



SG50

Ultra Low Power Solar LoRaWAN® Gateway





Introduction

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

Cellular Band

Hardware System			
CPU	Dual-core 240MHz, 32-bit Xtensa® LX7		
Memory	8 MB PSRAM		
Flash	16 MB		
LoRaWAN®			
Antenna Connector Hardware System	$1 \times 50 \Omega$ N-Female External Connector		
Channel	8 (Half-duplex) Dual-core 240MHz, 32-bit Xtensa® LX7		
Frequency Band Memory	CN470/IN865/EU868/RU864/US915/AU915/KR920/AS923-1&2&3&4 8 MB PSRAM		
Sensitivity Flash	-140 dBm Sensitivity @292bps		
LoraWAn®	Max. 27 dBm		
Packet Forwarder Antenna Connector	1 × 50 Ω N-Female External Connector		
Channel	Semtech UDP Forwarder, Basic Station TCP Forwarder, 8 (Half-duplex)		
Compatibility Frequency Band	ChirpStack-y3/y4, Milesight Gateway Embedded NS, DeviceHub LNS, CN470/IN865/EU868/RU864/US915/AU915/KR920/AS923-1&2&3&4		
	Milesight Development Platform LNS, etc140 dBm Sensitivity @292bps		
Sensitivity	Around 2000 Class A/B/C Devices Max. 27 dBm		
§ጀρβ ን Μ ઉ d Devices	Max. 27 dBm (Depending on uplink/downlink frequencies)		
Packet Forwarder			
Advanced Feature	Packet Filter, LBT ¹ , Data Retransmission Semtech UDP Forwarder, Basic Station TCP Forwarder,		
Embedded Network S Compatibility	Server ChirpStack-v3/v4, Milesight Gateway Embedded NS, DeviceHub LNS,		
Protocol	V1.0.3 Class A/Class C Milesight Development Platform LNS, etc.		
Supported Devices	Max. 100 Devices Around 2000 Class A/B/C Devices		
FHEBOTE POLICES	MOTT (Depending on uplink/downlink frequencies)		
Cellular Interface Advanced Feature	Packet Filter, LBT ¹ , Data Retransmission		
Network Embedded Network	·		
•	1 × External Antenna (Share with GPS) V1.0.3 Class A/Class C		
Antenna Protocol			
Supported Devices	L08GL (Global except North America): Max. 100 Devices LTE-FDD: B1/2/3/4/5/7/8/12/13/17/18/19/20/25/26/28/66 MQTT		
bengratigand			
Cellular Interface	LTE-TDD: B34/38/39/40/41		
Network	GSM: B2/3/5/8 4G LTE (CAT 1)/GSM		
Antenna	1 × External Antenna (Share with GPS)		
	L08GL (Global except North America):		
Cellular Band	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

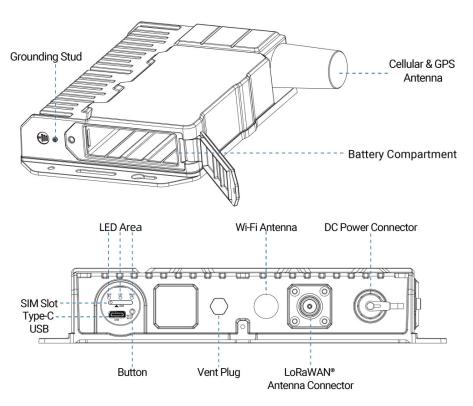
GSM: B2/3/5/8

LTE-FDD: B2/4/5/12/13/66 SIM Slot Model Wi-Fi Interface Wireless Transmission Antenna Technology Standards Frequency Mode AP Mode (Device Configuration Only) Tx Power Security Sensitivity WPA-PSK WORK Mode Tx External Antenna (Share with Cellular) Officiations Tx External Antenna (Share with Cellular) Officiators Tx External Antenna (Share with Cellular) Officiators Tx System, 1 x LTE, 1 x Wi-Fi -20°C ~60°C Battoracy Tx M12 A-Coded Connector Officiation Officiation Tx System Officiation Officiat
AM307 AM308(L) #### Interface
Archenology
Archenology
LoRaWAN® IEEE 802.11b/g/n, 2.4 GHz CN470/RU864/IN865/EU868/US915/AU915/KR920/AS923-1828384 Mode AP Mode (Device Configuration Only) 16dBm(868MHz)/22dBm(915MHz)/19dBm(470MHz) Security WPA-PSK -137dBm @300bps GNSS OTAA/ABP Class A Seristorical Security Security Security Security Security WPA-PSK -137dBm @300bps GNSS OTAA/ABP Class A Seristorical Security
Mode Tx Power 16dBm(868MHz)/22dBm(915MHz)/19dBm(470MHz) Security WPA-PSK -137dBm @300bps GNSS Work Mode OTAA/ABP Class A Security Sensitivity To Taylor Security Sec
Security Sensitivity Sensitivity Sensitivity Sensitivity Sensitivity Sensitivity OTAA/ABP Class A Sensology GPS 1 × External Antenna (Share with Cellular) Othersology (MEMS) Rangedicators 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C Buttonacy 1 × Reset/Wi-Fi Button 1 × USB 2.0 (Type-C) for Power Supplif and Console Pure dity Innector Sention Principle Watchdog, Timer Digital CMOSens® technology (MEMS) 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) Network and Management 0% ~ 100% RH Accuracy Resolution HTTP, MQTT Resolution 0 5% RH
GNSS Work Mode GPS 1 × External Antenna (Share with Cellular) Others principle Digital CMOSens® technology (MEMS) Range dicators 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C Rattoracy 1 × Reset/Wi-Fi Button 1 × USB 2.0 (Type-C) for Power Supplicand Console While the principle Watchdog, Timer Digital CMOSens® technology (MEMS) 1 × Wi-Fi -20°C ~60°C Desplution 1 × USB 2.0 (Type-C) for Power Supplicand Console Watchdog, Timer Digital CMOSens® technology (MEMS) Network and Management 0% ~ 100% RH Accuracy Network Protocols HTTP, MQTT Resolution 0 5% RH
Telepperature 1 × External Antenna (Share with Cellular) Others Principle Digital CMOSens® technology (MEMS) Rangedicators 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C Rantwacy 1 × Reset/Wi-Fi Button 1 × USB 2.0 (Type-C) for Power Supplif and Console Humidity Principle Watchdog, Timer Digital CMOSens® technology (MEMS) Network and Management 0% ~ 100% RH Accuracy Protocols Resolution 1 × MT2 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) Network Protocols HTTP, MQTT 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C 1 × Wi-Fi -20°C~60°C 1 × Reset/Wi-Fi Button 1 × O.5% RH
1 × External Antenna (Share with Cellular) Others principle Digital CMOSens® technology (MEMS) Randendicators 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C 1 × Reset/Wi-Fi Button 1 × USB 2.0 (Type-C) for Power Supplif and Console 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) Network and Management 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) Network Protocols HTTP, MQTT 0 5% RH
Digital CMOSens® technology (MEMS) Randendicators 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C 1 × Reset/Wi-Fi Button 1 × USB 2.0 (Type-C) for Power Supplify and Console White dity nuctor 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) Network and Management Accuracy Network Protocols HTTP, MQTT Digital CMOSens® technology (MEMS) 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) Network Protocols HTTP, MQTT
REDIGENCIANS 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C 1 × Reset/Wi-Fi Button ± 0.2°C 1 × USB 2.0 (Type-C) for Power Supplify and Console 1 × M12 A-Coded Connector 2 Partial Principle Watchdog, Timer Digital CMOSens® technology (MEMS) Network and Management Accuracy Network Protocols HTTP, MQTT Resolution 1 × SYSTEM, 1 × LTE, 1 × Wi-Fi -20°C~60°C 1 × Reset/Wi-Fi Button ± 0.2°C 1 × M12 A-Coded Connector 2 Note of the consoler to the console
Buttonacy 1 × Reset/Wi-Fi Button ± 0.2°C 1 × USB 2.0 (Type-C) for Power Supplify and Console 1 × M12 A-Coded Connector 2 Perating Principle Watchdog, Timer Digital CMOSens® technology (MEMS) Wetwork and Management Accuracy Network Protocols HTTP, MQTT Resolution 1 × Reset/Wi-Fi Button ± 0.2°C 1 × USB 2.0 (Type-C) for Power Supplify and Console 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) 0 5 × RH
1 × USB 2.0 (Type-C) for Power Supplify and Console ### Purificity* 1 × M12 A-Coded Connector Digital CMOSens® technology (MEMS) Network and Management
Accuracy Network Protocols HTTP, MQTT M12 A-Coded Connector 1 × M12 A-Coded Connector Watchdog, Timer Digital CMOSens® technology (MEMS) 0% ~ 100% RH ± 2% RH Execution 0.5% RH
Operating Principle Watchdog, Timer Digital CMOSens® technology (MEMS) 0% ~ 100% RH Accuracy Network Protocols HTTP, MQTT Resolution Digital CMOSens® technology (MEMS) 0% ~ 100% RH ± 2% RH
Network and Management Accuracy Network Protocols HTTP, MQTT Resolution 0% ~ 100% RH ± 2% RH
Accuracy Network Protocols HTTP, MQTT Resolution 0.5% RH
Network Protocols HTTP, MQTT Resolution 0.5% RH
Resolution 0.5% RH
Configuration Web, MQTT API, Milesight Development Platform, DeviceHub
Motion Update Web, Milesight Development Platform, DeviceHub
Operating Principle Passive infrared (PIR) Diagnostics Tool Ping Detection Range 80 ° Horizontal, 55 ° Vertical, 5m
Power Supply and Consumption
1 Solar Power or DC Power (12, 24VDC) via M12 Connector
Ligit
3 1
Range 3. 5V, 2A by USB Type Of Put (Determine as 6 levels, 0-5)
Charged by M12 Power Connector Only
Operating Principle Up to 4 Days Without Sunlight (1600 (Naches) Connection with 10 min
Range ¹ Report Interval) 1.00 ~ 5.00 (IAQ Rating)
Rower Consumption Typical 0.8W ±1
Ptrysical Characteristics 0.01
Raremetric Pressure IP67
ABersting Principle Metal Cast Albinarouns; swingtebsolute pressure sensor (MEMS)
Range Weight 1.275 kg (Without Batteries), 1.275 kg (With Batteries)
Dimension 250 × 157.5 × 46mm (9.84 x 6.20 x 1.81 in)

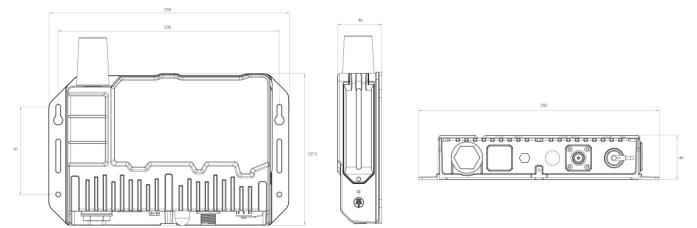
Installation	Wall or Pole Mounting			
Environmental				
Operating Temperature	-30°C to +70°C (-22°F to +158°F)			
Charging Temperature	-20°C to +50°C (-4°F to +122°F)			
Storage Temperature	-40°C to +85°C (-40°F to +185°F)			
Relative Humidity	0% to 95% (Non-condensing) at 25°C/77°F			
Approvals				
Regulatory	CE, FCC			
Environmental	RoHS			

¹AU915 and US915 do not support LBT.

◆ Hardware Overview

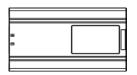


◆ Dimensions(mm)



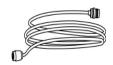
² Tested under laboratory conditions and for guideline purposes only.

Accessories









1 × Battery Pack

1 × SIM Card Ejector Tool 1 × LoRaWAN® Antenna

(60cm)

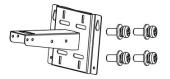
1 × Antenna Coaxial Cable (1m)



1 × Antenna U-strap Kit



1 × Antenna U-bolt Kit



1 × Mounting **Bracket Kit**



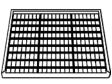
4 × Mounting Screws



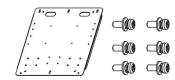
2 × Hose Clamps



4 × Wall Mounting Kits



1 × Solar Panel (With 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		





