


# tGW-715-UL Series

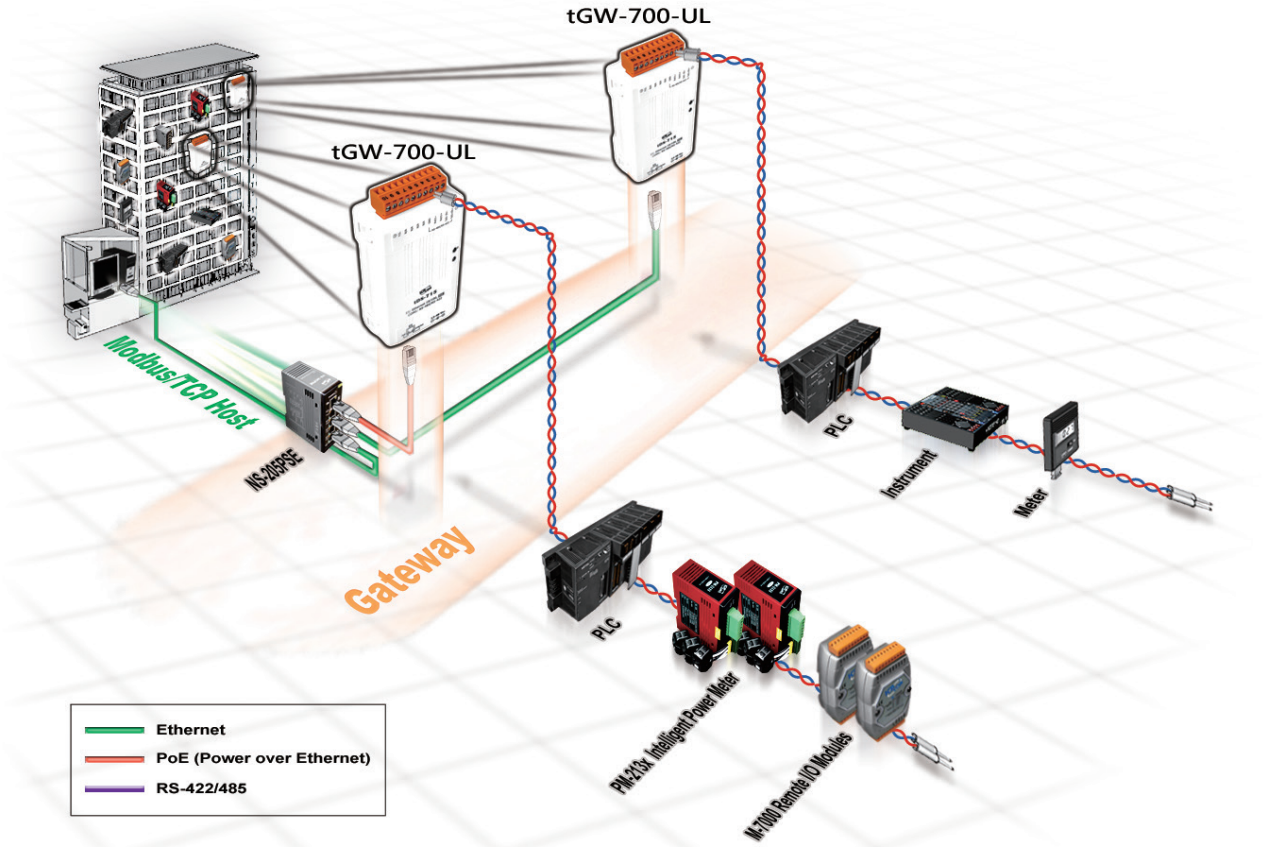
Tiny Modbus/TCP to RTU/ASCII Gateway

## Features

- Supports Modbus TCP/UDP master and slave
- Supports Modbus RTU/ASCII master and slave
- Max. TCP connections (masters) per serial port: 32
- Read-cache ensures faster Modbus TCP/UDP response
- Supports UDP responder for device discovery (UDP Search)
- Static IP or DHCP network configuration
- Tiny Web server for serial and network configuration (HTTP)
- Allows automatic RS-485 direction control

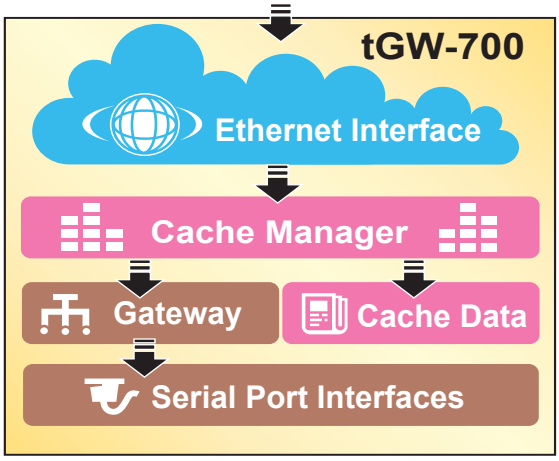
## Introduction

Modbus has become a 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.

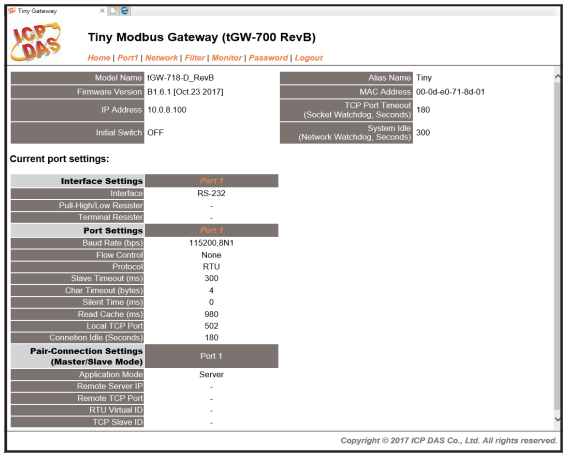



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**The tGW-700-UL module is a Modbus gateway that enables a Modbus TCP/UDP host to communicate with serial Modbus RTU/ASCII devices through an Ethernet network, and eliminates the cable length limitation of legacy serial communication devices.** The 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 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, this allows multiple masters accessing slave devices on the same serial port. The **read-cache function** is used to store previous requests and responses in the memory buffer of the tGW-700-UL 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-UL 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 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-UL 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 aPoE 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-UL 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 energy-efficient equipment can have a positive impact on maintaining a green environment.



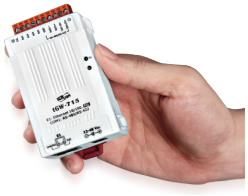

Based on an amazing tiny form-factor, the tGW-700-UL achieves maximum space savings that allows it to be easily installed anywhere, even directly embedded into a machine. It also supports automatic RS-485 direction control when sending and receiving data, thereby improving the stability of the RS-485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

The tGW-700-UL series modules have obtained UL certification, meeting strict safety standards including fire resistance, electric shock protection, and durability quirements. This ensures stability and safety across various usage environments, providing consumers with reliable quality assurance. The UTA version uses conformal coating technology that offers excellent resistance to moisture and salt spray, making it particularly suitable for coastal and high-humidity environments.

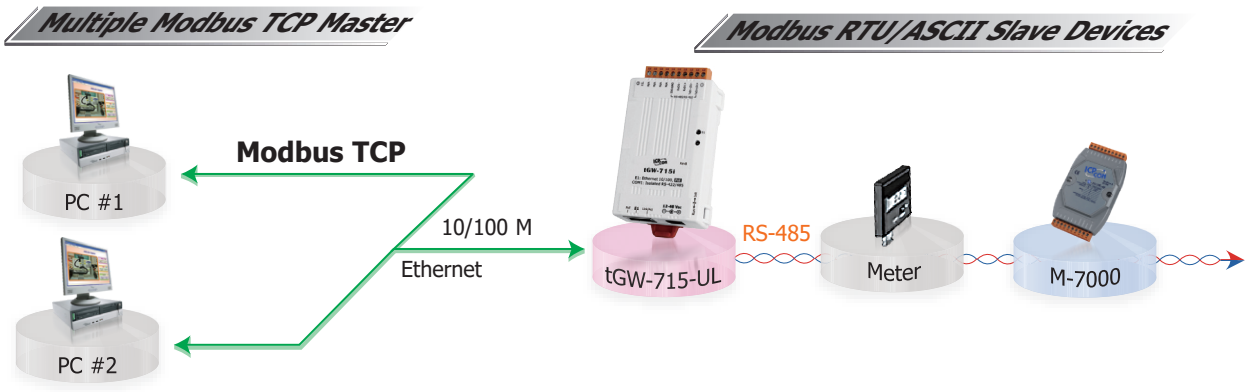
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## Applications

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



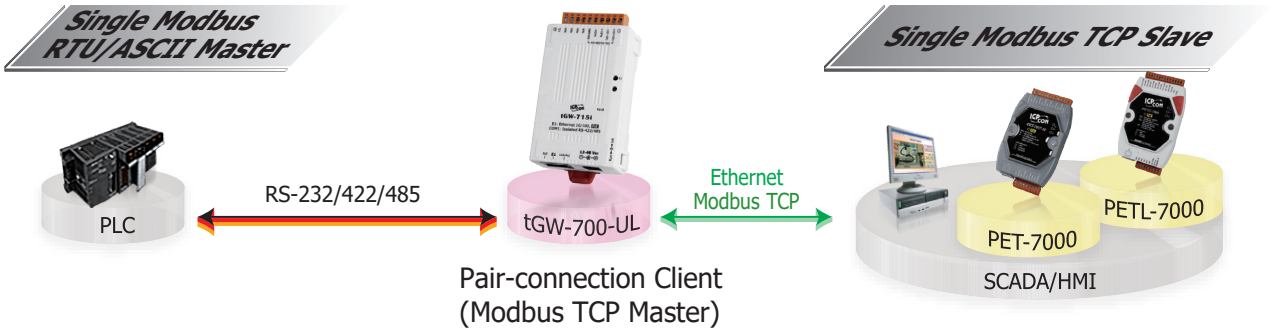
### 1. Modbus TCP Masters to RTU/ASCII Gateway application



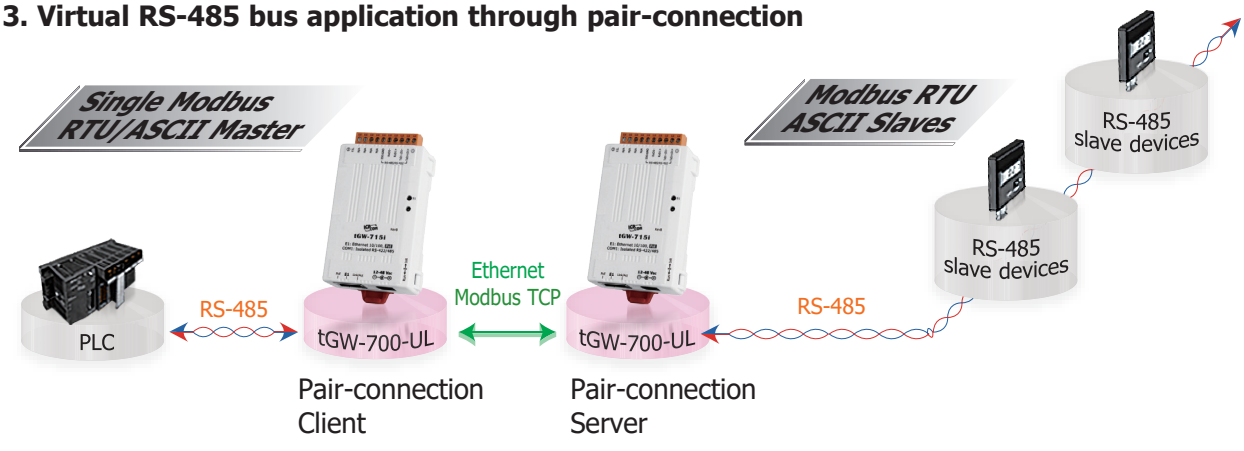

Max. TCP connections (Masters) per serial port: 32

Max. Device (Slave) per serial port: 247

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




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




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## Specifications

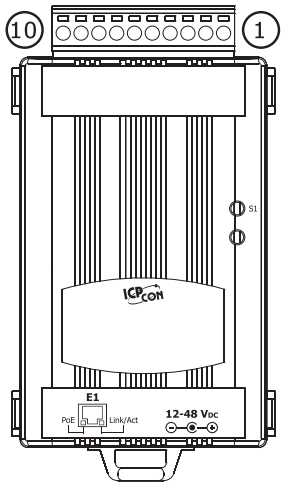
| Models | tGW-715-UL , tGW-715-UL-UTA , tGW-715i-UL & tGW-715i-UL-UTA |
|---|---|
| **Communication Interface** | |
| Ethernet | 10/100 Base-TX, 8-pin RJ-45 x 1, (Auto-negotiating, Auto-MDI/MDIX, LED indicator) |
| PoE | IEEE 802.3af, Class 1 |
| **COM Port Capability (16C550 or compatible UART)** | |
| Ports | tGW-715-UL & tGW-715-UL-UTA: 1 x RS-422/485 (non-isolation)<br>tGW-715i-UL & tGW-715i-UL-UTA: 1 x RS-422/485 (3000VDC Signal Isolation) |
| Baud Rate | 115200 bps Max. |
| Parity | None, Odd, Even, Mark, Space |
| Data Bit | 5, 6, 7, 8 |
| 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 | 10-pin Removable Terminal Block x 1 |
| Dimensions (W x L x H) | 52 mm x 27 mm x 95 mm |
| Installation | DIN-Rail mounting |
| Case | Plastic |
| **Environment** | |
| Operating Temperature | tGW-715-UL & tGW-715i-UL: -25 ~ +70 °C<br>tGW-715-UL-UTA & tGW-715i-UL-UTA: -40 ~ +70 °C |
| Storage Temperature | -30 °C ~ +80 °C |
| Humidity | 10 ~ 90% RH, non-condensing |

Note: COM1 = TCP Port 502

The UTA version has a conformal coated PCB for added protection against moisture, dust, and corrosion, making it ideal for coastal, marine, or high-humidity environments. Even with a waterproof enclosure, the coated version offers extra reliability.

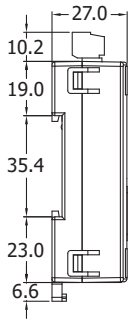
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## Apparances

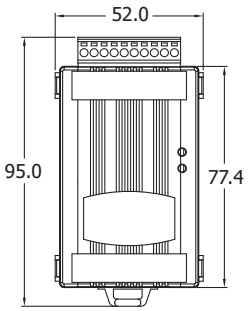



| | | |
|---|---|---|
| | 10 | F.G. |
| | 09 | N/A |
| | 08 | N/A |
| | 07 | N/A |
| | 06 | N/A |
| RS-485/ RS-422 | 05 | GND |
| | 04 | Rx1- |
| | 03 | Rx1+ |
| | 02 | D1-/Tx1- |
| | 01 | D1+/Tx1+ |

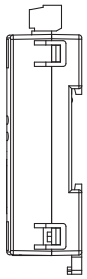
## Dimensions (Units: mm)



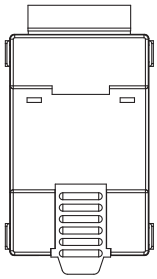

Left Side View



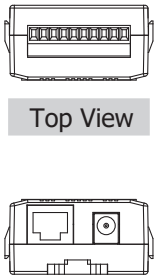

Front View



Right Side View



Rear View



Top View

Bottom View

## Ordering Information

| | Includes DC connector to 2-wire power cable, 0.3 M (CA-002-UL) |
|---|---|
| tGW-715-UL CR | Tiny Modbus TCP to RTU/ASCII Gateway with PoE and 1-port RS-422/485 (RoHS) |
| tGW-715-UL-UTA CR | Tiny Modbus TCP to RTU/ASCII Gateway with PoE and 1-port RS-422/485 (RoHS) (-40 °C Operating Temperature) |
| tGW-715i-UL CR | Tiny Modbus TCP to RTU/ASCII Gateway with PoE and 1-port Isolated RS-422/485 (RoHS) |
| tGW-715i-UL-UTA CR | Tiny Modbus TCP to RTU/ASCII Gateway with PoE and 1-port Isolated RS-422/485 (RoHS) (-40 °C Operating Temperature) |

## Accessories

**UP0061D-12PA58G CR**

Wall mount power supply; Input range 90-240VAC; Output 12 VDC/0.5 A, 6 W; two pins USA plug (RoHS)



**NS-205PSE CR**

Unmanaged 5-port 10/100 Mbps PoE (PSE) Ethernet Switch (RoHS)



**NS-205PSE-24V CR**

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



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