GB

P-1 MARK II

Professional GNSS Data Logger

Quick Start

CAUTION

Thank you for choosing our product.

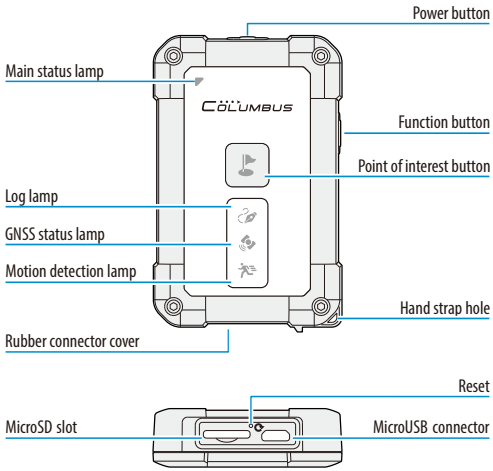
This manual is intended to guide you through the safe and correct use of the product and its accessories, avoiding improper operations that may result in injury of yourself or any other person or cause device damage.

As a precision electronics, the product contains no component that can be repaired by your own. Any attempt to disassemble the product will void the original manufacturer's warranty.

The protection class is IP66, P-1 M2 can work normally in rain, snow and high dust environments. The rubber connector cover must be fully covered.

Do not immerse P-1 M2 in water. Do not try to damage or puncture the device, otherwise, electrolyte in its built-in battery may leak or combust, causing injury or environmental pollution.

Parts Description



Main Status Lamp

- Power on: Green, always on
- Sleeping: Green, flashing
- Low battery: Red, flashing
- Charging: Red, always on
- Fully charged: Green, always on
- Spy mode: Blue

Log Lamp

- High speed log: Flash every 1 second (10Hz/5Hz)
- Normal log: Flash every 3 seconds (1Hz/distance interval)
- Pause: Always on
- MicroSD card error or no card: Continuous flashing

GNSS Status Lamp

- Acquiring satellite: Always on
- GNSS is fixed: Green, flashing
- GNSS is fixed (Best Positioning): Blue, flashing

Motion Detection Lamp

- Motion Detection Mode On/Off: Always On/Off
- Device is in motion: Flashing

Power button

- Long press: Turn On/Off .
- Short press: Turn On/Off Motion Detecting Mode.

Function button

- Short press: Pause / continue logging (default).
- This button can be configured to other functions, see page 6.

Point of interest button

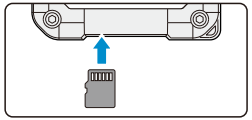
- Short press: Mark the current position as a point of interest (POI). (for CSV files only)
- Long press: Start a new track.

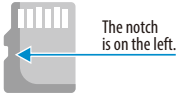
Reset

- If the device stops responding, use a pin to press the reset hole to reset.

Logging a track

1 P-1 M2 supports high capacity SDXC MicroSD card, we recommend the 4G-32G. Insert the MicroSD card into the slot. Please note the direction of the card. The notch of the card should be leftward.





2 Long press the "Power button" to power on.

3 Short press the "Power button" to turn On/Off the Motion Detection Mode.

4 Wait for GNSS positioning in the open air. The cold start needs 1-3 minutes. When the "GNSS status lamp" and the "Log lamp" start flashing, it indicates track logging has started.

5 Long press the "Power button" to turn the device off and save the track.

Do not remove the memory card while it is turned on, which will result in data loss!

If the memory card fails to log, the Log lamp will flash continuously with continuous warning sound. In such case, please format or replace the card.

Log Mode

P-1 M2 has three operating modes: Normal Mode, Motion Detection Mode and Spy Tracking Mode.

Motion Detection Mode

How to enter this mode: Power on, short press the "Power Button", the motion detection lamp (white) lights up.

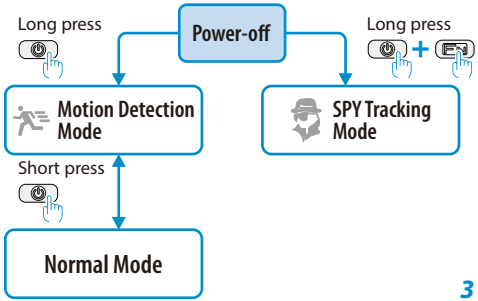
When P-1 M2 is stationary, the lamp is on. When P-1 M2 is in motion, the lamp is flashing. When P-1 M2 stops moving or loses the satellite signal more than 5 minutes, it enters the standby mode automatically. Once P-1 M2 detects motion, it automatically wakes up and continues to log. This mode is suitable for long time records of vehicles and other large objects.

Spy Tracking Mode

How to enter this mode: In the power-off state, press the "Power button" and the "Function button" simultaneously for about 3 seconds.

In this mode, P-1 M2 gets positioned and logs 8 way points at a certain time interval*. When P-1 M2 is standby, the main status lamp intermittently flashes in blue. All other lamps on the device are off and the speaker is mute. This mode is suitable for tracking your car for an extended period, or for places where charging is unavailable, e.g. in a long hiking.

* See page 5 for the value of the interval can be customized. See page 9 for the battery life under different intervals. Spy tracking mode is only recorded at 1Hz, CSV format.



Connect to End Devices

The USB port of P-1 M2 supports two operating modes

USB disk mode

Read files from the MicroSD card in P-1 M2.

The data can only be read when P-1 M2 is turned off.

It takes about 10-30 seconds (4G-32G) be recognized by computer, depending on the size of the TF card, please wait patiently for the connection.

If the AutoPowerON is configured as ON, press and hold the POI button to connect the data cable.

Track file naming

e.g.: The track recorded in January, 2022 is saved in the "2022-01" folder. "0208050.CSV" means the CSV track is recorded at 08:20:50 on 2nd January.

GNSS receiver mode

P-1 M2 can be used as an external GNSS receiver, and users can view the real-time location data.

Power on P-1 M2 first, then connect it to the computer via a USB cable.

For more information please visit
http://cbgps.com/p1m2/q

Configuring the Device

Obtain the configuration file

For the first use, visit the link to obtain the default configuration file which is named as CONFIG.TXT:
http://cbgps.com/p1m2/q

Configuration steps

1. Turn off P-1 M2. Connect P-1 M2 to the computer, copy the configuration file under the root directory of the MicroSD card, and eject the device.
2. In the power-off state, press the "Power Button" and the "POI Button" simultaneously until you hear 3 short beeps, then the 3 lamps will flash three times at the same time, and finally you hear one long beep, indicating the configuration is successfully completed.

View the current configuration

1. Make sure there is no CONFIG.TXT under the root directory of the MicroSD card.
2. In the power-off state, press the "Power button" and the "POI button" simultaneously until you hear 3 short beeps and then one long beep, then P-1 M2 will be turned off, which indicates that the current configuration file has been exported successfully. The current configuration file (INFO.TXT) is stored under the root directory of the MicroSD card.

Details about configuration

[SETTINGS]	Values for configuration (the blue value is default)
TimeZone	-12:00, -11:00, -10:00, -09:30, -09:00, -08:00, -07:00,-06:00, -05:00, -04:30, -04:00, -03:30, -03:00, -02:30, -02:00, -01:00, +00:00, +01:00, +02:00, +03:00, +03:30, +04:00, +04:30, +05:00, +05:30, +05:45, +06:00, +06:30, +07:00, +08:00, +08:45, +09:00, +09:30, +10:00, +10:30, +11:00, +11:30, +12:00, +12:45, +13:00, +13:45, +14:00
Time zone. The default is UTC time (+00:00), please check your local time zone in advance (for CSV files only).	
SpeedAlert	OFF or value: 1 - 200
Speed alarm. When the speed exceeds the value, the P-1 M2 will alert. Short press the "POI Button" to temporarily stop.	
AutoPowerOn	OFF, ON
Auto power on. When connecting to the MicroUSB cable, P-1 M2 automatically turns On/Off with the power status.	
Beeper	OFF, ON
Beeper. Turn On/Off the beeper.	

FunctionButton	Pause, POI

Function Button. It can be configured for two purposes: POI or Pause.
Pause: Press this button to pause logging, press again to continue.
POI: Press this button to m ark the current position as the second type of POI (for CSV files only).

Constellation	ALL, GPS

Satellite system. ALL: all Constellation; GPS: GPS only.

[RECORD]	Values for configuration (the blue value is default)
Format	CSV, GPX, NMEA

Track format. P-1 M2 offers three original file formats: CSV (plain code format), GPX (common exchange format), NMEA (NMEA 0183 format).

LogMode	1Hz, 5Hz, 10Hz 5m, 10m, 20m, 50m, 100m 20ft, 50ft, 100ft, 200ft, 500ft

Log mode. By frequency, e.g.: 1Hz (1 trackpoint per second); By distance, e.g.: 5m, 10m(Metric) / 20ft, 50ft(Imperial), (for CSV, GPX files only).

SpeedMask	OFF or value: 1 - 200

Speed mask: Only record the track points whose speed exceeding the value (for CSV, GPX files only).

SpyModeTimer	1 - 60, default: 5

Interval of Spy Tracking Mode: Set up the wake up interval (minute).

OneTrackPerDay	OFF, ON

One track per day. OFF: A new file is generated each time it is turned on.
ON: Only one file is generated per day, and all the tracks are automatically merged into one track.

[UNIT]	Values for configuration (the blue value is default)
Speed	km/h, mi/h

Speed Unit: km/h (Metric), mi/h (Imperial).
This configuration is only valid for SpeedAlert and SpeedMask.

Tips about configuration error

- **Users can customize the configuration, only limited to the contents and formats listed in the above table (case sensitive).**
- **Attention! The configuration cannot take effect if the configuration value does not conform to the format and content requirements. In case of abnormality, the main status lamp will flash in red, and the buzzer will give 5 short beeps as an error prompt. Please check the configuration values and fix it.**

Detailed explanation of CSV format

The following is one track point of CSV format file recorded by P-1 M2:
1,T,220501,123017,26.0984065N,119.2648239E,10,17.0,353

1	Sequence number
T	Type of way point. T: Normal point; C: POI; D: Second type of POI; G: Wake-up point
220501	Date (yymmdd)
123017	Time (hhmmss)
26.0984065N	Latitude (dd.dddddd). N: north; S: south
119.2648239E	Longitude (ddd.dddddd). E: east; W: west
10	Mean sea level altitude (meters)
17.0	Speed (km/h)
353	Course over ground (degrees)

Detailed explanation of NMEA format

The following are two lines of data for the NMEA format file recorded by P-1 M2:
$GNGGA,123017.000,2605.90439,N,11915.88943,E,1,15,1.8,35.8,M,0.0,M,,*42
$GNRMC,123017.000,A,2605.90439,N,11915.88943,E,9.20,353.00,010522,,,A,V*03

$GPGGA	Global Navigation Satellite System Fix Data
123017.000	UTC time (hhmmss.sss)
2605.90439,N	Latitude (ddmm.mmmmm). N: north; S: south
11915.88943,E	Longitude (dddmm.mmmmm). E: east; W: west
1	Position fix indicator 1: GNSS fix valid
15	Satellites used
1.8	HDOP (Horizontal Dilution of Precision)

35.8,M	Mean sea level altitude (meters)
0.0,M	Geoid separation (meters, WGS84 ellipsoid heights)
*42	Checksum

$GPRMC	Recommended Minimum Specific GNSS Data
123017.000	UTC time (hhmmss.sss)
A	A: GNSS fix valid
2605.90439,N	Latitude (ddmm.mmmmm). N: north; S: south
11915.88943,E	Longitude (dddmm.mmmmm). E: east; W: west
9.2	Speed over ground (knots)
353.00	Course over ground (degrees)
010522	Date (ddmmyy)
*03	Checksum

Play Back the Track

Download the "TimeAlbum Pro™"

Please visit the following link to download the latest version:
http://cbgps.com/p1m2/q

Open "TimeAlbum Pro™", the imported track can be played back or edited on the Google Maps®.

Q&A

Q: What is the difference between the two colors of the GNSS Status Lamp?

A: Green, flashing: GNSS is fixed. Blue, flashing: in the best positioning state, the highest horizontal positioning accuracy can be obtained and less drift. Refer to the GNSS Status Lamp and choose different placement positions to get the best tracks.

Q: What is the positioning accuracy of P-1 M2?

A: P-1 M2 can provide high-precision positioning performance: horizontal 2.0m/CEP (50%); 5.0m/CEP (95%). It can obtain lane-level positioning accuracy.

CEP refers to Circular Error Probable. 2.0m/CEP(50%)* means that the probability of greater than 50% of the track points can fall within a circle with a radius of 2.0m; 5.0m/CEP(95%)* means that the probability of greater than 95% of the track points can fall within a circle with a radius of 5.0m.

* Test under an ideal positioning environment

Q: How to reduce the drift and error of track in complex environment?

A: There are obvious multi-path reflections in the positioning between urban buildings, which will affect the track accuracy. In such a complex environment, whether it is in car or carried with users, please try to face the front of the P-1 M2 towards the sky. For placement advice, please visit: http://cbgps.com/place

Q: How to maximize the battery life of P-1 M2?

A: Enter the spy mode and configure an appropriate interval time. The battery life at different intervals is as follows:

Interval time	2 minutes	5 minutes	10 minutes	20 minutes
Battery life	12 days	17 days	20 days	24 days

Q: What should I do if there is no response with the buttons while operating P-1 M2?

A: You can use a pin to press the reset hole to reset.

Q: After positioning, P-1 M2 emits a short beep or automatically shuts down, what should I do?

A: Check the file format of the card, it should be FAT or FAT32. If still not resolved, it is recommended to replace the card.

For more Q&A, please refer to the official website, or send e-mail to: cbgps-sevice@hotmail.com

Firmware Update

We will update the firmware and improve the performance of P-1 M2, users can download and update by themselves.

Firmware download link: http://cbgps.com/p1m2/q

Specifications

Way points amount (Use 32GB MicroSD *1)	Approx. CSV: 550 Million points; GPX: 300 Million points; NMEA: 200 Million points
Storage card	MicroSD, MicroSDHC, MicroSDXC
File format	FAT16, FAT32
Protection class	IP66
Operating temperature	-10 ℃ to +50 ℃ / +14 ℉ to +122 ℉
Duration *2 (1Hz recording)	All Constellation: 48 hours GPS only: 55 hours
Constellation	GPS (L1), GLONASS (L1), BeiDou (B1C), QZSS (L1), SBAS (L1)
Accuracy *3	Horizontal: 1.5m/CEP(50%), 4.0m/CEP(95%)
Acquisition time *3	Hot start: <2s, Warm start: <30s, Cold start: <34s
Geodesics	WGS84
Power consumption	DC 5V, 800mA
Dimensions (WxHxD)	55.0 × 85.0 × 17.7mm / 2.2 × 3.3 × 0.7in
Weight	80g / 2.8oz

*1 Way points amount is an approximate value and may slightly vary from different conditions.
*2 Duration is subject to the environment of use, operating temperature.
*3 The test was done outdoor, in an open area.

On content unmentioned in the instruction, please visit the official website at any time to learn about the latest use skill and information.