

tDS-700-UL Series

User Manual

Tiny Serial-to-Ethernet Device Server Jan. 2026, Ver. 1.1



WARRANTY

All products manufactured by ICP DAS are warranted against defective materials for a period of one year from the date of delivery to the original purchaser.

WARNING

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CONTACT US

If you have any questions, please feel free to contact us via email at:

service@icpdas.com

SUPPORT

This manual relates to the following modules:

tDS-715-UL, tDS-715i-UL,
tDS-715-UL-UTA, tDS-715i-UL-UTA,
tDS-718-UL, tDS-718i-UL,
tDS-718-UL-UTA, tDS-718i-UL-UTA
tDS-725-UL, tDS-725i-UL
tDS-725-UL-UTA, tDS-725i-UL-UTA
tDS-735-UL, tDS-735i-UL
tDS-735-UL-UTA, tDS-735i-UL-UTA



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Packing List

The tDS-700-UL shipping package includes the following items:



tDS-700-UL Series



Quick Start



CA-002-UL Cable

Note

If any of these items are missing or damaged, please contact the local distributor for more information. Save the shipping materials and cartons in case you need to ship the module in the future.



Safety Instructions Consigns

To prevent possible electrical shock, fire, or personal injury and for safe operation of the product:



1. Power Supply

- Use only with the voltage and frequency specified on the product label.
- When using a Class 1 adapter, ensure proper grounding before connecting it to the product.
- When the product is powered by a PoE network, the network should not be routed to outdoor areas.



2. Important Notes on Operating Environment

- Disconnect the power and network cables during thunderstorms to prevent damage.
- Do not use the product around explosive gas, vapor, or in damp or wet environments.



3. Ventilation and Cooling

- Do not block ventilation openings; ensure adequate space around the device for heat dissipation.



4. Avoid Liquid Contact

- This product is not waterproof; keep it away from liquids and humid environments.



5. Maintenance and Service

- Do not attempt to disassemble or repair the device.
- Do not use the product if it is damaged or operates incorrectly. Contact service centers.



6. Warranty Limitation

- Damages resulting from failure to follow safety instructions are not covered under warranty.
- This product is covered by a limited warranty according to the ICP DAS official warranty policy.

Contact Information

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More Information

- **Documentation**

tDS-700-UL Series

[https://www.icpdas.com/en/download/index.php?model=tDS-718-UL series](https://www.icpdas.com/en/download/index.php?model=tDS-718-UL%20series)

- **Firmware**

tDS-700-UL Series

<https://www.icpdas.com/en/download/show.php?num=2420>

- **Software**

EtherDOT

<https://www.icpdas.com/en/download/index.php?nation=US&kw=EtherDOT>

VxComm Utility

<https://www.icpdas.com/en/download/index.php?nation=US&kind1=&model=&kw=VxComm>

eSearch Utility

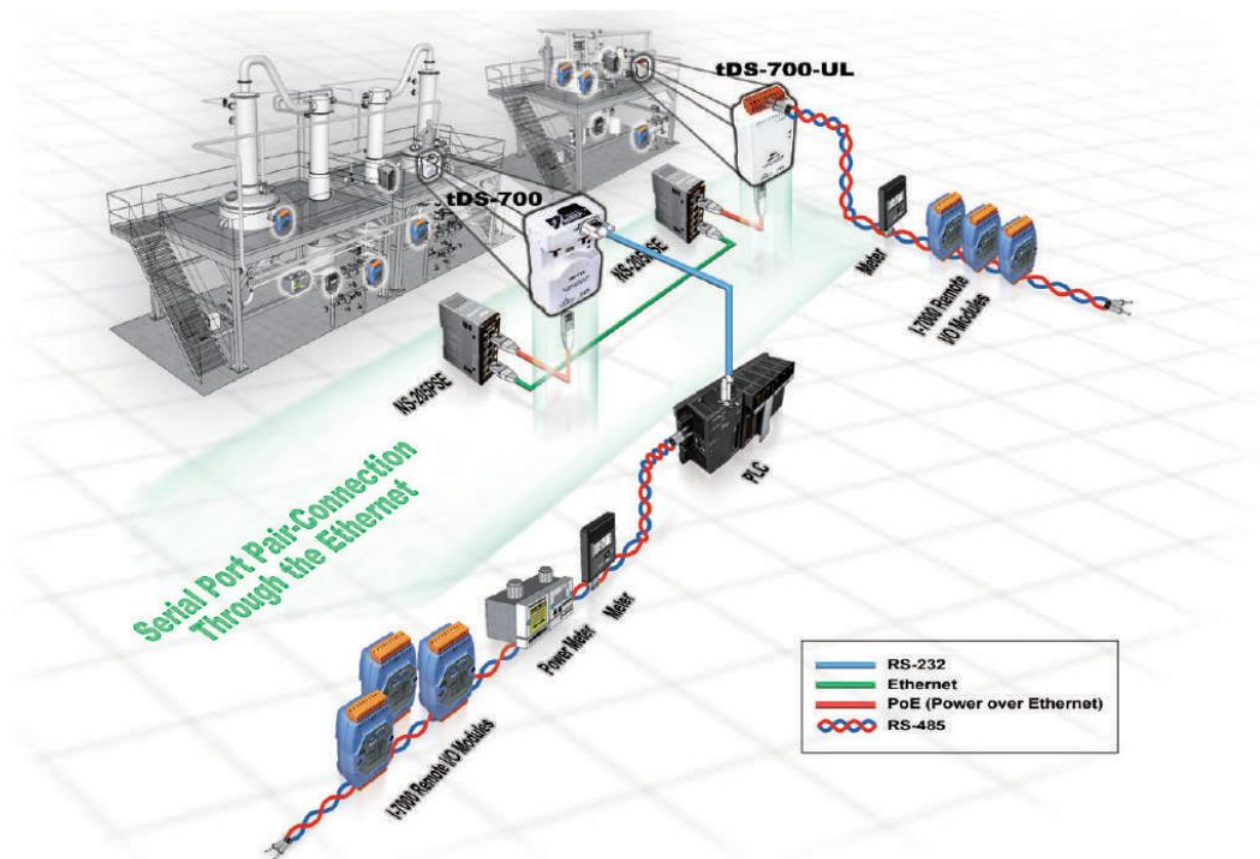
<https://www.icpdas.com/en/download/index.php?nation=US&kind1=&model=&kw=eSearch>

1. Introduction

The tDS-700-UL is a series of Serial-to-Ethernet device servers that are designed to add Ethernet and Internet connectivity to any RS-232 and RS-422/485 device, and to eliminate the cable length limitation of legacy serial communications. By using the VxComm Driver/Utility, the built-in COM Port of the tDS-700-UL series can be virtualized to a standard PC COM Port in Windows. Therefore, users can transparently access or monitor serial devices over the Internet/Ethernet without the need for software modification.



tDS-700-UL device servers can be used to create a pair-connection application (as well as serial-bridge or serial-tunnel), and then route data between two serial devices via TCP/IP. This is useful when connecting mainframe computers, servers or other serial devices that do not themselves have Ethernet capability. By virtue of its protocol independence and flexibility, the tDS-700-UL meets the demands of virtually any network-enabled application.



The compact design of the tDS-700-UL greatly saves installation space. It can be directly connected to serial devices or embedded in various machines, offering flexible and convenient installation. It supports IEEE 802.3af PoE (Class 1) and DC power supply, with an ultra-low power consumption design to reduce energy costs. It also provides 3000 VDC isolation and +/-4 kV ESD protection component, effectively safeguarding equipment against overvoltage damage.

In addition, the module has obtained UL certification, meeting strict safety standards including fire resistance, electric shock protection, and durability requirements. This ensures stability and safety across various usage environments, providing consumers with reliable quality assurance. The UTA version uses conformal coating technology that offers excellent resistance to moisture and salt spray, making it particularly suitable for coastal and high-humidity environments.

1.1 Ethernet Solutions

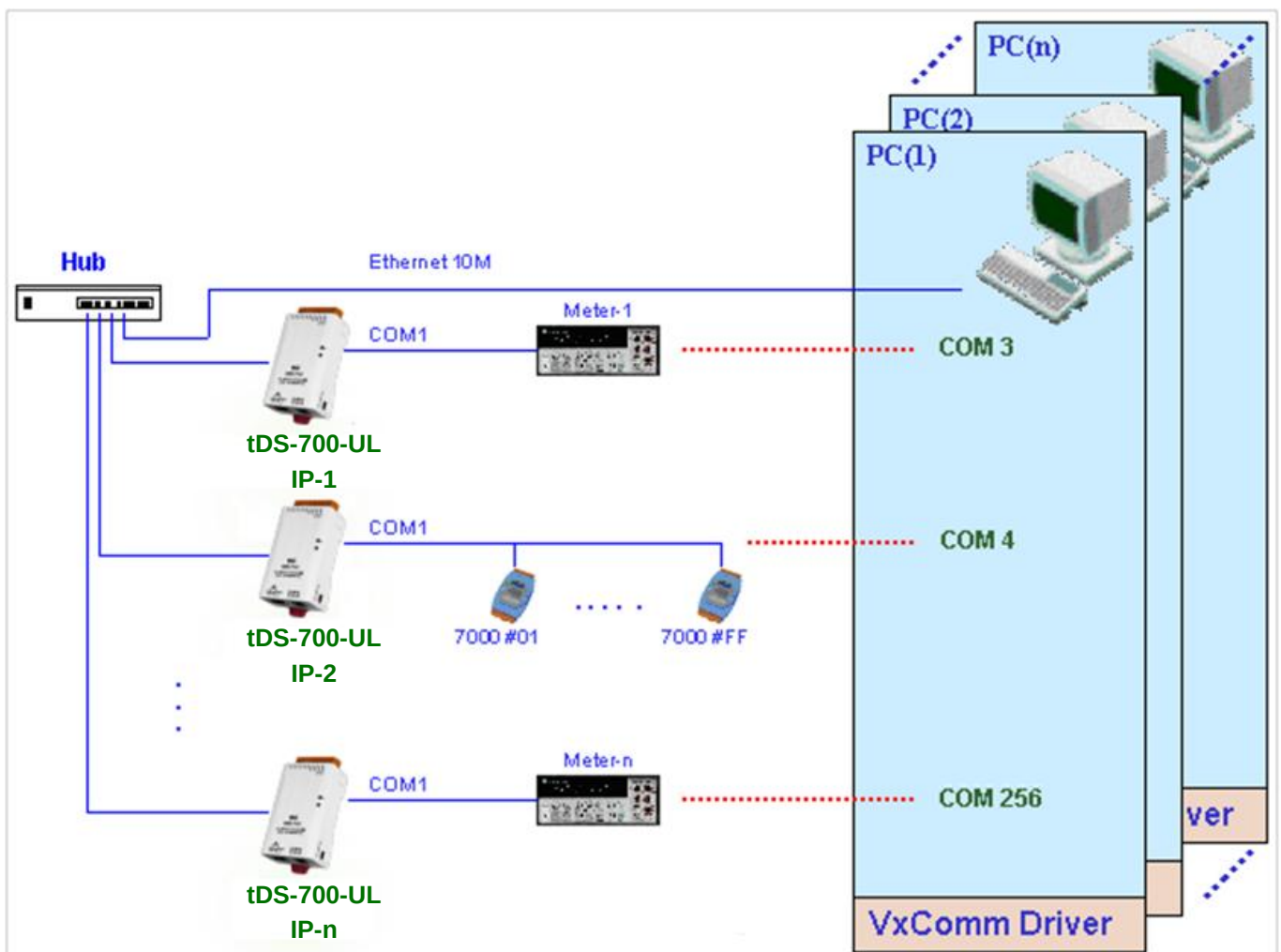
Nowadays, the Ethernet protocol has become the foremost standard for local area networks. Connectivity via the Internet is now common in many of the latest applications from home appliances, to vending machines, to testing equipment, to UPS, etc. An Ethernet network can link office automation and industrial control networks, access remote systems and share data and information between machines from multiple vendors, and also provides a cost-effective solution for industrial control networks.



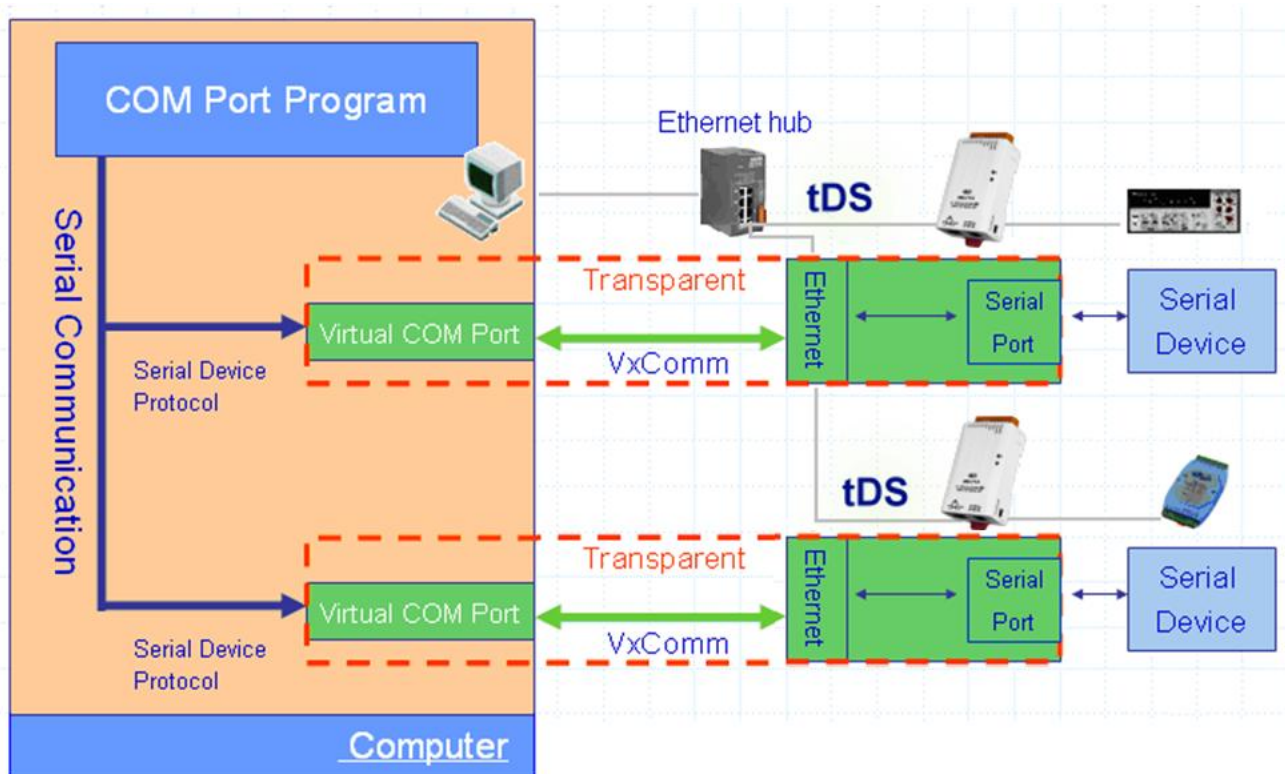
1.2 VxComm Technology

In general, writing a TCP/IP program is more difficult than writing a COM Port program. Another issue is that perhaps the existing the COM Port communication system was built many years ago that cannot be connected to the Internet.

As a result, a new technology, VxComm was developed to virtualize the COM Ports of the tDS-700-UL to allow up to 256 COM Ports to be used on a central computer. The VxComm driver saves time when accessing serial devices through the Ethernet without the need for reprogramming the COM Port software on the PC.



The VxComm driver handles all the complexities of Ethernet TCP/IP programming, meaning that, with the assistance of tDS-700-UL and VxComm technology, your COM Port program will be able to access serial devices over Ethernet just as if they were connected through a local COM port.



1.3 Web Server Technology

Web server technology enables the tDS-700-UL to be configured through any standard web browser - such as Microsoft Edge, Google Chrome, Internet Explorer, or Firefox - making it easy to view and adjust settings over an Ethernet network without the need for additional software. This simplifies device maintenance and lowers the learning curve for users.

Tiny Device Server

[Home](#) | [Port1](#) | [Network](#) | [Filter](#) | [Monitor](#) | [Password](#) | [Logout](#)

Model Name	tDS-718(i)_RevB2	Alias Name	Tiny
Firmware Version	B2.0.9 [Mar.31 2025]	MAC Address	00-0D-E0-77-18-59
IP Address	10.1.0.133	TCP Command Port	10000
Initial Switch	OFF	System Idle (s)	300

Current port settings:

Port Settings	Port 1
Baud Rate (bps)	115200,8N1
Flow Control	None
Allow Driver Control	Enable
Local TCP Port	10001
Connetion Idle (Seconds)	180
Prefix String	N/A

Serial Data Packing	Port 1
Slave Timeout (ms)	1000
Packing Length (bytes)	0
Serial Ending Chars (Number[,char1][[,char2])	0
Timeout Between Chars (ms)	10

Pair-Connection Settings (Client/Server Mode)	Port 1
Application Mode	Server
Remote Server IP	Disable
Remote TCP Port	Disable

2. Hardware Information

This chapter provides a detailed description of the front panel, the hardware specifications, the pin assignments, the wiring notes and the dimensions for the tDS-700-UL series modules.

2.1 Specifications

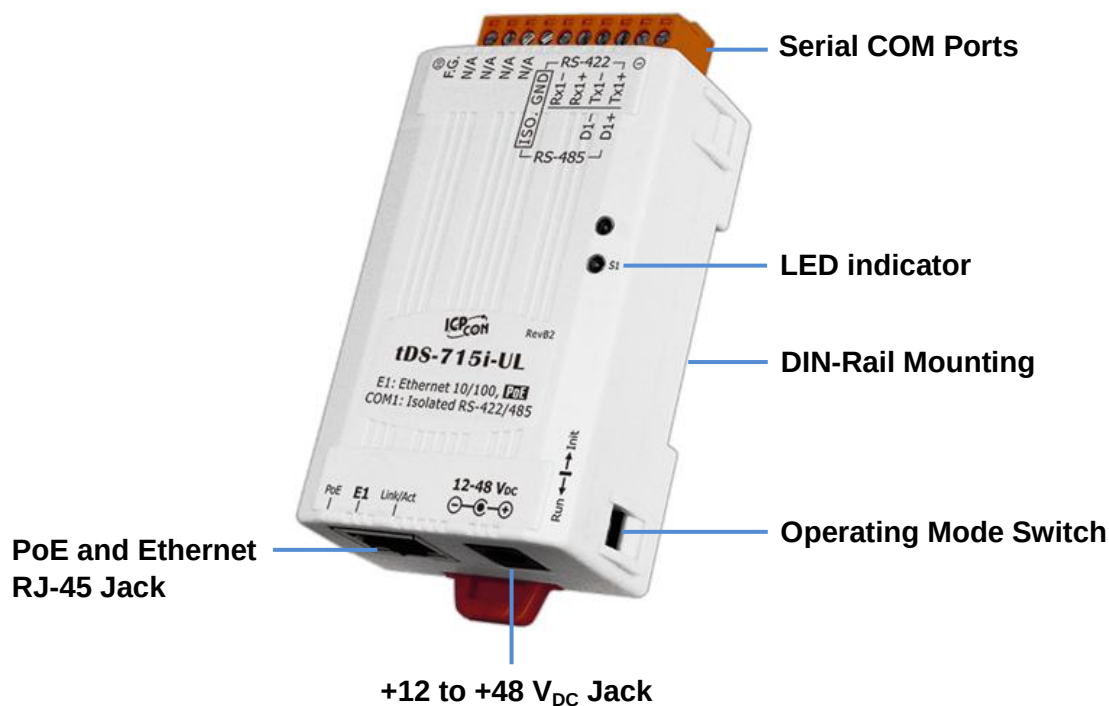
Model		tDS-715-UL tDS-715i-UL	tDS-715-UL-UTA tDS-715i-UL-UTA	tDS-718-UL tDS-718i-UL	tDS-718-UL-UTA tDS-718i-UL-UTA
Communication Interface					
Ethernet		10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator)			
PoE		IEEE 802.3af, Class 1			
COM Port		1 x RS-422/RS-485		1 x RS-232/422/485	
RS-485	Bias Resistor	Yes, 1 KΩ			
	Node	254 (max.)			
UART		16c550 or compatible			
Signal Isolation		3000 V _{DC} for only tDS-715i-UL / tDS-715i-UL-UTA / tDS-718i-UL / tDS-718i-UL-UTA			
COM Port Format					
Baud Rate		115200 bps Max.			
Data Bit		5, 6, 7, 8			
Parity		None, Odd, Even, Mark, Space			
Stop Bit		1, 2			
Power					
Power Consumption		0.07 A @ 24 V _{DC}			
Powered from PoE		IEEE 802.3af, Class 1			
Powered from DC Jack		+12 ~ 48 V _{DC}			
Mechanism					
Connector		10-Pin Removable Terminal Block			
Dimensions (W x L x H)		52 mm x 27 mm x 95 mm			
Installation		DIN-Rail Mounting			
Casing		Plastic			
Environment					
Operating Temperature		-25 ~ +70 °C	-40 ~ +70 °C	-25 ~ +70 °C	-40 ~ +70 °C
Storage Temperature		-30 ~ +80 °C			
Humidity		10 ~ 90% RH, non-condensing			

Model		tDS-725-UL tDS-725i-UL	tDS-725-UL-UTA tDS-725i-UL-UTA	tDS-735-UL tDS-735i-UL	tDS-735-UL-UTA tDS-735i-UL-UTA
Communication Interface					
Ethernet		10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator)			
PoE		IEEE 802.3af, Class 1			
COM Port		2 x RS -485		3 x RS-485	
RS-485	Bias Resistor	Yes, 1 KΩ			
	Node	254 (max.)			
UART		16c550 or compatible			
Signal Isolation		3000 V _{DC} for only tDS-725i-UL / tDS-725i-UL-UTA / tDS-735i-UL / tDS-735i-UL-UTA			
COM Port Format					
Baud Rate		115200 bps Max.			
Data Bit		5, 6, 7, 8			
Parity		None, Odd, Even, Mark, Space			
Stop Bit		1, 2			
Power					
Power Consumption		0.07 A @ 24 V _{DC}			
Powered from PoE		IEEE 802.3af, Class 1			
Powered from DC Jack		+12 ~ 48 V _{DC}			
Mechanism					
Connector		10-Pin Removable Terminal Block			
Dimensions (W x L x H)		52 mm x 27 mm x 95 mm			
Installation		DIN-Rail Mounting			
Casing		Plastic			
Environment					
Operating Temperature		-25 ~ +70 °C	-40 ~ +70 °C	-25 ~ +70 °C	-40 ~ +70 °C
Storage Temperature		-30 ~ +80 °C			
Humidity		10 ~ 90% RH, non-condensing			

2.2 Features

- Incorporates any RS-232/422/485 serial device in Ethernet
- Data transmission via Virtual COM or raw TCP connection
- VxComm Driver for 32-bit and 64-bit Windows 11/10/2016/2012/8/7/XP
- Max. connections: 1 socket per serial port is suggested
- Supports pair-connection (serial-bridge, serial-tunnel) applications
- Supports TCP client-mode and TCP server-mode operations
- Supports UDP responder for device discovery (UDP Search)
- Static IP or DHCP network configuration
- Easy firmware update via the Ethernet (BOOTP, TFTP)
- Tiny Web server for configuration (HTTP)
- Contains a 32-bit MCU that efficiently handles network traffic
- 10/100 Base-TX Ethernet, RJ-45 x1 (Auto-negotiating, auto MDI/MDIX, LED Indicators)
- Includes redundant power inputs: PoE (IEEE 802.3af, Class 1) and DC jack
- Allows automatic RS-485 direction control
- Signal isolation for i versions
- +/- 4 kV ESD protection
- Tiny form-factor and low power consumption
- RoHS compliant with no Halogen
- Cost-effective device servers

2.3 Appearance



PoE and Ethernet RJ-45 Jack

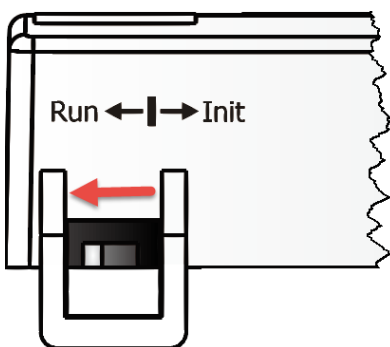
The tDS-700-UL series module is equipped with an RJ-45 jack that is used as the 10/100 Base-TX Ethernet port and features networking capabilities, supports PoE power supply. When an Ethernet link is detected and an Ethernet packet is received, the **Link/Act LED (Orange)** indicator will be illuminated. When power is supplied via PoE (Power-over-Ethernet), the **PoE LED (Green)** indicator will be illuminated.

+12 to +48 VDC Jack

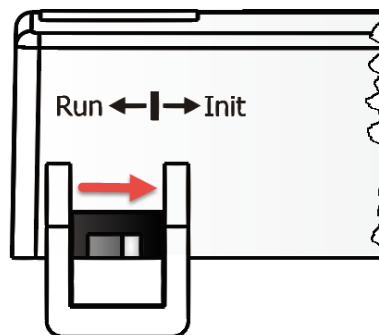
The tDS-700-UL series is equipped with a +12V_{DC} to +48 V_{DC} jack that can be used to connect a power supply. If no PoE switch is available on site, a DC adapter can be used to power the tDS-700-UL series module.

Operating Mode Switch

Run Mode: Firmware operation



Init Mode: Configuration mode



For tDS-700-UL series modules, the operating mode switch is set to the **Run** position by default. In order to update the firmware for the tDS-700-UL series module, the switch must be moved from the **Run** position to the **Init** position. The switch must be returned to the **Run** position after the update is complete.

LED Indicator

Once power is supplied to the tDS-700-UL series module, the system LED indicator will illuminate. An overview of the system LED functions is given below:

Function	Color	S1 LED Behavior
Running Firmware		Steady ON
Network Ready	Red	Slow flashing – Once every 3 seconds
Serial Port Busy		Rapid flashing – Once every 0.2 seconds

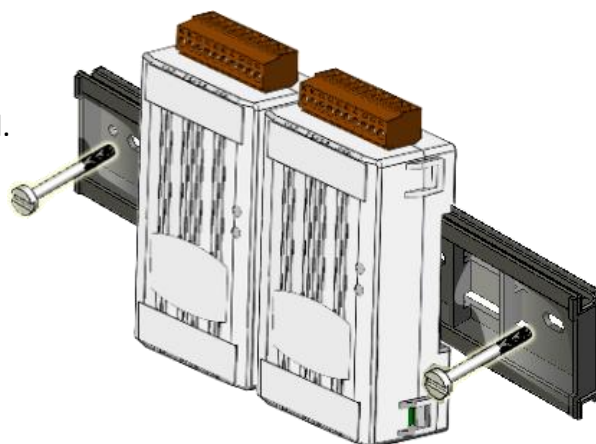


Serial COM Ports

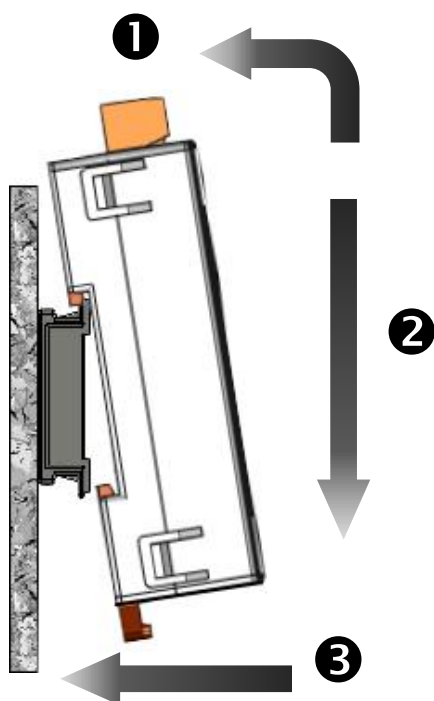
The number of COM ports varies depending on the function of tDS-700-UL series module. For more detailed information regarding the pin assignments for the Serial COM ports, refer to [Section 2.5 “Pin Assignments”](#).

DIN-Rail Mounting

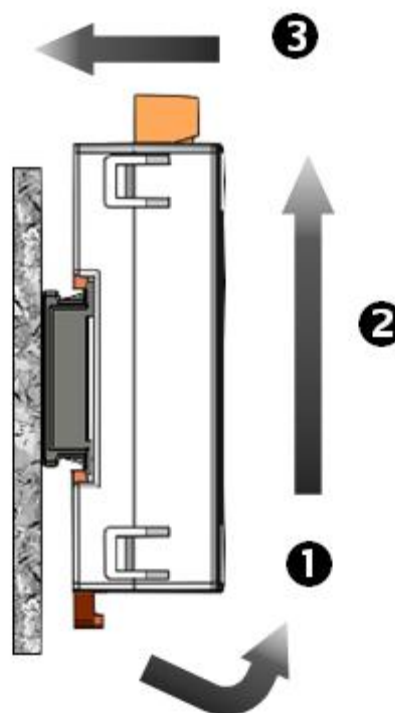
The tDS-700-UL series modules are equipped with simple rail clips located on the back of the chassis that allow them to be reliably mounted on a DIN-Rail or a wall. For more detailed information regarding DIN-Rail Mounting, refer to the illustration in the figure below.



Mounting on a DIN-Rail



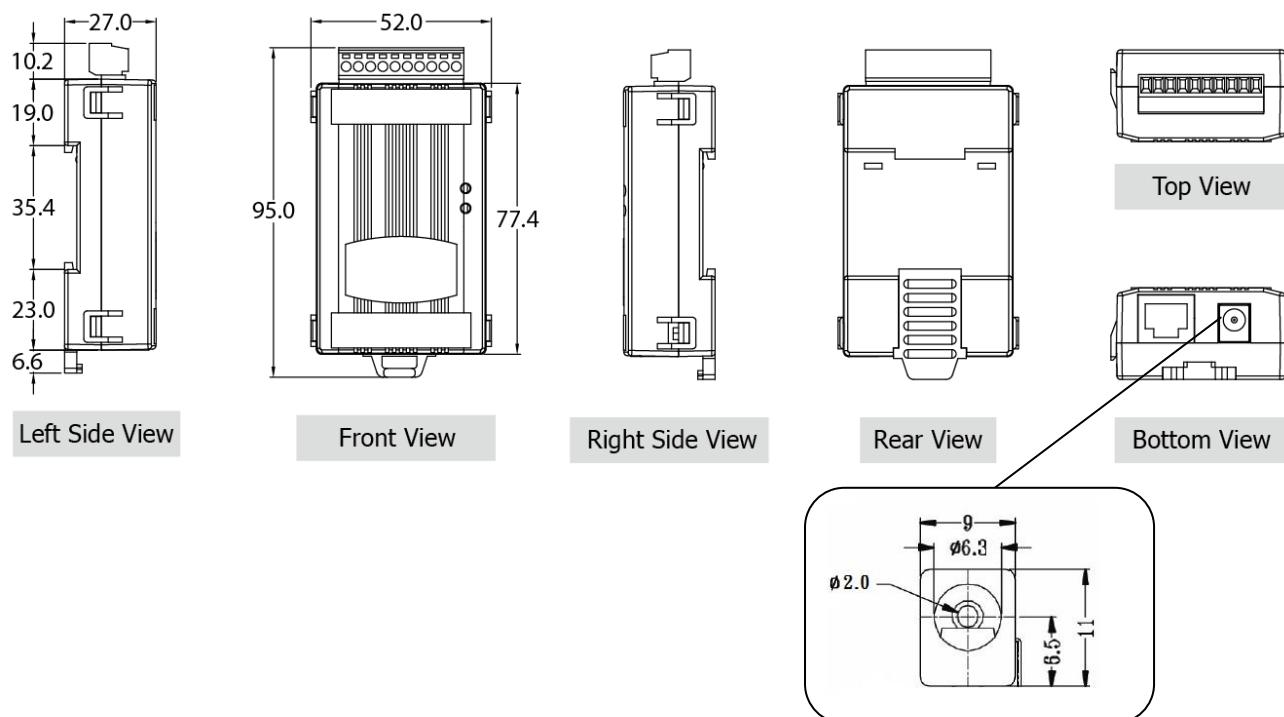
Dismounting from a DIN-Rail



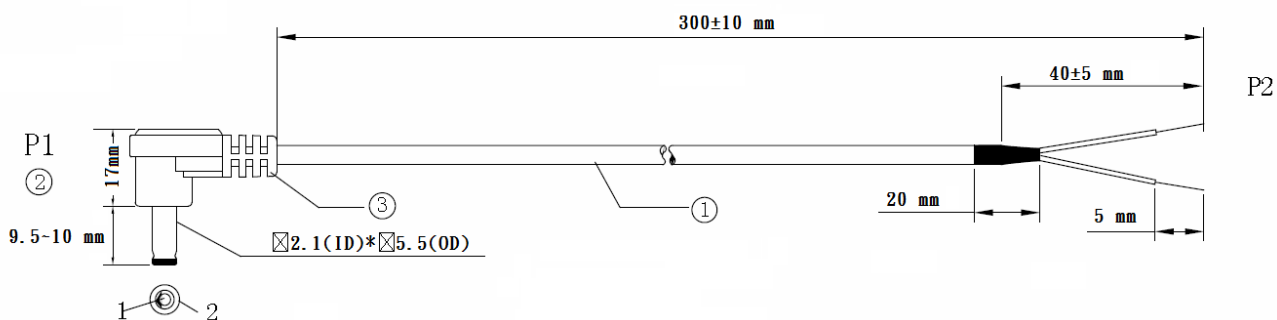
2.4 Dimensions

The following diagrams provide the dimensions of the tDS-700-UL series module and CA-002-UL cable that can be used as a reference when defining the specifications and the DC power supply plug for any custom enclosures. All dimensions are in millimeters.

2.4.1 tDS-700-UL Series Module



2.4.2 CA-002-UL Cable



Pin Assignment

P1		P2
1	RED	OPEN
2	BLACK	OPEN

Note: Cable color: BLACK

NO	DESCRIPTION	QTY	UNIT
1	UL2464 18AWG 2C(RED/BLACK) OD5.0 COLOR BLACK	1	PCS
2	DC PLUG 5.5*2.1	1	PCS
3	PVC:45/P BLACK		G

2.5 Pin Assignments

tDS-715-UL Series

		tDS-715-UL/tDS-715-UL-UTA		tDS-715i-UL/tDS-715i-UL-UTA	
Terminal No.		Pin Assignment			
		RS-485	RS-422	RS-485	RS-422
	10	F.G.		F.G.	
	09	N/A		N/A	
	08	N/A		N/A	
	07	N/A		N/A	
	06	N/A		N/A	
COM1	05	GND		ISO.GND	
	04	N/A	Rx1-	N/A	Rx1-
	03	N/A	Rx1+	N/A	Rx1+
	02	D1-	Tx1-	D1-	Tx1-
	01	D1+	Tx1+	D1+	Tx1+

tDS-718-UL Series

		tDS-718-UL/tDS-718-UL-UTA		tDS-718i-UL/tDS-718i-UL-UTA	
Terminal No.		Pin Assignment			
	10	F.G.		F.G.	
	09	N/A		N/A	
RS-232	08	GND		ISO.GND	
	07	Rx1D1		Rx1D1	
	06	Tx1D1		Tx1D1	
RS-485/RS-422	05	GND		ISO.GND	
	04	N/A	Rx1-	N/A	Rx1-
	03	N/A	Rx1+	N/A	Rx1+
	02	D1-	Tx1-	D1-	Tx1-
	01	D1+	Tx1+	D1+	Tx1+

tDS-725-UL Series

		tDS-725-UL/tDS-725-UL-UTA	tDS-725i-UL/tDS-725i-UL-UTA
Terminal No.		Pin Assignment	
	10	F.G.	F.G.
	09	N/A	N/A
	08	N/A	N/A
	07	N/A	N/A
COM2	06	GND	ISO.GND
	05	D2-	D2-
	04	D2+	D2+
COM1	03	GND	ISO.GND
	02	D1-	D1-
	01	D1+	D1+

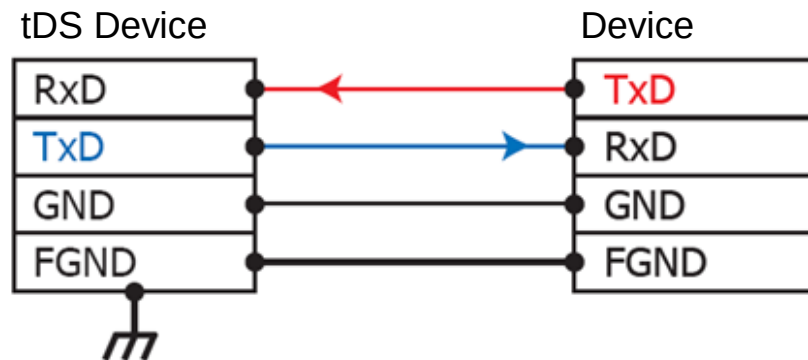
tDS-735-UL Series

		tDS-735-UL/tDS-735-UL-UTA	tDS-735i-UL/tDS-735i-UL-UTA
Terminal No.		Pin Assignment	
	10	F.G.	F.G.
COM3	09	GND	ISO.GND
	08	D3-	D3-
	07	D3+	D3+
COM2	06	GND	ISO.GND
	05	D2-	D2-
	04	D2+	D2+
COM1	03	GND	ISO.GND
	02	D1-	D1-
	01	D1+	D1+

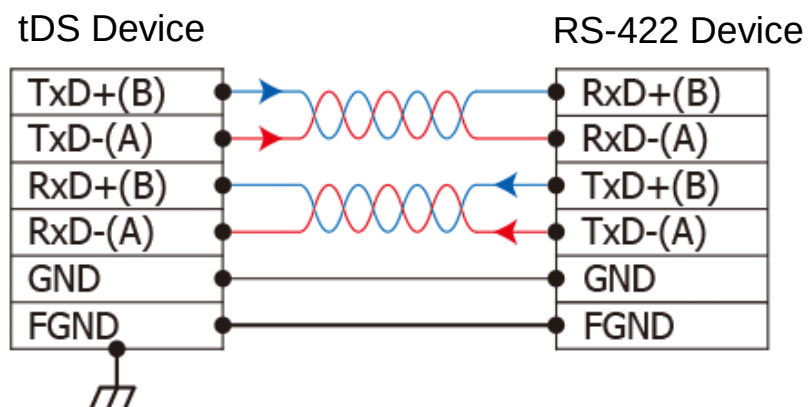
2.6 Wiring Notes for RS-232/485/422 Interfaces

RS-232 Wiring

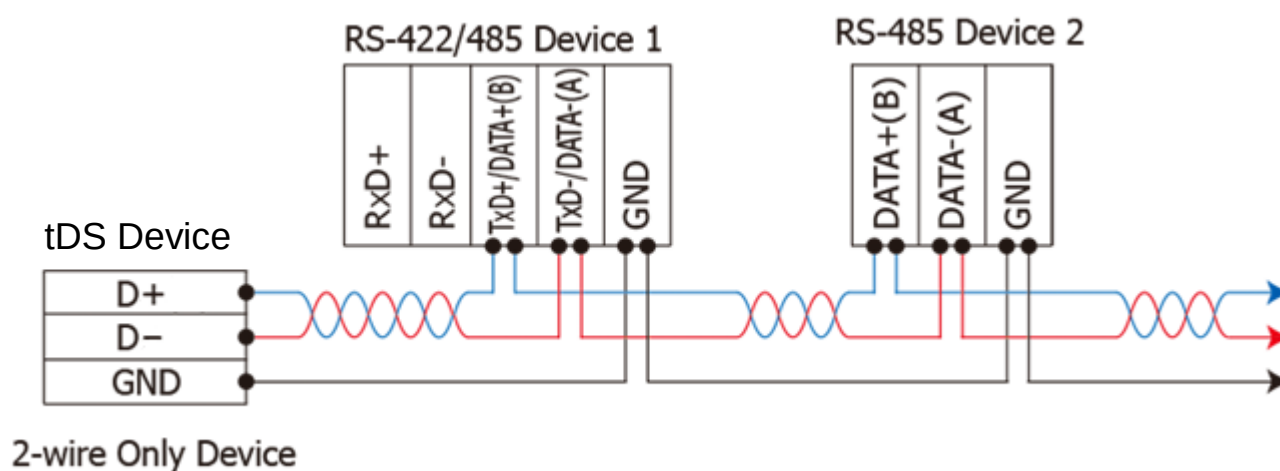
3-wire RS-232 Connection



RS-422 Wiring



RS-485 Wiring



Notes:

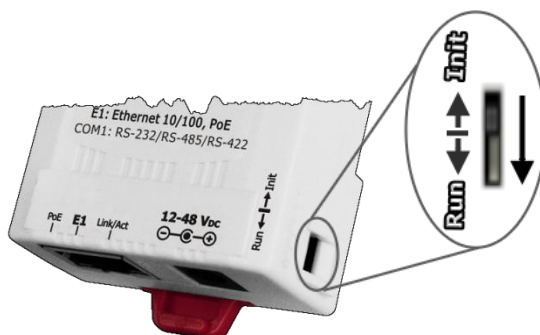
1. Usually, you have to connect all signal grounds of RS-422/485 devices together to reduce common-mode voltage between devices.
 2. The D+/D- (or Data+/Data-) wiring of RS-485 must use twisted pair cables.
 3. Termination resistors (typically 120Ω) may be required at both ends of the wiring, connected across the D+ and D- lines.
 4. The D+ and B pins are positive-voltage pins, and D- and A pins are negative-voltage pins in the above figure. The B/A pins may be defined in another way depending on *your* devices, please check it first.
-

3. Getting Started

This chapter provides detailed information about the “Self-Test” process, which is used to confirm that the tDS-700-UL series module is operating correctly. Before beginning the “Self-Test” process, the wiring test, Ethernet configuration and VxComm utility driver installation procedures must first be fully completed. Follow the procedure described below:

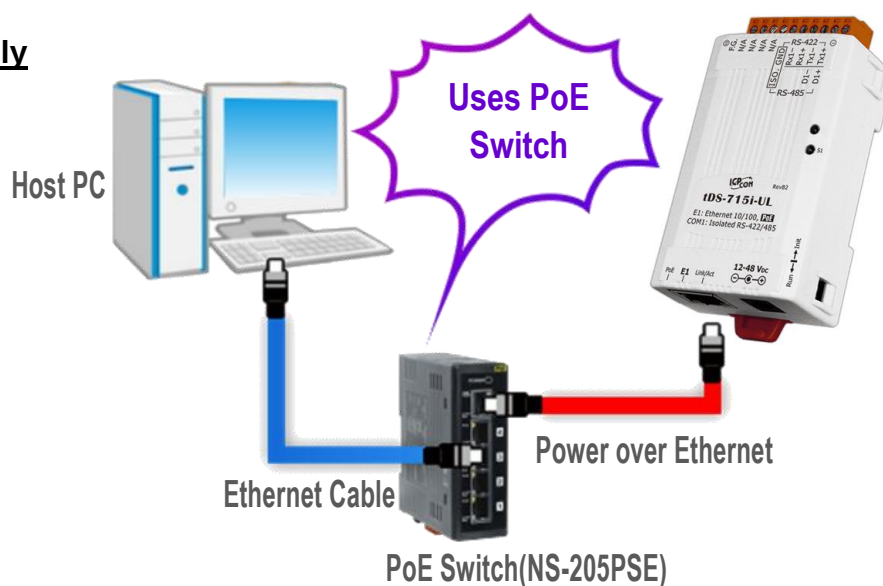
3.1 Connecting the Power and Host PC

1. Ensure that the network settings on your PC are configured correctly.
Make sure that the Windows Firewall and any Anti-Virus firewalls on your PC are temporarily disabled or properly configured. Otherwise, the VxComm Utility may not be able to detect the tDS-700-UL module during the search process. (Please consult your system administrator)
2. Check that the **Init/Run switch** is in the “Run” position.

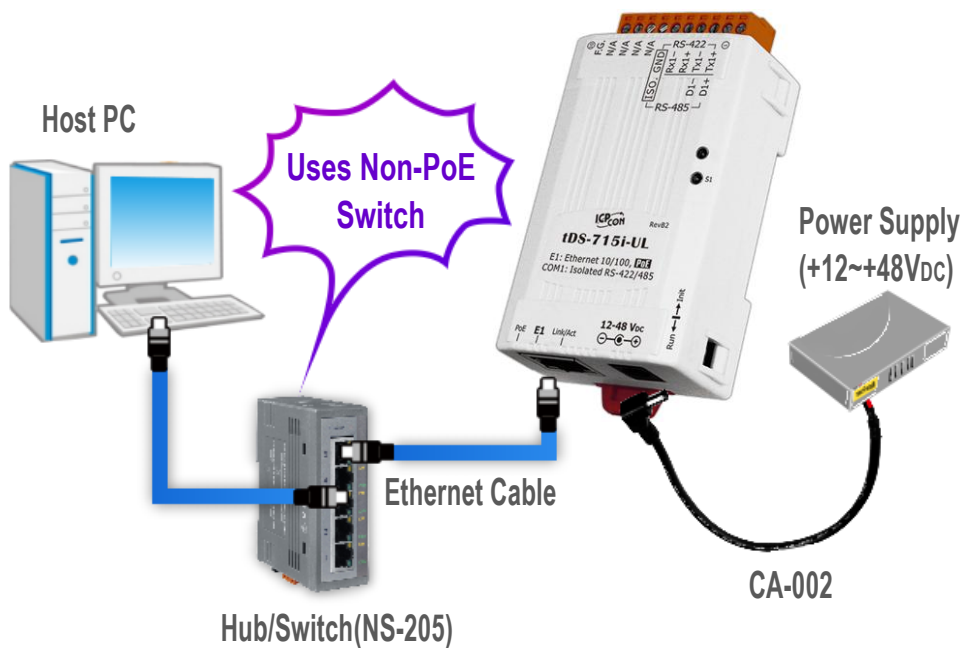


3. Connect both the tDS-700-UL and the Host computer to the same sub-network or the same Ethernet Switch, and then supply power (PoE or +12 to +48 VDC) to the tDS-700-UL.

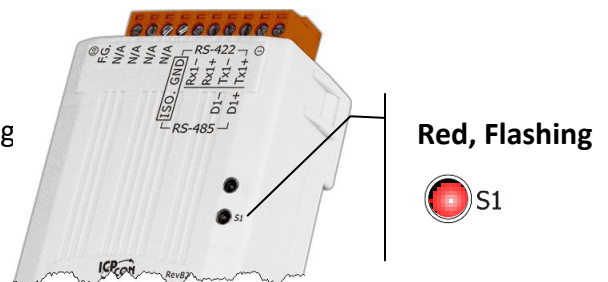
PoE Power Supply



+12 to +48 VDC Jack Power Supply (Non-PoE)



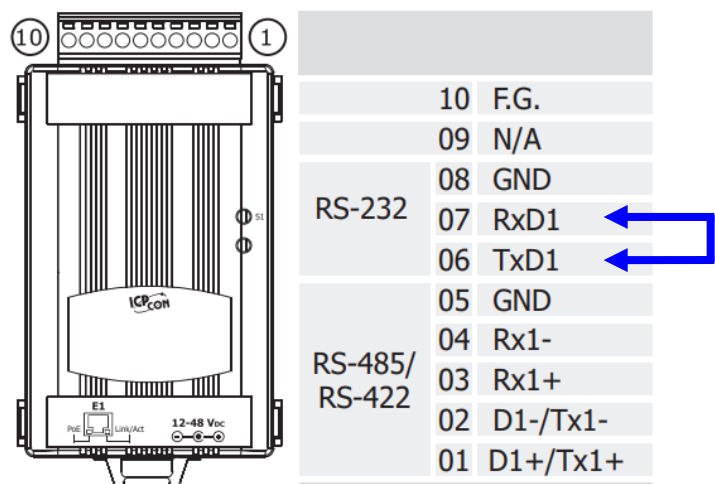
4. Verify that the **System (S1) LED** indicator is flashing



5. Perform a Self-test wiring check as follows:

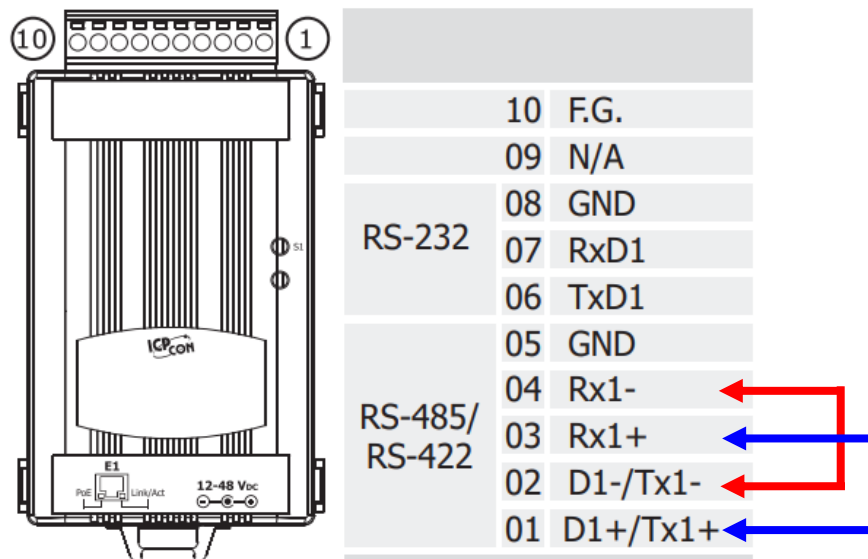
➤ RS-232 Wiring

Connect the RxD pin to the TxD pin.



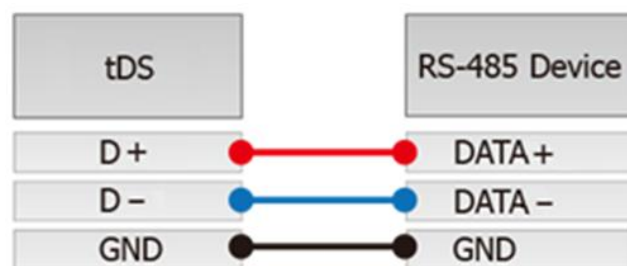
➤ RS-422 Wiring

Connect the Rx1- to the Tx1-, and then connect the Rx1+ to the Tx1+.



➤ RS-485 Wiring

While using RS-485 modules (e.g., tDS-718i-UL), you should wire the D+ with Data+, and wire the D- with Data- for self-test.



3.2 Install the VxComm Utility

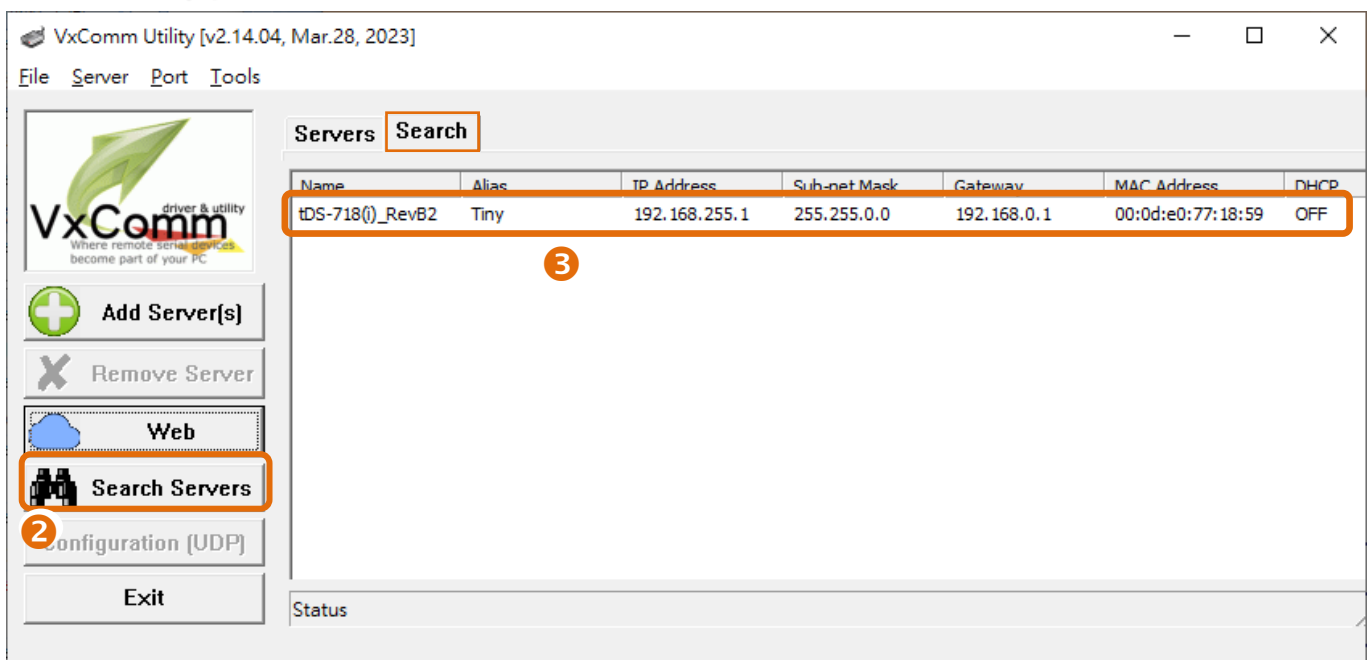
The VxComm Utility can be obtained from the ICP DAS website.
The download link is as follows:



 <https://www.icpdas.com/en/download/index.php?nation=US&kind1=&model=&kw=vxcomm>

3.3 Configuring Network Settings

1. Double-click the **VxComm Utility** shortcut on the desktop.
2. Click the **“Search Servers”** button to search for the tDS-700-UL module.
3. Once the search process is complete, **double-click the tDS-700-UL module name** to open the “Configure Server” dialog box.



4. Contact your network administrator to obtain the correct network configuration. Enter the settings in the relevant fields, including the **IP, Sub-net Mask and Gateway addresses**, and click the "OK" button. The tDS-700-UL will apply the new settings after 2 seconds.

Configure Server (UDP)

Server Name : tDS-718(i)_RevB2

DHCP: 0: OFF Sub-net Mask : 255.255.0.0

IP Address : 192.168.255.1 Gateway : 192.168.0.1

Alias: Tiny [7 Chars]

MAC: 00:0d:e0:77:18:59

Warning!!
Contact your Network Administrator to get correct configuration before any change.

OK Cancel

Factory Default Settings of tDS-700-UL Series Module

IP Address	192.168.255.1
Subnet Mask	255.255.0.0
Gateway	192.168.0.1

3.4 Configuring the Virtual COM Ports

1. Wait 2 seconds and then click the **“Search Servers”** button again to ensure that the tDS-700-UL is working correctly with the new configuration.
2. Click the tDS-700-UL name to select it from the list on the Search page.

VxComm Utility [v2.14.04, Mar.28, 2023]

File Server Port Tools

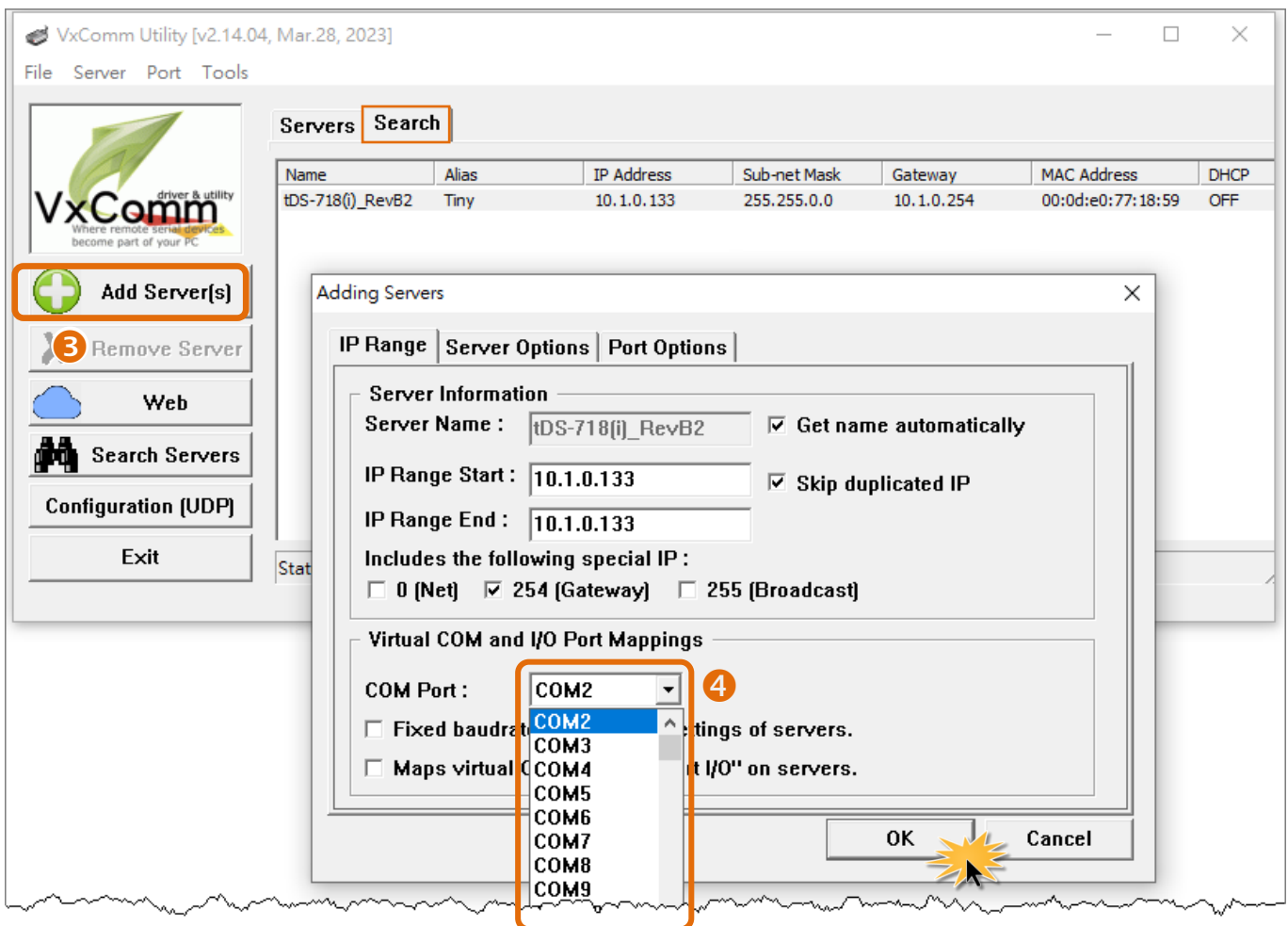
Servers Search

Name	Alias	IP Address	Sub-net Mask	Gateway	MAC Address	DHCP
tDS-718(i)_RevB2	Tiny	10.1.0.133	255.255.0.0	10.1.0.254	00:0d:e0:77:18:59	OFF

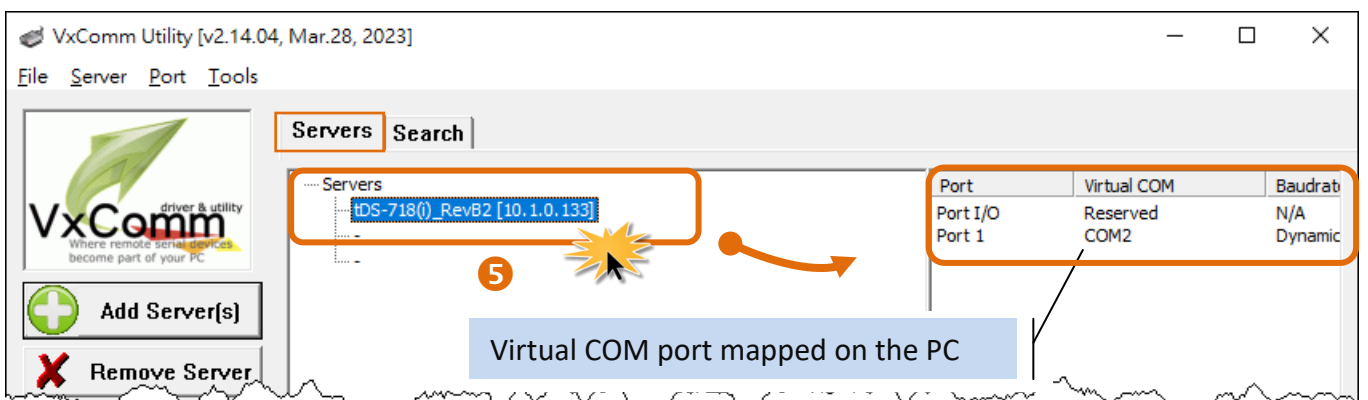
Add Server(s)

Remove Server

3. Click the “Add Server[s]” button.
4. Assign a COM Port number and click “OK” to save your settings.

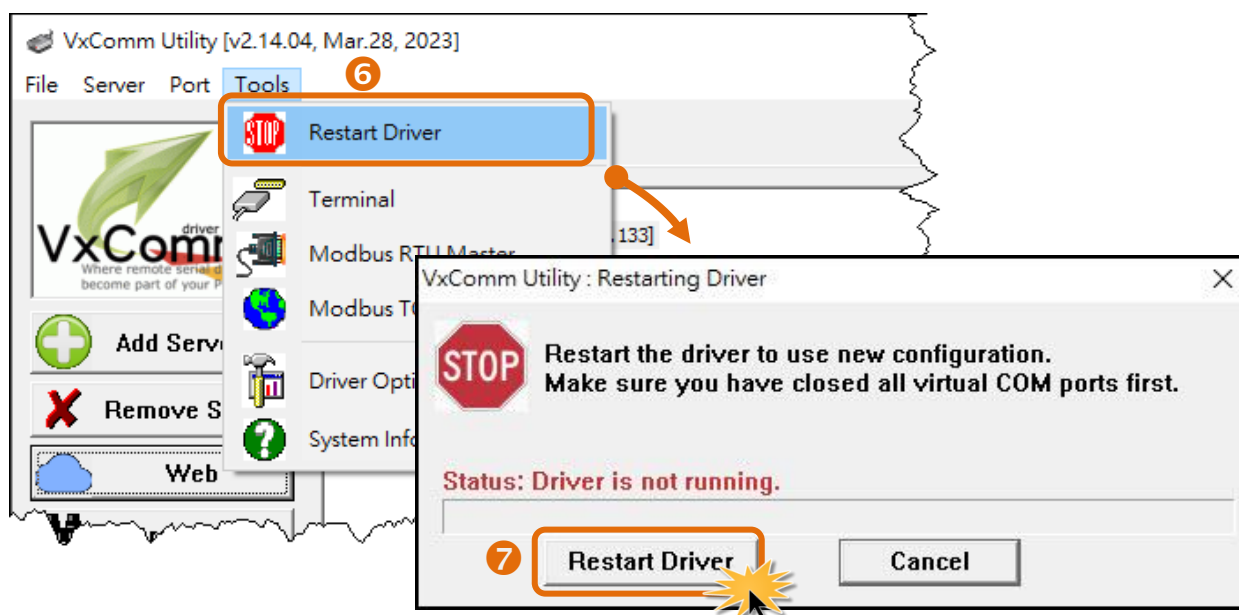


5. Click on the tDS-700-UL name from the Servers list on the “Servres” page, and **check the virtual COM port** mapped on the PC in the Port field on the right.



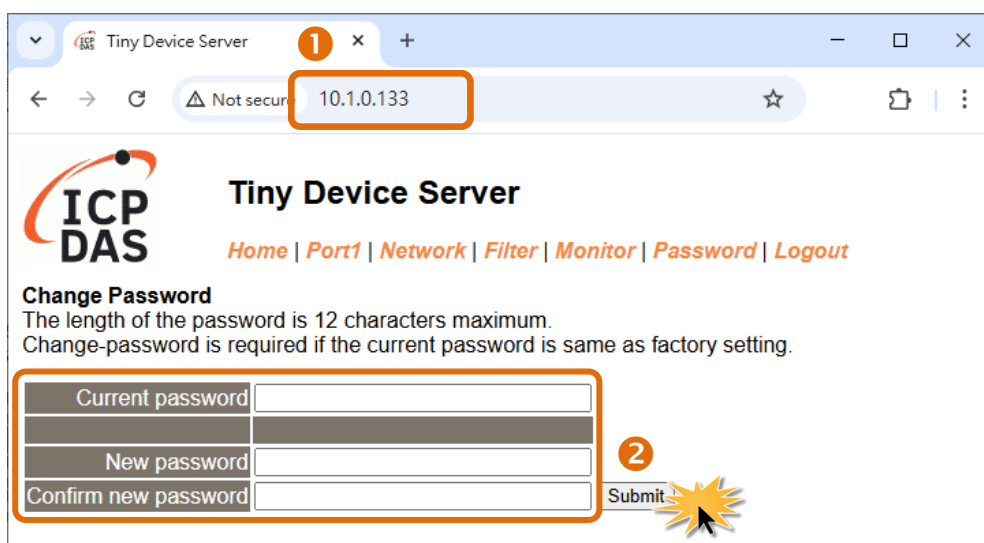
6. Click the “**Restart Driver**” item in the “**Tools**” menu.

7. Click the “**Restart Driver**” button on the “VxComm Utility: Restarting Driver” dialog box.

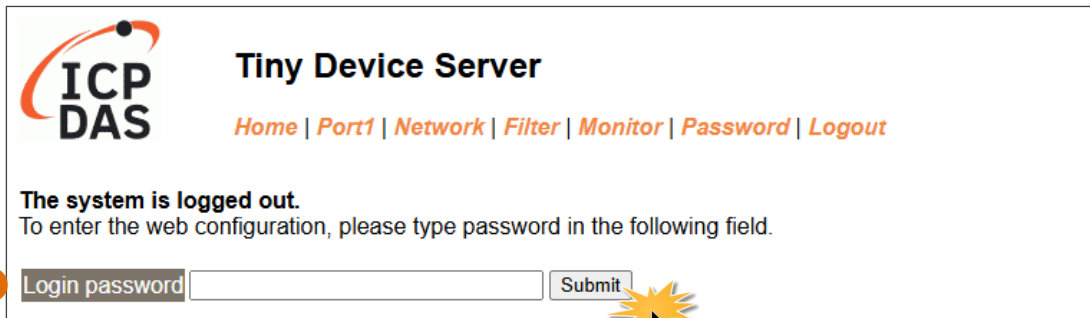


3.5 Configuring the Serial Port

1. Enter the tDS-700-UL module's IP address into your web browser address line and press **Enter**, or click the “**Web**” button in the VxComm Utility.
2. It is required to change password when logging into the tDS-700-UL series for the first time:
 - Enter the default password **admin** in the Current password field,
 - Enter your password in the **New password** field and the **Confirm new password** field,
 - Click the “**Submit**” button to complete the setting.



- Enter the new password in the Login password field and click “**Submit**”.

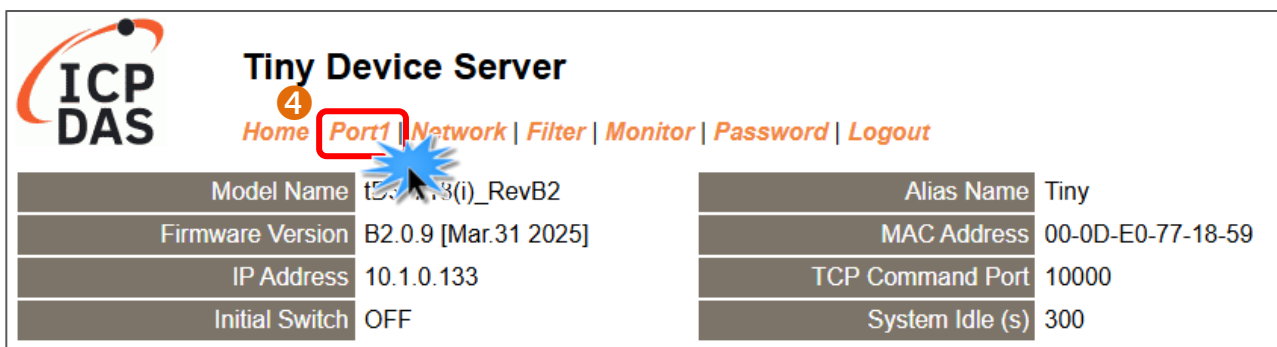


ICP DAS **Tiny Device Server**
[Home](#) | [Port1](#) | [Network](#) | [Filter](#) | [Monitor](#) | [Password](#) | [Logout](#)

The system is logged out.
 To enter the web configuration, please type password in the following field.

3 Login password

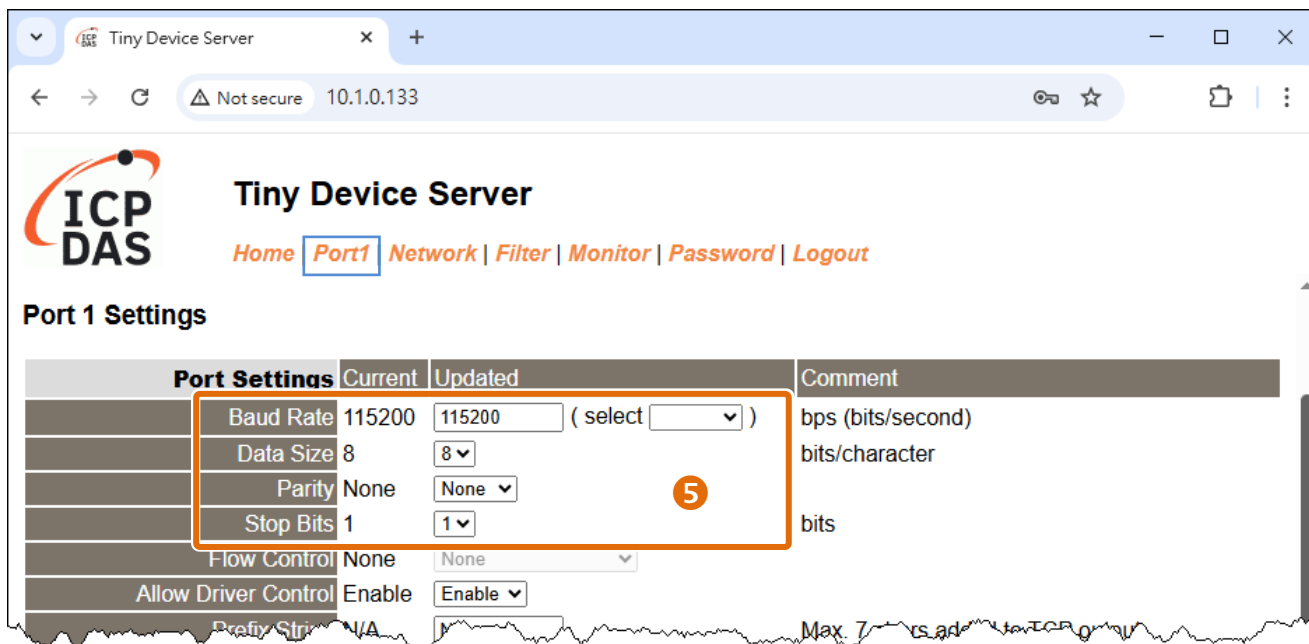
- Click on “**Port1**” in the navigation bar.



ICP DAS **Tiny Device Server**
[Home](#) | [Port1](#) | [Network](#) | [Filter](#) | [Monitor](#) | [Password](#) | [Logout](#)

Model Name	T5113(i)_RevB2	Alias Name	Tiny
Firmware Version	B2.0.9 [Mar.31 2025]	MAC Address	00-0D-E0-77-18-59
IP Address	10.1.0.133	TCP Command Port	10000
Initial Switch	OFF	System Idle (s)	300

- Select the appropriate Baud Rate and Data Format (e.g., 115200 and 8N1) from the relevant dropdown menus. **Note:** These settings should be configured according to your device's requirements.
- Click “**Submit**” at the bottom of the page to save your settings.



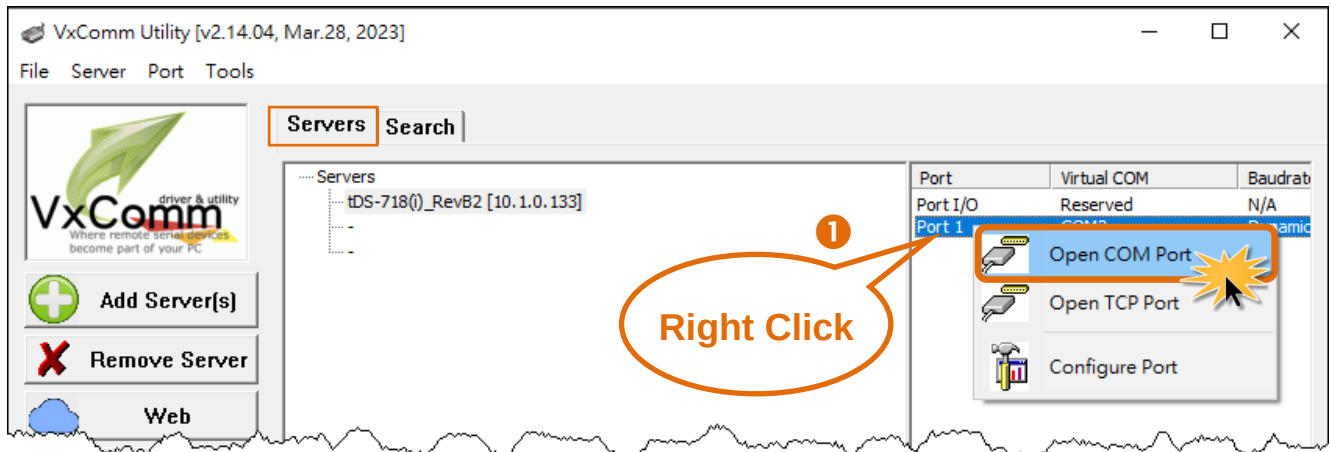
ICP DAS **Tiny Device Server**
[Home](#) | [Port1](#) | [Network](#) | [Filter](#) | [Monitor](#) | [Password](#) | [Logout](#)

Port 1 Settings

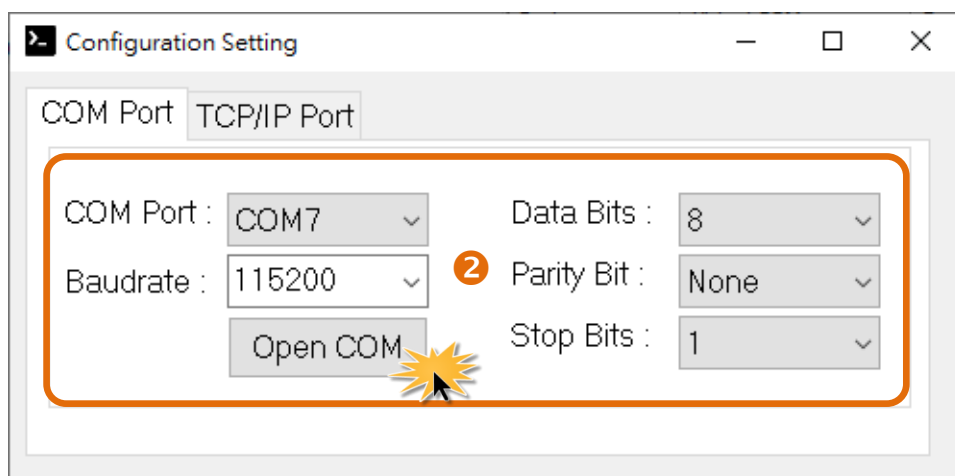
Port Settings	Current	Updated	Comment
Baud Rate	115200	115200 (select)	bps (bits/second)
Data Size	8	8	bits/character
Parity	None	None	bits
Stop Bits	1	1	
Flow Control	None	None	
Allow Driver Control	Enable	Enable	
Prefix Str	N/A		

3.6 Testing Your tDS-700-UL

1. Back to VxComm Utility, **Right click Port 1** and then choose the “**Open COM Port**” item.

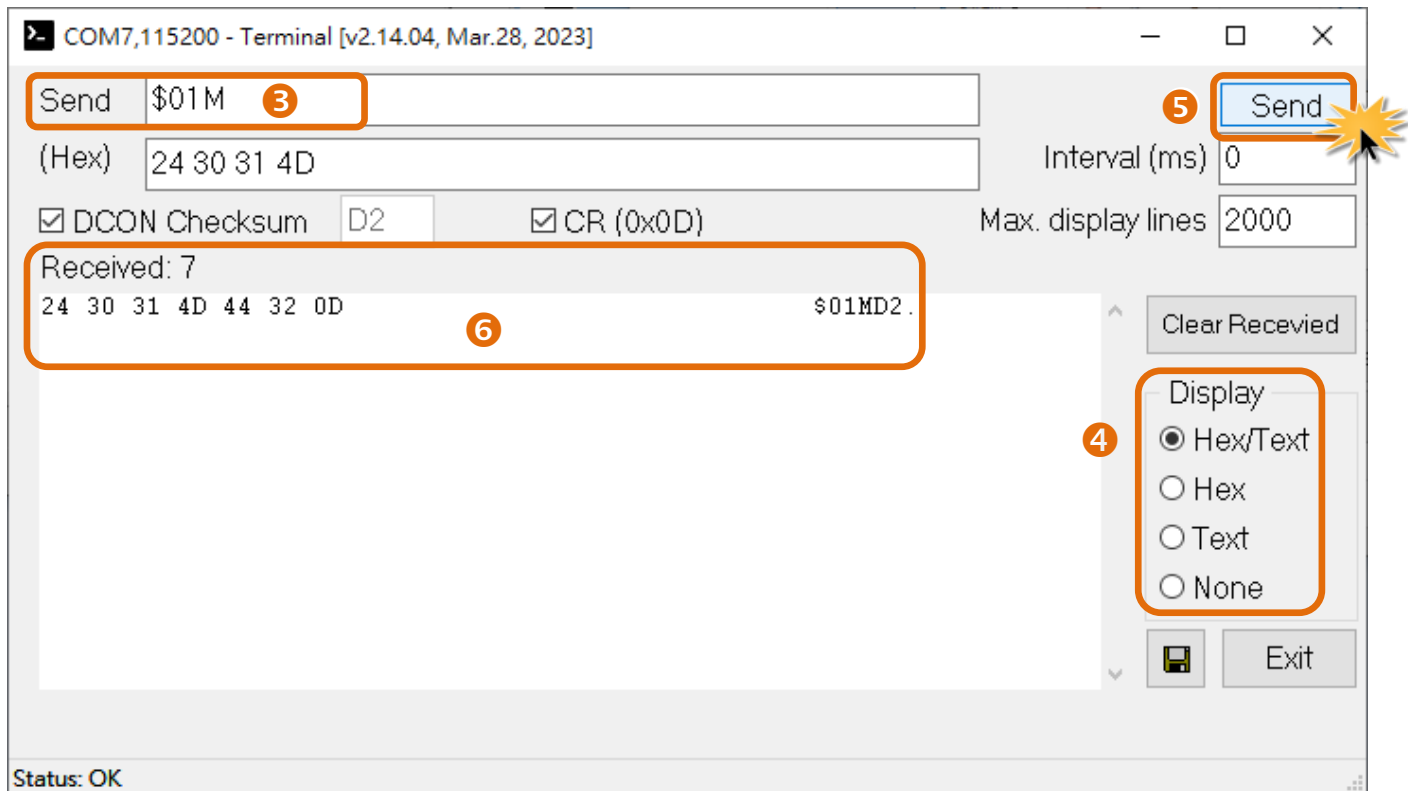


2. Check that the configuration of the COM Port is correct and then click the “**Open COM**” button.



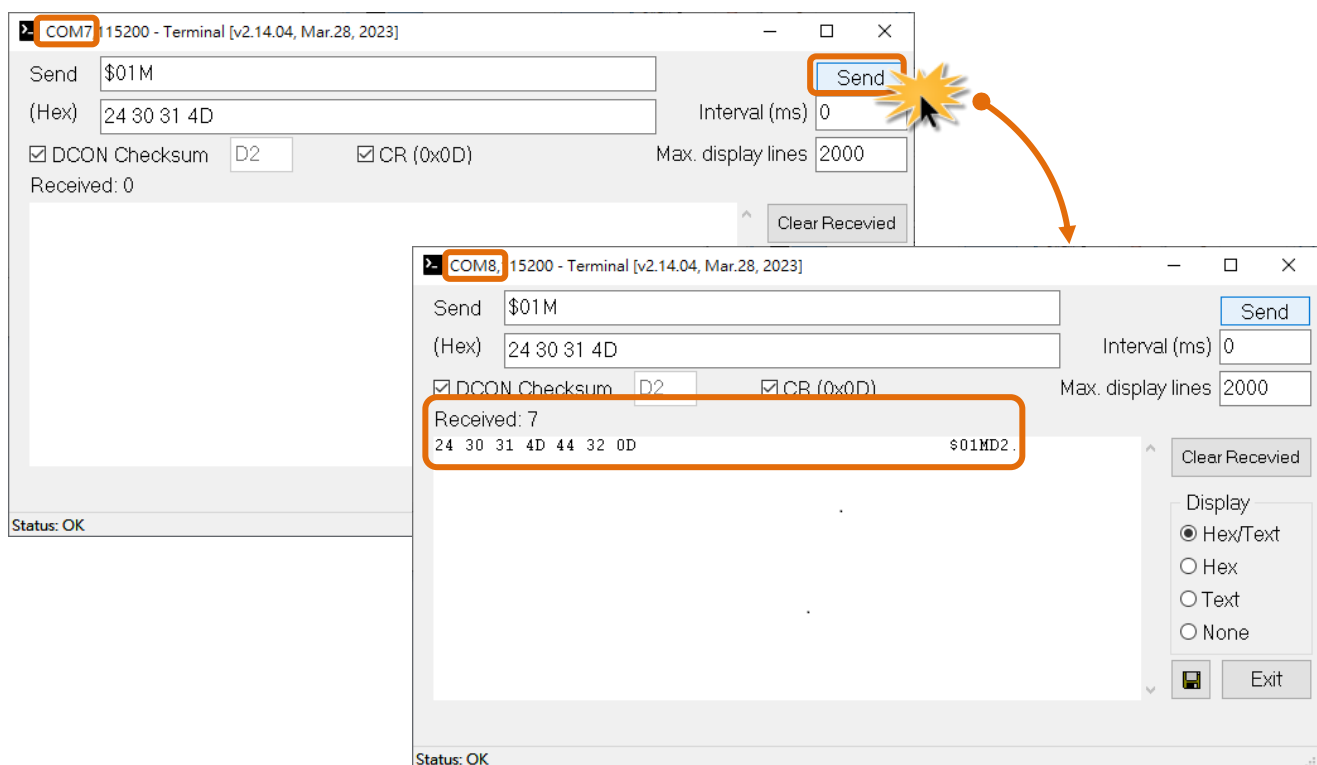
3. Type a string (e.g., \$01M) in the “**send**” field
4. Click the “**Hex/Text**” option in the “**Display**” section.
5. Click the “**Send**” button to send the message.
6. If a response is received, it will be displayed in the received field.

If the test is successful, then your COM port program should now be able to work with this Virtual COM Port.



Note

While using RS-485 modules (e.g., tDS-715-UL), open the first two COM Ports and use one (e.g., COM7) to send data to and the other (e.g., COM8) to receive data.



4. Web Configuration

Once the Ethernet settings for the tDS-700-UL module have been correctly configured and the module is functioning properly, you can proceed with further configuration using the VxComm Utility or a standard web browser.

4.1 Logging in to the tDS-700-UL Web Server

The embedded tDS-700-UL series web server can be accessed from any computer that has an Internet connection.

Step 1: Open a Web Browser

Open your web browser, such as Microsoft Edge, Mozilla Firefox, Apple Safari, or Google Chrome, to configure and check the settings of the tDS-700-UL module.



Step 2: Enter the IP of the tDS-700-UL into the Address Bar

Ensure that the tDS-700-UL series module has been configured with the correct network settings. (If not, refer to [Chapter 3 “Getting Started”](#) for setup instructions), and then enter the IP address for the tDS-700-UL series module in the address bar and press “Enter”.



Step 3: Enter the Password

For the first login, you will be prompted to change the default password. Please refer to [Section 3.5 “Configuring the Serial Port”](#).

Once connected to the module’s web page, enter the password in the “Login password” field, then click the “**Submit**” button to access the tDS-700-UL web server.

To change the password, please refer to [Section 4.7 “Password Configuration Page”](#).



Serial Device Server

[Home](#) | [Port1](#) | [Port2](#) | [Port3](#) | [Network](#) | [Filter](#) | [Monitor](#) | [Password](#) | [Logout](#)

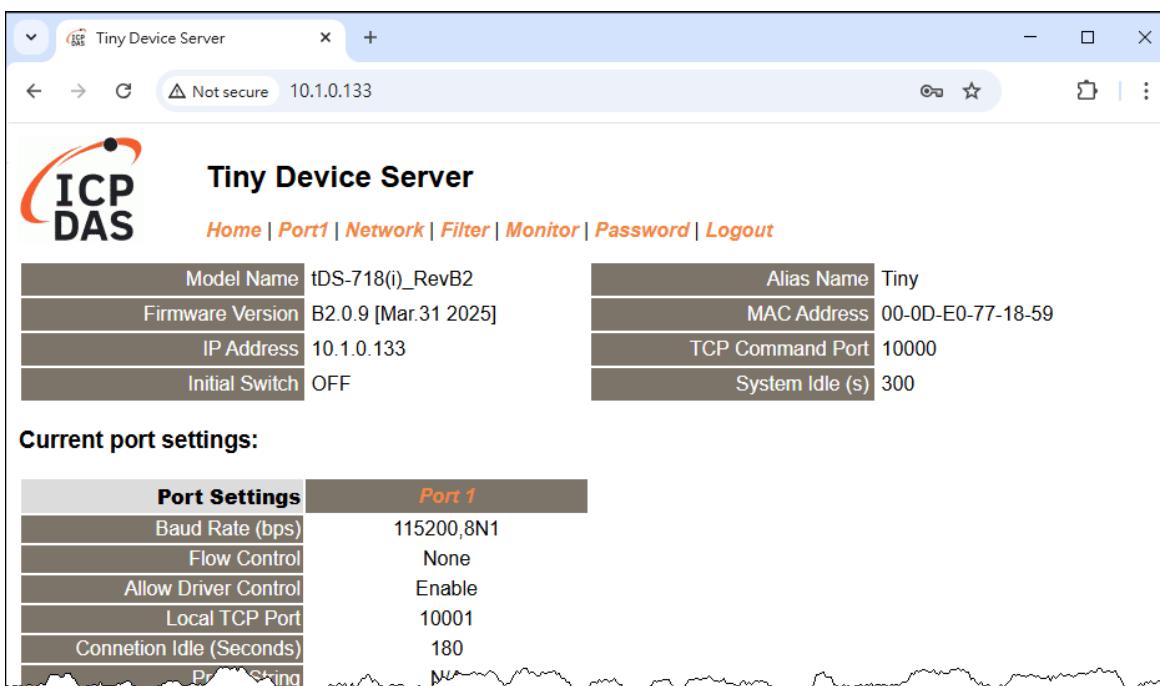
The system is logged out.
To enter the web configuration, please type password in the following field.

Login password:

Enter your password and click “Submit”.

Step 4: Access to the tDS-700-UL Web Server

After successfully logging into the tDS-700-UL web server, the main page will display various information. Detailed explanations begin in Section 4.2.



Tiny Device Server

[Home](#) | [Port1](#) | [Network](#) | [Filter](#) | [Monitor](#) | [Password](#) | [Logout](#)

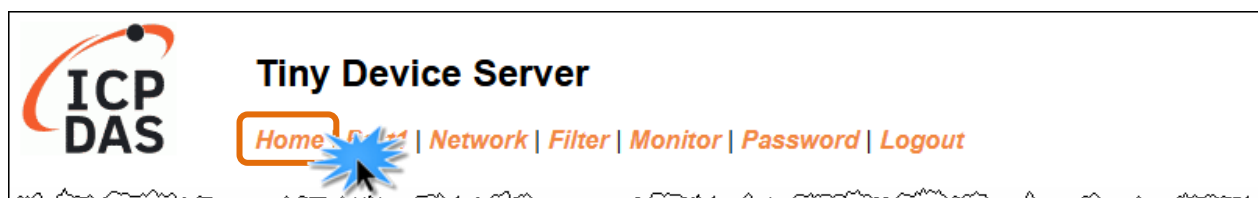
Model Name	tDS-718(i)_RevB2	Alias Name	Tiny
Firmware Version	B2.0.9 [Mar.31 2025]	MAC Address	00-0D-E0-77-18-59
IP Address	10.1.0.133	TCP Command Port	10000
Initial Switch	OFF	System Idle (s)	300

Current port settings:

Port Settings	Port 1
Baud Rate (bps)	115200,8N1
Flow Control	None
Allow Driver Control	Enable
Local TCP Port	10001
Connection Idle (Seconds)	180
Port String	NA

4.2 Home Page

The **Home** link connects to the main page, which contains two parts.



The first part provides basic information about the module. It includes information related to the model name, the current firmware version, the IP address, the current position of the Initial Switch, the alias, the MAC address, and the TCP port, and the system timeout values.

After updating the firmware, you can check the version information here.

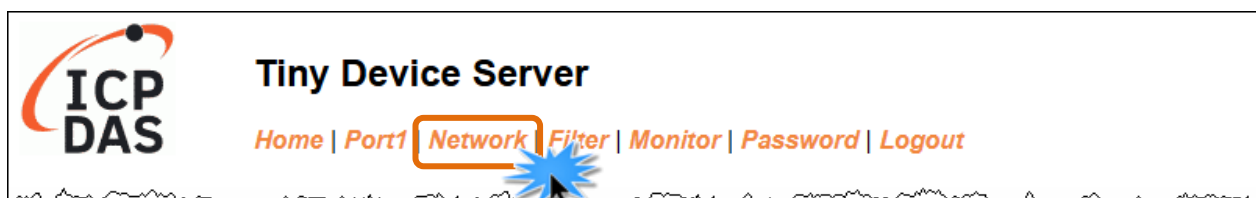
Model Name	tDS-718(i)_RevB2	Alias Name	Tiny
Firmware Version	B2.0.9 [Mar.31 2025]	MAC Address	00-0D-E0-77-18-59
IP Address	10.1.0.133	TCP Command Port	10000
Initial Switch	OFF	System Idle (s)	300

The lower section provides information related to the COM port and pair-connection settings.

Current port settings:	
Port Settings	Port 1
Baud Rate (bps)	115200,8N1
Flow Control	None
Allow Driver Control	Enable
Local TCP Port	10001
Connexion Idle (Seconds)	180
Prefix String	N/A
Serial Data Packing	Port 1
Slave Timeout (ms)	1000
Packing Length (bytes)	0
Serial Ending Chars (Number[,char1][,char2])	0
Timeout Between Chars (ms)	10
Pair-Connection Settings (Client/Server Mode)	Port 1
Application Mode	Server
Remote Server IP	Disable
Remote TCP Port	Disable

4.3 Network Setting

Click “**Network**” to open the network settings page, where you can modify the IP and other communication parameters, update the firmware, restore the factory defaults, and restart the module remotely.



4.3.1 IP Address Settings

The **Address Type**, **Static IP Address**, **Subnet Mask**, and **Default Gateway** settings must match the network configuration that the module is being connected to. Otherwise, the tDS-700-UL module will not function properly. Modifying these settings while the module is in operation may cause the application’s connection to the virtual COM port to be interrupted, resulting in errors.

IP Address Settings

IP Address	
Address Type	Static IP ▼
Static IP Address	10 . 1 . 0 . 3
Subnet Mask	255 . 255 . 0 . 0
Default Gateway	10 . 1 . 0 . 254
MAC Address	00-0D-E0-02-22-35 (Format: FF-FF-FF-FF-FF-FF)
Virtual COM	
TCP Command Port	10000 (Default: 10000)
Command Port Timeout (Socket Watchdog)	180 (1 ~ 65535 seconds, 30=default, 0=disable)
Update Settings	

The following is an overview of the parameters contained in the **IP Address Settings** section:

Item	Description
IP Address	
Address Type	Static IP: If no DHCP server is available on the network, the network settings can be configured manually. Refer to “Manual Configuration” section for more details.
	DHCP: The Dynamic Host Configuration Protocol (DHCP) is a network application protocol that automatically assigns an IP address to each device. Refer to “Dynamic Configuration” section for further information.
Static IP Address	Each tDS-700-UL module must have a unique IP address on the network. This setting specifies that unique address.
Subnet Mask	Defines the subnet mask for the module. It determines which portion of the IP address is used to identify the local network or subnet.
Default Gateway	This parameter is used to assign the IP Address of the Gateway to be used by the tDS-700-UL. A Gateway (or router) is a device that is used to connect an individual network to one or more additional networks.
MAC Address	Allows the user to assign a custom MAC address, which must follow the format: FF-FF-FF-FF-FF-FF.
Virtual COM	
TCP Command Port	Sets a custom TCP command port number based on your application requirements. Once configured, the serial port's TCP port changes as follows: COM1= TCP Command Port + 1 By default, the TCP Command Port is 10000., and COM1 will default to 10001.
Command Port Timeout (Socket Watchdog)	If no data is received on the command port within the time interval set by this parameter, the module will automatically close the socket. Valid range: 1 ~ 65535 (seconds); Default: 30 (seconds); Disabled: 0;
Update Settings	Click this button to to save and apply the modified settings to the module.

Manual Configuration

Before manually configuring the IP address, consult your network administrator to obtain valid network settings.

Step 1: Select “Static IP” from the “Address Type” drop-down menu.

Step 2: Enter the correct and appropriate network settings in the “network settings” fields.

Step 3: Click the “Update Settings” button to complete the configuration.

IP Address	
Address Type:	Static IP 1
Static IP Address:	10 . 0 . 8 . 70
Subnet Mask:	255 . 255 . 255 . 0 2
Default Gateway:	10 . 0 . 8 . 254
MAC Address:	00-0d-e0-8e-17-18 (Format: FF-FF-FF-FF-FF-FF)
Virtual COM	
TCP Command Port:	10000 (Default: 10000)
Command Port Timeout: (Socket Watchdog)	180 (1 ~ 65535 seconds, 30=default, 0=disable)
Update Settings 3	

Dynamic Configuration

Dynamic configuration is very easy to perform. If your network has a DHCP server, you can enable DHCP to allow the server to automatically assign an IP address.

Step 1: Select “DHCP” from the “Address Type” drop-down menu.

Step 2: Click the “Update Settings” button to complete the configuration.

IP Address	
Address Type:	DHCP 1
Static IP Address:	10 . 0 . 8 . 70
Subnet Mask:	255 . 255 . 255 . 0
Default Gateway:	10 . 0 . 8 . 254
MAC Address:	00-0d-e0-8e-17-18 (Format: FF-FF-FF-FF-FF-FF)
Virtual COM	
TCP Command Port:	10000 (Default: 10000)
Command Port Timeout: (Socket Watchdog)	180 (1 ~ 65535 seconds, 30=default, 0=disable)
Update Settings 2	

4.3.2 General Settings

You can view and modify the settings for HTTP port, Auto-logout time, CGI Configuration, Alias Name, UART Watchdog and UDP Alarm.

General Settings	
Network	
Ethernet Speed:	Auto (Auto=10/100 Mbps Auto-negotiation)
HTTP port	80 (Default= 80)
System Idle:	300 (30 ~ 65535 seconds, 300=default, 0=disable) Action=Reboot
Web Auto-logout:	10 (1 ~ 255 minutes, 10=default, 0=disable)
CGI Configuration:	Enable (Enable/Disable the assign.cgi, Enable=default.)
UDP Configuration:	Enable (Enable/Disable the UDP Configuration, Enable=default.)
UDP Alarm	
Alarm IP Address(UDP):	255 . 255 . 255 . 255
Alarm Port(UDP):	54300
Misc.	
Alias Name:	Tiny (Max. 18 chars)
UART Watchdog:	Tx: 0 Rx: 0 (30 ~ 65535 seconds, 0=default=disable) Action=Reboot
Debug Message(UDP):	20 (1 ~ 255 seconds, 20=default, 0=disable)
Update Settings	

The following is an overview of the parameters contained in the **General Settings** section:

Item	Description	Default
Network		
Ethernet Speed	Displays the current Ethernet speed setting. (Auto: 10/100 Mbps auto-negotiation).	Auto
HTTP Port	Assigns the HTTP port number. After changing the HTTP port, you need to restart the module. If the HTTP port is not 80, the HTTP port need be added following the module's IP address in the format: "IP address:HTTP port" to connect to the web server correctly. (e.g. 10.0.8.123:81, when HTTP port is set to 81)	80

Item	Description	Default
System Idle (Network Watchdog)	Sets the system timeout duration. If the module encounters abnormal operation and no communication occurs within the specified time period, the module will automatically reboot. Range: 30 to 65535 (seconds); Disable = 0.	300
Web Auto-logout	Sets the automatic logout time. If no activity occurs on the web interface within the configured time, the user will automatically be logged out. Range: 1 to 65535 (minutes); Disable = 0.	10
CGI Configuration	Enables or disables CGI commands for configuring the tDS-700-UL module. For detailed CGI command usage, refer to Chapter 6 “CGI Configuration” Enable/Disable the assign.cgi.	Enable
UDP Configuration	Enables or disables the UDP configuration feature.	Enable
UDP Alarm		
Alarm IP Address (UDP)	When an alarm event occurs, the tDS-700-UL can send a UDP packet containing the alarm message to a specified IP address and port.	
Alarm Port (UDP)	Alarm IP Address (UDP): Destination IP address for UDP alarm messages. Alarm Port (UDP): Destination port for UDP alarm messages.	
Misc.		
Alias Name	Sets a user-defined alias for the module, up to 18 characters. Assigning unique alias names to each module helps distinguish them on the network.	Tiny
UART Watchdog	Sets the UART Watchdog timeout duration. If no communication occurs or an error happens within the specified time, the module will automatically restart. Range: 30 ~ 65535 (seconds); Disable = 0.	0
Debug Message(UDP)	Sets the interval for sending debug message broadcast packets. The tDS-700-UL will broadcast debug messages at the configured interval. Range: 1–255 (seconds); Disable = 0	20
Update Settings	Click this button to save the revised settings to the tDS-700-UL.	

4.3.3 Other Operations

In the Other Operations section, it provides functions for restoring factory defaults, restarting the module, and updating firmware over the network.

Other Operations

Restore all options to their factory default states	Restore Defaults
Reboot the module	Reboot
Firmware update via Ethernet If the remote firmware update is failed, then on-site firmware update is required to make the module working again. Step 1: Refer to firmware update manual first. Step 2: Run eSearch Utility to prepare and wait for update. Step 3: Click the [Update] button to reboot the module and start update. Step 4: Configure the module again.	Update

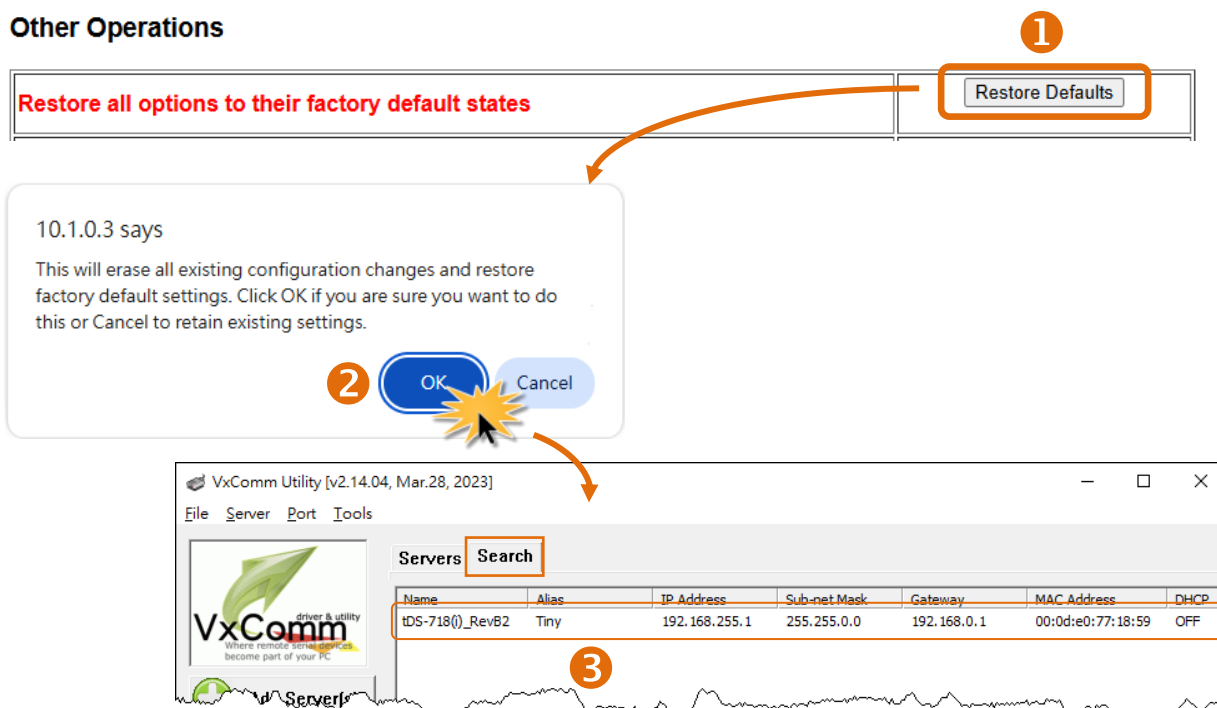
Restore all options to their factory default states

Step 1: Click the “Restore Defaults” button to reset the configuration.

Step 2: Click the “OK” button in the message dialog box.

Step 3: Check whether the module has been restored to factory defaults by using the VxComm Utility. Refer to [Chapter 3 “Getting Started”](#) for more details.

Other Operations



The following is an overview of the factory default settings:

Factory Default Settings			
Network Settings		Basic Settings	
IP Address	192.168.255.1	Alias	Tiny
Gateway Address	192.168.0.1		
Subnet Mask	255.255.0.0		
DHCP	Disabled		

Reboot the module

Clicking the reboot button on the right side of the “**Reboot the module**” field can remotely reboot the module. After the tDS-700-UL module restarts, you will need to refresh the web page and re-enter your password to log in again.

Other Operations

Restore all options to their factory default states	Restore Defaults
Reboot the module	Reboot



Firmware update via Ethernet

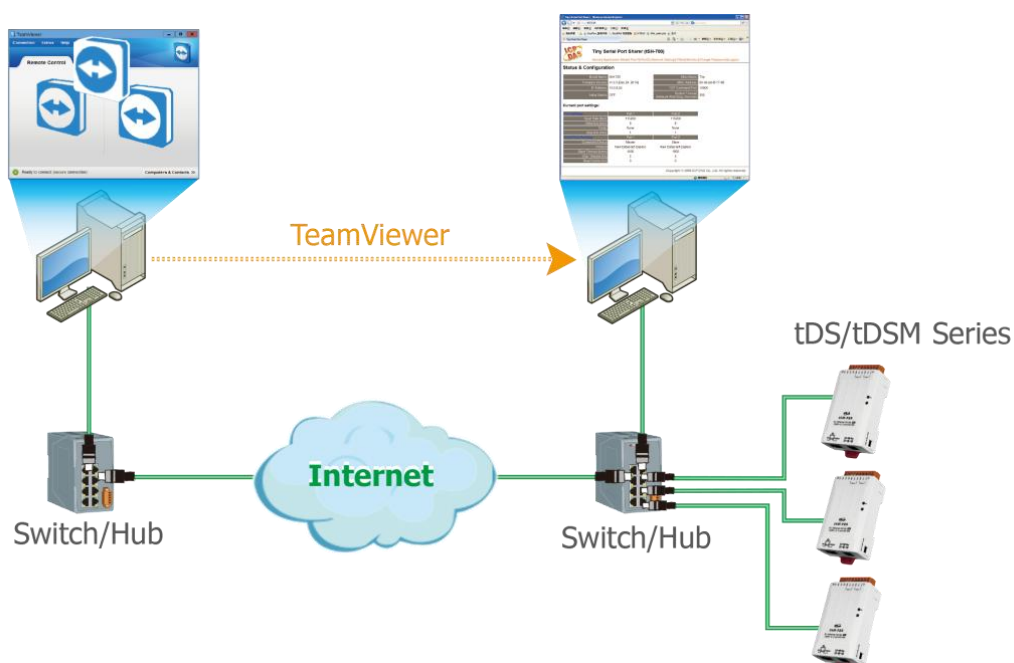
When updating the firmware of the tDS-700-UL module, it typically requires manually switching the Init/Run mode switch and restarting the module. However, if the module is installed in a location that is difficult to detach, and the host is in the same sub-network of the module, you can click the Update button in the “**Firmware update via Ethernet**” field to initialize the module to Init mode, without any manual intervention.

Other Operations

Restore all options to their factory default states	Restore Defaults
Reboot the module	Reboot
Firmware update via Ethernet If the remote firmware update is failed, then on-site firmware update is required to make the module working again. Step 1: Refer to firmware update manual first. Step 2: Run eSearch Utility to prepare and wait for update. Step 3: Click the [Update] button to reboot the module and start update. Step 4: Configure the module again.	Update



If the tDS-700-UL module is not on the same subnet of your computer, you can use remote control software (e.g., TeamViewer) to access a computer that is on the same subnet of the module, and perform the firmware update from that remote PC.



Note:

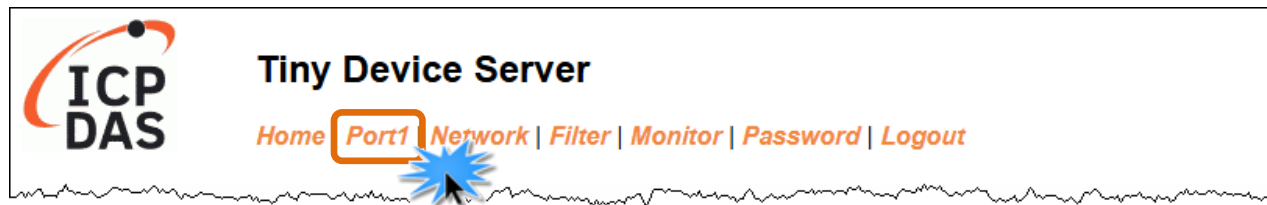
If the remote firmware update fails, the module may become non-operational. In such cases, you must physically remove the module, manually switch the Init/Run mode to Init, and restart the module. Then perform the firmware update again to restore normal operation.

For detailed instructions on updating the firmware of the tDS-700-UL module, please refer to the Firmware Update Manual:

<https://www.icpdas.com/en/download/show.php?num=2420>

4.4 Serial Port Settings

Click the “**Port1**” to enter the COM port function setting page.



4.4.1 Port1 Settings

The **Port 1 Settings** section provides functions allowing items such as port settings, serial data packing and pair-connection settings to be configured.

Port 1 Settings

Port Settings	Current	Updated	Comment
Baud Rate	115200	115200 (select)	bps (bits/second)
Data Size	8	8	bits/character
Parity	None	None	
Stop Bits	1	1	bits
Flow Control	None	None	
Allow Driver Control	Enable	Enable	
Prefix String	N/A	N/A	Max. 7 chars added to TCP output.
Remove Errors	FE BE	☐ Parity Error ☒ Framing Error ☒ Break Error	Clear RX FIFO data when serial errors.
Remove Data		☐ Remove RX	Clear RX data when TCP disconnected.
Serial Data Packing	Current	Updated	Comment
Slave Timeout	1000	1000	ms, After last TX
Packing Length	0	0	0 ~ 1024 bytes, 0=default=disable
Serial Ending Chars (Number[,char1][,char2])	0	0	e.g.: 2,0x0D,0x0A
Timeout Between Chars	10	10	ms, After last RX 10 ~ 65000, 10=default, 0=disable
TCP/IP	Current	Updated	Comment
Local TCP Port	10001		=TCP Command Port +1
Operation Mode	0	0	0=Data-sharing, 1=Non-sharing
Connction Idle	180	180	1 ~ 65000 seconds, 180=default, 0=disable
Pair-Connection Settings (Client/Server Mode)	Current	Updated	Comment
Application Mode	Server	Server	Server=Slave, Client=Master

The following is an overview of the parameters contained in the **Port1 Settings** section:

Item	Description		Default
Port Settings			
Baud Rate (bps)	Sets the Baud Rate of the COM port.		115200
Data Size (bits)	Sets the Data Size of the COM port.		8
Parity	Sets the Parity of the COM port.		None
Stop Bits (bits)	Sets the Stop Bits of the COM port.		1
Flow Control	Sets the Flow Control of the COM port.		None
Allow Driver Control	Enables client (VxComm Driver) to dynamically change the data format and baud rate settings.		Enable
Prefix String	Set the prefix string added to the TCP output. Range: Max. 7 chars.		N/A
Remove Errors	Clears RX FIFO data when the error(s) checked occurs.	Framing Error checked Break Error checked	
Remove Data	Enables or disables clearing RX data when TCP disconnected.		Disable
Serial Data Packing			
Slave Timeout (ms)	Set the waiting time after last Tx of the request sent to the device. If the device does not respond within the timeout value, the tDS-700-UL will return existing data via TCP package and process next request.		1000
Packing Length (bytes)	Sets the packet character length. When the length of received data reaches this configured value, an Ethernet packet will be sent at once. Range: 0 ~ 1024; Disabled: 0.		0
Serial Ending Chars (Number[,char1][,char2])	Sets the serial ending characters. When the tDS-700-UL module receives serial data ending with the specified characters, it will immediately send an Ethernet packet. The ending characters can be disabled (0), or configured as one or two characters. Disabled: 0, 1 char: 1,0x0D , 2 chars: 2,0x0D,0x0A .		0

Item	Description	Default
Serial Data Packing		
Timeout Between Chars (ms)	Sets the inter-character timeout for the response sent from the device. If the device does not send further data within this period, the tDS-700-UL will process this response. Range: 10 ~ 65535, Disabled: 0.	10
TCP/IP		
Local TCP Port	TCP Command Port +1 Note: COM1 = TCP port 10001	10001
Operation Mode	0: M0/Multi-echo: Shares the received data from the COM port between clients. 1: M1/Single-echo: Sends received data from the COM port to the requested client only.	0
Connection Idle (seconds)	If the Local TCP port does not receive any data sent via the TCP/IP within the certain period set by this parameter, the tDS-700-UL will disconnect the socket. Range: 1 ~ 65535 (seconds); Disabled: 0.	180
Pair-Connection Settings (Client/Server Mode)		
Application Mode	Server	Client
Remote Server IP	-	IP address of the remote device
Remote TCP Port	-	TCP Port number of the remote device
Submit	Click this button to save the revised settings to the tDS-700-UL.	

Note

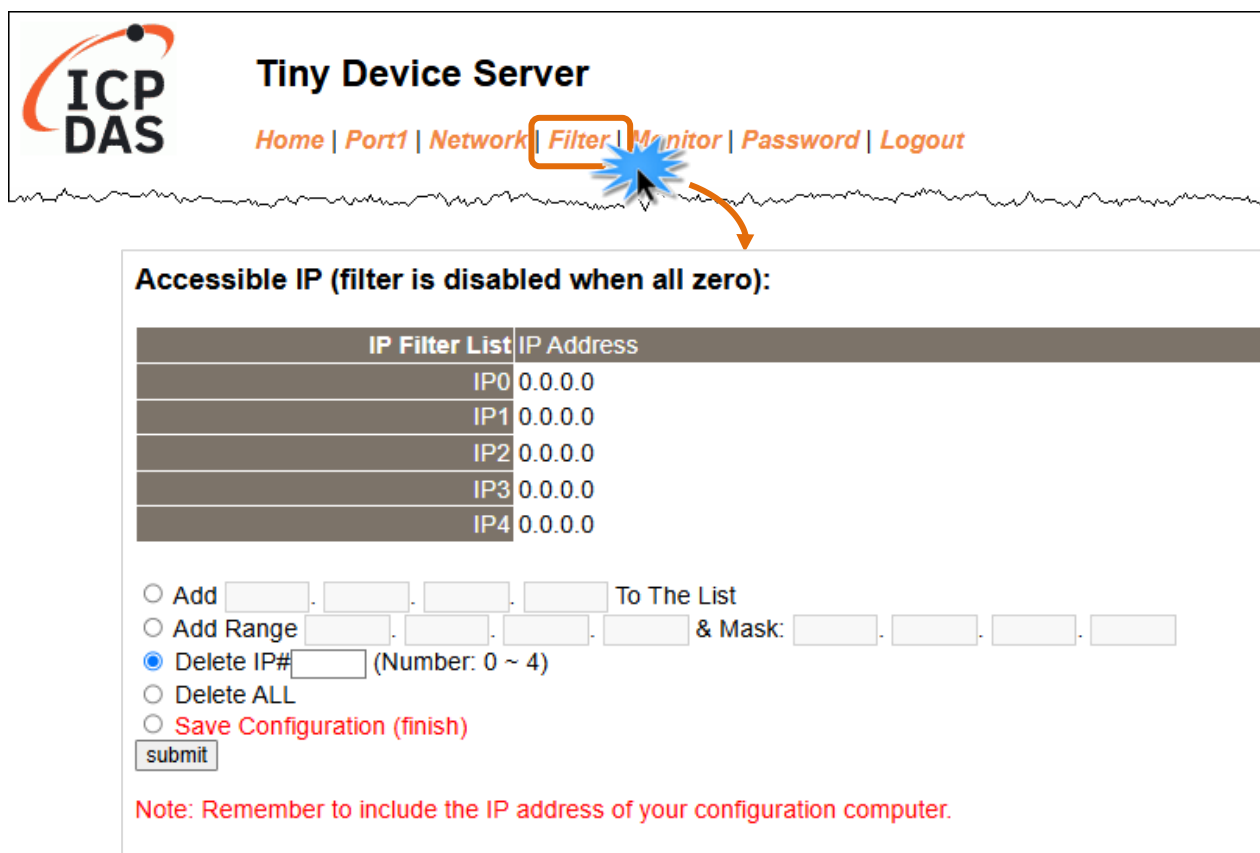
For more detailed information regarding pair-connection applications settings, refer to [Section 5.4 "Pair-Connection Applications"](#).

4.5 Filter Settings

The IP Filtering function on the tDS-700-UL series modules can prevent connections from untrusted IP addresses by restricting access based on IP.

- If any IP addresses are configured in the list, only the IPs in the list is allowed to access the module's web interface.
- If the list is empty, the IP filtering function is disabled.

Click the “Filter” item to go to the settings page:



Tiny Device Server

Home | Port1 | Network | **Filter** | Monitor | Password | Logout

Accessible IP (filter is disabled when all zero):

IP Filter List	IP Address
IP0	0.0.0.0
IP1	0.0.0.0
IP2	0.0.0.0
IP3	0.0.0.0
IP4	0.0.0.0

☐ Add . . . To The List
☐ Add Range . . . & Mask: . . .
☒ Delete IP# (Number: 0 ~ 4)
☐ Delete ALL
☐ Save Configuration (finish)

Note: Remember to include the IP address of your configuration computer.

The following is an overview of the parameters contained in the Filter Settings (white list) section:

Item	Description
Add “IP” To The List	Add an IP address to the IP Filter List.
Add Range “IP”& Mask “IP”	Add an IP address range to the IP Filter List.
Delete IP# “Number”	Delete a specific IP# address from the IP Filter List. (Number: 0 ~ 4)
Delete All	Delete all items from the IP Filter List.
Save Configuration (finish)	Save a new IP Filter List to the Flash memory.
Submit	Click this button to save the revised settings to the tDS-700-UL.

4.6 Monitor Page

Click the **Monitor** item to view the the current TCP/IP connection status and COM ports status on the tDS-700-UL module.



Tiny Device Server

[Home](#) | [Port1](#) | [Network](#) | [Filter](#) | **[Monitor](#)** | [Password](#) | [Logout](#)

Current Status(Socket):

Port Number	Port 1
Application Mode	Server
Connected IP1	0.0.0.0
IP2	0.0.0.0
IP3	0.0.0.0
IP4	0.0.0.0

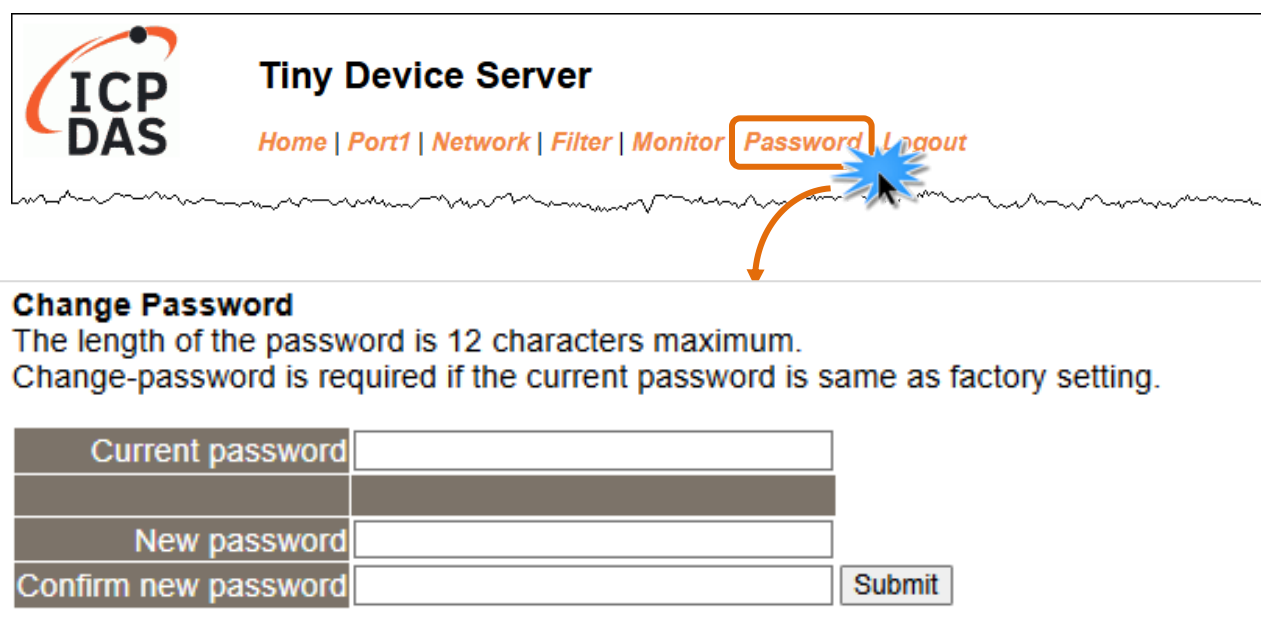
Note: Multi-connection may be used in light-loading communications only, not for heavy-loading.

Current Status(UART):

Port Number	Port 1
Last Tx Count (bytes)	0
Last Rx Count (bytes)	0
Total Tx Count (bytes)	0
Total Rx Count (bytes)	0
Remove PE/FE/BE (bytes)	0

4.7 Change Password

You can click “**Password**” in the navigation bar to change the tDS-700-UL web server login password.



The screenshot shows the Tiny Device Server web interface. At the top, there is a navigation bar with the ICP DAS logo and the title "Tiny Device Server". Below the title, there are several navigation links: Home, Port1, Network, Filter, Monitor, Password, and Logout. The "Password" link is highlighted with a blue starburst and an orange arrow pointing to the "Change Password" form below. The form has a title "Change Password" and a note: "The length of the password is 12 characters maximum. Change-password is required if the current password is same as factory setting." The form contains three input fields: "Current password", "New password", and "Confirm new password", followed by a "Submit" button.

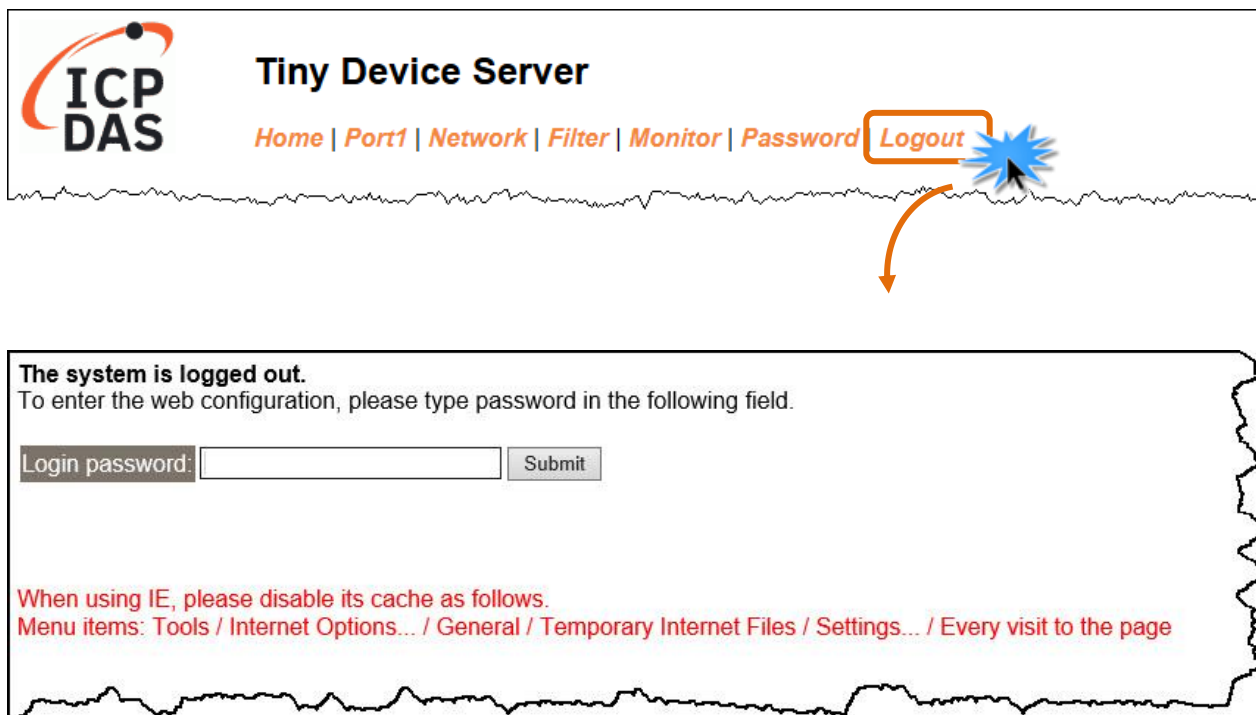
Item	Description
Current password	Enter the current password. Using the factory default password “ admin ” for the first time login.
New password	Enter the new password. (12 characters maximum)
Confirm new password	Enter the new password again. (12 characters maximum)
Submit	Click this button to save the revised settings to the tDS-700-UL.

Note

If you forgot password, please refer to [Section A1. How do I restore the web password for the module to the factory default password?](#)

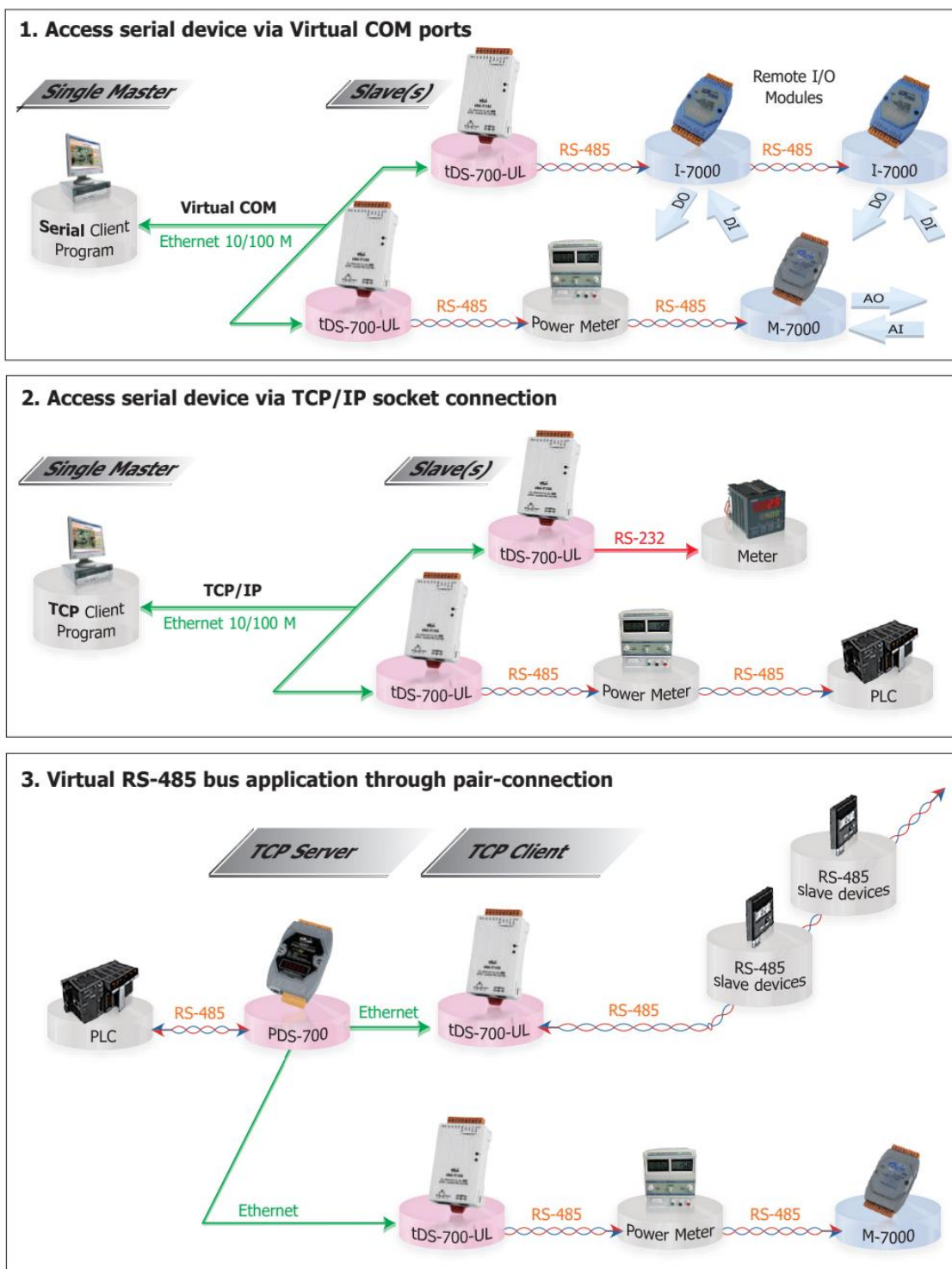
4.8 Logout

After clicking the **Logout**, you will be immediately logged out from the system and be returned to the login page.



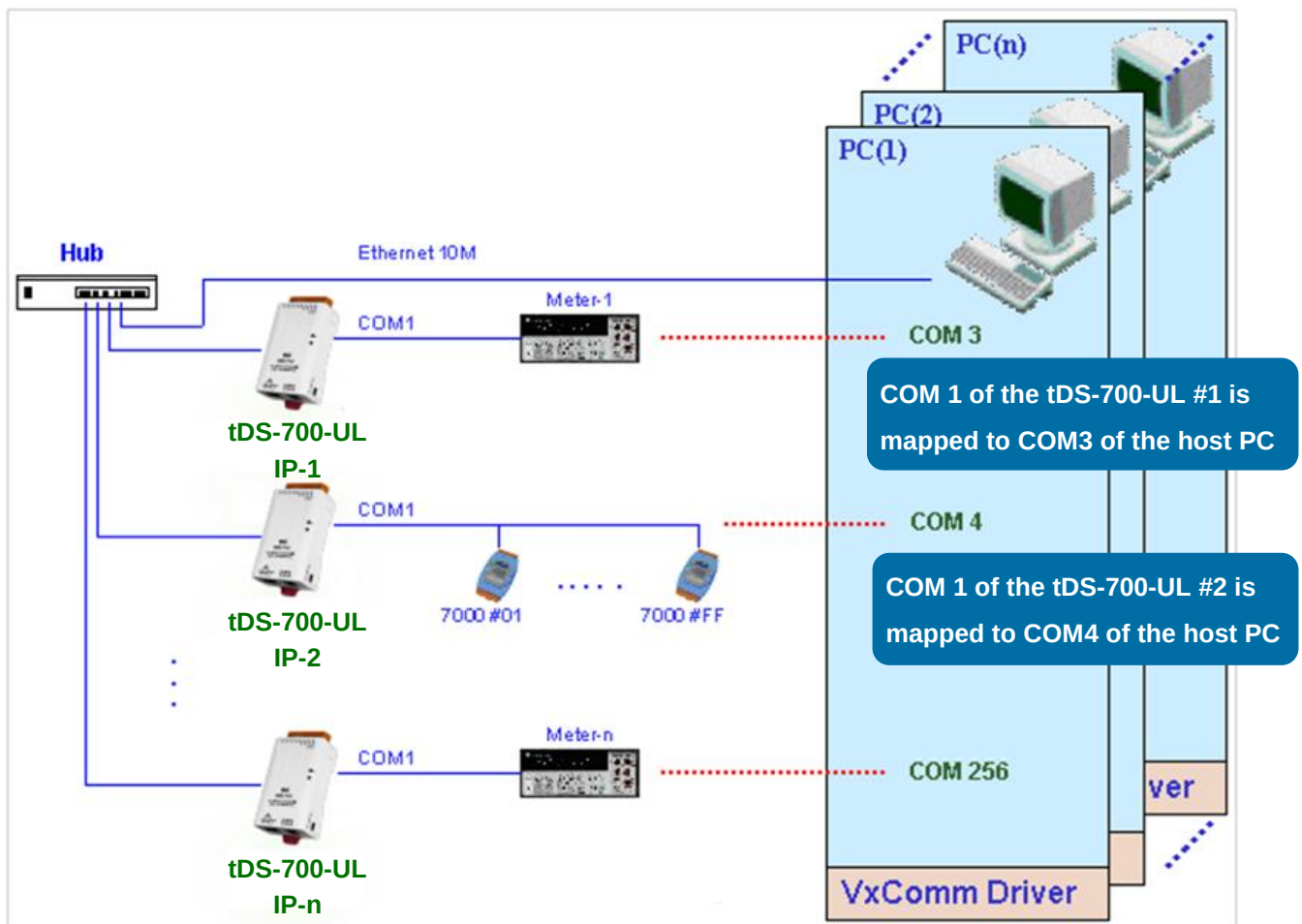
5. Typical Applications

This chapter provides some examples of typical scenarios for the tDS-700-UL module, including applications focused on the Virtual COM, Direct Socket Connection, Ethernet I/O, Pair-connection and TCP Client Mode, etc...



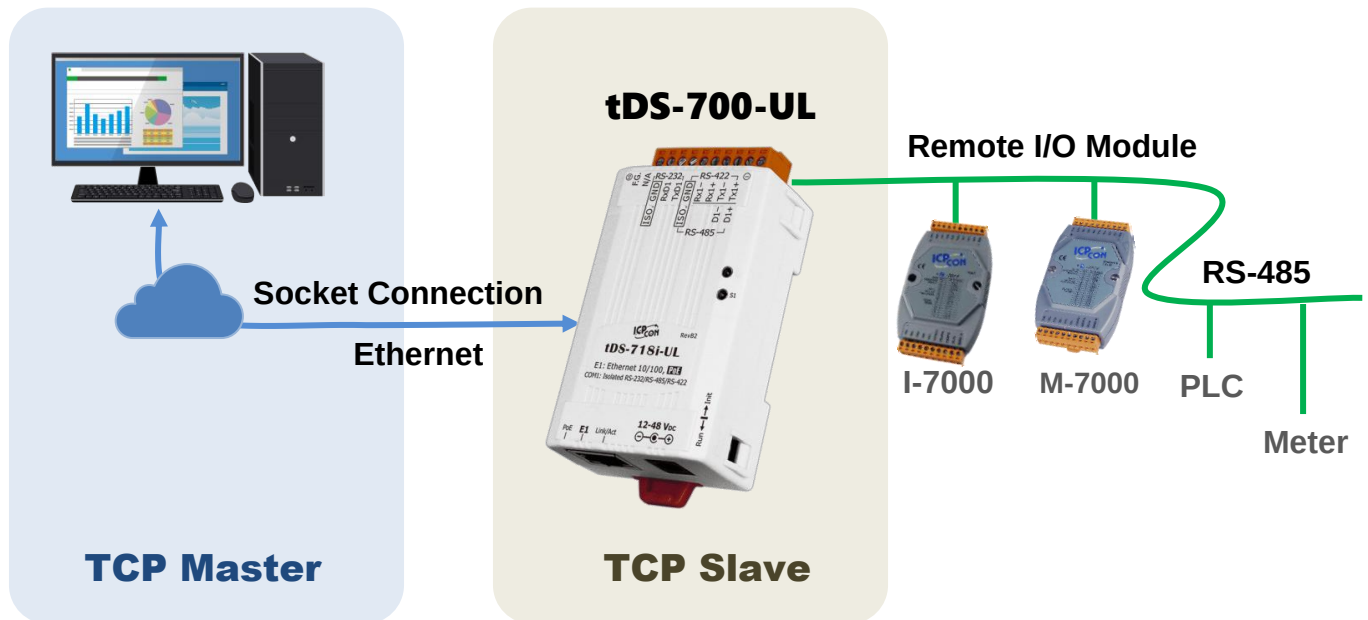
5.1 Virtual COM Application

The tDS-700-UL series is designed to link RS-232/422/485 devices to an Ethernet network. The VxComm utility allows the built-in tDS-700-UL COM Port to be virtualized to a standard COM Port of a host PC, as shown below:



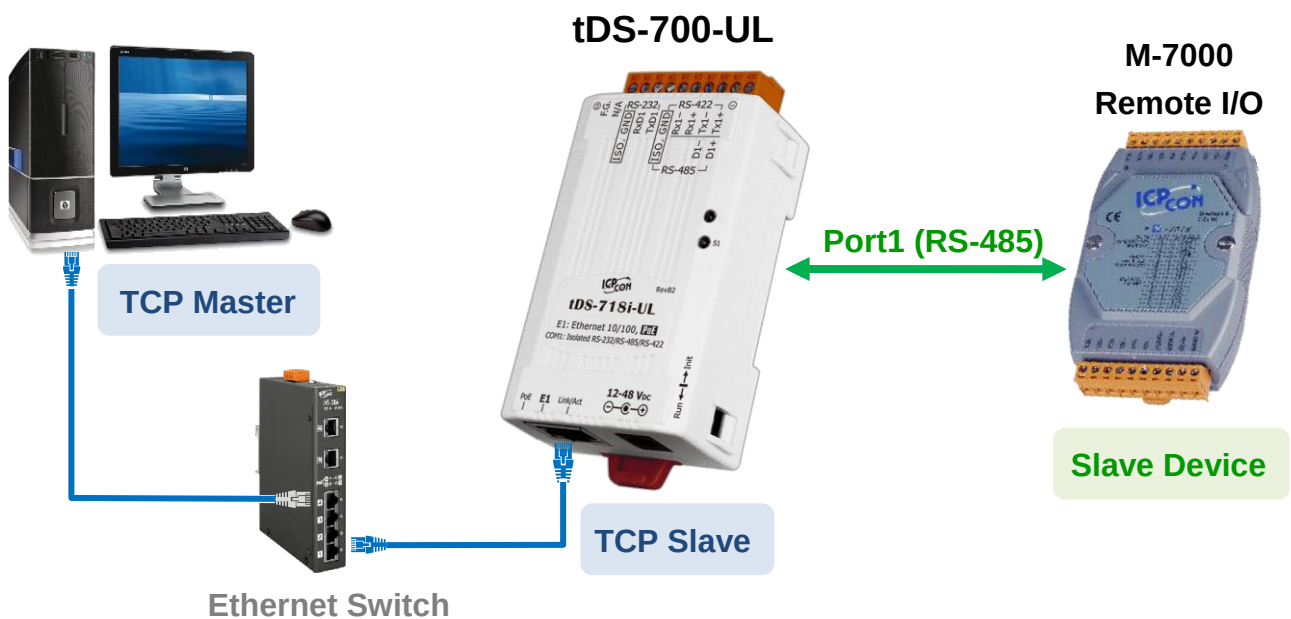
In the configuration above, Meter-1 is virtualized to link to COM3 of the host PC. Therefore, a program originally designed for the MS-COMM standard can access the meter without the need for any modification.

5.2 Direct Socket Connection Applications



The tDS-700-UL series module can accept the TCP connection (include raw data) directly, it also can communicate with TCP client and Serial Device in this way.

For examples of socket connection test as follows:

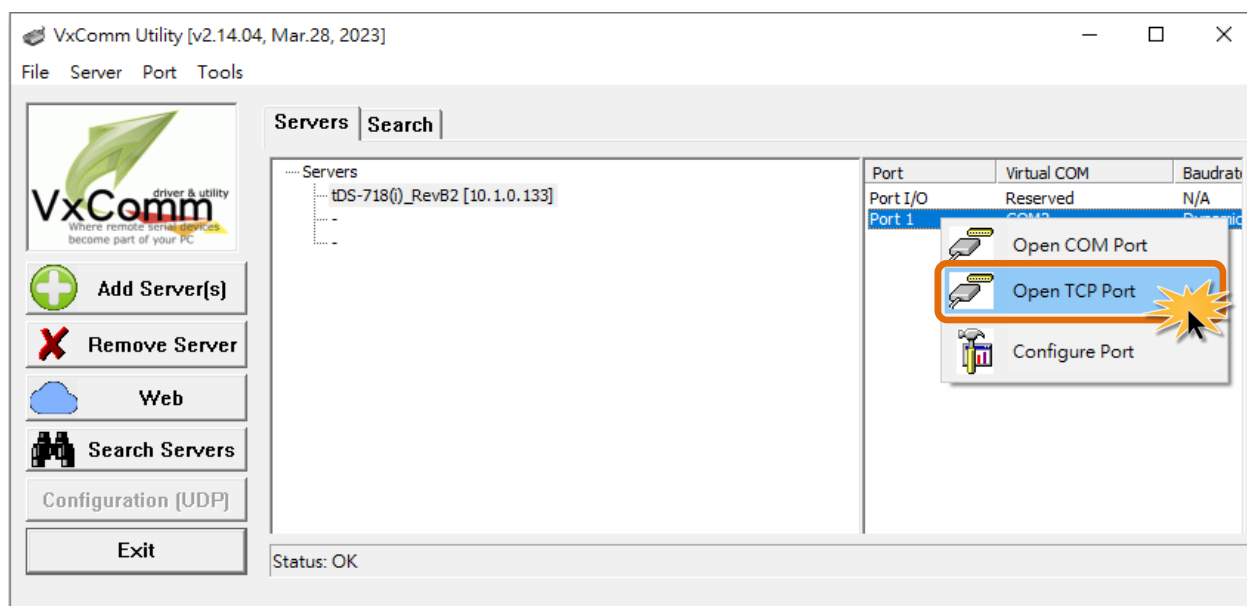


1. Confirm that the tDS-700-UL modules are functioning correctly. Refer to [Chapter 3 “Getting Started”](#) for more details.
2. Wire the slave device (e.g., M-7015, optional) with your tDS-700-UL. For detailed information of RS-232/422/485 wiring, refer to [Section 2.6 “Wiring Notes for RS-232/485/422 Interfaces”](#).
3. Supply power to the slave device (e.g., M-7015, Device ID: 2, +10 to +30 V_{DC} power used.)
4. Install VxComm Utility, and then configuration Ethernet setting (**such as IP/Mask/Gateway details**) for tDS-700-UL series module; refer to [Chapter 3 “Getting Started”](#).
5. Confirm the serial port settings (**Baud Rate and Data Format**) must be the same between the tDS-700-UL and slave device (e.g., M-7015).

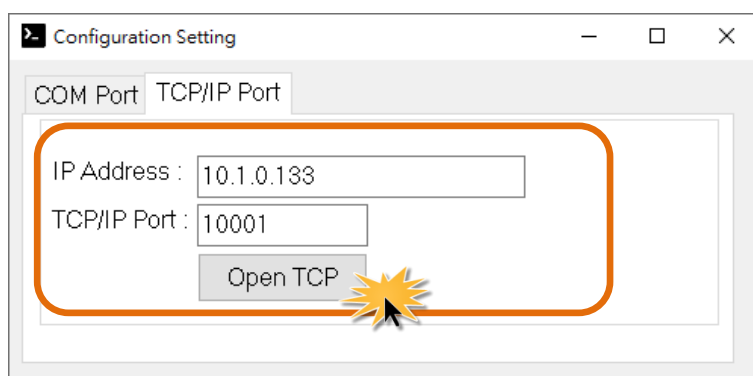
For example:

Model	Port Settings		TCP Port
	Baud Rate	Data Format	
tDS-700-UL	9600	8,N,1	10001
Slave Device (M-7015)	9600	8,N,1	-

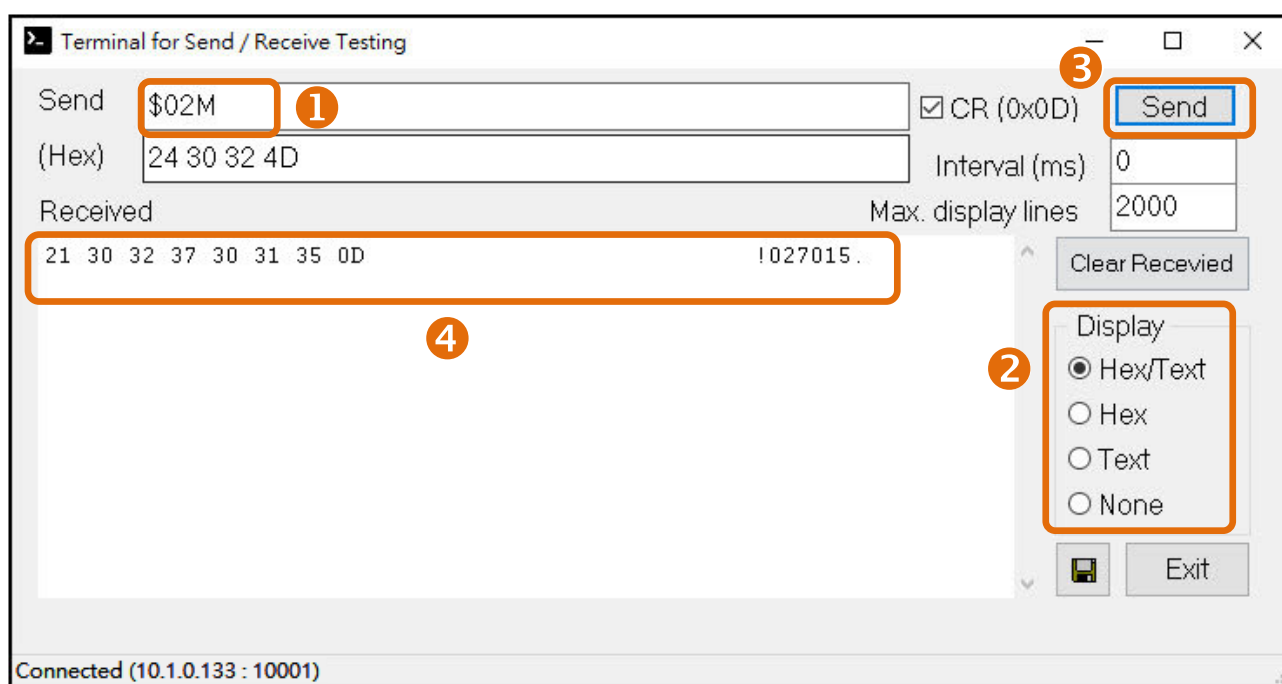
6. Run VxComm Utility, select the tDS-700-UL name in the Servers list, select “**Port 1**” in the port list pane on the right, and choose the “**Open TCP Port**” item on the right-click menu of Port 1.



7. Ensure that the **IP address of the tDS-700-UL** module and TCP/IP port are correct, and then click the **“Open TCP”** button.



8. Enter a string (e.g., \$02M) in the **“Send”** field and then click the **“Send”** button. If a response is received, it will be displayed in the received field.



5.3 Ethernet I/O Applications

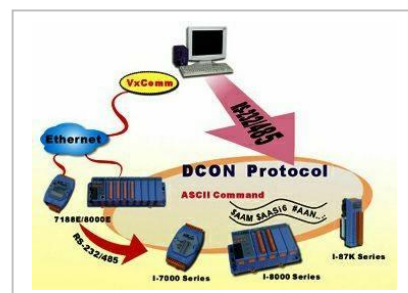
Linking to I-7000 series modules

The I-7000 series provides a variety of I/O operations, such as D/I, D/O, A/D, D/A, Counter and Frequency Measurement, etc. The I-7000 series was originally designed to be used with RS-485 networks, so the RS-485 of COM on the tDS-700-UL can be used to link to I-7000 series modules.

By using VxComm technology, programs that support serial devices on the host PC can be upgraded from an RS-485 network to an Ethernet network without requiring any modifications to the program.

Configurable Ethernet Data Logger

Using the VxComm driver, the tDS-700-UL + I-7000 modules can be virtualized to become COM Port + I-7000 modules located on the host PC, and then the Data Logger in the DCON Utility Pro can be used to access data related to the I-7000 from the Ethernet. Signal data originating from the I-7000 modules can be analyzed using MS Excel without the need to write any custom programs.



1. The DCON utility Pro includes a log function, you can click the following icon to run it:



2. Add the commands used to read the data to be recorded into the command list on the Edit Command page.

The screenshot shows the 'Tool for Command Data Logger' window with the 'Edit Command' tab selected. The 'Data Logger' tab is also visible. The 'Edit Command' section includes a 'COM Port' dropdown set to 'COM1', 'Start Search' and 'Stop Search' buttons, and a large empty text area for command input. The 'Data Logger' section includes fields for 'COM Port' (COM1), 'Protocol' (DCON), 'Baud Rate' (115200), 'Data Format' (N,8,1), 'Checksum' (Disable), 'Address' (1[01h]), 'Timeout (ms)' (200(ms)), 'Delay for Next (ms)' (200(ms)), 'Command Reference' (Command Reference), 'Send Command' (\$01M), 'Compared Response' (Input Compared Data without [CR]), and 'Compare Mode' (Full Match). There are 'Add >>', 'Remove', 'Save', and 'Load' buttons.

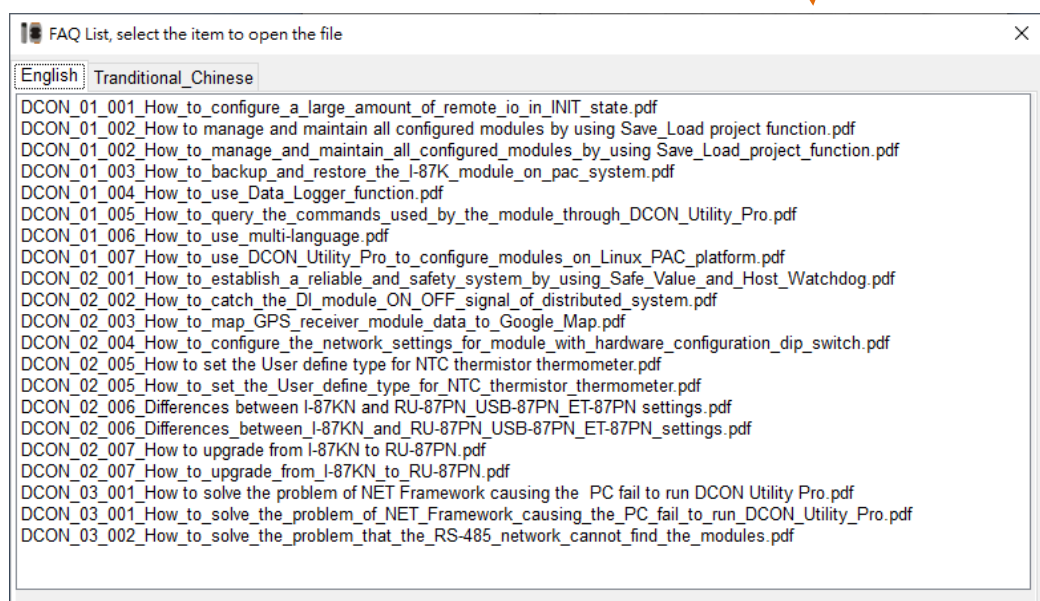
3. Click the Start button on the Data Logger page to log the data.

The screenshot shows the 'Tool for Command Data Logger' window with the 'Data Logger' tab selected. The 'Edit Command' tab is also visible. The 'Data Logger' section includes a 'Start' button, 'Stop' button, 'Pause' checkbox, 'Log To File' checkbox, 'Log Error Only' checkbox, a dropdown menu, and a 'View' button. Below these is a table with columns: COM, Command, Response Data, Compared Data, Response(...), Result, Sent, Error, and Timeout. The 'Result' column is highlighted. At the bottom, there are checkboxes for 'Use Default Name' and 'Saved File Mode' (Overwrite), and a text field for 'Default(Logger_mm_dd_hh.csv style)'. There is also a field for 'Interval to Change File Name' set to '1 Hr'.

4. Open the log file in MS Excel to view the log data, as shown in the following example:

	A	B	C	D	E	F	G	H	I	J
1	Start log at	11/26/01	#####							
2	14.36:1:0	2	9600	0 #010	>+000.00	>+000.62	1000			
3	14.36:2:40	2	9600	0 #010	>+000.00	>+000.65	1000			
4	14.36:3:30	2	9600	0 #010	>+000.00	>+000.65	1000			
5	14.36:4:20	2	9600	0 #010	>+000.00	>+000.60	1000			
6	14.36:5:10	2	9600	0 #010	>+000.00	>+000.66	1000			
7	14.36:6:0	2	9600	0 #010	>+000.00	>+000.66	1000			
8	14.36:7:40	2	9600	0 #010	>+000.00	>+000.66	1000			
9	14.36:8:30	2	9600	0 #010	>+000.00	>+000.71	1000			
10	14.36:9:20	2	9600	0 #010	>+000.00	>+000.69	1000			
11	14.36:10:1	2	9600	0 #010	>+000.00	>+000.67	1000			
12	14.36:11:0	2	9600	0 #010	>+000.00	>+000.71	1000			
13	14.36:12:4	2	9600	0 #010	>+000.00	>+000.65	1000			
14	14.36:13:3	2	9600	0 #010	>+000.00	>+000.72	1000			
15	14.36:14:2	2	9600	0 #010	>+000.00	>+000.66	1000			
16	14.36:15:1	2	9600	0 #010	>+000.00	>+000.60	1000			
17	14.36:16:0	2	9600	0 #010	>+000.00	>+000.70	1000			
18	14.36:17:4	2	9600	0 #010	>+000.00	>+000.65	1000			
19	14.36:18:3	2	9600	0 #010	>+000.00	>+000.72	1000			
20	14.36:19:2	2	9600	0 #010	>+000.00	>+000.73	1000			

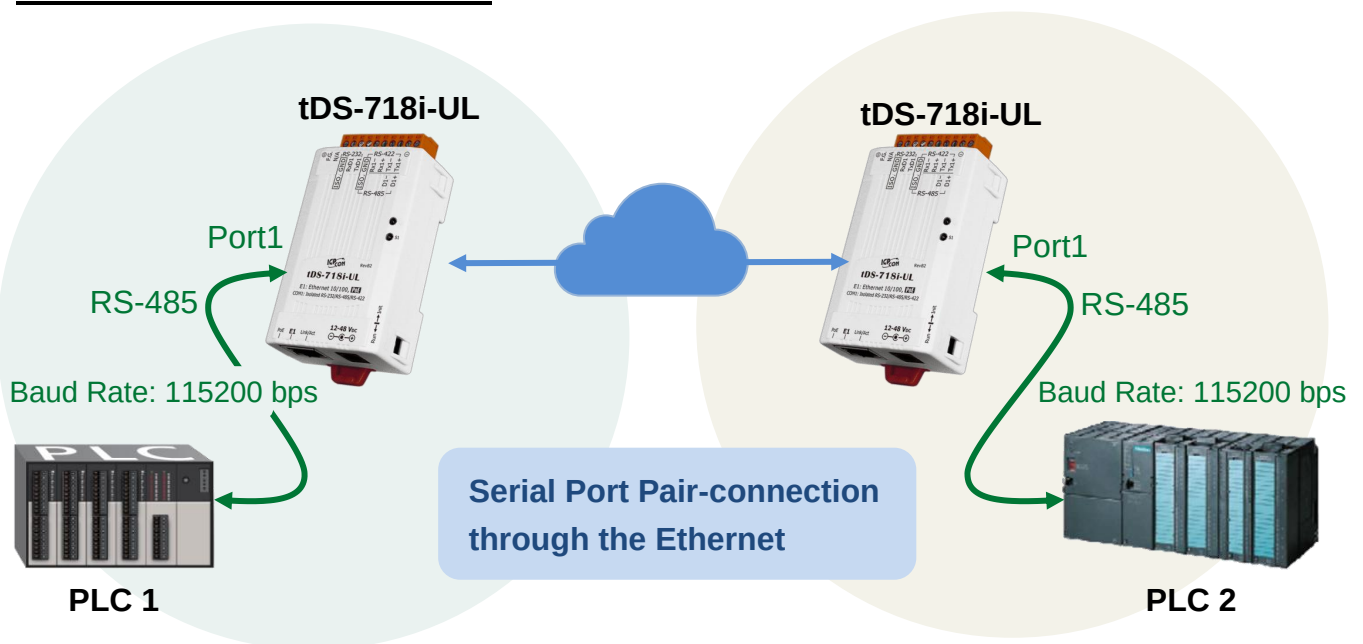
By combining VxComm technology, DCON Utility Pro and MS Excel, you can retrieve data from I-7000 series modules over Ethernet and analyze the data without writing any code. For more advanced features (such as the Log Function), please refer to the DCON Utility Pro FAQ online documentation.



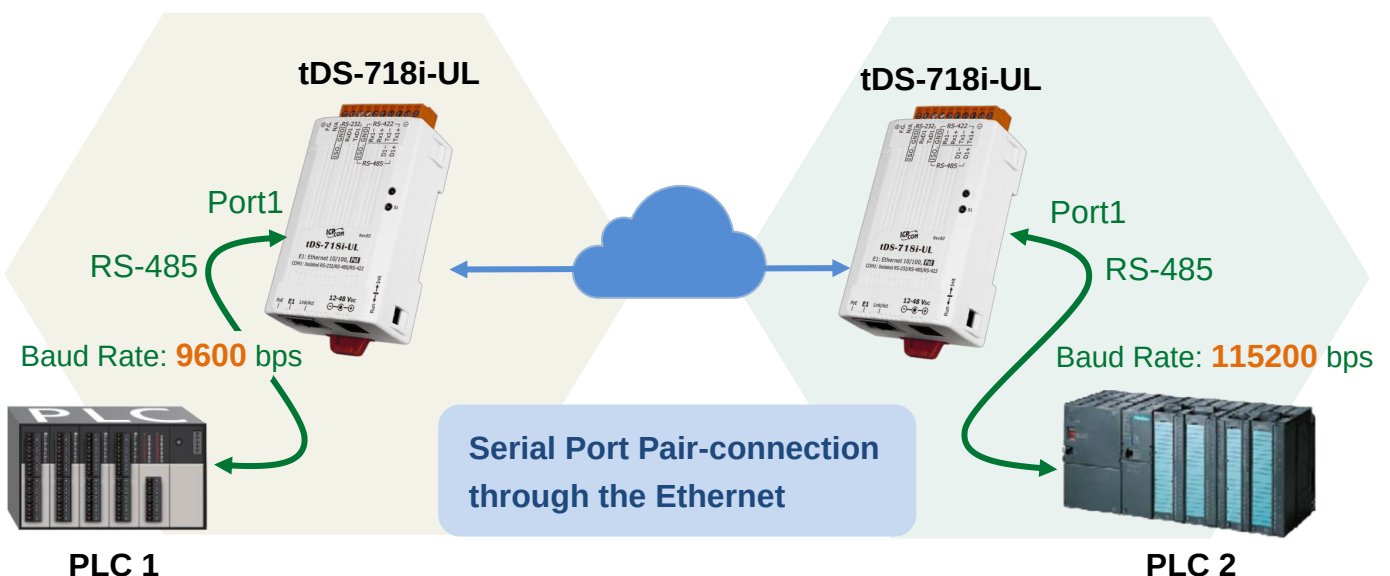
5.4 Pair-connection Applications

tDS-700-UL device servers support Pair-Connection applications (as known as serial-bridge or serial-tunnel). Once the pair-connection is configured, you can establish communication between two host computers, servers, or serial devices without Ethernet capabilities using the TCP/IP protocol, allowing for data transmission and device control.

The Pair-Connection Basis



The Pair-connection with Different Baud Rate



The following are examples of pair-connection tests:

Pair-connection Settings:

Model	Port Settings (default)		Pair-connection Settings		
	Baud Rate	Data Format	Application Mode	Remote Server IP	Remote TCP Port (default)
tDS-700-UL #1	115200	8N1	Client	IP Address of tDS-700-UL #2	10001
tDS-700-UL #2	115200	8N1	Server	-	-

Note

The Baud Rate and Data Format settings of the client and server (tDS-700-UL #1 and #2) depend on the COM ports of the PC (or the connected device). The serial port settings between tDS-700-UL #1 and tDS-700-UL #2 can be different.

Ensure that the following items are available:

☒ I-7561U-G USB to Isolated RS-232/422/485 Converter x 2

(Optional, Website: <https://www.icpdas.com/en/product/I-7561U-G>)

☒ Install the driver of I-7561U-G module

Driver for I-7561U-G: <https://www.icpdas.com/en/download/show.php?num=3079>

Step 1: Connecting to a network, PC and Power

1. Confirm that the tDS-700-UL modules are functioning correctly. Refer to [Chapter 3 “Getting Started”](#).
2. Use a I-7561U-G to connect the PC and COM1 of the tDS-700-UL #1, refer to [Section 2.6 “Wiring Notes for RS-232/485/422 Interfaces”](#) for RS-485 wiring details information.
3. Use the other I-7561U-G to connect the PC and COM1 of the tDS-700-UL #2,, refer to [Section 2.6 “Wiring Notes for RS-232/485/422 Interfaces”](#) for RS-485 wiring details information.

The image below shows an example of the setup for a pair-connection test:

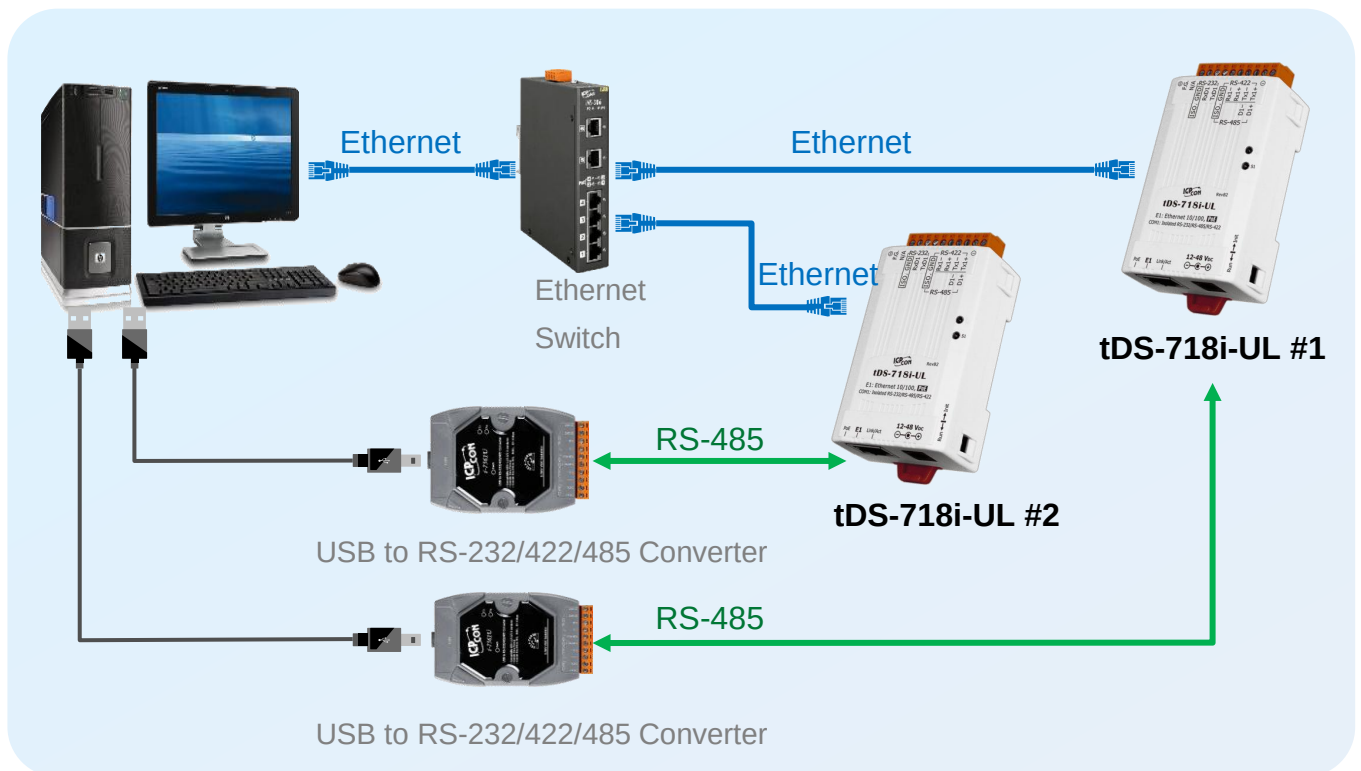
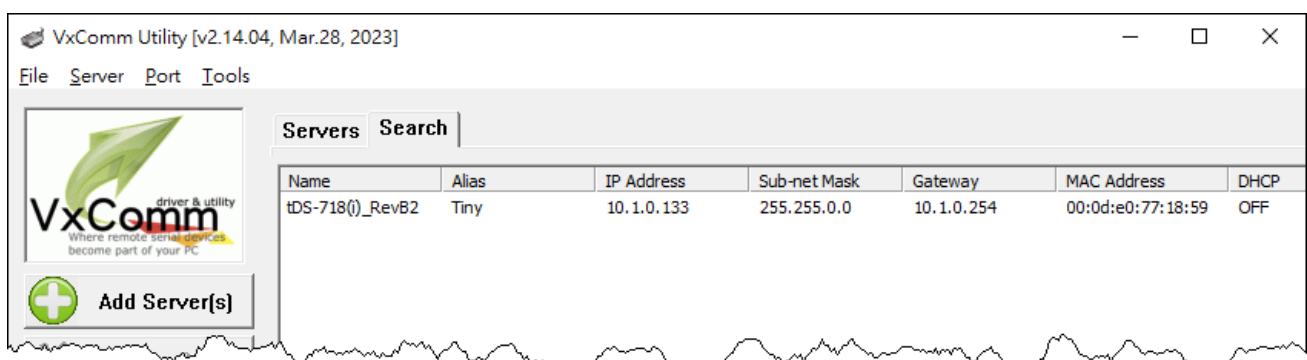


Figure 6-1

Step 2: Configuring the Ethernet Settings

Contact your Network Administrator to obtain the correct network configuration for the tDS-700-UL modules (including the **IP Address, Mask and Gateway details**). Refer to [Chapter 3 “Getting Started”](#) for more details.



Step 3: Configuring the Pair-connection (Client Mode) on the Web Server for tDS-700-UL #1

1. Enter the **IP address of the tDS-700-UL #1** in the address bar of the browser.
2. Enter the **password** in the Login password field, and click the **“Submit”** button.

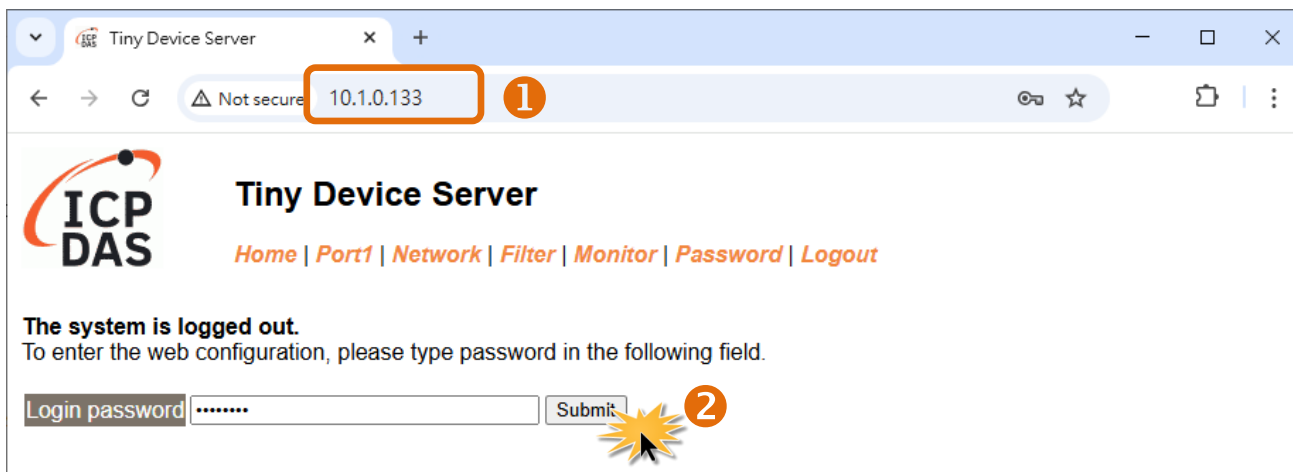


Figure 6-3

3. Click the **“Port1”** item to go to the **Port1 Settings** page.

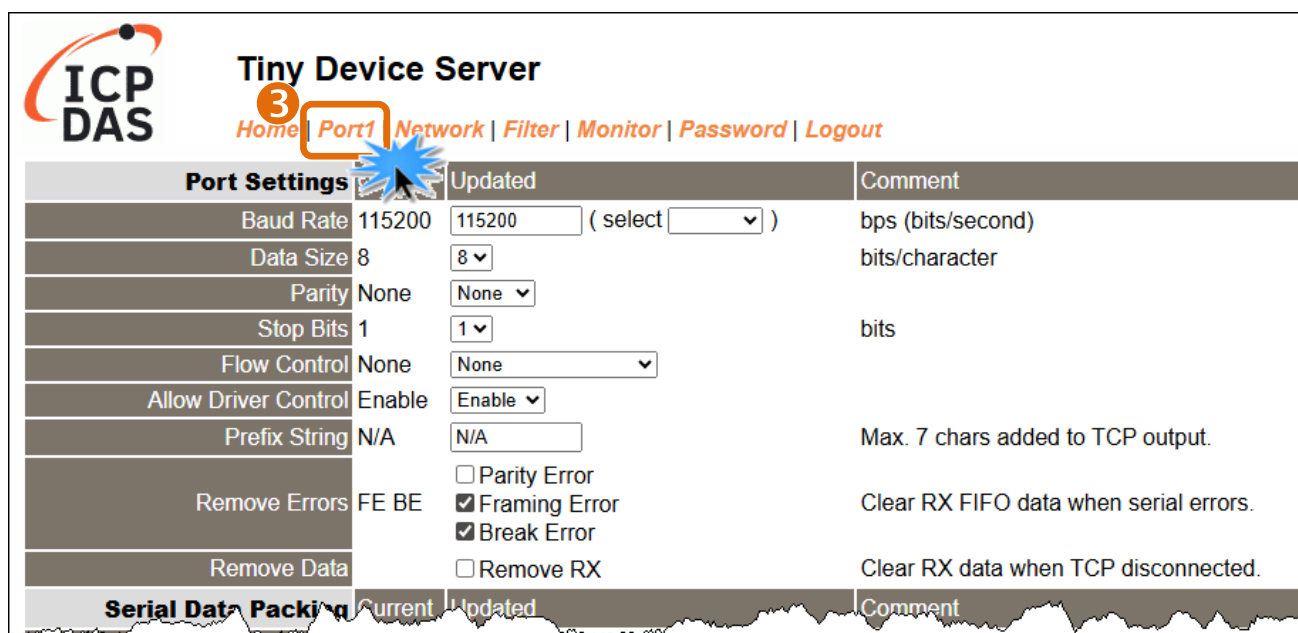


Figure 6-4

4. Select the appropriate **Baud Rate and Data Format** settings from the relevant drop down menus, for example “115200”, “8”, “None” and 1”.
5. The pair-connection settings area as follows:
 - 5-1: Select “Client” from the “**Application Mode (Server Mode)**” drop down options
 - 5-2: Type the IP address of the tDS-700-UL #2 in the “**Remote Server IP**” field.
 - 5-3: Assign a TCP port for the tDS-700-UL #2 in the “**Remote TCP Port**” field.
6. Click the “**Submit**” button to complete the configuration.

Port Settings	Current	Updated	Comment
Baud Rate (bps):	115200	115200 ▼	bits/second
Data Size (bits):	8	8 ▼	bits/character
Parity:	None	None ▼	
Stop Bits(bits):	1	1 ▼	
Flow Control:	None	None ▼	
Allow Driver Control:	Enable	Enable ▼	
Operation Mode:	0	0 ▼	0=Data-sharing, 1=Non-sharing
Local TCP Port:	10001		=TCP Command Port +1
Connexion Idle (seconds):	180	180	1 ~ 65535, 180=default, 0=disable
Prefix String:	N/A	N/A	Max. 7 chars
Serial Data Packing	Current	Updated	Comment
Slave Timeout (ms):	1000	1000	After last TX
Packing Length (bytes):	0	0	0 ~ 1024, 0=default=disable
Serial Ending Chars: (Number[,char1][,char2])	0	0	e.g.: 2,0x0D,0x0A
Timeout Between Chars (ms):	10	10	After last RX 10 ~ 65535, 10=default, 0=disable
Pair-Connection Settings (Client/Server Mode)	Current	Updated	Comment
Application Mode:	Server	Client ▼	Server=Slave, Client=Master
Remote Server IP:	Disable	10 . 0 . 8 . 246	Required on client-mode.
Remote TCP Port:	Disable	10001	Required on client-mode.
Submit			

Figure 6-5

Step 4: Configuring the Pair-connection (Server Mode) on the Web Server for tDS-700-UL #2

1. Enter the configuration page for the tDS-700-UL #2 web server.
2. Click the **“Port1”** link to enter the settings page of the tDS-700-UL #2.
3. Set the Baud Rate to **“115200”** and the Data Format to **“8, None, 1”**.

➦ Refer to Figures 6-3 to 6-5 for illustrations of how to perform the above steps.

4. Select **“Server”** from the **“Application Mode (Server Mode)”** drop down options and then click the **“Submit”** button to complete the configuration.

Pair-Connection Settings (Client/Server Mode)	Current	Updated	Comment
Application Mode:	Server	Server ▼ Submit	Server=Slave, Client=Master



Figure 6-6

Step 5: Testing the Pair-connection Functions

1. Launch the Test Program.

The following example use Test2COM.exe to perform self-test.

The Test2COM.exe program can be obtained from the ICP DAS web site.

The location of the download addresses are shown below:



<https://www.icpdas.com/en/download/show.php?num=2910>

2. Double-click the Test2COM.exe program and type the relevant configuration as follows:

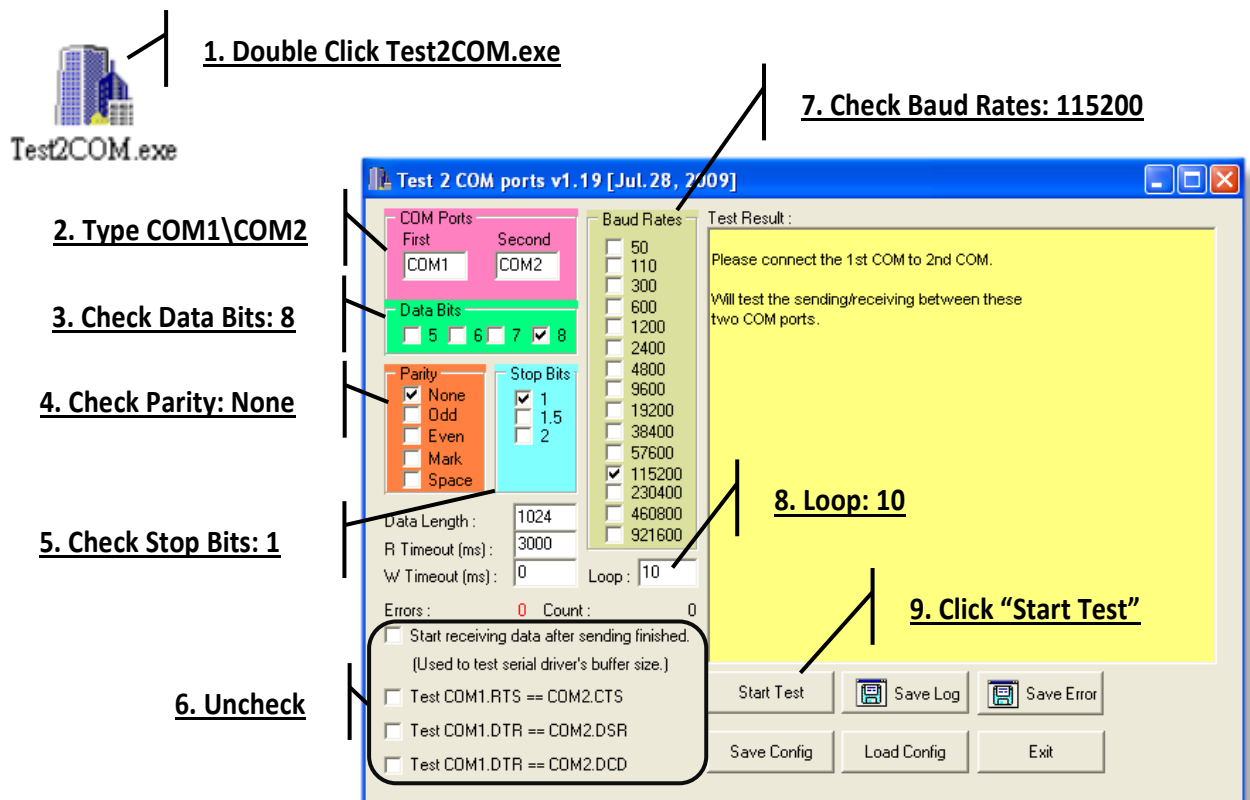


Figure 6-7

Note

The Baud Rate and data format depend on the serial port settings for the web configuration above.

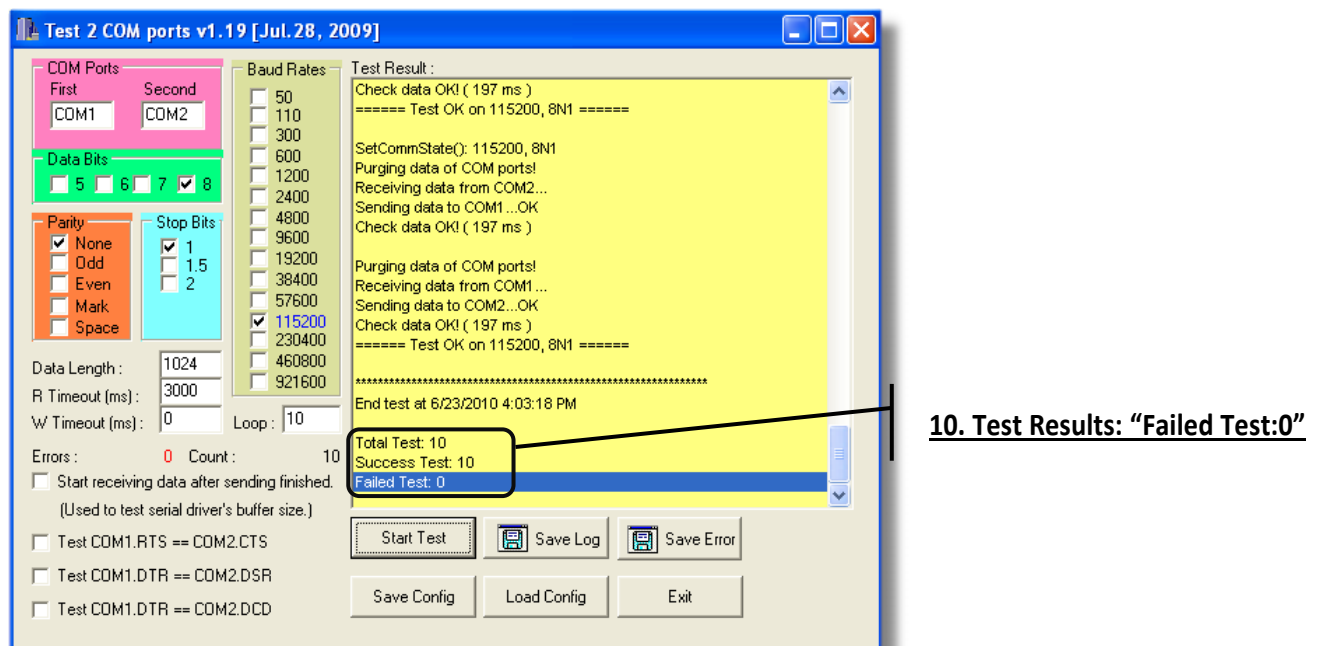
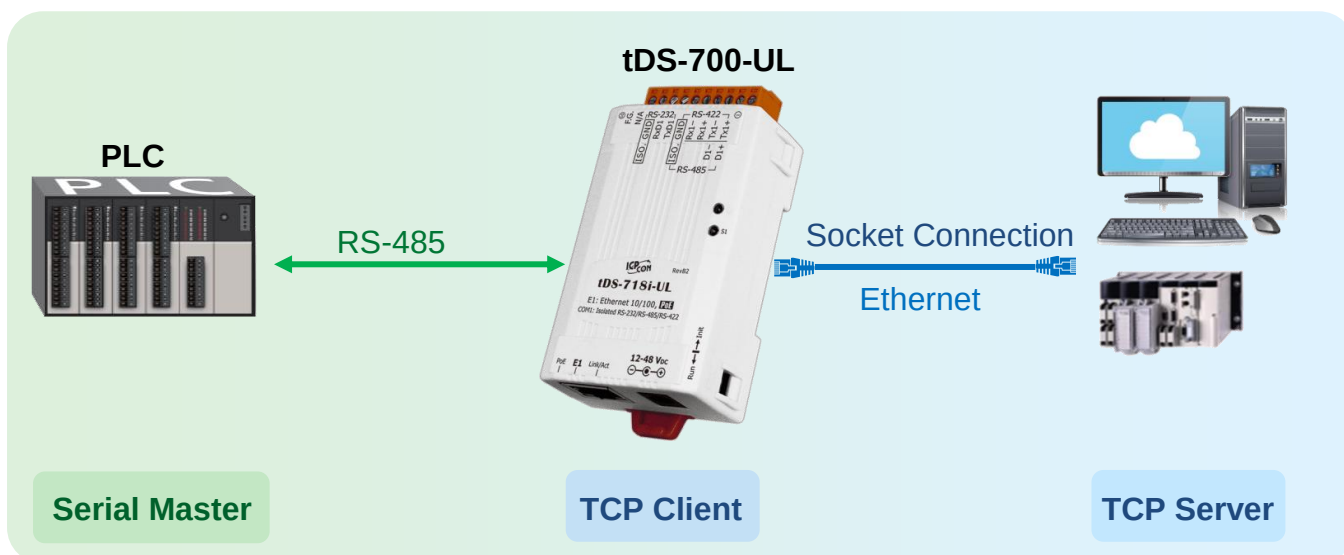


Figure 6-8

5.5 TCP Client Mode Applications

In TCP Client Mode, the tDS-700-UL can establish a TCP connection to a specific TCP slave device actively by TCP server program. The whole system should operate like this:



The following are examples of TCP Client Mode tests:

TCP Client Mode Settings:

Model	Port Settings (default)		Pair-connection Settings		
	Baud Rate	Data Format	Application Mode	Remote Server IP	Remote TCP Port
tDS-700-UL	115200	8, N, 1	Client	10.0.8.21	500
PC #2 (TCP Server)	-	-	-	-	-
PC #1 (Serial Master)	115200	8, N, 1	-	-	-

Follow the procedure described below:

Step 1: Connecting to a network, a PC and a Power Supply

1. Confirm that the tDS-700-UL module is functioning correctly. Refer to [Chapter 3 “Getting Started”](#) for more details.
2. Connect both the tDS-700-UL TCP server (PC #2) and hyper terminal (PC #1) to the same sub network or the same Ethernet Switch. For detailed RS-232/RS-422/485 wiring information, refer to [Section 2.6 “Wiring Notes for RS-232/485/422 Interfaces”](#).

The wiring diagram is as follows:

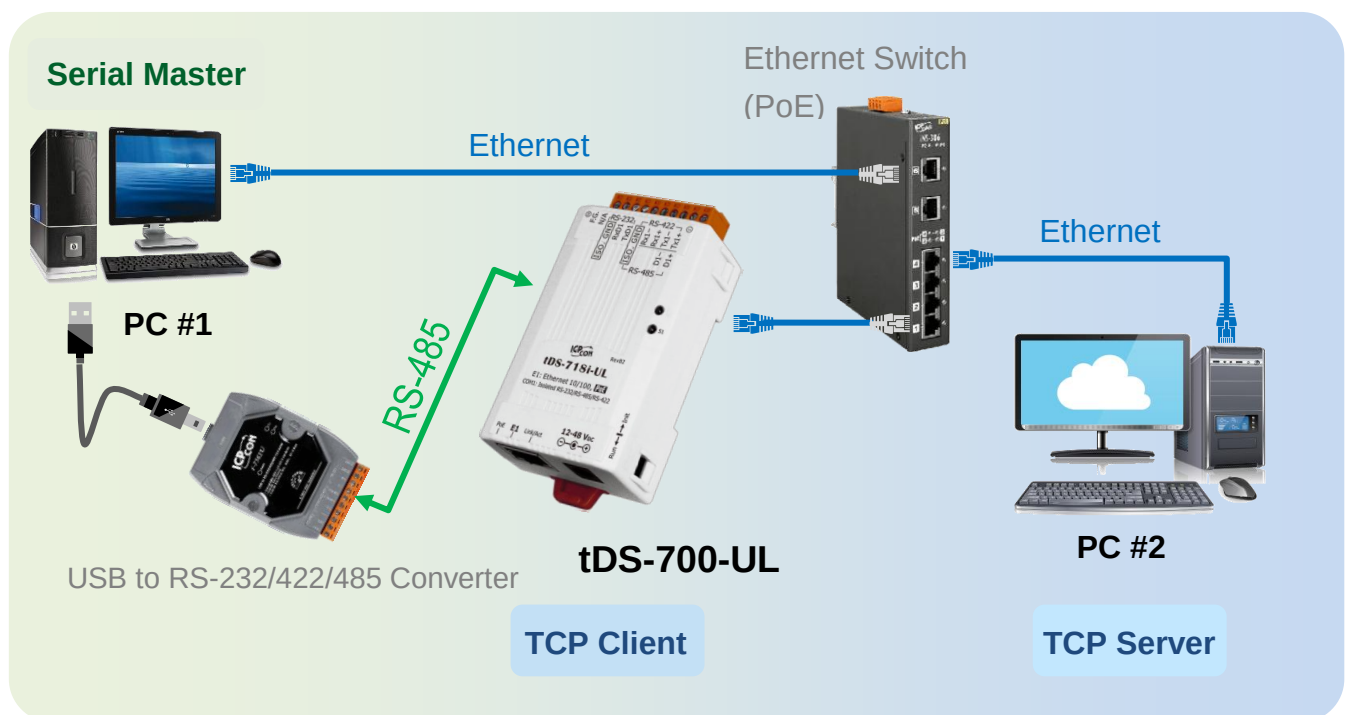


Figure 6-9

Step 2: Configuring the Ethernet Settings

Contact your Network Administrator to obtain valid network configuration (including the **IP Address, Mask and Gateway details**) for the tDS-700-UL. Also refer to [Chapter 3 “Getting Started”](#), for more details.

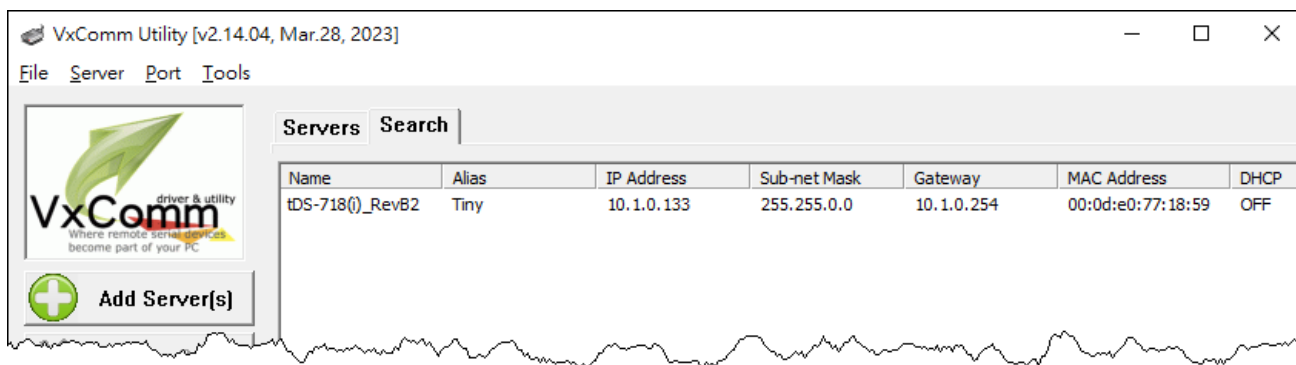


Figure 6-10

Step 3: Configuring Pair-connection (TCP Client Mode) on the Web Server for the tDS-700-UL module

1. Enter the **URL address of the tDS-700-UL** in the address bar of the browser.
2. Enter the **password (default: admin)** in the Login password field, and click the **“Submit”** button to enter the configuration page.

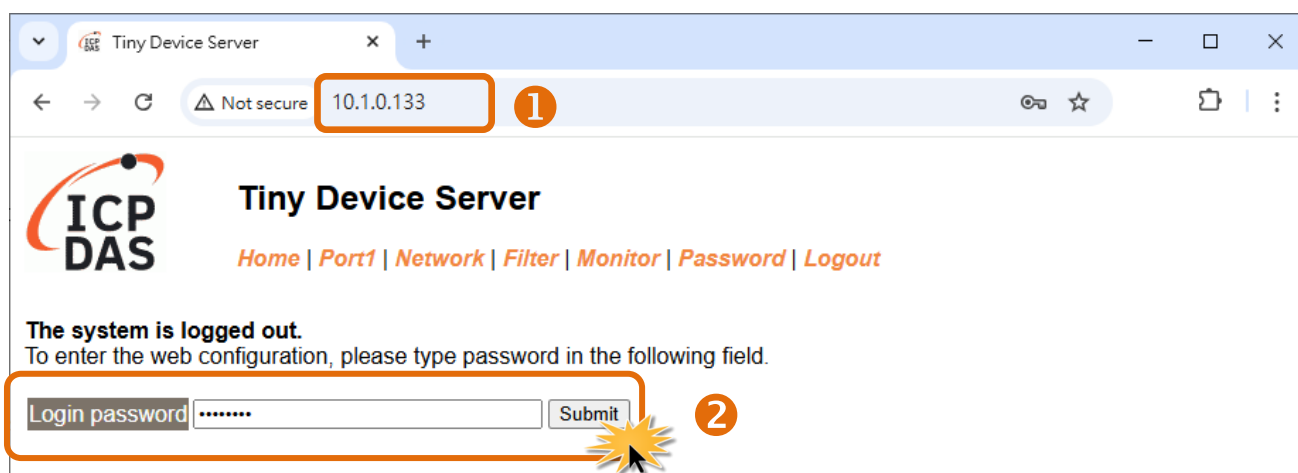


Figure 6-11

3. Click the **"Port1"** link to enter the settings page.
4. Select the appropriate **Baud Rate** and **Data Format** settings from the relevant drop down options, for example **"115200"**, **"8"**, **"None"** and **"1"**.
5. The pair-connection settings area as follows:
 - 5-1: Select **"Client"** from the **"Application Mode (Server Mode)"** drop down options
 - 5-2: Type the **IP address of the TCP Server (PC #2)** in the **"Remote Server IP"** field.
 - 5-3: Assign a **TCP port for the TCP Server (PC #2)** in the **"Remote TCP Port"** field.
6. Click the **"Submit"** button to complete the configuration.

ICP DAS Tiny Device Server

Home **Port1** Network Filter Monitor Password Logout

Port Settings	Current	Updated	Comment
Baud Rate	115200	115200 (select)	bps (bits/second)
Data Size	8	8	bits/character
Parity	None	None	
Stop Bits	1	1	bits
Flow Control	None	None	
Allow Driver Control	Enable	Enable	
Prefix String	N/A	N/A	Max. 7 chars added to TCP output.
Remove Errors	FE BE	☐ Parity Error ☒ Framing Error ☒ Break Error	Clear RX FIFO data when serial errors.
Remove Data		☐ Remove RX	Clear RX data when TCP disconnected.

Serial Data Packing	Current	Updated	Comment
Slave Timeout	1000	1000	ms, After last TX
Packing Length	0	0	0 ~ 1024 bytes, 0=default=disable
Serial Ending Chars (Number[,char1][,char2])	0	0	e.g.: 2,0x0D,0x0A
Timeout Between Chars	10	10	ms, After last RX 10 ~ 65000, 10=default, 0=disable

TCP/IP	Current	Updated	Comment
Local TCP Port	10001		=TCP Command Port +1
Operation Mode	0	0	0=Data-sharing, 1=Non-sharing
Connexion Idle	180	180	1 ~ 65000 seconds, 180=default, 0=disable

Pair-Connection Settings (Client/Server Mode)	Current	Updated	Comment
Application Mode	Server	Client	Server=Slave, Client=Master
Remote Server IP	Disable	0 . 0 . 0 . 0	Required on client-mode.
Remote TCP Port	Disable	500	Required on client-mode.

Submit

Figure 6-12

Step 4: Testing the Pair-connection (TCP Client Mode) Functions

1. Install **SocketTest (TCP/IP Test Server program)** on your PC.

The download link is shown as below:

<https://sockettest.sourceforge.net/>

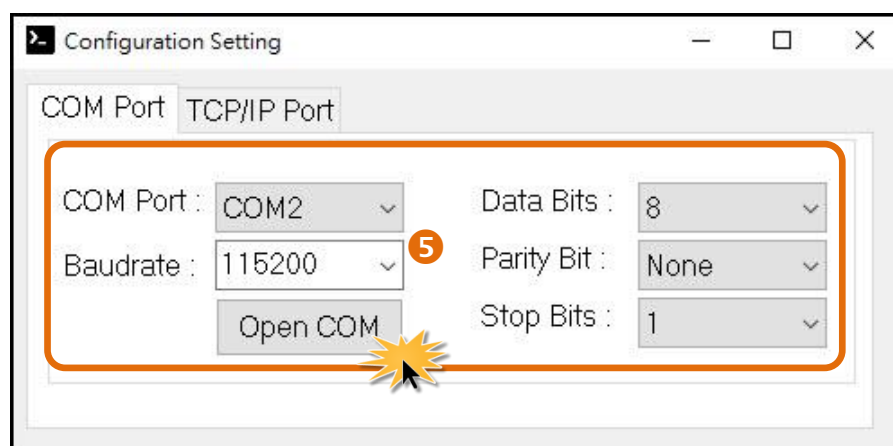
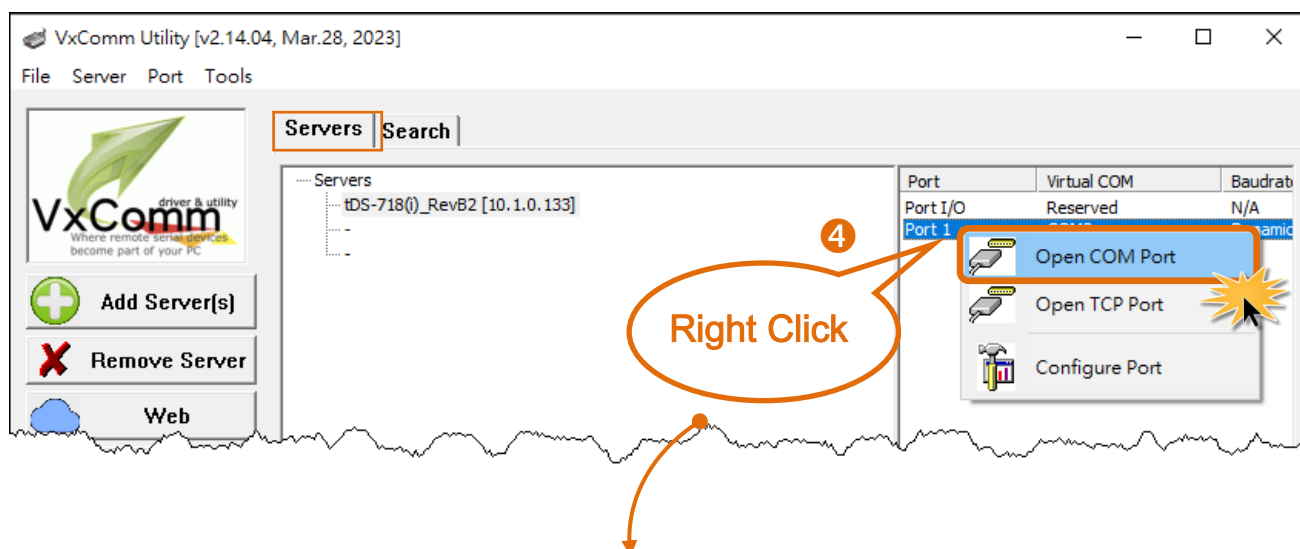
2. Run the SocketTest program.



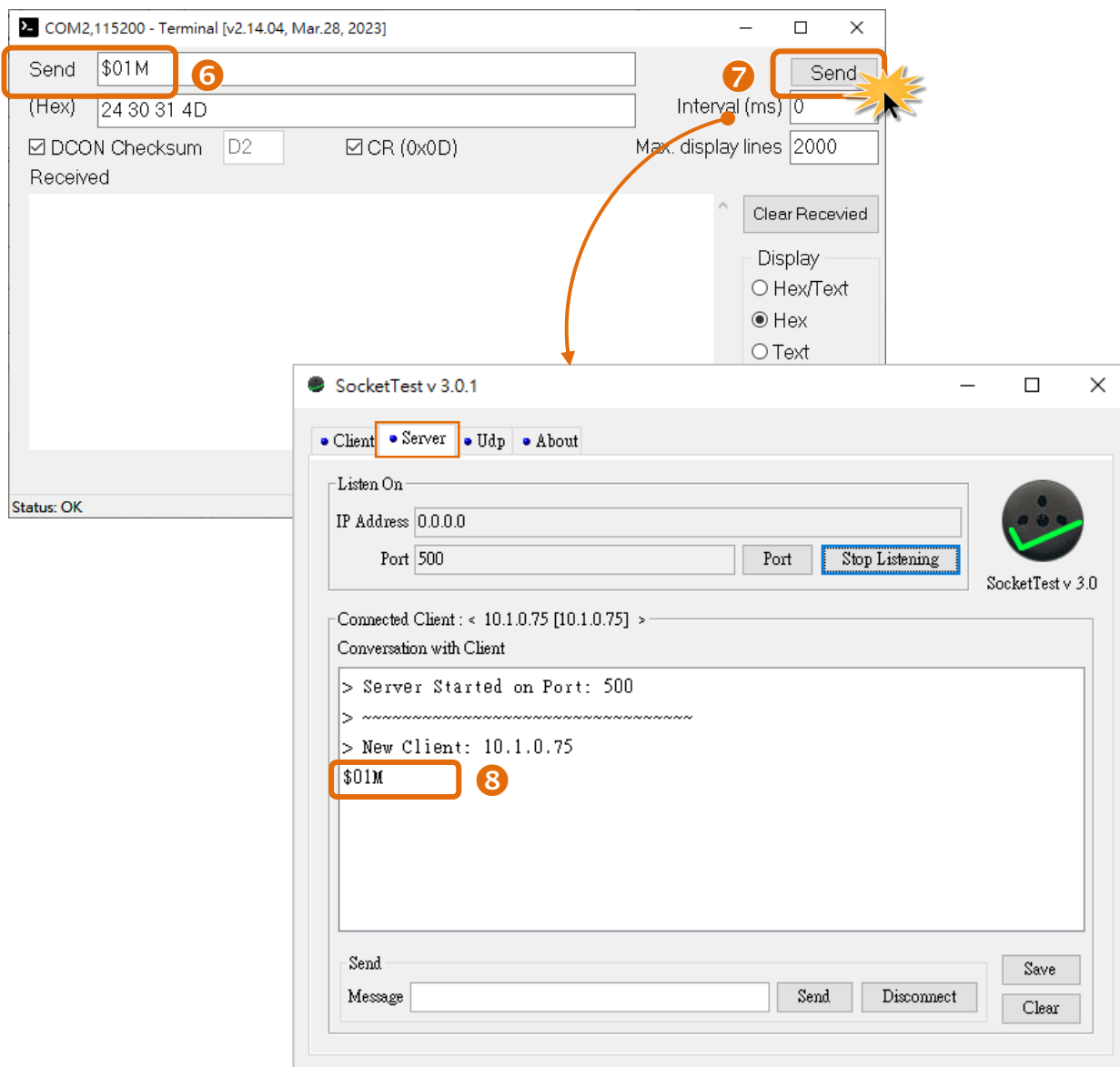
3. Click the **“Socket”** tab, Enter 500 into the port field, and then click **“Start Listening”**.



4. Run **VxComm Utility**, go to the **Servers** page, select the tDS-700-UL module name in the Servers list, then click the desired COM Port number in the right-hand panel. From the right-click menu, choose “Open COM Port”.
5. Select the appropriate Baud Rate from the dropdown menu, then click the “**Open COM**” button.



6. Enter a string (e.g., \$01M) in the send field on the COMx Terminal (PC#1) dialog.
7. Then click the “Send” button to transmit the message.
8. The “**Conversation with Client**” panel on the Server page of the SocketTest will display the received string.



6. CGI Configuration

The tDS-700-UL series can be configured via convenient URL commands. This section lists the commands in URL format corresponding to the basic functions of tDS-700-UL. Please make sure you have correctly configured the network settings for the tDS-700-UL before using CGI configuration. (Please refer to [Chapter 3 “Getting Started”](#) about the Ethernet settings.)

6.1 CGI URL Syntax

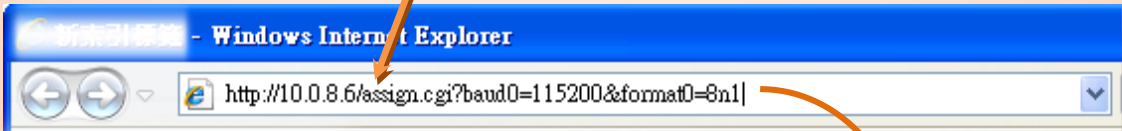
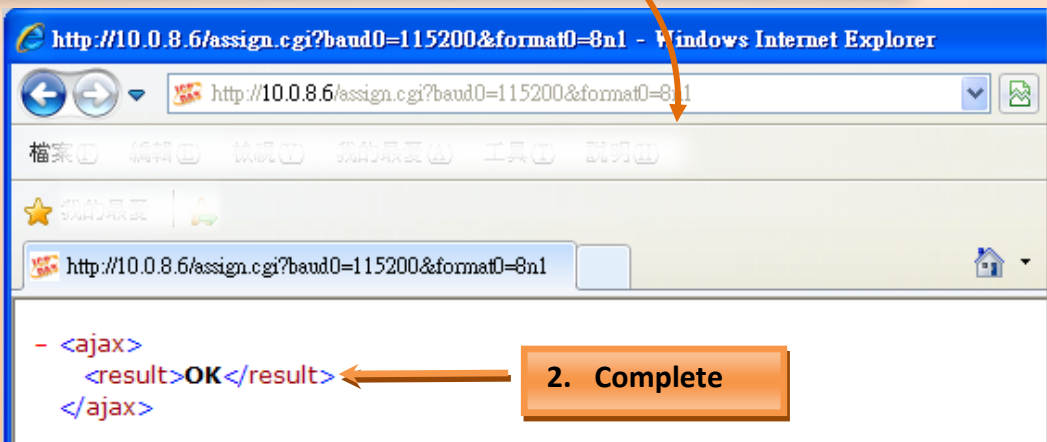
Type the CGI URL syntax in the browser, as follows:

Refer to Section 6.2 “CGI Command List”

Syntax: `http://<IP address of tDS-700-UL>/<CGI>?<Parameter Name>=<Value>`

Example: `http://10.0.8.6/assign.cgi?baud0=115200&format0=8n1`

1. Type the CGI command in the browser.

2. Complete

6.2 CGI Command List

<i>Network Settings</i>				
No.	Function Name	Parameter Name	Value Constraint	CGI
01	Set Address Type	dhcp	0,1 0: Disable; 1: Enable;	assign.cgi
02	Set IP Address	ip	xxx.xxx.xxx.xxx	
03	Set Gateway	gway	xxx.xxx.xxx.xxx	
04	Set Net Mask	mask	xxx.xxx.xxx.xxx	
05	Set TCP Command Port	cmdport	1~65535 Default: 10000	
06	Set Command Port Timeout (Socket Watchdog)	cmdwdt	1~65535 seconds, Default: 30; Disable: 0;	
07	Set MAC Address	mac	Format: FF-FF-FF-FF-FF-FF	
08	Set Alarm IP Address(UDP)	aip	xxx.xxx.xxx.xxx	
09	Set Alarm Port(UDP)	aport	1~65535 seconds, Default: 30; Disable: 0;	

<i>General Configuration Settings</i>				
No.	Function Name	Parameter Name	Value Constraint	CGI
01	Set Alias Name	aliname	Max. 18 chars	assign.cgi
02	Set System Timeout	syswdt	30 ~ 65535 seconds, Default: 300; Disable: 0	

<i>Filter Settings</i>				
No.	Function Name	Parameter Name	Value Constraint	CGI
01	Add IP to List (white list)	fip0 ~ fip4 fipm0 ~ fipm4 (mask)	xxx.xxx.xxx.xxx	assign.cgi
02	Delete IP#	delfip	0 ~ 4	
03	Delete All	delfip	all	

Serial Port Settings

No.	Function Name	Parameter Name	Value Constraint	CGI
01	Set Baud Rate	baud0 & baud1	(bits/S)	assign.cgi
02	Set Data Format	format0 & format1	8n1 Data bits: 5 ~ 8; Parity: n, e, o, m, s; Stop bits: 1, 2;	
03	Set Flow Control	flow0 & flow1	0,1 0: None; 1: CTS/RTS	
04	Set Dynamic Serial Setting	dyna0 & dyna1	0,1 0: Disable; 1: Enable	
05	Set Serial Ending Chars	endchr0 & endchr1	Number[,char1][,char2]	
06	Set Operation Mode	opmode0 & opmode1	0,1	
07	Set Slave Timeout	slto0 & slto1	(ms)	
08	Set Data Buffer Delay Time	dbdt0 & dbdt1	(ms)	
09	Set Packing Length	Packlen0 & packlen1	0 ~ 255 bytes	
10	Set TCP Timeout	tto0 & tto1	1~65535 seconds, Default: 180; Disable: 0	

Restore Factory Defaults

No.	Function Name	Parameter Name	Value Constraint	CGI
01	Reboot	-	-	Reboot.cgi
02	Reset To Factory	-	-	Reset.cgi

Queries Setting Status

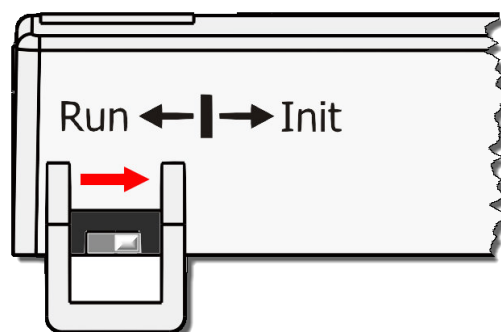
No.	Function Name	Access Method	Parameter Name	Value Constraint	CGI
01	Get module status.	-	-	-	status.cgi
02	Get the serial port configuration information.	-	-	-	conf_port.cgi
03	Get the network configuration information.	-	-	-	conf_net.cgi

Appendix A: Troubleshooting

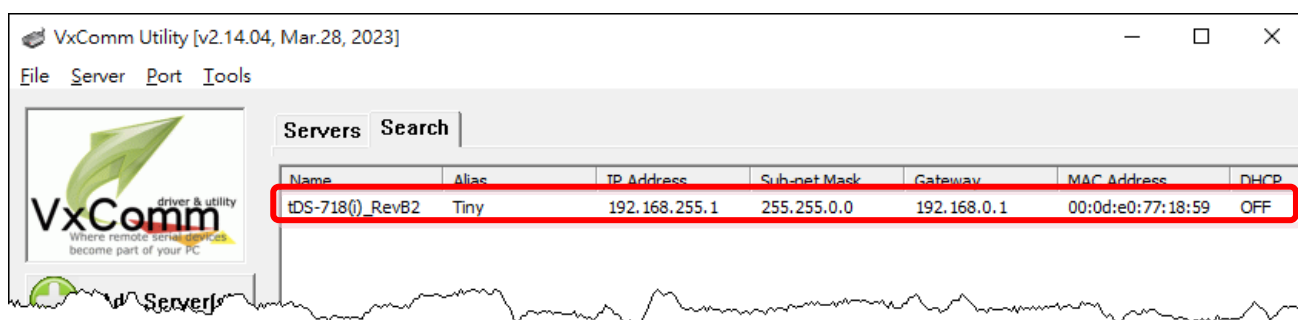
A1. How do I restore the web password for the module to the factory default password?

The instructions below outline the procedure for resetting the web password to the factory default value. **Note:** Be aware that **ALL** settings will be restored to the factory default values after the module is reset.

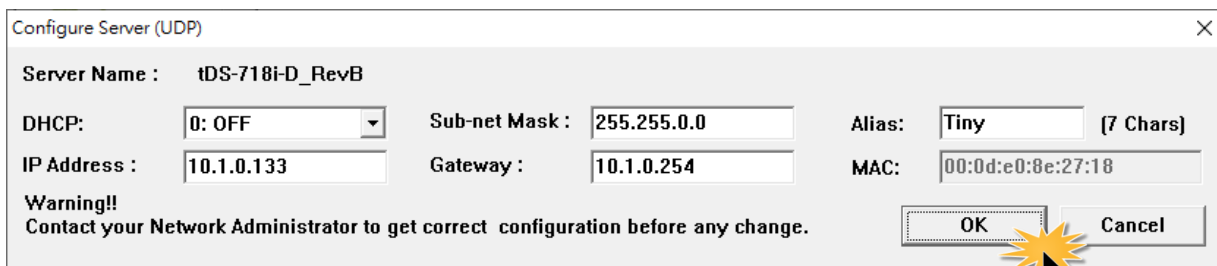
Step 1 Locate the Init/Run switch that can be found on the right-hand side of the tDS-700-UL module and set it to the "Init" position. Reboot the module to **load factory default settings** including default web password.



Step 2 Execute either the VxComm Utility or the eSearch Utility to search for any tDS-700-UL modules connected to the network. Verify that the tDS-700-UL has been reset to the original factory default settings. For example, the module should be shown as having the default IP address, which is 192.168.255.1.



Step 3 Double-click the name of the module to open the Configure Server (UDP) dialog box, and modify the basic settings as necessary, e.g., the IP, Mask and Gateway addresses, and then click the "OK" button to **save the new settings**.



Configure Server (UDP)

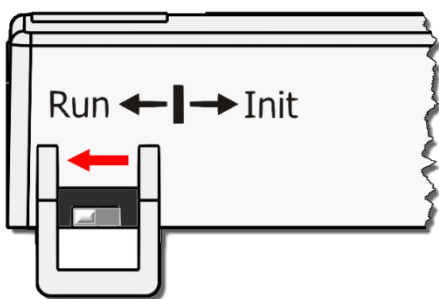
Server Name : tDS-718i-D_RevB

DHCP: 0: OFF Sub-net Mask : 255.255.0.0 Alias: Tiny [7 Chars]

IP Address : 10.1.0.133 Gateway : 10.1.0.254 MAC: 00:0d:e0:8e:27:18

Warning!!
Contact your Network Administrator to get correct configuration before any change.

OK Cancel



Step 4 Reset the Init/Run switch on the tDS-700-UL module to the "Run" position and reboot the device.

Step 5 Log in to the tDS-700-UL web configuration interface.

Note: You will be prompted to change your password, just like when you are login for the first time.
The default current password is "admin".



Tiny Device Server

Home | Port1 | Network | Filter | Monitor | Password | Logout

Change Password
The length of the password is 12 characters maximum.
Change-password is required if the current password is same as factory setting.

Current password: []

New password: []

Confirm new password: []

Submit

Appendix B: Glossary

1. ARP (Address Resolution Protocol)

The Address Resolution Protocol (ARP) is a telecommunication protocol that is used to convert an IP address to a physical address, such as an Ethernet address.

Consider two machines A and B that share the same physical network. Each has an assigned IP address IP_A and IP_B , and a MAC address, MAC_A and MAC_B . The goal is to devise a low-level software application that hides the MAC addresses and allows higher-level programs to work only with the IP addresses. Ultimately, however, communication must be carried out by the physical networks using whatever MAC address scheme the hardware supplies.

Suppose machine A wants to send a packet to machine B across a physical network to which they are both attached, but A only has the Internet address for B, IP_B . The question arises: how does A map that address to the MAC address for B, MAC_B ?

ARP provides a method of dynamically mapping 32-bit IP address to the corresponding 48-bit MAC address. The term dynamic is used since the mapping is performed automatically and is normally not a concern for either the application user or the system administrator.

2. Clients and Servers

The client-server paradigm uses the direction of initiation to categorize whether a program is a client or server. In general, an application that initiates peer-to-peer communication is called a client. End users usually invoke client programs when they use network services.

By comparison, a server is any program that waits for incoming requests from a client program. The server receives a request from a client, performs the necessary action and returns the result to the client.

3. Ethernet

The term Ethernet generally refers to a standard published in 1982 by Digital Equipment Corp., Intel Corp. and Xerox Corp. Ethernet is the most popular physical layer Local Area Network (LAN) technology in use today.

4. Firmware

Firmware is an embedded software program or set of instructions programmed on a device that provides the necessary instructions for how the device communicated with other computer hardware, and is located or stored in a semi-permanent storage area, e.g., ROM, EEPROM, or Flash memory. Firmware can often be updated by downloading a file from the manufacturer's web site or FTP.

5. Gateway

Computers that interconnect two networks and pass packets from one to the other are called Internet Gateways or Internet Routers. Gateways route packets that are based on the destination network, rather than the destination host.

6. ICMP (Internet Control Message Protocol)

ICMP provides a method of communicating between the Internet Protocol software on one machine and the corresponding software on another. It allows a gateway to send error or control messages to other gateways, or allows a host to diagnose problems with the network communication.

7. Internet

Physically, the Internet is a collection of packet switching networks interconnected by gateways that together with the TCP/IP protocol, allows them to perform logically as a single, large and virtual network. The Internet recognizes hosts using 32-bit IP address.

8. IP (Internet Protocol) Address

Each interface on the Internet must have a unique IP address (also called an Internet address). These addresses are 32-bit numbers, and are normally written as four decimal numbers, one for each byte of the address for example “192.168.41.1”. This is called dotted-decimal notation.

9. MAC (Media Access Control) Address

To allow a computer to determine which packets are meant for it, each device attached to an Ethernet network is assigned a 48-bit integer known as its MAC address (also called the Ethernet address, the hardware address or the physical address). A MAC address is normally written as eight hexadecimal numbers, for example “00:71:88:af:12:3e:0f:01”. Ethernet hardware manufacturers purchase blocks of MAC addresses and assign them in sequence as they manufacture Ethernet interface hardware. Thus, no two hardware interfaces can have the same MAC address.

10. Packet

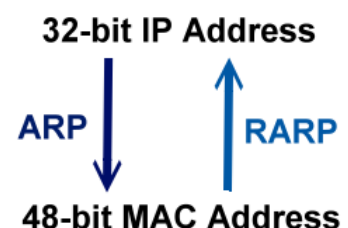
A packet is the unit of data sent across a physical network. It consists of a series of bits containing data and control information, including the source and the destination node (host) address, and is formatted for transmission from one node to another.

11. Ping

Ping is a network administration utility used to test the whether a host on an Internet network is active, and to measure the round-trip time for messages sent from the originating host to a destination computer. Ping operates by sending an ICMP echo request message to a host, expecting an ICMP echo reply to be returned. Normally, if a host cannot be pinged, Telnet or FTP cannot be used to connect to the host. Conversely, if Telnet or FTP cannot be used to connect to a host, Ping is often the starting point to determine the nature of the problem.

12. RARP (Reverse Address Resolution Protocol)

RARP provides a method of dynamically mapping 48-bit MAC address to the corresponding 32-bit IP address. RARP has now been replaced by the Bootstrap Protocol (BOOTP) and the modern Dynamic Host Configuration Protocol (DHCP).



13. Socket

Each TCP segment contains a source and destination port number that can be used to identify the sending and receiving application. These two values, along with the source and destination IP addresses in the IP header, uniquely identify each connection. The combination of an IP address and a port number is called a socket.

14. Subnet Mask

A Subnet mask, often simply called the “Mask”, is a 32-bit number that masks an IP address, and divides the IP address into the network address and the host address. Given its own IP address and its subnet mask, a host can determine whether a TCP/IP packet is destined for a host that is (1) on its own subnet, or (2) on a different network. If (1), the packet will be delivered directly; otherwise it, will be delivered via a gateway or a router.

15. TCP (Transmission Control Protocol)

TCP is a set of rules used in combination with the Internet Protocol to send data in the form of message units between computers over the Internet. TCP provides a reliable flow of data between two hosts and is associated with tasks such as dividing the data passed to it from an application into appropriately sized chunks for the network layer below, acknowledging received packets, setting timeouts to make certain that the other end acknowledges packets that are sent, and so on.

16. TCP/IP

The Transmission Control Protocol (TCP) and the Internet Protocol (IP) is standard network protocols that are almost always implemented and used together in a formation are known as TCP/IP. TCP/IP can be used to communicate across any set of interconnected networks.

17. UDP (User Datagram Protocol)

UDP is an internet protocol that provides a much simpler service to the application layer as it only sends packets of data from one host to another, but there is no guarantee that the packets will reach the destination host. UDP is suitable for purposes where error checking and correction is either not necessary or is performed in the application.

Appendix C: Actual Baud Rate Measurement

Ideal Baud Rate (bps)	Actual Baud Rate (bps)	Error
50	50	0.00%
110	109.92	0.07%
300	298.48	0.51%
600	597.04	0.49%
1200	1197.6	0.20%
2400	2395.2	0.20%
4800	4790.4	0.20%
9600	9568.0	0.33%
14400	14392	0.05%
19200	19136	0.33%
38400	38464	0.17%
57600	57552	0.08%
115200	114960	0.21%
128000	128240	0.18%
230400	229920	0.21%
250000	250000	0.00%
256000	256400	0.15%
460800	459760	0.22%
921600	921600	0.00%

Note

Recommended max baud rate is 115200 bps or below. Because the loading of the module, we don't guarantee a proper operation if using a larger buad rate (over 115200 bps).

Appendix D: Revision History

This chapter provides revision history information to this document.

The table below shows the revision history.

Revision	Date	Description
1.1	Jan.2026	Added specifications and pin assignments information for the tDS-725-UL and tDS-735-UL series modules.
1.0	Jul. 2025	Initial issue