

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
- 2500 V_{DC} isolation and +/-4 kV ESD protection for i versions

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.

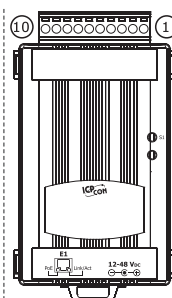
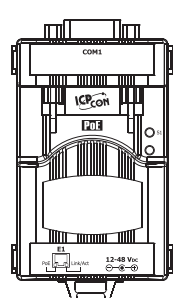


Protocol conversion

System Specifications

Models	tDS-712	tDS-722	tDS-732	tDS-715	tDS-725	tDS-735	tDS-718	tDS-724	tDS-734	
	tDS-712i	tDS-722i	tDS-732i	tDS-715i	tDS-725i	tDS-735i	tDS-718i	tDS-724i	tDS-734i	
	tDSM-712	tGW-722	tGW-732	tDS-2215	tDS-2225	tDS-2235	tDS-2218	tGW-724	tGW-734	
	tDS-2212	tGW-722i	tGW-732i	tGW-715	tGW-725	tGW-735	tGW-718	tGW-724i	tGW-734i	
	tGW-712	tSH-722	tSH-732	tGW-715i	tGW-725i	tGW-735i	tGW-718i	tSH-724	tSH-734	
	tGW-712i	tSH-722i	tSH-732i	tGW-2215	tGW-2225	tGW-2235	tGW-2218	tSH-724i	tSH-734i	
	tGW-2212				tSH-725	tSH-735				
					tSH-725i	tSH-735i				
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)								
	2200 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		1 × RS-232	2 × RS-232	3 × RS-232	1 × RS-422/ RS-485	2 × RS-485	3 × RS-485	1 × RS-232 or RS-422/485	1 × RS-485 1 × RS-232	1 × RS-485 2 × RS-232
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							
	2200 Series	5-pin Removable Terminal Block x 3								
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)								
	2200 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)		
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(i)/tGW-722(i)/tSH-722(i)		
COM2	10	F.G.
	09	CTS2
	08	RTS2
	07	RxD2
COM1	06	TxD2
	05	GND
	04	CTS1
	03	RTS1
RS-485/ RS-422	02	RxD1
	01	TxD1

tDS-715(i)/tGW-715(i)		
COM1	10	F.G.
	09	N/A
	08	N/A
	07	N/A
	06	N/A
	05	GND
	04	RxD1-
	03	RxD1+
RS-485/ RS-422	02	TxD1-/D1-
	01	TxD1+/D1+

tDS-732(i)/tGW-732(i)/tSH-732(i)		
COM3	10	F.G.
	09	GND
	08	RxD3
	07	TxD3
COM2	06	GND
	05	RxD2
	04	TxD2
	03	GND
COM1	02	RxD1
	01	TxD1

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

tDS-735(i)/tGW-735(i)/tSH-735(i)		
COM3	10	F.G.
	09	GND
	08	D3-
	07	D3+
COM2	06	GND
	05	D2-
	04	D2+
	03	GND
COM1	02	D1-
	01	D1+

tDS-724(i)/tGW-724(i)/tSH-724(i)		
COM2	10	F.G.
	09	N/A
	08	CTS2
	07	RTS2
	06	GND
	05	RxD2
	04	TxD2
	03	GND
COM1	02	D1-
	01	D1+

tDS-718(i)/tGW-718(i)		
RS-232	10	F.G.
	09	N/A
	08	GND
	07	RxD1
RS-485/ RS-422	06	TxD1
	05	GND
	04	RxD1-
	03	RxD1+
COM1	02	TxD1-/D1-
	01	TxD1+/D1+

tDS-734(i)/tGW-734(i)/tSH-734(i)		
COM3	10	F.G.
	09	GND
	08	RxD3
	07	TxD3
	06	GND
	05	RxD2
	04	TxD2
	03	GND
COM1	02	D1-
	01	D1+

Ordering Information

Note: Available soon

Non-Isolated	Isolated	2-port Ethernet Switch	Serial Device Server: Includes one CA-002 cable.
tDS-712 CR	tDS-712i CR	tDS-2212	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	tDS-2215	Tiny Device Server with PoE and 1 RS-422/485 Port (RoHS)
tDS-725 CR	tDS-725i CR	tDS-2225	Tiny Device Server with PoE and 2 RS-485 Ports (RoHS)
tDS-735 CR	tDS-735i CR	tDS-2235	Tiny Device Server with PoE and 3 RS-485 Ports (RoHS)
tDS-718 CR	tDS-718i CR	tDS-2218	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	2-port Ethernet Switch	Modbus/TCP to RTU/ASCII Gateway: Includes one CA-002 cable.
tGW-712 CR	tGW-712i CR	tGW-2212	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	tGW-2215	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 1 RS-422/485 (RoHS)
tGW-725 CR	tGW-725i CR	tGW-2225	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 2 RS-485 Ports (RoHS)
tGW-735 CR	tGW-735i CR	tGW-2235	Tiny Modbus/TCP to RTU/ASCII Gateway with PoE and 3 RS-485 Ports (RoHS)
tGW-718 CR	tGW-718i CR	tGW-2218	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	2-port Ethernet Switch	Serial Port Sharer: Includes one CA-002 cable.
tSH-722 CR	tSH-722i CR	-	Tiny Serial Port Sharer with PoE and 2 RS-232 Ports (RoHS)
tSH-732 CR	tSH-732i CR	-	Tiny Serial Port Sharer with PoE and 3 RS-232 Ports (RoHS)
tSH-725 CR	tSH-725i CR	-	Tiny Serial Port Sharer with PoE and 2 RS-485 Ports (RoHS)
tSH-735 CR	tSH-735i CR	-	Tiny Serial Port Sharer with PoE and 3 RS-485 Ports (RoHS)
tSH-724 CR	tSH-724i CR	-	Tiny Serial Port Sharer with PoE, 1 RS-485 and 1 RS-232 Ports (RoHS)
tSH-734 CR	tSH-734i CR	-	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)

