# KL65

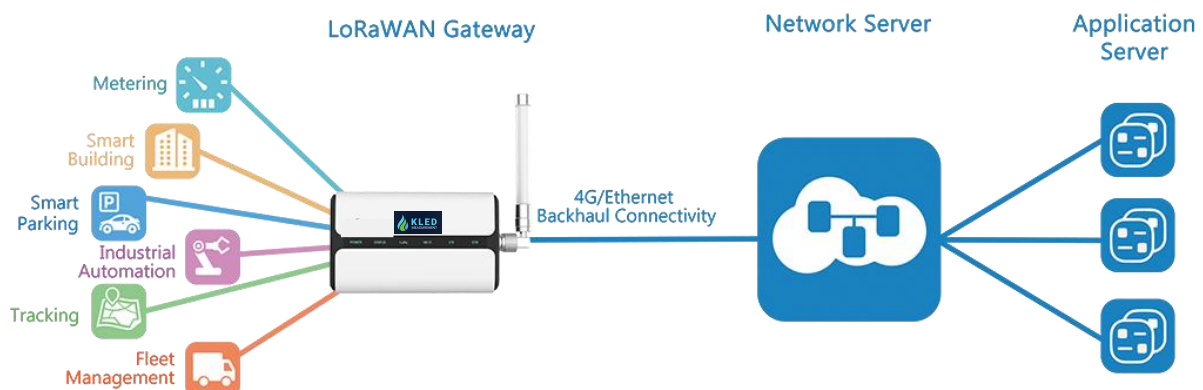## Lo Ra WAN G a te wa y

KL65 is a robust 8-channel indoor LoRaWAN gateway. Adopting SX1302 LoRa chip and high-performance quad-core CPU, KL65 supports connection with more than 2000 nodes. KL65 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.

KL65 supports not only multiple back-haul backups with Ethernet, Wi-Fi and cellular, but also has integrated mainstream network servers (such as TTI, ChirpStack, etc.) and built-in network server and Milesight IoT Cloud 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/3G) and Wi-Fi
- DeviceHub and Milesight IoT Cloud provide easy and centralized management of remote devices
- Enable security communication with multiple VPNs like IPsec/OpenVPN/L2TP/PPTP/DMVPN
- Compatible with mainstream network servers like The Things Industries, ChirpStack, Actility, Everynet, etc.
- Detect and analyze the noise level and provide intuitive diagram for deployment
- Built-in network server and MQTT/HTTP/HTTPS API for easily integration
- Embedded Python SDK for users secondary development
- Fast and user-friendly programming by Node-RED development tool

# ◆ 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 (Optional: 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 |
| Output 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 (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) |
| **Wi-Fi Interface** | |

| | |
|---|---|
| Antenna | Internal Antenna |
| Standards | IEEE 802.11 b/g/n, 2.4GHz |
| Mode | AP or Client mode |
| Security | WPA/WPA2 authentication, WEP/TKIP/AES encryption |
| Tx Power | 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) |
| | 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)

| | |
|---|---|
| Antenna | Internal Antenna |
| SIM Slot | 1 (mini SIM-2FF) |

## Others

| | |
|---|---|
| Reset Button | 1 × RST |
| Console Port | 1 × Type-C |
| LED Indicators | 1 × POWER, 1 × STATUS, 1 × LoRa, 1 × Wi-Fi, 1 × LTE, 1 × ETH |
| Built-in | Watchdog, RTC, Timer |

## Software

| | |
|---|---|
| Network Protocols | PPPoE, SNMP v1/v2c/v3, TCP, UDP, DHCP, DDNS, HTTP, HTTPS, DNS, ARP, SNTP, Telnet, SSH, MQTT, etc. |
| VPN Tunnel | OpenVPN/IPsec/PPTP/L2TP/GRE/DMVPN |
| Firewall | ACL/DMZ/Port Mapping/MAC Binding/URL Filter |
| Management | Web, CLI, SMS, On-demand dial up, DeviceHub, Milesight IoT Cloud, Yeastar Workplace Platform |
| Reliability | WAN Failover |
| App | Python SDK, Node-RED |

## Power Supply and Consumption

| | |
|---|---|
| Power Input | 1. 9-24 VDC by DC Male Jack Connector |
| | 2. 1 × 802.3 af PoE input |
| Power Consumption | Typical 2.9 W, Max 4.2 W |

## Physical Characteristics

| | |
|---|---|
| Ingress Protection | IP65 |
| Dimensions | 180 x 110 x 56.5 mm (7.09 x 4.33 x 2.22 in) |

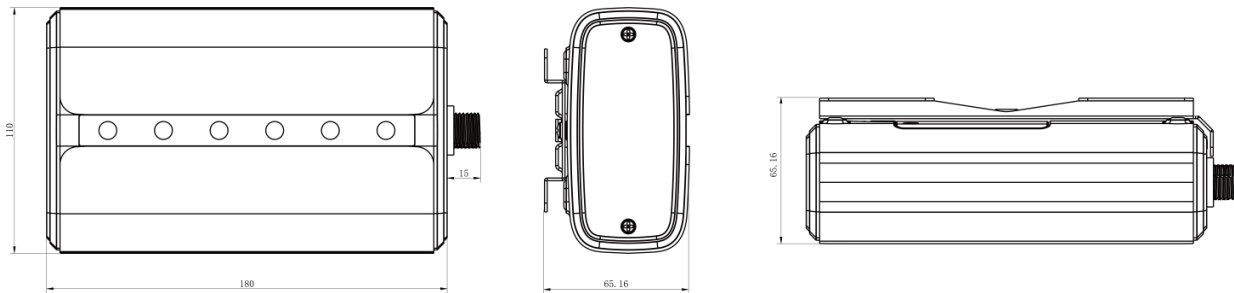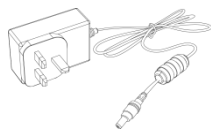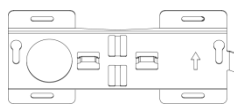| Installation | Desktop, Wall or Pole Mounting |
|---|---|
| **Environmental** | |
| Operating | -40°C to +70°C (-40℉ to +158℉) |
| Temperature | Reduced Cellular Performance Above 60°C |
| Storage Temperature | -40°C to +85°C (-40℉ to +185℉) |
| Ethernet Isolation | 1.5 kV RMS |
| Relative Humidity | 0% to 95% (non-condensing) at 25°C/77℉ |
| **Approvals** | |
| Regulatory | CE, FCC, IC |
| Environmental | RoHS, REACH |

## ◆ Dimensions(mm)



## ◆ Accessories

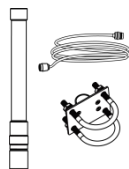1 × DC Jack Power Adapter

1 × Mounting Bracket

2 × Bracket Fixing Screws

4 × Wall Mounting Kits

1 × 18 cm LoRaWAN® Antenna **(External antenna version included)**

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

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