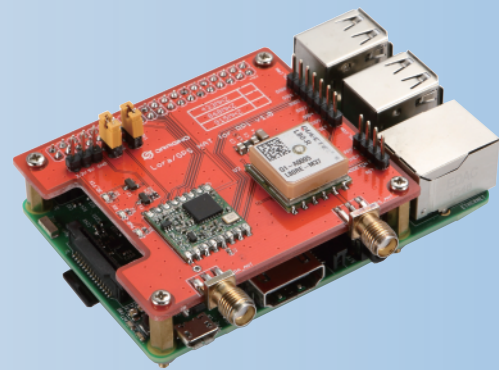
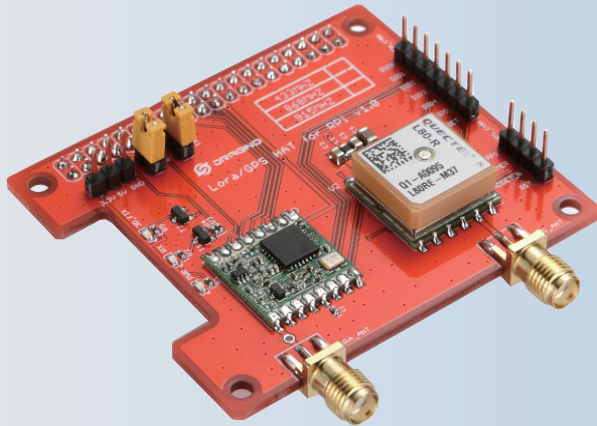


# Long Range Wireless Transceiver for Raspberry Pi

## Lora/GPS HAT



Lora/GPS HAT with Raspberry Pi

## OVERVIEW:

The Dragino Lora/GPS\_HAT is an expansion module for LoRaWAN for use with the Raspberry Pi. This product is intended for those interested in developing LoRaWAN solutions.

The Lora/GPS HAT is based on the SX1276/SX1278 transceiver. The addition of L80 GPS (based on MTK MT3339) is designed for applications that use a GPS connected via the serial ports to the Raspberry Pi such as timing applications or general applications that require GPS information.

The transceivers of the Lora/GPS HAT feature the LoRa™ long range modem that provides ultra-long range spread spectrum communication and high interference immunity whilst minimising current consumption. The Lora/GPS HAT can achieve a sensitivity of over -148dBm using a low cost crystal and bill of materials. This board can calculate and predict orbits automatically using the ephemeris data (up to 3 days) stored in internal flash memory, so the HAT can fix position quickly even at indoor signal levels with low power consumption. With AlwaysLocate™ technology, the Lora/GPS HAT can adaptively adjust the on/off time to achieve balance between positioning accuracy and power consumption according to the environmental and motion conditions.

## Features:

- Compatible with Raspberry Pi 2 Model B/ Raspberry Pi 3.
- Frequency Band: one of 433/868/915 MHz (Pre-configure in factory)
- Low power consumption
- FSK, GFSK, MSK, GMSK, LoRa™ and OOK modulation
- Support DGPS, SBAS(WAAS/EGNOS/MSAS/GAGAN)
- GPS support short circuit protection and antenna detection
- Automatic RF Sense and CAD with ultra-fast AFC
- Baud rate configurable

## Specification:

### Lora Spec

- 168 dB maximum link budget
- +20 dBm - 100 mW constant RF output vs
- +14 dBm high efficiency PA
- Programmable bit rate up to 300 kbps
- High sensitivity: down to -148 dBm
- Bullet-proof front end: IIP3 = -12.5 dBm
- Excellent blocking immunity
- Low RX current of 10.3 mA, 200 nA register retention

### GPS Spec

- Based on MT3339
- Compliant with GPS, SBAS
- Programmable bit rate up to 300 kbps
- Update rate: 1Hz (Default), up to 10Hz
- Protocols: NMEA 0183, PMTK
- Horizontal Position Accuracy <2.5 m CEP
- Timing Accuracy: 1PPS out 10ns, Reacquisition Time <1s
- Velocity Accuracy Without aid <0.1m/s, Acceleration Accuracy Without aid 0.1m/s<sup>2</sup>