Pi Supply

RAK813 LoRaB BLE 5 and LoRa Module (based on nRF52832 and SX127x)

RAK813 LoRa+BLE (LoRaB) Module

Based on nFR52832(BLE) and SX127X(LORA).

RAK813 is a relay module which combines BLE and LoRa. It provides long-range communication capabilities for the compact and portable, low power consumption BLE Bluetooth device. BLE terminal device connected with RAK813 module, sending the data through RAK813 LoRa transmitter to the receiver or the gateway.

At the same time, RAK813 supports various digital interfaces such as GPIO, UART, I2C, SPI, etc. Sensors connect to the RAK813 through these interfaces.

RAK813 supports various protocols, including the newest BLE and LoRaWAN, and customers can choose multi frequency, including: 433MHz, 470MHz, 868MHz, and 915MHz.

Features

- Long Range LoRaWAN operating in the 433MHz, 470MHz, 863MHz, or 928MHz frequency bands.
  - FCC Frequency range 902MHz - 928MHz
  - CE Frequency range 863MHz - 870MHz
  - MIC Frequency range 920MHz - 928MHz
  - KCC Frequency range 920MHz - 923MHz
- Support LoRa Point to Point communication in all the bands
- Small size and low power, sleep current down to 2uA
- High receiver sensitivity: LoRa down to -146dBm, BLE down to -96dBm
- TX Power: LoRa adjustable up to +14dBm high efficiency PA, max PA boost up to 20dBm, BLE -20 to +4 dBm in 4 DB steps
- Building in both TX and RX filter
- Building in TCXO for high frequency stability
- FSK, GFSK, and LoRa Technology modulation
- llP3 = -11dBm
- Up to 15 km coverage at suburban and up to 5 km coverage at urban area.

BLE and LoRa

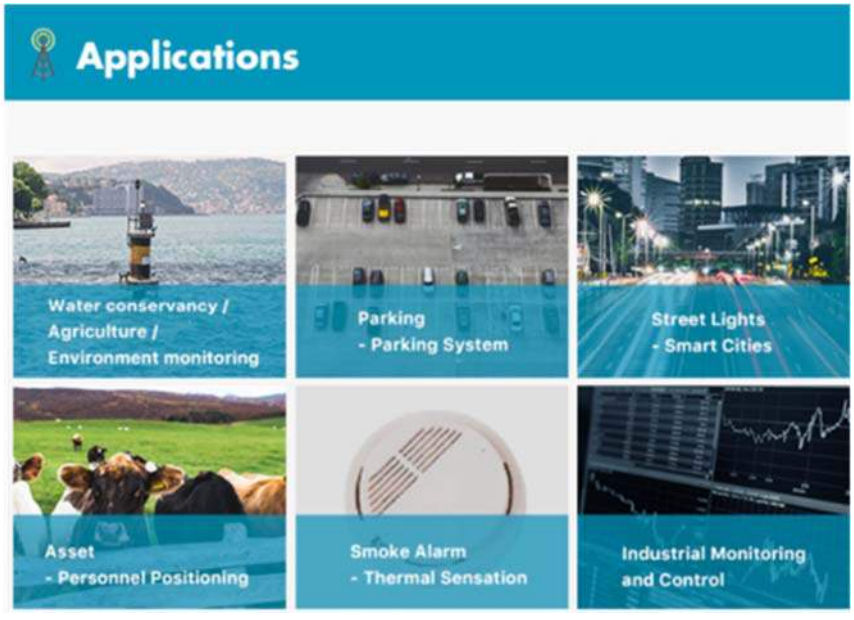
BLE short-range technology combined with low-power LoRa can provide long-distance data relay. Both technologies are low power, eliminating the need to change batteries frequently.

Based on the global leading Nordic Semiconductor Corporation's nRF52832(BLE) and Semtech's SX127x (LoRa) chipset, the RAK813 module provides a perfect combination of ultra low power and ultra long distance.

The RAK813 module uses TCXO as the LoRa clock source so at different temperatures (such as indoor and outdoor) the LoRA module of radio frequency close to the maximum, can effectively improve the decoding rate, so as to enhance the communication quality.

Applications

- Water conservancy/Agriculture/Environmental monitoring
- Parking - Parking systems
- Street lights - Smart cities
- Asset - Personal positioning
- Smoke alarm - Thermal sensation
- Industrial Monitoring and Control



Specification

- Model Name: RAK813
- Dimension: 27.2mm x 23mm x 1.7mm
- Interface: UART, SPI, I2C, GPIO
- Operating Temperature: -40 to 85
- Storage Temperature: -40 to 85
- Frequency Band: LoRa 433/470/868/915 MHz, BLE 2.4GHz
- Host Interface: UART, SPI, I2C
- LoRa Transmit: 20dBm (MAX) - TX Power
- LoRa RX Sensitivity: RSSI: -130dBm (Min) SNR: -15dB (Min)
- BLE Transmit: 4dB (MAX) - TX Power
- BLE RX Sensitivity: -97dBm (Min)
- Current Consumption:
  - 30mA (14dBm) -- TX Mode
  - 5.5mA -- RX Mode
  - 7.2uA -- Sleep Mode