Dual Channels LoRa Gateway

LG02 / OLG02

Dual Channel LoRa Gateway Indoor & Outdoor version

OVERVIEW:

LG02 & OLG02 are open source dual channels LoRa Gateway. It lets you bridge LoRa wireless network to an IP network via WiFi, Ethernet, Or 3G/4G cellular via optional LTE module. The LoRa wireless allows users to send data and reach extremely long ranges at low data-rates.
It provides ultra-long range spread spectrum communication and high interference immunity.

LG02 & OLG02 has WiFi interface, Ethernet port and USB host port. These Inter-faces provide flexible methods for users to connect their sensor networks to Internet.

LG02 & OLG02 can support the LoRaWAN protocol in single frequency and custo-mized LoRa transmit protocol. It use two sx1276/sx1278 LoRa modules which lets the LoRa can works in full duplex mode and increase the communication efficiency. The aim for LG02 / OLG02 is to provide a low cost IoT wireless solution to support 50~300 sensor nodes.

Specifications:

Linux Side:
- Processor: 400MHz, 24K MIPS
- Flash: 16MB ; RAM: 64MB

Interfaces:
- 10M/100M RJ45 Ports x 2
- WiFi: 802.11 b/g/n
- LoRa Wireless
- Power Input: 12V DC
- USB 2.0 host connector x 1
- USB 2.0 host internal interface x 1
- 3G/4G module (optional)

Order Option:

Indoor Version:
LG02-XXX-YY.

Outdoor Version:
OLG02-XXX-YY.

-XXX:
  433: Best Tuned at 433Mhz
  868: Best Tuned at 868Mhz
  915: Best Tuned at 915Mhz

-YY:
  EC25-AU: with Quectel EC25-AU
  EC25-E:with Quectel EC25-E
  EC25-A: with Quectel EC25-A

Features:

- Open Source OpenWrt system
- Low power consumption
- Firmware upgrade via Web
- Software upgradable via network
- Flexible protocol to connect to IoT servers
- Auto-Provisioning
- Built-in web server
- Managed by Web GUI, SSH via LAN or WiFi
- Internet connection via LAN, WiFi, 3G or 4G
- Failsafe design provides robustly system
- 2 x SX1276/SX1278 LoRa modules
- Full–duplex LoRa transceiver
- Two receive channels, and one transmit channel
- Limited support in LoRaWAN/ Support Private LoRa protocol
- Support upto 300 nodes
- LoRa band available at 433/868/915/920 Mhz
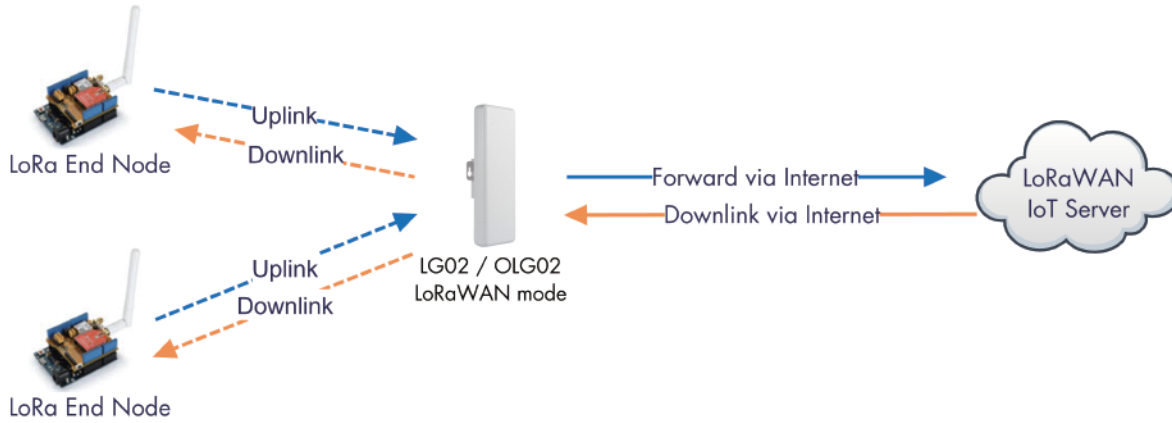- Max range in LoRa: 5~10 km. Density Area:>500m

Applications:

- Wireless Alarm and Security Systems
- Home and Building Automation
- Automated Meter Reading
- Industrial Monitoring and Control
- Long range Irrigation Systems
- GPS tracker,etc

LoRaWAN mode:
Use LG02 / OLG02 as a LoRaWAN gateway* to forward packet to LoRaWAN IoT Server
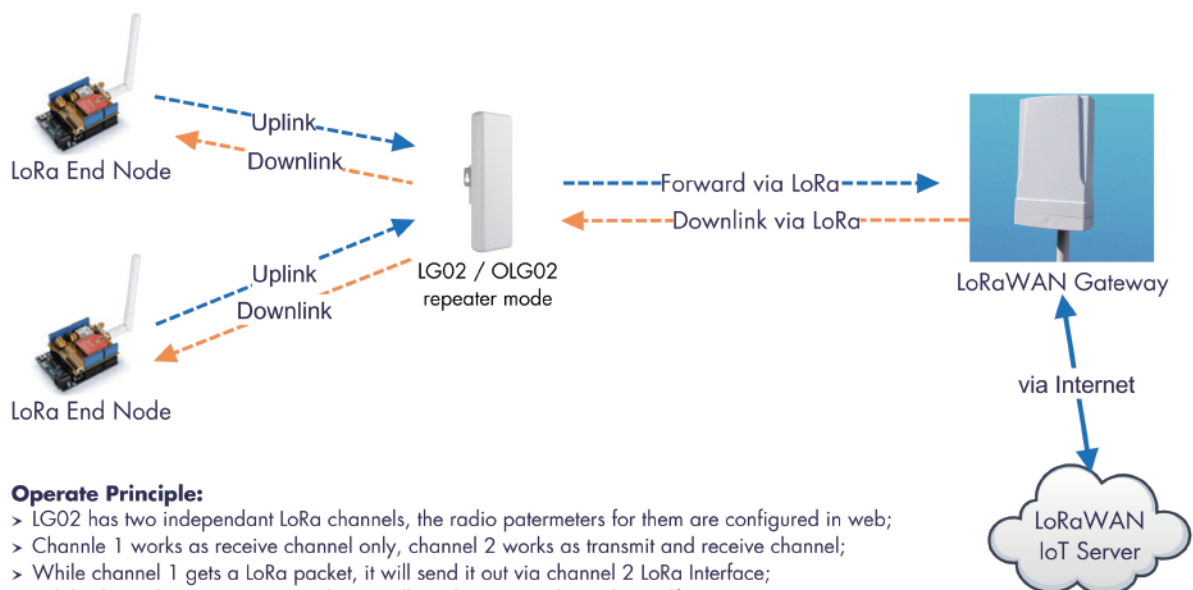

Operate Principle:
- LG02/OLG02 running packet forward and will forward the uplink LoRa packet from end node to LoRaWAN server.
- It will also forward downlink LoRa packet from LoRaWAN server to end node.
- The end node can use OTAA or ABP mode in the LoRaWAN protocol.

Limitation:
- The LG02 only support one LoRaWAN frequency for uplink. So the end node should be set to fix frequency.
- If end node use muliply frequencies to transfer, The LG02 will only be able to receive the same frequency set in LG02.

LoRa Repeater:
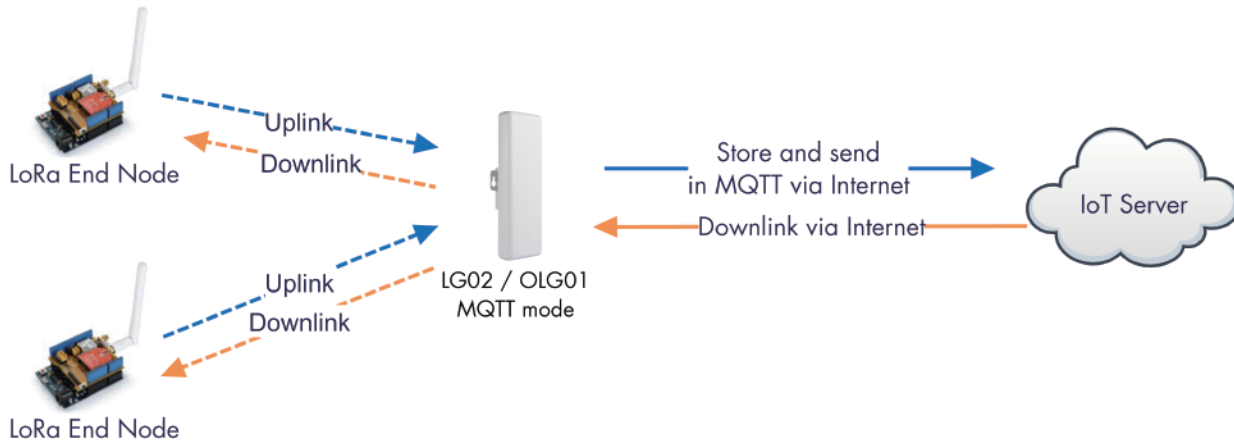Use LG02 / OLG02 as a LoRa Repeater to increase transmit distance

Operate Principle:
- LG02 has two independant LoRa channels, the radio patermeters for them are configured in web;
- Channle 1 works as receive channel only, channel 2 works as transmit and receive channel;
- While channel 1 gets a LoRa packet, it will send it out via channel 2 LoRa Interface;
- While channel 2 gets a LoRa packet, it will send it out via channel 2 itself.

MQTT mode:

Use LG02 / OLG02 as a LoRa Gateway to forward packet to IoT Server via MQTT protocol

LoRa End Node

Uplink
Downlink

Uplink
Downlink

LG02 / OLG01 MQTT mode

Store and send in MQTT via Internet
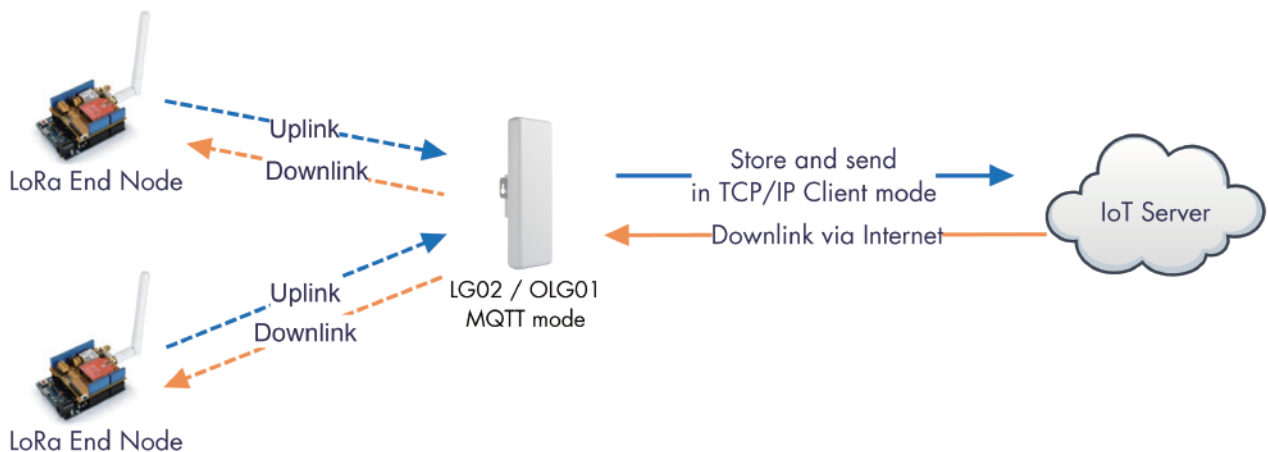
Downlink via Internet

IoT Server

LoRa End Node

Operate Principle:
> The LoRa end node sends data to LG02 gateway via pravite LoRa protocol. LG02 stores the sensor data.
> LG02 sends the sensor data to IoT Server via MQTT protocol.

TCP/IP Client mode:

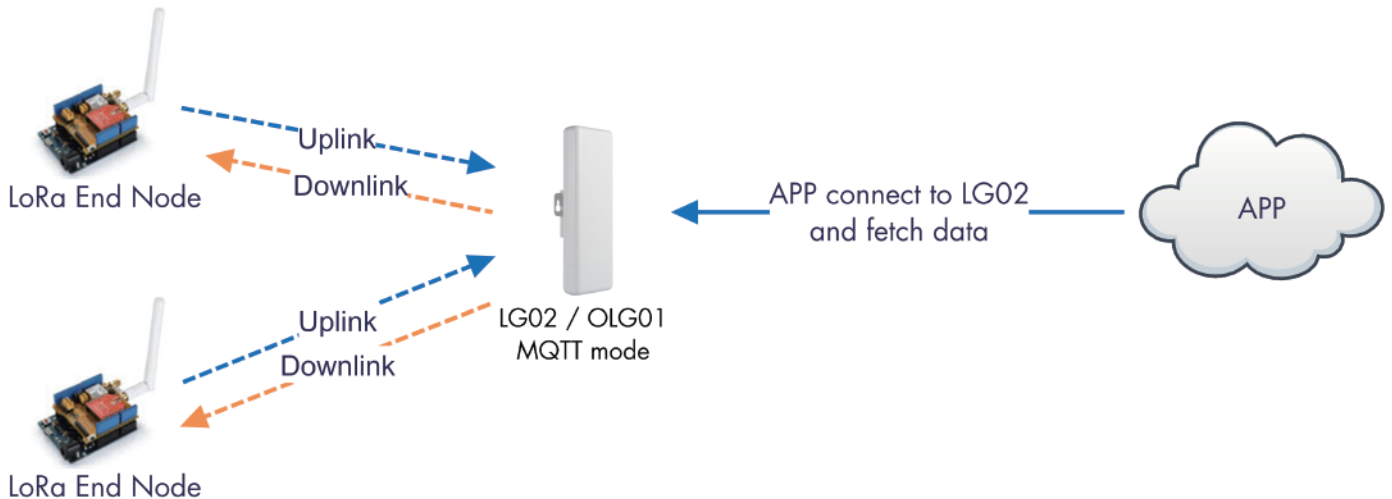Use LG02 / OLG02 as a LoRa Gateway to forward packet to IoT Server in TCP/IP Client Mode

LoRa End Node

Uplink
Downlink

Uplink
Downlink

LG02 / OLG01 MQTT mode

Store and send in TCP/IP Client mode

Downlink via Internet

IoT Server

LoRa End Node

Operate Principle:
> The LoRa end node sends data to LG02 gateway via pravite LoRa protocol. LG02 stores the sensor data.
> LG02 sends the sensor data to IoT Server via general TCP/IP Client mode.

TCP/IP Server mode:
Use LG02 / OLG02 as a LoRa Gateway to forward packet to IoT Server in TCP/IP Server Mode

LoRa End Node — Uplink / Downlink — LG02 / OLG01 MQTT mode — APP connect to LG02 and fetch data — APP

LoRa End Node — Uplink / Downlink

Operate Principle:
➢ The LoRa end node sends data to LG02 gateway via pravite LoRa protocol. LG02 stores the sensor data.
➢ Remote APP connect to LG02 and fetch sensor data.

More Modes:
LG02/OLG02 are open source device,user is easy to develop there own protocol to connect to there IoT Server.