

Industrial 5G Gigabit Gateways



Key Features

- Global 5G NR Sub-6 bands or mmWave(Optional), SA and NSA dual modes, or 4G LTE¹
- 5-RJ45(GbE), 1-RS232(Debug), 2-RS485, 1-Power Output, 1-TF, 2.4G WIFI, GNSS(Optional)
- Dual SIM/Dual Module(Optional) for failover/load balance
- Up to 32GB local data storage and backup via Micro SD
- OpenWRT based Linux OS, Python, C/C++ programmable²
- 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

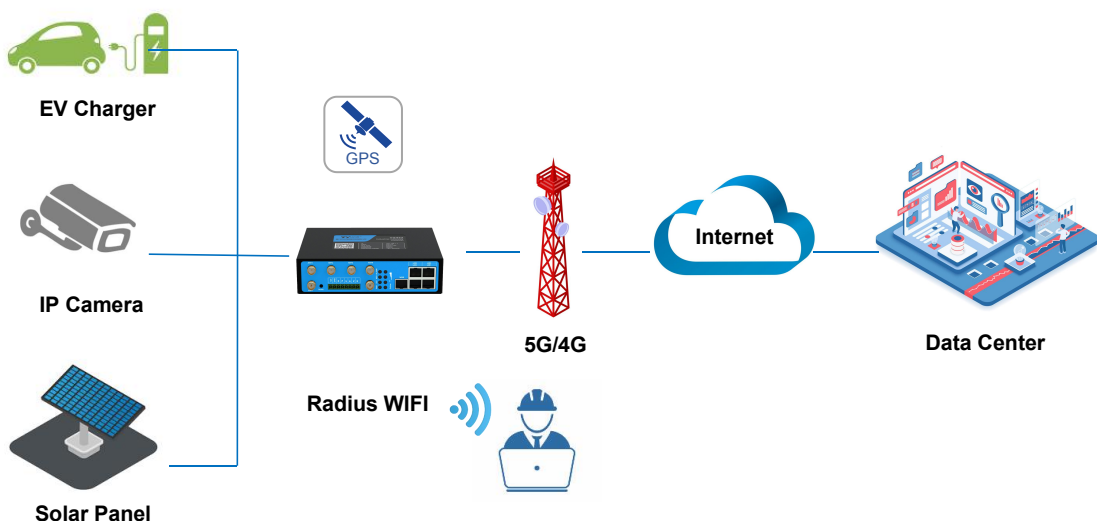
Introduction

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

- CPU32-bit, dual core
- Flash32MB
- RAM256MB DDR3

Cellular Interfaces

- Antenna4 × 50 Ω SMA Female(5G Version TG453-NR)
- Connector2 × 50 Ω SMA Female(4G Version TG453-LF)
- SIM Slot1, or 2(DSSM, or DSDM, Option)³
- ESD Protection15KV

Ethernet Interface

- Ports5-RJ45 (1-WAN, 4-LAN or 5-LAN configurable)
- Data Rates10/100/1000 Mbps (Auto-Sensing), Auto MDI/MDIX
- ESD Protection1.5KV

Serial Interfaces

- ConnectorTerminal block, 3.5 mm female socket
- Ports1-RS232(Debug), 2-RS485
- Baud Rate300bps to 230400bps
- ESD protection8KV for RS232, 15KV for RS485

Wi-Fi

- Antenna Connector2 × 50 Ω RP-SMA Female
- StandardIEEE 802.11b/g/n, AP and Client modes
- Transmission RateIEEE802.11b/g: Up to 54Mbps
IEEE802.11n: Up to 300Mbps
- SecurityOpen, WPA, WPA2, WPA/WPA2 Enterprise, Radius

GNSS/GPS (Option)

- ModuleBuilt-in independent GPS Module, or GNSS from cellular module
- Antenna Connector1 × 50 Ω SMA Female

External Storage(Optional)

- SD Card Slot1x Micro SD interface, Up to 32G
- UsageUser Program, Data Storage and Firmware Upgrade

Power Supply and Consumption

- ConnectorTerminal block, 3.5 mm female socket
- Standard PowerDC 12V/1.5A
- Input Voltage5-35 VDC
- Idle Mode451~509mA@12VDC
- Working Mode483~625mA@12VDC
- Power Output1 channel DC 12V/1A, for field sensors, devices

Software

- Network ProtocolsPPP, PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, RIPv1/v2, OSPF, BGP, DNS, DDNS, HTTP, ARP, QoS, SNTP, Telnet, SSH
- Serial PortMQTT, Transparent (TCP Client/Server, UDP Client/Server), Modbus Gateway (Modbus RTU to Modbus TCP)
- VPN TunnelIPsec/PPTP/L2TP/GRE/OpenVPN
- FirewallACL/DMZ/Port Mapping/MAC Binding
- ManagementWeb, CLI, SMS, Cloud DMP (Device Management Platform)⁴
- ReliabilityWWAN and WAN Failover, Hardware & Software Watchdog
- Secondary DevelopmentOpenWrt based Linux OS, C/C++, Python, LUA and SDK

Physical Characteristics

- Ingress ProtectionIP30
- Housing & WeightMetal, 630g(1.39lbs), without accessories
- Dimensions145 x 114 x 45mm (5.71 x 4.49 x 1.77in)
- MountingDesktop, 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 Humidity5% to 95% (non-condensing)
- Ethernet Isolation1.5 kV RMS

Others

- Reset Button1
- LED IndicatorsSignal strength, WIFI, System, Online, Power, Alarm
- Built-inWatchdog, RTC, Timer
- Approvals⁵CE*, RCM*, FCC*
- Warranty Period⁶Standard: 12 Months
Extended: 2-5 Years

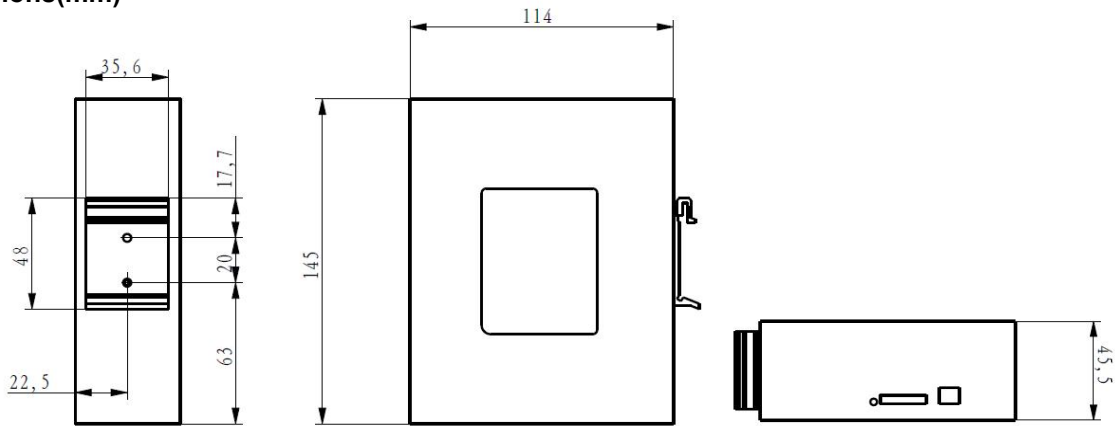
Standard Package Content

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|----|---|--|
| 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 |

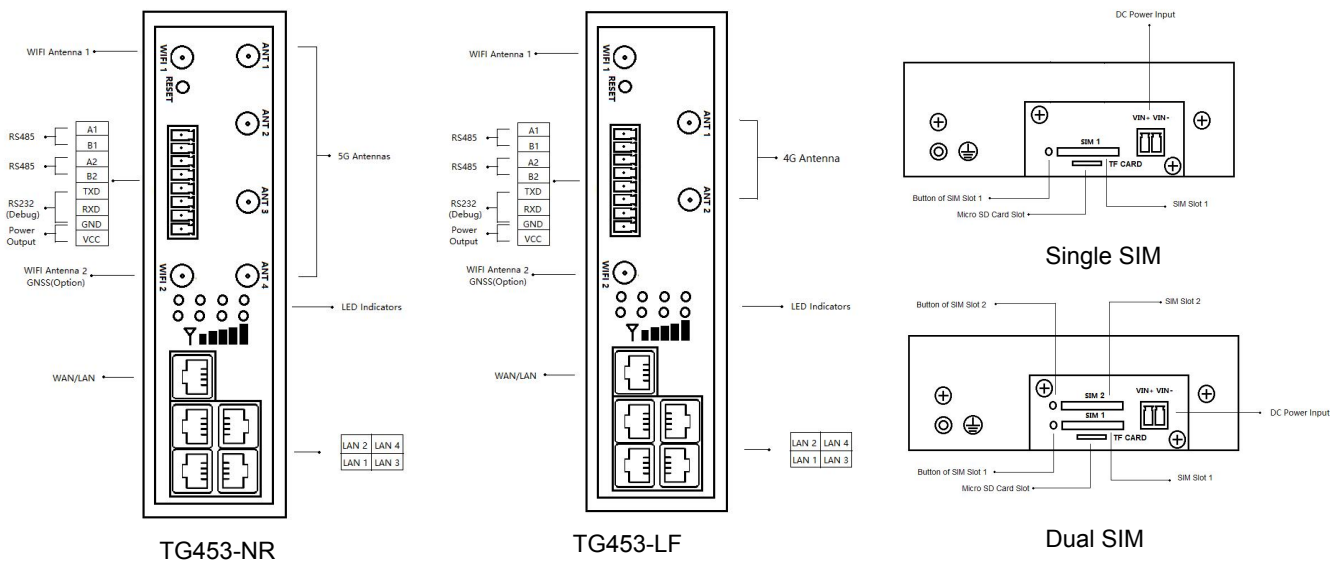
Order Information

| 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 <ul style="list-style-type: none">• 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 <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 |
| <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



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 compiler 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](#).