

2-7 Tiny Serial-to-Ethernet Device Server & Modbus Gateway

tDS-700 Series

DS-2200i Series **NEW**

Tiny Serial-to-Ethernet Device Server



tDS-712

tDS-700 series

tDSM-712

DS-2200i series

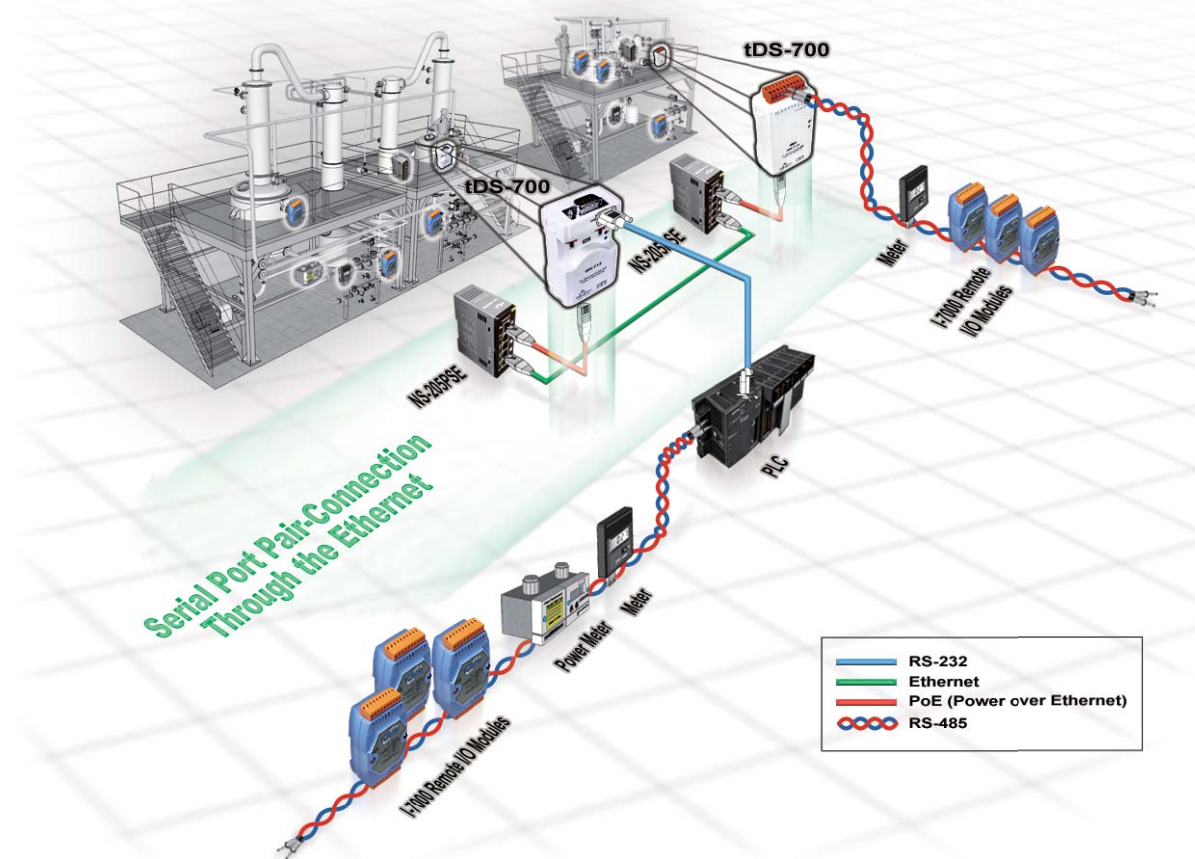


Features ▶▶▶

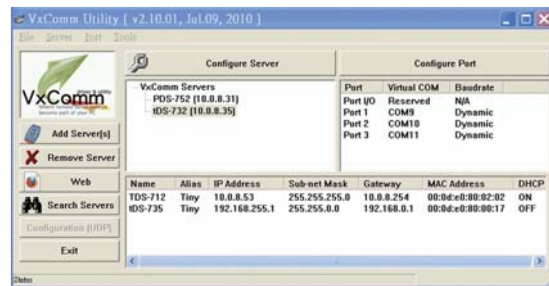
- Incorporates any RS-232/422/485 serial device in Ethernet
- Application Modes: Virtual COM, TCP Server, TCP Client
- Virtual COM for 32/64-bit Windows XP/7/10/2012/2016
- Data Packing Modes: Length, Delimiter, timeout, Char-timeout.
- Supports pair-connection (serial-bridge, serial-tunnel) applications
- 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
- tDS-700/tDSM-712: 10/100 Base-TX Ethernet, RJ-45 × 1
- DS-2200i: 2-port Ethernet Switch (LAN Bypass for Daisy-Chain Wiring)
- Redundant power inputs: PoE and DC jack
- Allows automatic RS-485 direction control
- 2500 V_{DC} isolation and +/-4 kV ESD protection for i versions
- tDSM-712 is the tDS-712 with Metal Case
- Male DB-9 or terminal block connector for easy wiring
- Tiny form-factor and low power consumption
- RoHS compliant & no Halogen

Introduction

The tDS-700/DS-2200i 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/DS-2200i 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.

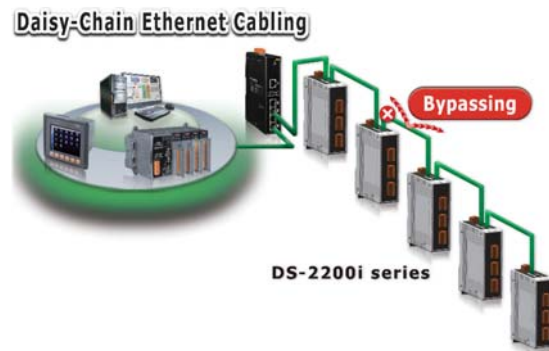


The VxComm Driver/Utility supports the most popular operating system in the world, including 32-bit and 64-bit Windows XP/7/10/2012/2016. **The virtual COM works transparently and is protocol independent, enabling perfect integration with your current central computer.** The utility provides an easy configuration interface that can be used to quickly create and map virtual COM ports to one or several tDS-700/DS-2200i 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/DS-2200i 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 computers, servers or other serial devices that do not themselves have Ethernet capability. By virtue of its protocol independence and flexibility, the tDS-700/DS-2200i meets the demands of virtually any network-enabled application.

The DS-2200i series has a built-in two-port Ethernet switch to implement daisy-chain topology. The cabling is much easier and total costs of cable and switch are significantly reduced. LAN Bypass feature guarantees the Ethernet communication if DS-2200i loses its power.



The tDS-700/DS-2200i 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/DS-2200i 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/DS-2200i 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/DS-2200i and the host for a predefined period of time (system timeout). This is an important feature that ensures the tDS operates continuously, even in harsh environments.



The tDS-700/DS-2200i 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/DS-2200i will also accept power input from a DC adapter. The tDS-700/DS-2200i 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.

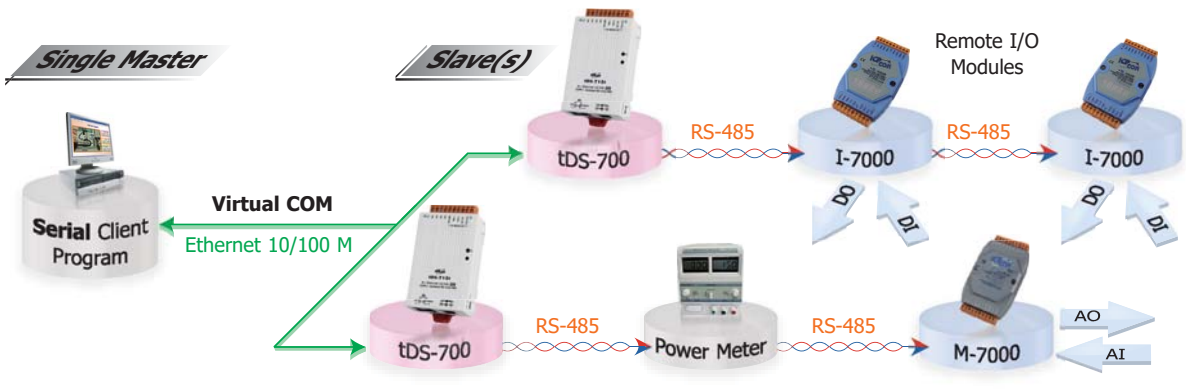
Applications

- Factory Automation
- Building Automation
- Home Automation
- Remote Diagnosis and Management

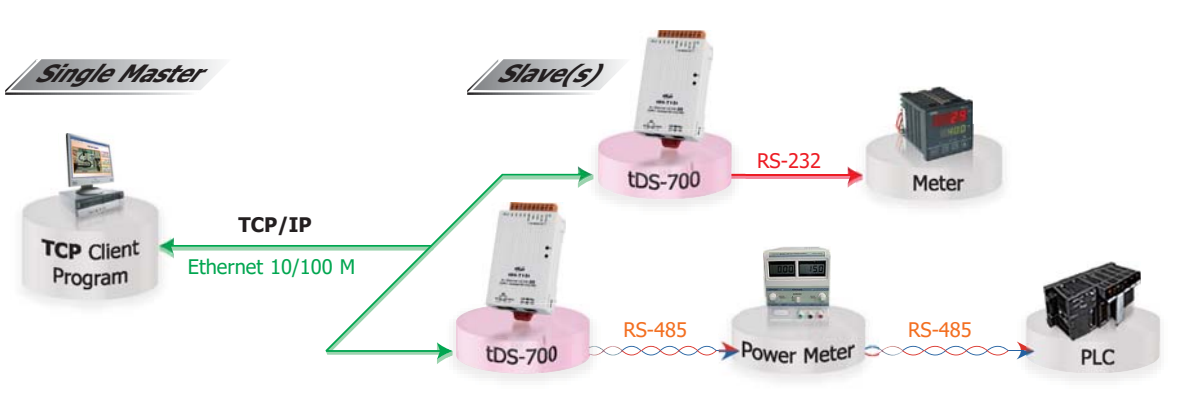


Comparison Table	tDS-700 Series	PDS-700 Series
Ethernet	10/100 M, PoE	10/100 M
Programmable	—	Yes
Virtual COM	Yes	Yes
Virtual I/O	—	Yes
DHCP	Yes	Yes
Web Configuration	Yes	Yes
UDP Search	Yes	Yes
Multi-client	—	Yes
Remarks	Cost-effective	—

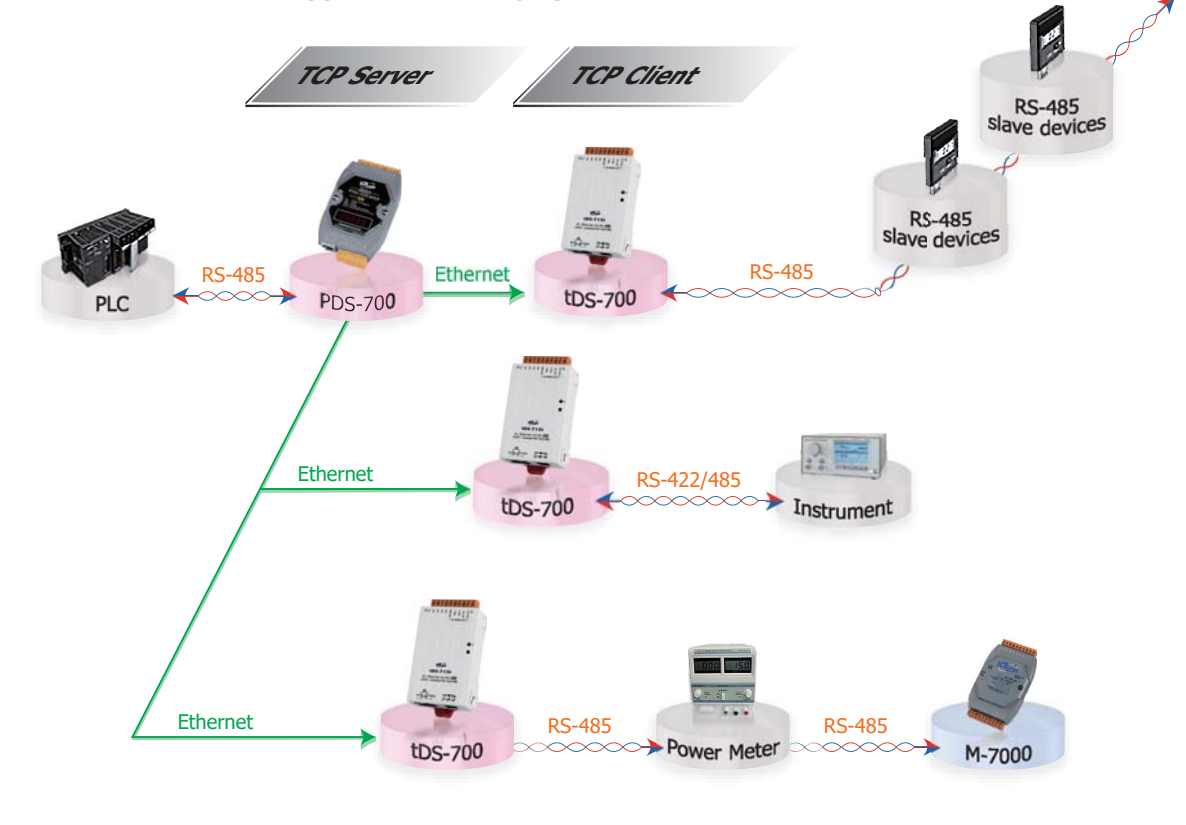
1. Access serial device via Virtual COM ports



2. Access serial device via TCP/IP socket connection



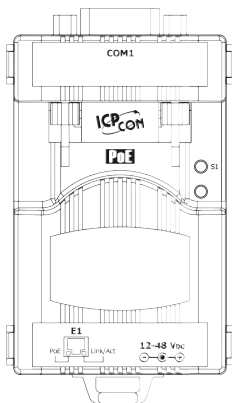
3. Virtual RS-485 bus application through pair-connection



System Specifications

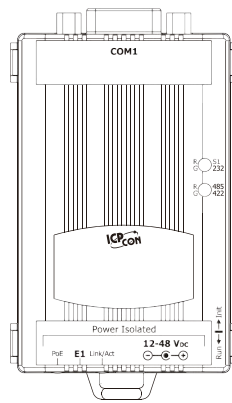
Models	tDS series tDSM series	tDS-712 tDS-712i tDSM-712	tDS-722 tDS-722i	tDS-732 tDS-732i	tDS-715 tDS-715i	tDS-725 tDS-725i	tDS-735 tDS-735i	tDS-718 tDS-718i	tDS-718i-D	tDS-724 tDS-724i	tDS-734 tDS-734i
	NEW DS series	DS-2212i	DS-2222i	DS-2232i	DS-2215i	DS-2225i	DS-2235i	-	-	-	-
	tGW series	tGW-712 tGW-712i	tGW-722 tGW-722i	tGW-732 tGW-732i	tGW-715 tGW-715i	tGW-725 tGW-725i	tGW-735 tGW-735i	tGW-718 tGW-718i	tGW-718i-D	tGW-724 tGW-724i	tGW-734 tGW-734i
	NEW GW series	GW-2212i	GW-2222i	GW-2232i	GW-2215i	GW-2225i	GW-2235i	-	-	-	-
	tSH series	-	tSH-722 tSH-722i	tSH-732 tSH-732i	-	tSH-725 tSH-725i	tSH-735 tSH-735i	-	-	tSH-724 tSH-724i	tSH-734 tSH-734i
System											
CPU		32-bit MCU									
Communication Interface											
Ethernet	700 Series	10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator)									
	2200i Series	2-Port 10/100 Base-TX Ethernet Switch with LAN Bypass, RJ-45 x 2 (Auto-negotiating, Auto-MDI/MDIX, LED indicator)									
PoE		IEEE 802.3af, Class 1									
COM Port	700 Series	1 x RS-232	2 x RS-232	3 x RS-232	1 x RS-422/ RS-485	2 x RS-485	3 x RS-485	1 x RS-232 or RS-422/485	1 x RS-485 1 x RS-232	1 x RS-485 2 x RS-232	
	2200i Series					2 x RS-422/ RS-485	3 x RS-422/ RS-485				
Self-Tuner		-			Yes, automatic RS-485 direction control						
Isolation		1000 Vdc (Power isolation for i version)			3000 Vdc (Signal isolation for i version)						
ESD Protection		+/-4 kV									
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 Vdc for DC Jack									
Power Consumption		0.07 A @ 24 Vdc									
Mechanical											
Connector	700 Series	Male DB-9 x 1	10-pin Removable Terminal Block x 1						Male DB-9 x 1	10-pin Removable Terminal Block x 1	
	2200i Series	5-pin Removable Terminal Block x 1 for 2212i/2215i; x 2 for 2222i/2225i; x 3 for 2232i/2235i									
Dimensions (W x H x D)	700 Series	52 mm x 95 mm x 27 mm (tDS/tGW-712: 52 mm x 90 mm x 27 mm) (tDSM-712: 75 mm x 83 mm x 24 mm)									
	2200i Series	90mm x 110mm x 33mm (without connectors)									
Installation		DIN-Rail mounting									
Case		Metal for tDSM-712; Plastic for others.									
Environment											
Operating Temperature		-25 °C ~ +75 °C									
Storage Temperature		-30 °C ~ +80 °C									
Humidity		10 ~ 90% RH, non-condensing									

Pin Assignments



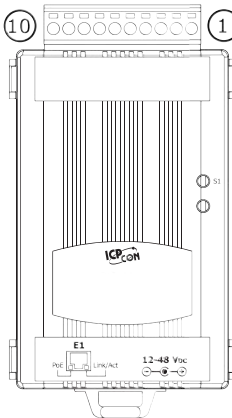
tDS-712(i) / tDSM-712
tGW-712(i)

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



tDS-718i-D
tGW-718i-D

Terminal No.	RS-232	RS-422	RS-485
09	N/A	N/A	N/A
08	CTS	N/A	N/A
07	RTS	N/A	N/A
06	N/A	N/A	N/A
05	GND	GND	GND
04	N/A	RxD-	N/A
03	TxD	RxD+	N/A
02	RxD	TxD+	Data+
01	N/A	TxD-	Data-



tDS-722(i)
tGW-722(i)
tSH-722(i)

	10	F.G.
	09	CTS2
COM2	08	RTS2
	07	RxD2
	06	TxD2
	05	GND
	04	CTS1
COM1	03	RTS1
	02	RxD1
	01	TxD1

tDS-715(i)
tGW-715(i)

	10	F.G.
	09	N/A
	08	N/A
	07	N/A
	06	N/A
	05	GND
	04	RxD1-
	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

tDS-732(i)
tGW-732(i)
tSH-732(i)

	10	F.G.
	09	GND
COM3	08	RxD3
	07	TxD3
	06	GND
COM2	05	RxD2
	04	TxD2
	03	GND
COM1	02	RxD1
	01	TxD1

tDS-725(i)
tGW-725(i)
tSH-725(i)

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

tDS-735(i)
tGW-735(i)
tSH-735(i)

	10	F.G.
	09	GND
COM3	08	D3-
	07	D3+
	06	GND
COM2	05	D2-
	04	D2+
	03	GND
COM1	02	D1-
	01	D1+

tDS-724(i)
tGW-724(i)
tSH-724(i)

	10	F.G.
	09	N/A
	08	CTS2
	07	RTS2
COM2	06	GND
	05	RxD2
	04	TxD2
	03	GND
COM1	02	D1-
	01	D1+

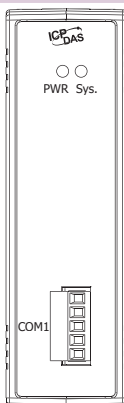
tDS-718(i)
tGW-718(i)

	10	F.G.
	09	N/A
	08	GND
	07	RxD1
	06	TxD1
	05	GND
	04	RxD1-
	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

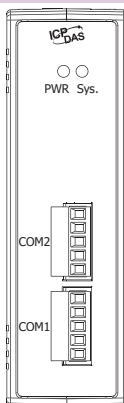
tDS-734(i)
tGW-734(i)
tSH-734(i)

	10	F.G.
	09	GND
COM3	08	RxD3
	07	TxD3
	06	GND
COM2	05	RxD2
	04	TxD2
	03	GND
COM1	02	D1-
	01	D1+

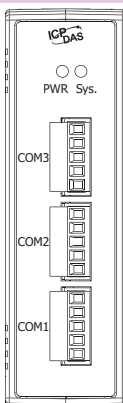
DS/GW-221xi



DS/GW-222xi



DS/GW-223xi



DS-2212i
GW-2212i

	05	GND1
	04	CTS1
COM1	03	RTS1
	02	RxD1
	01	TxD1

DS-2215i
GW-2215i

	05	GND1
	04	RxD1-
COM1	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

DS-2222i
GW-2222i

	10	GND2
	09	CTS2
COM2	08	RTS2
	07	RxD2
	06	TxD2
	05	GND1
	04	CTS1
COM1	03	RTS1
	02	RxD1
	01	TxD1

DS-2225i
GW-2225i

	10	GND2
	09	RxD2-
COM2	08	RxD2+
	07	TxD2-/D2-
	06	TxD2+/D2+
	05	GND1
	04	RxD1-
COM1	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

DS-2232i
GW-2232i

	15	GND3
	14	CTS3
COM3	13	RTS3
	12	RxD3
	11	TxD3
	10	GND2
	09	CTS2
COM2	08	RTS2
	07	RxD2
	06	TxD2
	05	GND1
	04	CTS1
COM1	03	RTS1
	02	RxD1
	01	TxD1

DS-2235i
GW-2235i

	15	GND3
	14	RxD3-
COM3	13	RxD3+
	12	TxD3-/D3-
	11	TxD3+/D3+
	10	GND2
	09	RxD2-
COM2	08	RxD2+
	07	TxD2-/D2-
	06	TxD2+/D2+
	05	GND1
	04	RxD1-
COM1	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

Ordering Information

Non-Isolated	Isolated	Serial Device Server: Includes one CA-002 cable.
tDS-712 CR	tDS-712i CR	Tiny Device Server with PoE and 1 RS-232 Port (RoHS)
tDS-722 CR	tDS-722i CR	Tiny Device Server with PoE and 2 RS-232 Ports (RoHS)
tDS-732 CR	tDS-732i CR	Tiny Device Server with PoE and 3 RS-232 Ports (RoHS)
tDS-715 CR	tDS-715i CR	Tiny Device Server with PoE and 1 RS-422/485 Port (RoHS)
tDS-725 CR	tDS-725i CR	Tiny Device Server with PoE and 2 RS-485 Ports (RoHS)
tDS-735 CR	tDS-735i CR	Tiny Device Server with PoE and 3 RS-485 Ports (RoHS)
tDS-718 CR	tDS-718i CR tDS-718i-D CR	Tiny Device Server with PoE and 1 RS-232/422/485 Port (RoHS)
tDS-724 CR	tDS-724i CR	Tiny Device Server with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tDS-734 CR	tDS-734i CR	Tiny Device Server with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)
tDSM-712 CR	-	Tiny Device Server with PoE and 1 RS-232 Port (Metal case, RoHS)

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

Non-Isolated	Isolated	Serial Port Converter: Includes one CA-002 cable.
tSH-722 CR	tSH-722i CR	Tiny Serial Port Converter with PoE and 2 RS-232 Ports (RoHS)
tSH-725 CR	tSH-725i CR	Tiny Serial Port Converter with PoE and 2 RS-485 Ports (RoHS)
tSH-724 CR	tSH-724i CR	Tiny Serial Port Converter with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)

Non-Isolated	Isolated	Serial Port Sharer: Includes one CA-002 cable.
tSH-732 CR	tSH-732i CR	Tiny Serial Port Sharer with PoE and 3 RS-232 Ports (RoHS)
tSH-735 CR	tSH-735i CR	Tiny Serial Port Sharer with PoE and 3 RS-485 Ports (RoHS)
tSH-734 CR	tSH-734i CR	Tiny Serial Port Sharer with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)

Isolated and 2-port Ethernet Switch	Serial Device Server
DS-2212i	Device Server with PoE and 1 RS-232 Port (RoHS)
DS-2222i	Device Server with PoE and 2 RS-232 Ports (RoHS)
DS-2232i	Device Server with PoE and 3 RS-232 Ports (RoHS)
DS-2215i	Device Server with PoE and 1 RS-422/485 Port (RoHS)
DS-2225i	Device Server with PoE and 2 RS-422/485 Ports (RoHS)
DS-2235i	Device Server with PoE and 3 RS-422/485 Ports (RoHS)
GW-2212i	Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-232 Port (RoHS)
GW-2222i	Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-232 Ports (RoHS)
GW-2232i	Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-232 Ports (RoHS)
GW-2215i	Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-422/485 Port (RoHS)
GW-2225i	Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-422/485 Ports (RoHS)
GW-2235i	Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-422/485 Ports (RoHS)