

# H2 User Guide

Version 1.3 /Feb.28 2022



# Contents

Contents.....	2
Version History.....	4
Abbreviations.....	5
1. Products and features.....	6
1.1 Product positioning .....	6
1.2 Features.....	6
2. Devices.....	7
2.1. Accessories.....	7
2.2. Adapter specifications and instructions.....	7
2.3. Adapter LED status instructions.....	8
2.4. Connection diagram (485&CAN).....	8
3. Operation instructions.....	9
3.1. Sign up.....	9
3.2. Preparation.....	9
3.3. Login and personal center.....	14
3.4. Roles and permissions.....	17
3.5. Connection & Protocol Interface.....	18
3.6. Information query.....	22
3.7. FC query.....	23
3.8. V3 command test.....	23
3.9. V35 command test.....	24
3.10. Communication Detection (COMM. DETN.).....	25
3.11. Firmware upgrade.....	27
3.12. ECU OTA.....	28
3.13. OTA.....	29
3.14. DTC.....	30
3.15. Battery data.....	32
3.16. Log.....	33
3.17. Instrument Settings.....	34
3.18. Restore factory settings.....	35
3.19. Copy text.....	35
3.20. Settings.....	36
3.21. Upload feedback on the app.....	38

3.22. Version updates.....	40
3.23. Delete account.....	40
3.24. Change your password.....	40
4. Anomaly detection.....	41
4.1. Inquiry issues.....	41
5. FAQs.....	42
5.1. How to change system language? .....	42

# Version History

<b>Version</b>	<b>Date</b>	<b>Author</b>	<b>Note</b>
<b>V1.0.0</b>	<b>Jul 23, 2021</b>	<b>Frida Zhang</b>	<b>First edition</b>
<b>V1.1.0</b>	<b>Aug 05, 2021</b>	<b>Frida Zhang</b>	<b>Add 5. FAQs</b>
<b>V1.1.1</b>	<b>Aug 12, 2021</b>	<b>Frida Zhang</b>	<b>Update 3.1 Sign up Update 3.4 Connection</b>
<b>V1.2.0</b>	<b>Dec 9, 2021</b>	<b>Frida Zhang</b>	<b>Update 1.1 Product positioning Add 3.2 Preparation Update 3.10 Communication Detection Update 3.17 Settings</b>
<b>V1.3.0</b>	<b>Feb 28, 2022</b>	<b>Frida Zhang</b>	<b>Add 3.5.2 Protocol Interface Add 3.5.3 Bluetooth Connection Add 3.10.2 CAN Communication Detection Add 3.12 ECU OTA Add 3.13 OTA Add 3.14 DTC</b>

# Abbreviations

<b>ECU</b>	Electronic Control Unit
<b>LCU</b>	Light Control Unit
<b>DB</b>	Dashboard
<b>FOC</b>	Field-Oriented Control
<b>ISP</b>	In-System Programming (STM32)
<b>IAP</b>	In-Application Programming
<b>BMS</b>	Battery Management System
<b>SN</b>	Serial Number (Scooter)
<b>LOG</b>	Log
<b>LOCK/LKU</b>	Lock Control Unit
<b>BCS</b>	Dual Battery Switching System
<b>FC</b>	Fast Charger
<b>OTA</b>	Over-The-Air (update)
<b>DTC</b>	Diagnostic Trouble Code
<b>VCU</b>	Vehicle Control Unit
<b>HCU</b>	Handlebar Control Unit
<b>OBD</b>	On-board Diagnostics
<b>NCU</b>	Network Control Unit
<b>ADR</b>	Automobile Data Recorder
<b>PC/H2 FCU</b>	Fan Control Unit
<b>NBC</b>	Battery Charger
<b>PDU</b>	Power Distribution Unit
<b>DC/DC</b>	Direct Current Converter
<b>ABS</b>	Anti-lock Brake System
<b>TTD</b>	Torque Transducer (UB)
<b>BCU</b>	Bus Control Unit
<b>OBC</b>	On Board Charger

# 1. Products and features

## 1.1 Product positioning



- HTP is a service platform with a convenient handheld terminal as a portal.
- [HTP](#) (Handheld Terminal Platform) = Handheld device (H2) + SaaS platform.
- Provides pre-sales, in-sales and after-sales service.
- Integrates store and online functions, users and after-sales, users and R&D, and reduces communication costs, in order to efficiently solve problems.
- It can also be used as a data collection and management platform for management of vehicle data, factory spare parts, offline inventory, etc.

## 1.2 Features

Compared with H1, this handheld terminal platform has a completely different technical architecture, which can fully implement online service management and expansion. It also has a flexible, user-friendly interface that can be customized as needed.

- **User-friendly interface:** Terminal data is clearly displayed, more data has been added, and replication of interface data is available.
- **Easy to extend:** The terminal application can be automatically updated according to future demand.

- **Permissions management:** The terminal and backend functions implement management of accounts and levels.
- **Improved efficiency:** The integration of the terminal and the SaaS platform allows for rapid online business flow and data storage. For example, log capture and submission of work orders are available offline, and backend flow and analysis of downloaded logs are available online.

## 2. Devices

### 2.1. Accessories

H2 Smart Client\*1  
Charger\*1  
Adapter\*1  
Double-ended type-C USB cable\*1  
USB3.0 adapter cable\*1

### 2.2. Adapter specifications and instructions

The adapter is mainly used to connect the H2 intelligent diagnostic device to forward the 485 and CAN data of the vehicle.

No need to use adapter and cable to connect the H2 intelligent diagnostic device and K electric scooter, they can be connected via bluetooth. (Please refer to 3.5.3 Bluetooth Connection)

### 2.3. Adapter LED status instructions

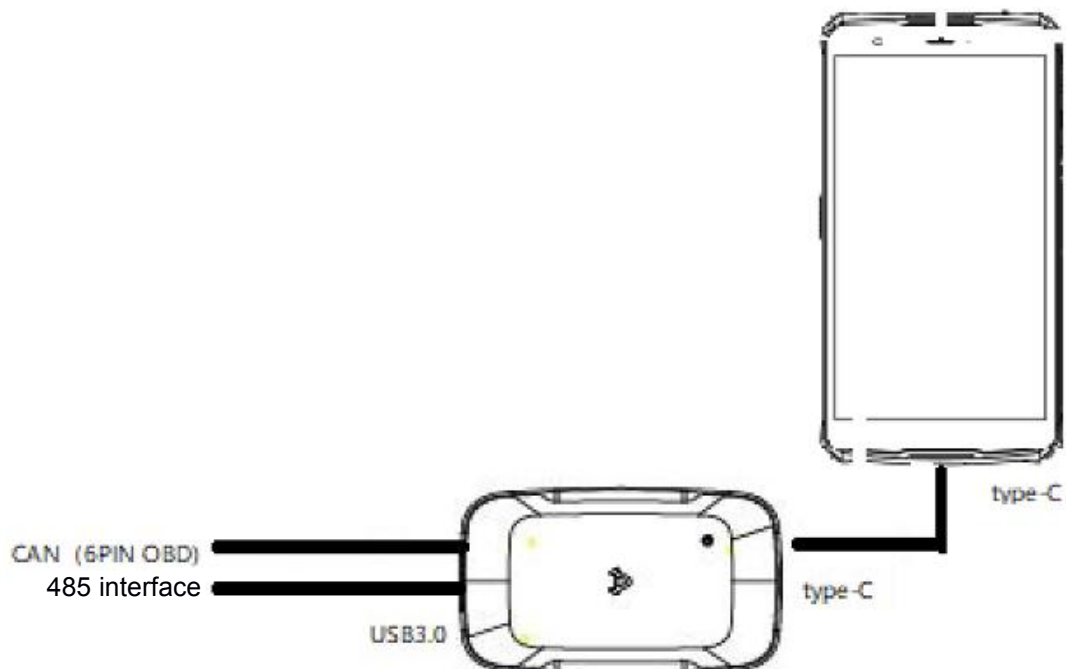
- **Connect the vehicle**

- (1) When the input power is 8~72V, the power supply is normal and the LED light stays on
- (2) When the input power is <8V, the power supply is abnormal and LED light goes out

- **Data transmission** (activate data transmission function)

- (1) Normal data transmission: The flashing frequency of the LED light changes according to the speed of transmission
- (2) No data received: Flashing at a fixed frequency, 1s on and 1s off

### 2.4. Connection diagram (485&CAN)





### 3. Operation instructions

#### 3.1. Sign up

H2 accounts are mainly registered through applications. Users can send their basic account information to the administrator by email. This includes their user name, password, role, email, phone, nickname, H2 ID, store address and department.

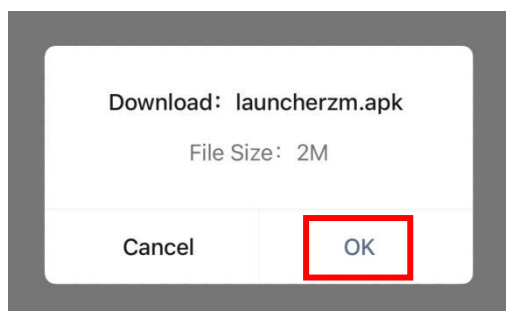
After the application has been made, the system administrator will send back the account login information by email.

If you do not have an NIU Academy account yet, or experience troubles login, please contact us at [academy@niu.com](mailto:academy@niu.com).

#### 3.2. Preparation

In order to make H2 as a normal Android phone, you must follow these steps:

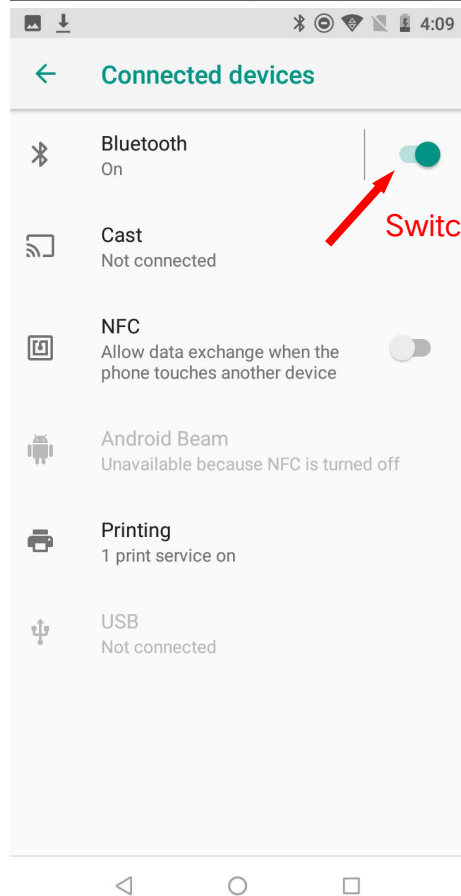
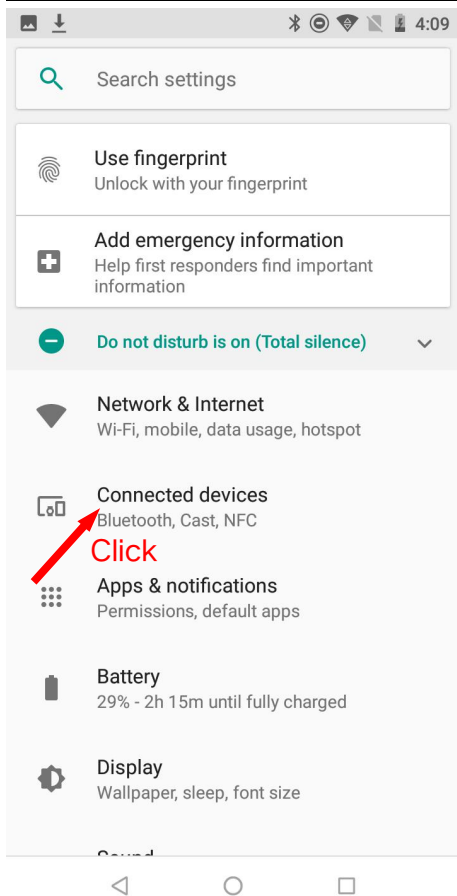
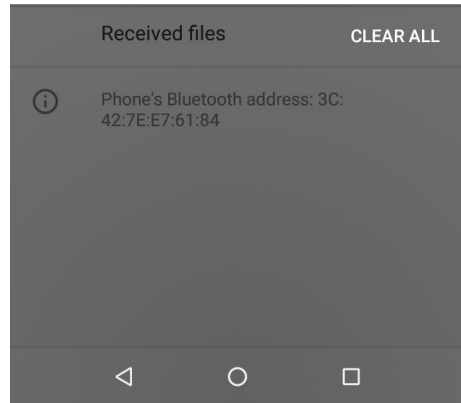
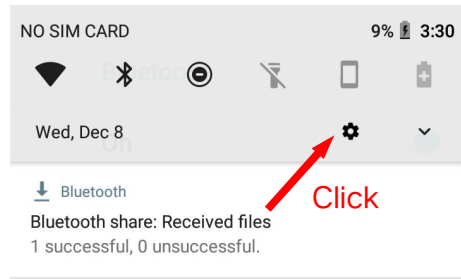
**Step 1:** Use one Android phone to scan this QR Code, then download and install the launcherzm.apk on H2.

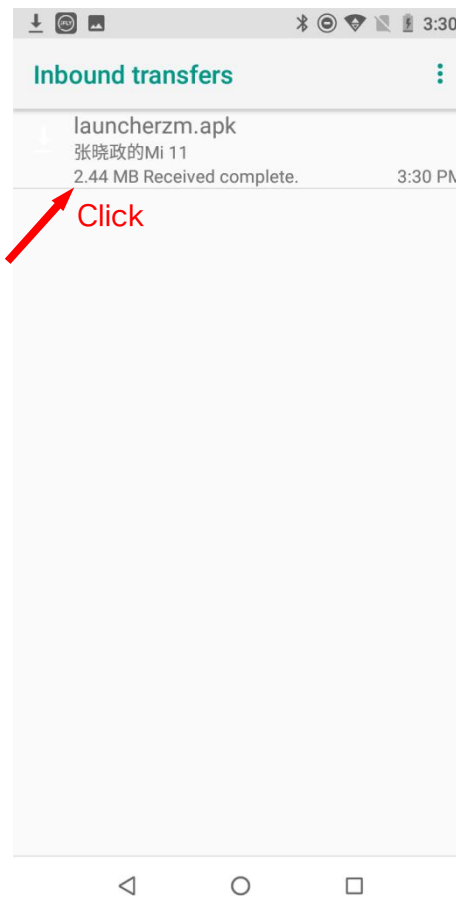
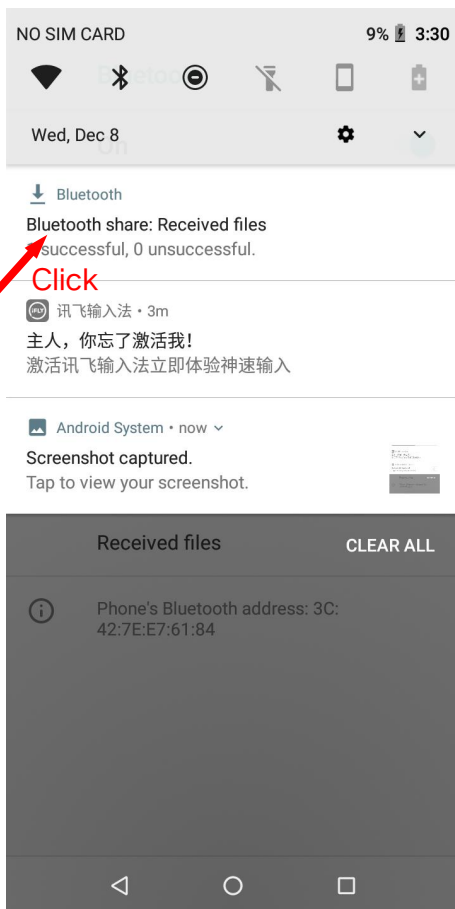
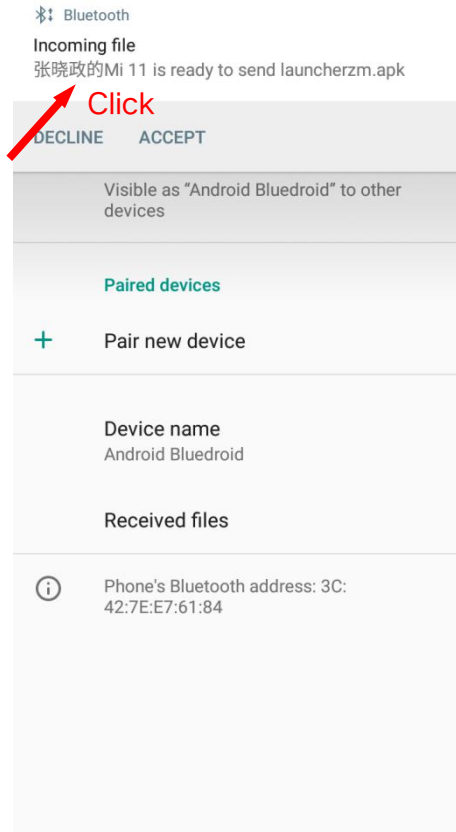
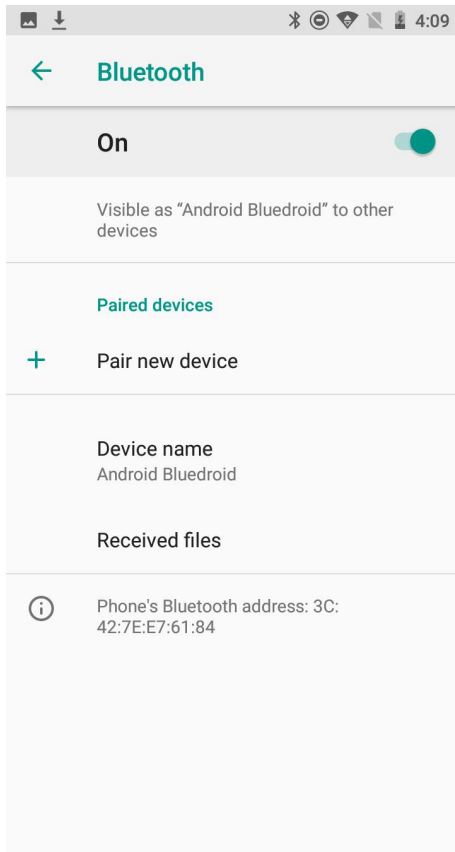


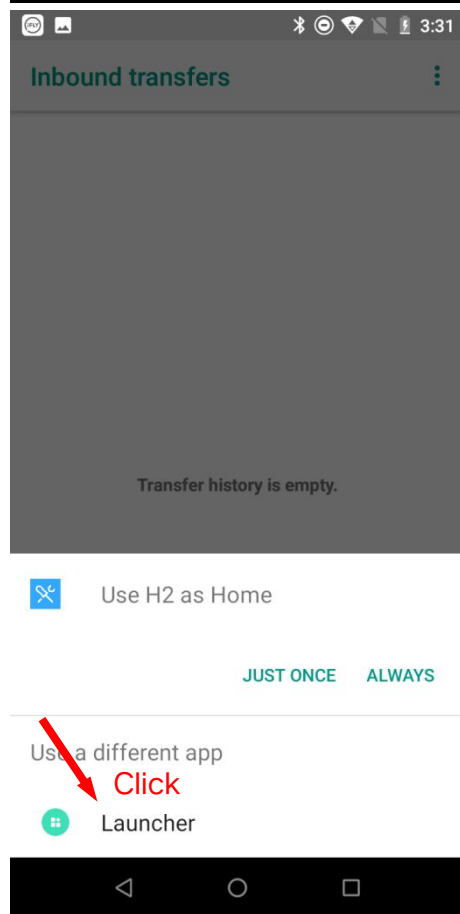
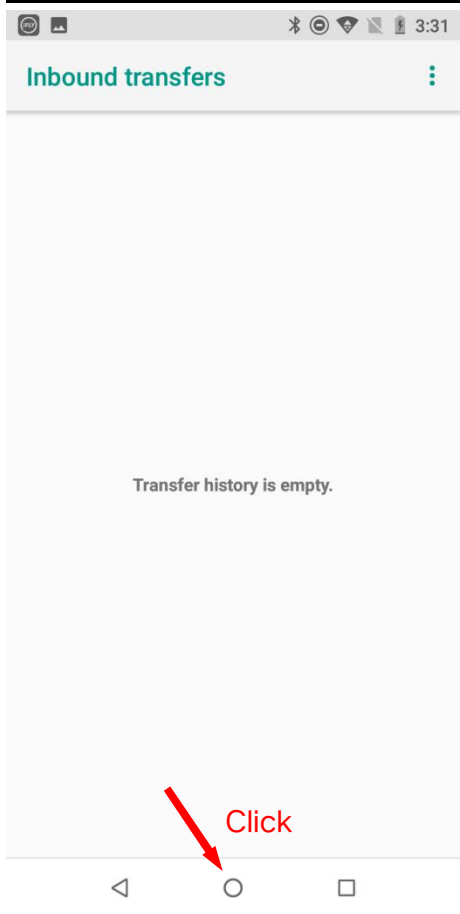
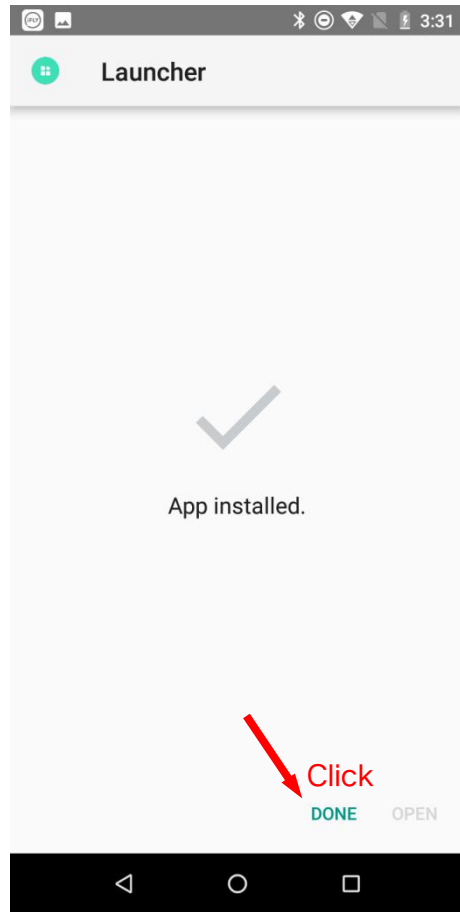
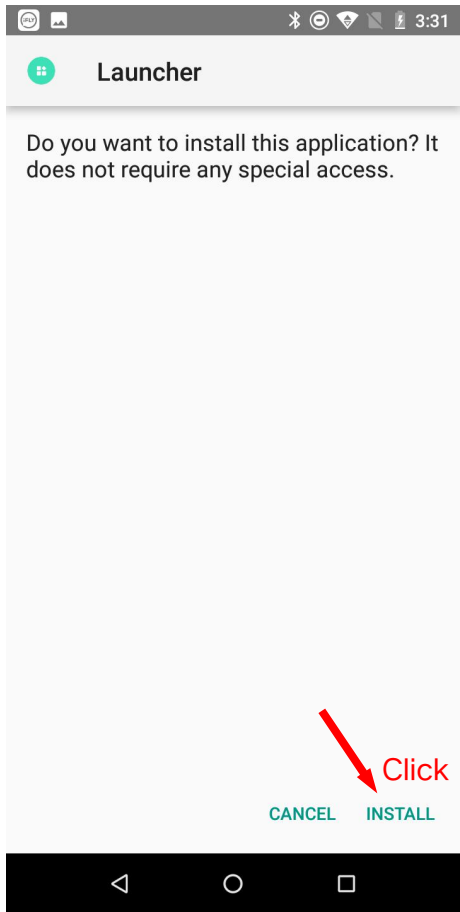
**Step 2:** Open the Bluetooth option of H2 and Android phone, then transfer this apk to H2.

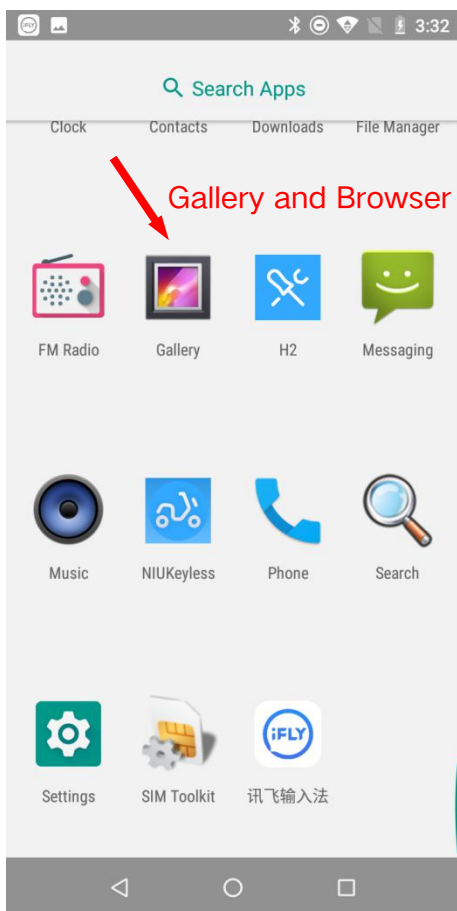
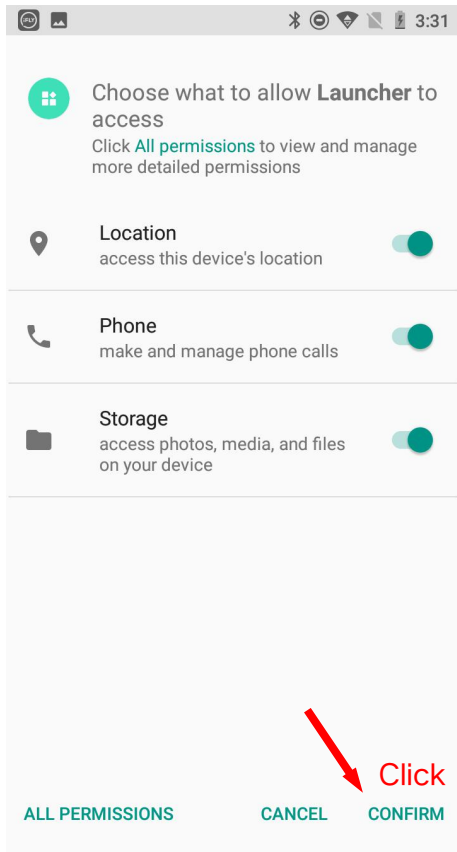
**Step 3:** Accept and download launcherzm.apk on H2 and follow these steps shown below:

**PS:** If your want to change your system language of H2, please refer to [ 5.1. How to change system language? ] first.





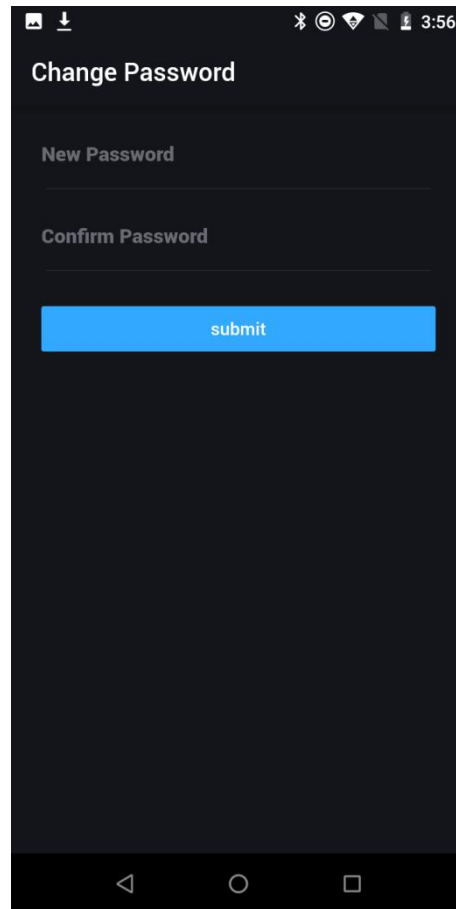
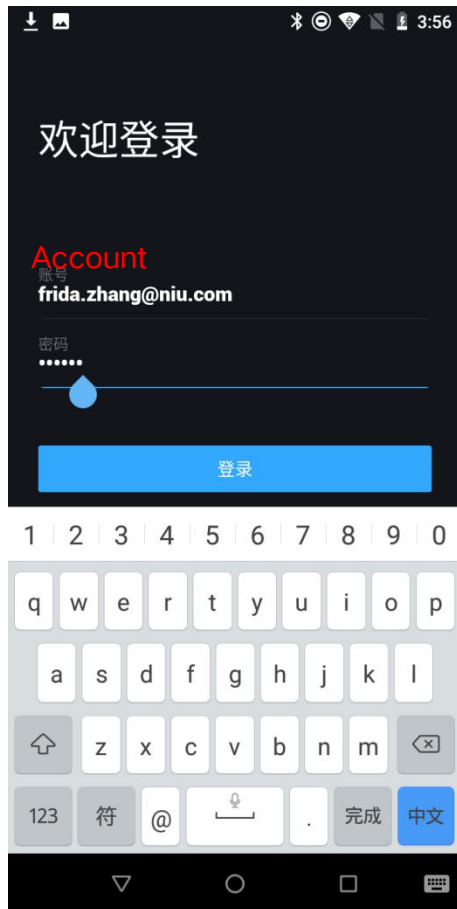


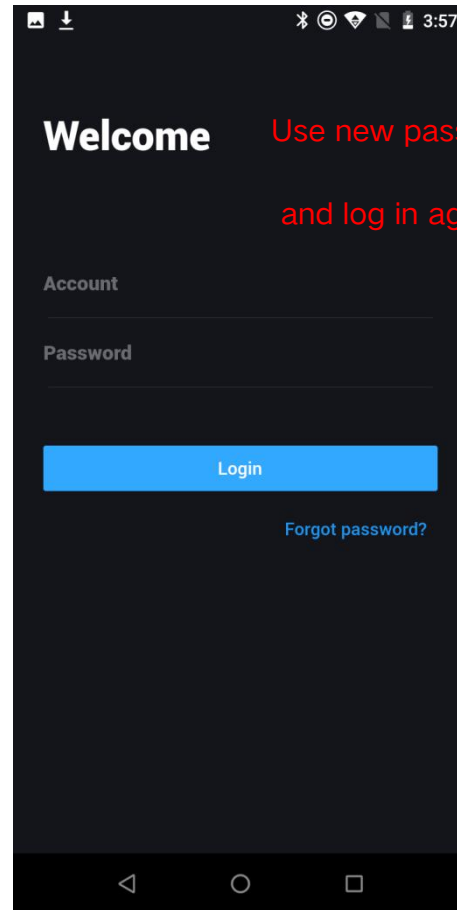
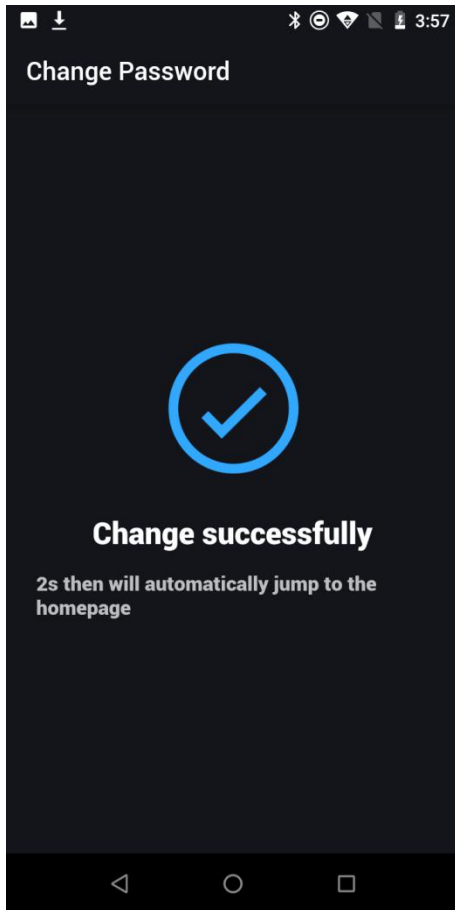


### 3.3. Login and personal center

Please connect to a wireless network, WIFI, or install a SIM card before use. Enter your account number and password.

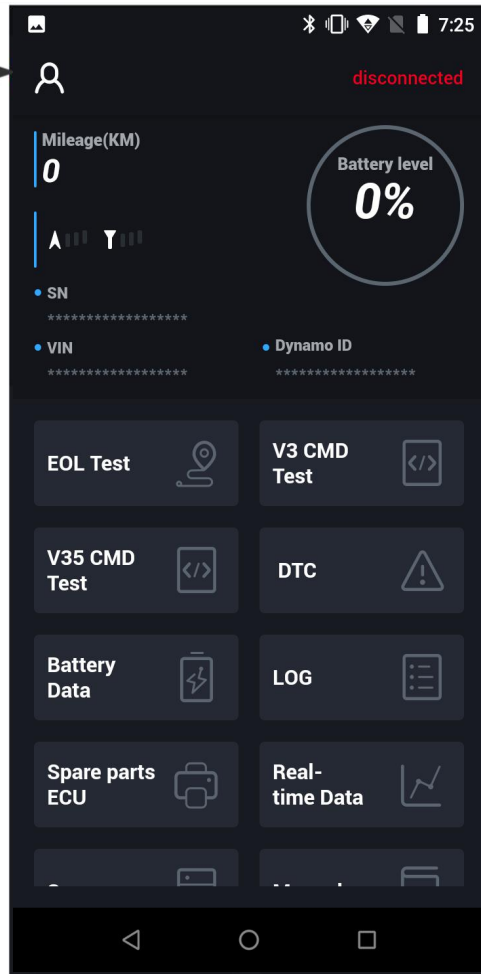
For account security, the password will be forced to change when logging in for the first time.





## H2 homepage:

Personal center  
and settings portal



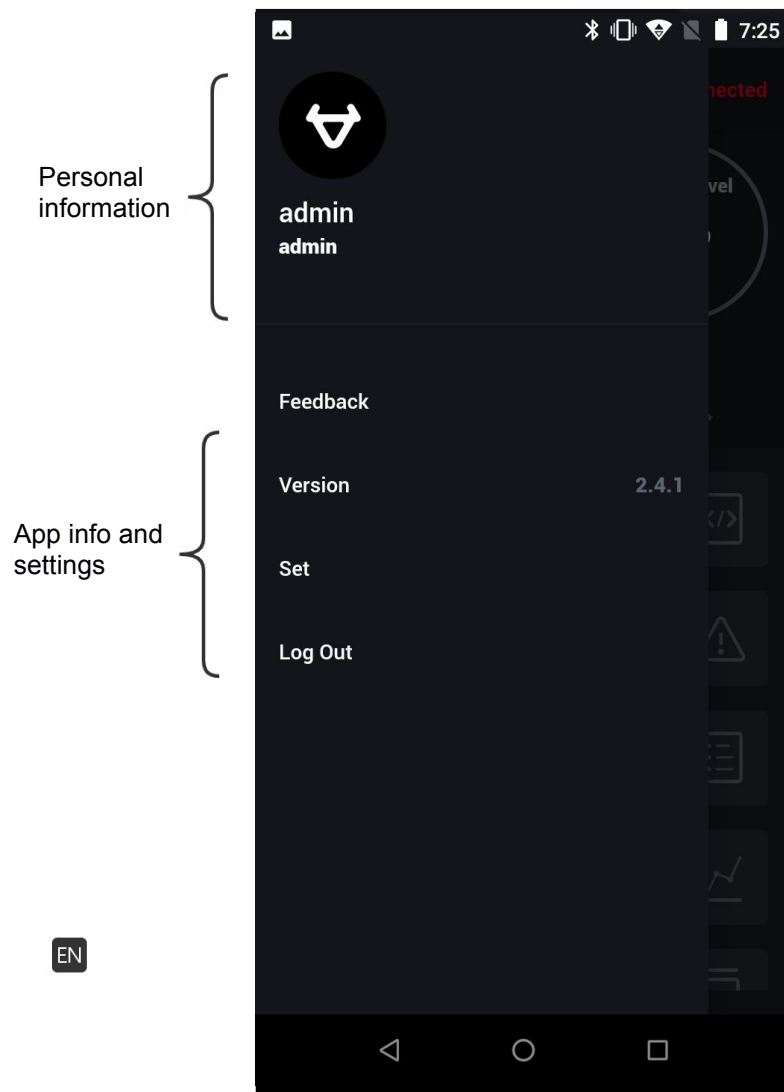
Device connection  
status

Basic vehicle  
information

Function list area



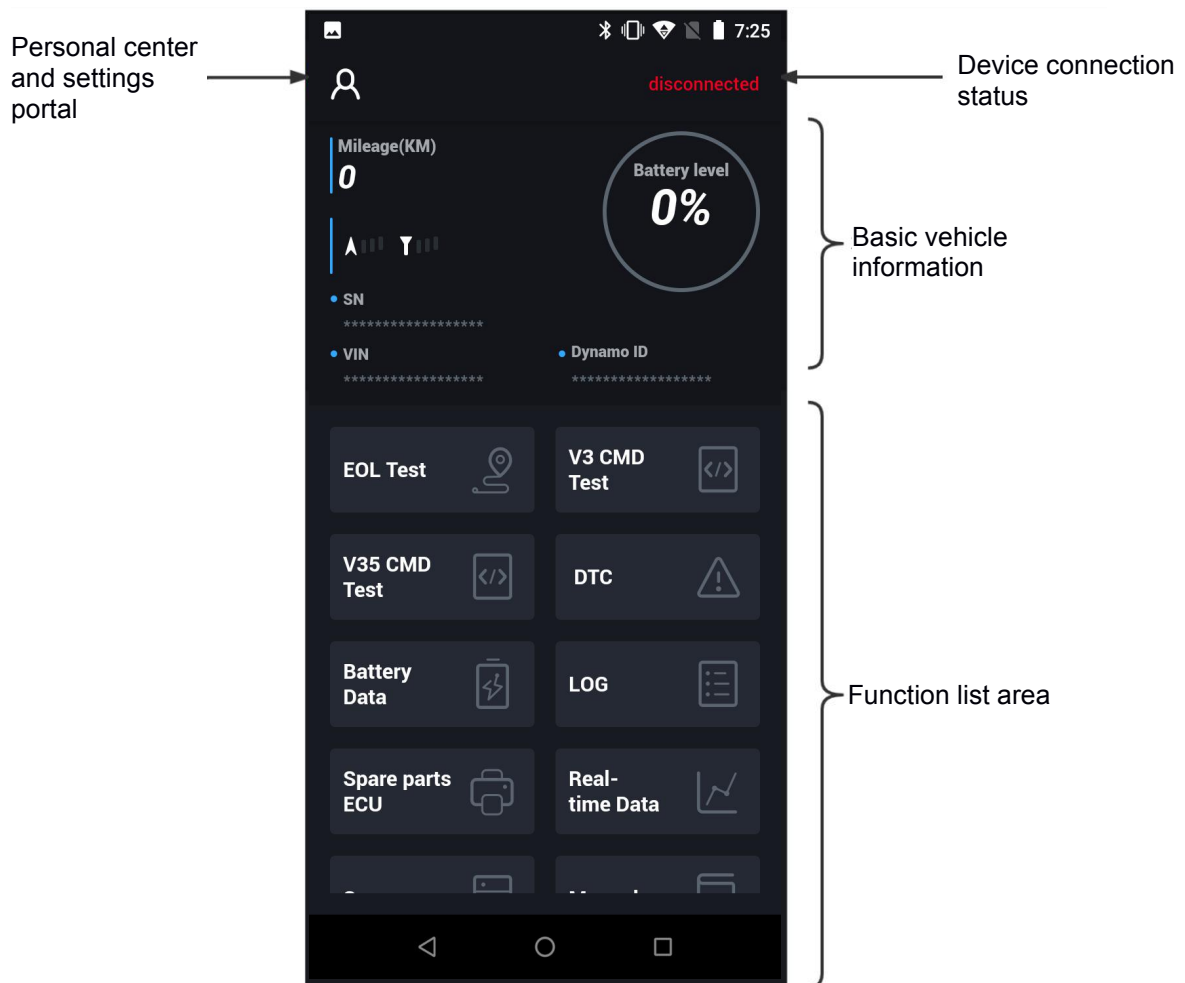
Personal center:



### 3.4. Roles and permissions

H2 function permissions are uniformly assigned by the administrator in the backend. Please apply for roles and permissions through your supervisor or H2 administrator.

H2 homepage function permissions portal:



### 3.5. Connection & Protocol Interface

#### 3.5.1 485&CAN Connection

Please refer to Section [2.4 Connection diagram] for the connection method. Do not forget to turn on the OTG charger option in settings.

The upper right corner will change from red [disconnected] to blue [connected] after successful connection.

After you agree to connect, the homepage will display basic information about the vehicle, including its SN, VIN, motor number, electric quantity, and mileage.

If this data is not displayed, please refer to Section [4. Anomaly detection].

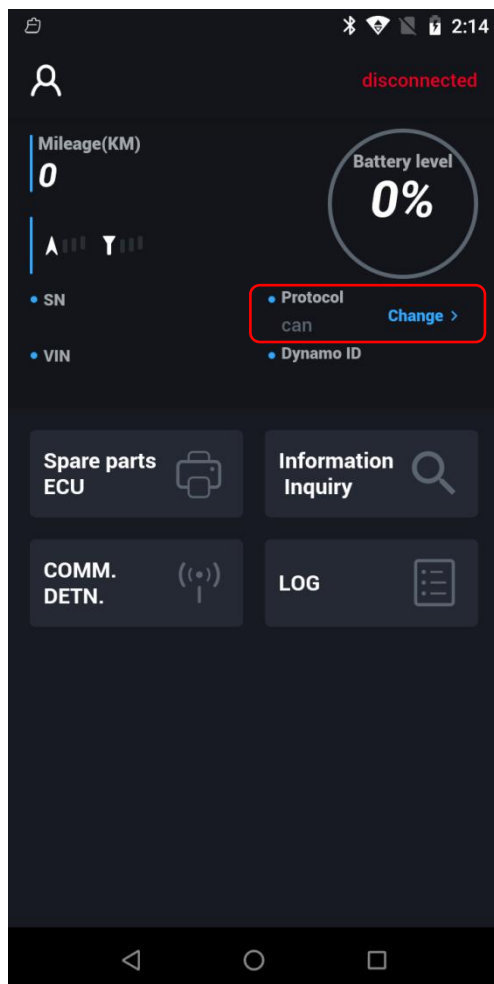
### 3.5.2 Protocol Interface

Before you use the function shown on H2 homepage, please follow the table below and check the protocol first.

Protocol & Model Table:

Model	Protocol
N / M / U	485
MGT EVO / R1	CAN
K Electric Scooter	Bluetooth
GOVA	SIF

Protocol Switching Interface:



### 3.5.3 Bluetooth Connection

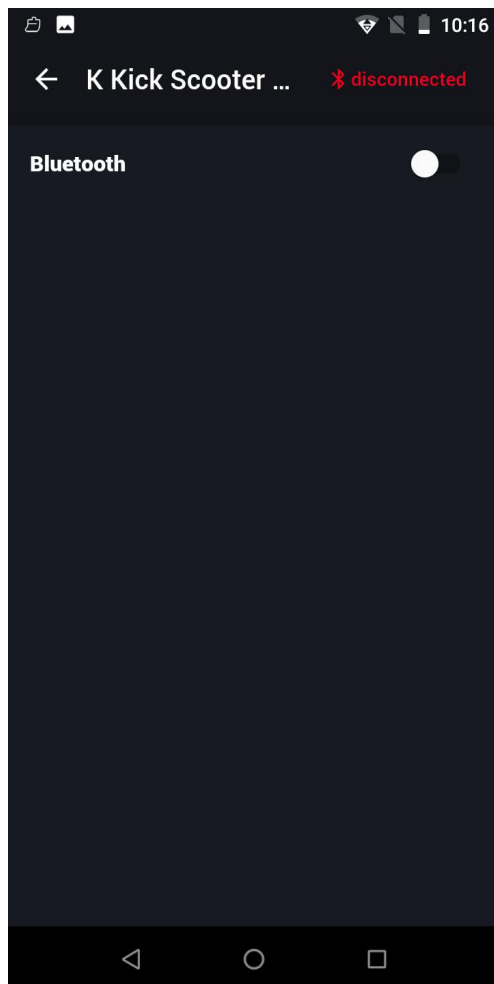
**Step 1:** Turn on the scooter.

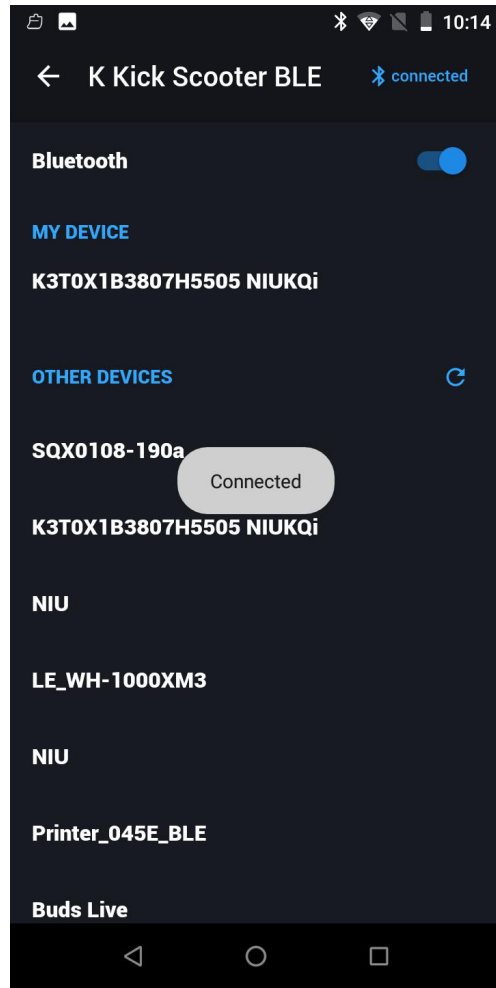
**Step 2:** Switch the protocol to Bluetooth. Press the upper right corner [disconnected] and connect scooter according to VIN via bluetooth.

**Step 3:** After the connection is successful, go back to H2 homepage and start to use it!

Note:

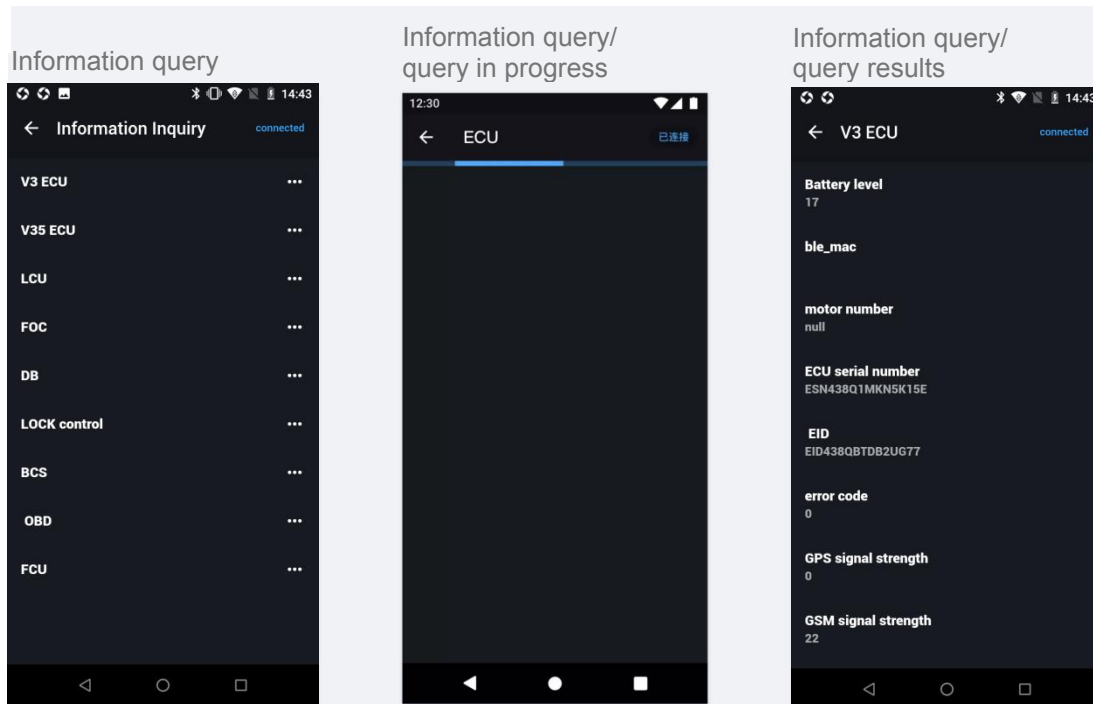
1. If H2 has been connected to a scooter via Bluetooth, click other vehicles VIN on the Bluetooth connection page, and the Bluetooth will automatically disconnect from the current and connect to other Bluetooth;
2. If H2 Bluetooth is not connected to any scooter, click any module to automatically jump to the Bluetooth connection page to connect.





### 3.6. Information query

Information query is used to detect and check basic device data, such as: V4 ECU, V3 ECU, V35 ECU, LCU light control, FOC controller, DB, LOCK, BCS, ITE, OBD, BCCU.



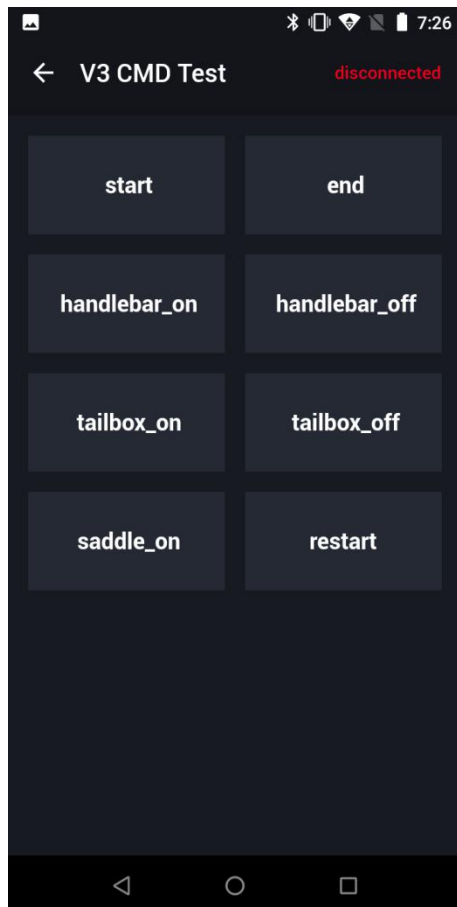
### 3.7. FC query

You can detect and inspect the FC using the FC query.

### 3.8. V3 command test

The V3 command test can be used to issue commands to the device, and perform detections and inspections on the V3 rental version of the ECU. The commands are as follows:

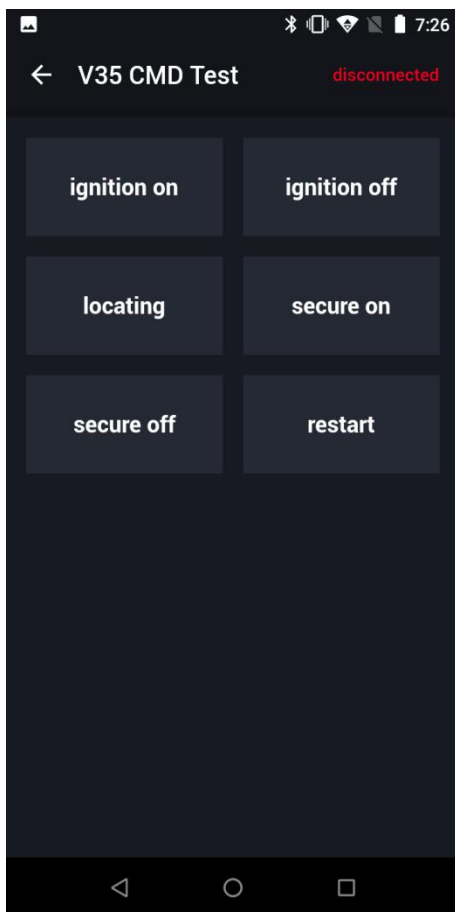
Command name	Command meaning
Start	Turn the power on
End	Turn the power off
handlebar_on	Lock the handlebar
handlebar_off	Unlock the handlebar
tailbox_on	Open the tailbox
tailbox_off	Lock the tailbox
saddle_on	Open the saddle
restart	Reboot the ECU



### 3.9. V35 command test

The V35 command test module can be used to issue V35 command tests to the ECU of V35 version, so as to detect and inspect the V35 version of the vehicle. The commands are as follows:

Command name	Command meaning
ignition_on	Turn the power on
ignition_off	Turn the power off
locating	Find the location of the scooter
secure_on	Activate the alarm system and motor lock
secure_off	Deactivate the alarm system and motor lock
Restart	Reboot the ECU





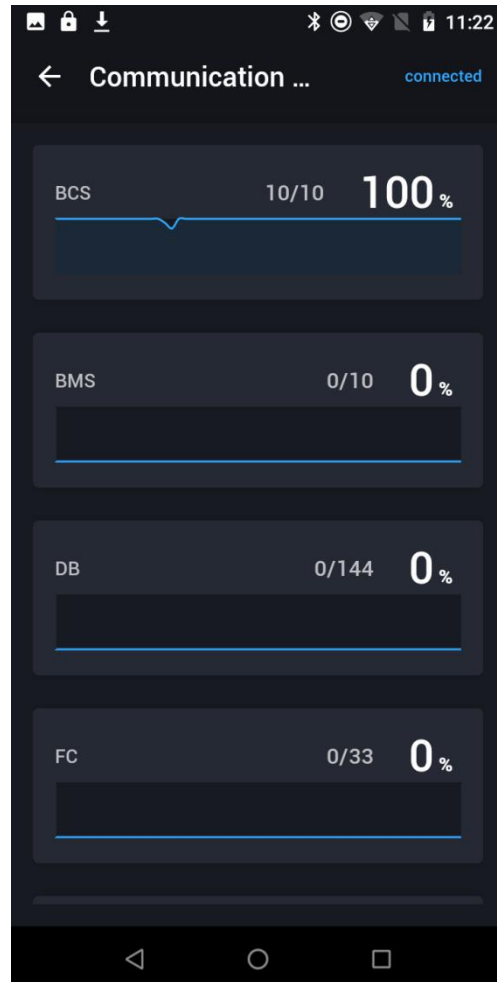
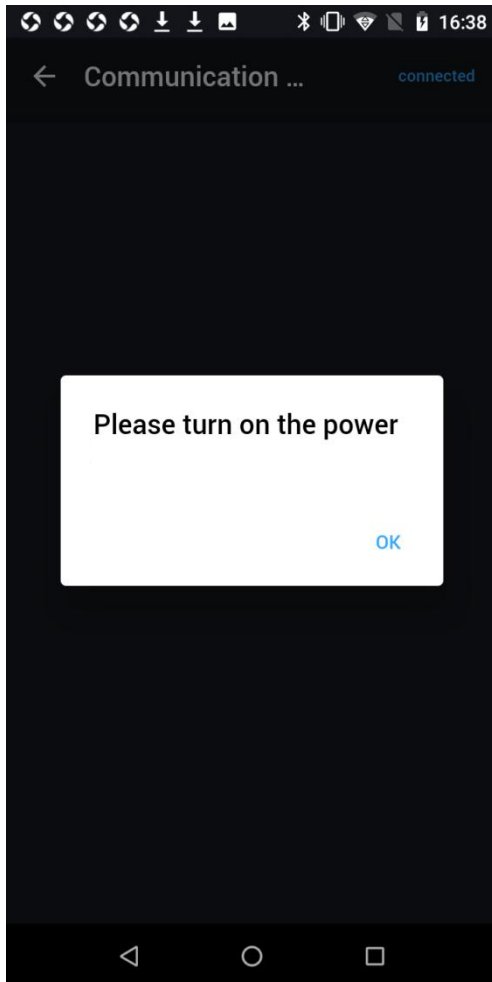
### 3.10. Communication Detection (COMM. DETN.)

#### 3.10.1 Function for 485 Protocol

Module function: Detect the device communication volume between the ECU and each component.

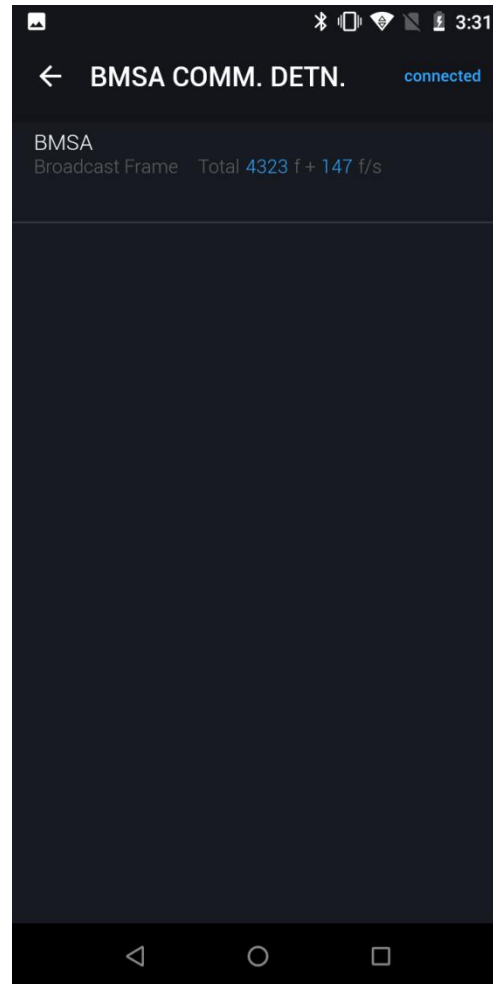
Before navigating to the statistics screen, please make sure that the electric door of the vehicle has been unlocked. If the electric door is locked, there will be no data available on the bus for statistics.

ECU --> DB Messages Number denotes the total amount of data sent by the ECU to the DB, DB --> ECU Messages Number represents the total amount of data sent back to the ECU by the DB, and Communication Response Rate indicates the success rate of the DB's responses to the ECU's data requests. H2 performs a CS check on the data package on the bus. Checks will only be counted if they are successful.



### 3.10.2 Function for CAN Protocol

Module function: Detect the device communication volume such as broadcast frame between each two components.

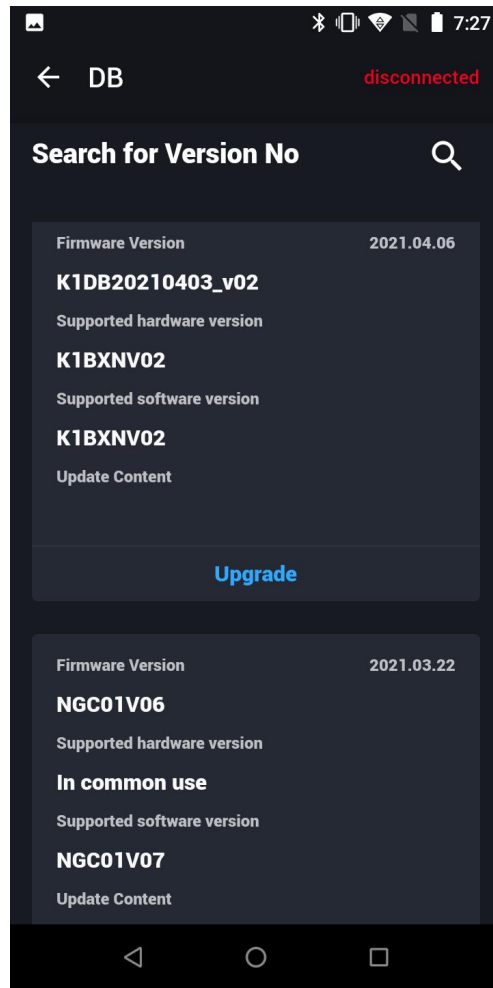
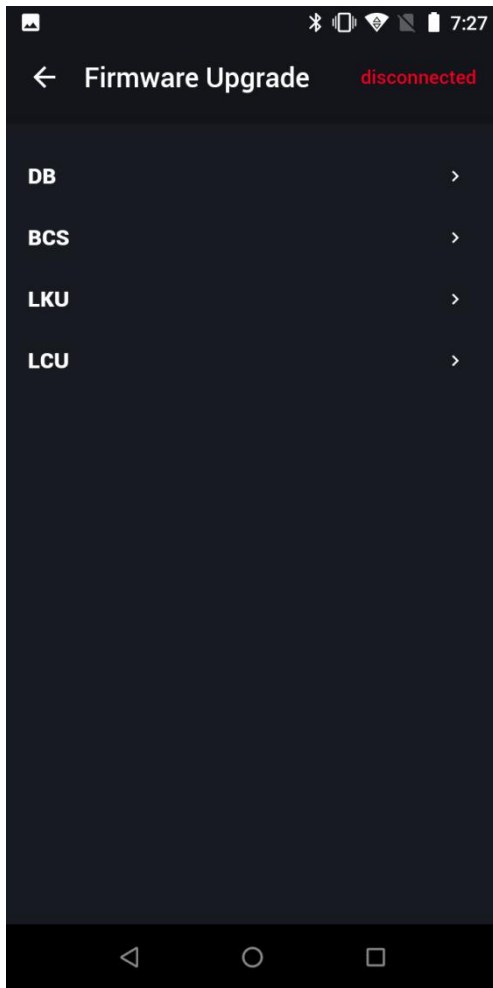


### 3.11. Firmware upgrade

Firmware can be updated to any version in the wired mode, please refer to the [Supported hardware version] and [Supported software version] to see whether your firmware can support updating.

Method: Plug the adapter cable directly into the battery.

Update-able firmware includes: DB ,BCS, LK, LCU.



### 3.12. ECU OTA

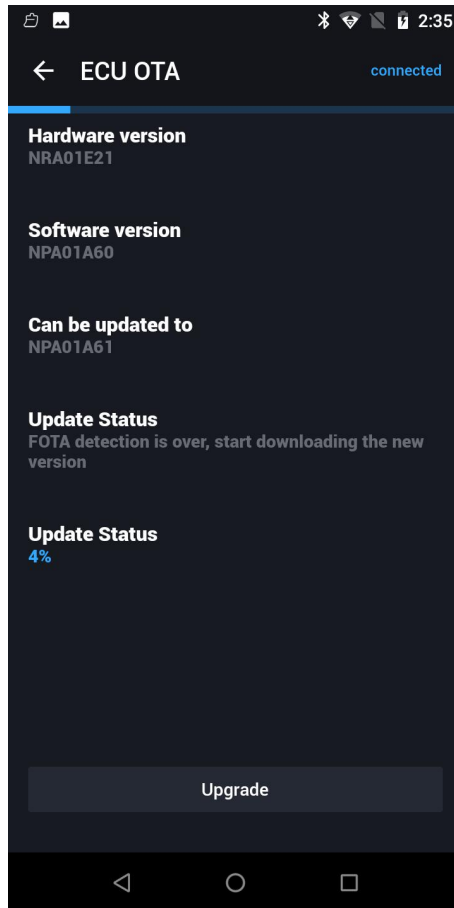
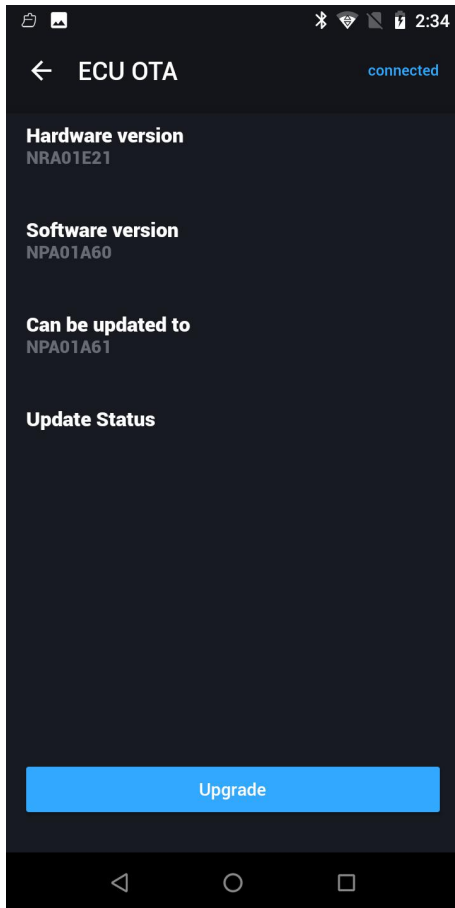
Support (V35\V35s\V3\U3LTE) ECU for updating.

Operation process:

**Step1:** Click the [ECU OTA] module to go to the model selection page, and then click U3LTE, V3, V35, V35s to start.

**Step2:** H2 will automatically detect the ECU software and hardware version and display whether there is a new version for ECU update. Click [Update] to start the update, and [Update Status] displays the real-time update progress.

**Step3:** If update failed, please try to update again.



### 3.13. OTA

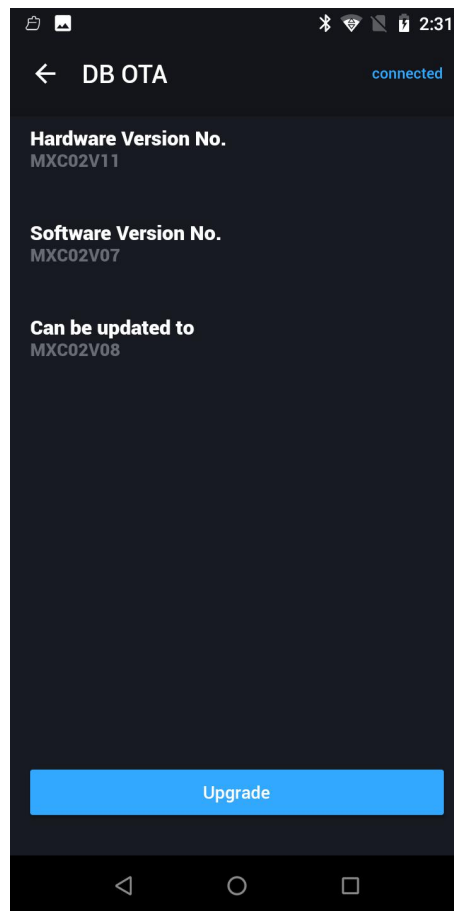
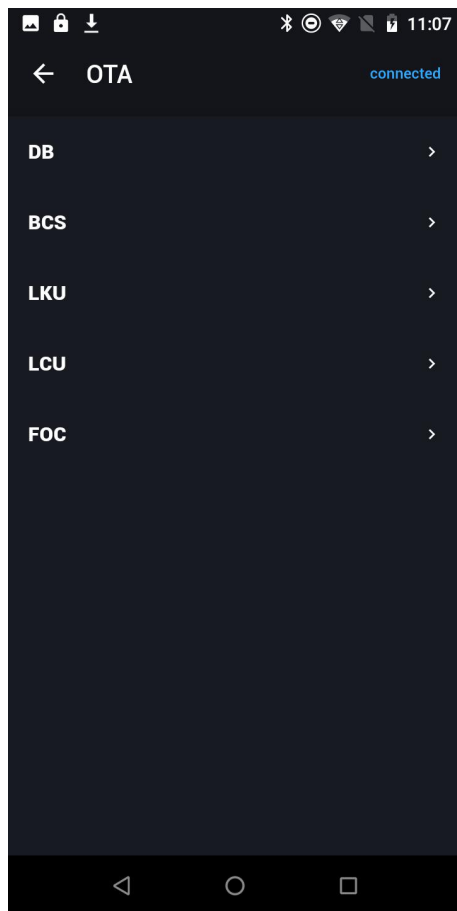
Support component (except for ECU) for updating.

Operation process:

**Step1:** Click the [OTA] module to go to the component selection page, and then click one to start.

**Step2:** H2 will automatically detect the component software and hardware version and display whether there is a new version for firmware update. Click [Update] to start the update, and [Update Status] displays the real-time update progress.

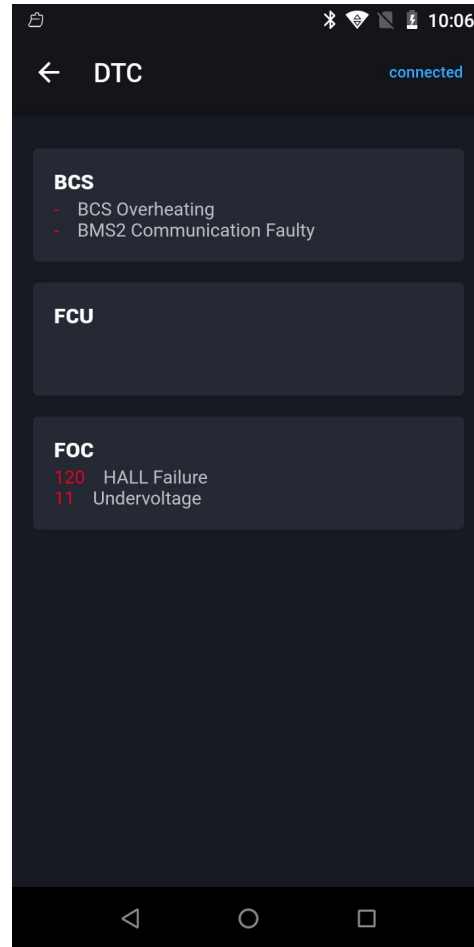
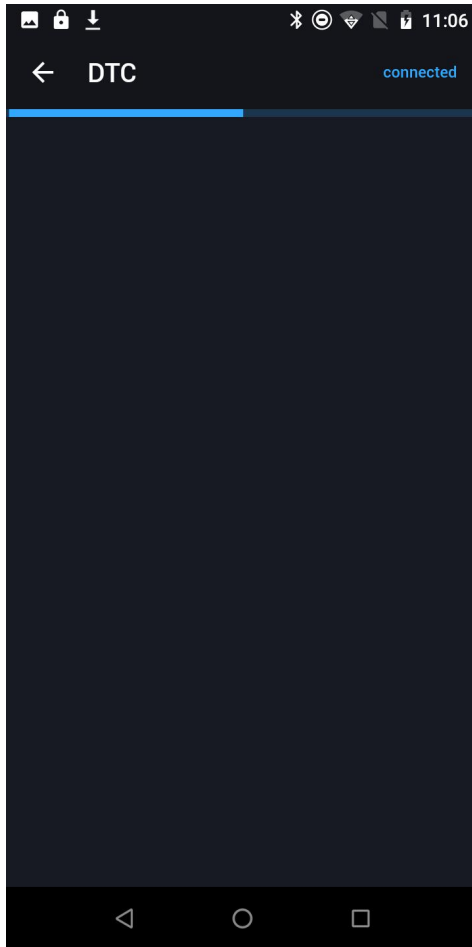
**Step3:** If update failed, please try to update again.



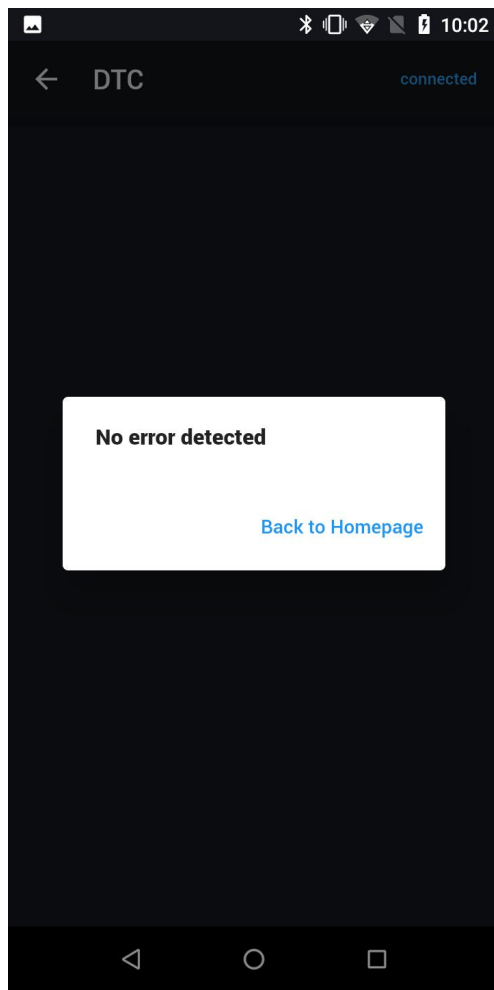
### 3.14. DTC

DTC is the abbreviation of Diagnostic Trouble Code, which is used to diagnose the fault code of NIU electric vehicle, and assist after-sales personnel to detect the vehicle status, troubleshoot and determine the problem.

Operation process: H2 homepage, click [DTC] module, H2 will automatically detect vehicle fault information, as shown in the following figure:



No failure detected:

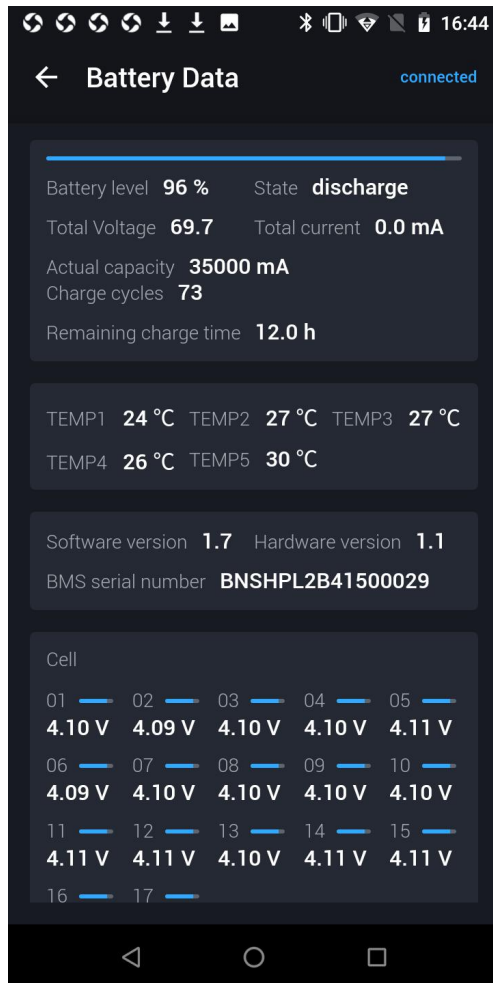


### 3.15. Battery data

The battery data query can be used for N/U/M series vehicle batteries.

Step 1: Plug the adapter cable directly into the battery.

Step 2: Click the [Battery Data] module on H2 to display detailed battery data.



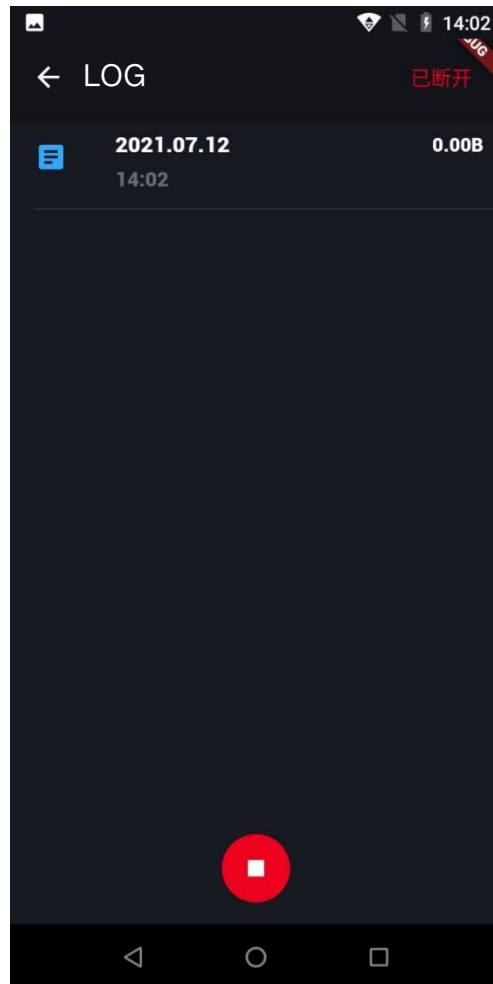
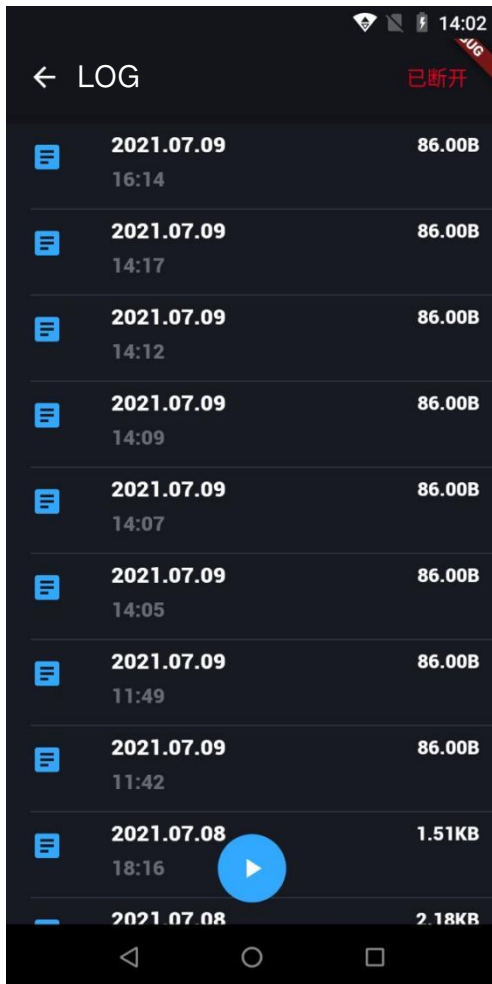


### 3.16. Log

H2 can be used to capture the vehicle fault log, submit it to the backend for R&D/after-sales personnel's reference, and quickly process the vehicle fault through the log circulation system in the backend.

Method: On the H2 homepage, tap [Log], then tap the blue Start button to start capturing the log. Tap the red Stop button to stop capturing the log and automatically switch to the Submission page. Fill in the content and tap Submit. The log will then be submitted to the H2 backend for processing by after-sales or R&D personnel.

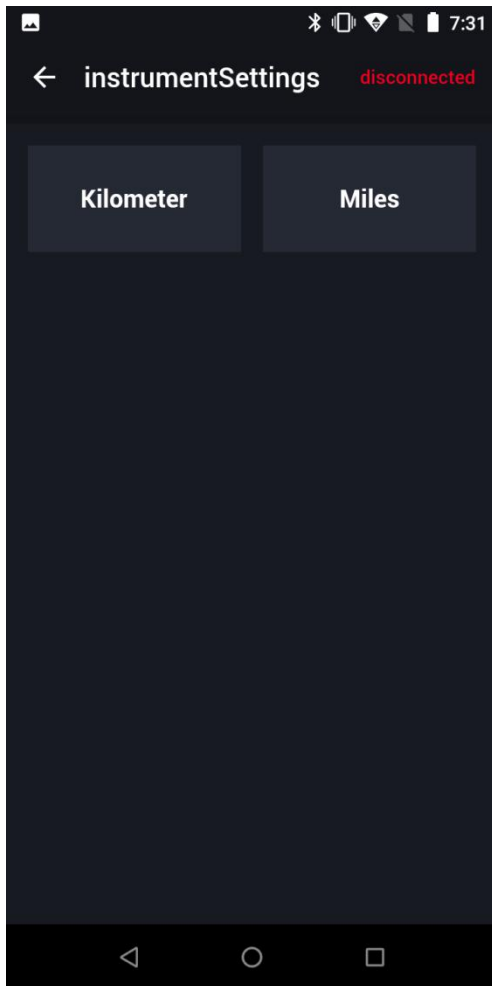
PS: If an error or a forced exit occurs during the log-capturing process, the captured logs will not be saved, and must be re-captured.



### 3.17. Instrument Settings

The DB can display miles or kilometers.

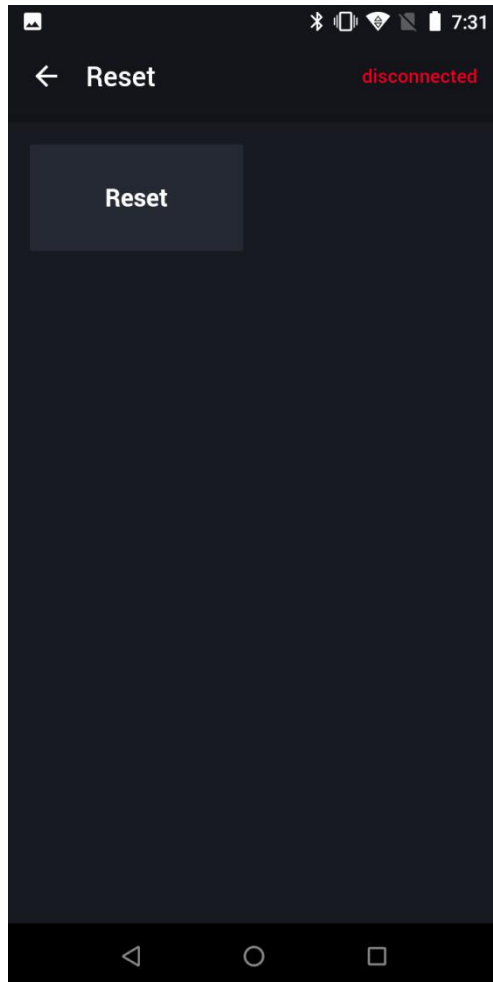
Step 1: On the H2 homepage, click [Instrument Settings] to switch between kilometers and miles.



### 3.18. Restore factory settings

The restore factory settings function can restore V3\W35 ECUs to their factory settings.

Step 1: on the H2 homepage, tap [Reset].



### 3.19. Copy text

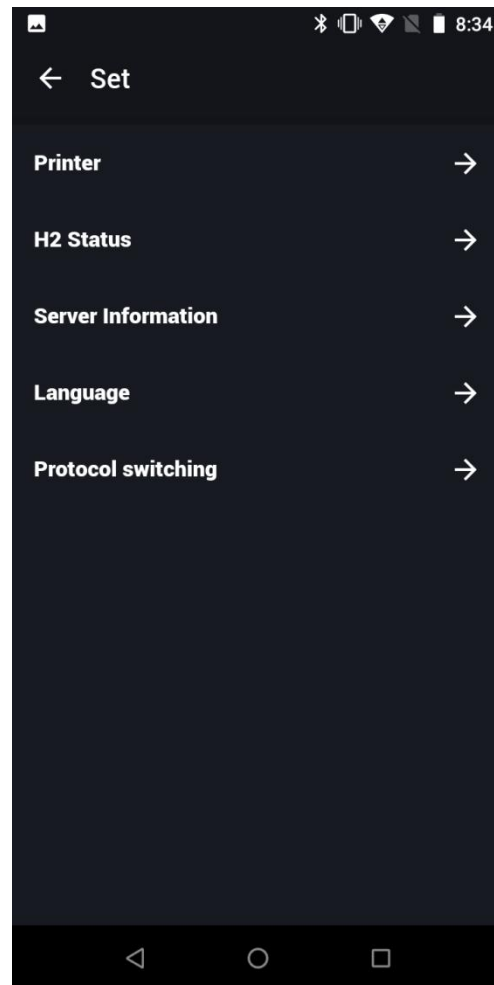
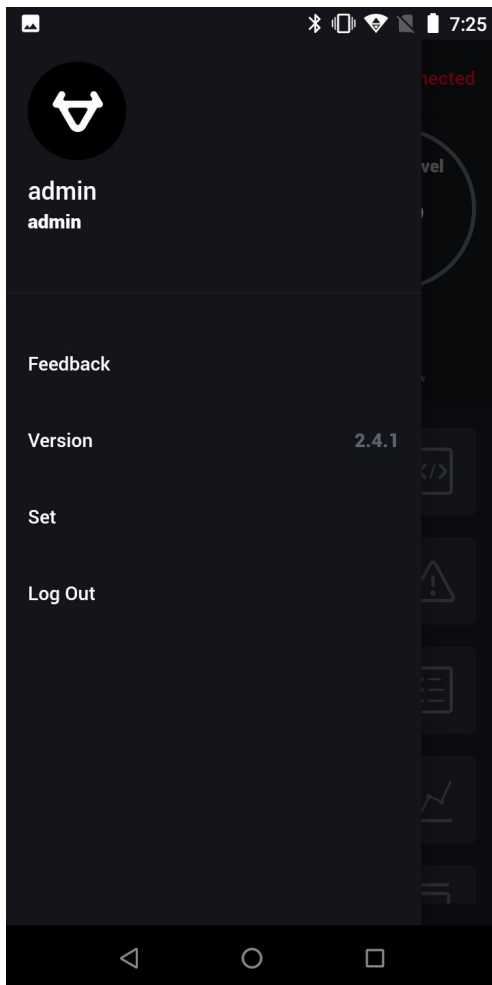
Press and hold the text in the query data to generate a QR code or send it to the mailbox of the registered account. This facilitates the transmission of information.

### 3.20. Settings

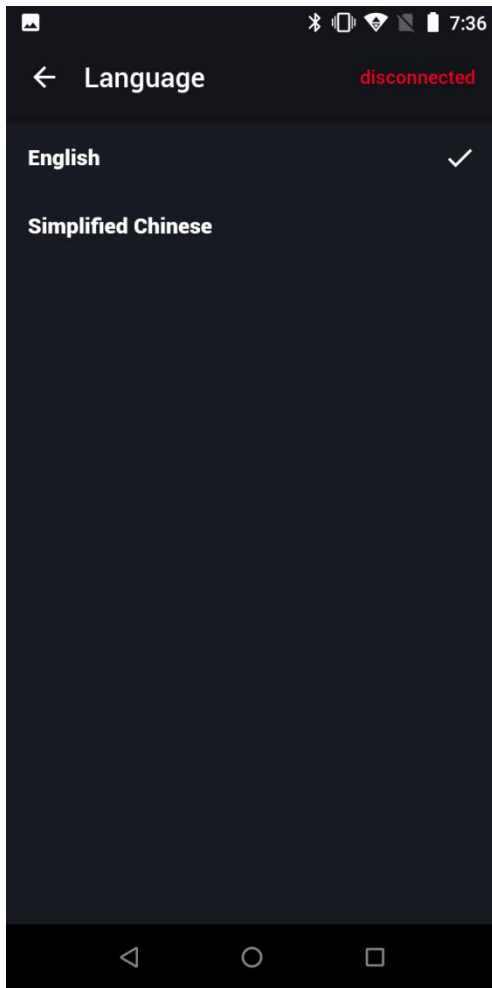
The functions on the settings page include Bluetooth printer connection, H2 status information, server information, multi-language switching, and protocol switching.

1. H2 status information displays the H2 ID, socket connection status, network status, MQTT connection status, USB connection status, voltage, serial port information, bus protocol, and AT software version.
2. Server information displays the HTTP API, socket server, and MQTT API.
3. Multi-language switching: Switch between Chinese and English.
4. Protocol switching: Switch between CAN\485\SIF protocols.

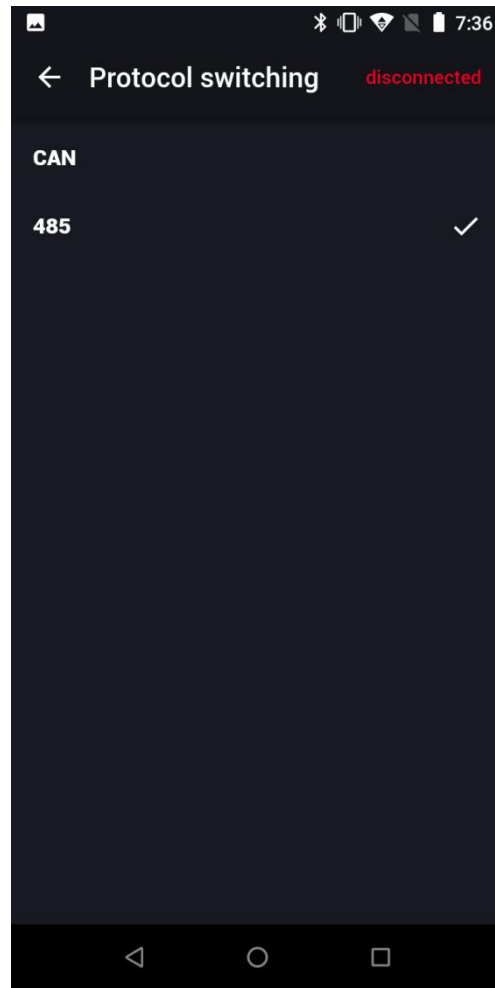
Protocol	Model
485	N   M   U
CAN	R   MGT EVO
SIF	GOVA



### Multi-language switching:

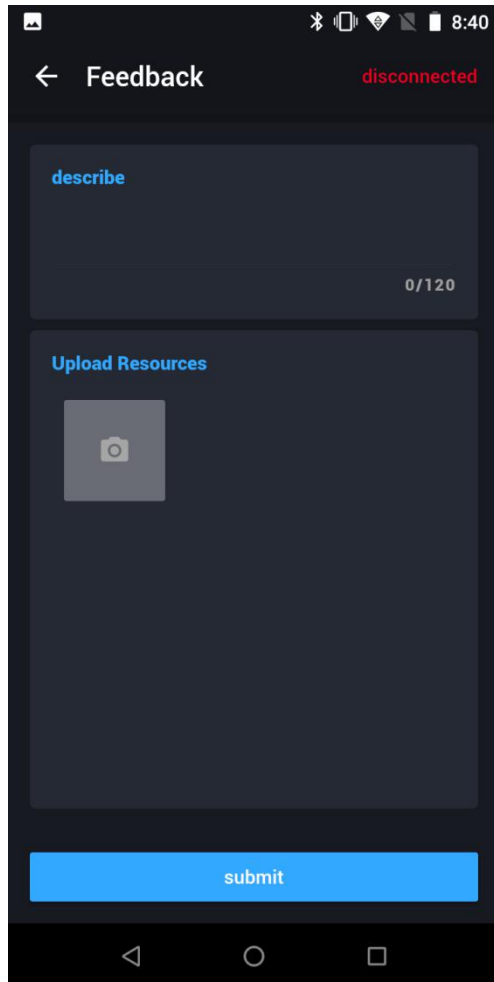


### Protocol switching:



### 3.21. Upload feedback on the app

Feedback on H2 (text description + pictures & videos) can be uploaded to the backend for the reference of R&D personnel. H2 can hereby be updated and iterated in a timely manner.

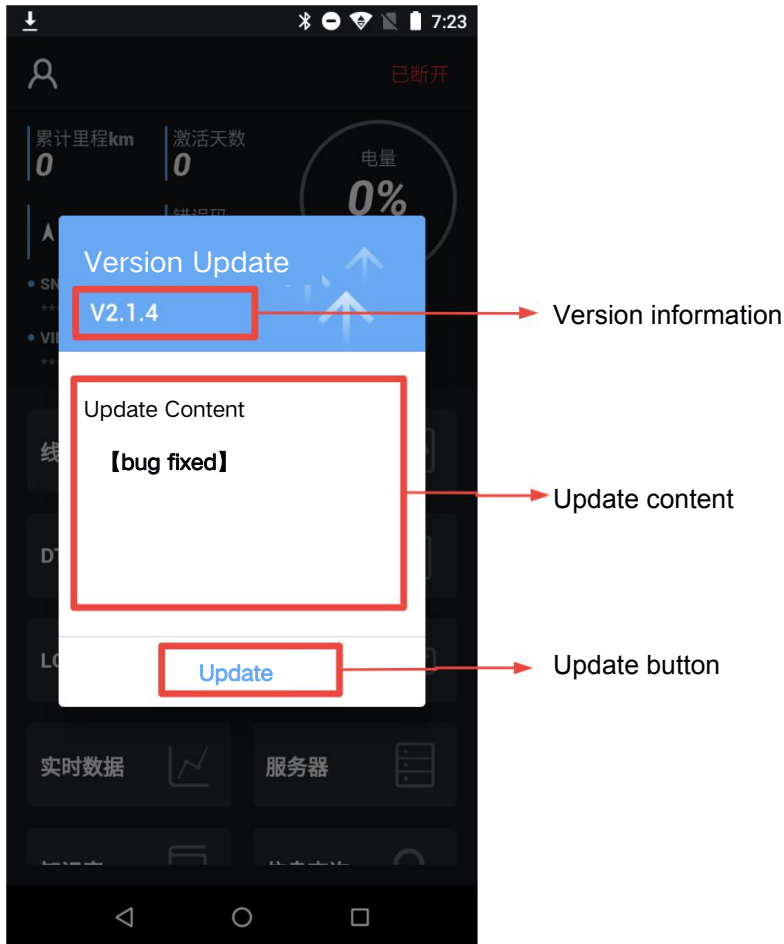


Push these two buttons for 2 second to create the screen-shot of H2.



### 3.22. Version updates

If there are any available app updated (later than version 2.2.0), an update prompt will automatically appear.



### 3.23. Delete account

H2 does not allow users to delete their own accounts. Please contact the superior or system administrator to disable your account.

### 3.24. Change your password

Please contact the system administrator. The password modification function will be launched later. Please look out for app update push notifications.



## 4. Anomaly detection

### 4.1. Inquiry issues

If you encounter a situation where the data cannot be queried, it may be due to the following reasons:

- Response timeout
  - Solution: Retry several times.
- OTG is not turned on
  - Solution: Unplug and replug the USB cable, turn on the OTG in settings, and tap Agree.
- USB cable failure
  - Solution: Please check that both ends of the USB cable and adapter are normal. If the connection is loose or there is a burning smell, replace your device.
- Device crashed
  - Solution: Force root the firmware. If this is unsuccessful, try again, or replace your device.

## 5. FAQs

### 5.1. How to change system language?

Follow these steps to change your H2 system language:

