

Industrial Cellular Gateways



Product Overview

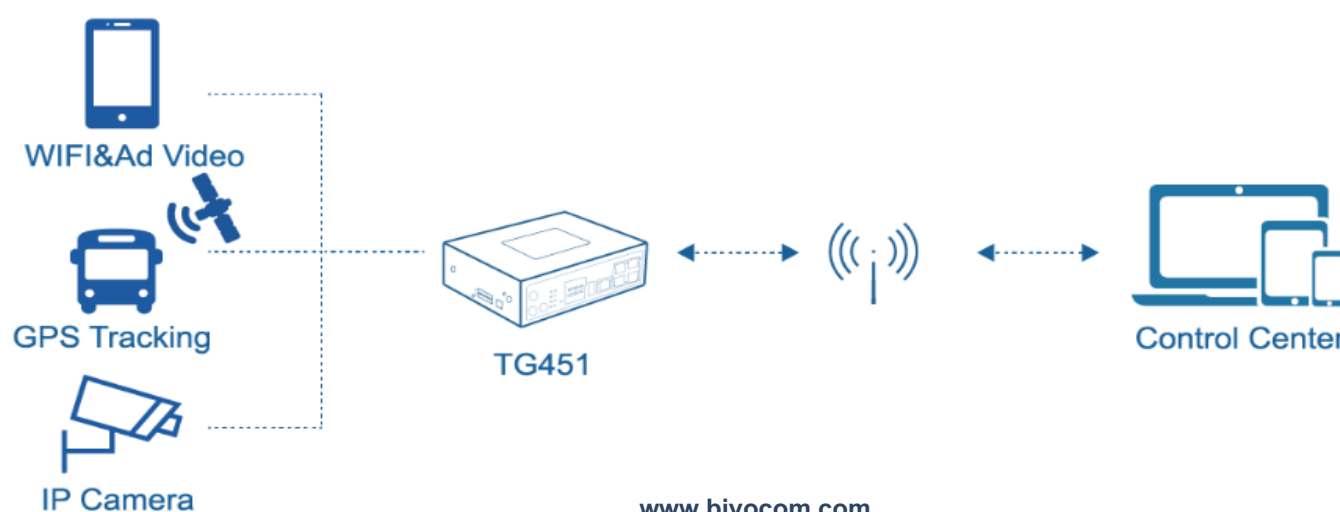
TG451 Series Gateway is a type of industrial cellular gateway, which adopts high-powered industrial 32-bits CPU, with multi-layer software detection and hardware protection mechanism to ensure reliability and stability of the device. It supports worldwide carrier 4G LTE CAT6/CAT4/3G/2G cellular network FDD-LTE, TDD-LTE, WCDMA, EVDO, TD-SCDMA, EDGE, CDMA 1X and GPRS. With rich interfaces, such as 4-LAN port, 1-WAN port, 1-USB port, 2-Relay, 1- RS232, 1-RS485, 2-DI(Digital Input), Dual SIM(Single module and Dual module, option), GPS(Optional) and WIFI, can be suitable for most of IoT applications in many industries.

TG451 Series Gateway supports multiple network and industrial protocols, includes TCP Client, TCP Server, UDP Client, UDP Server, DHCP, ICMP, NTP, DNS, DDNS, Modbus RTU, Modbus TCP, Modbus Master, MQTT, HTTP, SNMPv1 v2 v3, ARP, Telnet, etc. As a gateway, it's widely used in many applications, like Intelligent Transportation, Smart Grid, Oil and Gas, ATM, Vending Machine, Agricultural Irrigation, Environmental Protection, Industrial Automation, Energy Saving, Smart Home, etc.

Key Features

1. DSDM (Dual SIM on dual module) or DSSM (Dual SIM on Single Module) optional, support failover and load balance mode
2. LTE/3G/PPPoE/DHCP and static address connection mode, auto switchover between wired and wireless connectivity
3. Rich interfaces, 4-LAN, 1-WAN, 1-USB, 2-DI, 2-Relay, 1-RS232, 1-RS485, 1-WIFI(802.11b/g/n), 1-GPS(Optional)
4. Support 2-channel Digital Input and DI alarm
5. Support MQTT, Modbus RTU, Modbus TCP protocols
6. APN/VPDN to ensure the security of data transmission
7. Multiple VPN protocols, IPsec, L2TP, PPTP, GRE and OpenVPN
8. Din-rail mounting
9. DHCP server, DHCP binding MAC address, DDNS, Firewall, NAT, DMZ host, QoS, Traffic Analysis
10. TCP/IP, UDP, HTTP, SNMP protocols
11. SPI Firewall, Access Control, Port Mapping, DMZ Mapping, Access Control List (ACL), IP-MAC binding and Clone function
12. Support online detection, automatic recovery
13. Hardware and software watchdog technology, enable operation fault auto repairing
14. Status query of system, network connection, routing
15. Web UI, Telnet, SSH configurations
16. Local /remote syslog, serial port output log
17. Support SMS and SMS alarm
18. Support DMP(Device Management Platform)¹ for remote configuration and management
19. Support Firmware customization base on OpenWrt
20. Secondary development via Python, LUA, SDK

Application Diagram



Specifications

Cellular Interfaces

Antenna Connector	2 × 50 Ω SMA Female
SIM Slot	1, or 2 (For DSDM and DSSM)
ESD Protection	15KV

Ethernet Interface

Ports	5-RJ45 (1-WAN, 4-LAN or 5-LAN)
Data Rate	10/100 Mbps (Auto-Sensing), Auto MDI/MDIX
Magnet Isolation	1.5KV

Serial Interface

Connector	Terminal block, 6-pin 3.5 mm female socket with lock
Ports	1-RS232, 1-RS485(2-RS232 or 2-RS485, option)
Baud Rate	300bps to 230400bps
ESD protection	8KV for RS232, 15KV for RS485

Wi-Fi

Antenna Connector	1 × 50 Ω SMA Male
Standard	IEEE 802.11b/g/n, supporting 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
Tx Power	18dBm (11g), 21dBm (11b)
Rx Sensitivity	<-72dBm@54Mbps

I/O

Connector	Terminal block, 6-pin 3.5 mm female socket with lock
DI	2-DI (0-30V Input)
DO	2-Relay (Up to 5A and 30VDC/250VAC output)

External Storage

USB Port	1 x USB 2.0
SD (Optional)	1 x Micro SD interface, Up to 32G
Usage	User Program, Data Storage and Firmware Upgrade

GPS (Optional)

Module	Built-in independent GPS Module
Antenna Connector	1 × 50 Ω SMA Female

Power Supply and Consumption

Connector	2-pin with 3.5 mm terminal block
Standard Power	DC 12V/1.5A
Input Voltage	5-35 VDC
Power Consumption	280 ~ 330mA@12VDC
Idle Consumption	190 ~ 240mA@12VDC

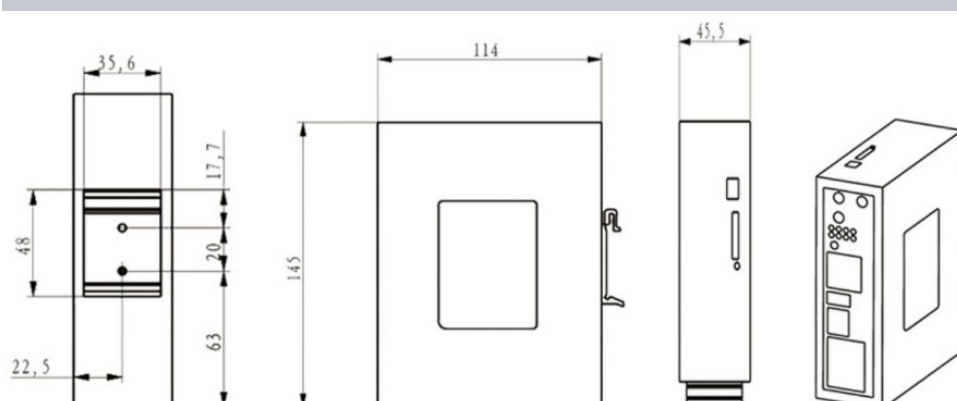
Software

Network Protocols	PPP, PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, RIPv1/v2, OSPF, DNS, DDNS, HTTP, ARP, QoS, SNTP, Telnet, VLAN, SSH, etc.
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Serial Port	MQTT, Transparent (TCP Client/Server, UDP Client/Server), Modbus Gateway (Modbus RTU to Modbus TCP)
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VPN Tunnel	IPsec/PPTP/L2TP/GRE/OpenVPN
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Dimenions(mm)



Firewall

Management

Reliability

Secondary Development

Physical Characteristics

Ingress Protection

Housing & Weight

Dimensions

Mounting

Environmental

Operating Temperature

Storage Temperature

Relative Humidity

Ethernet Isolation

Others

Reset Button

LED Indicators

Built-in

Certifications²

Warranty Period

ACL/DMZ/Port Mapping/MAC Binding

Web, CLI, SMS, Cloud DMP (Device Management Platform)

WAN Failover, Dual SIM Backup and Load Balance, Hardware & Software Watchdog

OpenWrt based, support Python, LUA and SDK

IP30

Metal

630g(1.39lbs), without accessories

145 x 114 x 45mm (5.71 x 4.49 x 1.77in)

Desktop, DIN Rail

-35°C to +75°C (-31°F to +167°F)

-40°C to +80°C (-40°F to +176°F)

0% to 93% (non-condensing) at 25°C/77°F

1.5 kV RMS

1-RESET

1-POWER, 1-WiFi, 1-SYSTEM, 1-ALARM, 1-ONLINE, 3-Signal Strength

Watchdog, RTC, Timer

CE, RCM, NBTC, FCC*

Standard: 12 Months

Extended: 2-5 Years³

Standard Package Content

TG451 Gateway
 Power Adapter(DC 12V/1.5A, EU/US/UK/AU plug optional)
 RP-SMA WIFI Antenna (19.5cm, 5dBi)
 Mag-mount Cellular Antenna (SMA Male, 1 meter, 5dBi)
 RS232 Cable (DB9 Female, 1 meter)
 Ethernet Cable(1 meter)
 6-Pin Terminal Block(2)
 2-Pin Terminal Block
 DIN-rail mount
 Quick Start Guide(Printed)

Order Information

Model

TG451-LF

Frequency Band⁴

4G LTE CAT 6
 EMEA&APAC: B1/B3/B5/B7/B8/B20/B28
 NA: B2/B4/B5/B7/B12/B13/B25

4G LTE CAT 4
 EMEA: 1/B3/B5/B7/B8/B20/B38/B40/B41
 ANZ/LATAM: B1/B3/B5/B7/B8/B28
 NA: B2/B4/B5/B12/B13/B14

TG451-W

HSPA/UMTS/WCDMA
 900/2100MHz, or 850/1900/2100MHz

Global: 800/850/900/1900/2100

Note:

1. There is license fee for DMP.
2. * Under development.
3. Price of 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.

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