

### Mini RTU with Rich I/O



TG501 is a compact and cost-effective industrial remote telemetry unit(RTU) designed for industrial applications, such as water, wastewater treatment, water quality, weather station, air quality, flood disaster alarm, water pump.

TG501 provides high speed 4G LTE or dual mode LTE-M/NB-IoT for applications that require different data throughput. By using the powerful config tool software provided by Bivocom, engineer can easily configure the RTU and collect the data from different sensors and controllers without doing any programming.

TG501 RTU supports multiple I/O, such as DI, ADC, RS232, RS485, Relay and multiple industrial protocols like MQTT, Modbus RTU/TCP, TCP/UDP, which is ideal for merging legacy and modern sensors and controllers into one system, saving time and cost on maintenance.

### Key Features

#### 1. Multiple I/O with Terminal Block

2x RS232, 1x RS485, 3x Analog input, 2x Digital input, 2x Relay output, 1x Power input, 1x Power output

#### 2. Compatible with Diverse Sensors/Controllers

Flowmeter, pressure, water quality, water level, temperature, humidity and PLC, etc.

#### 3. Rich Cellular Networks to Choose

Compatible with global 4G/3G/2G and LTE CAT M1/NB-IoT.

#### 4. Multiple Data Transmission Mode

Support Modbus RTU/TCP, Modbus to Json, MQTT and customized industrial protocols conversion and TCP/UDP transparent data transmission mode

#### 5. Remote/Local Data Storage

Up to 5 data centers for sync data storage and backup  
Supports up to 16MB local data storage

#### 6. Easy to Configure

A visible config and debug tool, convenient for configuration and troubleshooting.

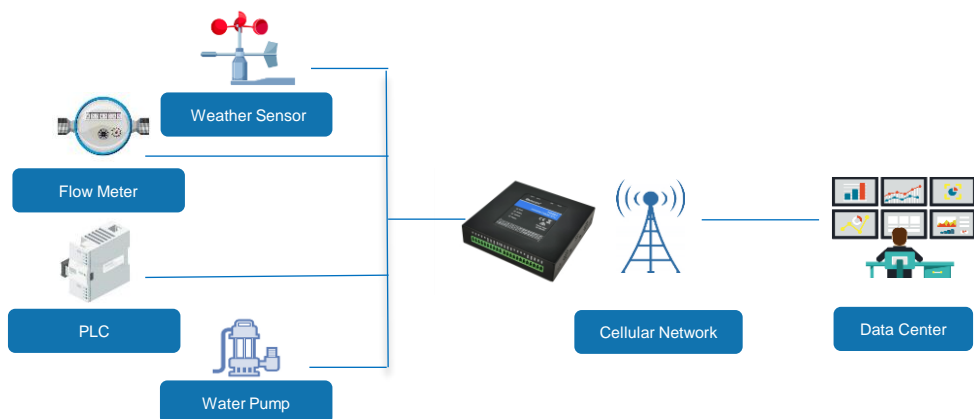
#### 7. Low Power Consumption Design

Support types of work modes, sleep mode, timing collecting and sending data to center, auto report.

#### 8. Remote Management

Support remote management via SMS, commands, Bivocom central management software and DMP<sup>1</sup>

### Applications



### Success Case

#### Gas Facility Monitor and Alarm



# Specifications

## System

- **CPU** Industrial 32-bit MCU
- **Flash** 512KB
- **SRAM** 256KB
- **Data Storage Flash** 16MB

## Cellular Interfaces

- **Antenna Connector** 1 × 50 Ω SMA Female, or 2(Optional)
- **SIM Slot** 1
- **ESD Protection** 15KV

## Serial Interfaces

- **Connector** Terminal block, 3.5 mm female socket with lock
- **Ports** 2-RS232(1 for debug), 1-RS485
- **Baud Rate** 300bps to 230400bps
- **ESD protection** 8KV for RS232, 15KV for RS485

## I/O

- **Connector** Terminal block, 3.5 mm female socket with lock
- **Analog Input** 3x ADC, 16-bit AD  
4-20mA current signal input  
or 0-5V voltage signal input(Optional)
- **Digital Input** 2x DI  
Status "0": 0-3VDC, Status "1": 5-30VDC
- **Relay Output** 2 x Relay  
Max switching voltage: 30VDC/250VAC Max  
switching, current: 5A

## Power Output

- **Port** 1  
Default is 12V. rated output current is 1A,  
built in overcurrent protection

## Software

- **Network Protocols** MQTT, Transparent (TCP Client/Server, UDP Client/Server), Modbus Gateway (Modbus RTU to Modbus TCP)
- **Management** Config tool, SMS, Cloud DMP (Device Management Platform)

## Power Supply and Consumption

- **Connector** 2-pin with 3.5 mm terminal block
- **Standard Power** DC 12V/1.5A
- **Input Voltage** 5-35 VDC
- **Data Acquisition** 40 ~ 45mA @12VDC
- **Communication** 40 ~ 60mA @12VDC

## Physical Characteristics

- **Ingress Protection** IP30
- **Housing & Weight** Metal, 320g (0.71lbs), without accessories
- **Dimensions** 100 x 100 x 23mm (3.94 x 3.94 x 0.91 in)
- **Mounting** Desktop, Wall mount, DIN-Rail

## Environmental

- **Operating Temperature** -35°C to +75°C (-31°F to +167°F)
- **Storage Temperature** -40°C to +80°C (-40°F to +176°F)
- **Relative Humidity** 5% to 95% (non-condensing)
- **Ethernet Isolation** 1.5 kV RMS

## Others

- **LED Indicators** System, Online, Power, Error
- **Built-in** Watchdog, RTC, Timer
- **Approvals<sup>2</sup>** CE\*, RCM\*, FCC\*, NBTC\*
- **Warranty Period<sup>3</sup>** Standard: 12 Months  
Extended: 2-5 Years

## Standard Package Content

- |    |                                                       |       |
|----|-------------------------------------------------------|-------|
| 1. | TG501 RTU                                             | 1 PCS |
| 2. | Power Adapter(DC 12V/1.5A, EU/US/UK/AU plug optional) | 1 PCS |
| 3. | Mag-mount Cellular Antenna (SMA Male, 1 meter, 5dBi)  | 1 PCS |
| 4. | RS232 Cable (DB9 Female, 1 meter)                     | 1 PCS |
| 5. | 12-Pin Terminal Block                                 | 1 PCS |
| 6. | 10-Pin Terminal Block                                 | 1 PCS |
| 7. | Wall Mount Kits                                       | 1 PCS |

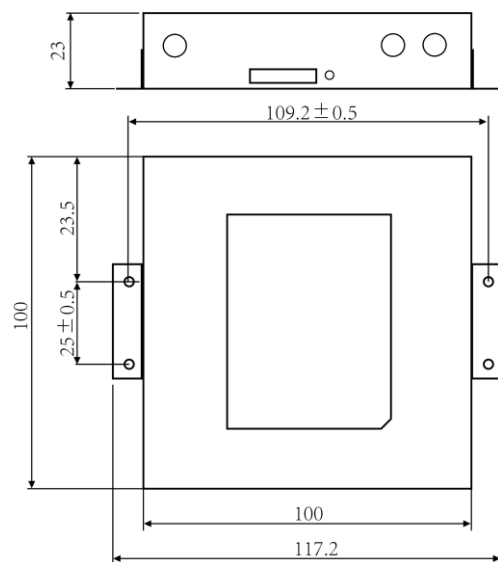
## Order Information

Model	Part Number	Description	Cellular Network	Frequency Band <sup>4</sup>
TG501-LF	TG501-L<1>	4G RTU, 2-RS232, 1-RS485, 2-DI, 3-ADC, 2-Relay, 1-Power Output	4G LTE 3G/WCDMA/UMTS/HSPA+ EDGE/GPRS	4G LTE CAT 4 • EMEA/Asia: B1/B3/B5/B7/B8/B20/B38/B40/B41 • ANZ/LATAM: B1/B3/B5/B7/B8/B28 • NA: B2/B4/B5/B12/B13/B14
TG501-W	TG501-W<1>	3G RTU, 2-RS232, 1-RS485, 2-DI, 3-ADC, 2-Relay, 1-Power Output	3G/WCDMA/UMTS/HSPA+ EDGE/GPRS	Global: 850/900/1900/2100
TG501-M	TG501-M<1>	LTE-M/NB-IoT RTU, 2-RS232, 1-RS485, 2-DI, 3-ADC, 2-Relay, 1-Power Output	LTE CAT M1/NB-IoT, EDGE/GPRS	APAC: FDD-LTE B1/B3/B5/B8 GPRS/EDGE 900/1800 MHz NA: FDD-LTE B2/B4/B12/B13 EU/AU: FDD-LTE B3/B8/B20/B28 GPRS/EDGE 900/1800Mhz Global: FDD-LTEB1/B2/B3/B4/B5/B8/B12/B13 B17/B18/B19/B20/B25/B26/B28/(CAT-M1 only); GPRS/EDGE 850/900/1800/1900Mhz
<1> means module for different cellular networks, countries and regions.				

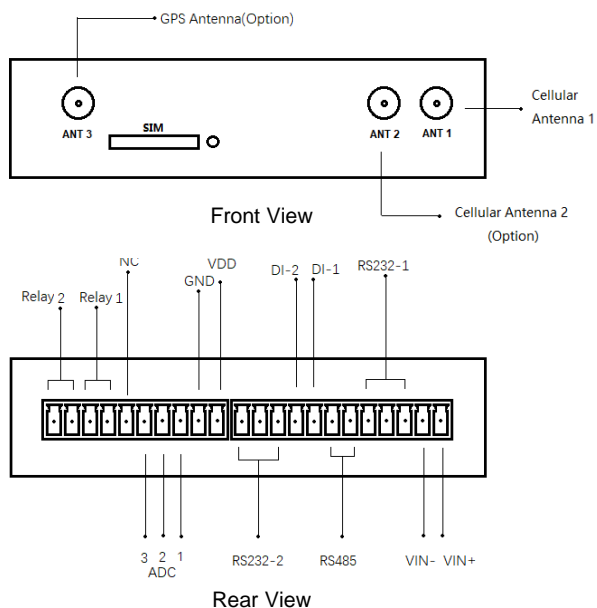
### Note:

1. There has a license fee for DMP.
2. \* Under progress
3. Price of the extended warranty will be different.
4. If you couldn't find the frequency band for your regions or have any questions, please contact Bivocom sales representatives for more information.
5. To save the earth, Bivocom doesn't print the user guide, if you need it, please go to Bivocom website to [download](#).

## Dimensions(mm)



## Side Views



## Related Products



◀ **LCD RTU**  
[TY511 Series](#)

- ✓ LCD display with keyboard
- ✓ Rich I/O
- ✓ MQTT, Modbus RTU/TCP, TCP/UDP



◀ **IoT Edge Gateway**  
[TG452 Series](#)

- ✓ ARM based CPU
- ✓ OpenWrt based Linux OS, Node-Red, C/C++, Python programmable
- ✓ Edge computing, up to local 32G local data storage