



# WisLink-LoRa Concentrator Module

Raspberry Pi HAT Edition  
RAK2245 Pi HAT



## Package Content



RAK2245 Pi HAT (1x)



LoRa Antenna (1x)



GPS Active Antenna (1x)

## Product Description

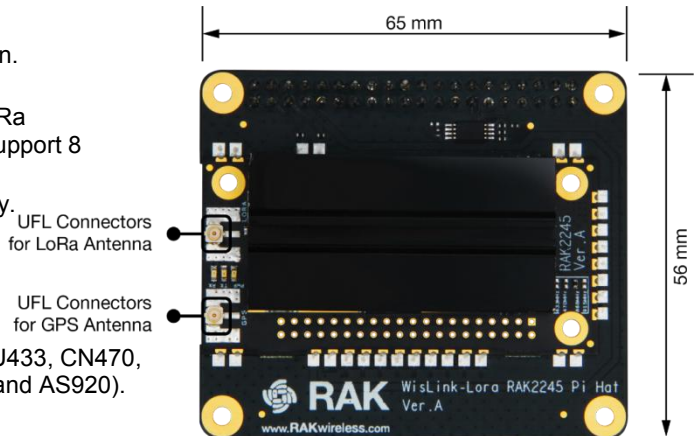
RAK2245 Pi HAT is a module with Raspberry Pi form factor. It can be plugged into Raspberry Pi such as Raspberry Pi 3 Model B+ as a complete RF front end of LoRa gateway. It supports eight channels and is available for LoRaWAN global frequency bands. The board is the smallest LoRaWAN gateway concentrator which integrates the Ublox MAX-7Q GPS Module and heat sink.

The board can provide low data rate LoRa radio links in ultra-fast speed. It is powered by a Semtech SX1301 transceiver concentrator that is capable of managing packets from many remotely dispersed end-points. Two Semtech SX125X are integrated for RF front end I/Q transceivers.

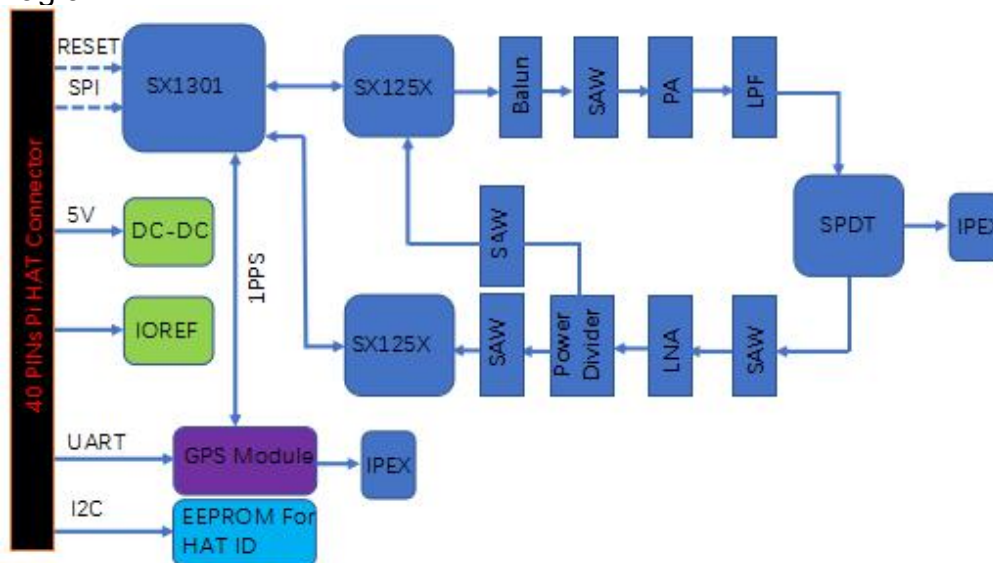
The RAK2245 Pi HAT is a complete and cost efficient LoRa gateway solution that can help you develop a full LoRa system. This is an economical way to create different solutions like smart grid, intelligent farm and other IoT applications. It is also ideal for manufacturing small series that can expand into 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





# WisLink-LoRa Concentrator Module

Raspberry Pi HAT Edition

RAK2245 Pi HAT



## Key Features

<b>LoRa Module</b>	<ul style="list-style-type: none"> <li>• RAK2245(1 x Semtech SX1301 transceiver concentrator and 2 x Semtech SX125X highly integrated RF front end I/Q transceivers)</li> </ul>
<b>GPS Module</b>	<ul style="list-style-type: none"> <li>• Ublox MAX-7Q</li> </ul>
<b>Form Factor</b>	<ul style="list-style-type: none"> <li>• Raspberry Pi HAT Edition</li> </ul>
<b>Heat Sink</b>	<ul style="list-style-type: none"> <li>• Metal Material</li> </ul>
<b>Frequency</b>	<ul style="list-style-type: none"> <li>• EU433, CN470, EU868, US915</li> <li>• AS923, AU915, KR920, IN865, AS920</li> </ul>
<b>LoRaWAN Version</b>	<ul style="list-style-type: none"> <li>• LoRaWAN Version: V1.0.2</li> <li>• Semtech SX1301 Driver Version: V5.0.1</li> <li>• Packet Forwarder Version: V4.0.1</li> </ul>
<b>Range</b>	<ul style="list-style-type: none"> <li>• Urban: 2~4km</li> <li>• Suburb: 5~10km</li> <li>• Open Area: 15km</li> </ul>
<b>Node Numbers</b>	<ul style="list-style-type: none"> <li>• 500 nodes/km2</li> </ul>
<b>TX Power</b>	<ul style="list-style-type: none"> <li>• 27dBm (Max), typical 25 dBm</li> </ul>
<b>RX Sensitivity</b>	<ul style="list-style-type: none"> <li>• -139dBm(Min)@SF12, BW 125KHz</li> </ul>
<b>Power Supply</b>	<ul style="list-style-type: none"> <li>• DC 5V</li> </ul>
<b>LEDs</b>	<ul style="list-style-type: none"> <li>• 1* Green LED for PWR status</li> <li>• 1* Green LED for TX status</li> <li>• 1* Green LED for RX status</li> </ul>
<b>Interfaces</b>	<ul style="list-style-type: none"> <li>• SPI, UART, GPIOs</li> </ul>
<b>Antenna Interface</b>	<ul style="list-style-type: none"> <li>• 1* U.FL connectors for LoRa</li> <li>• 1* U.FL connectors for GPS</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• TX (Typical): 336mA</li> <li>• RX(Typical): 360mA</li> </ul>
<b>Physical Dimension</b>	<ul style="list-style-type: none"> <li>• Dimension (L x W x H): 56.00 x 65.00 x 22.00 mm (<math>\pm 2</math>mm)</li> <li>• Weight: Approximately 1.15oz</li> </ul>
<b>Temperature Range</b>	<ul style="list-style-type: none"> <li>• Operation Temperature: <math>-40^{\circ}</math> C ~ <math>+85^{\circ}</math> C</li> <li>• Storage Temperature: <math>-40^{\circ}</math> C ~ <math>+85^{\circ}</math> C</li> </ul>

## 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](http://www.rakwireless.com).

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