



TG452 Series
Programmable Edge Gateways

Introduction

TG452 is a programmable edge gateway that integrates legacy and modern sensors, meters, and controllers into a unified system. It features rich interfaces, including RS232/RS485 serial ports, digital inputs, relay outputs, analog inputs, CAN*, RJ45 Ethernet, Wi-Fi, and GNSS*, making it a cost-effective choice for BESS (Battery Energy Storage Systems), fleet management, HVAC, building automation, water & wastewater treatment, oil & gas, and smart agriculture.

Supporting 5G/4G LTE/3G/2G cellular connectivity, TG452 offers dual-SIM/dual-module options for failover or load balancing, along with WAN & WWAN failover to maintain reliable connectivity for mission-critical industrial applications. Built-in VPN, SNMP, BGP, SSH, SPI firewall, and multiple security protocols help secure data transmission.

Powered by Bivocom OS with optional Ubuntu*, the gateway supports Node-RED, Python, and C/C++ for custom development. It supports mainstream protocols including Modbus RTU/TCP, MQTT, and JSON, as well as customized industrial protocols such as OPC UA*, IEC101/104/61850*, DNP3*, and BACnet IP/MSTP*, enabling seamless integration with existing systems.

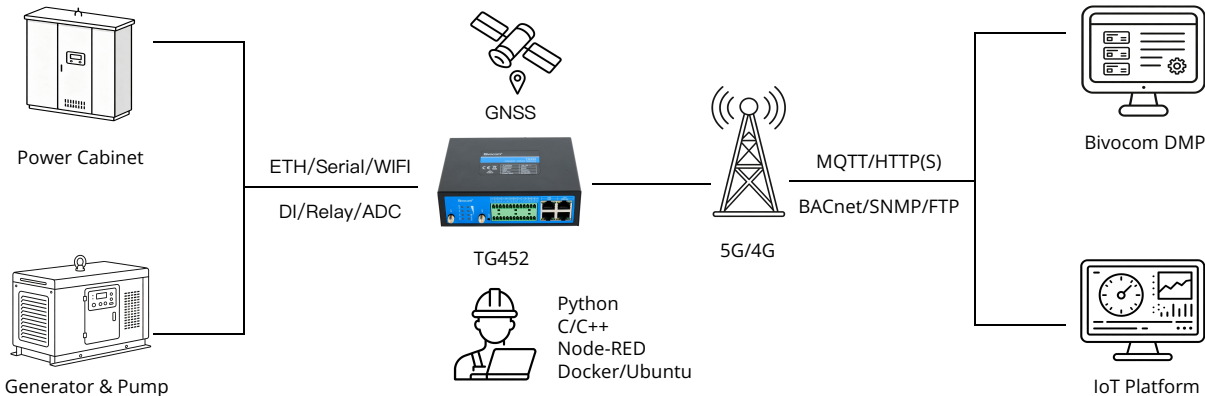
Key Features

- 4G LTE, or 5G RedCap (Optional)
- 4-ETH, 2-RS232, 3-RS485, 2-DI, 2-ADC, 2-Relay, 1-TF Slot, 1-CAN*, 1-DC Power Output, 2.4G WIFI*, GNSS*
- Programming Bivocom OS: C/C++, Python, Node-RED, Ubuntu*, Docker*
- Modbus RTU/TCP, JSON, BACnet IP/MSTP*, OPC UA*, IEC 101/104/61850*, DNP3* and customized industrial protocols
- MQTT, FTP*, HTTP(S), Wireguard, Tailscale*, SNMP*, Telnet, SSH

Applications

- HVAC
- Flood Alarm
- BESS
- Industry 4.0
- Water & Waste Water
- Oil & Gas
- Power
- Weather Station

Diagram



Specifications

Systems

CPU	32-bit ARM Cortex A7
Flash	1GB (8GB Optional)
RAM	256MB (512MB Optional)

Cellular

Antenna	2 x 50 Ω SMA-K
SIM Slot	1 Mini SIM(2FF), or 2(DSSM, DSDM, Optional)

Ethernet

Ports	4 x 10/100 Mbps 1 x WAN, 3 x LAN, or 4 x LAN Configurable
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Serial

Ports	2 x RS232, 3 x RS485
Baud Rate	1200bps to 230400bps

I/O

Digital Input	2-DI(Isolation, Dry contact), Optional Wet contact (Status "1": 0-3V, Status "0": 5-30V)
Relay Output	2-Relay (Up to 5A, 30VDC/250VAC switch)
Analog Input	2 x 12-bit (4-20mA, or 0-5/15/24V Optional)
CAN (Optional)	1, CAN2.0B, SAE J1939*
Power Output	1 x 12VDC/1A, for powering field sensors & devices

Wi-Fi (Optional)

Antenna	1 x 50 Ω RP-SMA-J
Standard	IEEE 802.11b/g/n, AP/Client modes
Bands	2.4GHz
Security	Open, WPA, WPA2, Radius

GNSS / GPS (Optional)

Module	GNSS from cellular module, or independent GPS Module
Antenna	1 x 50 Ω SMA-J

External Storage

TF Slot	1 x Micro SD slot, Up to 32GB
Usage	User Program and Data Storage

Power

Input	5-35VDC
Standard Power	12VDC/1.5A
Idle Mode	220 ~ 265mA@12VDC
Working Mode	280 ~ 330mA@12VDC

Physical Characteristics

IP Rating	IP30
Housing & Weight	Metal, 630g (1.39lbs), without accessories
Dimensions	145 x 114 x 45mm (5.71 x 4.49 x 1.77in)
Mounting	Desktop, DIN-Rail

Environmental

Operating Temp.	-35° C to +75° C (-31°F to +167°F)
Storage Temp.	-40° C to +80° C (-40°F to +176°F)
Relative Humidity	5% to 95% (non-condensing)

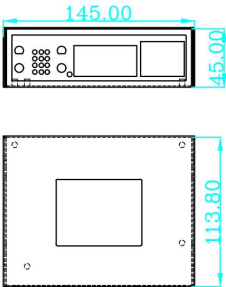
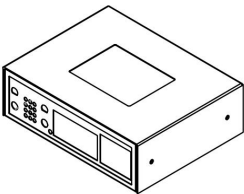
Others

Reset Button	1
LED Indicators	Power, WIFI, System, Alarm, Online, Signal
Built-in	Watchdog, RTC, Timer
Approvals	CE, RCM*, FCC*
Warranty Period	Standard: 2-Year limited warranty Extended: 3-5 Years

Software

Programming	Bivocom OS (OpenWrt based Linux OS, Or Optional Ubuntu OS) C/C++, Python, Node-RED, Docker(Ubuntu)*, LUA* and SDK
Data Protocols	Modbus RTU/TCP, SMS, SNMP*, IEC101/104*, IEC61850*, DNP3*, BACnet IP/MSTP*, OPC UA*, etc.
Network Protocols	VXLAN, GNSS, IPV6*, DDNS, DNS, ARP, Static Routing, NAT, Firewall, Telnet/SSH, PPP, PPPoE, DHCP, ICMP, NTP, etc.
Server Supported VPN	MQTT, HTTP(S), Transparent TCP/UDP, FTP* Wireguard/OpenVPN/IPsec/PPTP/L2TP/Tailscale*
Firewall Management	ACL/DMZ/Port Mapping/MAC Binding Web, CLI, SMS, Bivocom DMP (Device Management Platform)*
Reliability	Dual SIM*, WWAN and WAN Failover, Hardware & Software Watchdog

Dimensions



Ordering Information

Model	Part Number	Cellular	Frequency Bands	Package Contents
TG452-LF	TG452 - L <1><2> - <3>	4G LTE	4G LTE CAT 4* (Optional Global or Regional Version) <ul style="list-style-type: none">• 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	<div>1. TG452 x 1</div> <div>2. Cellular Antenna x 2</div> <div>3. Ethernet Cable x 1</div> <div>4. 13-Pin Terminal Block x 2</div> <div>5. DIN-Rail Mount Kit x 1</div> <div>6. Power Adapter x 1</div> <div>(Optional EU/UK/AU/US/CN Type)</div>
TG452-RC	TG452 - RC <1><2> - <3>	5G RedCap	5G NR Sub-6 SA* (Optional Global or Regional Version) <ul style="list-style-type: none">• n1/2/3/5/7/8/12/13/14/18/20/25/26/28/30/38/40/41/48/66/70/71/77/78/79• LTE FDD B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/30/66/70/71• LTE TDD B34/38/39/40/41/42/43/48	

Part Number:
<1>: 5G or 4G module for different countries and regions
<2>: DS=Dual SIM Single Module
DM=Dual SIM Dual Module
<3>: W=2.4G WIFI
G=GPS (Standalone GPS)
GN=GNSS from cellular module

- Note:**
1. Region-specific cellular modules are available; consult Bivocom sales for details.
2. Compiler & SDK are provided for secondary development. Ubuntu require dedicated hardware&firmware (8GB Flash version)
3. DSSM: Dual-SIM single-module design with automatic network failover; DSDM: Dual-SIM dual-module design supporting load balancing.
4. Bivocom DMP (Device Management Platform) requires a license fee.
5. *Optional functions rely on matching hardware/firmware versions; not all features supported on one device.
6. Power consumption is measured under laboratory conditions and is for reference only.
7. *Listed certifications are pending.
8. Extended warranty pricing varies.
9. Digital user manuals are free to download from [Bivocom](#) official website for environmental protection.

About Bivocom

Founded in 2014, Bivocom specializes in industrial IoT communication technology. Our comprehensive product portfolio covers IoT sensors, cellular gateways, industrial routers, RTUs, modems, as well as self-developed IoT cloud management platforms. We deliver ruggedized industrial wireless hardware, full-lifecycle OEM/ODM customization services and end-to-end IoT connectivity one-stop solutions to industrial partners worldwide.

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