

LinkElecs

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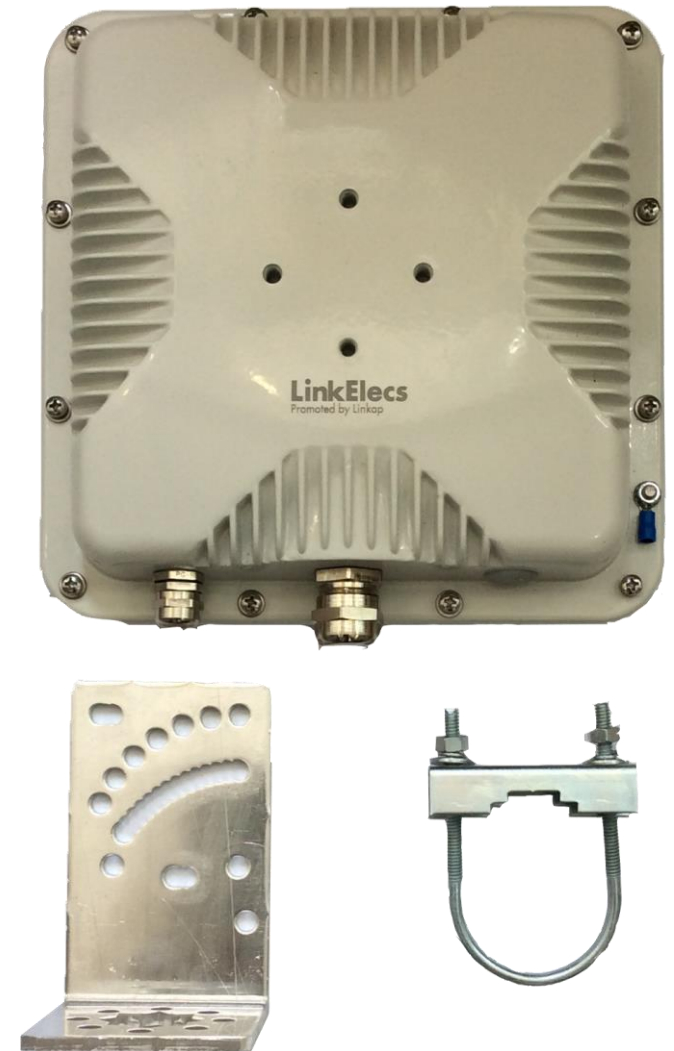
Products and Solutions

LinkElecs Multi-Channel LoRaWAN Gateway

Part Number: GW-1020

The LinkElecs multi-channel LoRaWAN gateway uses LoRa technology which complies with the LoRa Alliance specifications and ETSI ICT standard. Its advanced features include Full Duplex operation in regions that provide symmetrical spectrum for uplink and downlink channels. It specifically meets standard requirements of public operators, cable operators, MVNOs and private authorities.

- LoRaWAN antenna gain: between 0 to 12dBi
- Radio specification:
 - Frequency band : EU 863-870MHz ISM Band
 - 8 frequency channels
 - TX Power : +14dBm
 - Up to -142 dBm sensitivity
- Bidirectional communications, range of 5 km in urban areas, and of 15 km in sub-urban areas
- Rich backhaul: Gigabit Ethernet (electrical or fiber), 4G/LTE (Optional)
- Embedded sensors for remote monitoring and management
- Firmware upgrade over the network
- Power supply over Ethernet (POE), 9~36VDC, Maximum 15W
- Integrated GPS/GNSS for precise timestamping and high-accuracy position (optional)
- IP67-grade outdoor enclosure, Large operating range, high humidity tolerance
- Compact size: 23x23 cm



LinkElecs LoRaWAN Mote

Part Number: ULM-1010

A multi-purpose “ultra low power mote” to easily connect a device or sensor to a LoRaWAN (Long Range Wide Area Network) as a well-known LPWAN (Low Power Wide Area Network) in the world. The LinkElecs LoRaWAN ultra low power mote offers making an IoT-based ultra-low power device by integrating Ultra-low-power MCU and radio transceiver.

- STM32L072RBT 32-bit MCU
- RN2483 well-known LoRaWAN transceiver
- Various Interfaces include UART, I2C, SPI, ADC and GPIOs
- 10 years battery-powered lifetime (Up to 6 uplink per day with 2400 mAh battery)
- parameters configuration using USB interface or OTA in network
- Operating mode control using a magnetic reed switch.
- Supply voltage:
 - battery-powered : 3.6VDC
 - USB-powered: 5VDC
- Current consumption:
 - idle mode: 5mA
 - TX mode: up to 40 mA
 - RX mode: 15mA
 - Deep sleep mode: up to 8uA
- Compact size of 30 x 40 mm



LinkElecs LoRaWAN Mote

Part Number: ULM-1110

A multi-purpose “ultra low power mote” to easily connect a device or sensor to a LoRaWAN (Long Range Wide Area Network) as a well-known LPWAN (Low Power Wide Area Network) in the world. The LinkElecs LoRaWAN ultra low power mote offers making an IoT-based ultra-low power device by integrating Ultra-low-power MCU and radio transceiver. It's designed to be placed in a IP67 box.

- STM32L072RBT 32-bit MCU
- RN2483 well-known LoRaWAN transceiver
- Various Interfaces include UART, I2C, SPI, ADC and GPIOs
- 10 years battery-powered lifetime (Up to 6 uplink per day with 2400 mAh battery)
- parameters configuration using USB interface or OTA in network
- Operating mode control physically using a mechanical or magnetic reed switch.
- Integrated battery holder, buzzer and magnetic reed switch (optional)
- Supply voltage:
 - battery-powered : 3.6VDC
 - USB-powered: 5VDC
- Current consumption:
 - idle mode: 5mA
 - TX mode: up to 40 mA
 - RX mode: 15mA
 - Deep sleep mode: up to 8uA
- Compact size of 77x52mm

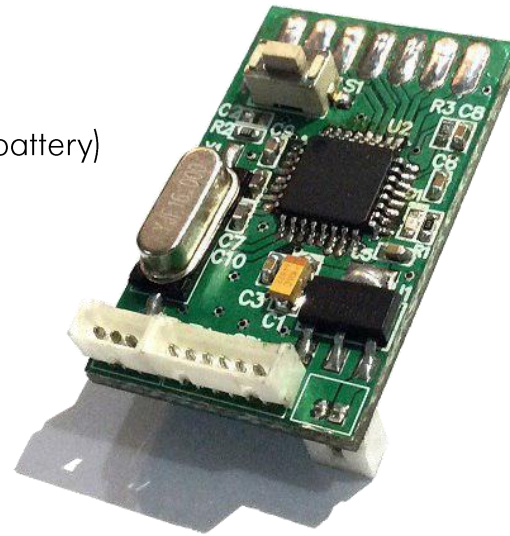


LinkElecs LoRaWAN Mote

Part Number: LM-1010

A multi-purpose “low power mote” to easily connect a device or sensor to a LoRaWAN (Long Range Wide Area Network) as a well-known LPWAN (Low Power Wide Area Network) in the world. The LinkElecs LoRaWAN low power mote offers making an IoT-based low power device easily and fast using Arduino software platform.

- Atmega328 8-bit MCU
- RN2483 well-known LoRaWAN transceiver (or RFM95, optional)
- Firmware development using Arduino platform
- Various Interfaces include UART, I2C, SPI, ADC and GPIOs
- 10 years battery-powered lifetime (Up to 2 uplink per day with 2400 mAh battery)
- Supply voltage:
 - battery-powered : 3.6VDC
 - external supply: 3~6VDC
- Current consumption:
 - idle mode: 10mA
 - TX mode: up to 45mA
 - RX mode: 20mA
 - Deep sleep mode: up to 25uA
- Compact size of 20 x 34mm

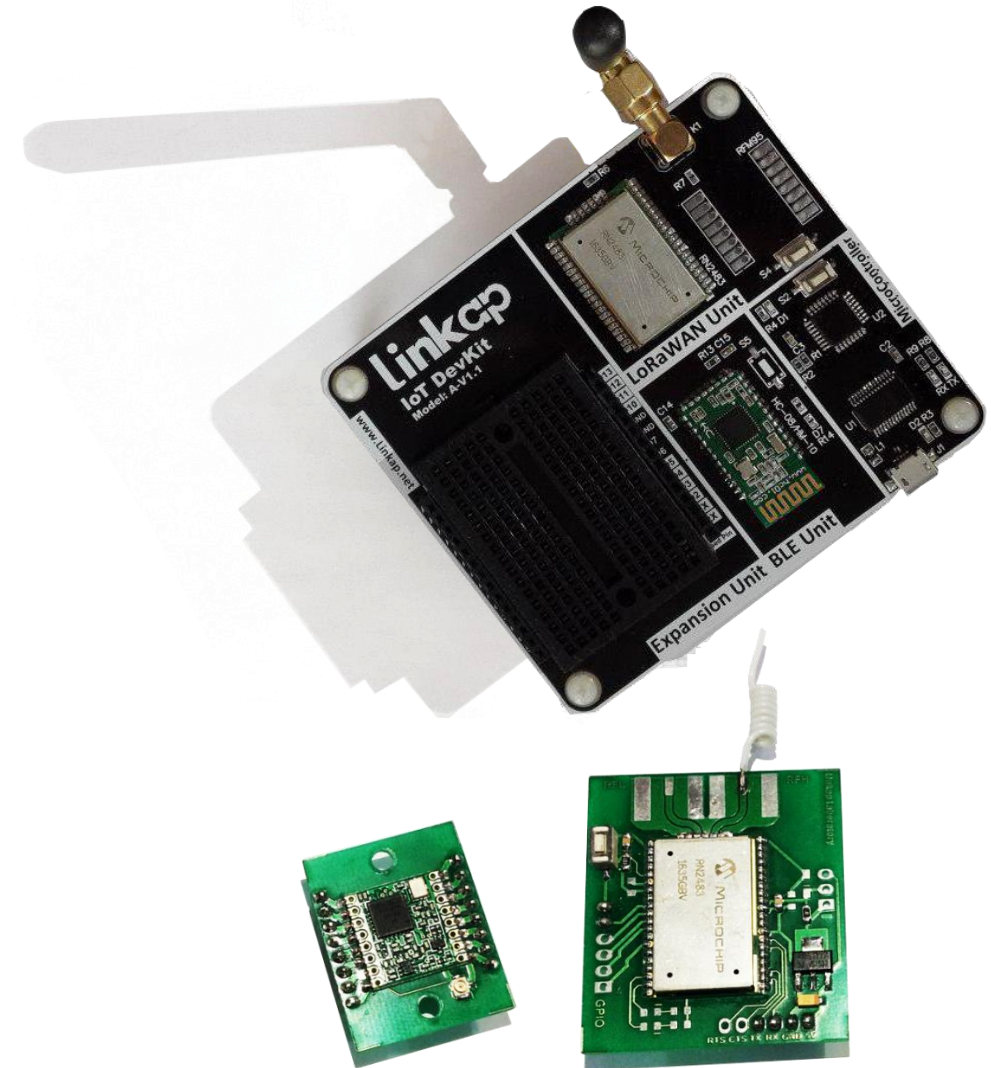


LinkElecs IoT Development Products

Part Number: DK-1012, LBB-1010, LBB-2010

The LinkElecs IoT development products are designed to facilitate beginners and developers to quickly prototype IoT ideas using the short or long range, low power IoT network.

- DK-1012: IoT development kit
 - Atmega328 8-bit MCU
 - Connection to a IoT network:
 - Short range: HC-08 Bluetooth v4.0 (BLE) module
 - Long range: RN2483 LoRaWAN transceiver, (optional: RFM95)
 - Firmware development using Arduino platform (Arduino Nano bootloader) over USB v2.0 communication
 - MCU pins broken to 0.1" pin headers with Integrated breadboard
 - Supply voltage:
 - battery-powered : 4~6VDC
 - USB-powered: 5VDC
 - Small size of 10x8 cm
- LBB-1010: radio module breakout board
 - for RN2483 module
- LBB-2010: radio module breakout board
 - for RFM95 module



LinkElecs IoT Consumer Products

Several Part Numbers

The designed LoRaWAN motes, ULM-1010 and LM-1010, can be used in different ways in the intended device. They can be connected to the device PCB by wired connectors or be placed on a daughterboard. Moreover, they can be used as a part of the device PCB during the device design process.

Here are some products that the designed LoRaWAN motes have been used to connect the devices to a LoRaWAN network:

- LRM-1010: Single channel relay module (up to 100W)
- LRC-1010: Multi-channel relay control device (up to 20 channels)
- SD-1010: Connected Smoke detector
- AQ-1021: Air Quality analyzer (CO2, Temperature, Humidity)
- OD-1010: Connected PIR-based occupancy detector
- And several other connected products.



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