

**tSH-700 Series** *NEW*

**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 tGW-700 modules are Modbus TCP-to-Serial gateway, while the tSH-700 modules are Serial Port Sharers working as Serial-to-Serial converters. The tSH-700 module 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.



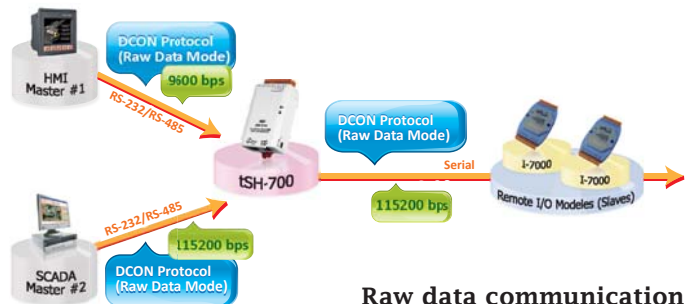
**Modbus RTU/ASCII Conversion:**

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:**

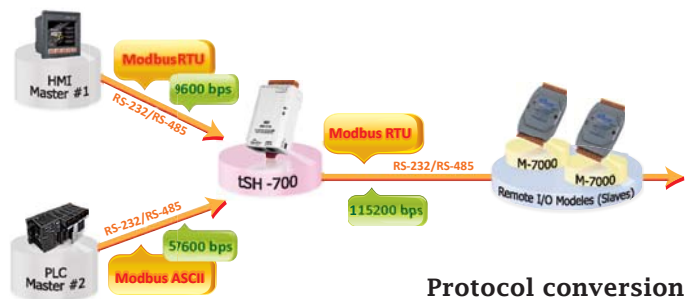
This function allows two master devices connected to different serial ports to share slave devices. The queries from the masters are queued in the tSH-700 module and then processed one-by-one. Modbus mode can be used to convert the Modbus RTU/ASCII protocols, while raw data mode can be used for DCON or other query-response protocols. Different baud rates and data formats can also be used on the different serial ports.



Raw data communication

**Read-Cache Function:**

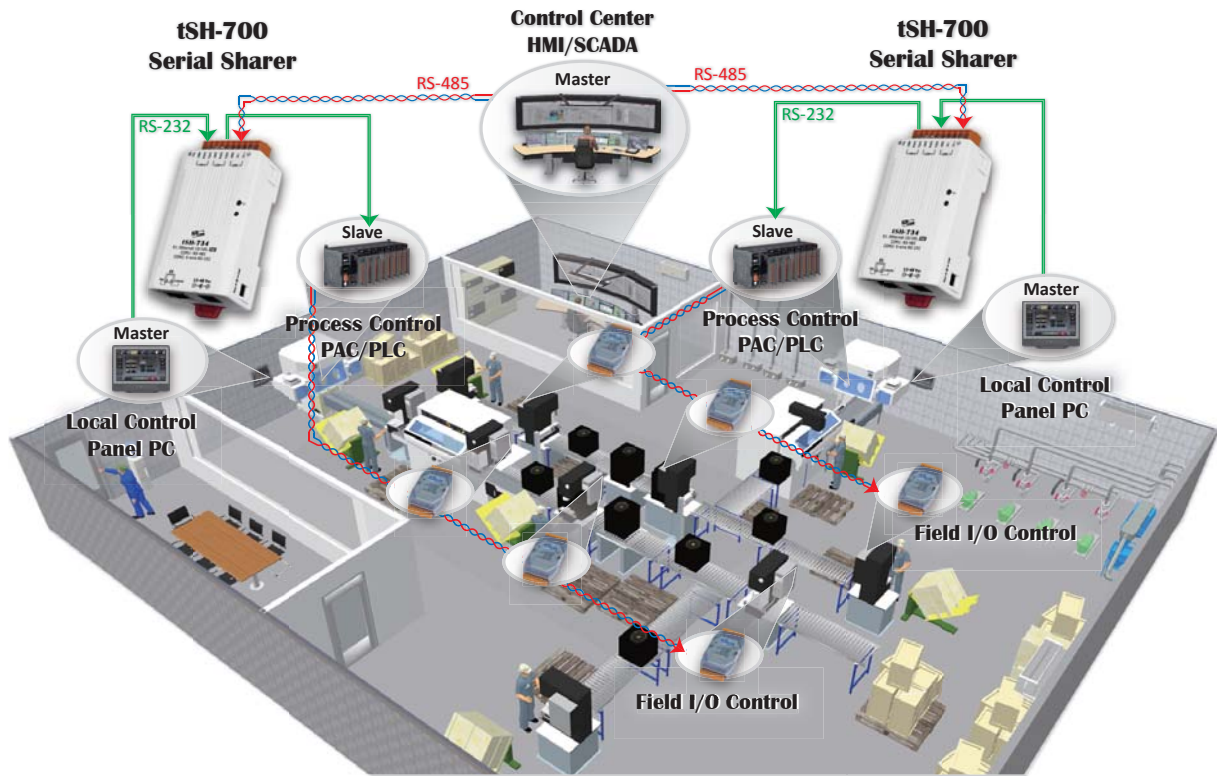
The built-in read-cache function is used to store previous requests and responses of the Modbus messages in the memory buffer of the tSH-700 module. When other HMI/SCADA master controllers requiring the same information from the same slave RTU device, the cached response is returned immediately. This feature dramatically reduces the loading on the slave serial port communication, ensures faster responses to the master, and improves the stability of the entire system.



Protocol conversion

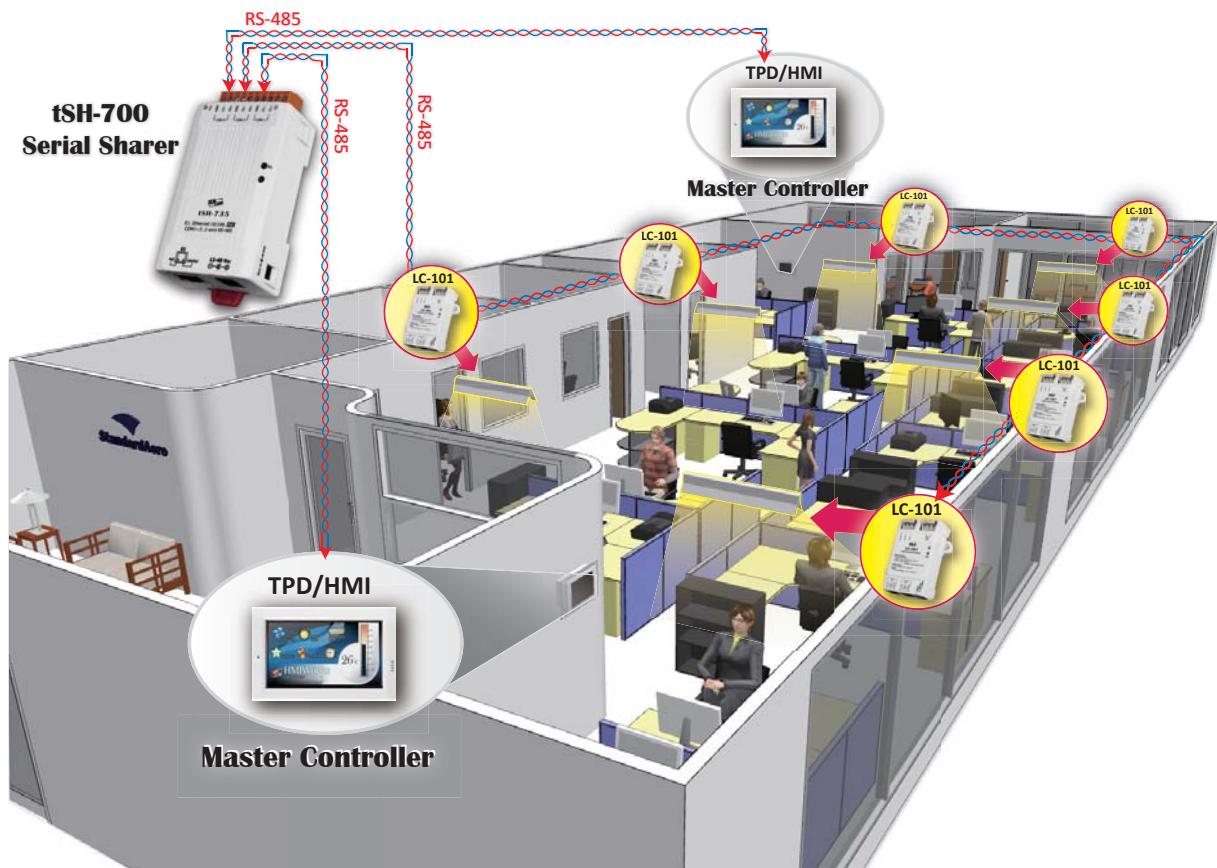
**Applications**

**Accessing a Process Controller from Local Panel and Control Center**



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Serial Device Server

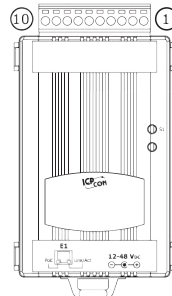
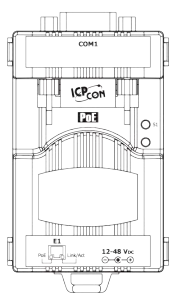
**Control Office Lightings from Two HMI Devices (Masters) in Different Places**



## 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
<b>System</b>										
CPU	32-bit MCU									
<b>Communication Interface</b>										
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			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 <sub>DC</sub>
<b>COM Port Capability (16C550 or compatible UART)</b>										
Baud Rate	115200 bps Max.									
Data Bit	5, 6, 7, 8									
Parity	None, Odd, Even, Mark, Space									
Stop Bit	1, 2									
<b>Power</b>										
Power Input	IEEE 802.3af, Class 1 for PoE; +12 ~ 48 V <sub>DC</sub> for DC Jack									
Power Consumption	0.07 A @ 24 V <sub>DC</sub>									
Connector	Male DB-9 x 1 for tXX-712 series; Removable Terminal Block (10-pin) for others.									
<b>Mechanical</b>										
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									
<b>Environment</b>										
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)			5-wire RS-232: RxD, TxD, CTS, RTS, GND (Non-isolated)			
4-wire RS-422: TxD+, TxD-, RxD+, RxD-, GND (Non-isolated)										

## Pin Assignments



tDS-712/tGW-712

Pin	Function
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.
09	CTS2
08	RTS2
07	RxD2
06	TxD2
05	GND
04	CTS1
03	RTS1
02	RxD1
01	TxD1

tDS-732/tGW-732/tSH-732	
10	F.G.
09	GND
08	RxD3
07	TxD3
06	GND
05	RxD2
04	TxD2
03	GND
02	RxD1
01	TxD1

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

tDS-718/tGW-718	
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-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-725/tGW-725/tSH-725	
10	F.G.
09	N/A
08	N/A
07	N/A
06	GND
05	D2-
04	D2+
03	GND
02	D1-
01	D1+

tDS-724/tGW-724/tSH-724	
10	F.G.
09	N/A
08	CTS2
07	RTS2
06	GND
05	RxD2
04	TxD2
03	GND
02	D1-
01	D1+

tDS-734/tGW-734/tSH-734	
10	F.G.
09	GND
08	RxD3
07	TxD3
06	GND
05	RxD2
04	TxD2
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 <b>NEW</b>	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 <b>NEW</b>	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 <b>NEW</b>	Tiny Serial Port Sharer with PoE and 2 RS-232 Ports (RoHS)
tSH-732 CR <b>NEW</b>	Tiny Serial Port Sharer with PoE and 3 RS-232 Ports (RoHS)
tSH-725 CR <b>NEW</b>	Tiny Serial Port Sharer with PoE and 2 RS-485 Ports (RoHS)
tSH-735 CR <b>NEW</b>	Tiny Serial Port Sharer with PoE and 3 RS-485 Ports (RoHS)
tSH-724 CR <b>NEW</b>	Tiny Serial Port Sharer with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tSH-734 CR <b>NEW</b>	Tiny Serial Port Sharer with PoE, 1 RS-485 and 2 RS-232 Ports (RoHS)

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Serial Device Server

## 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)

