Package Content

RAK2245 Pi HAT
(1x)

LoRa Antenna
(1x)
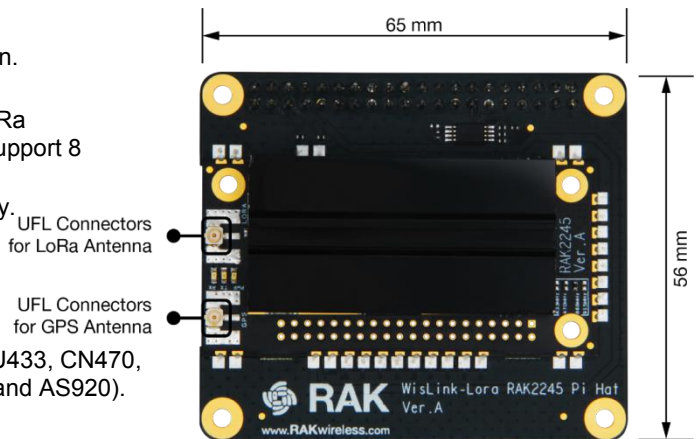
GPS Active Antenna
(1x)

Product Description

RAK2245 Pi HAT is a module with Raspberry PI form factor which can be plugged into Raspberry PI such as Raspberry Pi 3 Model B+ as a complete RF front end of LoRa gateway.

Built-in RAK2245 is supporting eight channels and available all the variants for use in global bands, this ultra compact module measures just 60mm x 30mm x 14.9mm and is believed to be the world's smallest LoRaWAN gateway module include GPS module & Heat sink. It can enable the fast provision of low data rate LoRa radio links, the module comprises a Semtech SX1301 transceiver concentrator capable of managing packets from many remotely dispersed end-points, two Semtech SX125X highly integrated RF front end I/Q transceivers.
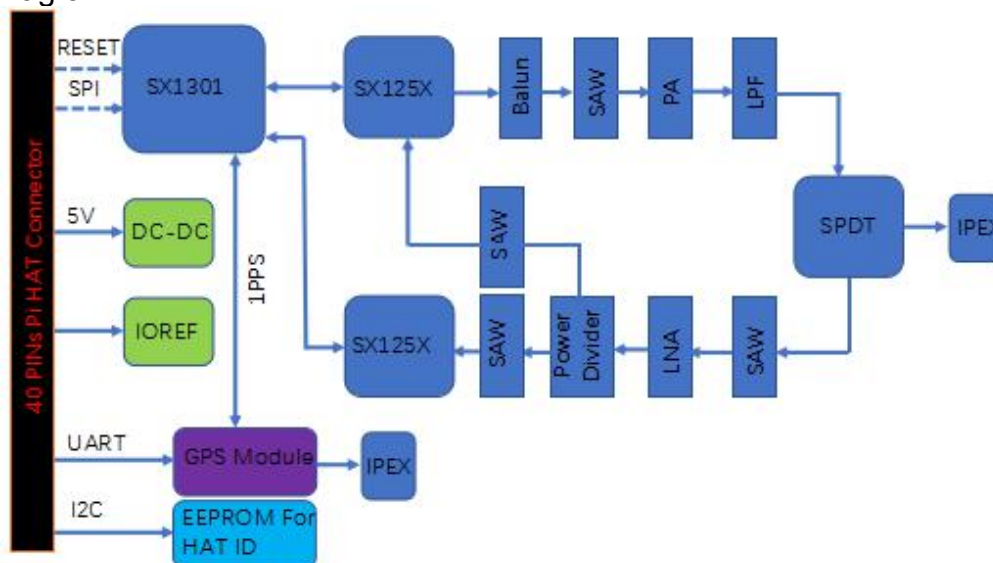
The RAK2245 Pi HAT is a complete and cost efficient LoRa gateway solution to help you realize the whole Lora system development. It is also ideal for manufacturing of small series and can expand more applications.

Product Features

- Compatible with Raspberry Pi 3 Model B+ edition.
- Integrated the heat sink.
- SX1301 base band processor emulates 49 x LoRa demodulators 10 parallel demodulation paths, support 8 uplinks channel, 1 downlink channel.
- 2 x SX125x Tx/Rx front-ends high/ low frequency.
- Supports 5V power supply.
- TX power up to 27dBm, RX sensitivity down to -139dBm@SF12, BW 125KHz.
- Supports latest LoRaWAN 1.0.2 protocol.
- Supports global license-free frequency band (EU433, CN470, EU868, US915, AS923, AU915, KR920, IN865 and AS920).
- Supports SPI, UART, GPIOs interface.
- Integrated the Ublox MAX-7Q GPS Module.

Block Diagram

Key Features

LoRa Module	• RAK2245(1 x Semtech SX1301 transceiver concentrator and 2 x Semtech SX125X highly integrated RF front end I/Q transceivers)
GPS Module	• Ublox MAX-7Q
Form Factor	• Raspberry Pi HAT Edition
Heat Sink	• Metal Material
Frequency	• EU433, CN470, EU868, US915 • AS923, AU915, KR920, IN865, AS920
LoRaWAN Version	• LoRaWAN Version: V1.0.2 • Semtech SX1301 Driver Version: V5.0.1 • Packet Forwarder Version: V4.0.1
Range	• Urban: 2~4km • Suburb: 5~10km • Open Area: 15km
Node Numbers	• 500 nodes/km2
TX Power	• 27dBm (Max), typical 25 dBm
RX Sensitivity	• -139dBm(Min)@SF12, BW 125KHz
Power Supply	• DC 5V
LEDs	• 1* Green LED for PWR status • 1* Green LED for TX status • 1* Green LED for RX status
Interfaces	• SPI, UART, GPIOs
Antenna Interface	• 1* U.FL connectors for LoRa • 1* U.FL connectors for GPS
Power Consumption	• TX (Typical): 336mA • RX(Typical): 360mA
Physical Dimension	• Dimension (L x W x H): 56.00 x 65.00 x 22.00 mm ($\pm$2mm) • Weight: Approximately 1.15oz
Temperature Range	• Normal Operation Temperature: -20°C ~ +65°C • Extended Temperature: -40°C ~ +85°C • Storage Temperature:- 40°C ~ +85°C

Order Information

Part Number	Package	Description
RAK2243-0X-R01	1x board, 1x LoRa Antenna and 1x GPS Active Antenna retail package	Supports 433/470/868/915/923/920/865 MHz
RAK2243-0X-C10	10-piece board and Antennas carton package	Supports 433/470/868/915/923/920/865 MHz

About RAKwireless:

RAKwireless is the pioneer in providing innovative and diverse cellular and LoRa connectivity solutions for IoT edge devices. It's easy and modular designs can be used in different IoT applications and accelerate time-to-market. For more information, visit RAKwireless website at www.rakwireless.com.