USB-Port-GPS Module SKU:EZ-0048

Description

• Support Raspberry Pi model A, B, A+, B+, Zero, 2, 3 with its' L80-39 GPS chip inside.
• Communicates satellite with UART or USB.
• CP2102 as USB to UART Bridge chip, stable and faster.
• The L80-39 with 66 search channels and 22 simultaneous tracking channels,it acquires and tracks satellites in the shortest time at Outdoor.

Attention: This module is fit for outdoor operation. please put the Antana in the open air.

Feature

• -165 dBm sensitivity, 1Hz (Default), up to 5Hz, 66 channels
• At least 100mA current draw to startup.
• PPS output can be used to coordinate time with satellite.
• Internal patch antenna which works quite well when used outdoors SMA connector for external active antenna for when used indoors
• Fix status LED blinks to let you know when the GPS has determined the current coordinates
• EASY™, advanced AGPS technology without external memory
• Support time service application which can be achieved by PPS sync NMEA feature
• Built-in LNA for better sensitivity
• RTC battery-compatible
• 1x8 male headers, USB micro Interface
• includes CP2102 Module Serial Converter USB 2.0 To TTL UART

Document Download: File:Quectel L80-R GPS Specification V1.0.pdf

Parameters

Type	value
Satellites	66 acquisition channels, 22 tracking channels
Work Voltage	4.5-5.5V
Weight	4.35g
Maximum Current	100mA MAX
Work Temperature	-40~+85°C
scale	16.6x26x18.6(mm)
GPS	L80-M39
Patch Antenna Size	15.0 x 15.0 x 4.0mm
Position Accuracy	<2.5M CEP
Velocity Accuracy	<1.0m/s
Warm/cold start without ESEY	<35s
Warm/cold start with ESEY	<15s
Acquisition sensitivity	-148dBm
Tracking sensitivity	-165dBm
Update rate	1Hz (Default) up to 5Hz
Baud Rate	4800~115200 bps 9600bps default
Protocols	NMEA 0183
Mount Cable	1x8 Stacking Header USB micro data cable
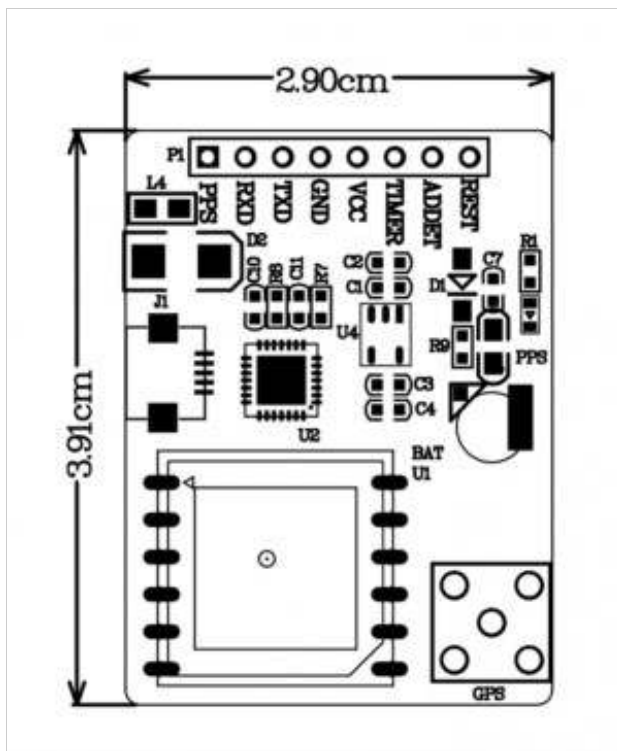
Package includes:

• 1x USB-Port-GPS(L80-39) module

• 1x USB data wire

How to wire it up

Uart Style:
Because of the Serial port issue of Raspberry Pi 3, Model B, it may cause unexpected problem, we suggest that you do not connect GPS module with Raspberry Pi directly with GPIO Pins.

You need a USB-to-TTL cable to connect GPS module and Raspberry Pi ,and you can wire it up like this chart:

GPS module	Wire color
VCC	Red wire
GND	Black wire
TXD	Green wire
RXD	White wire

Power on Raspberry Pi and login, open a terminal and type following commands if you use raspberry Pi in desktop environment.
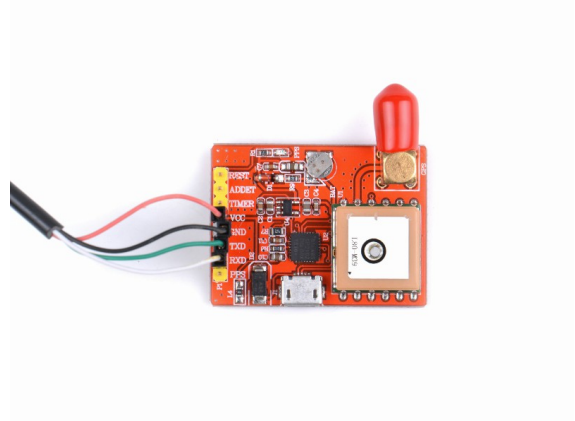
USB Style:
Just use a microUSB cable connect Raspberry Pi USB port with GPS module and power on Raspberry Pi.

How to use it

1. After power on and login to system. you can open a terminal and typing following command to install packages for GPS module.
   ```
   sudo apt-get update && sudo apt-get -y install gpsd gpsd-clients python-gps
   ```

2. Reboot your Raspberry Pi and login, also typing command in your terminal, it will help you reconfigure your gpsd service:
   ```
   sudo dpkg-reconfigure gpsd
   ```

3. Start the gpsd service:
   ```
   sudo gpsd /dev/ttyUSB0 -F /var/run/gpsd.sock
   ```

4. you can stop the gpsd service:
   ```
   sudo killall gpsd
   ```

5. You can also use systemctl command to manage this service,but at the first, you should modify the configuration file of gpsd in /etc/default/gpsd,
   filling the blank with your device name and socket name and path.


```
pi@raspberrypi:~ $ grep -v "#" /etc/default/gpsd |grep -v "^$"
START_DAEMON="true"
USBAUTO="true"
DEVICES="/dev/ttyUSB0"
GPSD_OPTIONS="-F /var/run/gpsd.socket"
pi@raspberrypi:~ $
```

Start service:
```
sudo systemctl enable gpsd.sock
sudo systemctl start gpsd.sock
```

Stop service:
```
sudo systemctl stop gpsd.sock
sudo systemctl disable gpsd.sock
```

Finally, use this command to get information from GPS module.
```
sudo cgps -s
```

You will see this:


```
x   Time:         2016-06-21T07:08:09.000Z   xxPRN:    Elev:  Azim:  SNR:  Used: x
x   Latitude:     31.101330 N                xx   1     76    046    31     Y    x
x   Longitude:    121.440386 E               xx  11     60    035    00     Y    x
x   Altitude:     435.4 ft                   xx  30     48    249    51     Y    x
x   Speed:        0.0 mph                     xx 137     45    139    37     Y    x
x   Heading:      105.8 deg (true)           xx 193     44    138    41     Y    x
x   Climb:        0.0 ft/min                  xx  28     42    324    23     Y    x
x   Status:       3D FIX (2 secs)             xx   7     39    209    48     Y    x
x   Longitude Err: +/- 12 ft                 xx  22     34    117    44     Y    x
x   Latitude Err:  +/- 11 ft                 xx   8     28    063    22     Y    x
x   Altitude Err:  +/- 37 ft                 xx   3     26    146    39     N    x
x   Course Err:    n/a                       xx  17     23    281    24     N    x
x   Speed Err:     +/- 16 mph                xx                                  x
x   Time offset:   0.683                     xx                                  x
x   Grid Square:   PMO1rc                    xx                                  x
```

FAQ

Question: I use L80-39 GPS module. I choose to connect the GPS to the raspberry using a USB port. I followed these steps:

```
pi@raspberrypi ~ $ sudo cat /dev/ttyUSB0
$GPRMC,144034.00,V,,,,,,,090315,,,N*75
$GPVTG,,,,,,,,,N*30
$GPGGA,144034.00,,,,,0,00,99.99,,,,,,*60
$GPGSA,A,1,,,,,,,,,,,,,99.99,99.99,99.99*30
$GPGSV,1,1,01,15,,,25*7B

sudo apt-get update
sudo apt-get install gpsd gpsd-clients
sudo dpkg-reconfigure gpsd
start gpsd automatically: yes
Should gpsd handle attached USB receivers automatically: yes
Device the GPS receiver is attached to: <leave blank>
Options to gpsd: -n /dev/ttyUSB0
gpsd control socket path: <use default>

sudo gpsd /dev/ttyUSB0 -F /var/run/gpsd.sock
cgps -s
**NO FIX**
```

What should I do for NO FIX problem?

Answer: You can modify /etc/defalut/gpsd file and make sure you input the right arguments as following picture:


```
pi@raspberrypi:~ $ grep -v "#" /etc/default/gpsd |grep -v "^$"
START_DAEMON="true"
USBAUTO="true"
DEVICES="/dev/ttyUSB0"
GPSD_OPTIONS="-F /var/run/gpsd.socket"
pi@raspberrypi:~ $
```

Question˙ Can I use it in my car as a GPS receiver?

Answer: please see this manual and try lcdgps command.

```
lcdgps
A client that passes gpsd data to lcdproc, turning your car computer
into a very expensive and nearly feature-free GPS receiver. Currently
assumes a 4x40 LCD and writes data formatted to fit that size screen.
Also displays 4- or 6-character Maidenhead grid square output.
```

Question: Does it supports the entire NMEA Version 3 sentences or just a subset of it?

Answer: Yes, it is, Our GPS module support standard NMEA protocol, more information you can read this datasheet:

http://wiki.52pi.com/index.php/File:L80_gps_protocol_specification_v1.0.pdf