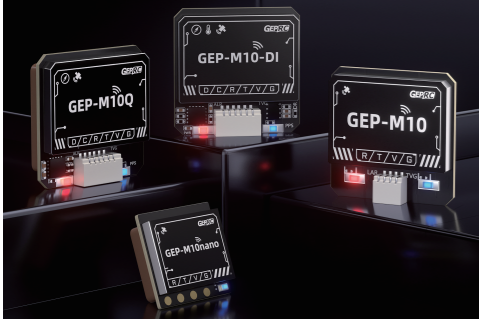


GEPRC

## GEP-M10系列GPS模块

使用说明书



v1.3

### 产品简介

GEP-M10 系列GPS定位模块,拥有体积小、定位快、连接稳定、使用方便等特点,使用u-blox公司的M10芯片方案,支持GPS+北斗+伽利略+准天顶星+SBAS联合定位,最高可达32颗卫星;有12\*12mm和18\*18mm两种陶瓷天线版本,提供了更优秀的接收能力;内置Flash芯片和法拉电容,可保存配置参数及快速热启动;可选QMC5883L/IST8310磁力计和DPS310气压计,可提供精准的方位指向和灵敏的高度变化数据。可满足大部分FPV穿越机、多旋翼、固定翼等模型产品的需求。

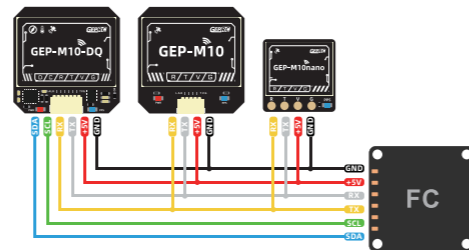
### GPS参数

GPS芯片	u-blox M10050
输入电压	3.3V-5V
接收频率	GPS L1,GLONASS L1,BDS B1,GALILEO E1,SBAS L1,QZSS L1
工作模式	GPS+BDS+LALILEO+QZSS+SBAS联合定位
接收频道	72ch
导航卫星数	最高32颗
输出协议	UART(ublox),I2C (Baro Mag)
波特率	115200bps
更新频率	10Hz
速度精度	0.05 m/s
水平定位精度	2D ACC1.5m(露天)
授时精度	30 ns
接收灵敏度	迹线-162dBm,捕获-160dBm
动态特性	最大高度:50000m,最高速度:500m/s
最大加速度	4G
外尺寸	15x15x7.5mm (GEP-M10nano),22x22x8.2mm(GEP-M10)
天线尺寸	12x12mm (GEP-M10nano),18x18mm(GEP-M10)
重量	4.1克 (GEP-M10nano),7.8克 (GEP-M10)

### 磁力计&气压计参数

	QMC5883L	IST8310	DPS310
GEP-M10nano	—	—	—
GEP-M10	—	—	—
GEP-M10Q	✓	—	—
GEP-M10-DQ	✓	—	✓
GEP-M10I	—	✓	—
GEP-M10-DI	—	✓	✓

### 接线图



注:GEP-M10Q、GEP-M10I、GEP-M10-DI的接线方式与GEP-M10-DQ一致

### 安装方式

- 1.GPS天线需朝向天空,切勿遮挡天线;
- 2.磁力计需远离磁干扰才可正常工作,故安装带磁力计的GPS模块时,需注意不要靠近电源线等容易产生磁干扰的地方;
- 3.切勿堵塞气压计开孔,否则将无法读取大气压数据;
- 4.附赠的海绵可用于覆盖在气压计上方,以减少气流的扰动,提升数据精度。

### 开启GPS设置

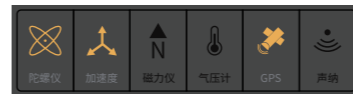
1. 根据GPS接线开启对应的端口,例如端口5,设置波特率为115200;

标识符	传感器输入	
USB VCP	已禁用	AUTO
UART5	GPS	115200

2. 在配置页面开启GPS,协议设置为UBLOX;



- 3.设置完成重启飞控,飞控在识别到GPS后会亮起GPS标识。



### 磁力计&气压计设置

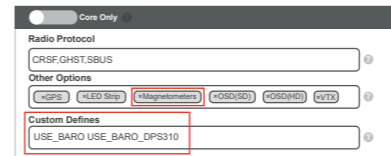
集成了磁力计和气压计的GEP-M10系列GPS版本,需将GPS上的SDA和SCL分别连接到飞控的SDA和SCL上,接着做相应的设置才可正常使用。

#### Betaflight:

由于BF4.4固件中使用了云编译的策略,通常情况下烧录的固件将不带磁力计和气压计的功能,需要手动进行添加后才可使用。

注:Betaflight中使用IST8310磁力计需要4.5.0+ 版本。

- 1.在Other Options中点击 Magnetometers,添加磁力计功能;在Custom Defines输入框中,输入:"USE\_BARO USE\_BARO\_DPS310"添加气压计功能,然后再加载固件进行烧录。



- 2.重新烧录好固件后,在地面站的配置界面中打开气压计和磁力计开关,保存重启后,飞控会自动识别设备。



- 2.当飞控识别到磁力计和气压计后会亮起对应的标识;

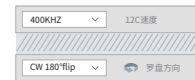


#### INAV:

- 1.根据GPS中集成的磁力计和气压计型号,在配置界面中磁力计设置为QMC5883或IST8310、气压计设置为DPS310;



- 2.若GPS模块的安装方向与箭头指示一致,则磁力计方向设置为CW 180° flip,若使用IST8310磁力计,则需把I2C速度设置为400KHZ;



- 3.设置完成重启飞控,飞控在识别到磁力计和气压计后会亮起对应的标识;



- 4.根据地面站指示校准磁力计,确保磁力计指向无误;
- 5.静止状态下,在传感器界面检查气压计数据是否趋于平稳。

### 产品清单

- 1 x GPS模块
- 1 x 端子线
- 1 x GPS模块使用说明书
- 1 x GEPRC贴纸
- 1 x 热缩管

### 联系方式

格普淘宝: <http://geprc.taobao.com/>

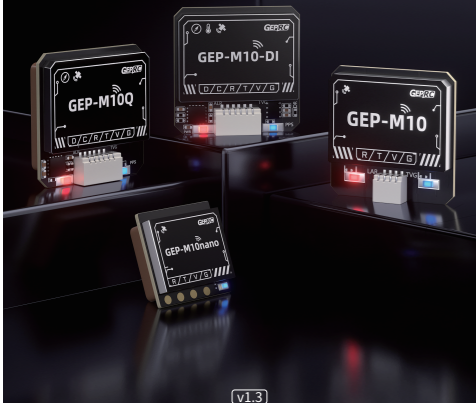
格普官网: <http://geprc.com/>

格普官方QQ群: 499699918



# GEPRC-M10 series GNSS modules

User Manual



v1.3

## Product description

GEPRC-M10 series GPS positioning module has the features of small size, fast positioning, stable connection, and convenient use. Using the M10 chip solution of u-blox company, it supports GPS+BDS+Galileo+QZSS+SBAS joint positioning, the highest up to 32 satellites. There are 12\*12mm and 18\*18mm ceramic antenna versions, providing better receiving ability. Built-in Flash chip and Farad capacitor can save configuration parameters and quickly hot start. Optional QMC5883L/IST8310 magnetometer and DPS310 barometer. Provide accurate azimuth pointing and sensitive altitude change data. It can meet the needs of most FPV quadcopters, multi-rotor, fixed wing and other model products.

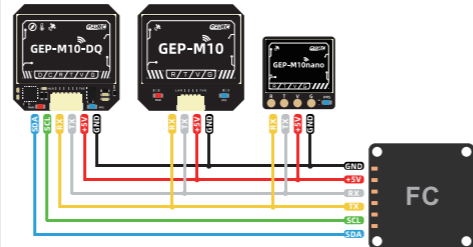
## GPS parameters

GPS chip	u-blox M10050
Input voltage	3.3V-5V
Receiving frequency	GPS L1, GLONASS L1, BDS B1, GALILEO E1, SBAS L1, QZSS L1
Operating mode	GPS+BDS+LALILEO+QZSS+SBAS joint positioning
Channel	72ch
Navigation satellites	Up to 32 pieces
Output protocol	UART (u-blox), I2C (Baro Mag)
Baud rate	115200bps
Output Frequency	10Hz
Speed Accuracy	0.05 m/s
Horizontal positioning accuracy	2D ACC1.5m(Weather)
Timing accuracy	30 ns
Receiver sensitivity	Trace-162dBm, Capture-160dBm
Dynamic characteristics	Max Height: 50000m, Max Speed: 500m/s
Maximum acceleration	4G
Size	15x15x7.5mm (GEP-M10nano), 22x22x8.2mm(GEP-M10)
Antenna Size	12x12mm (GEP-M10nano), 18x18mm(GEP-M10)
Weight	4.1g (GEP-M10nano), 7.8g (GEP-M10)

## Mag&Baro parameters

	QMC5883L	IST8310	DPS310
GEP-M10nano	—	—	—
GEP-M10	—	—	—
GEP-M10Q	✓	—	—
GEP-M10-DQ	✓	—	✓
GEP-M10I	—	✓	—
GEP-M10-DI	—	✓	✓

## Wiring diagram



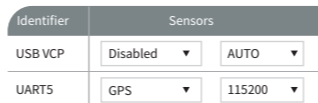
Note: The wiring method of GEP-M10Q, GEP-M10I, GEP-M10-DI is consistent with GEP-M10-DQ

## Installation

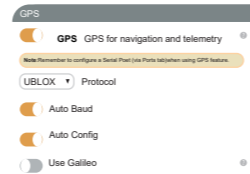
- The GPS antenna must face the sky, and it is forbidden to block the antenna;
- The magnetometer needs to be away from the magnetic interference to work properly, so when installing the GPS module with the magnetometer, pay attention not to close to the power line and other places prone to magnetic interference;
- Do not block the opening of the barometer, otherwise it will not be possible to read the atmospheric pressure data.
- The supplied sponge can be used to cover the top of the barometer to reduce the disturbance of airflow and improve the accuracy of the data.

## GPS setting

- Open the corresponding port according to the GPS connection, e.g. port 5, and set the baud rate to 115200.



- Turn on the GPS function in the configuration screen and set the protocol to UBLOX;



- Restart the flight control after setting up, the flight control will light up the GPS logo after setting to GPS.



## Magnetometer & Barometer Settings

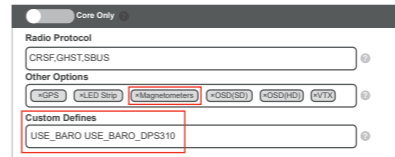
The GEP-M10 model integrated with magnetometer and barometer needs to connect the SDA and SCL on GPS to the SDA and SCL of flight control respectively, and then make the corresponding Settings before normal use.

## Betaflight:

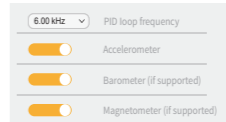
The BF4.4 firmware uses the cloud compilation strategy. Usually, the flashed firmware will not have the functions of magnetometer and barometer, and it needs to be added manually.

Note: Betaflight 4.5.0+ supports the IST8310 magnetometer.

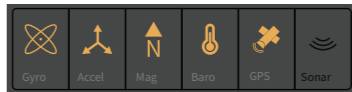
- Adding method: Click **Magnetometers** in Other Options to add the magnetometer function. In the Custom Defines input box, enter: "USE\_BARO USE\_BARO\_DPS310" to add the barometer function, and then load the firmware for flashing.



- After re-burning the firmware, open the barometer and magnetometer switch in the configuration interface of the ground station. After saving and restarting, the flight control will automatically identify the device.



- When the flight controller recognizes the magnetometer and barometer, the corresponding signs will light up.

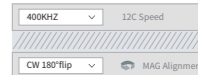


## INAV:

- According to the magnetometer and barometer models integrated in GPS, the magnetometer is set to **QMC5883** or **IST8310**, and the barometer is set to **DPS310** in the configuration interface;



- If the installation direction of the GPS module is consistent with the arrow indication, the direction of the MAG Alignment is set to **CW 180° flip**. If the **IST8310** magnetometer is used, the **I2C Speed** should be set to **400KHZ**.



- After the setting is complete, restart the flight controller. After the flight controller recognizes the magnetometer and barometer, the corresponding signs will light up.



- Calibrate the magnetometer according to the instructions of the ground station to ensure that the magnetometer is pointing correctly;
- In the static state, check whether the barometer data tends to be stable on the sensor interface.

## Include

- 1 x GPS module
- 1 x terminal wire
- 1 x GPS module instruction manual
- 1 x GEPRC sticker
- 1 x heat shrink tubing

## Contact

Website: <http://geprc.com>

