Bivocom®

TG453 Series

Industrial 5G Gigabit Gateways

Key Features

- Global 5G NR Sub-6 bands or mmWave(Option), SA and NSA dual modes, or 4G LTE[1]
- 5-RJ45(GbE),1-RS232(Debug), 2-RS485, 1-Power Output, 1-TF, 2.4G WIFI, GNSS(Option)
- Dual SIM/Dual Module(Option) for failover/load balance
- Up to 32GB local data storage and backup via Micro SD
- OpenWRT based Linux OS, Python, C/C++ programmable[2]
- Wide operating temperature: -35~+75 °C
- Modbus RTU/TCP, MQTT, JSON, TCP/UDP and customized industrial protocols
- VPN, SNMP, BGP, HTTP, Telnet, SSH, CLI, SPI firewall

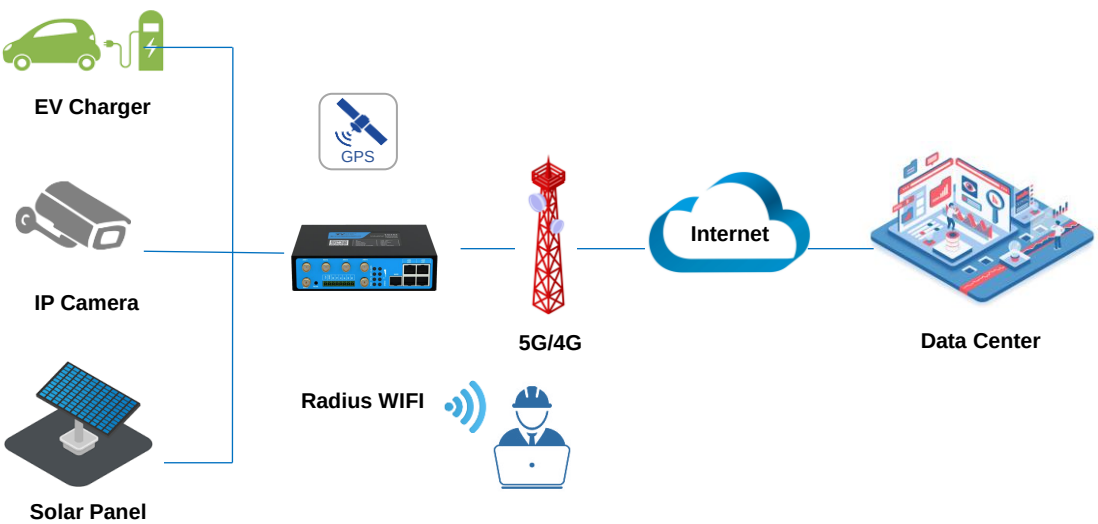
Introduction

The TG453 is a compact 5G NR IoT gateway designed for IoT, M2M, and eMBB applications requiring higher speed, lower latency data transmission, and capacity of basic edge computing. It provides OpenWRT based Linux OS embedded environment that allows developers and engineers to program and install their own application based on Python, C/C++ to the hardware themselves.

The TG453 gateway has 5-Gigabit ethernet ports, 1-RS232, 2-RS485 to connect to diverse field equipment and sensors, transferring the data to the cloud server via 5G/4G LTE cellular network. It comes with industrial protocols, such as MQTT, Modbus RTU/TCP, JSON, TCP/UDP and VPN to provide you an efficient and secure IoT data connectivity between field devices and cloud server.

The TG453 gateway has option of dual sim/dual module for failover/load balance, providing robust and reliable wireless and wired connectivity for your mission-critical industrial applications, such as EV charging station, solar power, smart pole, smart cities, smart office, smart buildings, smart traffic light, digital signage advertising, vending machines, ATM, etc.

Applications



Specifications

System

- **CPU** 32-bit, dual core
- **Flash** 32MB
- **RAM** 256MB DDR3

Cellular Interfaces

- **Antenna Connector** 4 × 50 Ω SMA Female(5G Version TG453-NR)
2 × 50 Ω SMA Female(4G Version TG453-LF)
- **SIM Slot** 1, or 2(DSSM, or DSDM, Option)[3]
- **ESD Protection** 15KV

Ethernet Interface

- **Ports** 5-RJ45 (1-WAN, 4-LAN or 5-LAN configurable)
- **Data Rates** 10/100/1000 Mbps (Auto-Sensing), Auto MDI/MDIX
- **ESD Protection** 1.5KV

Serial Interfaces

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

Wi-Fi

- **Antenna Connector** 2 × 50 Ω RP-SMA Female
- **Standard** IEEE 802.11b/g/n, AP and Client modes
- **Transmission Rate** IEEE802.11b/g: Up to 54Mbps
IEEE802.11n: Up to 300Mbps
- **Security** Open, WPA, WPA2, WPA/WPA2 Enterprise, Radius

GNSS/GPS (Option)

- **Module** Built-in independent GPS Module, or GNSS from cellular module
- **Antenna Connector** 1 × 50 Ω SMA Female

External Storage(Option)

- **SD Card Slot** 1x Micro SD interface, Up to 32G
- **Usage** User Program, Data Storage and Firmware Upgrade

Power Supply and Consumption

- **Connector** Terminal block, 3.5 mm female socket
- **Standard Power** DC 12V/1.5A
- **Input Voltage** 5-35 VDC
- **Idle Mode** 451 ~ 509mA@12VDC
- **Working Mode** 483 ~ 625mA@12VDC
- **Power Output** 1 channel DC 12V/1A, for field sensors, devices

Software

- **Network Protocols** PPP, PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, RIPv1/v2, OSPF, BGP, DNS, DDNS, HTTP, ARP, QoS, SNTP, Telnet, SSH
- **Serial Port** MQTT, Transparent (TCP Client/Server, UDP Client/Server), Modbus Gateway (Modbus RTU to Modbus TCP)
- **VPN Tunnel** IPsec/PPTP/L2TP/GRE/OpenVPN
- **Firewall** ACL/DMZ/Port Mapping/MAC Binding
- **Management** Web, CLI, SMS, Cloud DMP (Device Management Platform)[4]
- **Reliability** WWAN and WAN Failover, Hardware & Software Watchdog
- **Secondary Development** OpenWrt based Linux OS, C/C++, Python, LUA and SDK

Physical Characteristics

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

Others

- **Reset Button** 1
- **LED Indicators** Signal strength, WIFI, System, Online, Power, Alarm
- **Built-in** Watchdog, RTC, Timer
- **Approvals**[5] CE*, RCM*, FCC*
- **Warranty Period**[6] Standard: 12 Months
Extended: 2-5 Years

Standard Package Content

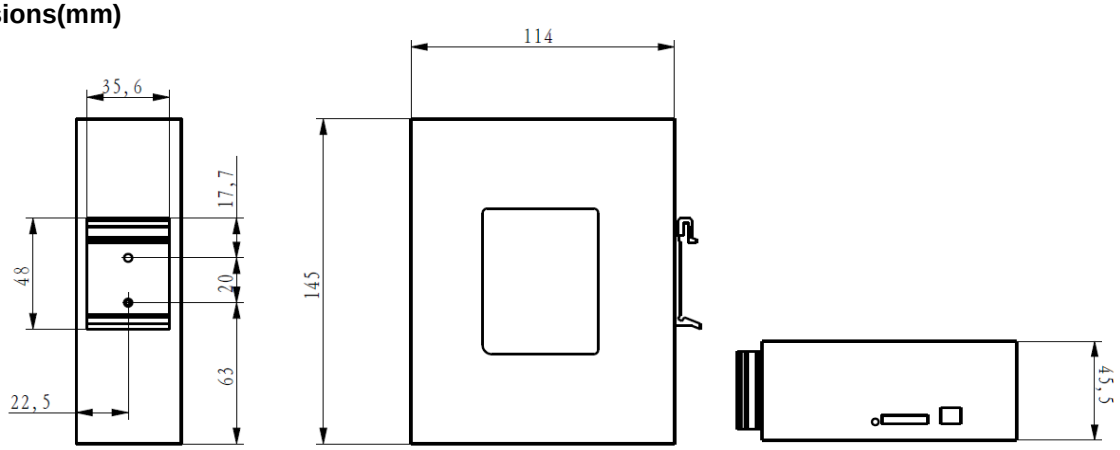
1.	TG453 Gateway	1 PCS
2.	Power Adapter(DC 12V/1.5A, EU/US/UK/AU plug optional)	1 PCS
3.	Mag-mount Cellular Antenna (SMA Male, 1 meter, 5dBi)	5G Version: 4 PCS 4G Version: 2 PCS
4.	WIFI Antenna	2 PCS
5.	RS232 Cable (DB9 Female, 1 meter)	1 PCS
6.	Ethernet Cable(1 meter)	1 PCS
7.	8-Pin Terminal Block	1 PCS
8.	2-Pin Terminal Block	1 PCS
9.	DIN-Rail Mount Kits	1 PCS

Order Information

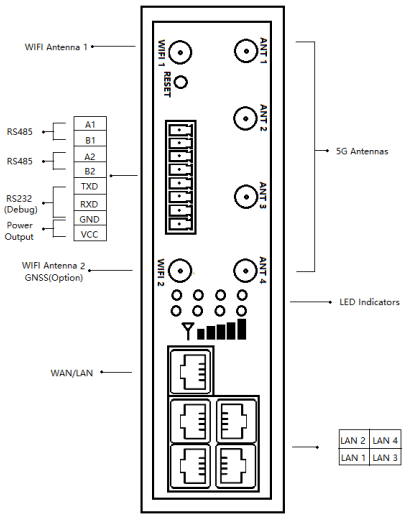
Model	Part Number	Description	Frequency Band[7]
TG453-NR	TG453 - N<1><2> - <3>	5G Gateway, 5-GE, 1-RS232, 2-RS485, 2.4G WIFI	5G NR Sub-6 • n1/n2/n3/n5/n7/n8/n12/n20/n28/n41/n66/n71/n77/n78/n79 • LTE FDD:B1/B2/B3/B4/B5/B7/B8/B9/B12/B13/B14/B17/B18/B19/B20/B21(TBD)/B25/B26/B28/B29/B30/B32/B66/B71 • LTE TDD: B34/B38/39/B40/B41/B42/B43/B48
TG453-LF	TG453 - L<1><2> - <3>	4G Gateway, 5-GE, 1-RS232, 2-RS485, 2.4G WIFI	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

<1>: 5G or 4G module for different countries and regions
<2>: DS=dual SIM on single module, failover only
DM=dual SIM on dual module, load balance
<3>: W=2.4G Single band WIFI
G=GPS(standalone GPS)
GN=GNSS from cellular module

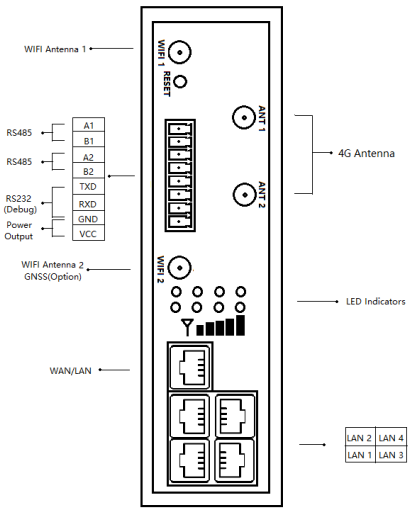
Dimensions(mm)



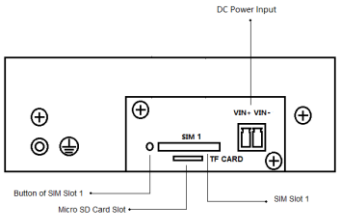
Side Views



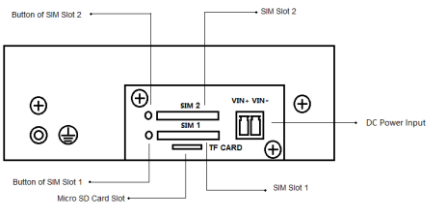
TG453-NR



TG453-LF



Single SIM



Dual SIM

Related Products

IoT Edge Gateway
TG452 Series

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

5G NR IoT Gateway
TG463 Series

- ✓ 5G NR NA/NSA dual mode
- ✓ Rich I/O and customizable industrial protocols
- ✓ OpenWrt based Linux OS, C/C++, Python programmable

Note:
1. There are different modules for different regions to choose.
2. Bivocom provides complier and SDK for customer to do their second development, and Python is a customized firmware.
3. DSSM=dual sim on single module, supports failover. DSDM=dual sim on dual module, supports load balance. DSDM on 5G version only supports one 5G and one 4G module.
4. There has a license fee for DMP.
5. * Under progress
6. Price of the extended warranty will be different.
7. If you couldn't find the frequency band for your regions or have any questions, please contact Bivocom sales representatives for more information.
8. To save the earth, Bivocom doesn't print the user guide, if you need it, please go to Bivocom website to download.

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