



IoT Gateway

General Description

The IoT Gateway uses 4G LTE CAT-M1/NB2 cellular technology to control Wireless Sensor settings without additional IT infrastructure. All you need is a power source and the cloud platform to monitor your environment and equipment using industry-leading wireless devices. The IoT Gateway communicates with Sensors to deliver data and send alerts about various machine, equipment, or area conditions.

The IoT Gateway is available in two versions: Commercial and Industrial. The IoT Gateway work together to connect and configure Sensors over the Internet and make their data accessible virtually anytime, anywhere. The IoT Gateway provides the crucial link that connects Sensors using 4G LTE CAT-M1/NB2 (4G Long Term Evolution Category M1/NarrowBand-Internet of Things (NB-IoT) 2) cellular technology. The gateway is equipped with a 60-hour backup battery and will continue to communicate with via cellular transmission in the event of a power outage.

Additionally, the IoT Gateway comes with an RJ-45 Ethernet jack (commercial version only) for local device configuration. However, it's ideal for applications without a wired Internet connection or where infrastructure is dedicated to other resources.

The IoT Gateway includes a GNSS location chipset supporting GPS, GLONASS, BeiDou, Galileo, and QZSS satellites. With the proper gateway subscription enabled, gateway location data can be collected, viewed, and distributed to additional software via an application programming interface (API). Location data functionality is only available when the cellular technologies are enabled.

Example Applications

- Remote Location and Asset Monitoring
- Shipping and Transportation
- Agricultural Monitoring
- Vacant Property Management
- Vacation Home Property Management
- Construction Site Monitoring
- Data Center Monitoring

IoT Gateway Features

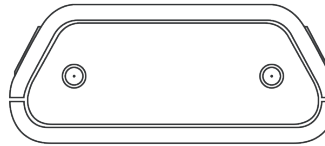
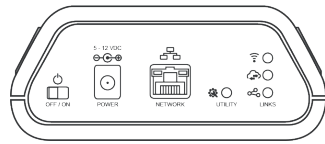
- 4G LTE CAT-M1/NB2 cellular technology
- Wireless range of 1,200+ feet through 12+ walls¹
- Frequency-Hopping Spread Spectrum (FHSS)
- Best-in-class interference immunity
- Encrypt-RF[®] Security (256-bit Diffie-Hellman Key Exchange + AES-128 CBC for sensor data messages)
- 32,000 sensor message memory²
- Over-the-air (OTA) updates (future-proof)
- True plug and play, no hassles for Internet configuration setup
- No PC required for operation
- Local status LEDs with transmission and online status indicators
- Magnetic on/off power button
- AC power supply
- Up to 60-hour battery backup in the event of a power outage
- External magnetic utility switch
- RJ-45 with 10/100BASE-TX Ethernet jack for configuration and server connectivity (commercial version only)
- Location data subscription supported (GPS/GLONASS/BeiDou/Galileo/QZSS)

¹ Actual range may vary depending on the environment.

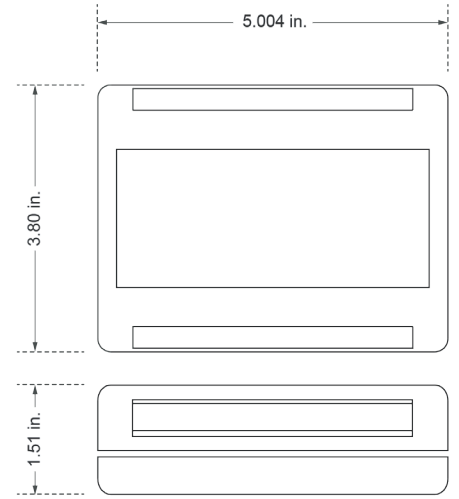
² Total messages in memory varies with sensor type. (32,000 is for Temperature Sensors.)




Wireless Range Comparison



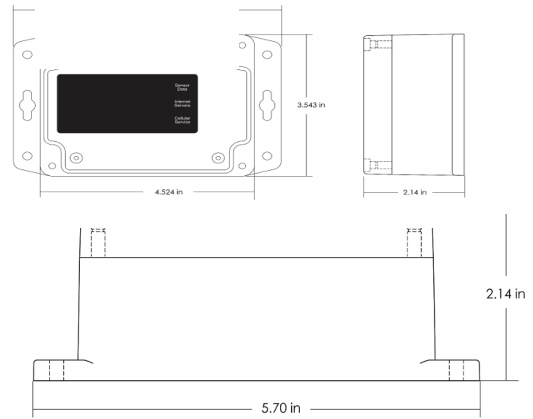


Radio Cellular



IoT Gateway Specifications	
Models	
	MNG2-(FREQUENCY)-CME-CCE-(OPTIONS)
Cellular	
Cellular Technology	LTE CAT-M1 / NB2 module for global use in bands 1,2,3,4,5,8,12,13,18,19,20,25,26,27,28,66,71,85
SIM Card Compatibility	Mini-SIM (3FF) 15 mm x 12 mm x 0.76 mm
Cellular Antenna Type	Connector: SMA / Gain: 5.0 dBi
GNSS Antenna Type	Internal Mount Active (28db) Ceramic Patch
GNSS Satellites Supported	GPS, GLONASS, BeiDou, Galileo, and QZSS
Ethernet	
Hardware	IEEE 802.3 10/100BASE-TX compatible controller
Operation	Full- and Half-Duplex
Cross-over Correction	Automatic MDI / MDI-X
Protocols Supported	DHCP, DNS, UDP, TCP, SNTP, MSVR Proprietary
Power	
Input Power	90-240 VAC @ 0.1A max (5W), 5.0VDC @ 1000mA max
Connector	Barrel Jack, 2.1x5.5 mm, Center Positive with 4.5V to 12.5V rating
Battery Backup	Battery Type: 2900mAh Rechargeable Lithium Polymer
	Battery Duration: Up to 60 hours
	Battery Cycle Life: 500 times
	Battery Safety: IEC62133
Mechanical	
Power Connector	2.1 x 5.5 mm
Ethernet Connector	RJ-45
LEDs	Internet Connectivity, Gateway Services, ALTA® Network Status
Enclosure	
Material	ABS
Dimensions	5.004 x 3.8 x 1.51 in.
Weight	7 ounces
Environmental	
Operating Temperature	+5 to +45°C (41 to 113°F)
Storage Temperature	-20 to +60°C (-4 to 140°F)
Wireless	
Transmit Power (EIRP)	50 mW (900 MHz), 25 mW (868 MHz), 10 mW (433 MHz)
Antenna Type	Connector: RP-SMA / Gain: 3.0 dBi (900/868) 2.5dBi (433)
Wireless Range	1,200+ ft. non-line-of-sight ¹
Security	Encrypt-RF® (256-bit Diffie-Hellman key exchange and AES-128 CBC)
Device Memory	Up to 32,000 sensor messages (Sensor messages will be stored in the event of an Internet outage and transferred when the connection is restored.)
Certifications	
  	Safety: IEC 62368-1; EMC: IEC 55024, IEC 55032, IEC 301489-1, -3, -A, -52, FCC 47 CFR Part 15, subpart B and ICES - 001 Issue 6; RF: 900 MHz product includes model FCC ID: ZTL-G2SC1 / IC: 9794A-G2SC1 and FCCID: XMR202007BG95M6 / IC:10224A-2020BG95M6; 868 MHz product includes Module G2SC1 (IEC 300 220-1, -2); 433 MHz product includes Module G2SC2 (IEC 300 220-1,-2)

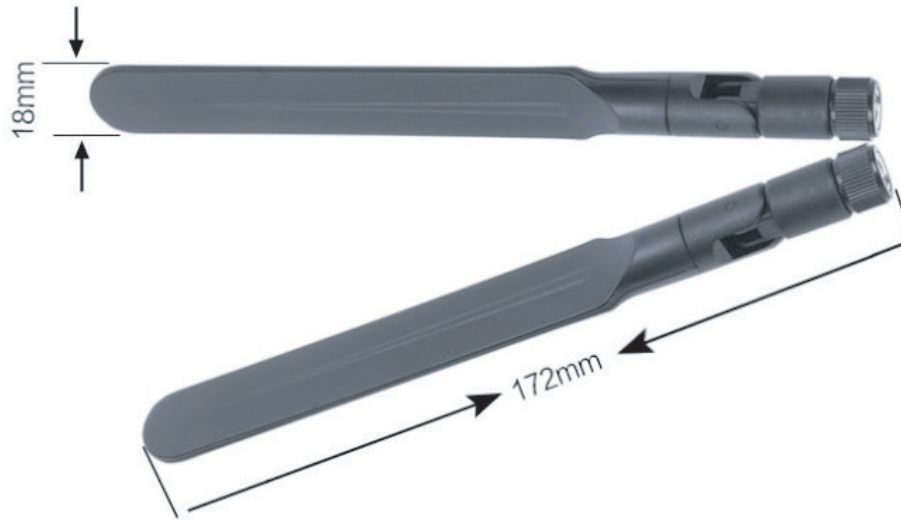
¹ Actual range may vary depending on the installation environment.



Industrial IoT Gateway Specifications

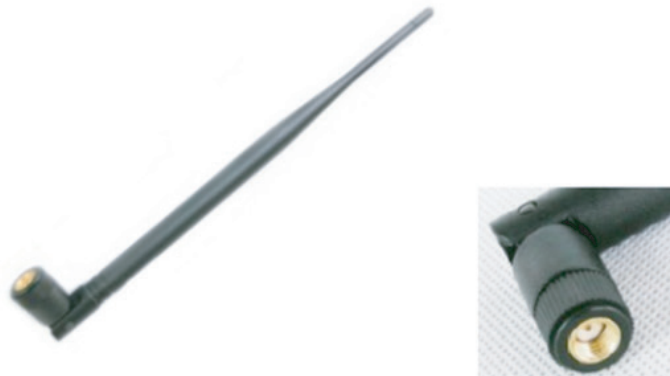
Models	
Cellular	MNG2-9-LTE-IN-ND
Cellular	
Cellular Technology	LTE CAT-M1 / NB2 module for global use in bands 1,2,3,4,5,8,12,13,18,19,20,25,26,27,28,66,71,85
SIM Card Compatibility	Micro-SIM (3FF) 15 mm x 12 mm x 0.76 mm
Cellular Antenna Type	Connector: SMA / Gain: 5.0 dBi
GNSS Antenna Type	Internal Mount Active (28db) Ceramic Patch
GNSS Satellites Supported	GPS, GLONASS, BeiDou, Galileo, and QZSS
Power	
Power Interrupt	Magnetic Reed Switch (see page 4 for details)
Input Power	90-240 VAC @ 0.2A max (15W), 5.9VDC @ 2500mA max
Power Supply Size	2.0 x 3.2 x 1.2 inch (50 x 80 x 30 mm) with 59 inch (1500 mm) cord
Battery Backup	Battery Type: 2900 mAh Rechargeable Lithium Polymer
	Battery Duration: Up to 60 hours
	Battery Cycle Life: 500 times
	Battery Safety: IEC62133
Mechanical	
LEDs	Sensor Data, Server Status, Cellular Status
Device Memory	Up to 32,000 sensor messages (Sensor messages will be stored in the event of an Internet outage and transferred when the connection is restored.)
Enclosure	
	Polycarbonate, NEMA 1, 2, 4, 4x, 12 and 13 rated, sealed, and weatherproof
Weight	16.9 ounces
Environmental	
Operating Temperature	-20 to 55°C (-4 to 131°F)
Charging Temperature	0 to 45°C (32 to 113°F)
Storage Temperature	-20 to +60°C (-4 to 140°F)
Wireless	
Transmit Power (EIRP)	50 mW (900 MHz), 25 mW (868 MHz), 10 mW (433 MHz)
Antenna Type	Connector: RP-SMA / Gain: 3.0 dBi (900/868) 2.5dBi (433)
Wireless Range	1,200+ ft. non-line-of-sight ¹
Security	Encrypt-RF® (256-bit key exchange and AES-128 CBC)
Certifications	
	Safety: IEC 60950-1 and IEC 62368-1; EMC: IEC 55024, IEC 55032, IEC 301489-1, -3, -12, -52, FCC 47 CFR Part 15, subpart B and ICES - 001 Issue 6; RF: 900 MHz product includes model FCC ID: ZTL-G2SC1 / IC: 9794A-G2SC1 and FCCID: XPY2AGQN4NNN / IC: 8595A-2AGQN4NNN; 868 MHz product includes Module G2SC1 (IEC 300 220-1, -2); 433 MHz product includes Module G2SC2 (IEC 300 220-1,-2)

¹ Actual range may vary depending on the installation environment.



Cellular Antenna (Extended Details)

Frequency Range	698-960/ 1710-2700(MHz)
Gain	5 dBi
VSWR	2.5 Max
Polarization	Vertical
Impedance	50 (Ω)
Connector Type	SMA male
Antenna Length	172 mm / 6.77 inch
Type	Omni-directional, Multi-band antenna



ALTA Antenna (Extended Details)

Frequency Range	902-946 (MHz)	860 - 870 (MHz)	430 - 435 (MHz)
Gain	3 dBi	3 dBi	2.5 dBi
VSWR	1.8 Max	1.8 Max	1.8 Max
Polarization	Vertical	Vertical	Vertical
Impedance	50 (Ω)	50 (Ω)	50 (Ω)
Connector Type	RP-SMA male	RP-SMA male	RP-SMA male
Antenna Length	210 (mm) / 8.26 inch	210 (mm) / 8.26 inch	210 (mm) / 8.26 inch
Type	Omni-directional dipole antenna	Omni-directional dipole antenna	Omni-directional monopole antenna

USING THE INDUSTRIAL IoT GATEWAY ON/OFF AND UTILITY SWITCHES

The Industrial IoT Gateway has a magnetic On/Off power switch and utility switch. To operate either button or reed switch, use the magnet that shipped with the gateway. To use, simply place the provided magnet to the touch points on either side of the gateway (highlighted in red below).



Left side: Magnetic power on/off button



Users will receive one of the two magnets.



Right side: Magnetic utility button

Commercial-Grade Sensors

commercial-grade wireless sensors are designed for applications in ordinary environments (normal room temperature, humidity and atmospheric pressure). Do not subject these sensors to the following, as these environmental aggressors could degrade the device and its performance, leading to failures and burnout:

- Corrosive or deoxidizing gas, e.g., chlorine gas, hydrogen sulfide gas, ammonia gas, sulfuric acid gas, and nitric oxide
- Volatile or flammable gas
- Dusty conditions
- Extremely low or high pressures
- Wet or excessively humid locations
- Places where saltwater, oils, chemical liquids, or organic solvents are routinely present
- Applications/locations prone to excessive or strong vibration
- Other sites where similar hazardous conditions exist

Use these products within the specified temperature range. Higher temperatures could deteriorate both the product and its functionality.

Industrial-Grade Gateways | Type 1, 2, 4, 4X, 12, and 13 NEMA-Rated Enclosure

Industrial gateways are enclosed in reliable, weatherproof NEMA-rated enclosures. Our NEMA-rated enclosures are constructed for both indoor or outdoor use and protect the gateway circuitry against the ingress of solid foreign objects like dust and the damaging effects of water (rain, sleet, snow, splashing water, and hose-directed water).

- Safe from falling dirt
- Protects against wind-blown dust
- Protects against rain, sleet, snow, splashing water, and hose-directed water
- Increased level of corrosion resistance
- Remains undamaged by ice formation on the enclosure

WARNING: Opening the waterproof housing to access the SIM socket or internal utility button will require care to correctly seal the housing. Alternately tighten all screws evenly until achieving a torque of 0.4 N*M or 3.5 in*lbs per screw. Failing to do this may cause the lid to incorrectly seal and the product could be damaged by environmental factors.