

# RAK811

LoRa long distance wireless data communication module

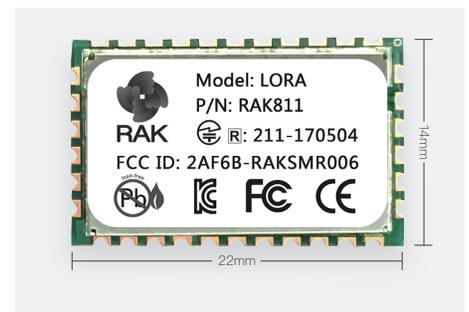
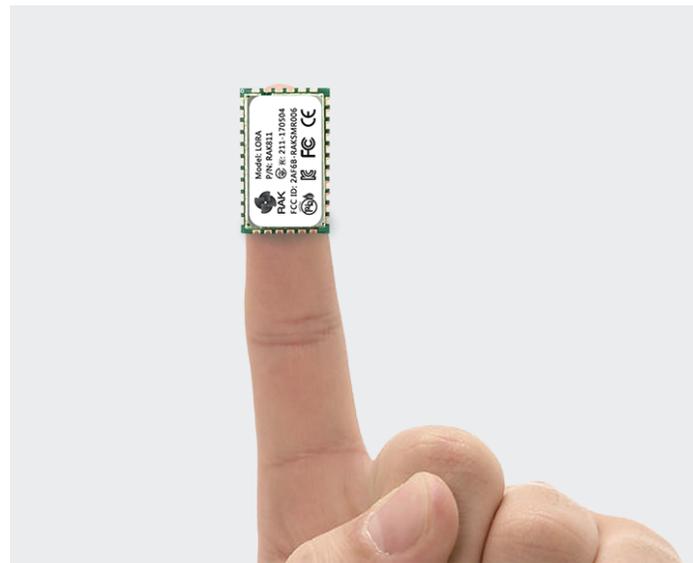


LoRa spread spectrum technologies, strong anti-interference abilities, forward error correction technologies

Lora WAN frequency bands: 868MHz/915MHz

Transmission range is 3km in complex urban areas and 15km in open areas

Wireless transparent communication and transmission module based on input chip SX276



Adopting advanced LoRa spread spectrum technologies, RAK811 chipset uses forward error correction technologies. It can actively correct and filter incorrect data packets. With stronger anti-interference abilities, it can realize communications over a longer range in combination with its high receiver sensitivity. The module is also in line with LoRaWAN Class A&C protocol, with easy access to LWPA IoT platforms like Activity.

RAK811 provides you with UART interfaces and AT commands of serial ports. Easy to use, it creates AT commands via UART interfaces and serial ports. On this module, UART baud rate and wireless transfer rate can be modified online.

RAK811 is matched with TCXO (Temperature Compensated Crystal Oscillator), and its frequency tolerance is within  $\pm 1$ PPM. The independent LAN amplifier for noise reduction can effectively make sure that the receiver sensitivity is as low as  $-146$ dBm. With ultra-low-power MCU and a standby power of 500nA, the module is covered by a high-quality shield, so it is endowed with stronger anti-interference abilities.

RAK811 is seamlessly connected to LoRaWAN Platform, wireless ThingPark and Activity (based on LoRaWAN specifications). Through point-to-point communications and broadcasts, it helps customer quickly configure their own remote private LoRa networks and collective networks.

## 应用场景



Medical Equipment



Security System



M2M / IoT



Smart Metering



Wireless Sensor



Remote System



Industrial monitoring & control

## Detailed Module Parameters

Module Characteristics	Parameters
Support LoRaWAN protocol, and exempted from license in ISM frequency bands	Band: 868MHz / 915MHz ( SupportLoRaWAN protocol)
LoRaWAN frequency bands: 868MHz / 915MHz	Interface: UART1 / UART2 / GPIOs
Easy to use, with UART interfaces and AT commands of serial ports; the baud rate and wireless transfer rate can be modified offline	Transmit power: 14dBm, Max20dBm
The maximum output power is 100mW and the output power can be adjusted within 5–20dBm;	Receiver sensitivity: $-130$ dBm (RSSI); $-15$ dBm (SNR)
High receiver sensitivity: $-130$ dBm@0.3kps	High receiver sensitivity: $-130$ dBm@0.3kps
With strong anti-interference abilities and forward error correction technologies, it can transmit over 3km in complex areas and 15KM in open areas	Power consumption: TX: 60mA; RX: 9.9mA; Sleep: 500nA
With lower power and a standby power of 500nA, the module supports wireless wakeup	Size: 22mm x 14mm x 1.7mm
The module has several channels and two data buffer caches. Each of them has 356 bytes	Operating temperature: $-40$ °C ~ $85$ °C (industrial grade)
Modulated by LoRa/FSK/GFSK/OOK, the module can realize bidirectional half-duplex communications	Storage temperature: $-40$ °C ~ $85$ °C (non-condensing)
Support customized interface development and provide function/test reports	Measured distance: 3000m