

3-7 Tiny Serial-to-Ethernet Device Server & Modbus Gateway

tDS-700 Series

Tiny Serial-to-Ethernet Device Server

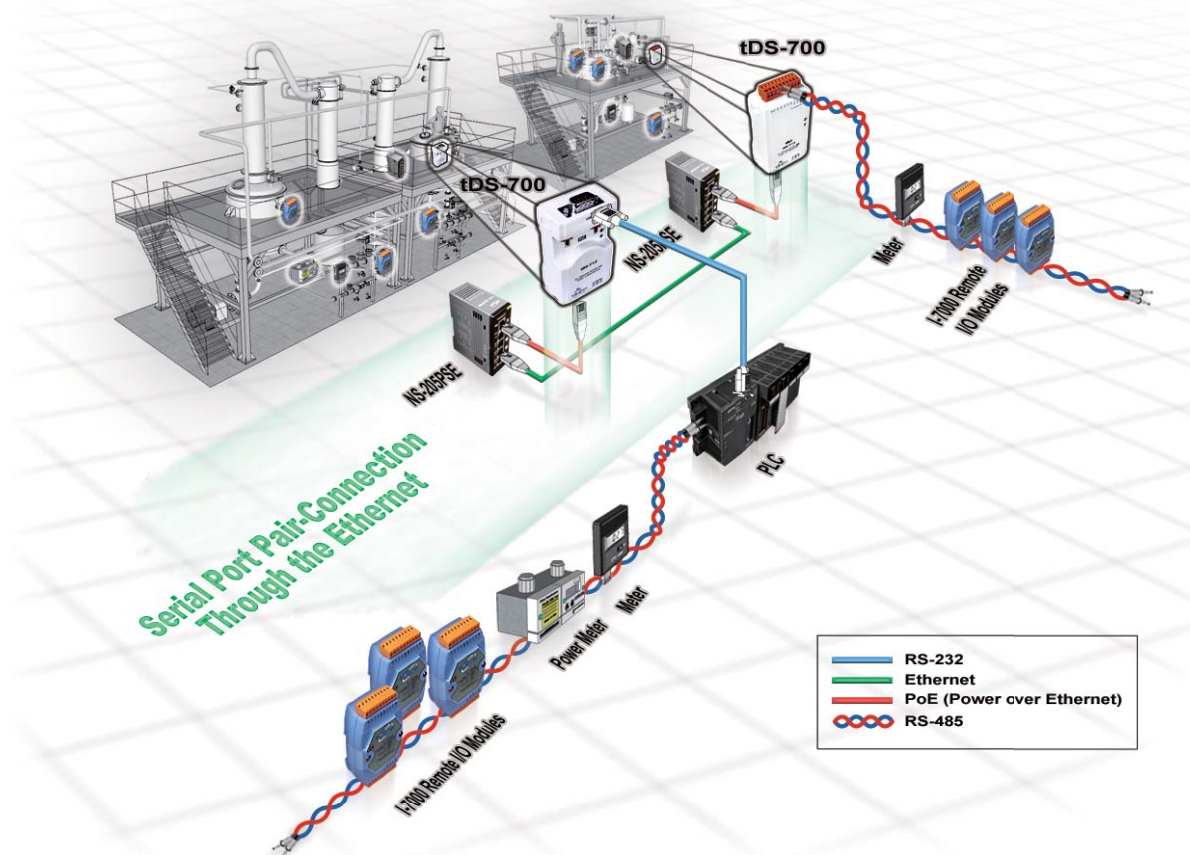


Features ▶▶▶

- Incorporates any RS-232/422/485 serial device in Ethernet
- Application Modes: Virtual COM, TCP Server, TCP Client
- Virtual COM for 32/64-bit Windows XP/2003/2012/Vista/7/8
- Data Packing Modes: Length, Delimiter, timeout, Char-timeout.
- Supports pair-connection (serial-bridge, serial-tunnel) applications
- 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 serial and network configuration (HTTP)
- Contains a 32-bit MCU that efficiently handles network traffic
- 10/100 Base-TX Ethernet, RJ-45 x 1 (Auto-negotiating, auto MDI/MDIX, LED Indicators)
- Redundant power inputs: PoE and DC jack
- Allows automatic RS-485 direction control
- Male DB-9 or terminal block connector for easy wiring
- Tiny form-factor and low power consumption
- RoHS compliant & no Halogen
- Cost-effective device servers

Introduction

The tDS-700 is a series of Serial-to-Ethernet device servers 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 communication. By using the VxComm Driver/Utility, the built-in COM port of the tDS-700 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 software modification.



The VxComm Driver/Utility supports the most popular operating system in the world, including 32-bit and 64-bit Windows 7/Vista/2008/2003/XP. The virtual COM works transparently and is protocol independent, enabling perfect integration with your current central computer. The utility provides an easy configuration interface that can be used to quickly create and map virtual COM ports to one or several tDS-700 modules. In addition, the utility contains a built-in terminal program, so users can send/receive command/data via the terminal program for easy testing.

The tDS-700 device servers can be used to create a pair-connection application (as well as serial-bridge or serial-tunnel), and can then route data over TCP/IP between two serial devices, which 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 meets the demands of virtually any network-enabled application.

DHCP minimizes configuration errors caused by manual IP address configuration, such as address conflicts caused by the assignment of an IP address to more than one computer or device at the same time. The tDS-700 supports the DHCP client function, which allows the tDS-700 to easily obtain the necessary TCP/IP configuration information from a DHCP server. The tDS-700 also contains a UDP responder that transmits its IP address information in response to a UDP search from the VxComm Utility, making local management more efficient.

The tDS-700 features a powerful 32-bit MCU to enable efficient handling of network traffic. It also has a built-in web server that provides an intuitive web management interface to allow users to modify the settings of the module, including DHCP/Static IP, gateway/mask and serial ports.

Based on an amazing tiny form-factor, the tDS-700 achieves the maximum space savings that allows it to be easily installed anywhere, even directly attached to a serial device or embedded into a machine.

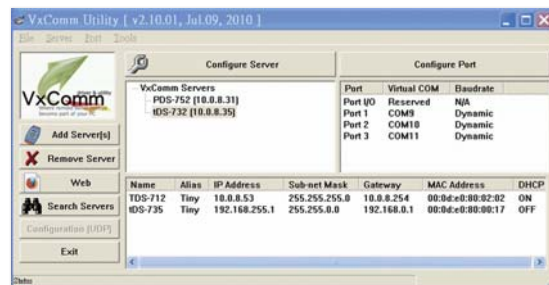
The tDS-700 series also contains a built-in CPU watchdog, which automatically resets the CPU if the built-in firmware is operating abnormally, or if there is no communication between the tDS-700 and the host for a predefined period of time (system timeout). This is an important feature that ensures the tDS-700 operates continuously, even in harsh environments.



The tDS-700 offers true IEEE 802.3af-compliant (classification, Class 1) Power over Ethernet (PoE) functionality using a standard category 5 Ethernet cable to receive power from a PoE switch such as the NS-205PSE. If there is no PoE switch on site, the tDS-700 will also accept power input from a DC adapter. The tDS-700 is designed for ultra-low power consumption, reducing hidden costs from increasing fuel and electricity prices, especially when you have a huge amount of device servers installed. Reducing the amount of electricity consumed by choosing energy-efficient equipment can have a positive impact on maintaining a green environment.

The tDS-712 is equipped with a male DB-9 connector, while other models are equipped with a removable terminal block connector to allow easy wiring, and also supports automatic RS-485 direction control when sending and receiving data.

The tDS-700 has the same basic Serial-to-Ethernet gateway and virtual COM functions as the PDS-700 series, as shown in the above comparison table. Note: For multiple TCP connections on the same serial port, use PDS-700 instead.



Comparison Table	tDS-700 Series	PDS-700 Series
Ethernet	10/100 M, PoE	10/100 M
Programmable	—	Yes
Virtual COM	Yes	Yes
Virtual I/O	—	Yes
DHCP	Yes	Yes
Web Configuration	Yes	Yes
UDP Search	Yes	Yes
Multi-client	—	Yes
Remarks	Cost-effective	—

Applications

○ Factory Automation

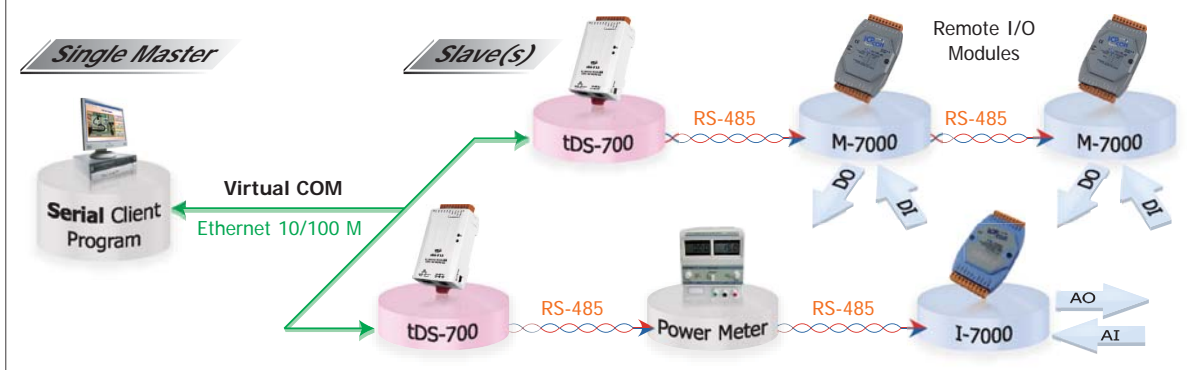
○ Building Automation

○ Home Automation

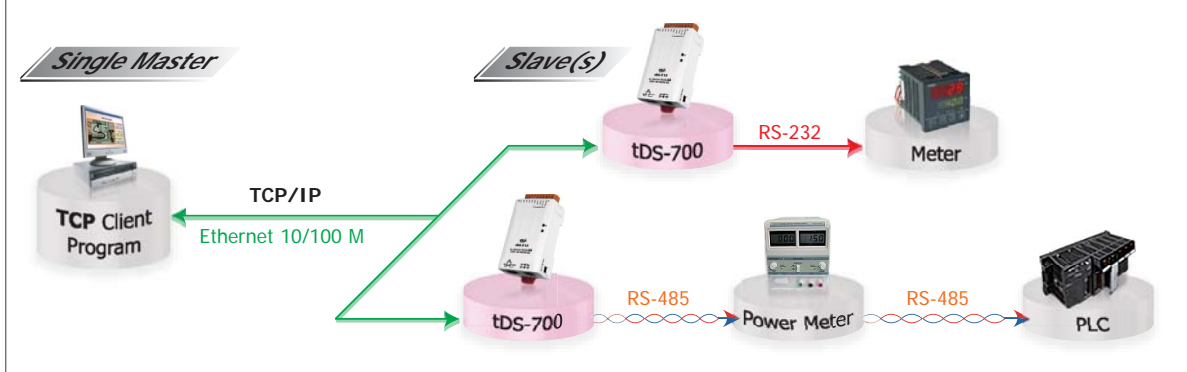
○ Remote Diagnosis and Management



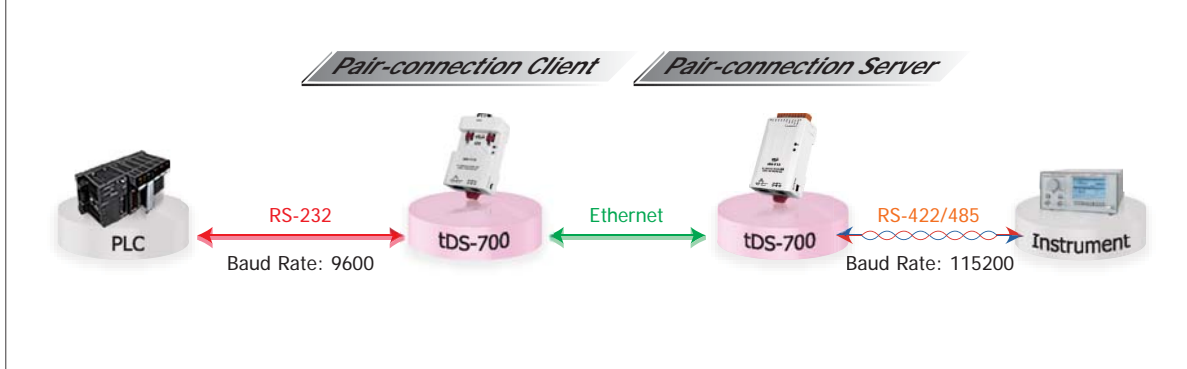
1. Access serial device via Virtual COM ports



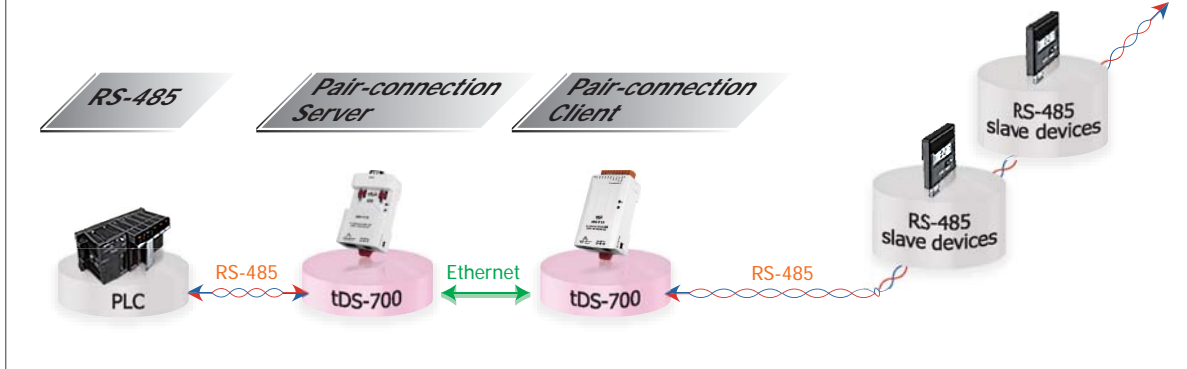
2. Access serial device via TCP/IP socket connection



3. Serial converter application through pair-connection



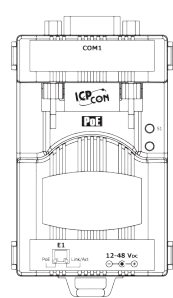
4. Virtual RS-485 bus application through pair-connection



System Specifications

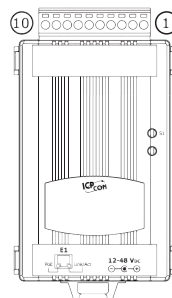
Models	tDS-712 tGW-712	tDS-722 tGW-722 tSH-722	tDS-732 tGW-732 tSH-732	tDS-715 tGW-715	tDS-725 tGW-725 tSH-725	tDS-735 tGW-735 tSH-735	tDS-718 tGW-718	tDS-724 tGW-724 tSH-724	tDS-734 tGW-734 tSH-734	tDS-715i tGW-715i	
System											
CPU	32-bit MCU										
Communication Interface											
Ethernet	10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator) PoE (IEEE 802.3af, Class 1)										
COM1	5-wire RS-232	5-wire RS-232	3-wire RS-232	2-wire RS-485	2-wire RS-485	2-wire RS-485	3-wire RS-232	2-wire RS-485	2-wire RS-485	2-wire RS-485	
				4-wire RS-422			2-wire RS-485				4-wire RS-422
COM2	—	5-wire RS-232	3-wire RS-232	—	2-wire RS-485	2-wire RS-485	—	5-wire RS-232	3-wire RS-232	—	
COM3	—	—	3-wire RS-232	—	—	2-wire RS-485	—	—	3-wire RS-232	—	
Self-Tuner	—			Yes, automatic RS-485 direction control							
Isolation	—									2500 V _{DC}	
COM Port Capability (16C550 or compatible UART)											
Baud Rate	115200 bps Max.										
Data Bit	5, 6, 7, 8										
Parity	None, Odd, Even, Mark, Space										
Stop Bit	1, 2										
Power											
Power Input	IEEE 802.3af, Class 1 for PoE; +12 ~ 48 V _{DC} for DC Jack										
Power Consumption	0.07 A @ 24 V _{DC}										
Connector	Male DB-9 x 1 for tXX-712 series; Removable Terminal Block (10-pin) for others.										
Mechanical											
Dimensions (W x H x D)	52 mm x 95 mm x 27 mm (tDS/tGW-712: 52 mm x 90 mm x 27 mm)										
Installation	DIN-Rail mounting										
Environment											
Operating Temperature	-25 °C ~ +75 °C										
Storage Temperature	-30 °C ~ +80 °C										
Humidity	10 ~ 90% RH, non-condensing										
2-wire RS-485: DATA+, DATA-, GND (Non-isolated)					3-wire RS-232: RxD, TxD, GND (Non-isolated)						
4-wire RS-422: TxD+, TxD-, RxD+, RxD-, GND (Non-isolated)					5-wire RS-232: RxD, TxD, CTS, RTS, GND (Non-isolated)						

Pin Assignments



tDS-712/tGW-712

COM1 (Male DB-9)	09	N/A
	08	CTS1
	07	RTS1
	06	N/A
	05	GND
	04	N/A
	03	TxD1
	02	RxD1
	01	N/A



tDS-722/tGW-722/tSH-722	
COM2	10 F.G. 09 CTS2 08 RTS2 07 Rx2 06 Tx2
COM1	05 GND 04 CTS1 03 RTS1 02 Rx1 01 Tx1

tDS-715(i)/tGW-715(i)	
COM2	10 F.G. 09 N/A 08 N/A 07 N/A 06 N/A
COM1	05 GND 04 Rx1- 03 Rx1+ 02 Tx1-/D1- 01 Tx1+/D1+

tDS-732/tGW-732/tSH-732	
COM3	10 F.G. 09 GND 08 Rx3 07 Tx3 06 GND
COM2	05 Rx2 04 Tx2 03 GND 02 Rx1 01 Tx1

tDS-725/tGW-725/tSH-725	
COM2	10 F.G. 09 N/A 08 N/A 07 N/A 06 GND
COM1	05 D2- 04 D2+ 03 GND 02 D1- 01 D1+

tDS-735/tGW-735/tSH-735	
COM3	10 F.G. 09 GND 08 D3- 07 D3+ 06 GND
COM2	05 D2- 04 D2+ 03 GND 02 D1- 01 D1+

tDS-724/tGW-724/tSH-724	
COM2	10 F.G. 09 N/A 08 CTS2 07 RTS2 06 GND
COM1	05 Rx2 04 Tx2 03 GND 02 D1- 01 D1+

tDS-718/tGW-718	
COM3	10 F.G. 09 N/A 08 GND 07 Rx1 06 Tx1
COM2	05 GND 04 Rx1- 03 Rx1+ 02 Tx1-/D1- 01 Tx1+/D1+

tDS-734/tGW-734/tSH-734	
COM3	10 F.G. 09 GND 08 Rx3 07 Tx3 06 GND
COM2	05 Rx2 04 Tx2 03 GND 02 D1- 01 D1+

Ordering Information

Serial Device Server: Includes one CA-002 cable.	
tDS-712 CR	Tiny Device Server with PoE and 1 RS-232 Port (RoHS)
tDS-722 CR	Tiny Device Server with PoE and 2 RS-232 Ports (RoHS)
tDS-732 CR	Tiny Device Server with PoE and 3 RS-232 Ports (RoHS)
tDS-715 CR	Tiny Device Server with PoE and 1 RS-422/485 Port (RoHS)
tDS-725 CR	Tiny Device Server with PoE and 2 RS-485 Ports (RoHS)
tDS-735 CR	Tiny Device Server with PoE and 3 RS-485 Ports (RoHS)
tDS-718 CR	Tiny Device Server with PoE and 1 RS-232/422/485 Port (RoHS)
tDS-724 CR	Tiny Device Server with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tDS-734 CR	Tiny Device Server with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)
tDS-715i CR NEW	Tiny Device Server with PoE and 1 Isolated RS-422/485 Port (RoHS)
Modbus/TCP to RTU/ASCII Gateway: Includes one CA-002 cable.	
tGW-712 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-232 Port (RoHS)
tGW-722 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-232 Ports (RoHS)
tGW-732 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-232 Ports (RoHS)
tGW-715 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-422/485 (RoHS)
tGW-725 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-485 Ports (RoHS)
tGW-735 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-485 Ports (RoHS)
tGW-718 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-232/422/485 Port (RoHS)
tGW-724 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tGW-734 CR	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)
tGW-715i CR NEW	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 Isolated RS-422/485 Port (RoHS)
Serial Port Sharer: Includes one CA-002 cable.	
tSH-722 CR NEW	Tiny Serial Port Sharer with PoE and 2 RS-232 Ports (RoHS)
tSH-732 CR NEW	Tiny Serial Port Sharer with PoE and 3 RS-232 Ports (RoHS)
tSH-725 CR NEW	Tiny Serial Port Sharer with PoE and 2 RS-485 Ports (RoHS)
tSH-735 CR NEW	Tiny Serial Port Sharer with PoE and 3 RS-485 Ports (RoHS)
tSH-724 CR NEW	Tiny Serial Port Sharer with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tSH-734 CR NEW	Tiny Serial Port Sharer with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)

Accessories

CA-002

DC connector to 2-wire power cable, 0.3 M



CA-0915

Male DB-9 to Female DB-9 Cable, 1.5 m



CA-0910F

Female DB-9 to Female DB-9 Cable, 1.0 m



CA-0910N

DB-9 Female-Female 3-wire Null Modem Cable, 1M



CA-PC09F

DB-9 Female Connector with Plastic Cover



FRA05-S12-SU CR

12V/0.58A (max.) Power Supply (RoHS, for tDS/tGW-700)



DIN-KA52F CR

24V/1.04A, 25 W Power Supply with DIN-Rail Mounting (RoHS, for NS-205 and NS-205PSE-24V)



DIN-KA52F-48 CR

48V/0.52A, 25 W Power Supply with DIN-Rail Mounting (RoHS, for NS-205PSE)



NS-205PSE CR

Unmanaged Ethernet Switch with 4 PoE Ports and 1 RJ-45 Uplink (RoHS)



NS-205PSE-24V CR

Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch; 24 Vdc Input (RoHS)

