Ultra Low Power Solar LoRaWAN® Gateway

SG50

SG50 is an energy-efficient solar LoRaWAN® gateway designed for outdoor environments with limited power availability and ample solar energy resources. With built-in batteries and accessorial solar panel, SG50 can work independently in various scenarios especially the place with hard access to power resource.

Besides the high adaptability, SG50 is highly compatible with mainstream network servers and support remote management via remote network servers which provides both convenience and secured management.

Benefiting from its robust structural design and high IP67 protection rate, SG50 can work smoothly in harsh environments. It is specifically tailored for applications such as oil and gas, mining, forestry, and remote industries where power consumption must be carefully managed.

◆ Features

- IP67 enclosure and robust structural design promote its strength and working lifespan
- Equip with SX1302 chip, handling a higher amount of traffic with lower consumption
- Support 8 channels for more than 2000 end-nodes connections
- Equip with GPS for simple remote management and deployment
- Fast deployment with the all-in-one design and standard accessories
- Built-in rechargeable batteries & accessorial solar panel for wireless usage
- Support cellular for backhaul network enabling independent networking

- Compatible with mainstream network servers like The Things Stack, ChirpStack, etc.
- Embedded network server and MQTT API for easily integration
- Equip with high-efficient power management design prolonging its battery life up to 4 days
- Compatible with remote management system for simple deployment even in remote regions

◆ Specifications

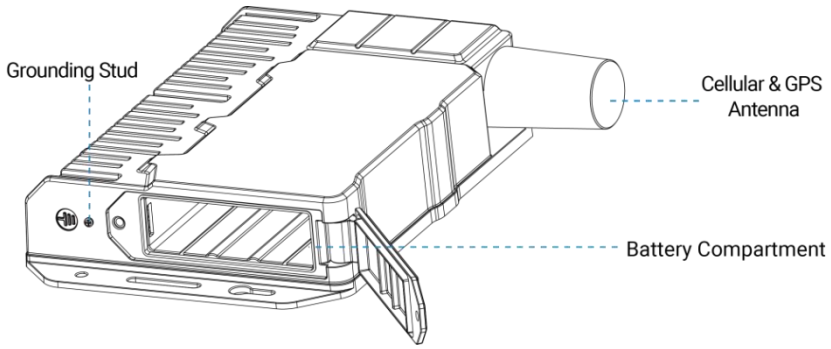
Hardware System	
CPU	Dual-core 240MHz, 32-bit Xtensa® LX7
Memory	8 MB PSRAM
Flash	16 MB
LoRaWAN®	
Antenna Connector	1 × 50 Ω N-Female External Connector
Channel	8 (Half-duplex)
Frequency Band	CN470/IN865/EU868/RU864/US915/AU915/KR920/AS923-1&2&3&4
Sensitivity	-140 dBm Sensitivity @292bps
Tx Power	Max. 27 dBm
Packet Forwarder	
Compatibility	Milesight Gateway Embedded NS, DeviceHub LNS, Milesight Development Platform LNS, etc. For more see ecosystem program.
Supported Devices	Around 2000 Class A/B/C Devices (Depending on uplink/downlink frequencies)
Advanced Feature	Packet Filter, LBT[1], Data Retransmission
Embedded Network Server	
Protocol	V1.0.3 Class A/Class C
Supported Devices	Max. 100 Devices
Integration	MQTT
Cellular Interface	
Network	4G LTE (CAT 1)/GSM
Tx Power	LTE: Class 3 (23 dBm ±2 dB)
Antenna	1 × External Antenna (Share with GPS)
Cellular Band	**L08GL (Global except North America):** LTE-FDD: B1/2/3/4/5/7/8/12/13/17/18/19/20/25/26/28/66 LTE-TDD: B34/38/39/40/41

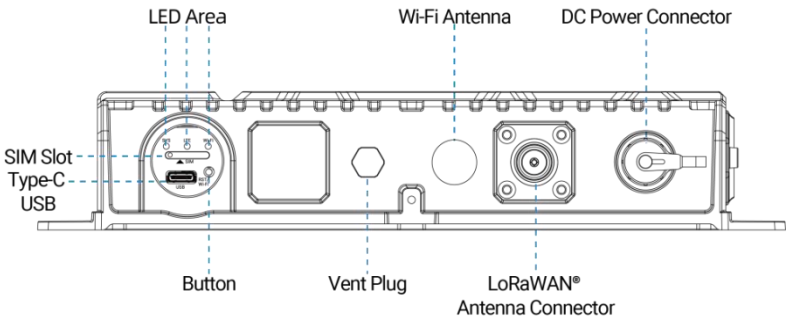
	GSM: B2/3/5/8 **L09NA (North America):** LTE-FDD: B2/4/5/12/13/66
SIM Slot	1 (Nano SIM-4FF)
Wi-Fi Interface	
Antenna	1 × External Antenna
Standards	IEEE 802.11b/g/n, 2.4 GHz
Mode	AP Mode (Device Configuration Only)
Security	WPA-PSK
GNSS	
Technology	GPS
Antenna	1 × External Antenna (Share with Cellular)
Others	
LED Indicators	1 × SYSTEM, 1 × LTE, 1 × Wi-Fi
Button	1 × Reset/Wi-Fi Button
USB	1 × USB 2.0 (Type-C) for Power Supply and Console
Power Connector	1 × M12 A-Coded Connector
Built-in	Watchdog, Timer
Network and Management	
Network Protocols	HTTP, HTTPS, MQTT
VPN	OpenVPN Client
Configuration	Web, MQTT API, Milesight Development Platform, DeviceHub
Update	Web, Milesight Development Platform, DeviceHub
Diagnostics Tool	Ping
Power Supply and Consumption	
Power Supply	1. Solar Power or DC Power (12~24VDC) via M12 Connector 2. 3.6V, 25000mAh 18650 Backup Batteries 3. 5V, 2A by USB Type-C Port
Battery Charge	Charged by M12 Power Connector Only
Battery Life[2]	Up to 4 Days Without Sunlight (100 Nodes Connection with 10 min Report Interval)
Power Consumption	Typical 0.8W
Physical Characteristics	
Ingress Protection	IP67
Housing & Color	Metal Cast Aluminum, White

Weight	1.275 kg (Without Batteries), 1.755 kg (With Batteries)
Dimension	250 × 157.5 × 46mm (9.84 x 6.20 x 1.81 in)
Installation	Wall or Pole Mounting
Environmental	
Operating Temperature	-30°C to +70°C (-22°F to +158°F)
Charging Temperature	-20°C to +50°C (-4°F to +122°F)
Storage Temperature	-40°C to +85°C (-40°F to +185°F)
Relative Humidity	0% to 95% (Non-condensing) at 25°C/77°F
Approvals	
Regulatory	CE, FCC
Environmental	RoHS

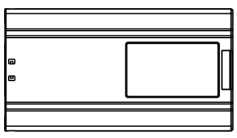
[1]AU915 and US915 do not support LBT.
[2] Tested under laboratory conditions and for guideline purposes only.

◆ Hardware Overview





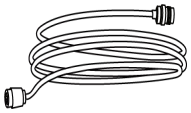
◆ Accessories



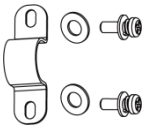
1 × Battery Pack

1 × SIM Card Ejector Tool

1 × LoRaWAN® Antenna (60cm)

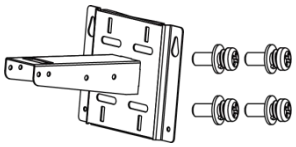


1 × Antenna Coaxial Cable (1m)

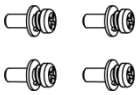


1 × Antenna U-strap Kit

1 × Antenna U-bolt Kit

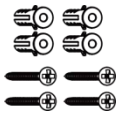


1 × Mounting Bracket Kit

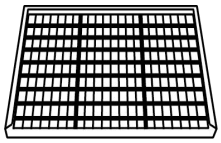


4 × Mounting Screws

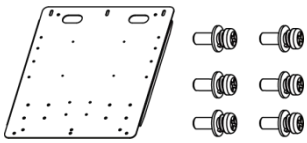
2 × Hose Clamps (⌀ 67-127mm)



4 × Wall Mounting Kits



1 × Solar Panel (With 50cm M12 Power Cable)



1 × Solar Panel Bracket Kit

***Note:**

1. Contact us if you need any other special accessories or customized accessories.
2. Optional solar panel specifications:

Model	**SP1530 (Default)**	**SP1545 (Optional)**
Electrical Characteristics		
Open-Circuit Voltage	17 V (± 0.3 V)	
Rated Voltage	15 V (± 0.3 V)	
Rated Current	2 A (± 5%)	3 A (± 5%)
Maximum Power	30 W (± 5%)	45 W (± 5%)
Minimal Power	28.5 W (± 5%)	43 W (± 5%)
Physical Characteristics		
Cell Type	Monocrystalline Silicon	
Operating Temperature	-20°C~80°C	
Weight	1.645kg	2.305kg
Dimension	533 × 303 × 17 mm	570 × 380 × 17 mm

◆ Dimensions(mm)