

# Pico-GPS-L76B

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The Pico-GPS-L76B is a GNSS module designed for Raspberry Pi Pico, with multi-satellite systems support including GPS, BDS, and QZSS. It has advantages such as fast positioning, high accuracy, and low power consumption, etc. Combined with the Raspberry Pi Pico, it's easy to use the global navigating function.

## Features

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- Standard Raspberry Pi Pico header supports Raspberry Pi Pico series boards
- Multi-satellite systems support: GPS, BDS, and QZSS
- EASY, self-track prediction technology, help quick positioning
- AlwaysLocate, intelligent controller of periodic mode for power saving
- Supports D-GPS, SBAS (WAAS/EGNOS/MSAS/GAGAN)
- UART communication baudrate: 4800~115200bps (9600bps by default)
- Onboard battery holder, supports ML1220 rechargeable cell, for preserving ephemeris information and hot starts
- 4x LEDs for indicating the module operating status

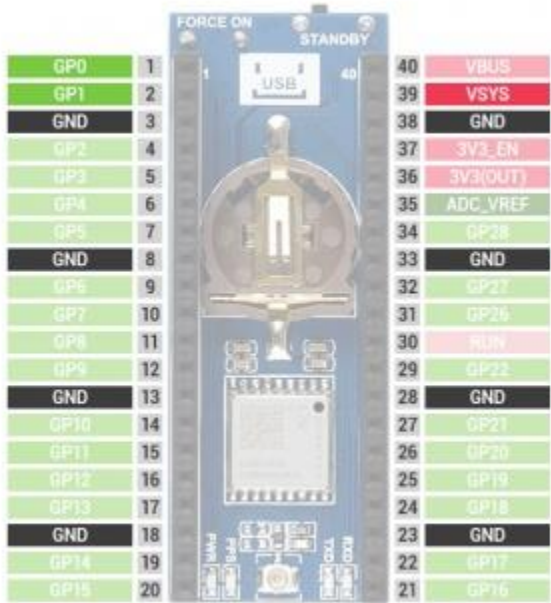
## Specifications

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GNSS	
Frequency band: GPS L1 (1575.42Mhz) BD2 B1 (1561.098MHz)	Channels: 33 tracking ch, 99 acquisition ch, 210 PRN ch
	C/A code
	SBAS: WAAS, EGNOS, MSAS, GAGAN
Horizontal position accuracy (autonomous positioning)	<2.5m CEP
Time-To-First-Fix @ -130dBm (EASY enabled)	Cold starts: <15s
	Warm starts: <5s
	Hot starts: <1s

Sensitivity	Acquisition: -148dBm
	Tracking: -163dBm
	Re-acquisition: -160dBm
Dynamic performance	Altitude (max): 18000m
	Velocity (max): 515m/s
	Acceleration (max): 4g
<b>Others</b>	
Communication interface	UART
Baudrate	4800~115200bps (9600bps by default)
Update rate	1Hz (default), 10Hz (max)
Protocols	NMEA 0183, PMTK
Power supply voltage	5V
Operating current	13mA
Overall current consumption	< 40mA@5V (Continue mode)
Operating temperature	-40°C ~ 85°C
Dimensions	52 × 21mm

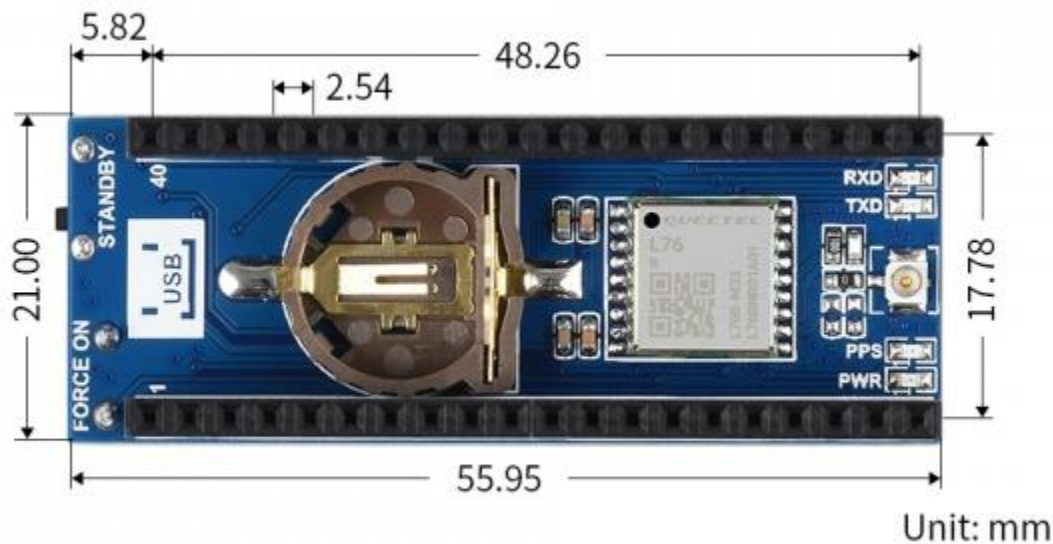
# Pinout



GP0	1	40	VBUS
GP1	2	39	VSYS
GND	3	38	GND
GP2	4	37	3V3_EN
GP3	5	36	3V3(OUT)
GP4	6	35	ADC_VREF
GP5	7	34	GP28
GND	8	33	GND
GP6	9	32	GP27
GP7	10	31	GP26
GP8	11	30	RUV
GP9	12	29	GP22
GND	13	28	GND
GP10	14	27	GP21
GP11	15	26	GP20
GP12	16	25	GP19
GP13	17	24	GP18
GND	18	23	GND
GP14	19	22	GP17
GP15	20	21	GP16

VSYS	5V power supply	
GND	Ground	
GP0	TXD0	UART TX pin
GP1	RXD0	UART RX pin

# Dimension



# Setup environment

Please refer to Raspberry Pi's guide: <https://www.raspberrypi.org/documentation/pico/getting-started/>

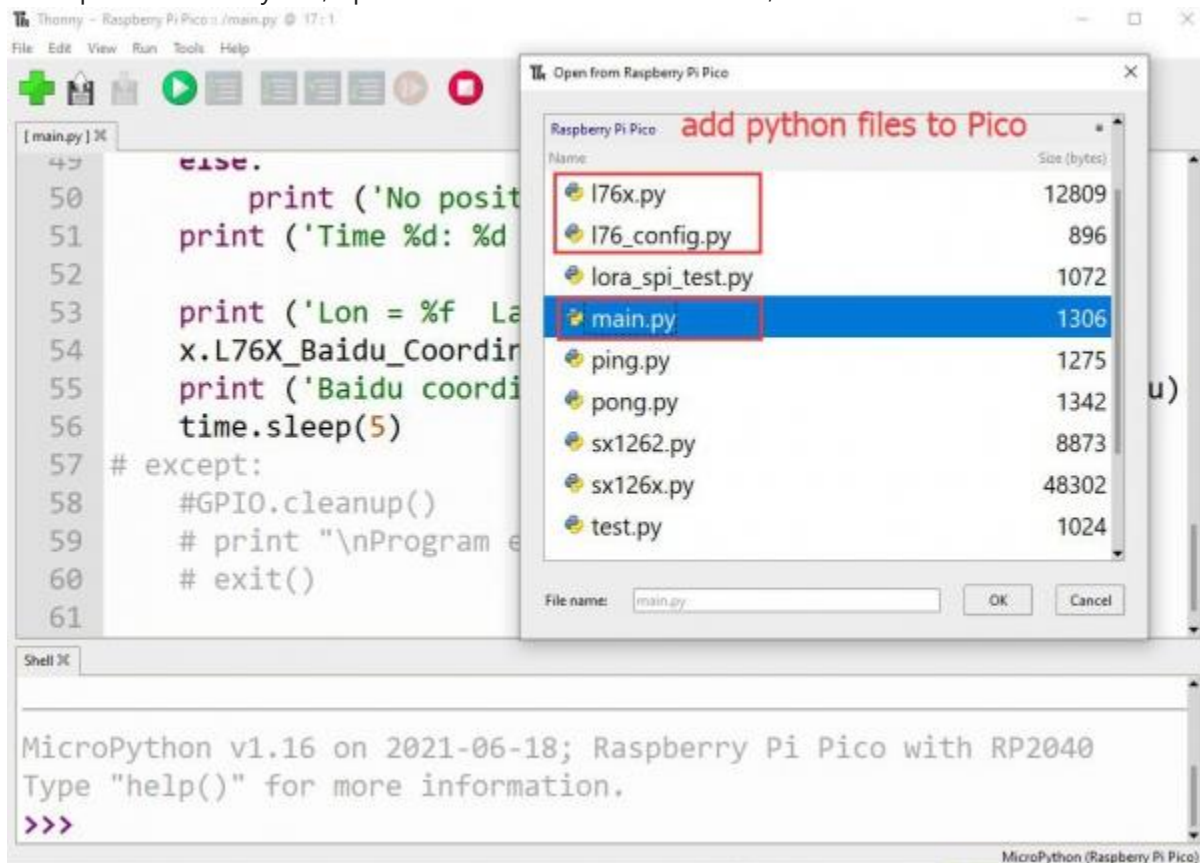
# Download examples

Note: Here we use Raspberry Pi boards as examples to control the Pico board.  
Open a terminal and download the demo codes with the following commands:

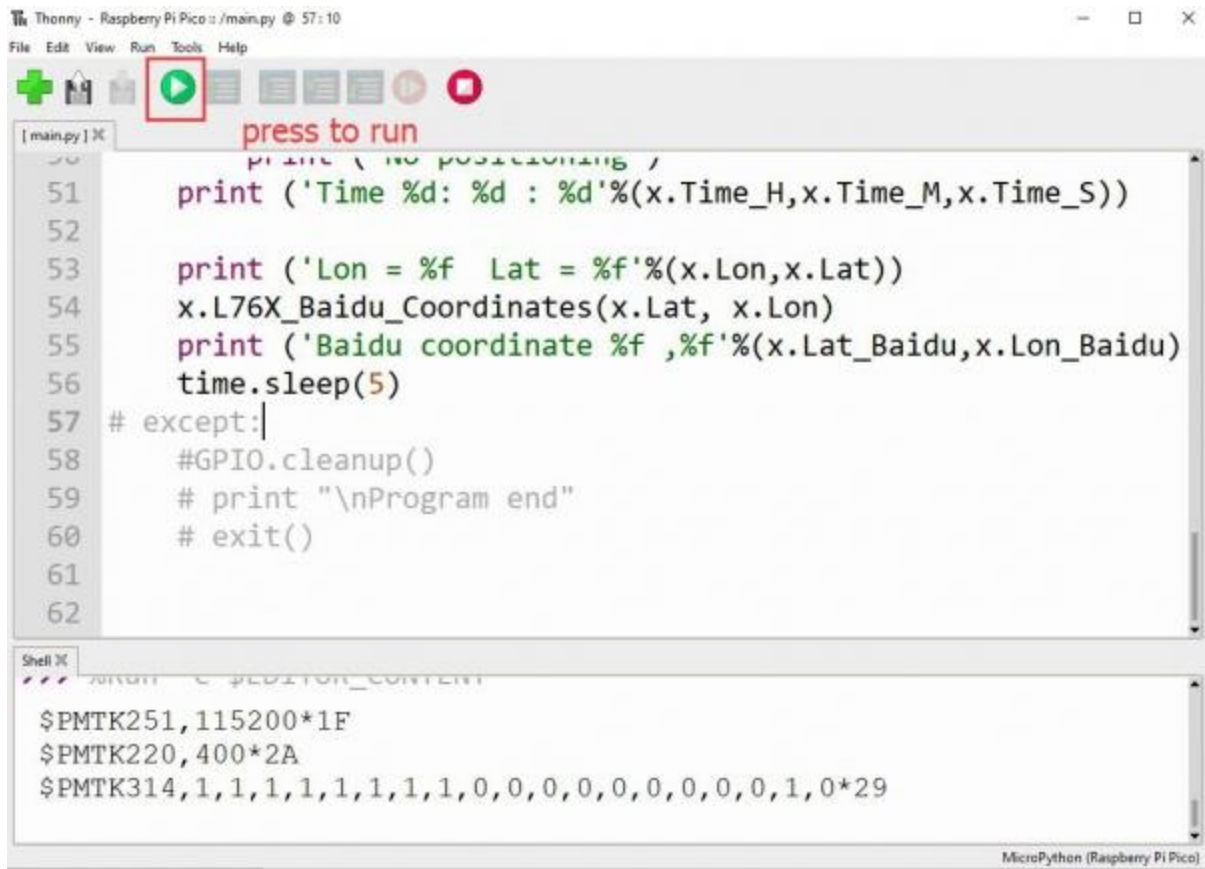
```
wget -P ~/pico https://www.waveshare.com/w/upload/b/ba/Pico-GPS-L76B_Code.zip
cd ~/pico
unzip Pico-GPS-L76B_Code.zip
```

## Python examples

- Update the Thonny IDE of your Raspberry Pi if it doesn't support Pico
- Open the Thonny IDE, open the demo codes downloaded, and save it to Pico



- Click to run the codes.



```
Thonny - Raspberry Pi Pico: /main.py @ 57:10
File Edit View Run Tools Help
press to run
51 print ('Time %d: %d : %d'%(x.Time_H,x.Time_M,x.Time_S))
52
53 print ('Lon = %f Lat = %f'%(x.Lon,x.Lat))
54 x.L76X_Baidu_Coordinates(x.Lat, x.Lon)
55 print ('Baidu coordinate %f ,%f'%(x.Lat_Baidu,x.Lon_Baidu))
56 time.sleep(5)
57 # except:|
58 #GPIO.cleanup()
59 # print "\nProgram end"
60 # exit()
61
62
Shell X
$PMTK251,115200*1F
$PMTK220,400*2A
$PMTK314,1,1,1,1,1,1,1,1,0,0,0,0,0,0,0,0,0,0,0,0,1,0*29
MicroPython (Raspberry Pi Pico)
```

## Resources

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- [Schematic](#)
- [Demo Code](#)

## Datasheet

- [Quectel GNSS Flash EPO Application Note V1.0](#)
- [Quectel GNSS FOTA User Guide V1.0](#)
- [Quectel GNSS Low Power Mode Application Note V2.0.pdf](#)
- [Quectel GNSS SDK Commands Manual V1.4](#)
- [Quectel L76 GNSS Presentation V1.3](#)
- [Quectel L76 Series GNSS Protocol Specification V3.3.pdf](#)
  
- [CAT24C23](#)
- [RT9193](#)
- [CP2102](#)

**If you require technical support, please go to the [Support](#) page and open a tickets.**