

Qbox Series User Guide



Hi-Target Surveying Instrument Co., Ltd.

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Manual Revision

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Preface

Introduction

Welcome to use Hi-Target Qbox series GIS data collector. This introduction describes how to use this product.

Experience Requirement

In order to help you use Hi-Target series products better, Hi-Target suggests you carefully read the instruction. If you are unfamiliar with the products, please refer to www.hi-target.com.cn

Tips for safe use



Notice: The contents here generally are special operations, and need your special attention. Please read the contents carefully.



Warning: The contents here generally are very important. Such wrong operation may make the machine damaged, make the data lost, even breaks down the system and endangers personal safety.

Exclusion

Before using the products, please carefully read the operating instruction, and it will help you better to use it. Hi-Target Surveying Instrument Co., Ltd will not assume the responsibilities if you fail to operate the product according to the requirements in operating instruction, or operate the product wrongly because of failing to understand the operating instruction.

Hi-Target is committed to constantly perfect product functions and performance, improve service quality and reserve the rights to change the contents in operating instruction without separate notice.

We have checked the consistency between contents in instruction and software & hardware, without eliminating the possibility of deviation. The pictures in operating instruction are only used for reference. In case of inconformity with products, the products shall prevail.

Technology and Service

If you have any technical issues, you can call Hi-Target technology department for help, we will answer your question in time.

Relevant Information

You can get this introduction in the following ways:

1. After purchasing Hi-Target receivers, you can find this manual in the instrument container to guide you how to operate instrument.

2. Log in hi-target official website, download the electronic version introduction in “Download Center” → “Manual” → “Surveying Products”

Advice

If you have any comments and suggestions, please call us or Dial the national hotline: +86 400-678-6690. Your feedback information will help us to improve the quality of the product and service.

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CHAPTER**1**

Hardware

This chapter describes:

- **Designs and Key Function**
- **Technical Specification**
- **Accessories**

1.1. Designs and Key Function

Qbox series high accuracy BD box, there are two model:Qbox5 (sub-meter) and Qbox8 (centimeter). The advantage of Qbox series: small and exquisite, accurate position.

It connects with Android phone or pad by Bluetooth. After matching connection, you can set up differentiated services which make the ordinary hand set achieve professional positional accuracy.

Qbox 8 which is compact and lightweight can connect to Android phone or tablet by Bluetooth. When your phone is paired with Qbox 8 and enables correction service, it can get professional GNSS accuracy to centimeter.

1.1.1. Designs

Qbox 5/6



Figure 1-1-1

- ① Mainboard antenna
- ② One-piece power key and indicator light
- ③ QR-code and scan download App software
- ④ Device model number、S/N code



Figure 1-1-2

⑤ Back clamp

⑥ Micro USB connector

Qbox 8



Figure 1-1-3

- ① Mainboard antenna
- ② SN code and device type
- ③ QR code (scan it to download related software)



Figure 1-1-4

- ④ Micro USB socket
- ⑤ Power button
- ⑥ Power lamp
- ⑦ Satellite lamp
- ⑧ Signal lamp

1.1.2. Key function

Qbox 5/6

Power on: Long press power key one second, green indicator lights up, loose the power key;

Power off: Long press power key two seconds, green indicator light go out, loose the key;

Force shut down: After starting up, long press the power key six seconds, green indicator light go out, loose it to force shut down.

Qbox 8

Power on: Long press power button for 1 second to power on. The three lamps will flash green.

Power off: Long press power button for 3 seconds to power off. The signal lamp and satellite lamp will flash at the same time.

Power button:

- Double press power button to switch work mode, if signal lamp is on, means working in RTK mode, if signal lamp is off, means working in static mode;
- Short press power button for 1 second to inquire power capacity;
- Long press power button for 6 seconds to reset mainboard;

- Long press power button for 10 seconds to shut down forcibly.

1.1.3. LED instruction

Qbox 5/6

Charging when powered off, red lights up means being charged, green lights up means the battery is full charged.

Charging when working, the yellow light slow flashing means it is not positioning, the yellow light fast flashing means the memory space is not enough.

When not charging, the green light bright constantly means it is not positioning. the green light is fast flash means the memory space is not enough.

Qbox 8

- When being charged: Long bright red means charging; long bright green means charging completed.
- When not being charged: Long bright yellow means full battery; long bright red means enough battery; flashing red means low battery.

- Enquiry battery: Single press power button, the power instruction lamp will flash one to four times which means different power capacity. (Once: 0%-25%, twice: 25%-50%, three times: 50%-75%, four times: 75%-100%)

Satellite lamp

Long bright green means tracked;

Flashing green means tracking.

Signal lamp

RTK mode: Flashing yellow when received data.

Static mode: Flashing red by collecting interval.

1.2. Technical Specification

		Qbox 5	Qbox 6
GNSS feature	GPS	•	•
	GLONASS	•	•
	BD	•	•
	Galileo	•	•
	SBAS(WASS, EGNOS, MASAS) and QZSS	•	•
	Helical antenna	•	•
	The first positional time: 30 seconds (typical)	•	•
Positional accuracy	Single position	2.5m	2.5m
	SBAS	1-3m	1-3m
	DGPS	0.8m	0.8m
	RTK	----	0.2m
Communication	BT 4.0	•	•
	Micro USB	•	•
Power property	Battery capacity: 900mAh/3.7V	•	•
	Work time: Over 10h	•	•

	Charging time: 3 hours, supports charging by car and charging online.	•	•
Physics property	Size: 90*57*26mm	•	•
	Weight; 70g(include battery)	•	•
	Work temperature: -30°C~+70°C	•	•
	Storage temperature:-40°C~+80°C	•	•
	Waterproof and dustproof: IP67	•	•
	Shockproof: 2m free fall	•	•
Application function	Support system: Android, Windows, iOS	•	•
	Install software: ZHD DNSS Tools	•	•
	Application customization: Supports secondary development and industry custom	•	•

Qbox 8

System configuration	Operating system: Industrial grade real-time OS
	Storage: 8GB, support up to 32GB
GNSS Features	GPS: L1, L2, L2C GLONASS: L1, L2 BDS: B1, B2 Galileo: E1, E5b SBAS: WAAS/EGNOS/MSAS
	Time for the first fix: 30 seconds
	Correction message type: CMR/CMR+, RTCA RTCM 2.1/2.3/3.0/3.1/3.2
	Fresh frequency: 1Hz, support higher frequency
Positioning accuracy	Single Positioning: 2 m
	SBAS Positioning: 1 to 3 m
	DGPS Positioning: 0.4 m
	RTK Positioning: 2 cm + 1 ppm
	Static Positioning: 3 mm + 1 ppm
Communication	Bluetooth: Dual-mode, 4.0
	USB: Micro USB
Power supply	Battery: 3.7V, 4800mAh
	Over 10 hours continuous work

	Charging time: 5 hours
Application functions	Device OS supported : Android/Windows/iOS
	Software: ZHD GNSS Tools
	Industry Applications: Supporting secondary development and highly industry-specific
Physical properties	Size: 115mm×85mm×25mm
	Weight: 300g (with battery inside)
	Operating temperature: -30℃～+70℃
	Storage temperature: -40℃～+80℃
	Dustproof/waterproof: IP67
	Shock and vibration: Designed to survive a 2 m nature fall onto concrete

1.3. Accessories

Frame 1

This frame can be used to fix Qbox 8 on pole.



Figure 1-3-1

Frame 2

This frame can fix device such as phone or tablet with Qbox 8



Figure 1-3-2

Adapter and USB cable

The Adapter and USB cable is used for charging and data transfer.



Figure 1-3-3



Figure 1-3-4

CHAPTER**2**

Software

This chapter describes:

- **GNSS Tools**
- **Static Data Transfer**
- **Firmware Upgrade**

2.1. GNSS Tools

2.1.1. Installing

GNSS Tools is handheld GIS software, it can get CM and DM accuracy coordinates after connecting Qbox 8 and Qbox 5.

1. Download the .apk from our website, then connect the Android (4.0 or higher) device to the computer and turn on USB storage, copy it to the device, then disconnect.

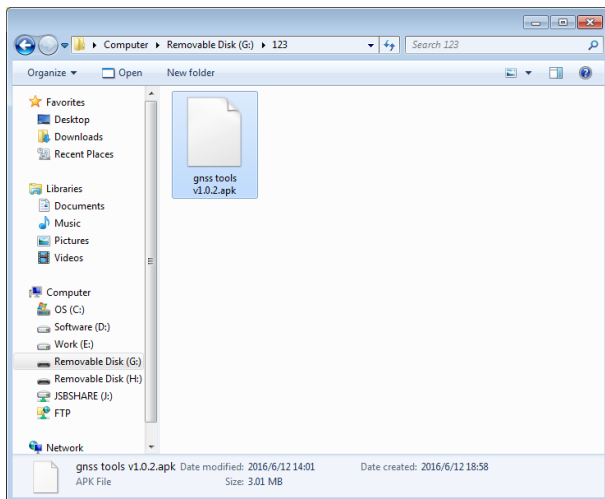


Figure 2-1-1

2. Open the file manager, find the .apk and click it to install.

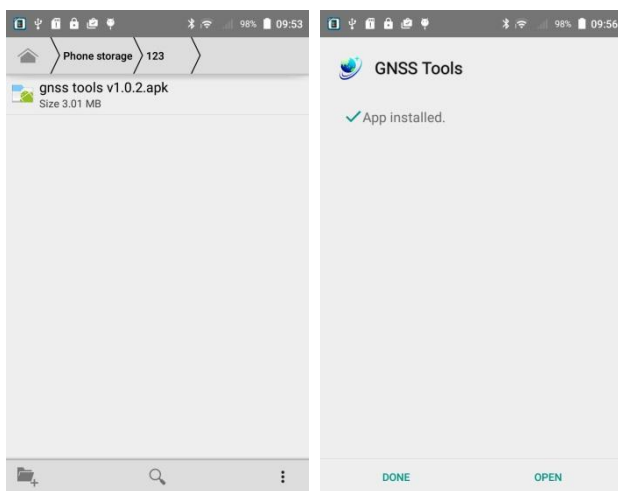


Figure 2-1-2

2.1.2. Functions

1. Device

On device interface, click Connect and Scan, after entered the pair code 1234 and connect success, it will show the information of the Qbox 8.

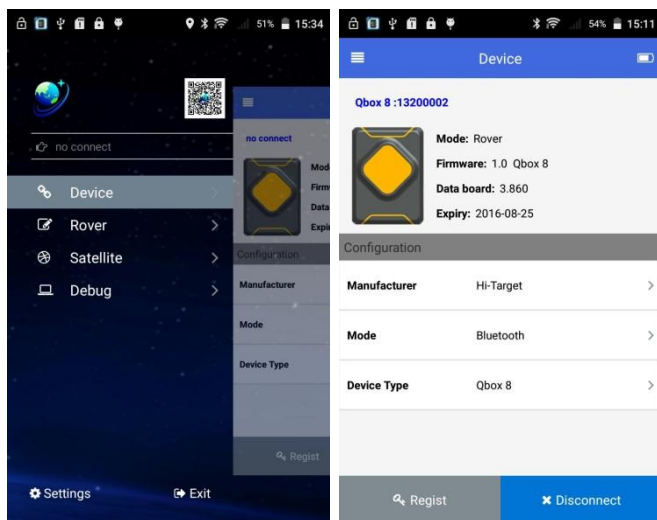


Figure 2-1-3

2. Rover

You can connect VRS or Hi-Target server in here.

VRS parameters include IP, Port, Username, Password and Mount Point.

Hi-Target server parameters include IP, Port, Area ID and Group ID.

The figure displays two side-by-side screenshots of the 'Rover' application interface, showing configuration options for connecting to different server types.

Left Screenshot (VRS):

- Network Type:** VRS
- IP:** 101.201.51.235
- Port:** 2101
- Username:** 132000002
- Password:** Masked with dots (•••••)
- Mount Point:** 0020006006
- Buttons:** Get, Connect

Right Screenshot (Hi-Target):

- Network Type:** Hi-Target
- IP:** 192.168.100.119
- Port:** 1234
- Area ID:** (Empty field)
- Group ID:** (Empty field)
- Buttons:** Connect

Figure 2-1-4

3. Satellite

Skyplot, position information and satellites information are showed in here.

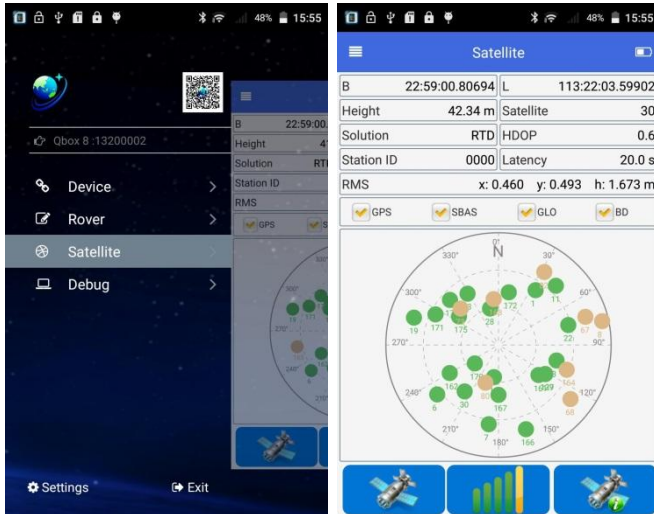


Figure 2-1-5

4. Debug

NMEA is showed in here, also you can do some operations and send commands in here.

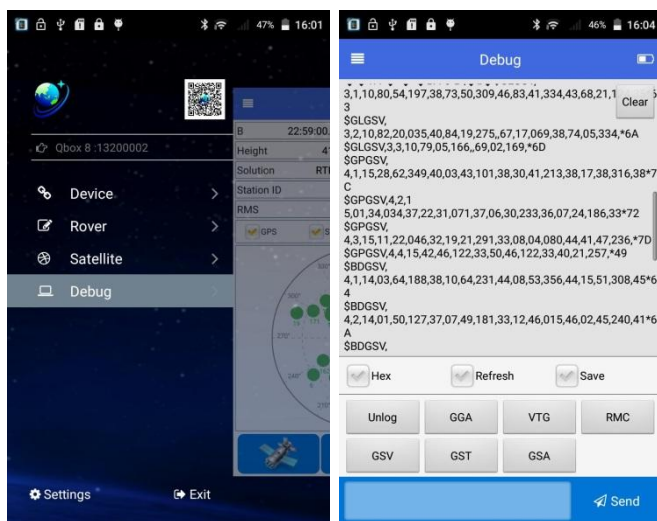


Figure 2-1-6

5. Settings

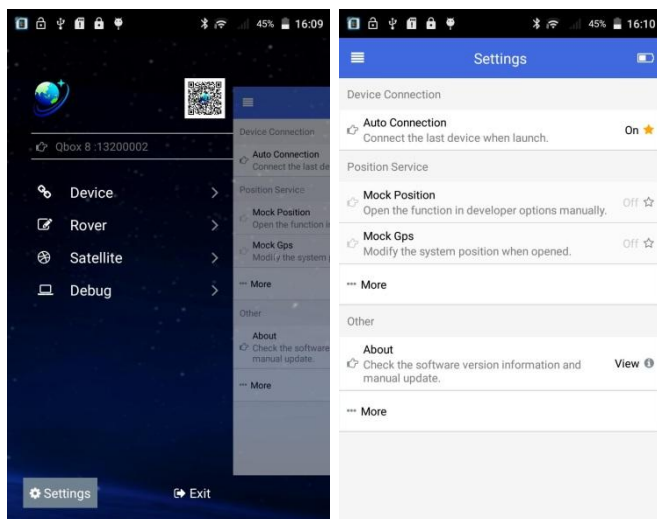


Figure 2-1-7

Click Settings on bottom-left to set software. Settings include:

- **Auto Connection:** Connect the last device when launch.
- **Mock Position:** Open the function in Developer options manually, and select Device only in Location mode.
- **Mock GPS:** Modify the system position when opened, then the third party software can use the position of Qbox 8.

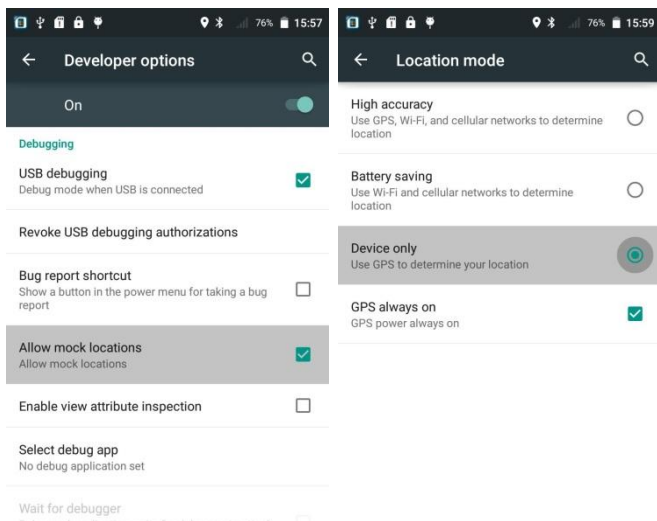


Figure 2-1-8

- **Position Service-More:** Test Mock GPS (Show or hide the menu of test mock gps), Upload Position (Show or hide the menu of upload position), Record GGA (Auto record GPGGA in gga.txt).
- **Other-About:** Get the GNSS Tools software information.
- **Other-More:** Record Operator Log, Auto Check Update.

2.2. Static Data Transfer

Turn on Qbox 5/6, connect it to PC, there will be a removable disk named STATIC. For Qbox 8, connect it to PC, there will be two removable disks named STATIC and UPDATE.



Figure 2-2-1

Open STATIC disk, copy the static raw data to PC, then import them to Hi-Target Geomatics Office software for processing.

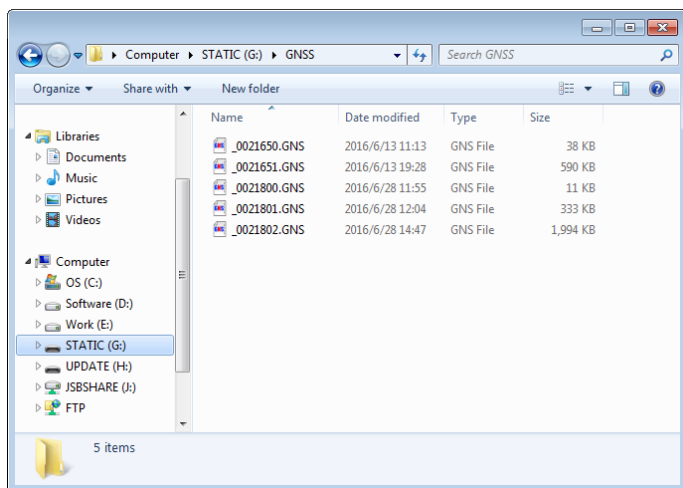


Figure 2-2-2

2.3. Firmware Upgrade

For Qbox 5/6, turn on and connect it to PC, then copy the firmware to STATIC disk, disconnect it and restart, it will upgrade automatically.

For Qbox 8, turn on and connect it to PC, then copy the firmware to UPDATE disk, disconnect it and restart, it will upgrade automatically.

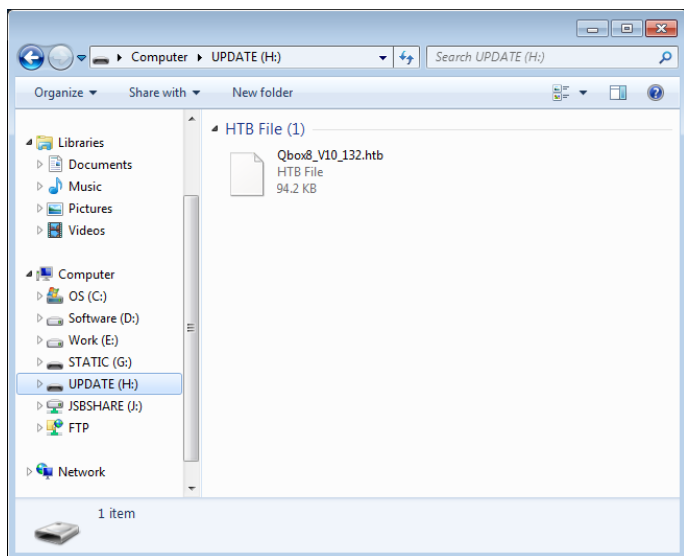


Figure 2-3-1