

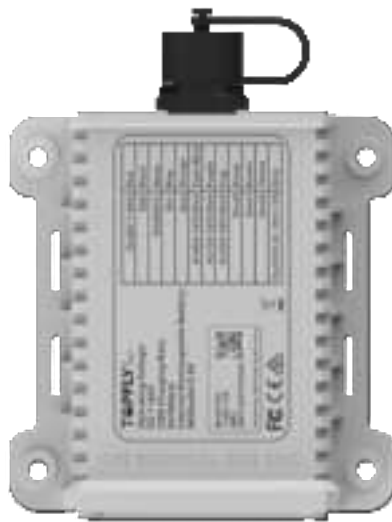


# **TOPFLYtech TLW2-12B Asset GPS Tracker**

User Manual

20210223

Thanks for your purchasing of the high-quality GPS tracker from TOPFLYtech. Please read this user manual carefully before installation and operation. Information in this manual is the property of TOPFLYtech. Changes to the specifications and features in this manual may be made by TOPFLYtech without prior notice. No part of this manual could be reproduced, copied, translated, transmitted, or published in any form or by any means without TOPFLYtech's prior written permission.



TLW2-12B

The tracker is using GNSS & LTE technologies and could collect device coordinates then transfer them via LTE network to the server. It provides customer with cost-effective, efficient and safety management. It has been widely used in commercial transportation, company vehicle fleet management, intelligent transportation, logistics, car rental, engineering machinery, marine transportation, and other segments.

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## 1. Quick Reference



### Intelligent Power Management

To extend the battery life, we designed an intelligent power management algorithm. This algorithm allows the tracker working for long period when battery is low and disconnected from external power. Once the battery is charged back, the tracker will report as normal. This function is enabled in default. Customer can disable it by command. The detail working logic is:

- When the battery voltage value is down to 3.5V, then the tracker will report at every 24 hours no matter moving or standstill.
- When the battery is charged back to 3.6V, the device will report as what are set by customer.



### FOTA (firmware over the air) Notification

TOPFLYtech is committed to providing clients with the best user experience. We are offering automatic firmware update feature for every device. This feature allows devices always having the latest version firmware. It can save clients the time and effort of updating firmware manually. Please note that this feature is enabled in default. If you want to turn it off, please contact with TOPFLYtech. If this feature is disabled, the fw update only can be done by sending upgrade command manually.

## 2. Product Specifications

| Network Specifications |   |
|------------------------|---|
| Operating Band         | FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B25/B26/B28<br>TDD: B39 (Cat M1 only)<br>EGPRS: 850/900/1800/1900MHz |
| Data Transmission      | eMTC: Max. 300Kbps (DL), Max. 375Kbps (UL)  |

|  |  |
|--|--|
|  | NB1: Max. 32Kbps (DL), Max. 70Kbps (UL)<br>EDGE: Max. 296Kbps (DL), Max. 236.8Kbps (UL)<br>GPRS: Max. 107Kbps (DL), Max. 85.6Kbps (UL) |
| <b>GNSS Specifications</b>   |  |
| GNSS Chipset   | Qualcomm Gen 8 GNSS receiver   |
| GNSS System  | GPS+Glonass+Galileo+Beidou   |
| Receiver type:   | 33 tracking / 99 acquisitions- channel GNSS receiver   |
| Sensitivity  | Cold start: -149 dBm<br>Tracking: -163 dBm   |
| Position Accuracy in open sky (CEP-50)   | < 2m   |
| Standalone TTFF  | Cold start: < 29s<br>Warm start: < 27s<br>Hot start: < 1s  |
| <b>Interfaces</b>  |  |
| Digital Input  | 3  |
| Digital Output   | 3  |
| Configurable Input   | 3 (input range 0-32V, ≥6V trigger in digital)  |
| Voltage Output (DC 5V/12V)   | 1  |
| Charging   | DC 7-60V or USB cable  |
| Data Transmission  | USB cable  |
| Network, GNSS Antenna  | Internal only  |
| Indicator LED  | Network, GNSS and Battery  |
| FOTA   | Yes  |
| Light Sensor   | 1 back light sensor  |
| Temperature Sensor   | 1 temperature sensor   |
| BLE 5.0  | Yes  |
| <b>General Specifications</b>  |  |
| Waterproof   | IP67   |
| Dimensions   | 132mm*100mm*34mm (5.2" *3.93" *1.34")  |
| Weight   | 320g (11.3oz)  |
| Battery  | Rechargeable Li 9600 mAh/ 3.6V   |
| Standby Time<br>(2 hours active tracking per day without accessories and charging) | 10 minutes reporting: 320 Days<br>5 minutes reporting: 170 Days<br>1 minute reporting: 68 Days   |
| Operating Temperature  | -25°C ~ +70°C (-13°F ~ 158°F)  |
| Mounting   | Magnet/Screw   |
| <b>Air Interface Protocol</b>  |  |
| Transmit Protocol  | TCP, UDP, MQTT, SMS  |
| Protocol Check & Encryption Support  | MD5/ AES256  |
| BLE Accessory Support  | Yes  |
| Scheduled Timing/angle/distance Report   | Report position and status at preset intervals   |

### 3. Standard Accessories Introduction

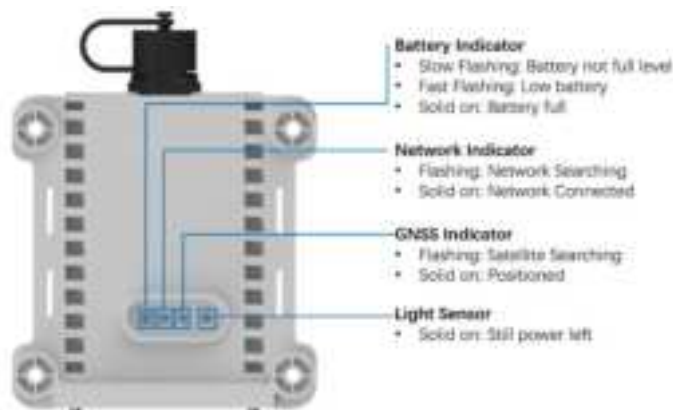


USB cable



Extension cable

### 4. LED indicator



Note: Indicator lights will go out automatically after the tracker turns on for 8 mins.

### 5. Installation Guide

#### 5.1 SIM Card Pre-Installation Note

- 5.1.1 SIM card data service should be enabled.
- 5.1.2 If SIM card is locked via PIN, please unlock it first.
- 5.1.3 Ensure there is sufficient balance in the SIM card.

#### 5.2 SIM card installation and tracker power switch

- 5.2.1 Open the tracker rear cover with the screwdriver.
- 5.2.2 Insert the SIM card with a little push. Turn the power switch from off to on.
- 5.2.3 Put the cover back and use screwdriver to fix the cover tightly.



#### 5.3 Power extension cable

- 5.3.1 Untighten the cap of the tracker.



- 5.3.2 Plug the extension cable to make it solid attached.
- 5.3.3 Tighten the cap on the extension cable until it can't be turned any more.
- 5.3.4 With a big capacity internal battery, the device can be used without extension cable. Please make sure the tracker cap is tightened firmly to protect the pins.

#### 5.4 Installation

- 5.4.1 Away from emission source such as all kinds of sensors, burglar alarm and other communication devices.

### 6. Quick Trouble Shooting

#### 6.1 Unable to Connect to the Tracking Platform

- 6.1.1 Check the APN and IP settings.
- 6.1.2 Check the SIM card whether support specific network and the data service whether is enabled.
- 6.1.3 Make sure there is no limitation or already added server IP to the IP white list when using a M2M SIM card.
- 6.1.4 Check the remaining balance or network signal of the SIM card.

#### 6.2 Tracker Shows Offline

- 6.2.1 Check the external power voltage to see whether the tracker is disconnected from external power.
- 6.2.2 Check whether the vehicle entered network blind area.
- 6.2.3 Check the balance of tracker SIM card.
- 6.2.4 If the connection lost happens on the last several days of the month, check whether the network service is terminated by carrier because of exceeding the max data usage volume.

#### 6.3 Unable to locate

- 6.3.1 Is the top side (with TOP SIDE logo on) facing upwards without shielded by metallic things during the installation?
- 6.3.2 Does the vehicle enter an area with no satellite coverage?

#### 6.4 Location Drift

In an area with poor GNSS signal (like the areas with lots of high buildings), location drift may happen. When move to open area, the drift will no longer exists.

#### 6.5 No Command Reply

- 6.5.1 Check the command format. Make sure it's correct.
- 6.5.2 Vehicle may be in network blind area.
- 6.5.3 Ensure the SIM card is properly inserted.

### 7. Warranty and Stock

The device standard warranty period is 12 months starting from the date of purchasing. If the device will be stored for a long time, please connect it to the external power and recharge the internal battery (20 hours) every 3 months. It will be helpful to extend the internal battery life.

## 8. Optional Accessories List

|         |  |   |
|---------|--|---|
| TA01    | Fuel Supply Cut Relay(12V)                     |    |
| TA11    | Fuel Supply Cut Relay(24V)                     |    |
| TA34    | Ultrasound Fuel Sensor v2                      |    |
| TA12    | BLE Tag  |    |
| TA20    | External TPS Suite (BLE)                       |     |
| TA22    | Internal TPS Suite (BLE)                       |     |
| TSTH1-B | BLE 5.0 Wireless Temperature & Humidity Sensor |   |
| TSDT1-B | BLE 5.0 Wireless Door & Temperature Sensor     |  |
| TSR1-B  | BLE 5.0 Wireless Relay                         |  |
| TA39    | Magnet Set (4 units)                           |  |

## 9. FCC Warning

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by



turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation

Caution!

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**IMPORTANT NOTICE:**

**FCC Radiation Exposure Statement**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body.