

Semi-Industrial LoRaWAN® Gateway UG65

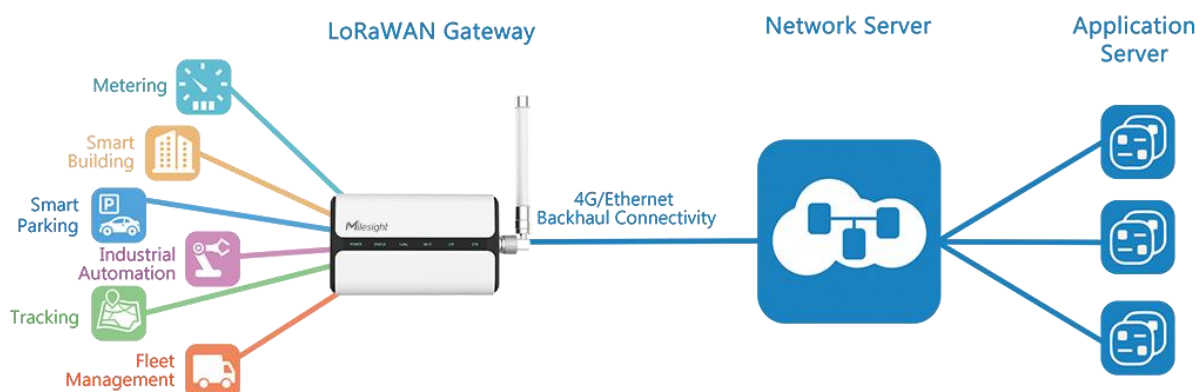
Milesight



UG65 is a robust 8-channel indoor LoRaWAN® gateway. Adopting SX1302 LoRa chip and high-performance quad-core CPU, UG65 supports connection with more than 2000 nodes. UG65 has line of sight up to 15 km and can cover about 2 km in urbanized environment, which is ideally suited to smart office, smart building and many other indoor applications.

UG65 supports not only multiple back-haul backups with Ethernet, Wi-Fi and cellular, but also has integrated mainstream network servers (such as The Things Stack, ChirpStack, etc.) and built-in network server for easy deployment.

◆ Application Example



◆ Features

- Quad-core industrial processor with big memory
- Equip with SX1302 chip, handling a higher amount of traffic with lower consumption
- 8 half/full-duplex channels
- IP65 enclosure and industrial design for parts of outdoor environment applications like eaves
- Desktop, wall or pole mounting
- Multi backhaul backups with Ethernet, cellular (4G) and Wi-Fi
- DeviceHub and Milesight Development Platform provide easy and centralized management of remote devices
- Enable security communication with multiple VPNs like IPsec/OpenVPN/L2TP/PPTP/DMV PN/WireGuard
- Compatible with mainstream network servers like The Things Stack, ChirpStack, Actility, AWS, etc.
- Detect and analyze the noise level and provide intuitive diagram for deployment
- Built-in network server and MQTT(s)/HTTP(s) API for easily integration
- Support BACnet/IP and Modbus to integrate LoRaWAN® data to BMS/PLC system easily
- Embedded Python SDK for users secondary development
- Fast and user-friendly programming by Node-RED development tool

◆ Hardware Specifications

Hardware System

| | |
|--------|--|
| CPU | Quad-core 1.5 GHz, 64-bit ARM Cortex-A53 |
| Memory | 512 MB DDR4 RAM |
| Flash | 8 GB eMMC |

LoRaWAN®

| | |
|----------------|---|
| Antenna | 2 × Internal Antennas + 1 × 50 Ω N-Female External Connector |
| Channel | 8 (Half/Full-duplex) |
| Frequency Band | CN470/IN865/EU868/RU864/US915/AU915/KR920/AS923-1&2&3&4 |
| Sensitivity | -140dBm Sensitivity @292bps |
| Tx Power | 27dBm Max |
| Protocol | V1.0 Class A/Class B/Class C and V1.0.2 Class A/Class B/Class C |

Ethernet Interface

| | |
|----------------|--------------------------------------|
| Port | 1 × RJ45 WAN Port (PoE PD supported) |
| Physical Layer | 10/100/1000 Base-T (IEEE 802.3) |
| Data Rate | 10/100/1000 Mbps (Auto-Sensing) |
| Interface | Auto MDI/MDIX |

| | |
|--------------------------------------|--|
| Mode | Full or Half Duplex (Auto-Sensing) |
| Ethernet Isolation | 1.5 kV RMS |
| Wi-Fi Interface | |
| Antenna | Internal Antenna |
| Standards | IEEE 802.11 b/g/n, 2.4GHz |
| | 802.11b: 18 dBm +/-2.0 dBm (11 Mbps) |
| | 802.11g: 15 dBm +/-2.0 dBm (6 Mbps) |
| | 802.11g: 15 dBm +/-2.0 dBm (54 Mbps) |
| Tx Power | 802.11n@2.4 GHz: 14 dBm +/-2.0 dBm (MCS0_HT20) |
| | 802.11n@2.4 GHz: 14 dBm +/-2.0 dBm (MCS7_HT20) |
| | 802.11n@2.4 GHz: 13 dBm +/-2.0 dBm (MCS0_HT40) |
| | 802.11n@2.4 GHz: 13 dBm +/-2.0 dBm (MCS7_HT40) |
| Cellular Interface (Optional) | |
| Network | 4G LTE |
| Tx Power | Class 3 (23 dBm ±2 dB) |
| Antenna | Internal Antenna |
| SIM Slot | 1 (mini SIM-2FF) |
| Others | |
| Reset Button | 1 × RST |
| USB | 1 × USB Type-C for Power Supply and Console |
| LED Indicators | 1 × POWER, 1 × STATUS, 1 × LoRa, 1 × Wi-Fi, 1 × LTE, 1 × ETH |
| Power Connector | 1 × DC Male Jack Connector (2.1 x 5.5 mm) |
| Built-in | Watchdog, RTC, Timer |
| Power Supply and Consumption | |
| | 1. DC 9-24 V by Power Connector |
| Power Input | 2. 802.3 af PoE |
| | 3. 5V/1A by USB Type-C Port |
| Power Consumption | Typical 2.9 W, Max 4.2 W |
| Physical Characteristics | |
| Ingress Protection | IP65 |
| Material & Color | PC+ABS (UL94 V0), White & Black |
| Weight | 548g |
| Dimensions | 180 x 110 x 55.5 mm (7.09 x 4.33 x 2.19 in) |
| Installation | Desktop, Wall or Pole Mounting |
| Environmental | |

| | |
|-----------------------|---|
| Operating Temperature | -40°C to +70°C (-40°F to +158°F) |
| Temperature | Reduced Cellular Performance Above 60°C |
| 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, CE (RED), Telec, JATE, RCM |
| Environmental | RoHS |

◆ Software Specifications

LoRaWAN®

| | |
|-------------------|--|
| Supported Devices | Around 2000 Class A/B/C Devices (10 min uplink interval) |
| Protocol | V1.0 Class A/Class B/Class C and V1.0.2 Class A/Class B/Class C |
| Compatibility | DeviceHub LNS, Milesight Development Platform LNS, Milesight IoT Cloud, etc. For more see ecosystem program . |

Packet Forwarder

| | |
|----------------------------------|---|
| Noise Analyzer | Scan the noise of the frequencies for channel selection |
| Packet Filter | Add whitelist or blacklist to filter the packets |
| Data Retransmission ¹ | Re-transmit the data packets after network recovery |

Embedded Network Server

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|-------------------|---|
| Decode and Encode | Inbuilt Milesight devices codec library, support custom codec setup |
| Gateway Fleet | Work as the network server of other Milesight blind-filling gateways |
| Multicast | Support multicast downlink control |
| FUOTA | Upgrade FUOTA supported end devices |
| Integration | MQTT(s), HTTP(s), BACnet/IP, BACnet/SC, Modbus TCP, Modbus RTU over TCP |

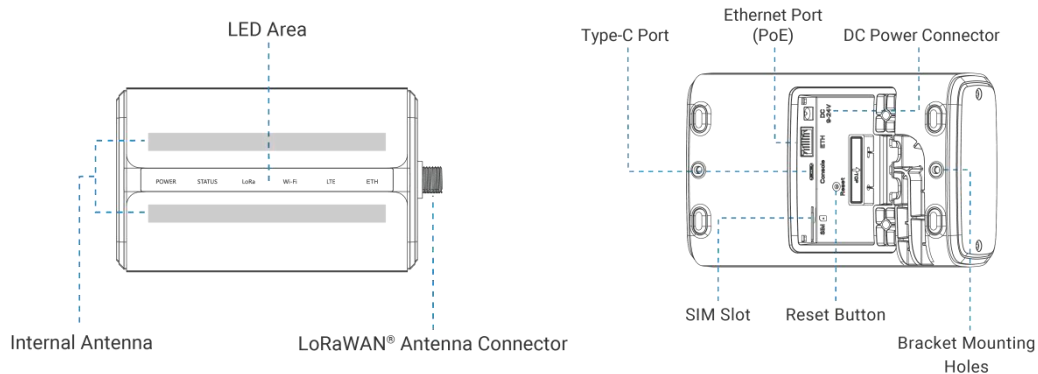
Network

| | |
|-------------------|---|
| Network Protocols | PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, DDNS, HTTP, HTTPS, DNS, ARP, SNTP, Telnet, SSH, etc. |
| VPN Tunnel | OpenVPN/IPsec/PPTP/L2TP/GRE/DMVPN/WireGuard |
| Firewalls | Access Control, DMZ, Port Mapping (DNAT), MAC Binding, Filtering (IP&Domain) |
| DDNS | Supported >16 service providers, others can be configured manually |

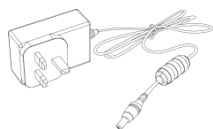
¹ Only parts of packet forwarders support this feature.

| | |
|------------------------|---|
| Multilevel Authority | Multiple Levels of User Authority |
| Reliability | WAN Failover |
| Diagnostics Tools | Ping, Traceroute, Tcpdump, QXDM, Log Server |
| Wi-Fi Interface | |
| Standards | IEEE 802.11 b/g/n, 2.4GHz |
| Mode | AP or Client mode |
| Security | AP: WPA-PSK/WPA2-PSK authentication, WEP/TKIP/AES encryption Client: WPA-PSK/WPA2-PSK/WPA-Enterprise/WPA2-Enterprise authentication, WEP/TKIP/AES encryption |
| Management | |
| Configuration | Web, CLI (SSH/Telnet), SMS, On-demand dial up, SNMP, HTTP API, MQTT API, Milesight Development Platform, DeviceHub |
| Update | Web, Milesight Development Platform, DeviceHub |
| Remote Management | Milesight Development Platform, DeviceHub |
| Event Alarm | Power On, Network Up/Down, VPN Up/Down, etc. |
| Others | |
| App | Python SDK, Node-RED |

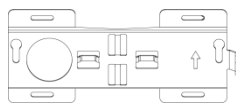
◆ Hardware Overview



◆ Accessories



1 × DC Jack Power Adapter



1 × Mounting Bracket



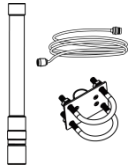
2 × Bracket Fixing Screws



4 × Wall Mounting Kits



1 × LoRaWAN® Antenna
(18cm)



1 × 60cm LoRaWAN®
Fiber-Glass N-N Antenna Kit
(Optional)

***Note:** Contact us if you need any other special accessories or customized accessories.

◆ Dimensions(mm)

