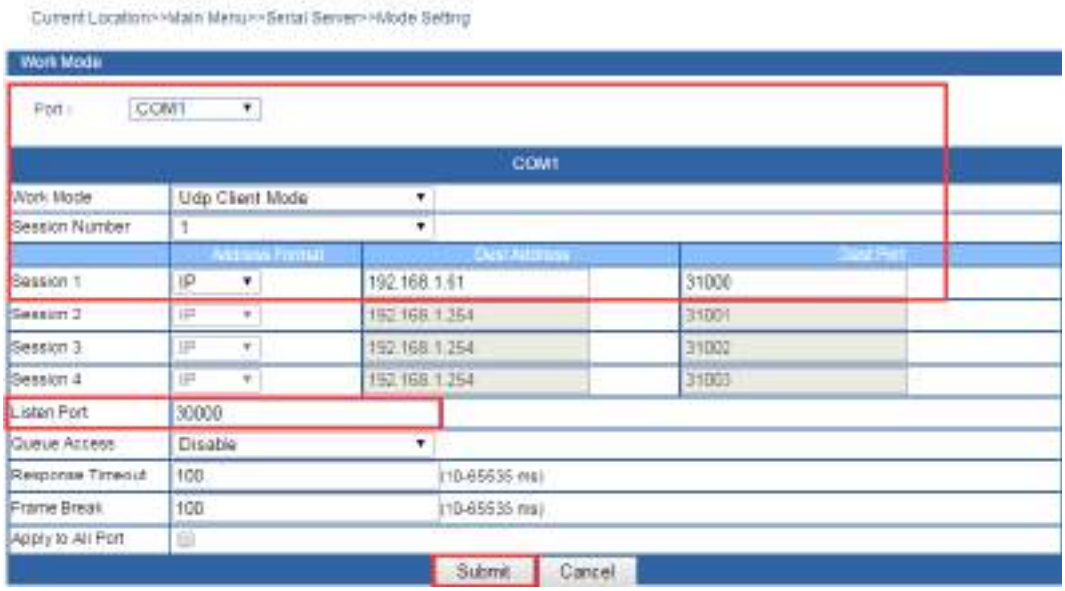


2. Select "COM1" from the serial port number drop-down list box.
3. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option box.

4. Other parameters remain the default, click "Submit".

Step 3 Configure the working mode of the serial server.

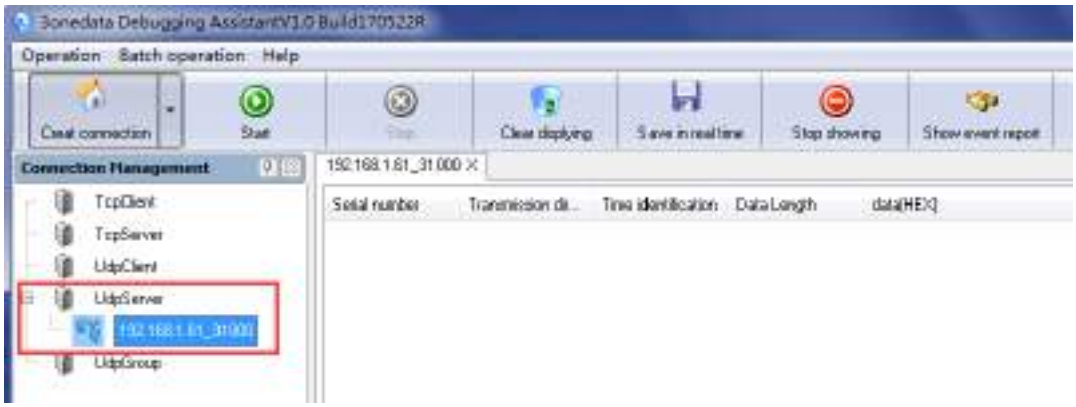
1. Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".
2. Select "COM1" from the serial port number drop-down list box.
3. Click the "Work Mode" drop-down list box and select "Udp Client Mode".
4. Click "session number" drop-down list box, and select "1 "to establish one session connection.
5. Enter the host PC's IP address "192.168.1.61" in the destination address text box.
6. Enter the host PC's local port number, 31000, in the destination port text box.
7. Enter "30000" for the local port number of the serial port server in the listen port text box.
8. Other parameters remain the default, click "Submit".



Step 4 Run "3onedata Debugging Assistant" software to create UDP server for the host.

1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging> UdpServer".

2. In the "Monitoring IP" drop-down list box, select the IP address "192.168.1.61" of the host PC (that is, the UDP server).
3. In the "Local Port" text box, enter the local port "31000" for the host PC (that is, the UDP server) and click "OK".

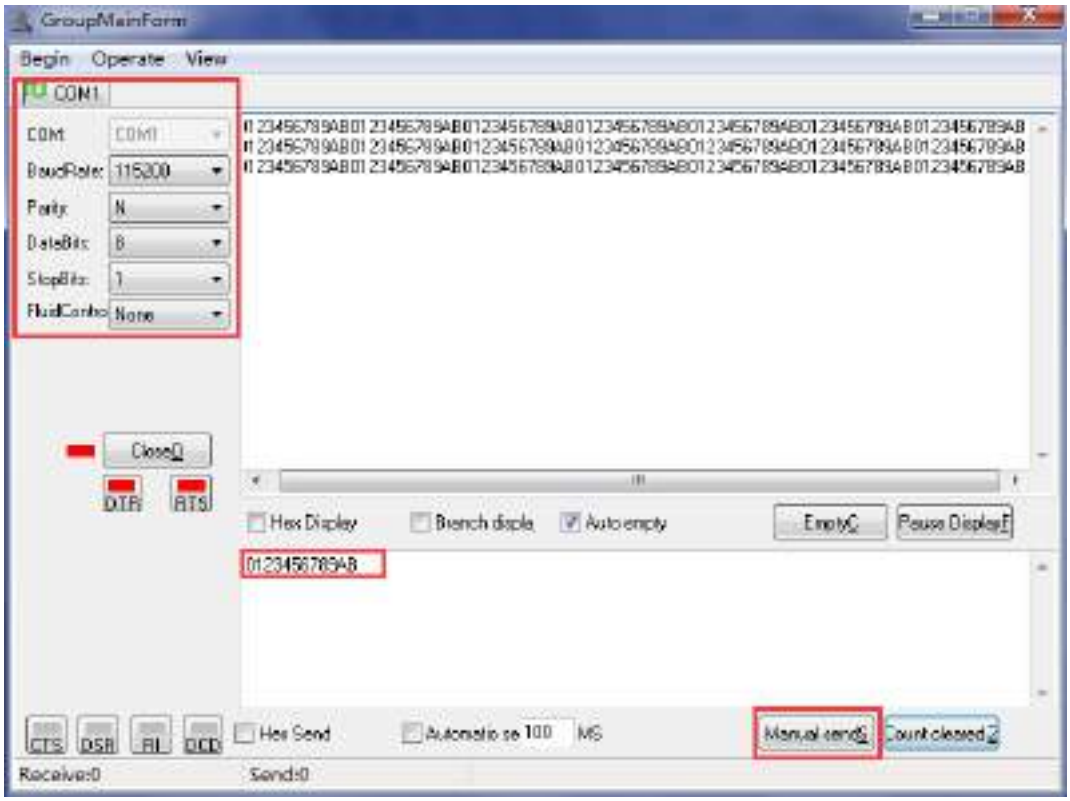


Notice

UDP (User Datagram Protocol), it's a connectionless protocol. Therefore, after successfully creating UdpClient connection, user doesn't need to click "Start".

Step 5 Simultaneous operation of the "DebugTool" and "ComTest3One" software, test the serial server (UDP Client) and the host PC (UDP server) to communicate with each other.

1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".
2. Add serial port "COM1" window, and configure serial port number, baud rate, check bit and data bit and other parameters consistent with "serial port configuration" of WEB interface.
3. Open the serial port signal of "COM1", for example, enter the serial port information "0123456789AB", and click "send manually".



4. Run the "DebugTool" software, in the TcpServer option box to see the host PC to receive the serial information. Similarly, the host PC can also send messages to serial port devices.

8.6 Pair Slave & Master Mode

Background introduction

Pair mode requires two serial server devices to work together to break the serial data transmission distance limit. The two serial servers in this mode establish a network connection with each other via Ethernet and transparently transmit data from the respective serial port to each other.

Assume that serial device server A uses pair slave mode to passively wait for a connection.

The serial device server B uses the pair master mode to actively connect the serial device server A.

The serial port that serial server A and serial port B connect with the computer is “COM1”.

The "dest address" of the serial server B is the IP address "192.168.1.254" of the serial server A. The “dest port” of the serial server B is the listening port "30000" of the serial server A.

Serial device server A configuration steps

Step 1 Serial device server A configuration steps

Step 2 Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".

Step 3 Select “COM1” from the serial port number drop-down list box.

Step 4 Enter "30000" in the "Listen port" text box.

Step 5 Other parameters remain the default, click “Submit”.

Serial device server B configuration steps

Step 1 Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".

Step 2 Select “COM1” from the serial port number drop-down list box.

Step 3 Click the “Work Mode” drop-down list box and select “Pair Master Mode”.

Step 4 Enter the IP address "192.168.1.254" of the serial device server A in the "Dest Address" text box.

Step 5 Enter the listen port "30000" of the serial device server A in the "Dest Port" text box.

Step 6 Other parameters maintain the default, click "Submit".

After the completion of the above configuration, serial server A and serial server B establish connection successfully, and they can send and receive serial data from each other.

8.7 UDP Rang Mode

Background introduction

When the router, switch and other devices do not support multicast function, the serial device server can work in the UDP Rang mode to achieve multicast function. Assuming that the serial port COM1 of the serial device server is connected to the host computer, it needs to transmit the serial data to two hosts that specify the same network segment "192.168.1.61" to "192.168.1.62" through the UDP protocol at the same time.

The parameters of the serial server (UDP server) are as follows:

- IP Address: 192.168.1.250
- Local Port: 30000

- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

Host A (UDP client A) parameter information as follow:

- IP address: 192.168.1.61
- Local Port:31000

Host B (UDP client B) parameter information as follow:

- IP address: 192.168.1.62
- Local Port:31000

Operation Steps

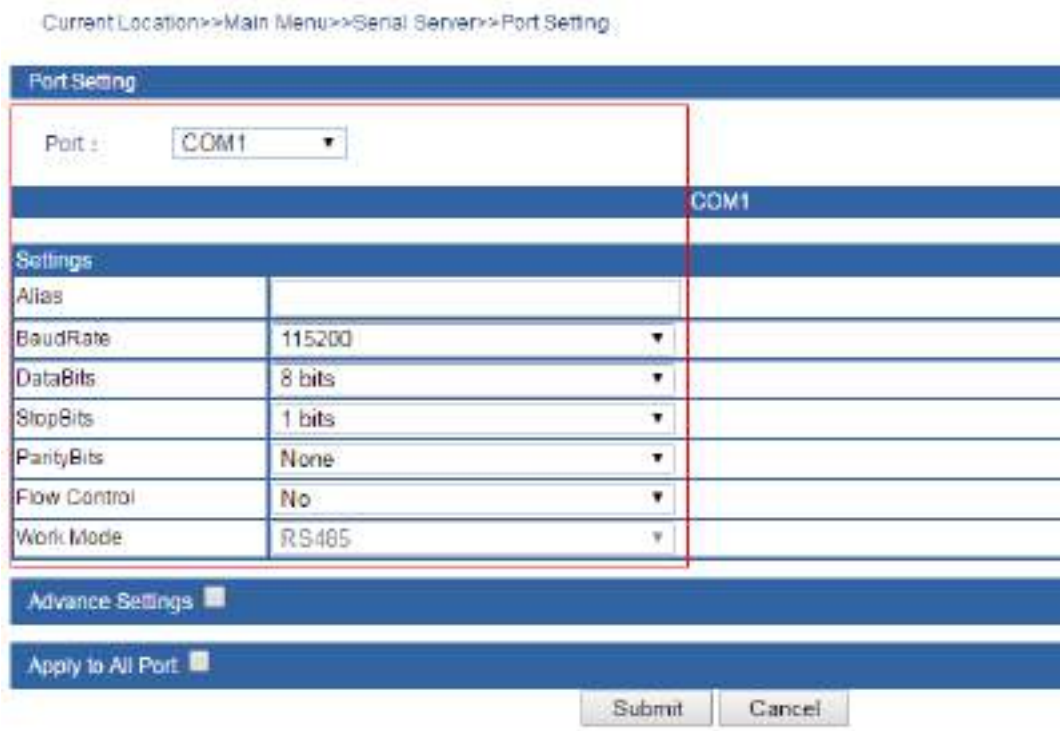
Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".

2. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
3. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

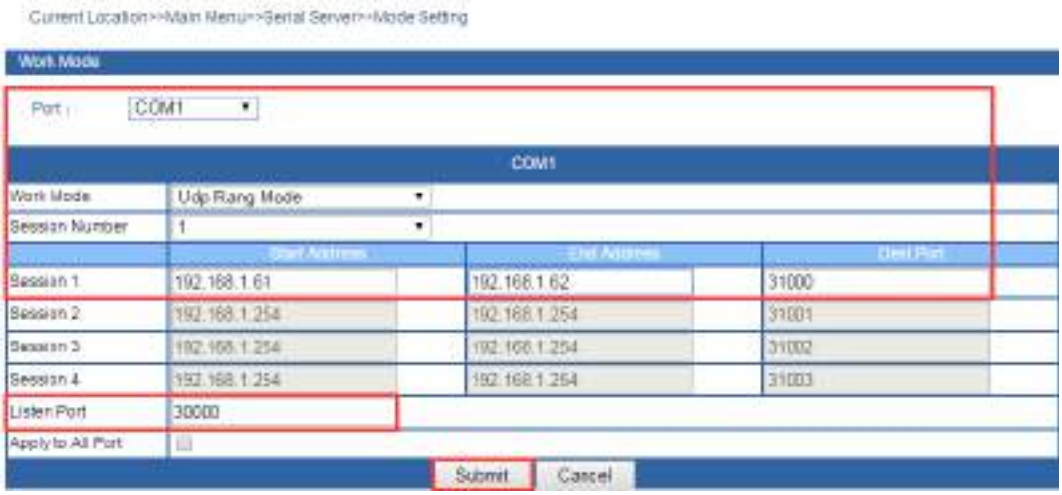
1. Log in to the Web configuration interface and select "Serial Server> COM Settings".



2. Select "COM1" from the serial port number drop-down list box.
3. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option box.
4. Other parameters remain the default, click "Submit".

Step 3 Configure the working mode of the serial server.

1. Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".
2. Select "COM1" from the serial port number drop-down list box.



3. Click the "Work Mode" drop-down list box and select "UDP Rang Mode".
4. Click "session number" drop-down list box, and select "1 ".
5. In the "Start Address" and "End Address" text boxes, enter the IP address "192.168.1.61" of Host A and the IP address "192.168.1.62" of Host B, respectively.
6. Enter the port number "31000" of the host in the "Dest Port" text box.
7. Enter the port number "30000" of the serial device server in the "Listen Port" text box.
8. Other parameters remain the default, click "Submit".

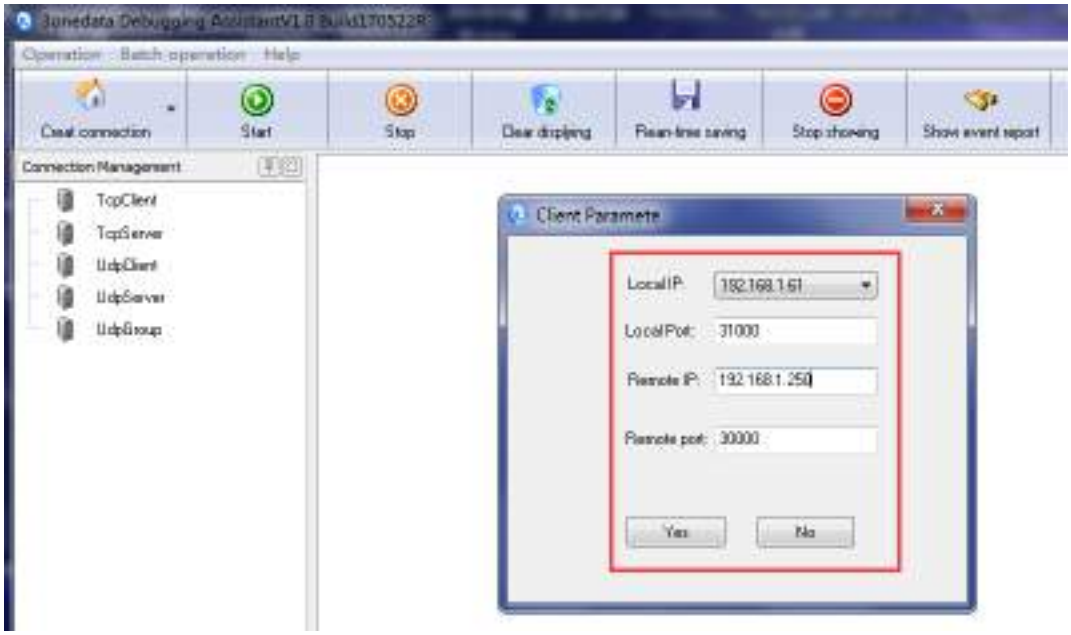
Step 4 Run "3onedata Debugging Assistant" software on the host A to create Udp client A.

1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging>UDPClient".

2. In the "Monitoring IP" drop-down list box, select the IP address "192.168.1.61" of the host A (that is, the UDP client A).
3. In the "Local Port" text box, enter the local port "31000" for the host A (that is, the

UDP client A).

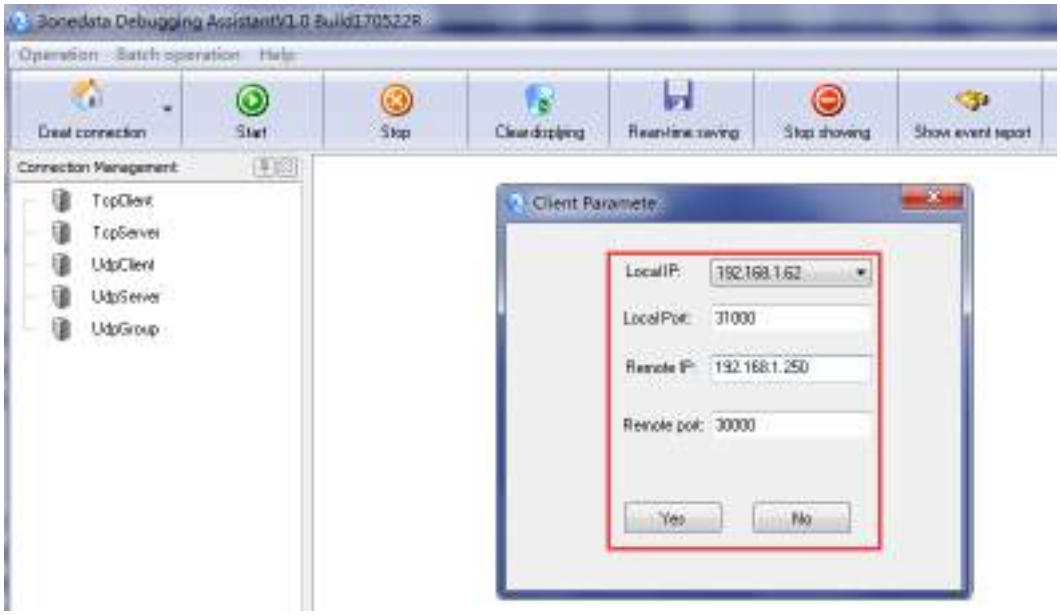
4. Enter the IP address "192.168.1.250" of the serial server (that is, the Udp server) in the "Remote IP" text box.
5. In the "Remote Port" text box, enter the port number "30000" for the serial server (that is, the Udp server), and click "OK".

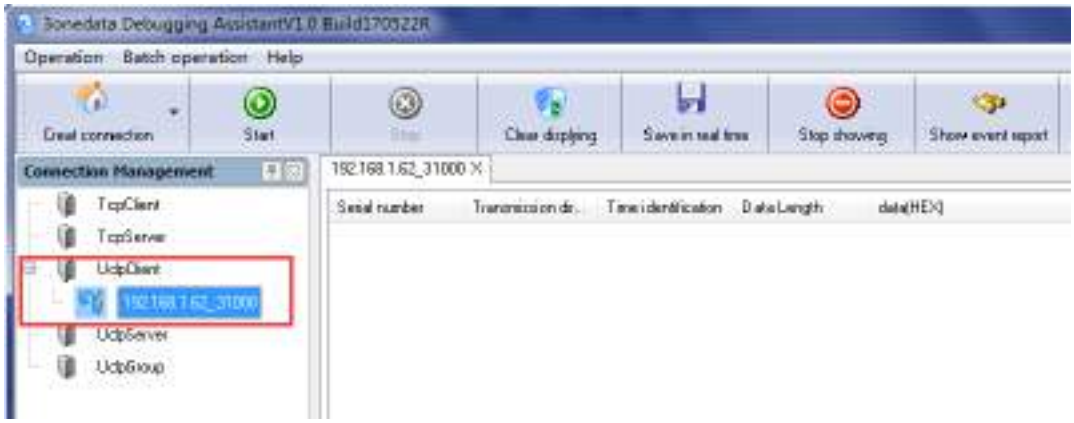


Step 5 Run "3onedata Debugging Assistant" software on the host B to create Udp client B.

1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging>UDPClient".

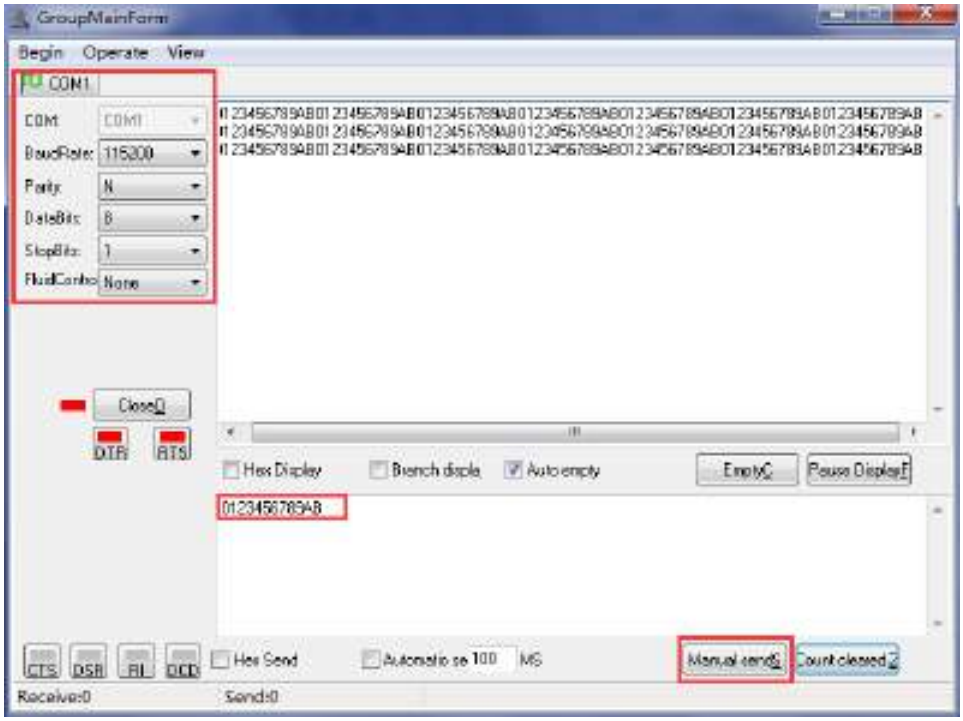
2. On the pop-up "Local IP" drop-down list box, choose the IP address of host B (Udp client B) "192.168.1.62".
3. In the "Local Port" text box, enter the local port "31000" for the host A (that is, the UDP client A).
4. Enter the IP address "192.168.1.250" of the serial server (that is, the Udp server) in the "Remote IP" text box.
5. In the "Remote Port" text box, enter the port number "30000" for the serial server (that is, the Udp server), and click "OK".

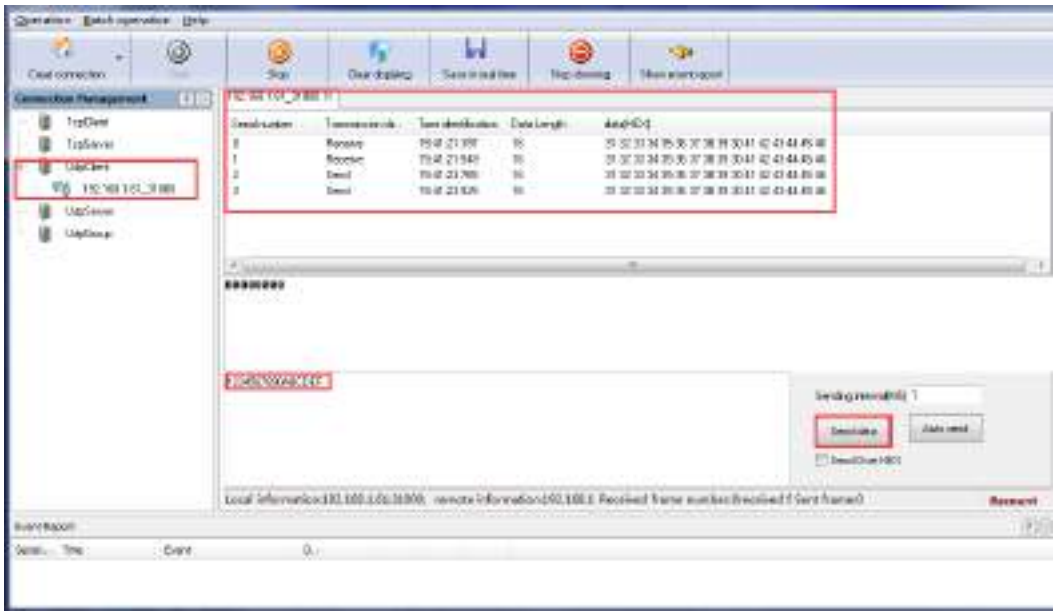


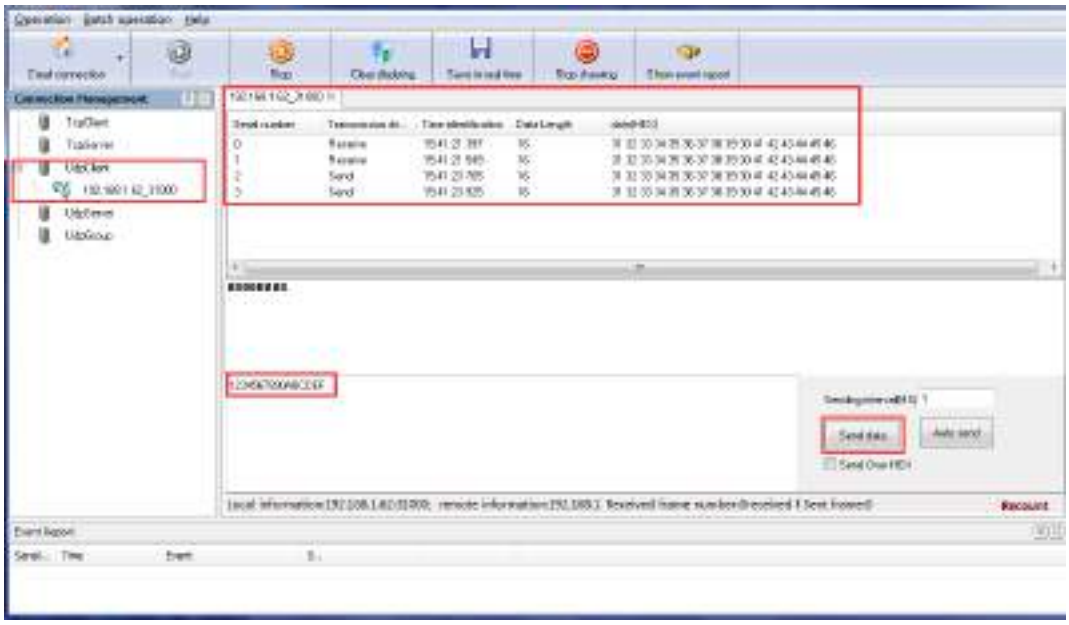


Step 6 Simultaneous operation of the "DebugTool" and "ComTest3One" software, test the serial server, host A and host A to communicate with each other.

1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".
2. Add serial port "COM1" window, and configure serial port number, baud rate, check bit and data bit and other parameters consistent with "serial port configuration" of WEB interface.
3. Open the serial port signal of "COM1", for example, enter the serial port information "0123456789AB", and click "send manually".
4. Run "3onedata Debugging Assistant" software, check the serial port information received by host A and host B in the UdpClient option box. Similarly, host A and host B can also send information to the serial device.







8.8 UDP Multicast Mode

Background introduction

It's assumed that serial server IP address is "192.168.1.250", user needs to add the serial server to the multicast address "239.0.0.0". So that the serial server through the UDP protocol can make the serial device data through unicast or multicast sent to one or more hosts, but also can receive from one or more host unicast or multicast data, complete multipoint-to-multipoint communication.

The parameters of the serial server are as follows:

- IP Address: 192.168.1.250
- Local Port: 30000
- Baud rate: 115200
- Parity bit: None
- Data bit: 8
- Stop bit: 1

Host PC parameter information as follow:

- IP address: 192.168.1.61
- Local Port:31000

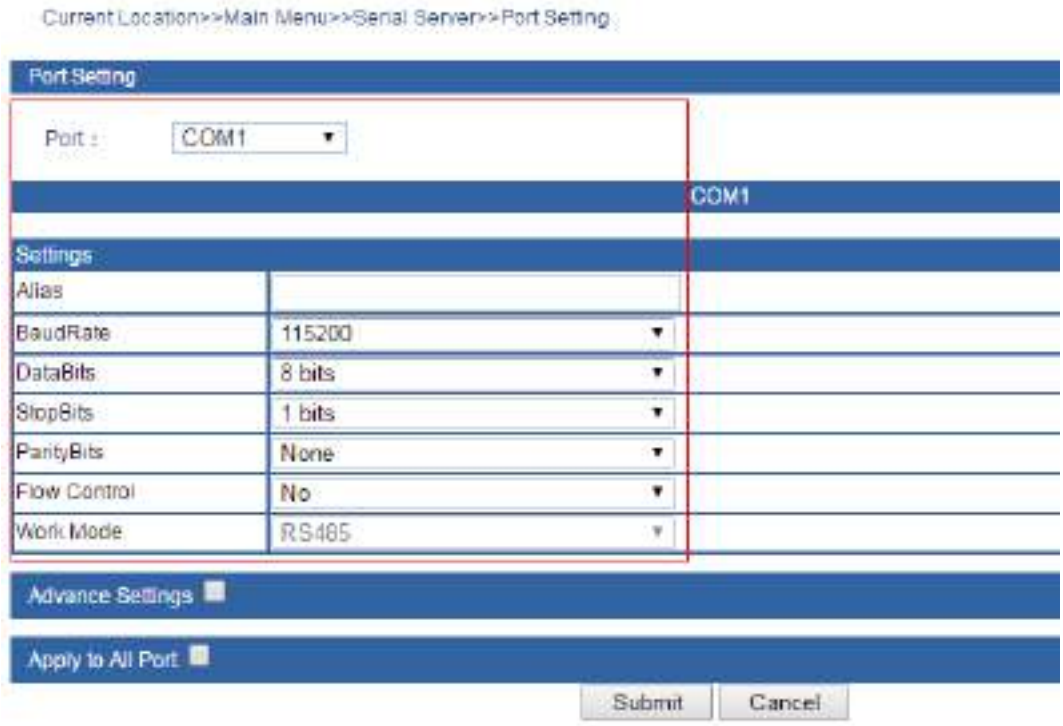
Operation Steps

Step 1 Configure the IP address of the serial server.

1. Log in to the Web configuration interface and select "Network Setting".
2. In the "Use the following IP address" option box, enter the "IP address", "Subnet Mask" and "Gateway address" corresponding to the serial server.
3. Other parameters remain the default, click "Submit".

Step 2 Configure the serial port parameter information.

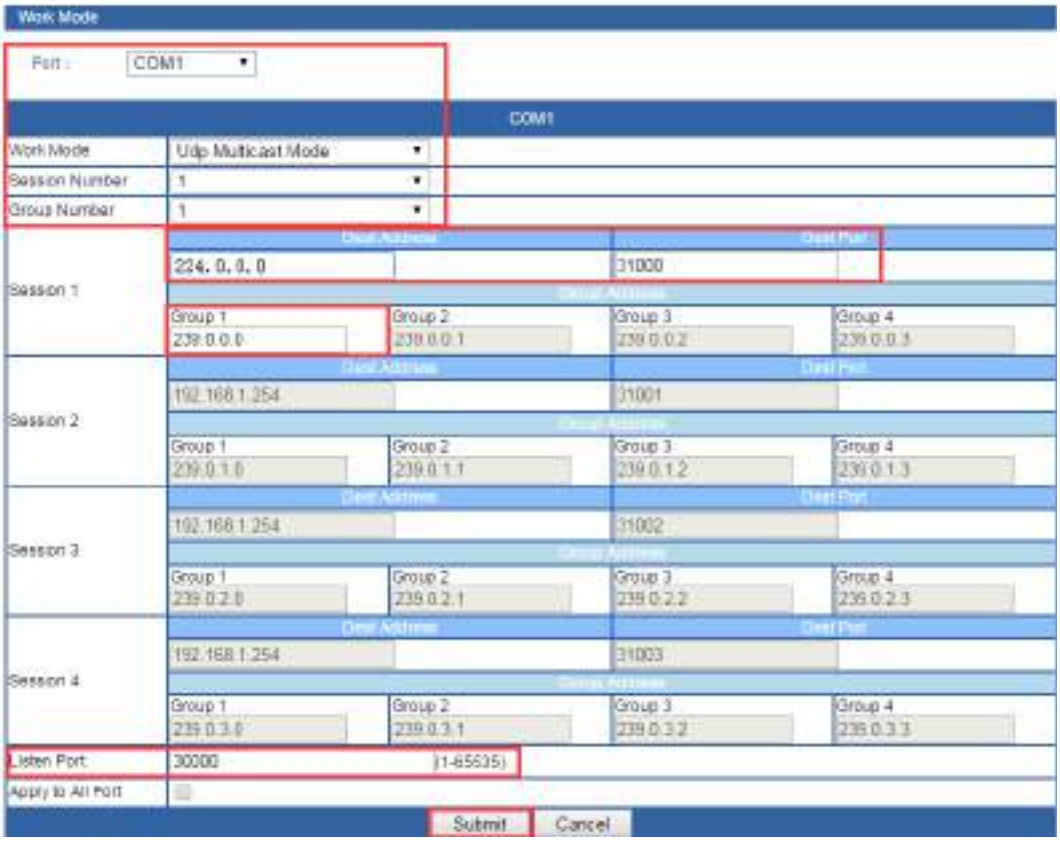
1. Log in to the Web configuration interface and select "Serial Server> COM Settings".



2. Select “COM1” from the serial port number drop-down list box.
3. Set the "BaudRate", "DataBits", "StopBits" and "ParityBits" in the "Settings" option box.
4. Other parameters remain the default, click "Submit".

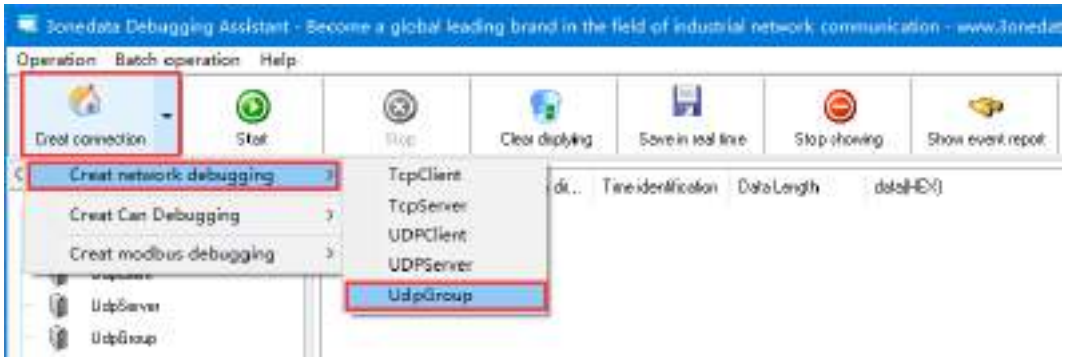
Step 3 Configure the working mode of the serial server.

1. Log in to the Web configuration interface and select "Serial Server> COM Mode Settings".
2. Select “COM1” from the serial port number drop-down list box.
3. Click the “Work Mode” drop-down list box and select “UDP Multicast Mode”.
4. Click “session number" drop-down list box, and select “1 “to establish one session connection.
5. Click the “Group Number” drop-down list box and select “1”.
6. Enter the group address "224.0.0.0" of the host PC in the "Dest Address" text box.
7. Enter the host PC's local port number, 31000, in the destination port text box.
8. Enter the group address "239.0.0.0" of the host PC in the "Group Address/ Group 1" text box.
9. Enter "30000" for the local port number of the serial port server in the listen port text box.
10. Other parameters remain the default, click "Submit".



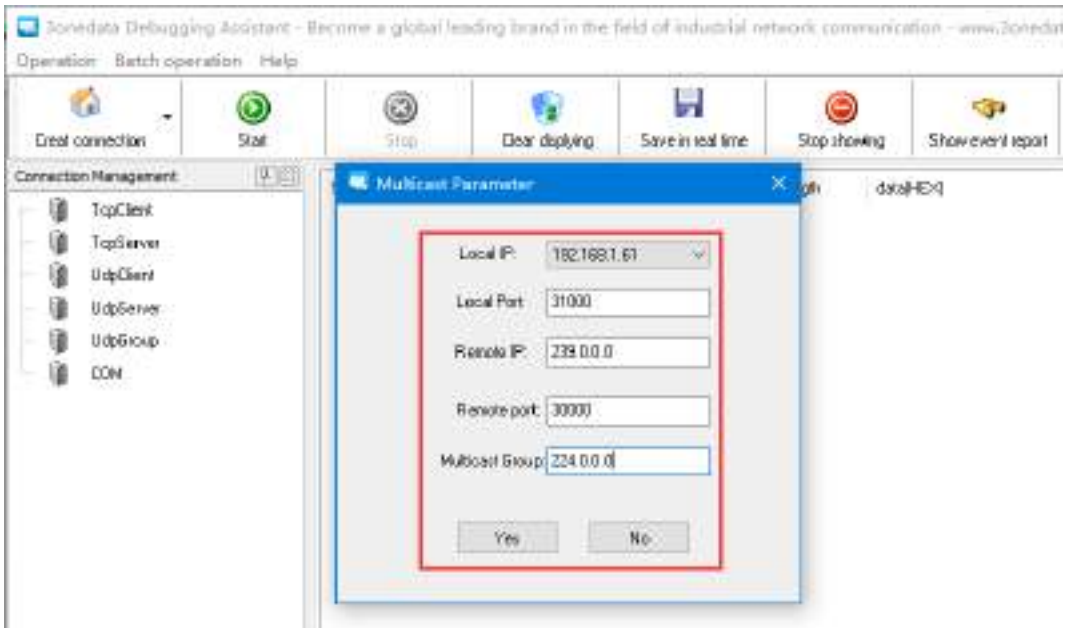
Step 4 Run "3onedata Debugging Assistant" software to create UDP multicast for the host.

1. To install and run "DebugTool" Software, click "Create Connection" drop-down list box and choose "Create Network Debugging> UdpGroup".



2. In the "Local IP" drop-down list box, select the IP address "192.168.1.61" of the host.
3. In the "Local Port" text box, enter the local port "31000" for the host.
4. In the "Remote IP" text box, enter the IP address "239.0.0.0" for the serial device server.

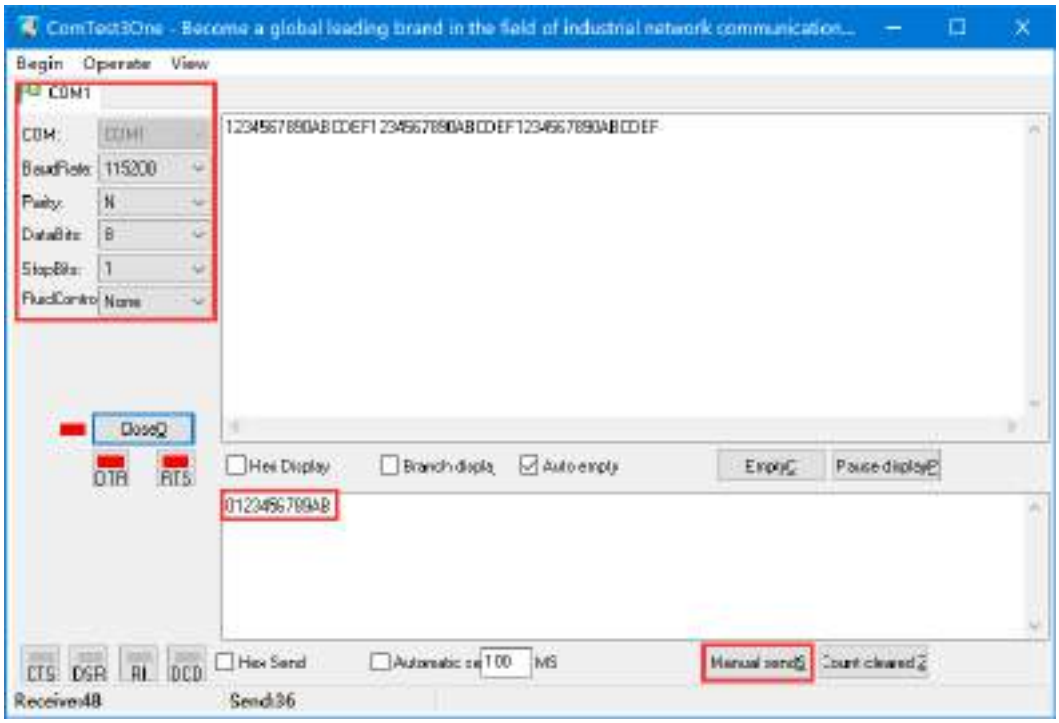
5. In the "Remote Port" text box, enter the local port number "30000" for the serial device server.
6. In the "Multicast" text box, enter the multicast group address "224.0.0.0".

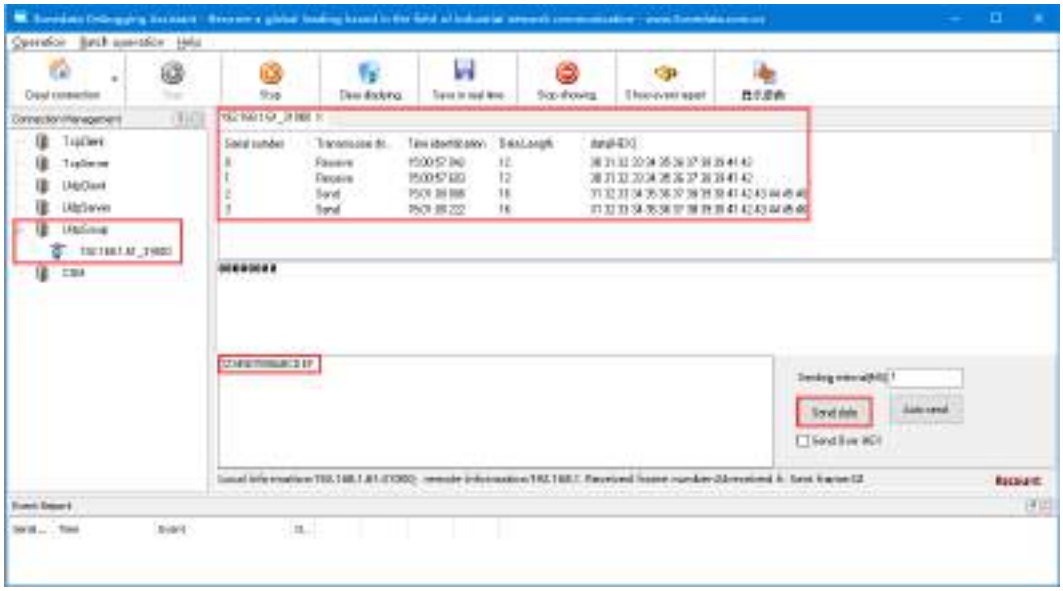


Step 5 Simultaneous operation of the "DebugTool" and "ComTest3One" software, test the serial server and the host PC to communicate with each other.

1. Install and run the "ComTest3One" software, click "Begin" menu "New Windows".
2. Add serial port "COM1" window, and configure serial port number, baud rate, check bit and data bit and other parameters consistent with "serial port configuration" of WEB interface.
3. Open the serial port signal of "COM1", for example, enter the serial port information "0123456789AB", and click "send manually".

4. Run the "DebugTool" software, in the UdpGroup option box to view the host received the serial information. Similarly, the host PC can also send messages to serial port devices.





The Second Part: Frequently Asked Questions

9 FAQ

9.1 Sign in Problems

1. **Why the webpage displays abnormally when browsing the configuration via WEB?**
   Before access the WEB, please eliminate IE cache buffer and cookies. Otherwise, the webpage will display abnormally.
2. **What should I do if I forget my login password?**
   For forgetting the login password, the password can be initialized by restoring factory setting, specific method is adopting BlueEyes_□ software to search and use restore factory setting function to initialize the password. Both of the initial user name and password are "admin".
3. **Is configuring via WEB browser same to configuring via BlueEyes_Ⅱ software?**
   Both configurations are the same, without conflict.

9.2 Configuration Problem

1. **Use TCP Socket to connect the serial port server to the access control machine to debug communication, and found that the normal communication unavailable?**

   Fault detection:

   - The IP address and port number may not be configured correctly.
   - The serial port parameters may not be configured correctly.
   - RS-485 wiring may be abnormal.

   Problem solving: found that the parity bit error, none parity modified to mark parity, communication is normal.

2. **The serial port server could not communicate normally. It found that there was a command, but the data from the serial port server was wrong?**

   Fault detection:

   Older version of VSP Manager's Realcom function to receive code algorithm exception, resulting in the serial server to open the WEB function and VSP Manager open Realcom function, the serial port to send and receive data are wrong.

   Problem Solving: After upgrading the VSP management software, the communication is normal.

3. **PC with straight-through cable directly connected to the serial server, Ping test packet loss?**

   Check whether the Ethernet port of the serial server is damaged, if it has been damaged, it will cause Ping test packet loss.

4. **Serial server and computer use network cable connection, the local connection will appear "!" exclamation mark (that is, local connection is limited)?**

   Fault detection:

   - MAC address aging.
   - The computer and the serial server are not on the same network segment.

   Problem Solving: After a period of time to see whether the local connection "!" Exclamation mark or the computer and serial server can be changed to the same network segment.

5. **Serial server link LED does not light?**

   Fault detection:

   - The serial server is not powered on.

- Network cable or fiber optic cable is not connected or poor contact, network cable damage.
- Network port damage, network cable line error and did not do according to the standard line.
- Optical port damage, fiber type, fiber wavelength, transmission distance, transmission medium and data format does not match.
- The serial port server Link indicator is damaged.

Problem Solving:

- Confirm the communication environment, whether the device is powered on, check the network cable contact problem.
- Ping serial server IP address, if you can Ping, then it would prove that the serial server Link indicator is damaged. If the Ping fails, proceed to the following steps.
- For copper port, replace the copper port of the network cable, computer or serial server for test.
- For optical ports, check whether the fiber type, fiber wavelength, transmission distance, transmission medium, and data format match. If it matches, replace the fiber or optical port for testing.

6. **Why is the serial server power supply not powered?**

   Check whether the power supply is damaged or whether the positive and negative terminals are connected; whether the power indicator light is on and the power supply is stable.

7. **Device can be searched via VSP Manager, and virtual serial port is established, but when viewing the virtual serial port, it cannot Link?**

   Fault detection: session is not enabled

   Problem Solving:

   - Confirm the communication environment, if you can search the device, Link indicator light is also bright, that PC to the serial server can communicate.
   - Check whether the PC and the serial server can Ping successfully. If the Ping fails, change the PC and serial server to the same network segment.
   - Enter the configuration interface of the serial server to check whether the working mode is configured correctly; whether the IP address and port

number of the remote virtual serial device and the serial server are consistent.

8. **Test the serial server with test software found garbled?**

   Fault detection: serial port parameters do not match, for no reason to open Realcom function.

   Problem Solving:

   - Confirm the communication environment (whether there is a strong magnetic field around), check whether the communication line is in good contact, and whether the quality of the communication line is OK.
   - Verify that the serial parameters of the test software, serial server, and serial device are matched.
   - When creating a virtual serial port, select "RealCom Mode" for the working mode in the WEB configuration interface of the serial server.

9. **Why is the serial server disconnected after a period of connection?**

   - Equipment supply voltage instability. Troubleshooting: Check the power supply wiring and supply voltage.
   - Network status is unstable. Troubleshooting: Ping the IP address of the serial server to view the network.
   - TCP connection channel is occupied. Troubleshooting: Modify the serial server's IP address and local port number.
   - VSP driver software is modified. Troubleshooting: Install the high version of the VSP driver software.
   - The firewall caused the device to fail to connect. Troubleshooting: Turn off the firewall and anti-virus software.
   - Hardware problems. Troubleshooting: Replace the computer, network cable, serial server.
   - Upper software caused. Troubleshooting: restart the upper software, re-establish the connection.

10. **Modify the MAC address of the serial server to affect the communication?**

    If the MAC address is not a broadcast or multicast address, it will not affect the communication. In the WEB configuration interface of the serial server, MAC address modification is not supported. It is recommended that you do not modify the MAC address.

11. **Can a serial server support multiple computer communication?**

Support up to 4-computer communication, as long as the multi-session connection is enabled.

12. **When the two computers correspond to a virtual serial port, will the communication be intermittent?**

    Open 2 sessions and establish two virtual serial port connections for communication.

13. **Can the serial server communicate after crossing the network segment?**

    Yes, set the default gateway address, the serial server can cross-network communication.

14. **In the use of the process found that the serial server LEDs all bright, can not communicate properly?**

    - LAN storm. Troubleshooting: Host directly connected to the serial server.
    - Network IP address conflicts. Troubleshooting: the host directly connected with the serial server, modify the IP address of the serial server.
    - The baud rate is set too high. Troubleshooting: Modify the baud rate of the serial server.
    - Indicator is abnormal. Troubleshooting: Replace the other serial server for testing.

15. **Serial server work in TCP client mode, can support virtual serial communication?**

    - Serial server work in TCP Server mode, support virtual serial communication, RealCom function is turned on.
    - Serial server work in TCP Client mode, does not support virtual serial communication, RealCom function is turned off.
    - Serial server work in UDP mode, does not support virtual serial communication, RealCom function is turned off.

16. **Communication environment: computer + wireless router + serial server, can use this way?**

    The computer is connected via WiFi, but the VSP software on the computer must search for the device (the wireless router and the serial server must be on the same network segment).

17. **What is the wiring situation when the serial server uses RS-485 communication?**

    RS-485 terminals are T + / D + and T- / D-.

18. **How many RS-485 terminal nodes can the RS-485 port of the serial server support?**

    The conventional serial server supports 32 devices and can also customize 64,128 nodes.

19. **After configuring the serial server parameters, found that these parameters can not be saved?**

    - Display problem of browser. Troubleshooting: Replace the browser to view or replace the host.
    - System software problems. Troubleshooting: Restore factory settings.
    - Product chip problems. Troubleshooting: Depot Repair.

20. **Can the serial server be used in pairs?**

    Yes, one device works as TCP Server, and the other one works as TCP Client. They are connected by network cable.

21. **Serial server RS-485 interface connecting attendance machines and vending machines, only one IP address will have an impact on the data?**

    The data will not be affected, because the RS485 device address code and machine number are not the same.

22. **When the serial server is creating a virtual serial port, causing the computer blue screen crash?**

    Usually the driver causes the computer blue screen crash, troubleshooting method:

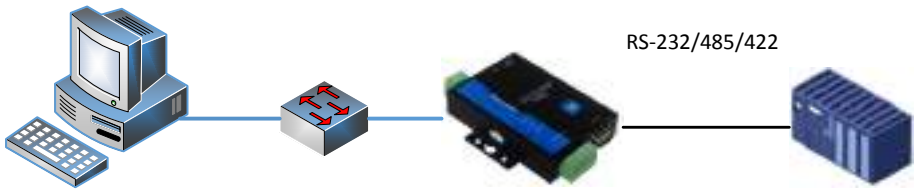
    - Replace to the higher version of the driver.
    - Turn off the firewall, exit antivirus software.

23. **Can the baud rate of the serial server support 921.6k?**

    No; serial port server support baud rate: 300 ~ 115200bps, but can be achieved through customization.

24. **Just bought the serial to Ethernet converter (serial server), how should I debug the device used?**

    The live environment is as follows: Do not cross the gateway (the device is under the same gateway as the monitoring host).



- Will be connected to the same serial port with the host LAN (with the network segment, with the Vlan, with the broadcast domain), use the management software to search the device, view the device IP address.
- In the management software, modify the device IP and host IP to the same network segment. Refer to the CD-ROM documentation and configure the parameters at both ends of the communication (virtual serial port / serial port server).
- Access terminal serial equipment (attendance, access control, etc.), the use of data acquisition and management software to test whether the normal communication connection.

3onedata
Make network communication more reliable

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