



Billion M2M Solutions

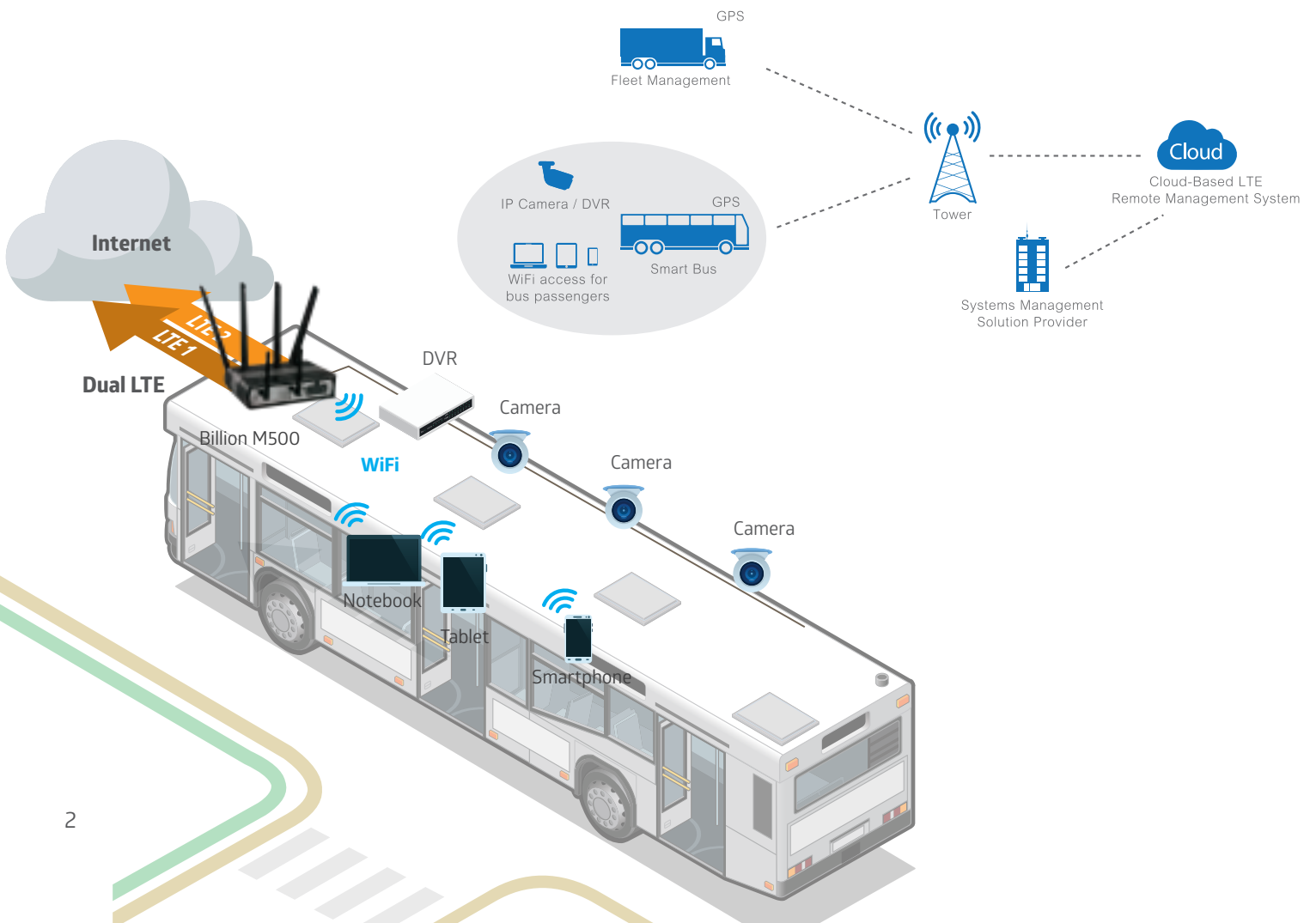
Driving the Future of Mission-Critical and
In-Vehicle Broadband Communications





Billion Intelligent In-Vehicle WiFi Hotspot Solution for Smart Bus System

Billion M500 provides ultra down-link and up-link rate that serve as 4G/LTE Wi-Fi Hotspot for passengers to surf the Internet and enjoy instant video streaming on all personal electronic devices. Supporting 4G/LTE real-time streaming for video communications, surveillance, and monitoring, Billion M500 broadens wireless coverage to rough terrains and rural areas and persists unsurpassed connectivity without interruptions. M500 also supports GPS tracking system indicating the geographic locations of scattered vehicles.





Billion Fleet Management Tracking Solution Maximizes Dispatching Efficiency

Fleet management companies are increasingly embracing the vehicle tracking service to ensure the highest service productivity with enhanced safety and vehicle asset management. Billion Fleet Management solution empowers operators and service providers to maximize fleet efficiencies and performance. Billion M500 works with OBD II adapter to provide dispatchers to collect all vehicle data, including engine speed, tire pressure, improper braking, throttle recordings, as well as provide a detailed record of vehicle driving operations and reduce unnecessary costs.



Billion M500

4G/LTE Industrial/In-Vehicle Multi-Carrier Router

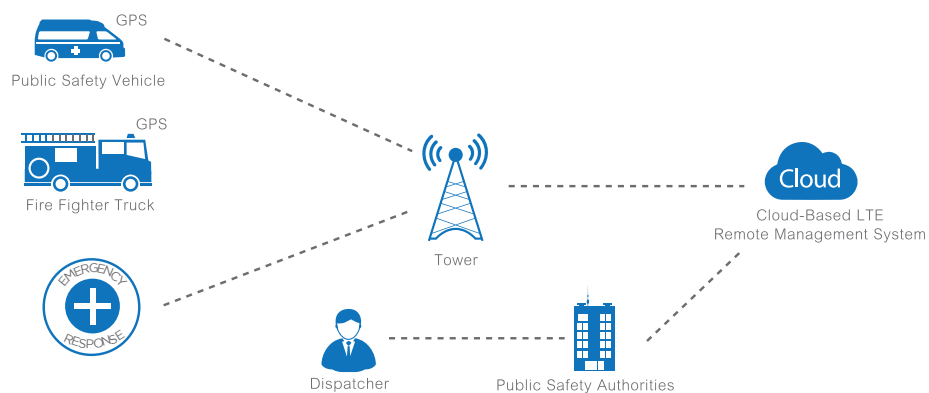
- ❖ Offers dual 4G/LTE broadband connectivity (3G Fallback is optional)
- ❖ Multi-WAN interfaces: Dual SIM/Dual Radio and E-WAN for network resilience and reliable connectivity
- ❖ Support ignition sensing with delay timer to keep M500 running for a certain time after the vehicle shuts off
- ❖ Embedded GPS option for real-time asset tracking and location data-based applications
- ❖ Local and Remote Management via Web GUI, SNMP or TR-069
- ❖ QoS (Quality of Service) with traffic prioritization based on IP protocol, port number, and IP address
- ❖ Compact and unobtrusive design Ignition power control option when mounted within vehicles
- ❖ Hardened enclosure with Industrial-graded components
- ❖ Withstand heat, humidity and protect from shock, vibration, etc.
- ❖ US Military Standard MIL-STD-810G Compliant

In-Vehicle Emergency Response Management Solution for Ambulance and Public Safety Applications

LTE technology was adopted as the foundation of public safety networks mainly due to its national interoperability and support of a wide variety of broadband applications. Since ambulances and public safety vehicles are arranged for delivering patients with emergency-related illness to hospitals, the capability to provide available medical treatment on the transportation to hospitals is crucial. M500 serves an excellent in-vehicle router collecting and analyzing patients' inquiry conditions, as well as providing substantial bandwidth to support instant images and video processing.

Solution

Billion M500 provides dual LTE modules, enable in-vehicle WiFi, real-time imaging streaming, and medical data transferring with instant failover capability. Ambulance staff is allowed to examine patient media records, plan driving routes, and communicate with emergency room and fleet dispatchers to allocate the available vehicle resource to resolve emergency scenarios. The dual-radio supports multi-channel video recording and streaming with always-on, extensive broadband feasibility. Thus, Billion M500 can transmit the images of a patient's injuries from the ambulance to the emergency room for treatment advice and minimize the gaps of medical care upon arrival at hospitals.



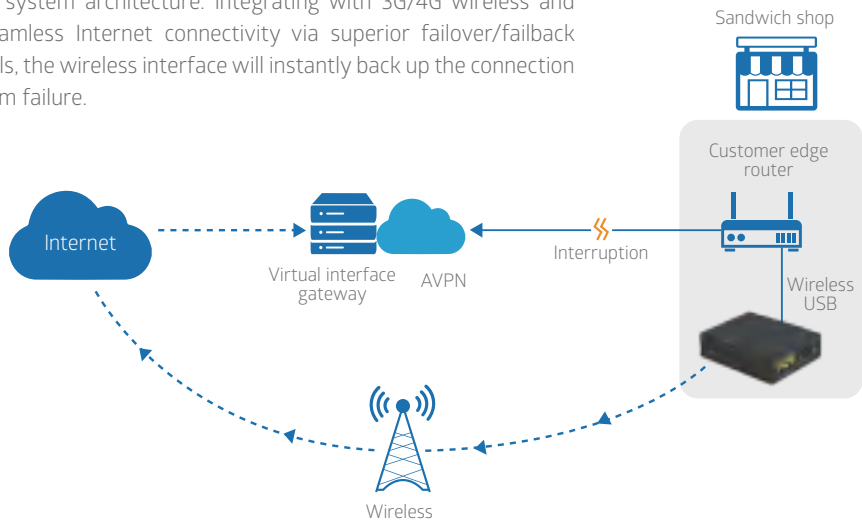
Benefits

- Support digital imaging, video streaming, voice, and large data download.
- Enhance emergency responders operations by delivering high-data-rate services to full coverage areas.
- Allow mission-critical information to be exchanged in real-time, anytime, anywhere.
- Achieve database lookups, dispatch messaging, mug shots, video/surveillance feeds, and broadcasting within seconds
- Support rapid boot up and wake-on-call functions.
- Reduce delays and enhance driving safety through the integration of tire pressure monitoring system and forwarded collision warning.



Developing Seamless Business Continuity and Operation with Auto Failover/ Failback

A reliable Internet connection is essential for a business to run smoothly that a temporary disconnection can quickly lead to loss of productivity, revenue, and even damage the business reputation. Compatible with all kinds of xDSL and Fiber modems, M100 enables business to upgrade current network without changing the system architecture. Integrating with 3G/4G wireless and EWAN interfaces, M100 ensures a seamless Internet connectivity via superior failover/failback functionality. As the wired connection fails, the wireless interface will instantly back up the connection to continue to operate in case any system failure.

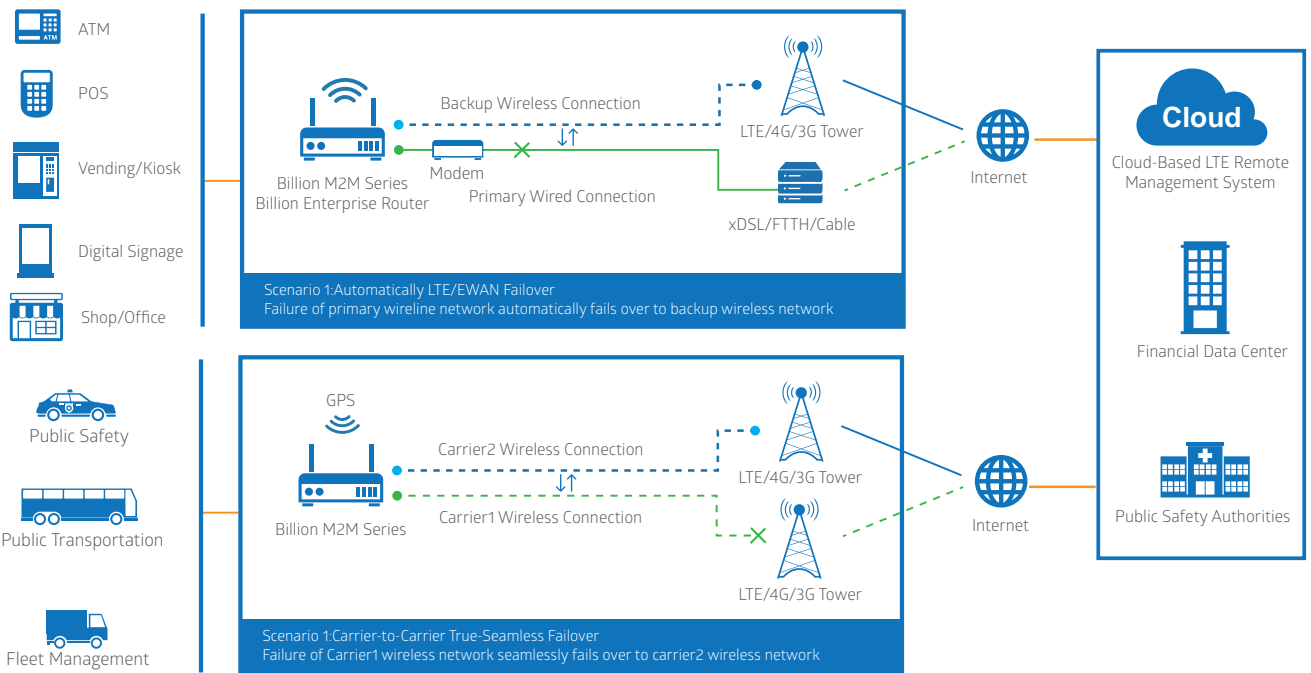


Billion M100 / M150 Advanced Industrial 4G/LTE Router

- ❖ 2 Gigabit Ethernet Interfaces
- ❖ Multiple APNs and Dedicated Bearers
- ❖ RS-232/RS-485 Serial data connectivity
- ❖ Enterprise Routing & VPN
- ❖ Small form factor, fits in the palm on your hand
- ❖ Simplified deployments, quickly mounted discretely anywhere
- ❖ DIN rail and wall mount options
- ❖ Automatic Fail-Over between 4G Cellular and EWAN
- ❖ Explosion proof: UL Class I Division2 certified

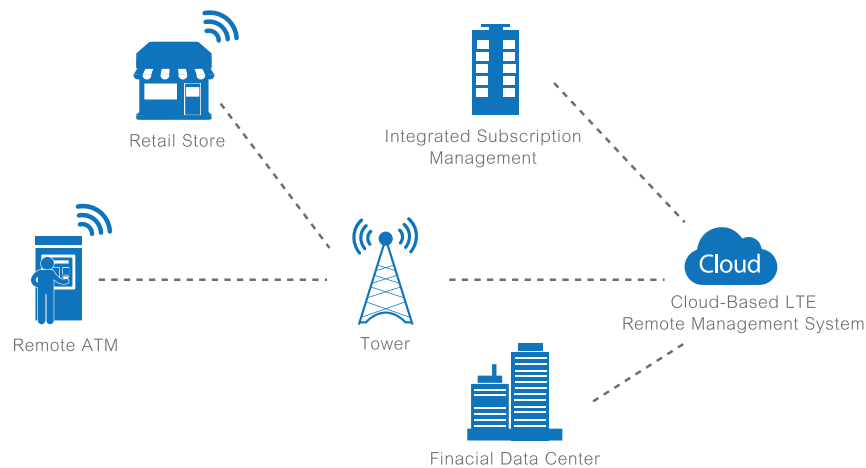


Critical Communication and Enterprise Failover Manager



Billion Finance and Retail PoS, ATM, Kiosks Solutions with Enhanced Data Security

Billion M100/M150 provides a higher bandwidth, lower latency, and improved spectrum efficiency. These advantages not only allow for fast electronic transactions, but they also enable new business models such as targeted marketing, location-based offers, interactive services and an overall improved customer experience. Billion M100/M150 is helping retailers meet consumer expectations and become more competitive by providing wireless technology solutions that quickly integrate with Point-of-Sale (PoS) Systems, Automated Teller Machines (ATMs), Multi-purpose Kiosks and Vending Machines.



Benefits

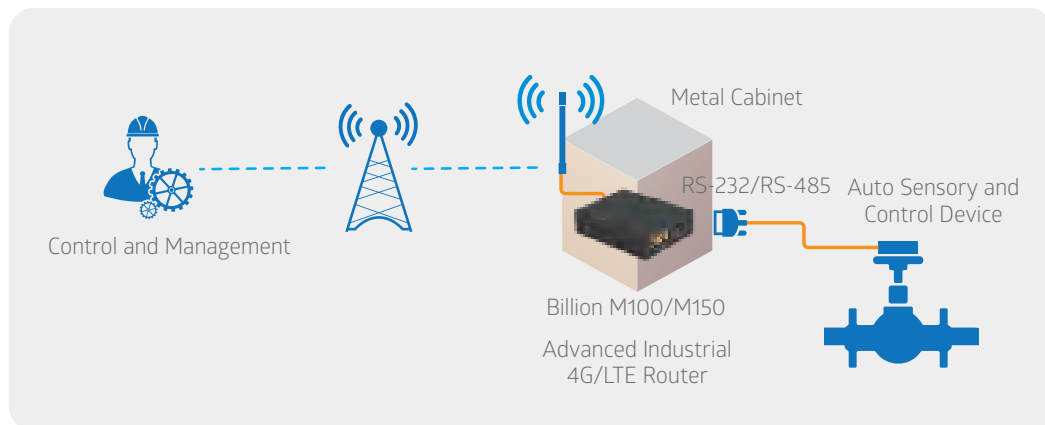
- Either primary connection or backup connection when wired connections are unavailable or non-existent.
- Fixed wireless communications platform enabling real-time 4G Cellular data connectivity for existing serial devices & Ethernet network.
- Reliable and cost-effective alternative solution for business continuity.
- Always-online 4G/LTE Bridge / IP-Pass through Mode

Billion Provides Reliable Energy: Oil and Gas Networking Solutions Using SCADA & 4G/LTE

Vertical markets can significantly benefit from the extensive coverage and high-speed advantages of 3G/4G LTE technology. Owning a private or dedicated broadband network is now possible with 3G/4G LTE for many oil & gas companies. Next-generation communication systems enabled by LTE technology can support new business models that yield high efficiency, lower cost, and increased revenue. These benefits are particularly enjoyed by the energy industry where its operations extend large remote areas in difficult terrains, typically lacking suitable means of connectivity.

Solution

Billion M100/M150 is dedicated to providing the broadband networks ensuring access to high-speed data anytime and anywhere. Installed next to pipeline SCADA equipment which can monitor and collect the critical information such as pressure, flow, and potential leaks of each pipeline, M100 serves as a communication backbone between field and central console by directly supporting SCADA via its RS-232 serial port and serial communication with Modbus, a master-slave protocol. By receiving the certification of UL Class I Division 2, M100 is ignition & explosion proof that can operate in hazardous environments where fire or explosive hazards may exist due to flammable gasses and vapors.



Benefits

- Real-time monitoring and control of remote sites
- Remote workforce video, data & voice connectivity
- Video surveillance and security system for remote sites
- Real-time data collection from remote oil wells/rigs
- Rugged design withstands the most extreme environments



Product	Billion M100	Billion M150	Billion M500
WAN Interface			
3G/4G LTE	•	•	• (x2)
EWAN	•	•	•
Hardware Interface			
SIM slot	1	1	2
Giga Ethernet	2	2	4
USB 2.0	-	-	2
802.11n (2.4 GHz)	-	-	300Mbps
GPS	•	•	•
mini USB	-	-	• (x2)
Serial port (DCE,DB-9)	RS-232	RS-232/RS-485	-
Features			
VPN	•	•	•
IPv4 / IPv6	•	•	•
Failover / Fallback	•	•	•
Load balance	•	•	•
Dual APNs	•	•	•
Dual firmware images	•	•	•
Metal casing	•	•	•
Hardware Specifications			
Dimensions	4.29"(W) x 1.17"(H) x 3.43"(D) (109mm x 29.7 mm x 87 mm)	4.29"(W) x 1.17"(H) x 3.43"(D) (109mm x 29.7 mm x 87 mm)	7.83" x 5.21" x 1.84" (198.85 mm x 132.4 mm x 46.7mm)
Power Requirements	Input: DC 9V~56V	Input: DC 9V~56V	Input: DC 10 ~ 56 VDC (with ignition sensing)
Operating Environment	-20 to 60° C	-20 to 60° C	-40°C ~ 60 °C
Humidity	20 ~ 95% non-condensing	20 ~ 95% non-condensing	20 ~ 95% non-condensing

Billion M500

Specifications

Availability and Resilience

- Dual LTE Modules
- Auto fail-over and failback
- Load Balancing

Supported Frequency Bands

- Primary LTE: FDD and TDD (Bands depend on module configuration) ¹
- Secondary LTE: Optional (Bands depend on module configuration) ¹

Network Protocols and Features

- IPv4, IPv6, IPv4/IPv6 dual stack²
- NAT, Static Routing and RIP-1/2
- Virtual Server and DMZ
- SNTP, DNS relay and DDNS
- IGMP Snooping and IGMP Proxy
- Supports DHCP server/client/relay
- Supports port-based Virtual LAN (VLAN)

Quality of Service Control

- Traffic prioritization based-on IP protocol, port number and IP address

Firewall

- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- Prevents DoS attacks including Land Attack, Ping of Death, etc.
- Access Control
- IP Filtering, MAC Filtering, URL Filtering
- Password protection for system management
- VPN Passthrough

Wireless LAN

- Compliant with IEEE 802.11n standard Auto fail-over and failback
- Backward compatible with IEEE 802.11b and 802.11g standards
- Up to 300Mbps wireless operation rate
- WPS (Wi-Fi Protected Setup) for easy setup
- 64/128 bits WEP supported for encryption
- Wireless security with WPA-PSK, WPA2-PSK, Mixed WPA/WAP2-PSK
- AP and WDS Operational Modes
- Multiple SSID (4 SSIDs), BSSID
- Wireless MAC Filtering
- Wireless Client Isolation

USB Application Server

- Storage: FTP server and Samba server

Management

- Web-based GUI for remote and local management
- Firmware upgrade and configuration data upload and download via web-based GUI
- CWMP(TR-069), SNMP
- Universal Plug & Play (UPnP)
- Access control by services or protocols
- Network Time Protocol (NTP)
- Syslog monitoring
- Physical layer/protocol diagnostic test tool

Hardware Specifications

Physical Interface

- Antenna:
 - Wireless: two(2) detachable antennas
 - 3G/4G LTE: four(4) detachable antennas
 - GPS: one (1) detachable antenna
- WAN: 3G/4G LTE
- USB 2.0 : two (2) ports
- Mini USB Console: two (2) ports
- Ethernet LAN: 4-port 10/100/1000Mbps auto-crossover (MDI/ MDI-X) switch
- SIM Card: two (2) slots
- Reset Button
- Wireless On/Off and WPS Push Button
- Power jack
- LED Indicators

Power Specifications

- Input: DC 10V-56V with ignition sensing

Physical Specifications

- Dimensions: 7.25"(W) x 1.91"(H) x 5.31"(D)
(184.25 mm x 48.5 mm x 135 mm)
- Weight: 1.07kg (2.36lbs)

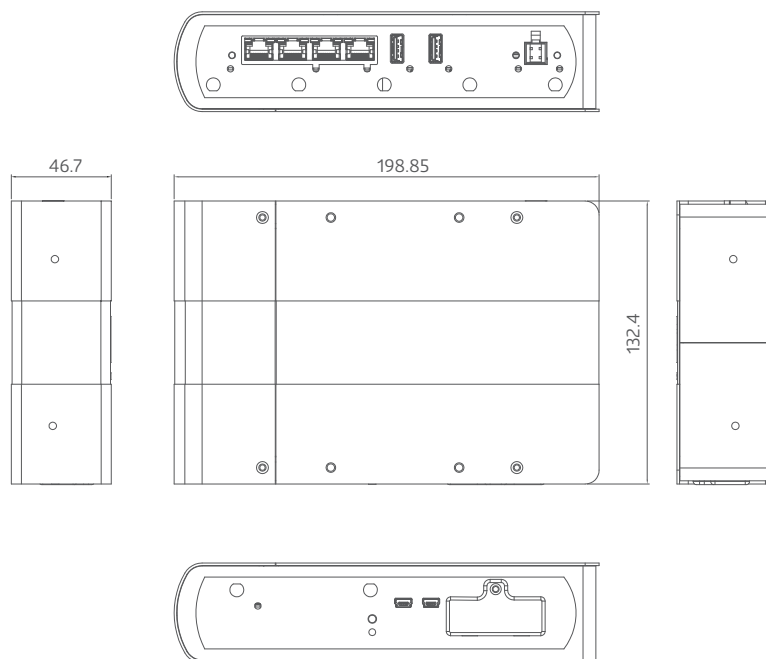
Operating Requirements

- Operating: -40°C to 60°C (-40°F to 140°F)
- Humidity: 20 ~ 95% non-condensing

* Notes:

1. The 4G LTE is dependent on your local service provider.
2. Future release and only upon request for Telco/ ISP tender projects.
3. Specifications in this datasheet are subject to change without prior notice.

Dimensions



Unit:mm

Billion M100/M150 Specifications

Availability and Resilience

- Dual-WAN Interfaces
- Auto fail-over and failback

Supported Frequency Bands

- LTE: FDD and TDD (Bands depend on module configuration) ¹

Network Protocols and Features

- IPv4, IPv6, IPv4/IPv6 dual stack²
- NAT, Static Routing and RIP-1/2
- Virtual Server and DMZ
- SNTP, DNS relay and DDNS
- IGMP Snooping and IGMP Proxy
- Supports DHCP server/client/relay
- Supports port-based Virtual LAN (VLAN)

Firewall

- Built-in NAT Firewall
- Stateful Packet Inspection (SPI)
- Prevents DoS attacks including Land Attack, Ping of Death, etc.
- Access Control
- IP Filtering, MAC Filtering, URL Filtering
- Password protection for system management
- VPN Passthrough

Quality of Service Control

- Traffic prioritization based-on IP protocol, port number and IP address

Management

- Web-based GUI for remote and local management
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- CWMP(TR-069), SNMP
- Universal Plug & Play (UPnP)
- Access control by services or protocols
- Network Time Protocol (NTP)
- Syslog monitoring
- Physical layer/protocol diagnostic test tool

Hardware Specifications

Physical Interface

- Antenna:
 - 3G/4G LTE: two (2) detachable antennas
 - GPS: one (1) detachable antenna
- WAN: 3G/4G LTE (and/or ETH WAN option)
- RS-232/RS-485 (DCE, DB-9): one (1) port ⁴
- Ethernet LAN: 2-port 10/100/1000Mbps auto-crossover (MDI/ MDI-X) switch
- SIM Card: one (1) slots
- Reset Button
- Power Connector: 2-pin connectors
- LED Indicators

Power Specifications

- Input: DC 9V~56V

Physical Specifications

- Dimensions: 4.29"(W) x 1.17"(H) x 3.43"(D) (109mm x 29.7 mm x 87 mm)

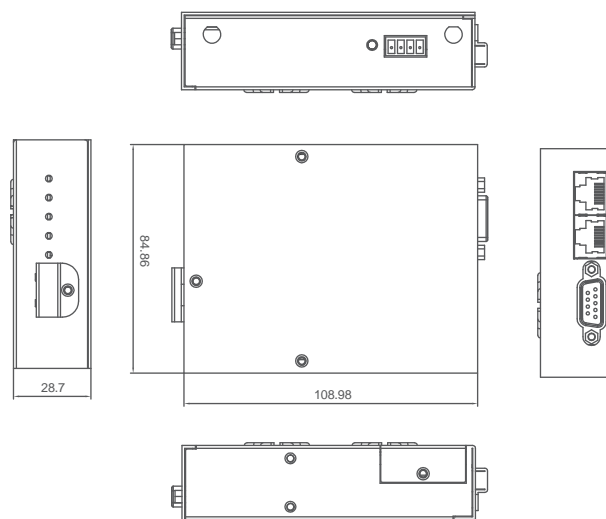
Operating Requirements

- Operating: -20°C to 60°C (-4°F to 140°F)
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* Notes:

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4. M150 RS-232/485
M100 RS-232

Dimensions



Unit:mm

About BILLION

Billion Electric Co., Ltd. (www.billion.com, Taixex: 3027, trading as Billion) is a leading global information and communication technology (ICT) solutions provider. We enhance life and communication efficiency through a better-connected world, acting as a responsible corporate citizen, an innovative enabler for the information society, and a collaborative contributor to the industry. Billion's over 900 employees worldwide are committed to creating optimal value for telecom operators and determined to pursue the position of industry vanguard by providing our current and future customers the highest quality of technology outputs.

www.billion.com

Billion Electric Co., Ltd. Taiwan- HQ

8F., No. 192, Sec. 2, Zhongxing Road,
Xindian Dist., New Taipei City,
Taiwan, R.O.C.
TEL : +886-2-2914-5665
FAX : +886-2-2918-2895
E-mail : marketing@billion.com

Billion Products and Solutions

Power



Ranging from transformers, in-home and in-building broadband power-line accesses, adapters to switches, Billion presents its solid expertise in the manufacturing of a variety of AC/DC switching power supply equipments for worldwide clients.

LED Drivers | Smart Lighting



To create an extraordinary lighting experience, Billion provides a rich selection of outdoor and indoor LED drivers both purposed for high-efficiency and high-performance, as well as integrates cloud monitoring technology to build a comprehensive indoor and streetlight control management system.

Communication



Billion also has a strong R&D team dedicated to the development of a complete portfolio of advanced network communication products, including Fiber, xDSL, Cable, 3G, 4G LTE, and M2M broadband networking CPE.

Smart Energy | Smart Grid



Bridging the in-depth knowledge of power and network communication, Billion builds sustainable energy saving solutions to help industrial, commercial, and residential users in reducing utility overhead while maximizing asset management.