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

tDS-700 Series

Tiny Serial-to-Ethernet Device Server

tDS-712   tDS-700 series

CE FC RoHS ☒ PoE

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.

▬▬	RS-232
▬▬	Ethernet
▬▬	PoE (Power over Ethernet)
⬭⬭⬭⬭	RS-485

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Serial Device Server
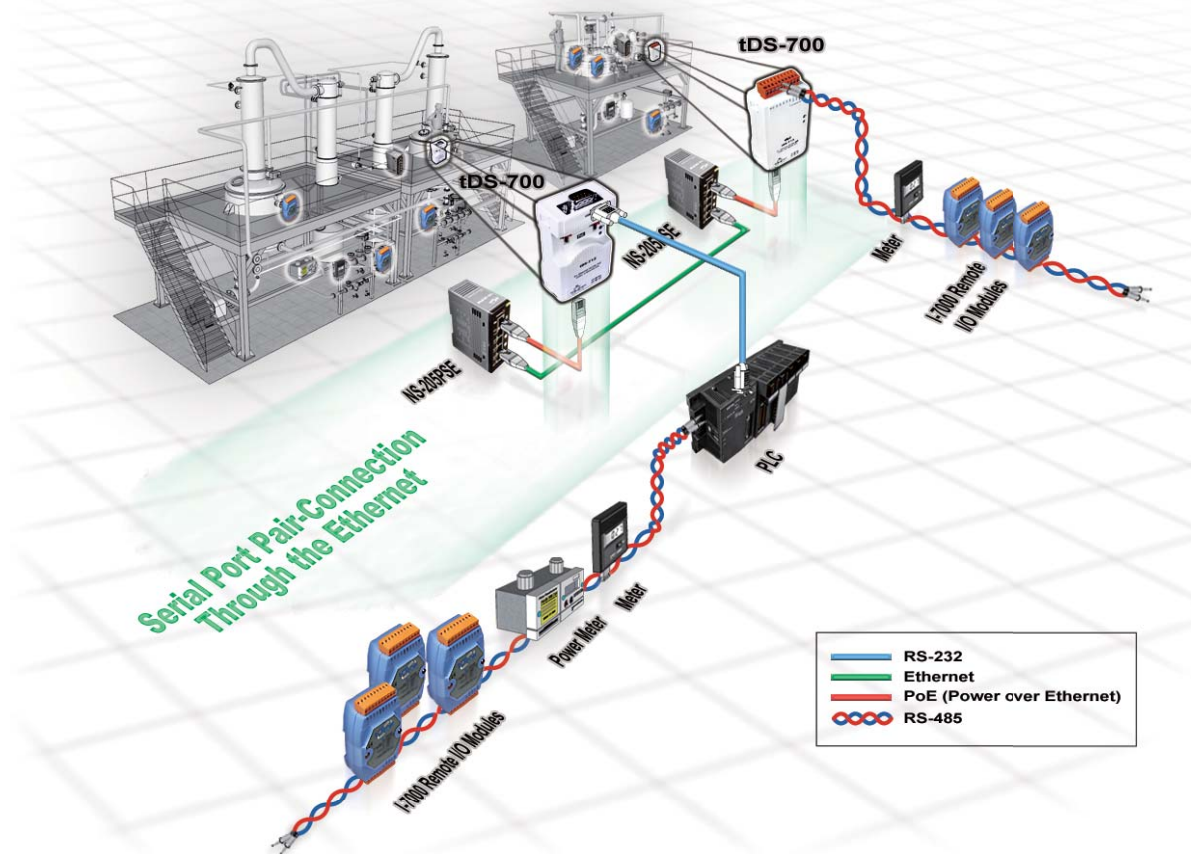
The VxComm Driver/Utility supports the most popular operating system in the world, including 32-bit and 64-bit Windows 7/Vista/2008/2003/XP. The virtual COM works transparently and is protocol independent, enabling perfect integration with your current central computer. The utility provides an easy configuration 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.
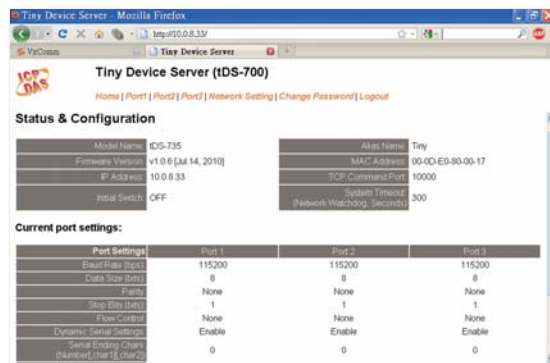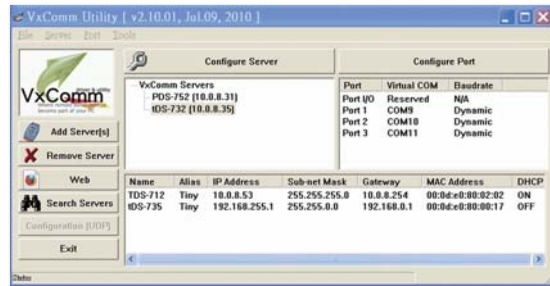
The tDS-700 series also contains a built-in CPU watchdog, which automatically resets the CPU if the built-in firmware is operating abnormally, or if there is no communication between the tDS-700 and the host for a predefined period of time (system timeout). This is an important feature that ensures the tDS-700 operates continuously, even in harsh environments.

Low Power Consumption

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	–

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.
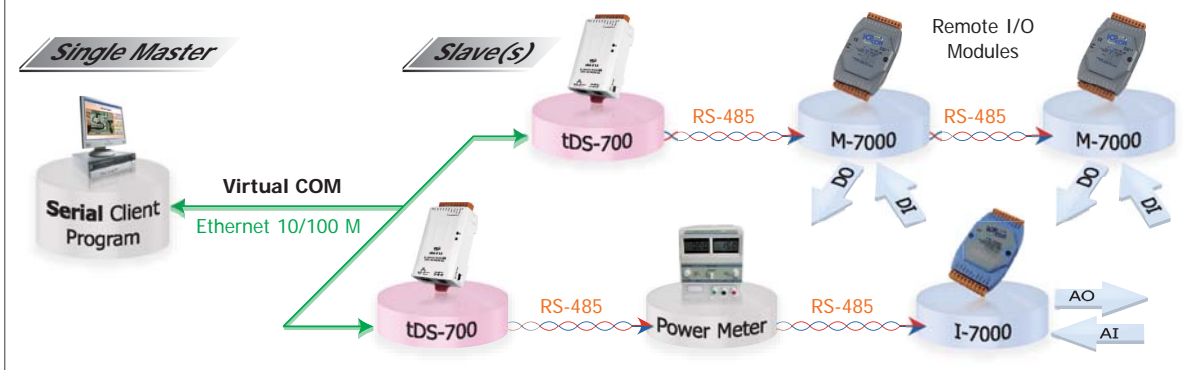
Applications

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

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Serial Device Server

1. Access serial device via Virtual COM ports

Single Master

Slave(s)

Remote I/O Modules

Serial Client Program

Virtual COM

Ethernet 10/100 M

tDS-700 — RS-485 — M-7000 — RS-485 — M-7000

DO / DI / DO / DI

tDS-700 — RS-485 — Power Meter — RS-485 — I-7000

AO / AI

2. Access serial device via TCP/IP socket connection

Single Master

Slave(s)

TCP Client Program

TCP/IP

Ethernet 10/100 M

tDS-700 — RS-232 — Meter

tDS-700 — RS-485 — Power Meter — RS-485 — PLC
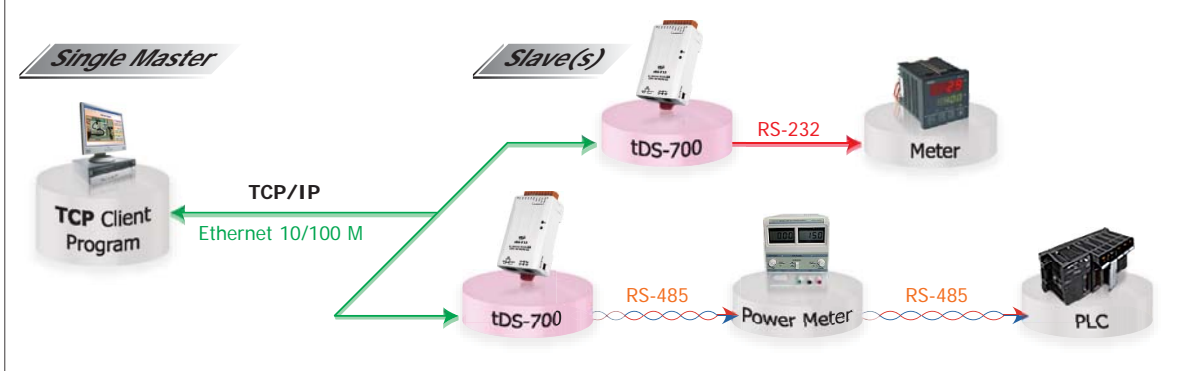
3. Serial converter application through pair-connection

Pair-connection Client   *Pair-connection Server*

PLC — RS-232 — tDS-700 — Ethernet — tDS-700 — RS-422/485 — Instrument

Baud Rate: 9600   Baud Rate: 115200

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

RS-485   *Pair-connection Server*   *Pair-connection Client*

RS-485 slave devices

RS-485 slave devices

PLC — RS-485 — tDS-700 — Ethernet — tDS-700 — RS-485
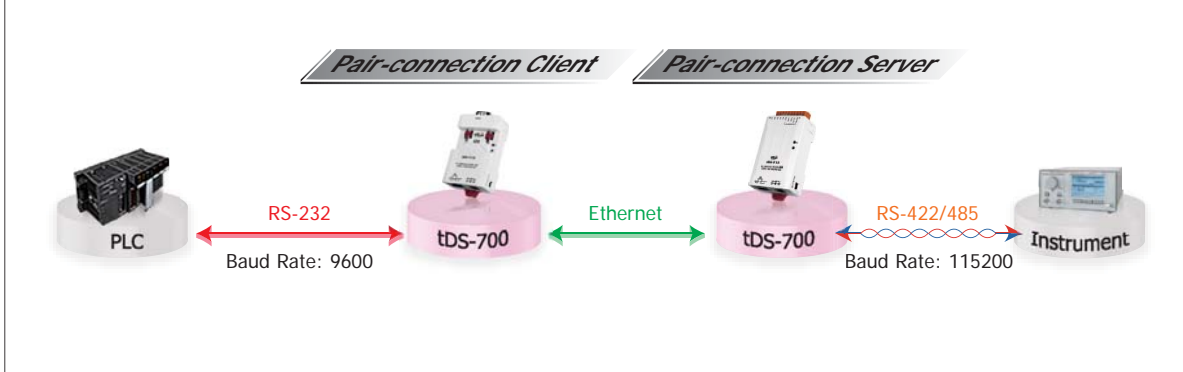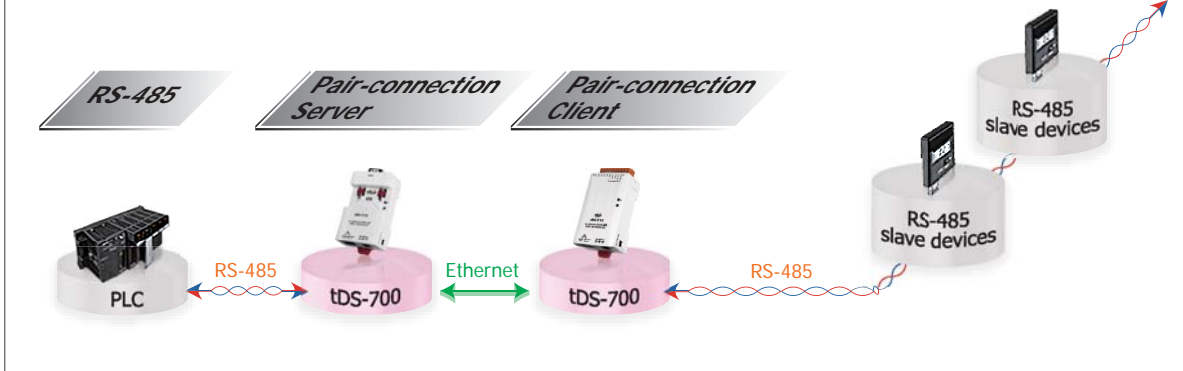
tGW-700 Series

Tiny Modbus/TCP to RTU/ASCII Gateway

tGW-712   tGW-700 series

Features ▶▶▶▶

- Supports Modbus TCP/UDP master and slave
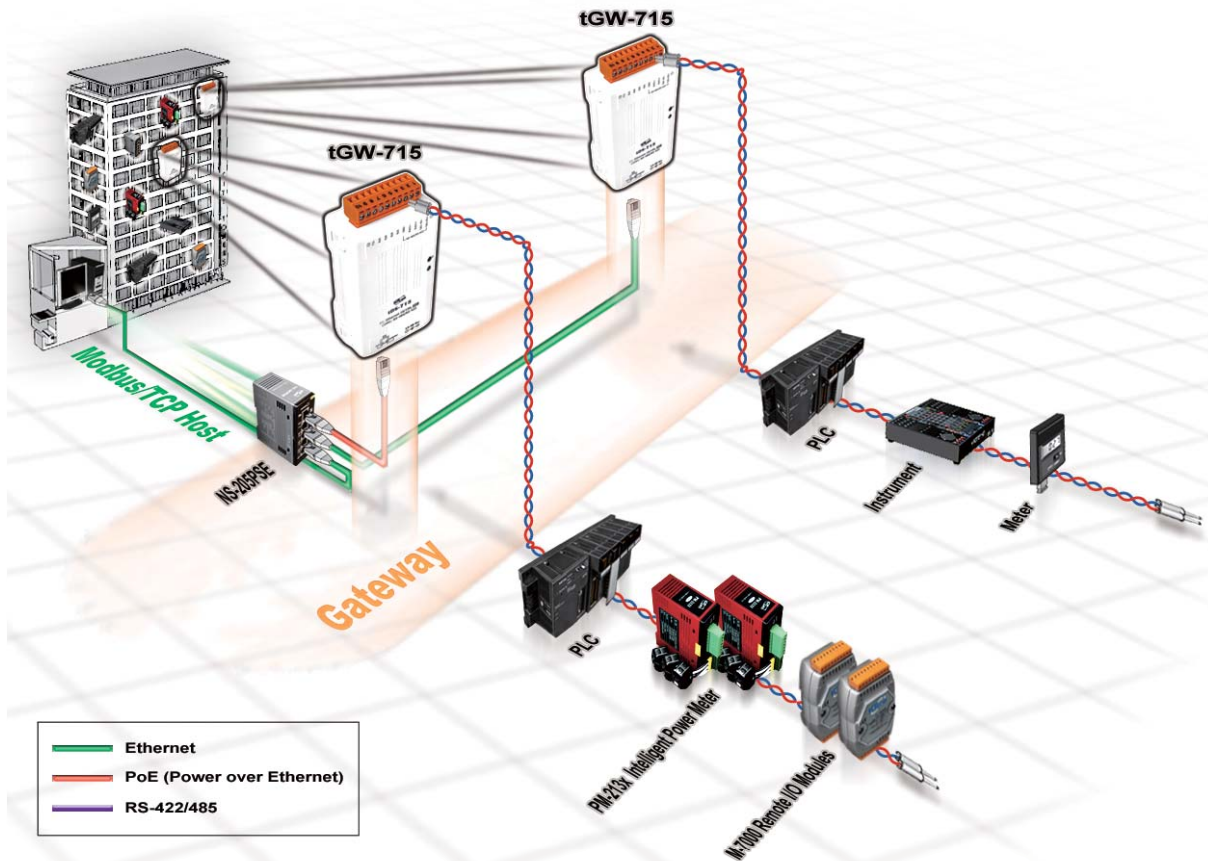- Supports Modbus RTU/ASCII master and slave
- Max. TCP connections (masters) per serial port: 32 (tGW-71x), 16 (tGW-72x) or 10 (tGW-73x)
- Read-cache ensures faster Modbus TCP/UDP response
- Supports UDP responder for device discovery (UDP Search)
- Static IP or DHCP network configuration
- Easy firmware update via the Ethernet (BOOTP, TFTP)
- Tiny Web server for serial and network configuration (HTTP)

- 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 Modbus Gateway

Introduction

Modbus has become a de facto standard industrial communication protocol, and is now the most commonly available means of connecting industrial electronic devices. Modbus allows for communication between many devices connected to the same RS-485 network, for example, a system that measures temperature and humidity and communicates the results to a computer. Modbus is often used to connect a supervisory computer with a remote terminal unit (RTU) in supervisory control and data acquisition (SCADA) systems.

tGW-715

tGW-715

Modbus/TCP Host

NS-205PSE

Gateway

PLC

Instrument

Meter

PLC

PM-213x Intelligent Power Meter

M-100 Remote I/O Modules

- Ethernet
- PoE (Power over Ethernet)
- RS-422/485

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Serial Device Server

The tGW-700 module is a Modbus gateway that enables a Modbus TCP/UDP host to communicate with serial Modbus RTU/ASCII devices through an Ethernet network, and eliminates the cable length limitation of legacy serial communication devices. The module can be used to create a pair-connection application (as well as serial-bridge or serial-tunnel application), and can then route data over TCP/IP between two serial Modbus RTU/ASCII devices, which is useful when connecting mainframe computers, servers or other serial devices that use Modbus RTU/ASCII protocols and do not themselves have Ethernet capability.

The maximum number of TCP connections for each serial port is up to 32 for tGW-71x, 16 for tGW-72x and 10 for tGW-73x. This allows multiple masters accessing slave devices on the same serial port. The new read-cache function is used to store previous requests and responses in the memory buffer of the tGW-700 module. When other HMI/SCADA master controllers send the same requests to the same RTU slave device, the cached response is returned immediately. This feature dramatically reduces the loading on the serial port communication, ensures faster TCP responses, and improves the stability of the entire system.
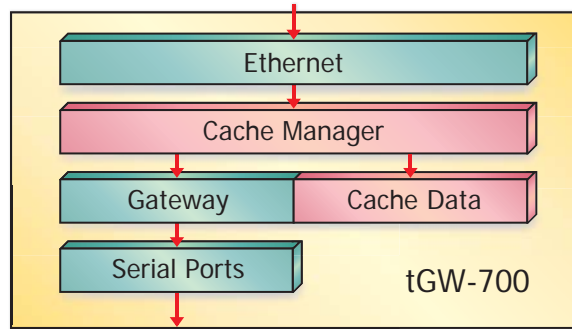
The tGW-700 module supports the DHCP client function, which allows it to easily obtain the necessary TCP/IP configuration information from a DHCP server, and minimizes configuration errors caused by manual setting. The module also contains a UDP responder that transmits its IP address information in response to a UDP search from the eSearch utility, making local management more efficient.

The tGW-700 module features a powerful 32-bit MCU to enable efficient handling of network traffic, and also has a built-in web server that provides an intuitive web management interface that allows users to modify the configuration of the module, including the DHCP/Static IP, the gateway/mask settings and the serial port settings.
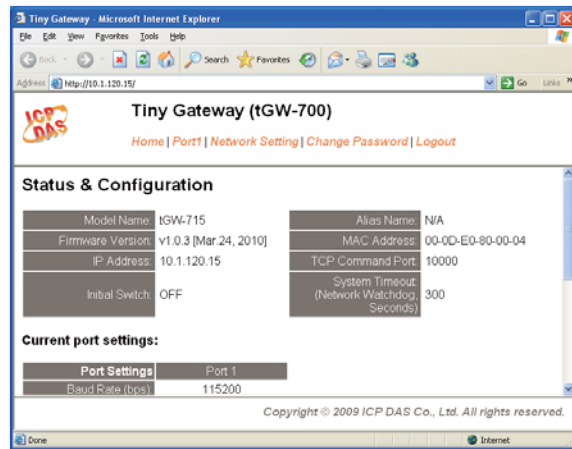
The module contains a dual watchdog, including a CPU watchdog (for hardware functions) and a host watchdog (for software functions). The CPU watchdog automatically resets the CPU if the built-in firmware is operating abnormally, while the host watchdog automatically resets the CPU if there is no communication between the module and the host (PC or PLC) for a predefined period of time (system timeout). The dual watchdog is an important feature that ensures the module operates continuously, even in harsh environments.

The tGW-700 module 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 module will also accept power input from a DC adapter. The tGW-700 module is designed for ultra-low power consumption, reducing hidden costs from increasing fuel and electricity prices, especially when you have a large number of modules installed. Reducing the amount of electricity consumed by choosing energyefficient equipment can have a positive impact on maintaining a green environment.

Based on an amazing tiny form-factor, the tGW-700 achieves maximum space savings that allows it to be easily installed anywhere, even directly embedded into a machine. It also supports automatic RS-485 direction control when sending and receiving data, thereby improving the stability of the RS-485 communication.

Comparison Table	Ethernet	Programmable	Virtual COM	Virtual I/O	DHCP	Web Configuration	UDP Search	Modbus Gateway	Multi-client
tGW-700 Series	10/100 M, PoE	–	–	–	Yes	Yes	Yes	Yes	Yes
PPDS-700-MTCP Series	10/100 M, PoE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Applications

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

1. Modbus TCP to RTU/ASCII Gateway application

Single Modbus TCP Master

PC

Modbus TCP
Ethernet 10/100 M

tGW-700

RS-232
Modbus ASCII

PLC

Multiple Modbus RTU/ASCII Slave Devices

Modbus TCP slaves

tGW-700

RS-485
Modbus RTU

Power Meter

M-7000
Remote I/O
Modules
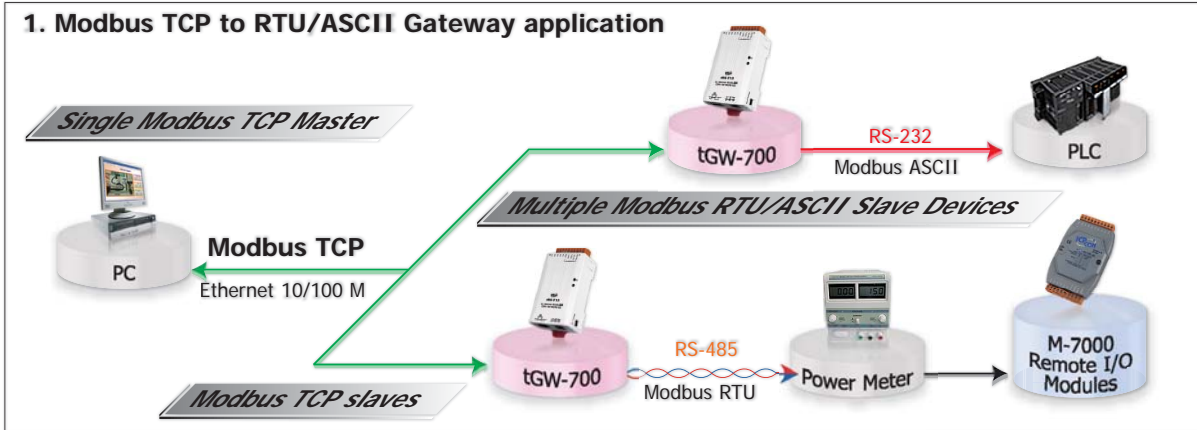
2. Modbus TCP to RTU/ASCII Gateway application (dual-port)

Modbus TCP client

PC

10/100 M
Ethernet

Port 502 (COM1)
Port 503 (COM2)

tGW-725

Modbus RTU

RS-485

PLC

Meter

RS-485

PLC

Meter

Modbus ASCII

3. Modbus RTU/ASCII to TCP Gateway application (like pair-connection)

Single Modbus RTU/ASCII Master

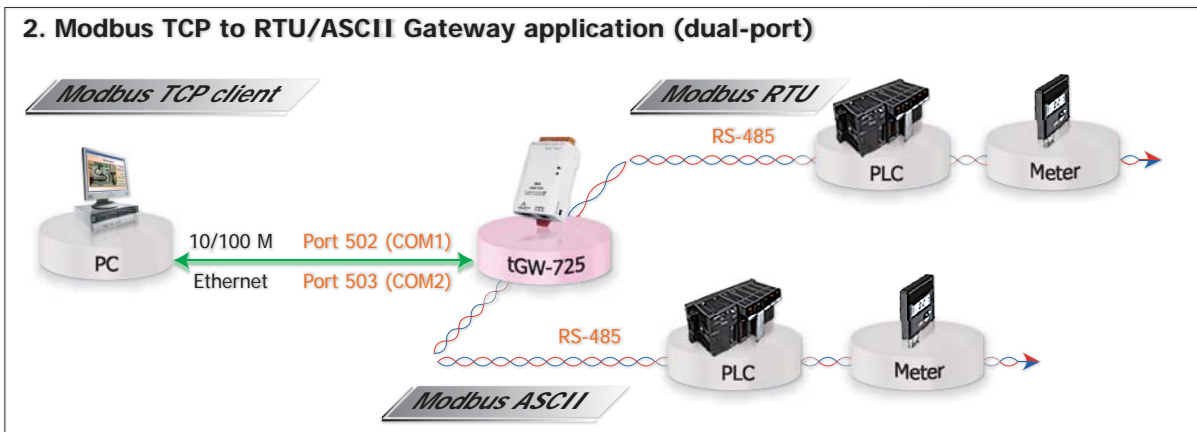**Pair-connection Client (Modbus TCP Master)**

Single Modbus TCP Slave

PLC

RS-232/422/485

tGW-700

Ethernet
Modbus TCP

PET-7000

PETL-7000

SCADA/HMI

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

Single Modbus RTU/ASCII Master

Pair-connection Client

Pair-connection Server

Modbus RTU ASCII Slaves

RS-485
slave devices

RS-485
slave devices

PLC

RS-485

tGW-700

Ethernet
Modbus TCP

tGW-700

RS-485

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Serial Device Server
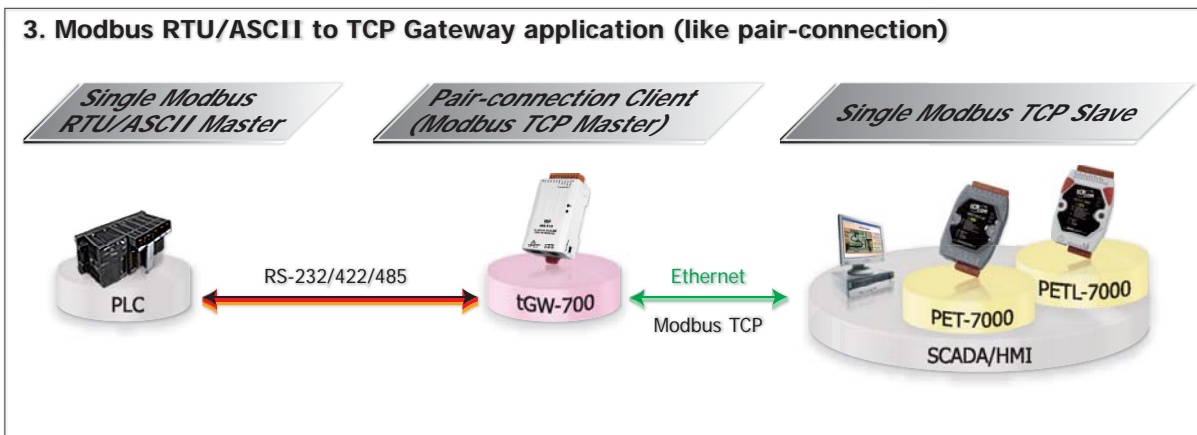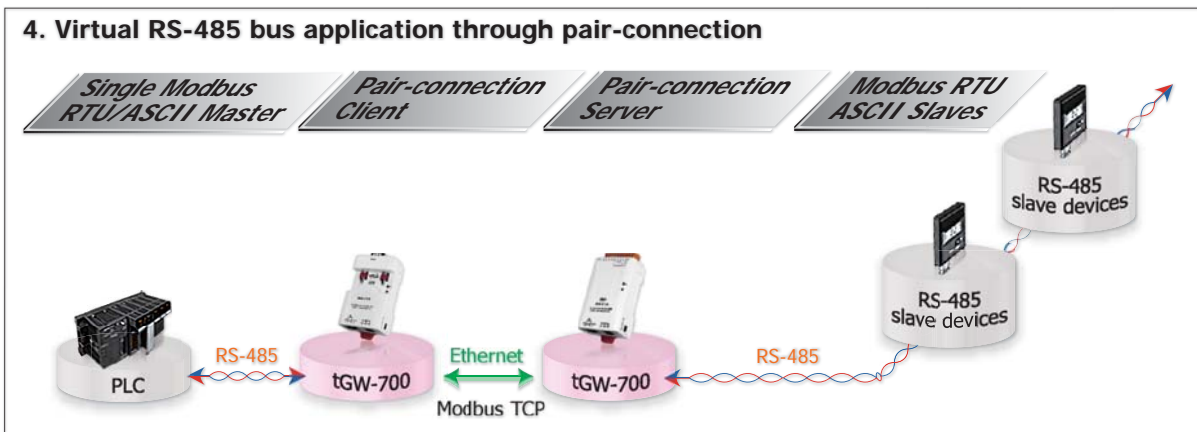
tSH-700 Series

Tiny Serial Port Sharer

tSH-700 series

Features ▶▶▶▶

- Supports baud rate conversion application
- Supports two masters sharing one slave port
- Read-cache ensures faster response
- Redundant power inputs: PoE and DC jack
- Tiny form-factor and low power consumption

- Supports Modbus RTU/ASCII protocol conversion
- Raw data mode for most query-response protocols
- Built-in web server for easy configuration (HTTP)
- Allows automatic RS-485 direction control

Introduction

Following the success of the original tGW-700/tDS-700 modules, ICP DAS has continued to develop new functions for these products in order to provide increased support for a greater number of applications. The tSH-700 module is a serial port sharer that provides a number of functions, including "Baud Rate Conversion", "Modbus RTU/ASCII Conversion" and "Two Masters Share One Slave". The built-in web server provides easy configuration interface, and no console commands are required.

- **Baud Rate Conversion:**

This function allows a single master device to communicate with slave devices using different baud rates and data formats. Most query-response protocols (half-duplex), e.g. DCON, are supported in the raw data mode. Full-duplex communication should also work when the data size is smaller than the built-in 512 bytes buffer on each serial port.

- **Modbus RTU/ASCII Conversion:**

This function allows a single Modbus RTU/ASCII master device to communicate with Modbus RTU/ ASCII slave devices using different protocols, baud rates and data formats.

- **Two Masters Share One Slave:**

This function allows two master devices connected to different serial ports to share slave devices. Modbus mode can be used to convert the Modbus RTU/ASCII protocols, while raw data mode can be used for DCON or other query-response protocols. Different baud rates and data formats can also be used on the different serial ports. The built-in cache function reduces the loading of serial communication on the slave port by removing duplicated queries when the two master devices are requesting the same information.
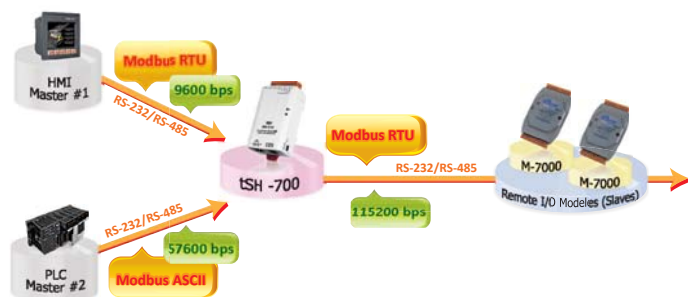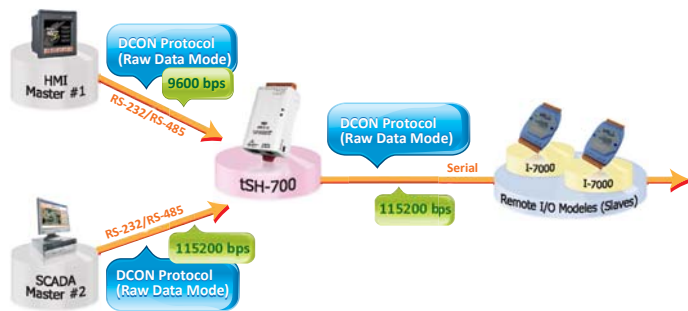
tMS-700 Series

Tiny Modbus TCP Slaves Gateway

tMS-712   tMS-71x series

[CE] [FC] [RoHS] [X] [PoE]

Features ▶▶▶▶

- Modbus RTU/ASCII to TCP slaves conversion
- Supports virtual ID and local ID mappings
- Built-in web server for easy configuration (HTTP)
- Allows automatic RS-485 direction control

- Supports up to 32 Modbus TCP slaves/connections
- Smart routing based on VID/LID instead of broadcast
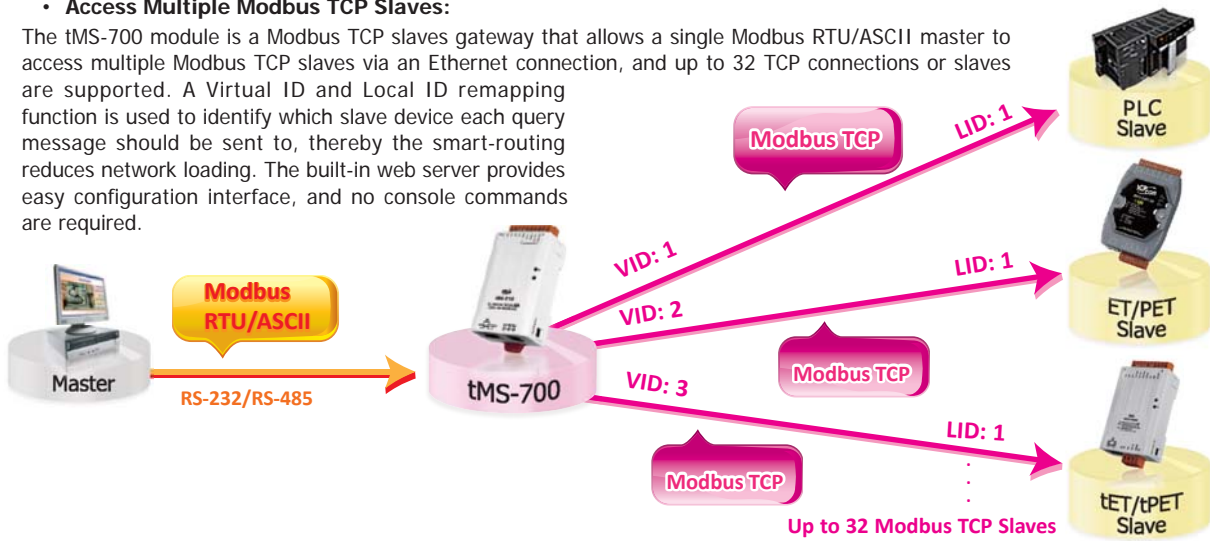- Redundant power inputs: PoE and DC jack
- Tiny form-factor and low power consumption

⟡ Introduction

- **Access Multiple Modbus TCP Slaves:**

The tMS-700 module is a Modbus TCP slaves gateway that allows a single Modbus RTU/ASCII master to access multiple Modbus TCP slaves via an Ethernet connection, and up to 32 TCP connections or slaves are supported. A Virtual ID and Local ID remapping function is used to identify which slave device each query message should be sent to, thereby the smart-routing reduces network loading. The built-in web server provides easy configuration interface, and no console commands are required.

Modbus RTU/ASCII

RS-232/RS-485

Master

tMS-700

Modbus TCP — LID: 1 — PLC Slave

VID: 1
VID: 2 — LID: 1 — ET/PET Slave
Modbus TCP

VID: 3
Modbus TCP — LID: 1 — tET/tPET Slave

Up to 32 Modbus TCP Slaves

- **Access Multiple Modbus RTU/ASCII Slaves:**

The Modbus RTU/ASCII slave devices can be accessed when used in conjunction with the tGW-700 Modbus TCP to RTU/ASCII Gateway, and the maximum number of supported serial slave devices is increased to 247 (Modbus standard).

tMS-700

Modbus TCP — VID: 1 ~ 30 — LID: 1 ~ 30 — tGW-700 — Modbus RTU — M-7000 / M-7000 / M-7000 — Slaves (M-7000)

VID: 31 ~ 60 — Modbus TCP — LID: 1 ~ 30 — tGW-700 — Modbus RTU — Meter / Meter / Meter — Slaves (Meters)

VID: 61 ~ 90 — Modbus TCP — LID: 1 ~ 30 — tGW-700 — Modbus ASCII — PLC / PLC / PLC — Slaves (PLC or Devices)

Modbus RTU/ASCII

RS-232/RS-485

Master

Up to 32 Connections

Up to 247 Modbus RTU/ASCII Slaves

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Serial Device Server
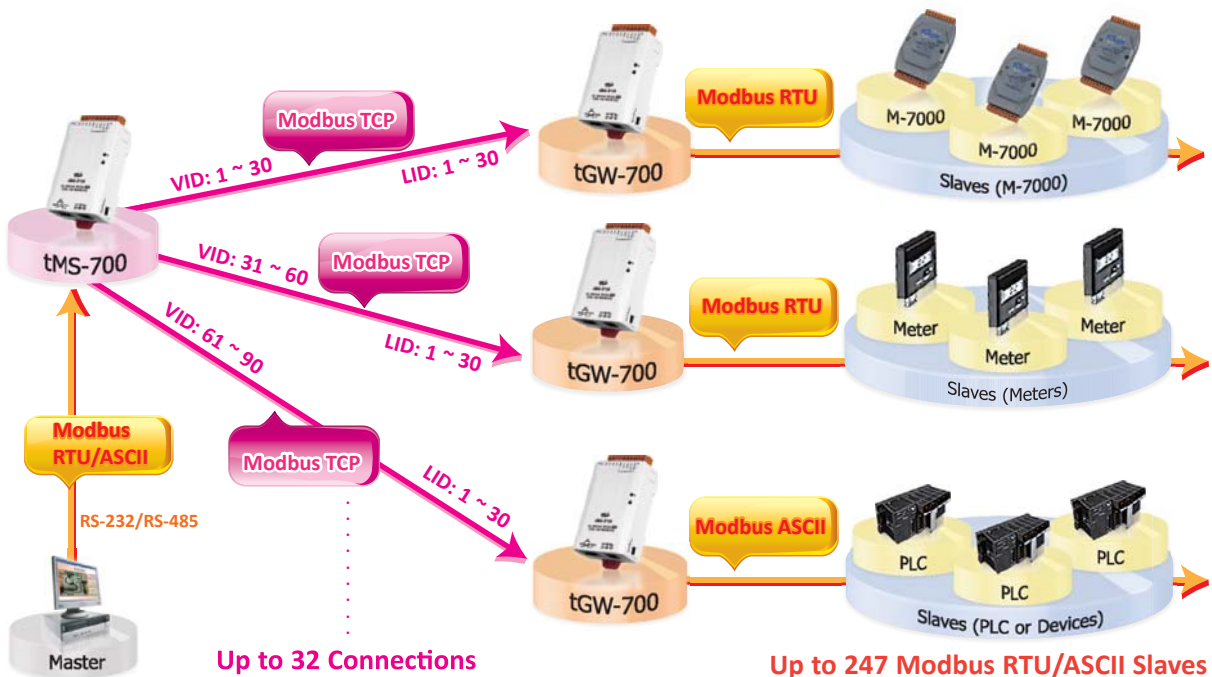
System Specifications

Models	tDS-712 tGW-712 tMS-712	tDS-722 tGW-722 tSH-722	tDS-732 tGW-732 tSH-732	tDS-715 tGW-715 tMS-715	tDS-725 tGW-725 tSH-725	tDS-735 tGW-735 tSH-735	tDS-718 tGW-718 tMS-718	tDS-724 tGW-724 tSH-724	tDS-734 tGW-734 tSH-734	tDS-715i tGW-715i tMS-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 / 4-wire RS-422	2-wire RS-485	2-wire RS-485	3-wire RS-232 / 2-wire RS-485 / 4-wire RS-422	2-wire RS-485	2-wire RS-485	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) 4-wire RS-422: TxD+, TxD-, RxD+, RxD-, GND (Non-isolated)	3-wire RS-232: RxD, TxD, GND (Non-isolated) 5-wire RS-232: RxD, TxD, CTS, RTS, GND (Non-isolated)

Pin Assignments
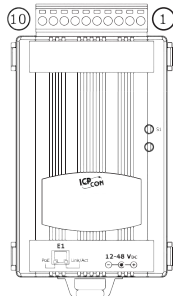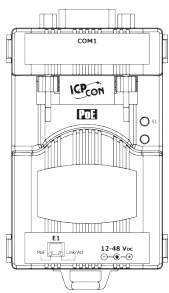
tDS-712/tGW-712/tMS-712

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

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

tDS-732/tGW-732/tSH-732

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

tDS-735/tGW-735/tSH-735

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

tDS-718/tGW-718/tMS-718

	10	F.G.
RS-232	09	N/A
	08	GND
	07	RxD1
	06	TxD1
	05	GND
RS-485/ RS-422	04	RxD1-
	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

tDS-715(i)/tGW-715(i)/tMS-715/tMS-715i

	10	F.G.
	09	N/A
	08	N/A
	07	N/A
	06	N/A
	05	GND
RS-485/ RS-422	04	RxD1-
	03	RxD1+
	02	TxD1-/D1-
	01	TxD1+/D1+

tDS-725/tGW-725/tSH-725

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

tDS-724/tGW-724/tSH-724

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

tDS-734/tGW-734/tSH-734

	10	F.G.
COM3	09	GND
	08	RxD3
	07	TxD3
COM2	06	GND
	05	RxD2
	04	TxD2
COM1	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	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	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	Tiny Serial Port Sharer with PoE and 2 RS-232 Ports (RoHS)
tSH-732 CR	Tiny Serial Port Sharer with PoE and 3 RS-232 Ports (RoHS)
tSH-725 CR	Tiny Serial Port Sharer with PoE and 2 RS-485 Ports (RoHS)
tSH-735 CR	Tiny Serial Port Sharer with PoE and 3 RS-485 Ports (RoHS)
tSH-724 CR	Tiny Serial Port Sharer with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tSH-734 CR	Tiny Serial Port Sharer with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)
Modbus TCP Slaves Gateway: Includes one CA-002 cable.	
tMS-712 CR	Tiny Modbus TCP Slaves Gateway with PoE and 1 RS-232 Port (RoHS)
tMS-715 CR	Tiny Modbus TCP Slaves Gateway with PoE and 1 RS-422/485 Port (RoHS)
tMS-715i CR	Tiny Modbus TCP Slaves Gateway with PoE and 1 Isolated RS-422/485 Port (RoHS)
tMS-718 CR	Tiny Modbus TCP Slaves Gateway with PoE and 1 RS-232/422/485 Port (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-205 CR	Unmanaged 5-port Industrial Ethernet Switch (RoHS)
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 V_{DC} Input (RoHS)