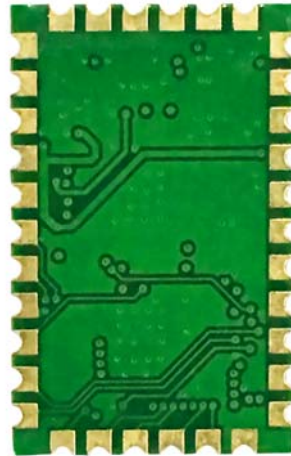
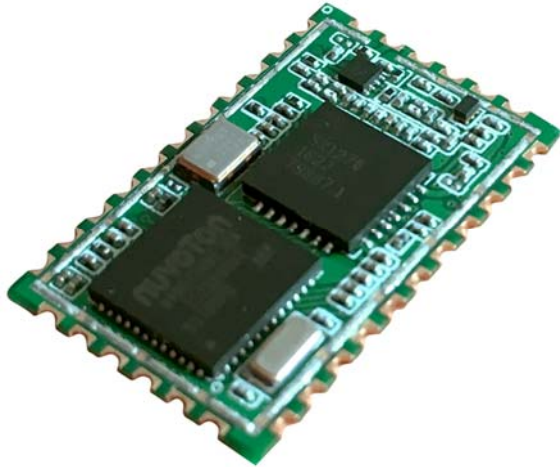




Pi Supply



RAK811 LoRa / LoRAWAN module (based on SX1276) 868/915MHz up to 3km range

RAK811 LoRa Module

LoRaWAN module base on SX1276 LoRa spread spectrum.

- Embedded LoRaWAN protocol class A&C. Easily connects to LoRa technology gateway.
- LoRaWAN protocol stack ready in system
- Full certification by region
- Long Range - Greater than 15 km
- Simple ASCII command set
- Serial Port AT Command
- Automatic modification of frequency points supported

RAK811 LoRa Technology

RAK811 is a wireless transparent communications module, based on the Semtech SX1276. LoRa technology utilises a spread spectrum modulation in the Sub-GHz band to enable long range (greater than 10 miles) coverage, low power consumption (up to 10 years battery power), high network capacity (up to 1 million nodes), robust communication, and localisation capability. With strength of RF hardware capability by RAK, RAK811 communication distance maintains to 3000m with improved receive sensitivity. Moreover, RAK811 fully supports and conforms to the specifications of LoRaWAN Class A&C protocol, facilitating an easy access to LwM2M IoT platforms such as Activity.

LoRa technology applies physical layer or wireless modulation to build long distance communication links. Based on LFM SS modulation, it maintains the same low power consumption as of FSK modulation, but significantly prolongs communication distance.

LoRaWAN defines communication protocol and system architecture of networking aiming at some core requirements of IoT, such as safe two-way communications, mobility, and local service. The technology does not require local complex configuration to allow seamless interoperability among smart devices, releasing the operating authority to the users, developers and enterprises of IoT.

LoRaWAN protocol gives you...


- **Universality** - LoRaWAN specifications have been formulated in Europe and North America. It's impact is widening with more developers and resources getting behind it.
- **Safety** - The protocol uses strict encryption algorithm assuring more stringent safety in its own private protocol module.
- **Network roaming** - LoRaWAN includes detailed protocol planning of roaming to smoothen your network.
- **Business advantage** - LoRaWAN protocol has been adopted in LoRa networks of Japan, South Korea, and Singapore with outstanding business prospect.

Super Strong Anti-interference

LoRa spread spectrum technology Super Strong Anti-interference

Traditional communications – fixed single frequency communications


Interfered single frequency cannot receive data normally



The diagram shows two black antenna icons on the left and right. A single horizontal line represents a single frequency channel. A red circle with a diagonal slash is placed over the line, indicating interference. The text above says 'Interfered single frequency cannot receive data normally'.

LoRa spread spectrum communications – multi-channel communications

Multi-channel communications has enhanced anti-interference capability



The diagram shows two green antenna icons on the left and right. Multiple horizontal lines represent multiple frequency channels. One line is crossed out with a red circle and slash, while the others have green checkmarks, indicating that the multi-channel system can still receive data despite interference.

Access LoRaWAN Platform

Access LoRaWAN Platform

ThingPark Wireless, platform from Actility (based on LoRaWAN specification)

More is in Coming.....




The diagram shows a network topology with several green nodes connected by lines. Below the network is a LoRa module with various certification logos (PFC, CE, etc.). The text 'More is in Coming.....' is written above the network.

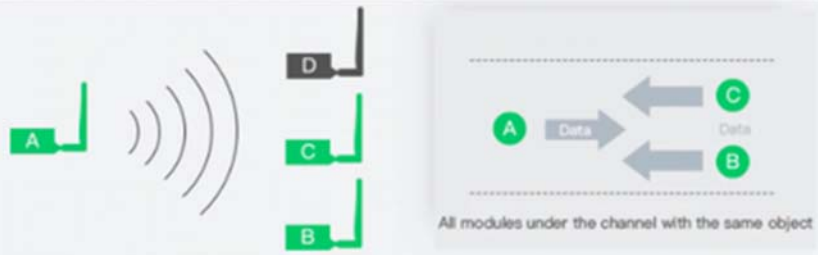
Point to point/Broadcasting

Launch mode: Point to point/Broadcasting

Point to point communications
- Sender: objective address + objective channel + data
Receiver: data
Can help you quickly establish your own remote private LoRa network



Broadcasting communications
- Sender: data
Receiver: data
Can help you quickly build group networking



Easy to user: Serial Port AT Commands

UART interface and serial port AT command provided makes it easy to use.

Easy to use Serial Port AT Commands

UART interface and serial port AT command provided, easy to use,
AT command built on the UART interface; UART baud rate and air rate online change supported



Features of the module

- LoRaWAN protocol supported / global license free ISM band / full certification by region.
- remote LoRaWAN band: 868MHz / 915MHz
- Easy to use UART interface / serial port AT command / baud rate and air rate online change supported / simple ASCII command set.
- Maximum output power 100mW (20dBm) / adjustable from 5 to 20dBm
- High sensitivity: -148dBm enabling extremely long range connectivity.
- Long range: Greater than 15 km
- High capacity of up to 1 million nodes
- Low power consumption / 500nA on standby / in-air wake-up supported
- Multi-channel, dual data buffer (256 bytes each)
- LoRa/FSK/GFSK/OOK modulation bidirectional two way communications
- Long battery life - over 10 years
- LoRa technology is capable of demodulating 20dB below noise level, significantly improving immunity to the interference when combined with integrated forward error correction.



<https://uk.pi-supply.com/products/rak811-lora-lorawan-module> 9-17-18