



TOPFLYtech TorchX 100 OBDII GPS Tracker

User Manual

20230517

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.



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



⚠ 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.

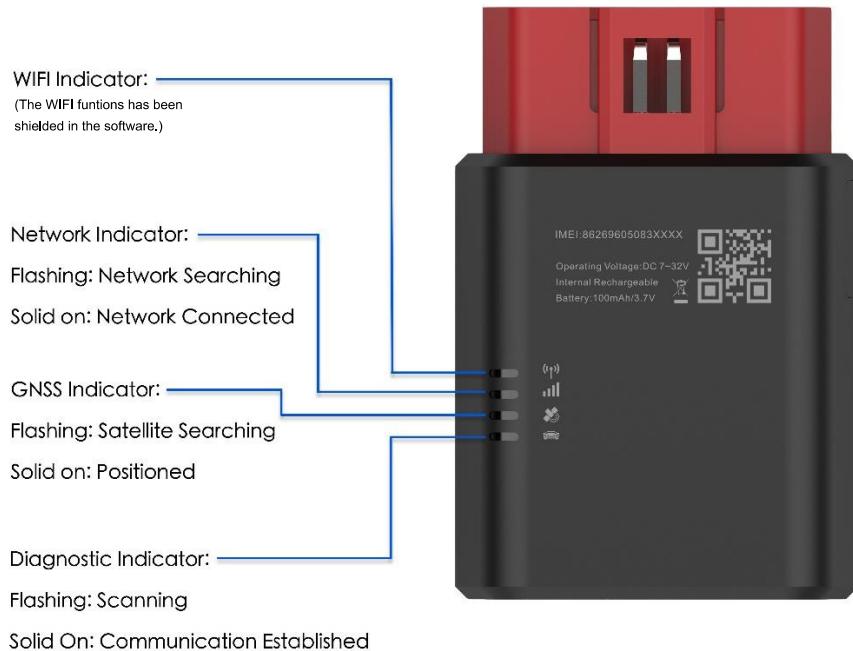
2. Product Specifications

| LTE Specifications | |
|---------------------|---|
| Operating Band | LTE FDD : B2/B4/B5/B12/B13/B25/B26/B66 LTE TDD: B41 |
| GNSS Specifications | |
| GNSS Chipset | Qualcomm Gen 8C GNSS receiver |
| Parallel GNSS | GPS+Glonass+Beidou+Glonass |
| Receiver type: | 33 tracking / 99 acquisitions- channel GNSS |

| | |
|---|---|
| | receiver |
| Sensitivity | Acquisition: -149 dBm Tracking: -163 dBm |
| Position Accuracy in open sky (CEP-50) | Autonomous: < 2 m |
| Standalone TTFF | Cold Start: < 29S Warm Start: < 27S Hot Start: < 1S |
| | |
| BLE | |
| BLE Band | 2.402 ~ 2.480 GHz |
| Interfaces | |
| OBDII Connector (The function varies under different configurations) | GMLAN (GM or Mazda Single-wire CAN) SAE J1850-VPW, SAE J1850-PWM, ISO 15765, SAE J1939, ISO 14230(KWP2000), ISO9142-2, SAE J1708 |
| SIM card | Nano SIM card slot |
| LTE/GNSS/BLE Antenna | Internal only |

| | |
|---|---|
| Indicator LED | Network, GNSS, and Diagnostic |
| USB | Debug |
| FOTA | Yes |
| BLE (Bluetooth Low Energy) | 4.1 |
| Buzzer | Event triggering |
| General Specifications | |
| Dimensions | 52.8mm*47.8mm*24.8mm (2.08" *1.88" *0.98") |
| Weight | 73.0g (2.6oz) |
| Backup Battery | Li-Polymer 100 mAh/3.7V |
| Operating Voltage | 7V to 32V DC |
| Operating Temperature | -30°C ~ +80°C (-22°F ~ 176°F) |
| Storage Temperature | -40°C ~ +85°C (-40°F ~ 185°F) |
| Air Interface Protocol | |
| Transmit Protocol | TCP, UDP, MQTT, SMS |
| Data Security & Encryption Option | MD5/ AES128 |
| BLE Accessory Support | Yes |
| OBDII Data Reading | Yes |
| Diagnostic Trouble Code (DTC) | Read and Erase |
| Scheduled Timing/angle/distance Report | Report position and status at preset intervals |
| External Power Status Alarm | Report when external power is disconnected |
| Low Power Alarm | Report when backup battery is low |
| Network Signal Jamming Detection | Report network jamming |
| Driving Behavior Monitoring | Aggressive driving behavior detection, e.g., harsh braking and acceleration |
| Crash Detection | Accident data collection for reconstruction and analysis |
| Data Roaming Control | Avoid additional data consumption |
| Industry Certifications | |
| CE, RCM, IC, FCC, PTCRB, AT&T, US Cellular, T-Mobile, Verizon, TDRA, NBTC, CITC, Anatel | |

3. LED indicator



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

4. Installation Guide

4.1 SIM Card Pre-Installation Note

- 4.1.1 SIM card data service should be enabled.
- 4.1.2 If SIM card is locked via PIN, please unlock it first.
- 4.1.3 Ensure there is sufficient balance/data in the SIM card.

4.2 SIM Card Installation

- 4.2.1 Follow the SIM icon direction then insert the SIM card
- 4.2.2 Give a slight push then release.

4.3 Installation

- 4.3.1 This is a plug-and-play tracker. Before the installation, please ensure your vehicle have a OBDII connector.
- 4.3.2 After plugged the tracker into the car OBDII connector, it will automatically power on and the LED indicators will start to flash. This indicates a successful installation.
- 4.3.3 Please ensure the tracker is firmly connected to the car OBDII connector.

4.4 Ignition Detection and OBDII Data Reading

The tracker detects ignition status and reads OBDII data automatically.

5. Tracker Configuration

Refer to frequently used operation commands in this manual

6. Tracker Operation

6.1 Power on and off

- 6.1.1 Power on: Insert a SIM card and connect the tracker to external power. It will turn on automatically.
- 6.1.2 Power off: Remove the SIM card first, then disconnect the tracker from external power. It will power off automatically around 5~10 seconds.

6.2 Location Search

6.2.1 SMS Query

Send a location inquiry SMS command (refer to the Operation Command in this manual) to the tracker. The location information will be sent to you through SMS.

6.2.2 Platform Query

Connect your tracker to the tracking platform then check the real-time position online. (Additional tracking service charge may happen. Contact with your service provider to get more details.)

7. Quick Trouble Shooting

7.1 Unable to Connect to the Tracking Platform

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

7.2 Tracker Shows Offline

- 7.2.1 Check the external power voltage to see whether the tracker is disconnected from external power.
- 7.2.2 Check if the vehicle entered network blind area.
- 7.2.3 Check the balance or data of SIM card.
- 7.2.4 If the connection lost happens on the last several days of the month, check whether the data service is terminated by carrier due to reaching the data cap.

7.3 Unable to locate

- 7.3.1 Is the device shielded by metallic stuff?
- 7.3.2 Does the vehicle enter an area with no satellite coverage?

7.4 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.

7.5 No Command Reply

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

8. Warranty and Stock

The standard warranty period is 12 months starting from the date of purchasing. If the tracker will be stored for a long time, please connect it to the external power and recharge the internal battery (10 hours) every 3 months. It will be helpful to the internal battery life.

9. Frequently Used Operation Commands (SMS)

Commands are not case-sensitive and can be sent via mobile phone or Web. The content is separated by comma and ends with #. When set successfully, the tracker will return OK and execute it. Otherwise, there is no message returned.

| Function | Command Format |
|----------------------------|--|
| APN Setting | APN , <i>Current PIN,APN Name,User Name,Password#</i> |
| Server Setting | IP , <i>Current PIN,Server Domain Name or IP,Port Number#</i> |
| Reporting Interval Setting | TIMER , <i>Current PIN,Upload Time(ACC on):Upload Time(ACC off):Angle Compensation:Distance Compensation#</i> |
| Enable ELD | ELDTIME , <i>Current PIN,ELD upload Interval#</i> |
| Heartbeat Setting | HBT , <i>Current PIN,Heartbeat Interval#</i> |
| PIN Setting | PASSWORD , <i>Current PIN,New PIN#</i> |
| Towing Setting | DRAG , <i>Current PIN,Distance#</i> |
| Speeding Setting | SPEED , <i>Current PIN,Upper Speed Limit#</i> |
| Position Inquiry | GOOGLE , <i>Current PIN#</i> |
| Forgot the PIN | MYSELF# |

9.1 APN Setting

APN,*Current PIN,APN Name,Username,Password#*

Note:

- 1) Tracker will return "SET APN OK" when received this command.
- 2) If there is no GPRS User Name and APN PIN, the SMS setting is:

APN,Current PIN,APN Name,,#
3) If there is no APN PIN, the SMS setting is:
APN,Current PIN,APN Name,Username,#

9.2 Server Setting
IP,Current PIN,Server Domain Name or IP,Port Number#

Server Domain Name or IP:

Range: Letters, Numerals and Symbols
Length Limit: 1~128

Port Number:

Range: Positive Integer
Length Limit: 0~65535

Note: Tracker will return "SET IP OK" when received this command.

9.3 Reporting Interval Setting
TIMER,Current PIN,Upload Time(ACC on):Upload Time(ACC off):Angle Compensation:Distance Compensation#

Upload Time (ACC on):

Range: Positive Integer
Range Limit: 0, 3~65535
Default: 25

Upload Time (ACC off):

Range: Positive Integer
Range Limit: 0, 3~65535
Default: 600

Angle Compensation:

Range: Positive Integer
Range Limit: 0~90 degrees
Default: 30 degrees

Distance Compensation:

Range: Positive Integer
Range Limit: 0 ~ 65535 meters
Default: 0 meters

Note: Tracker will return "SET TIMER OK" when received this command.

9.4 ELD

ELDTIME,0000,a#

a= is the time in seconds, used to set how often to send ELD data.

a= 0 or 3-65535 where a=0 disable, Default A=5

9.5 Heartbeat Setting

HBT,*Current PIN,Heartbeat Interval#*

Heartbeat Interval:

Range: Positive Integer

Range Limit: 1 ~ 255 minutes

Default: 5 minutes

Note: Tracker will return “SET HBT OK” when received this command.

9.6 PIN Setting

PASSWORD,*Current PIN,New PIN#*

PIN:

Range: Letters and Numerals

Length Limit: 1 ~ 10

Default: 0000

Note: Tracker will return “SET PASSWORD OK” when received this command.

9.7 Towing Setting

DRAG,*Current PIN,Distance#*

Distance:

Range: Positive Integer

Range limit: 0~65535 meters

Default: 0

Note:

- 1) Tracker will return “SET DRAG OK” when received this command.
- 2) This function will be enabled automatically when ACC is off.
- 3) The Recommended distance setting is no less than 100 meters.

9.8 Speeding Setting

SPEED,*Current PIN,Upper Speed Limit#***Upper Speed Limit (KM/H):**

Range: Positive Integer

Range limit: 0~32767

Default: 0

Note:

- 1) Tracker will return "SET SPEED OK" when received this command.
- 2) Set "Upper Speed Limit" to 0 will turn off speed alarm.

9.9 Position Inquiry

GOOGLE,*Current PIN#*

Note: Tracker will return below SMS message when received this command.

<http://maps.google.com/maps?q=<Latitude>,<Longitude>>

9.10 Forgot the PIN

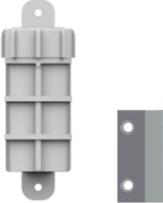
MYSELF#

Note:

- 1) If the manager phone number has been set, only the manager can use "MYSELF#". If no manager setting, the tracker will return the IMEI and current PIN when it received "MYSELF#" from any mobile phone.
- 2) This command can be used to retrieve password.

10. Optional Accessories List

| Product | Description | Photo for Reference |
|---------|------------------------------------|---|
| TA06 | OBDII Power Extension Cable (80cm) |  |
| TA14 | J1939 to OBDII Cable (80cm) |  |
| TA20 | External TPS Set (BLE) |  |
| TA22 | Internal TPS Set (BLE) |  |

| | | |
|---------|--|---|
| TSTH1-B | BLE 5.0 Wireless Temperature and Humidity Sensor |  |
| TSDT1-B | BLE 5.0 Wireless Door and Temperature Sensor |  |
| TSR1-B | BLE 5.0 Wireless Relay |  |
| TA43 | OBDII Extension Cable (80cm) CAN(P6+Pin14)+Power(Pin16)+GND(Pin4+Pin5) |  |
| TA44 | OBDII T Cable (80cm) Extension Connector: CAN(P6+Pin14)+Power(Pin16)+GND(Pin4+Pin5) Male to Female Connector: Full Pin to Pin |  |
| TA40 | OBDII Y Cable (30cm + 100cm) |  |
| S07 | T-button BLE 5.1 Key Fob or Panic button |  |

11. FOTA 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.

12. 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.

13. ISED/CNR Warning

This device complies with Innovation, Science, and Economic Development Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

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

Le présent appareil est conforme aux CNR d' Innovation, Sciences et Développement

économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

The device is in compliance with RF exposure guidelines, users can obtain Canadian information on RF exposure and compliance. The minimum distance from body to use the device is 20cm.

Le présent appareil est conforme. Après examen de ce matériel aux normes de conformité ou aux limites d'intensité de champ RF, les utilisateurs peuvent trouver l'exposition aux radiofréquences et la conformité et la compliance d'acquérir les informations correspondantes. La distance minimale du corps à utiliser le dispositif est de 20cm.