TRENDnet®

User's Guide

1-Port Serial to IP Ethernet Converter

TU-S9E

Content

1 Overview

Easily connect TU-S9E devices using the 9 pin interface to your network which can be conveniently placed next to your serial equipment. This device server supports maximum 921.6Kbps for the RS232 serial interface. Provided for remote control, monitoring and data communication. It is ideal for POS, factory automation and building automation field.
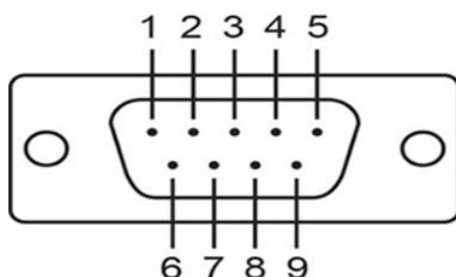
2 Features

- Remotely connect and configure your serial device over the network
- Easy setup with software or web browser
- Works as virtual serial port, DHCP and TFTP server
- Rugged metal housing
- Software utility included

3 Usage

3.1 Product Interface and Pinout Definition

RS232/M(DB9 Male)	Pin2	Pin3	Pin5
Signal Name	RX	TX	GND

3.2 Software

The AXR2E Configuration Utility is a Windows program. It consists of necessary tools that you can use to help manage your TU-S9E application products.
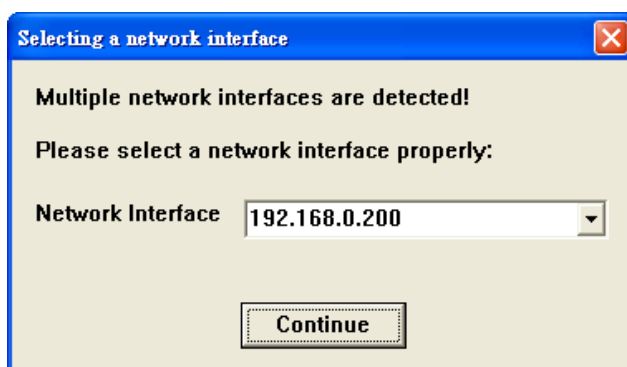
The AXR2E Configuration Utility contains the following tools:

(1)   Device Management tool: enable you to remotely manage TU-S9E device servers.

(2)   Virtual Serial Port tool: enable you to manage virtual serial ports on the host PC.

(3)   Device Monitor tool: enable you to monitor the status of TU-S9E device servers.

(4)   DHCP Server tool: enable a TU-S9E device server to get a dynamic IP address when operating at the DHCP-enabled mode.

(5)   TFTP Server tool: enable a TU-S9E device server to download the new firmware from the TFTP server.

(6)   COM Port Terminal tool: supports two RS-232 port terminals to make it easier for you to develop or test your TU-S9E application products.
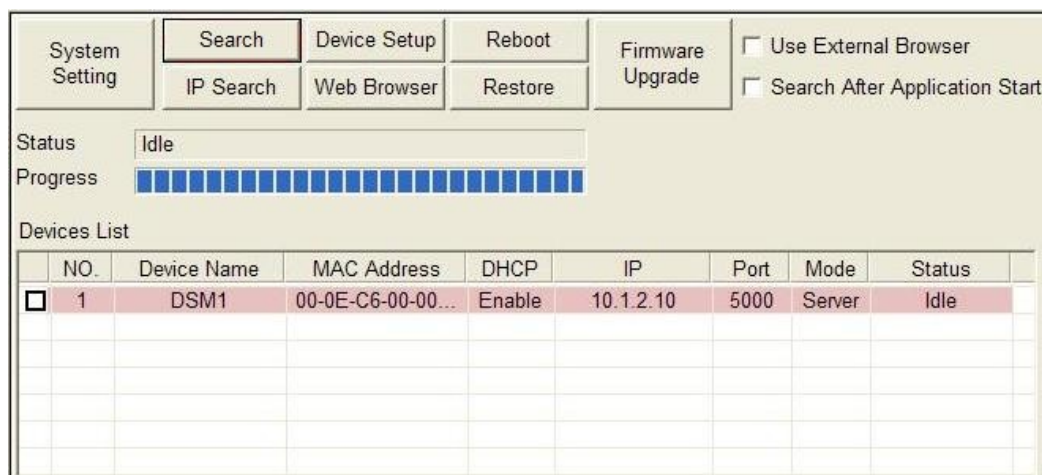
3.2.1 Install AXR2E Configuration Utility

Step 1: On the 32-bit Windows environment, run AXR2E_x86.exe, and then the main window will appear as the following figure. (Note: on a 64-bit Windows environment, you should run AXR2E_x64.exe).

Step 2: If there are more than one network interface (multiple IP addresses), AXR2E configuration utility will pop up a dialog as below and request you to choose one IP address to be used for management.

3.2.2 Software Interface

The main window divides the display into three functional areas: Menu Window, Function Window and System Log Window.

(1)   Menu Window: displays supported tools and existed VSP Ports list.

(2)   Function Window: displays supported functions of a selected tool.

(3)   System Log Window: mainly displays system log messages. It is also as the function window of COM Port Terminal tool and as the internal web browser of Device Management tool.

3.3 Device Management

The main window provides eight functions,

(1) System Setting: configures the Search, Restore, Reboot period.

(2) Search: searches available device servers on the LAN.

(3) IP Search: searches the device server with specified IP address.

(4) Device Setup: configures the settings of a selected device server.

(5) Web Browser: configures the settings of a selected device server via web browser.

(6) Restore: restores the selected device server back to factory default settings.

(7) Reboot: restarts the selected device server.

(8) Firmware Upgrade: upgrades the firmware code of the selected device server.

The main window supports two parameters that you can configure:

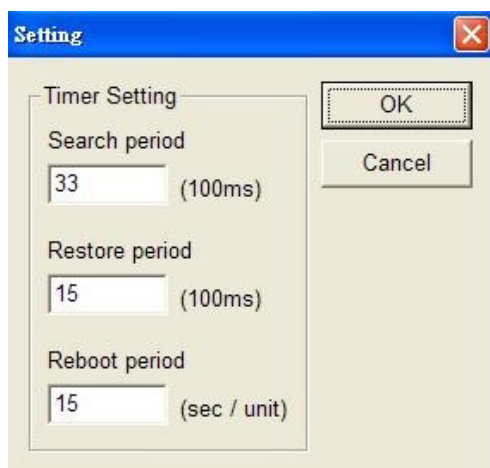| Parameter	Description
Use External Browser	Enable / disable using the external browser to access the device server's web pages
Search After Application Start	Enable / disable executing the search operation automatically after application start

After executing the [Search] function, if any device servers are found, they will be added in the Devices List and the following information is displayed:

Category	Description
NO	Device server index in the list
Device Name	Device server name, 16 bytes maximum string
MAC Address	Device server MAC address
DHCP	Enable or disable
IP	- If DHCP is enabled, dynamic IP is acquired from the DHCP server, - Or, static IP is assigned as dynamic IP.
Port	- Server mode: data packet listening port - Client mode: destination port
Mode	Client or Server
Status	- Idle: the device server has no TCP or UDP connection. - Connected: the device server has a TCP or UDP connection.

If a device server shows "Connected" status, it indicates that data transmission task is in progress. To avoid any unexpected interrupts during data transmission, the Device Management tool prohibits users from operations including device setup, reset, reboot and upgrade for those device servers which status are "Connected".

3.3.1 System Setting

When click the [System Setting] button, the Setting dialog will appear,
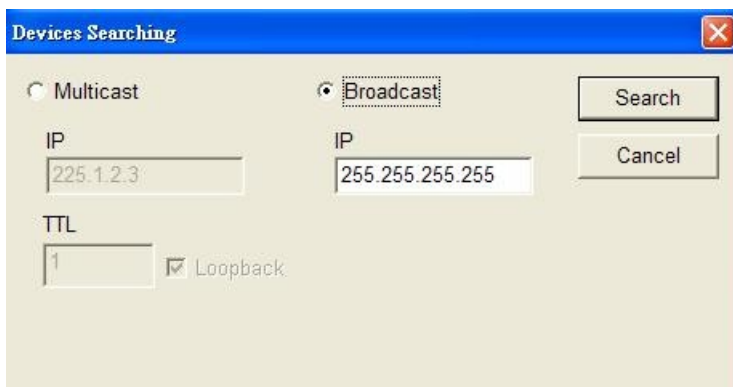

The Setting dialog provides two functions,

(1)   OK: enables the new period setting.

(2)   Cancel: cancels the new period setting.

The Setting dialog provides following parameters,

Parameter	Description
Search period (100ms)	Set the search timeout period
Reset period (100ms)	Set the reset timeout period
Reboot period (sec / unit)	Set the reboot timeout period

3.3.2 Search

When click the [Search] button, the Devices Searching dialog will appear,

The Devices Searching dialog provides two functions,

(1)   Search: starts the search operation

(2)   Cancel: cancels the search operation.

The Devices Searching dialog provides following parameters,

Parameter	Description
Multicast	Search via UDP multicast packet
IP	Multicast IP address
TTL	Time to live
Loopback	Enable/Disable loopback of outgoing multicast packets
Broadcast	Search via UDP broadcast packet
IP	Broadcast IP address

Note: The default Multicast IP address is 225.1.2.3 in the RS-232 to Ethernet Converter demo firmware.

Step 1: In Menu Window, select Device Management tool.

Step 2: Click the [Search] button to search available device servers on the LAN. Below figure shows an example that one device server is found.

Step 3: The found device servers will be showed in Devices List. On the list you can acquire the device server's settings including connection type, IP address, and port number, and so on.
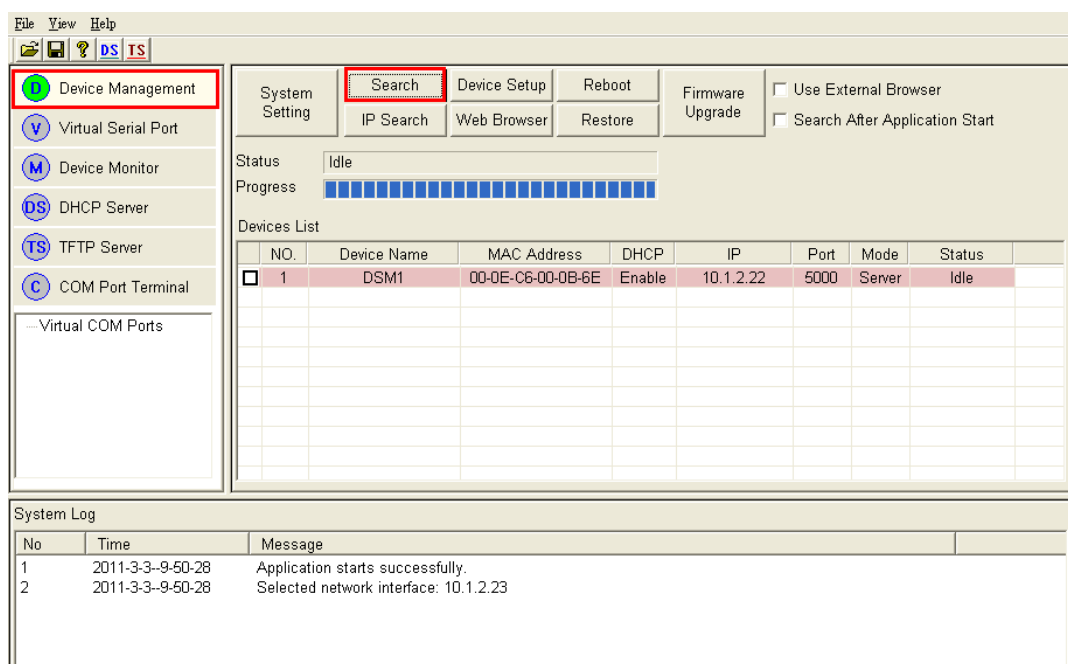
3.3.3 IP Search

When click the [IP Search] button on main window, the IP Search dialog will appear
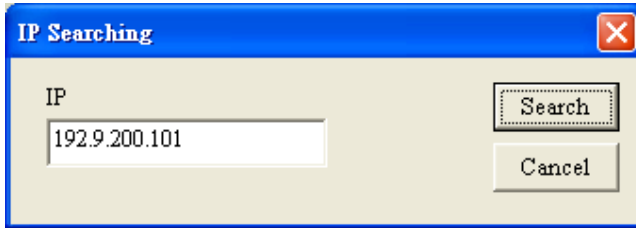
The IP Search dialog provides two functions,

(1)   Search: starts the search operation

(2)   Cancel: cancels the search operation.

The IP Search dialog provides following parameters,

Parameter	Description
IP	The device server's IP address

3.3.4 Device Setup

When click the [Device Setup] button on main window, the Device Setup dialog will appear,
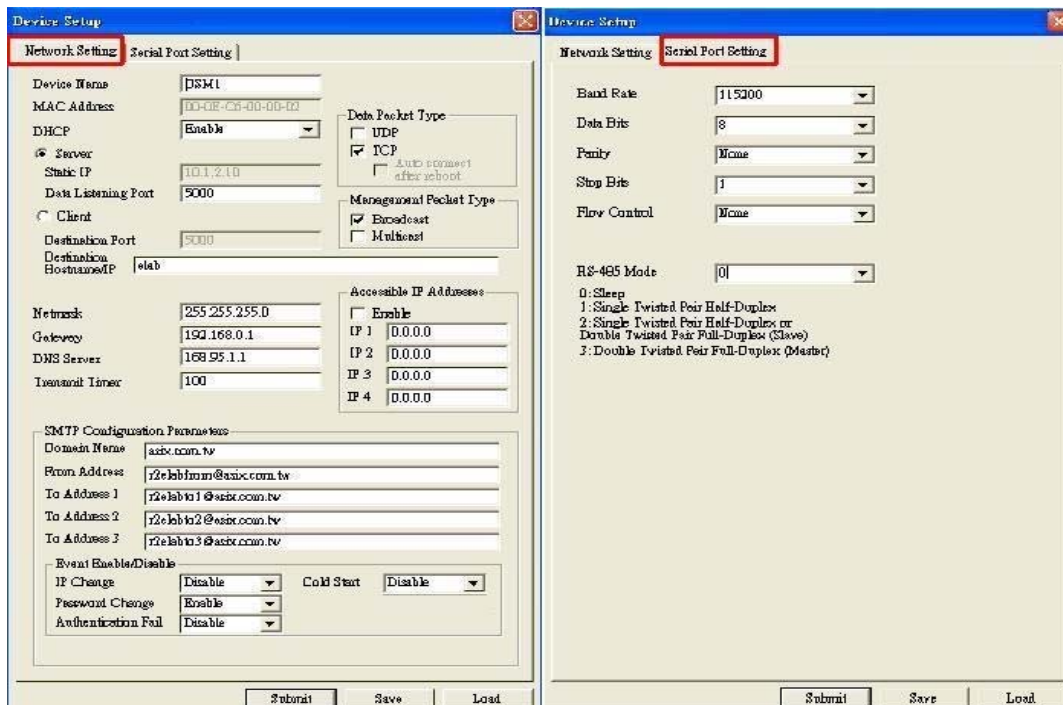
The Device Setup dialog provides three functions,

（1） Save: saves the settings to a file.

（2） Load: reads a set of settings from a file.

（3） Submit: submits new settings.

The Device Setup dialog consists of two tabs: [Network Setting] and [Serial Port Setting].

3.3.4.1 Network Setting

The [Network Setting] tab provides following parameters,

Parameter	Description
Device Name	Device identification string
MAC Address	Multicast IP address
DHCP	Enable / disable DHCP client function
Server	Enable Server mode
Listening IP	Search via UDP broadcast packet
Data Listening Port	Server data packet listening port
Client	Enable Client mode
Destination IP	Remote host IP address
Destination Port	Remote host listening port
TCP	Transmit serial data via TCP packet
UDP	Transmit serial data via UDP packet
Multicast	Transmit management data via multicast packet
Broadcast	Transmit management data via broadcast packet
Netmask	Subnet mask
Gateway	Gateway IP address
DNS Server	DNS server IP address
Transmit Timer	Time interval to send out serial data packet
Accessible IP Addresses Configuration Parameters	

Enable	Enable / disable accessible IP addresses
IP 1	Accessible IP address 1
IP 2	Accessible IP address 2
IP 3	Accessible IP address 3
IP 4	Accessible IP address 4
SMTP Configuration Parameters	
Domain Name	The SMTP client's domain name.
From Address	The sender's IP address.
To Address 1	The 1st recipient's IP address
To Address 2	The 2nd recipient's IP address
To Address 3	The 3rd recipient's IP address
IP Change	Enable / disable the IP Change event.
Password Change	Enable / disable the Password Change event.
Authentication Fail	Enable / disable the Authentication Fail event.
Cold Start	Enable / disable the Cold Start event.

3.3.4.2 Serial Port Setting

The [Serial Port Setting] tab provides following parameters

Parameter	Description
Baud rate	Data transfer rate per second
Data bits	Data bits
Parity	Parity check
Stop bits	Stop bits
Flow control	Flow control
RS-485 Mode	RS-485 mode
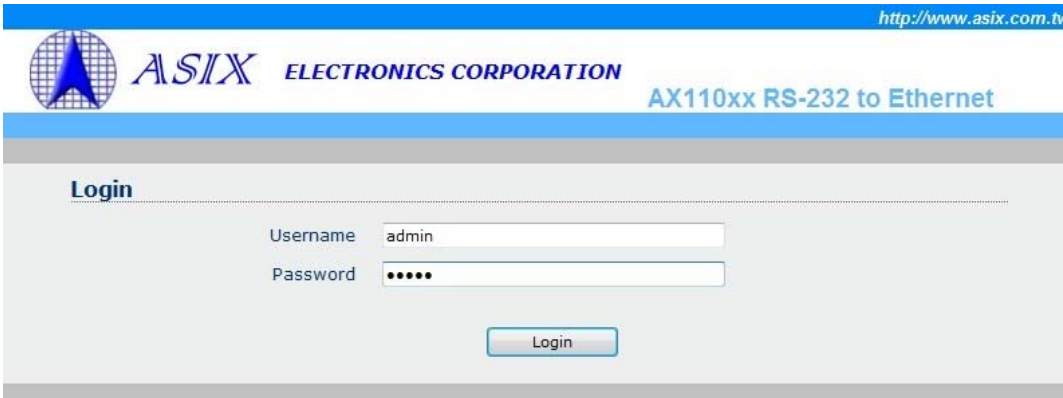
3.3.5 Web Browser

There are two methods to open the web page of a device server.

Method 1: On either the AXR2E Configuration Utility, you can select the target device server and then click the [Web Browser] button.

The tool will open a browser and connect automatically to the web server of the target device server, the Login web page will appear.

Method 2: You can manually open a web browser and connect to http::/xxx.xxx.xxx.xxx (e.g. http://192.168.0.3), the Login web page will appear.

You must enter username and password first and then click the [Login] button. The default username is "admin" and default password is "admin". The HTTP server will redirect to the Basic web page if the authentication completed successfully.

3.3.5.1 Basic

In this web page, the Client Destination Host Name/IP field can accept either host name or IP address format; for example, you can enter "asix.com.tw" or "10.1.4.100" in this field.

This page supports four button commands:

(1) Apply: submits this page's settings to the device server.

(2) Cancel: cancels the changed settings on this page.

(3) Restore default: restores the selected device server back to factory default settings.

(4)   Reboot: restarts the selected device server.

When click the [Restore default] button, a warning dialog will appear. You can press the [OK] button to continue the operation, or press the [Cancel] button to cancel the operation.

When click the [Apply] or [Reboot] button, the confirmation window will appear. You can click the [OK] button to continue the operation, or click the [Cancel] button to cancel the operation.

3.3.5.2 Advance

In this page, the E-mail Server Address/IP field can accept host name or IP address format, for example, you can enter "asix.com.tw" or "10.1.4.100" in this field.

There is a [FirmwareUpgrade] button in this page, it is used to upgrade the firmware of a target device, you need to make sure to enter correct TFTP Server IP and the firmware file name for upgrade before click this button.

When click the [Apply] or [FirmwareUpgrade] button, the confirmation window will appear. You can press the [OK] button to continue the operation, or press the [Cancel] button to cancel the operation.

3.3.5.3 Security

In this page, the Accessible IP Setting group must be careful in using. You need to make sure to enter correct accessible IP address(es) after enable this function; the new configuration will take effect after the device server reboot.

When click the [Apply] button, the confirmation window will appear. You can press the [OK] button to continue the operation, or press the [Cancel] button to cancel the operation.=

 When click the Logout link at the top right side of the page, the system will logout and redirect to the authentication page.

3.3.6 Firmware Upgrade Dialog

(1) Select the AX110xx RS-232 target board from the Devices List in the Function Window of Device Management tool.

(2) Click the [Firmware Upgrade] button to pop up the Firmware Upgrade dialog.

(3) Input a correct AX110xx RS-232 firmware file.

(4) Click the [Upgrade Firmware] button to start upgrading the new AX110xx RS-232 firmware code.
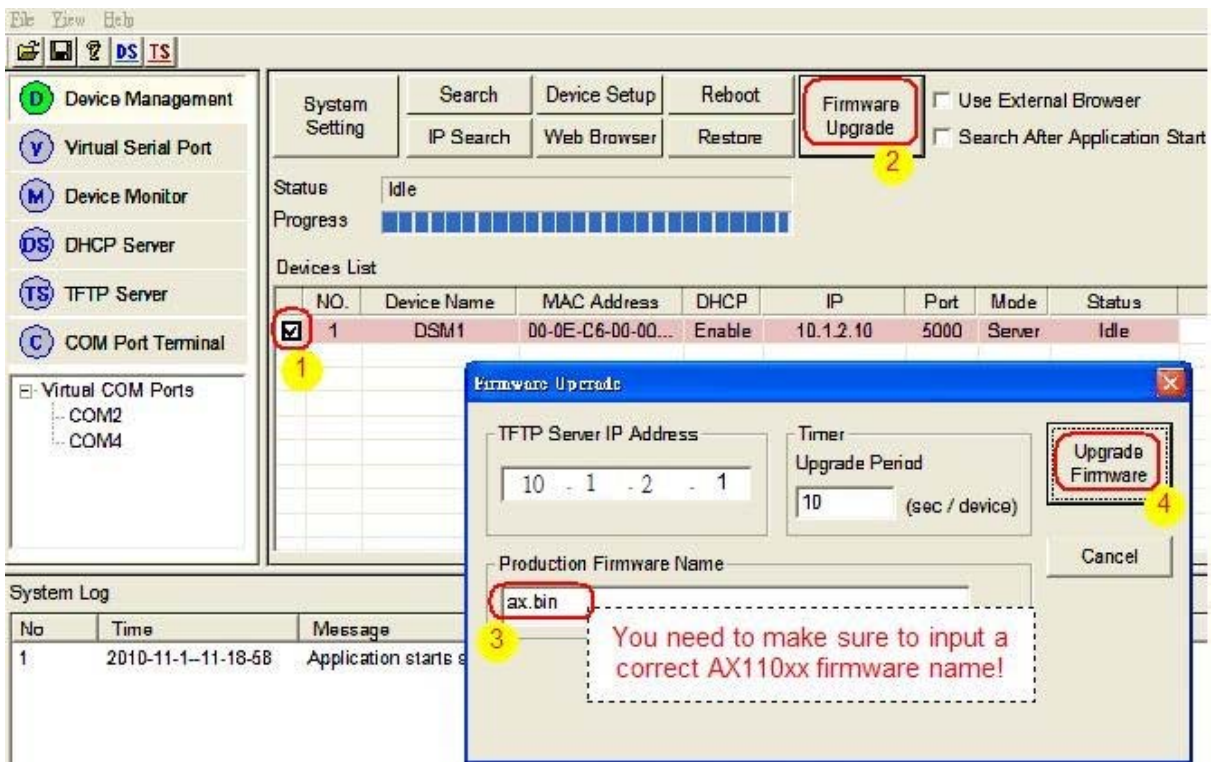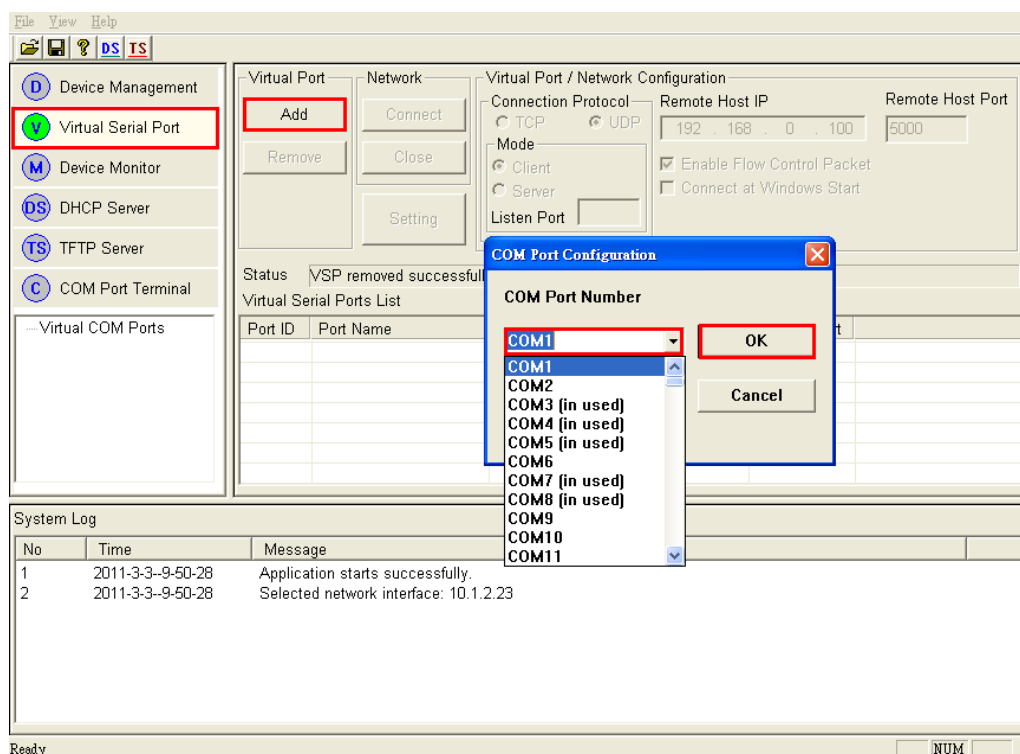
3.4 Virtual Serial Port

Step 1: In Menu Window, select Virtual Serial Port

Step 2: Click the [Add] button to add a virtual serial port. The COM Port Configuration dialog will appear.

Step 3: On the COM Port Configuration dialog, select an unused port number to be assigned to the virtual serial port. Then click the [OK] button to complete the add operation

Step 4: Click the [Setting] button to configure settings of the connection type, IP address, and listening port according to configuration of the targeted device. Here assumes the settings are as follows:

Parameter	Setting
Connection Protocol	TCP
Remote Host IP	10.1.2.22
Remote Host Port	5000

Enable Flow Control Packet	Disabled
Connect at Windows Start	Disabled
Mode	Client

Step 5: Click the [OK] button to complete the setting operation.
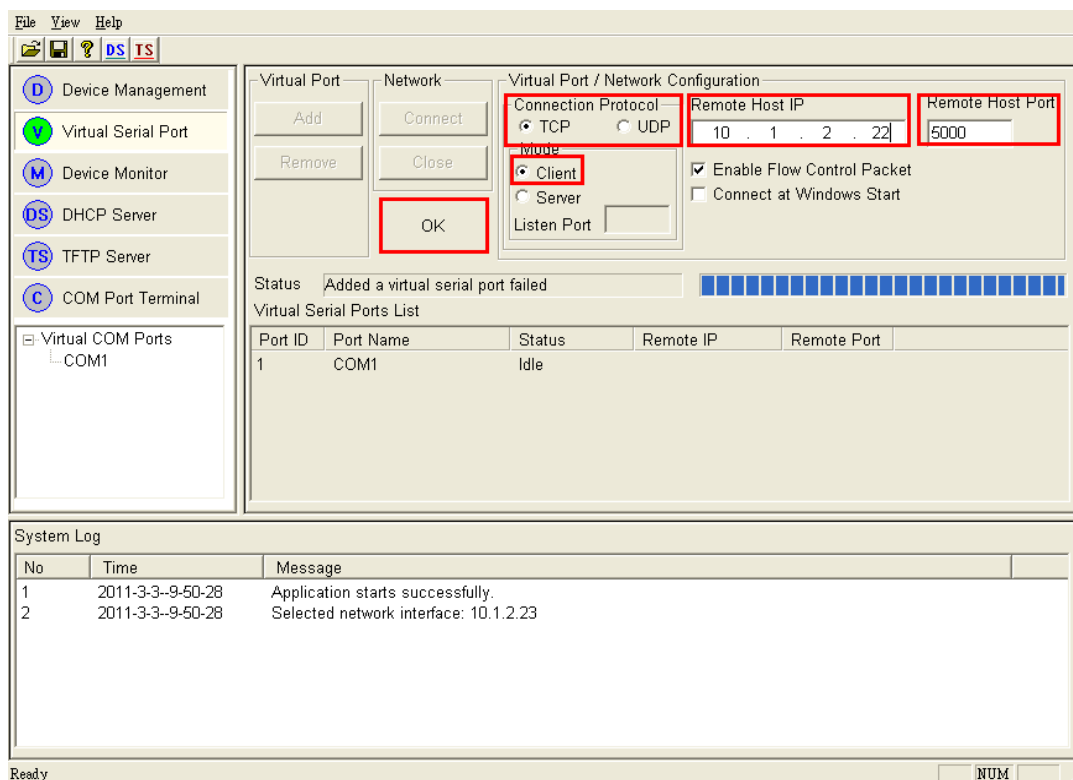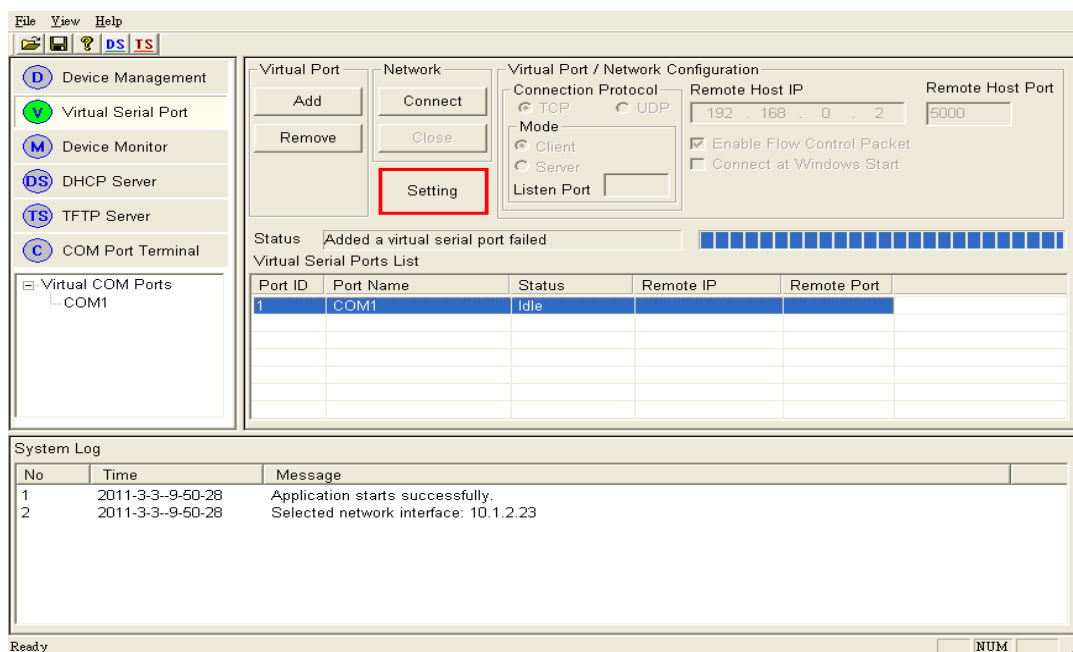
Step 6: Click the [Connect] button to make a TCP connection with the remote device server. You will see the update of the virtual serial port's status in both the Function Window and the Menu Window.
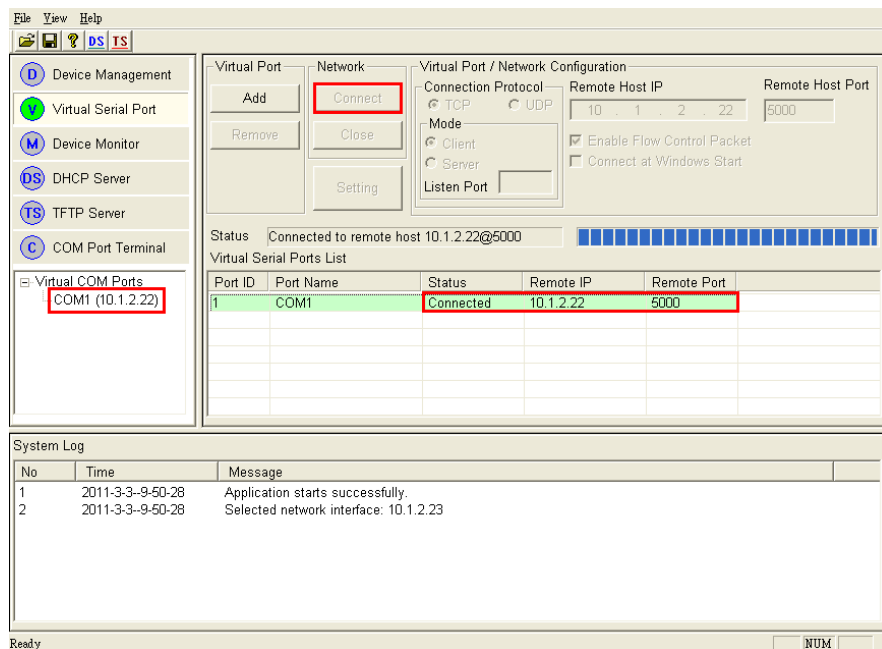
Note: When you click the [Add] button to add a Virtual Serial Port, if a warning message appears as in below figure, you need to enable the administrator authority. Below shows how:

1. Select the AXR2E_x86.exe or AXR2E_x64 icon on your desktop.

2. Right-click on the file and select Properties.

3. Check the "Run this program as an administrator" checkbox from Compatibility page.
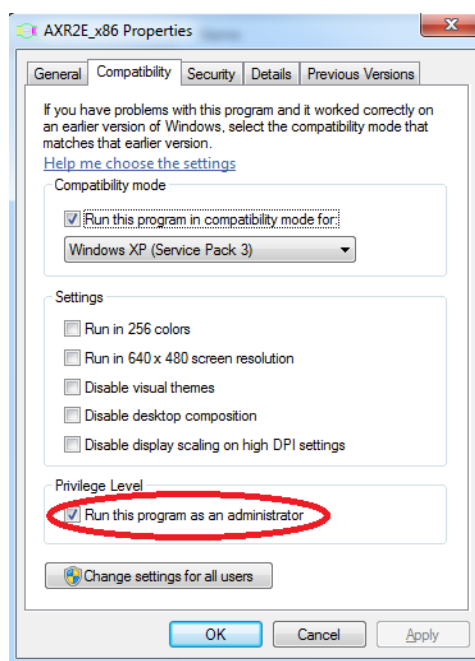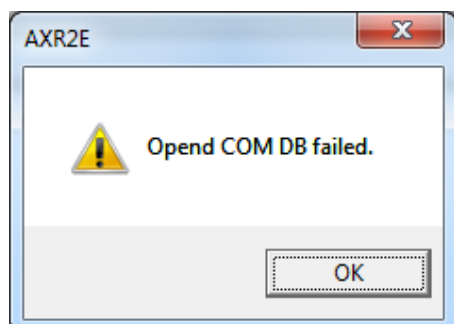
3.5 Device Monitor

The main window of Device Monitor tool is shown below.

(1) Start: starts / stops to monitor the selected device server(s). Before start the monitor function, you need to select at least one device server from the Devices List in the Function Window of Device Management tool.

The main window supports one parameter that you can configure:

Parameter	Description
Monitor Time Interval	Set the monitor frequency.

When a device server is selected from the Devices List in the Function Window of Device Management tool, it will be added in the Devices List and the following information is displayed:

Category	Description
NO	Device server index in the list
Query Status	The device server's query status
Device Name	Device server name
IP	Device server IP address
Modem Status	The value of device server UART2's Modem Status register
Firmware Version	Production firmware version
Serial Port TX Count	Device server UART2's TX count in unit of bytes
Serial Port RX Count	Device server UART2's RX count in unit of bytes

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Device Name	Device server name
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Modem Status	The value of device server UART2's Modem Status register
Firmware Version	Production firmware version
Serial Port TX Count	Device server UART2's TX count in unit of bytes
Serial Port RX Count	Device server UART2's RX count in unit of bytes

3.6 DHCP Server

The main window provides three functions,

(1) Start: starts / stops the DHCP server function.

(2) Delete: deletes a MAC to IP address mapping record.

(3) Delete All: delete all MAC to IP address mapping records.

Parameter	Description
Start IP Address	The first available IP address for clients
End IP Address	The end available IP address for clients
Gateway (Router)	The network gateway's IP address
Subnet Mask	The subnet mask
Domain Name Server	The domain name server's IP address
Server IP Address	The TFTP server's IP address
Boot File	The boot file name on the TFTP server

(1) Start: starts / stops the TFTP server function.

(2) Folder Browser: opens a folder browse dialog for file path setting.

| Parameter	Description
File Path	The file path for TFTP file read requests

3.7 TFTP Server
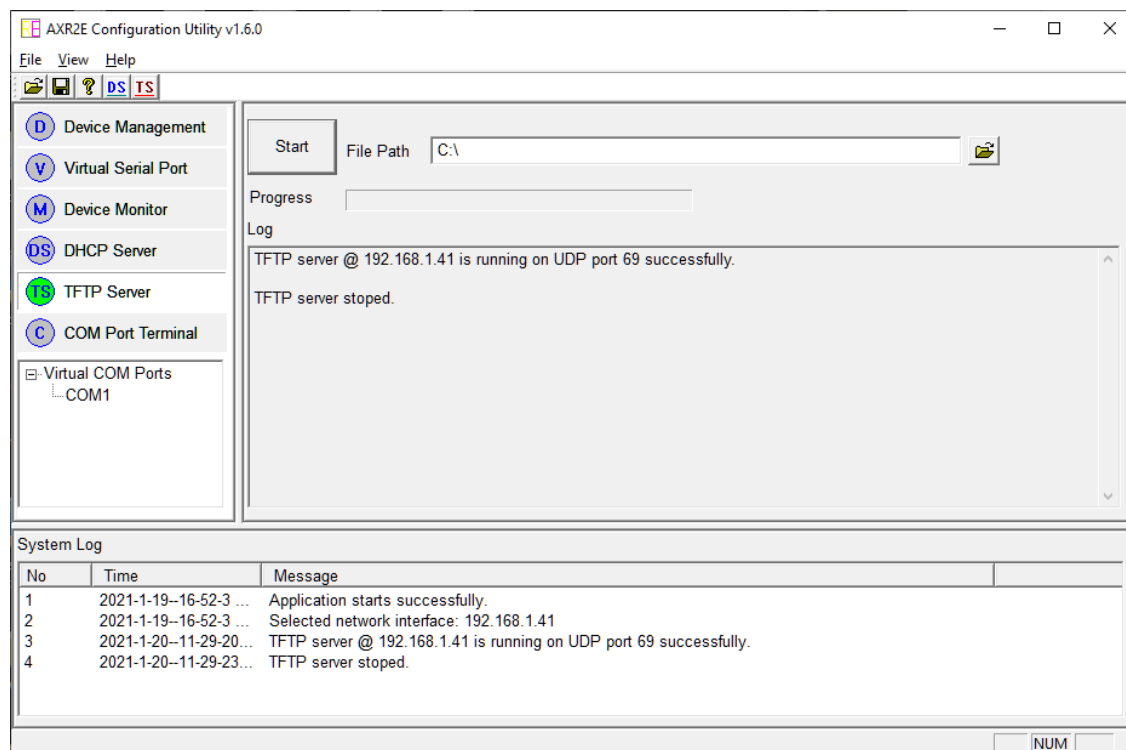
3.8 COM Port Terminal

This section describes the detailed functions of COM Port Terminal tool. This tool supports two terminals. Each terminal supports a simple test function to ease you to develop and test TU-S9E solution for your target application.

The main window of COM Port Terminal tool is shown below.
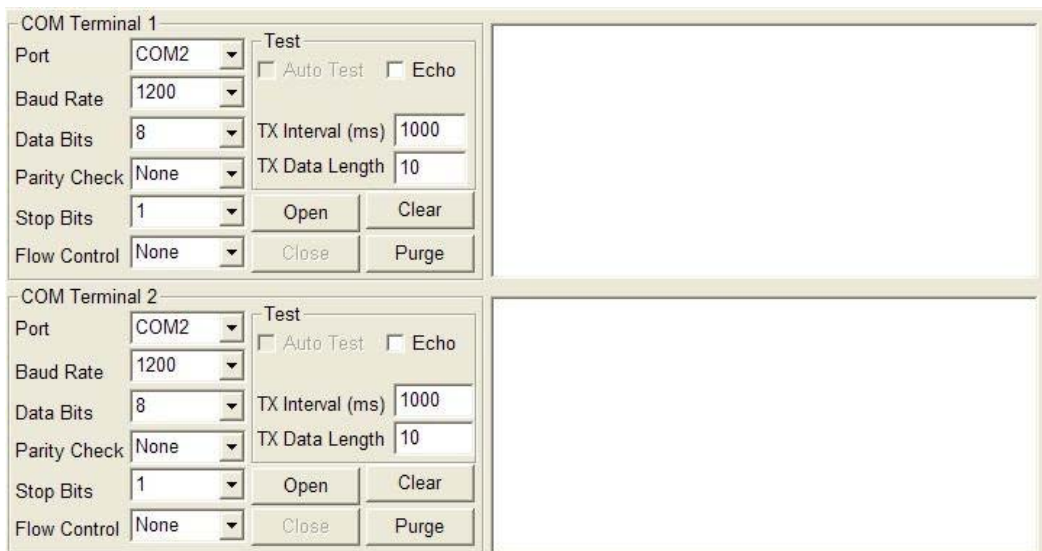
The main window contains two terminals. Each terminal provides below the same four functions,

(1)   Open: opens the selected COM port.

(2)   Close: closes the selected COM port.

(3)   Clear: clears the console data.

(4)   Purge: clears the data stored in COM port buffer.

Each terminal supports six general COM port parameters that you can configure:

| Parameter	Description
Port	COM Port number
Baud Rate	Baud rate
Data Bits	Data bits
Parity Check	Parity check type
Stop Bits	Stop bits
Flow Control	Flow control type

Each terminal supports four additional parameters for test function that you can configure:

| Parameter	Description
Auto Test	Enable / disable sending test data
Echo	Enable / disable echoing back received test data
TX Interval (ms)	The time interval to send out a test data
TX Data Length	The test data's length

Note: The following example operation assumes the AX110xx device server's UART2 port is connected to the COM7 port on PC1. And this device server has established a TCP connection with the Virtual Serial Port COM1 on PC1.

Step 1: In Menu Window, select COM Port Terminal tool. You will see the System Log Window being switched to the Function Window of COM Port Terminal tool.
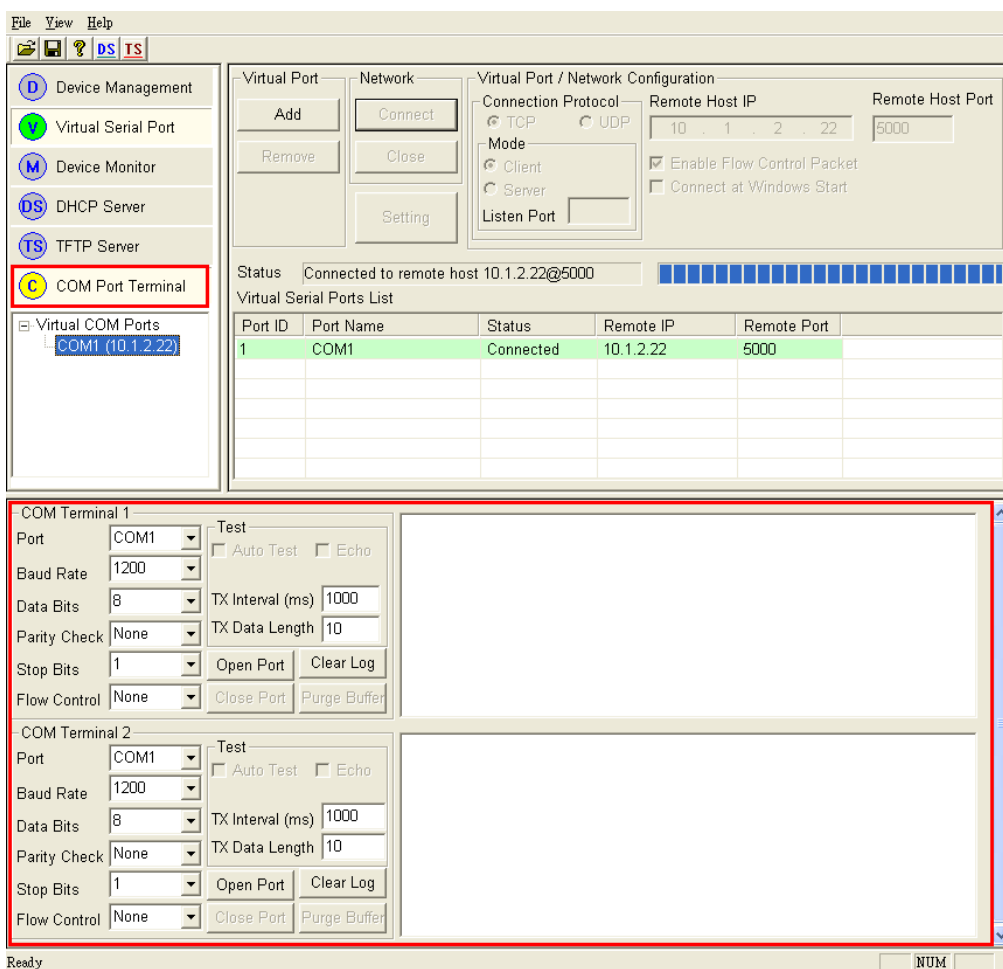
Step 2: Use COM Terminal 1 to open the COM1 and use COM Terminal 2 to open COM7. Here assumes the AX110xx device server's serial port settings are 115200 baud rate, 8 data bits, no parity check, 1 stop bit and no flow control.
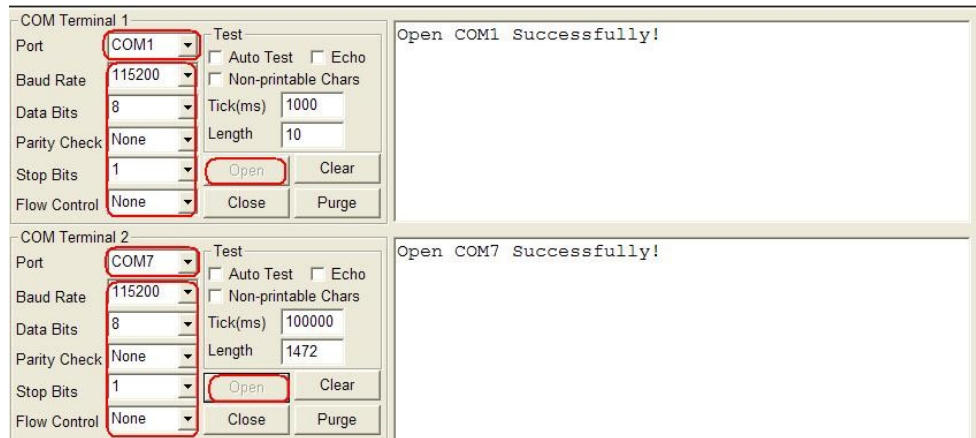

Step 3: Input some text data (e.g., "11111") in the console of COM Terminal 1, and then you should see the data appear in the console of COM Terminal 2.

Step 4: Input some text data (e.g., "22222") in the console of COM Terminal 2, and then you should see the data appear in the console of COM Terminal 1.
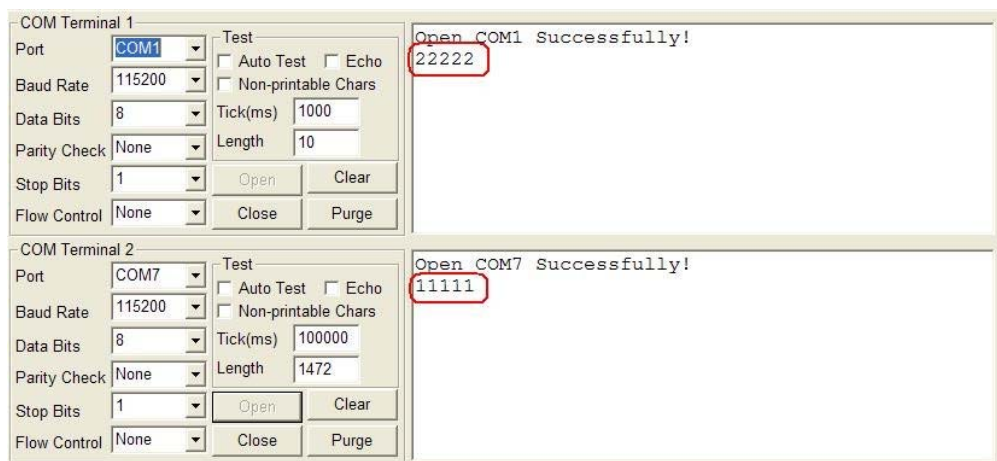
Step 5: Click the [Close] buttons of COM Terminal 1 and COM Terminal 2 to close COM1 and COM7 ports
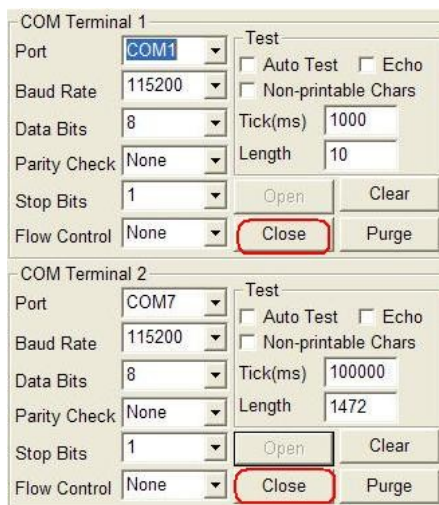
Step 6: In Menu Window, select Virtual Serial Port tool. Select the virtual serial port COM1 from the Virtual Serial Ports List and then click the [Close] button to close the connection between the virtual serial port driver and the AX110xx device server.
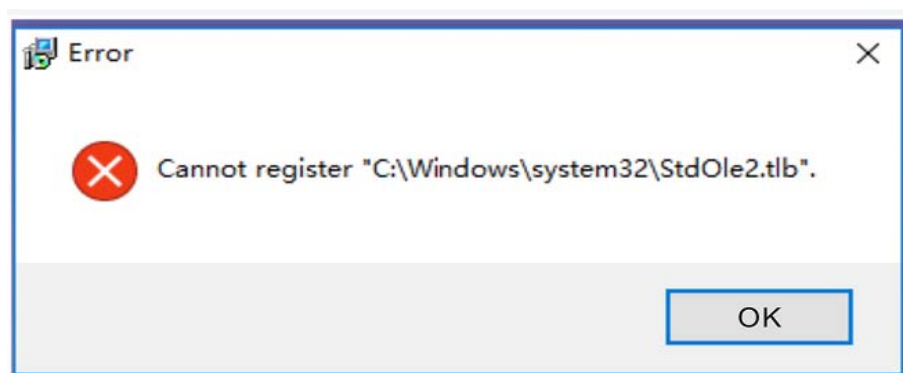
Step 7: Click the [Remove] button to remove the virtual serial port driver from PC1.
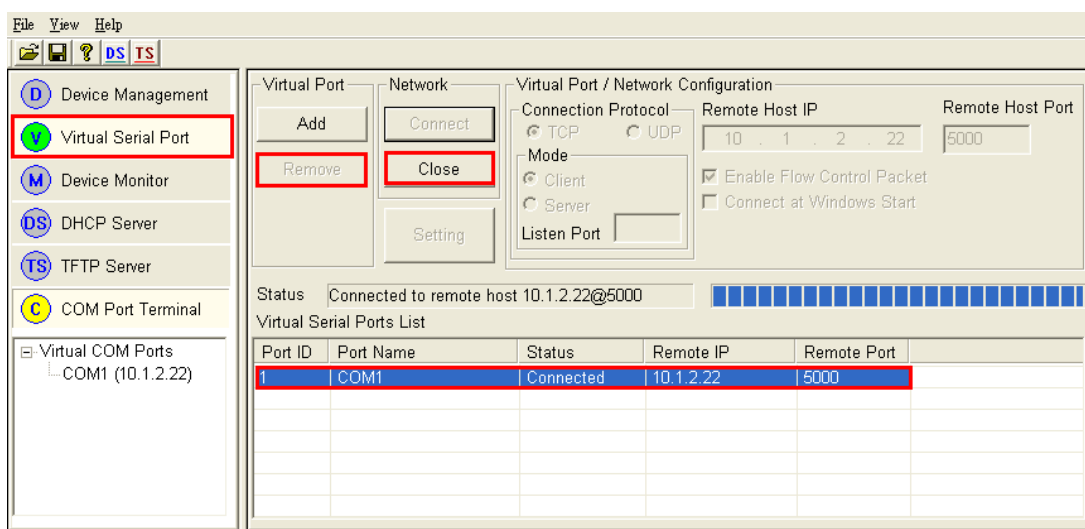
4. TCP Test Tool

（1） Double-click TCP Test Tool_2.3 to install.

（2） If the following problems occur during the installation process, we need to set up the program

and reinstall it again.

（3） Right-click the TCP Test Tool_2.3 program, and then click to enter the property interface.
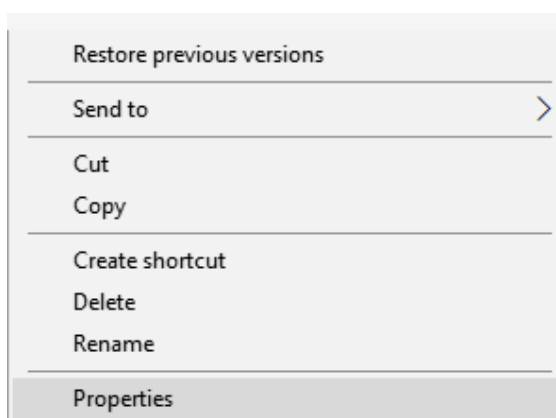
（4） Click compatibility, check Windows 7 running program in compatible mode, check

running program as administrator, click OK after setting, and then reinstall the program.
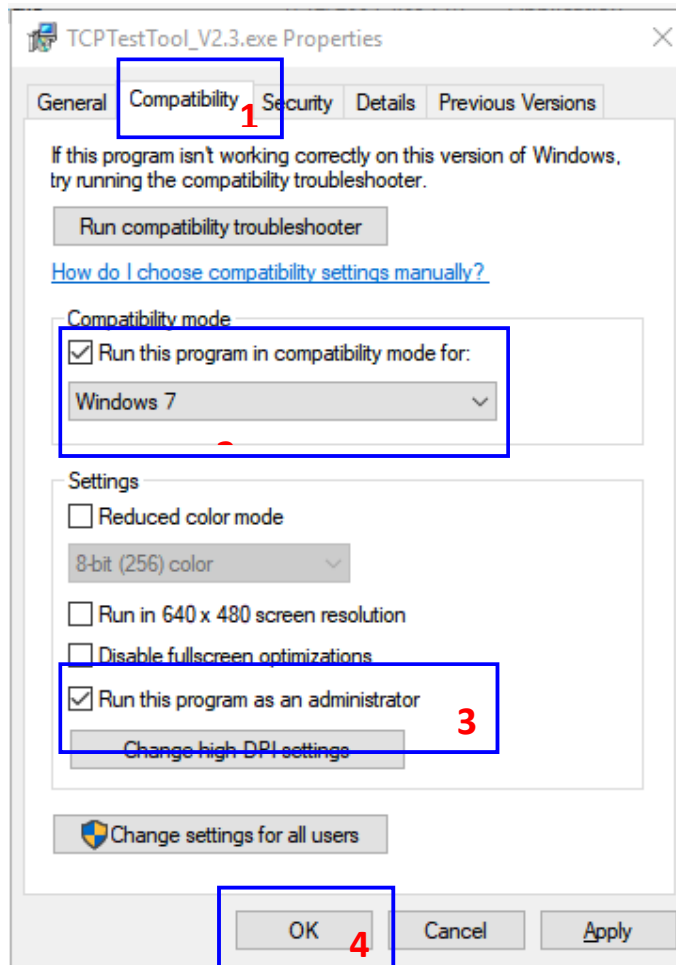
4.1 Configuration

TCP Test Tool has a simple and intuitive user interface. There is no real configuration or 'setup' that needs to be done, as the main screen/desktop puts all the settings at your fingertips.

Using the software…

The application software involves only one screen, which is broken down into (2) sections:

1. The REMOTE COMMUNICATIONS section

    This 'section' is the TCP SESSION INITIATOR (sender) tool.

    It is used for sending data to any remote IP address and definable TCP port

2. The HOST/LOCAL COMMUNICATIONS section

This 'section' is the TCP SESSION INITIATOR (receiver) tool.

It is used for answering TCP sessions from a remote device on a user definable TCP port

TCP Test Tool view broken down into   (2) sections

Remote Communications (Transmit)   Host/Local Communications (Receive)


This part is for initiating data streams to a remote IP and TCP port. You can initiate it using an IP or a hostname. Data can be in ASCII or HEX format.	This part is for receiving sessions on any desired TCP port. Data is displayed in ASCII or HEX formats. You can log and edit the data adding Date and/or Time stamps if needed.

4.2 TCP Client Communications (Initiator)

Initiating data sessions to a remote location and TCP port is easy.

1. Enter the Remote IP or HOSTNAME and the desired destination TCP port. Since this is where you want the data to be sent, it assumes that there must be something listening for the packet at that location. The default is 'localhost' meaning it will send data to itself.

2. Enter the Data to be sent. Type into the box or paste text from another application.

3. Select the required data format and framing type. Most text will be ASCII. Most machine or coded data will be in HEX format. Add Line Feeds and/or Carriage Returns as needed.

4. Hit the Connect button to start the session. To send a single packet, hit the Send button. If you want to send the packet on a recurring basis, select Auto Send and enter the time interval. The application will send the data stream every x seconds until you stop the software or de-select the Auto Send button. (Default is every 1 second).

5. Data will be displayed in the Sent Data Log. You can change the display format to either ASCII or HEX, as well as choose to append a Time and/or Date to each data stream.

6. Data totals in bytes are displayed in the bottom status tray.
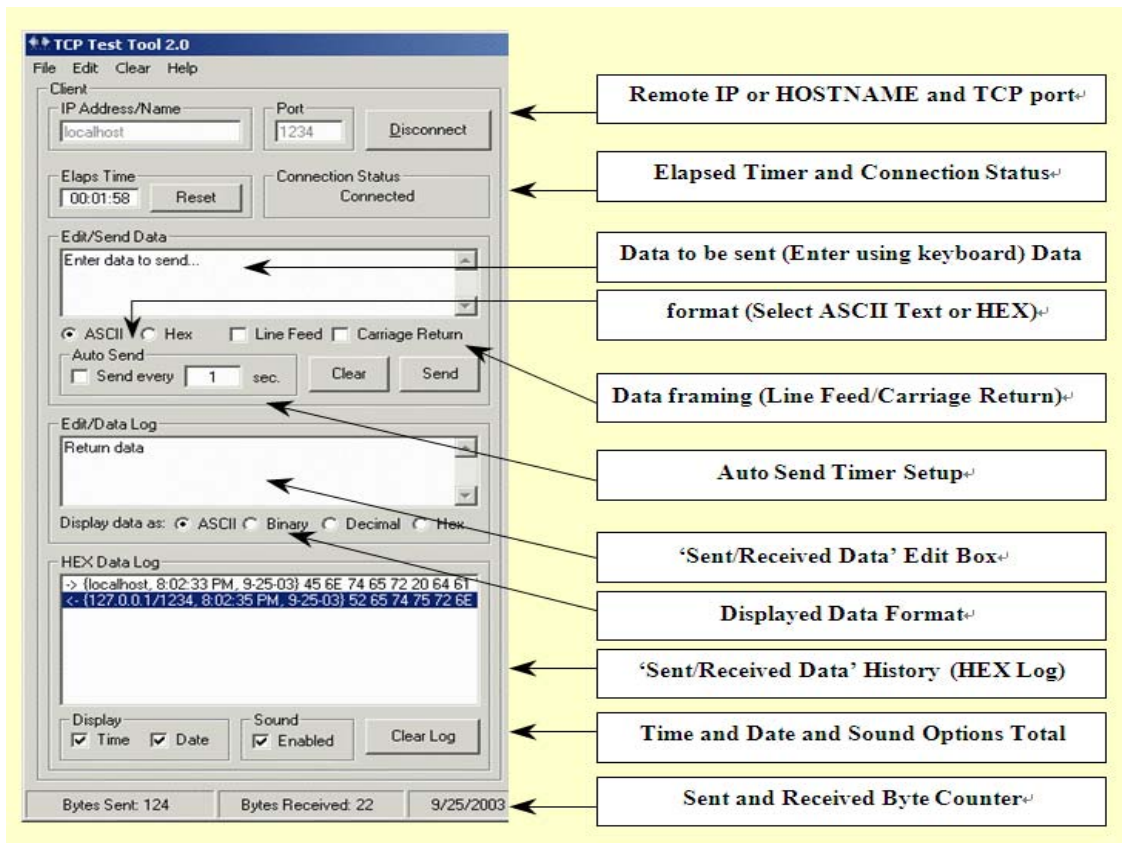
4.3 TCP Server Communications (Receiver)

Receiving data on a TCP port is just as easy.

1. Enter the TCP 'listening' port on which you intend to be receiving data and select <u>Bind</u>
    To stop listening for data on that port, or to release the port for another application,
    simply change the port number and select the <u>Bind</u> button again, or exit the software
    application completely. (There is no 'Un-Bind' control button).

2. Enter the Data to be sent back to the TCP session originator (client), select the required
    data format (ASCII or HEX) and add Line Feeds and/or Carriage Returns as needed.

3. To send data back to the TCP originator, just hit the Send button. If you want to send
    the packet on a recurring basis, select Auto Send and enter the time interval. The
    application will send the data stream every x seconds until you stop the software or de-
    select the Auto Send button. (Default is every 1 second).

4. Data will be displayed in the Sent Data Log. You can change the display format to either ASCII or HEX, as well as choose to append a Time and/or Date to each data stream.

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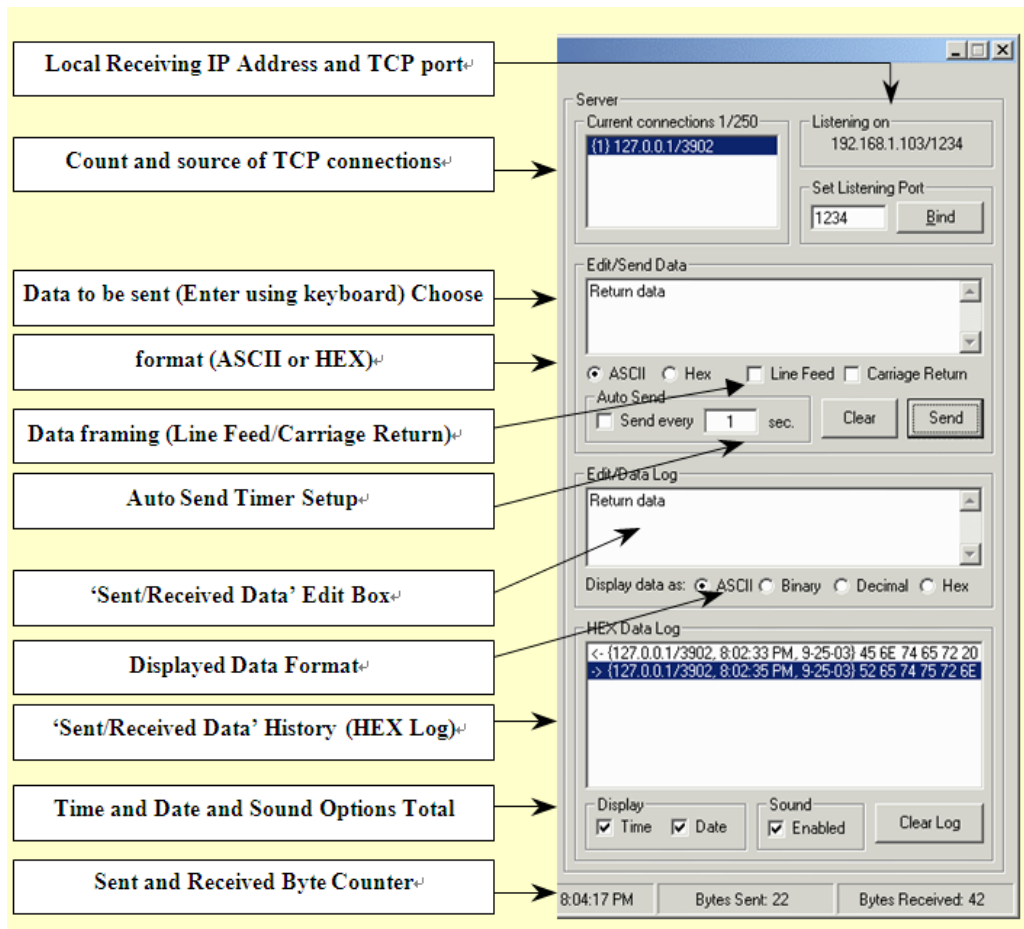
5. Restore factory settings

Hold the restore switch for 7-10 seconds, do not loosen in the middle. When two LED lights of the product are out at the same time, the yellow and green LED lights are turned on again and work normally, it can be determined that the factory settings are successfully restored. (Green LED lights are always on and yellow LED lights are flashing when working normally)

TRENDnet ®

Product Warranty Registration

Please take a moment to register your product online.
Go to TRENDnet's website at http://www.trendnet.com/register

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Torrance, CA 90501. USA