TOPFLYtech HeroX 100 Vehicle GPS Tracker

User Manual

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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.



HeroX 100

The tracker is using GNSS & LTE & WiFi & BLE scan 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 4
2. PRODUCT SPECIFICATIONS 4
3. STANDARD ACCESSORIES INTRODUCTION 6
4. LED INDICATOR AND SIM CARD SLOT 6
5. WIRE DEFINITION 6
6. INSTALLATION GUIDE 7
6.1 SIM CARD PRE-INSTALLATION NOTE 7
6.2 SIM CARD INSTALLATION 7
6.3 INSTALLATION 7
7. QUICK TROUBLE SHOOTING 7
7.1 UNABLE TO CONNECT TO THE TRACKING PLATFORM 7
7.2 TRACKER SHOWS OFFLINE 7
7.3 UNABLE TO LOCATE 8
7.4 LOCATION DRIFT 8
7.5 NO COMMAND REPLY 8
8. WARRANTY AND STOCK 8
9. OPTIONAL ACCESSORIES LIST 8
10. FCC WARNING 9
11. ISEDC WARNING 10

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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

Network Specifications	
Operating Band	LTE FDD Cat 1: B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B18/B19/ B20/B25/B26/B28/B66 LTE TDD Cat 1: B34/B38/B39/B40/B41 GSM: 850/900/1800/1900 MHz
Data Transmission	LTE-FDD:Max.10Mbps (DL), Max.5Mbps (UL) LTE-TDD:Max.8.96Mbps(DL),Max.3.1Mbps (UL) GPRS: Max. 85.6Kbps (DL), Max. 85.6Kbps (UL)
GNSS Specifications	
GPS Chipset	All-In-One GNSS Receiver
Parallel GNSS	GPS+Beidou+Galileo+QZSS (SBAS)
Receiver type:	24 tracking / 64 acquisitions- channel GNSS receiver
Sensitivity	Acquisition: -148 dBm Reacquisition: -159 dBm Tracking: -162 dBm
Horizontal Position Accuracy	Autonomous: < 1.5 m CEP
TTFF @ -130 dBm with (without) EASY™	Cold Start: < 20s (30s)

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	Warm Start: < 2 (2s) Hot Start: < 2s (2s)
Interfaces	
Digital Input	1 Positive Trigger Input for Ignition detection (input range 0-32V, 5≤: ignition on, ≤2V ignition off, from 2V to 5V: unstable status) 1 Negative Trigger Inputs for Panic button 2 Positive Trigger input for other using (input range 0-32V, 5≤: ignition on, ≤2V ignition off, from 2V to 5V: unstable status)
Digital Output	2 Digital Outputs for Relay Control
Analog Input	2 Analog Inputs (0~32V DC, Can be configured as a digital input)
RS485	2 RS485 Ports
1-Wire	1-wire temperature sensor and iButton driver ID(Maximum 8 channels)
Speakerphone	A push-to-talk or A Speaker and a Microphone
CAN Bus Interface	CAN, SAE1939(FMS)
microSD	Maximum Memory of Supported Card is 128 GB
Network, BLE	Internal
GNSS	Internal or External (Optional Accessory)
Indicator LED	Network and GNSS and CAN
FOTA	Yes
Temperature Sensor	1 temperature sensor
BLE 5.1	Yes (Only support BLE 1M)
WiFi	2.4 GHz 802.11b (Rx)
Tracker Configuring	USB Type-C Connector
General Specifications	
Ingress Protection Rating	IP41
Dimensions	84.5mm*69.7mm*21.8mm("3.32 *2.74" *0.86")
Weight	80g (2.82oz)
Battery	Li-Polymer 200 mAh/ 3.7V
Operating Voltage	5V to 32V DC
Operating Temperature	-30℃ ~ +80℃ (-22°F ~ 176°F)
Storage Temperature	-40℃ ~ +85℃ (-40°F ~ 185°F)
Air Interface Protocol	
Transmit Protocol	TCP, UDP, MQTT, SMS
Protocol Check & Encryption Support	MD5/ AES128
BLE Accessory Support	1M
Scheduled Timing/angle/distance Report	Report position and status at preset intervals
External Power Status Alarm	Report when external power is disconnected

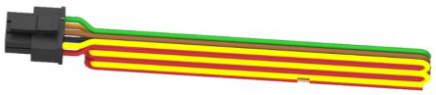
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Low Power Alarm	Report when backup battery is low
Speeding Alarm	Report when speed exceed the pre-set value
Towing Alarm	From internal 3-axis acceleration
Remote Control	Remote output control
Network Signal Jamming Detection	Report network jamming
Data Roaming Control	Avoid additional data consumption
Driving Behavior Monitoring	Aggressive driving behavior detection, e.g., harsh braking and acceleration
Crash Detection	Accident data collection for reconstruction and analysis

3. Standard Accessories Introduction

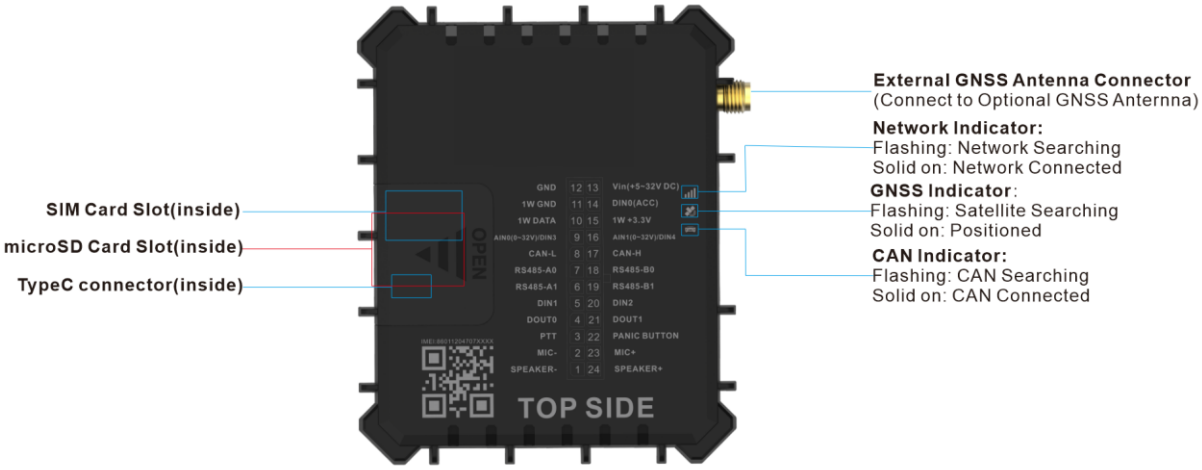


Sponge double-side adhesive tape



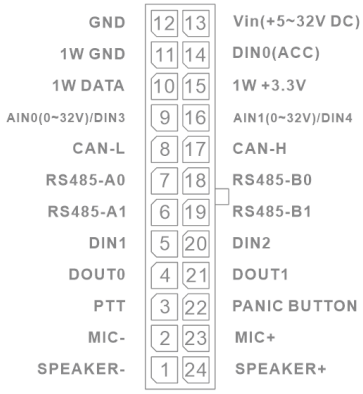
Extension wire

4. LED indicator and SIM card Slot



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

5. Wire Definition



6. Installation Guide

6.1 SIM Card Pre-Installation Note

6.1.1 SIM card data service should be enabled.

6.1.2 If SIM card is locked via PIN, please unlock it first.

6.1.3 Ensure there is sufficient balance in the SIM card.

6.2 SIM card installation

6.2.1 Open the rubber stopper on the side

6.2.2 Insert the SIM card by following the direction icon on the tracker cover

6.2.3 Give a little push to the SIM card. When there is a “click” sound, it stands for the SIM card has been successfully inserted

6.3 Installation

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

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 whitelist when using a M2M SIM card.

7.1.4 Check the remaining balance or network signal 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 whether the vehicle entered network blind area.

7.2.3 Check the balance of tracker SIM card.

7.2.4 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.

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7.3 Unable to locate

7.3.1 Is the top side (with TOP SIDE logo on) facing upwards without shielded by metallic things during the installation?

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.

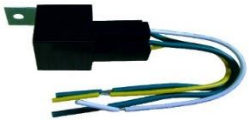
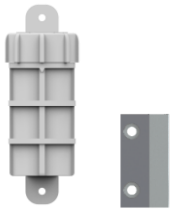
7.5.2 Vehicle may be in network blind area.

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. Optional Accessories List

TA01	Fuel Supply Cut Relay(12V)	
TA11	Fuel Supply Cut Relay(24V)	
TA20	External TPS Set (BLE)	
TA22	Internal TPS Set (BLE)	
TSTH1-B	BLE 5.0 Wireless Temperature & Humidity Sensor	
TSDT1-B	BLE 5.0 Wireless Door & Temperature Sensor	

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TSR1-B	BLE 5.0 Wireless Relay	
TA48	Panic Button (2m)	
T-button	BLE 5.1 Key Fob & Panic button	
T-sense	BLE 5.1 IP67 temp&movement&door sensor	
T-hub	BLE 5.1 IO extension hub	
T-one	BLE 5.1 Probe temp or temp&humi sensor extender	

10. 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.

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—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.

11. ISEDC 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 nedoit 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 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 conformité ou aux limites d'intensité de champ RF, les utilisateurs peuvent sur l'exposition aux radiofréquences et la conformité and compliance d'acquérir les informations correspondantes. La distance minimale du corps à utiliser le dispositif est de 20cm.

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