PROFESSIONAL MULTI-BRAND DIAGNOSTIC TOOL

FCAR F9S

User manual



Tablet, FCAR software and FV400 / FV500 vehicle communication interfaces: setup, diagnosis, service functions and reports.

FCAR Europe
OFFICIAL FCAR IMPORTER FOR EUROPE
FCAREUROPE.COM

FCAR F9S

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FCAR F9S

How to use this manual

This manual covers the whole FCAR F9S range. All models share the same tablet and the same software (parts 1 and 2); what changes is the vehicle communication interface (VCI) included with each model:

Model	VCI included	Vehicles	Parts of this manual
F9S-W	FV400	Combustion and hybrid passenger cars	1, 2 and 3
F9S-WE	FV400	Passenger cars, plus electric vehicles and their cables	1, 2 and 3
F9S-D	FV500	Commercial vehicles, diesel engines, agricultural and construction machinery	1, 2 and 4
F9S-G	FV400 + FV500	Passenger cars and commercial vehicles	1, 2, 3 and 4
F9S-GE	FV400 + FV500	Full coverage, electric vehicles and cables included	1, 2, 3 and 4

Tip: the screenshots show the software in English; the interface follows the language set in the Personal Center (see part 2).

FCAR F9S

Legal notice

- This manual is intended for use with FCAR products. No part of it may be copied or stored in any form (electronic, mechanical, photocopying, recording or otherwise) without the prior written permission of Shenzhen FCAR Technology Co., Ltd.
- This manual is intended for professional vehicle repair technicians.
- This manual describes the operation of FCAR products only. The company accepts no responsibility for the consequences of applying these procedures to other equipment.
- The company accepts no responsibility for accidents caused by the user or by third parties, nor for costs and expenses arising from damage to the equipment, including its loss, caused by abuse or misuse by the user, by unauthorized modifications or repairs, or by operating the equipment in a manner not in accordance with this manual.
- This manual has been written according to the current configuration and functions of the product, and is subject to change without notice if new configurations or functions are added to the product.

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FCAR F9S

Safety precautions

Tablet care and use

- Do not disassemble the device without authorization.
- Avoid strong impacts to the device.
- Keep the device away from magnetic fields.
- Do not leave the device in a high-temperature environment for long periods.
- Do not press the screen forcefully or touch it with sharp objects.
- Do not clean the device with water or chemical solvents; use a soft, clean cloth and a neutral detergent instead.

Precautions when working on the vehicle

- Follow the standard safety rules of the vehicle repair industry. Take special care to avoid impacts or damage caused by environmental factors such as acidic or alkaline substances, toxic gases or high-pressure environments.
- Vehicle battery fluid contains sulfuric acid, which is corrosive to the skin. While working, avoid direct contact with it and, in particular, take care that it does not splash into your eyes. Keep it away from fire.
- Engine exhaust gas contains various toxic compounds that must not be inhaled. While working, keep the vehicle in a well-ventilated area.
- When the engine is running, temperatures are very high; do not touch the radiator, the exhaust pipe or other hot components.
- Before starting the engine, apply the handbrake and put the gear lever in neutral (manual transmission) or P (automatic transmission) so that the vehicle does not move suddenly when the engine starts.
- Before working on the vehicle, apply the parking brake, select neutral or P and lower the driver's window.
- If the engine can be started, warm it up to normal operating temperature (coolant temperature approx. 80 °C) and switch off auxiliary electrical consumers (air conditioning, lights, audio system, etc.).
- Locate the vehicle's diagnostic socket (OBD-II) and check that its wiring is in good condition before connecting the tablet for diagnosis. If it is not, do not carry out the test, to avoid damaging the tablet. If necessary, measure the voltage at the diagnostic socket with a multimeter.

PART 1

The F9S tablet

F9S-W F9S-WE F9S-D F9S-G F9S-GE

Hardware, charging, power on and power off



CHAPTER 1

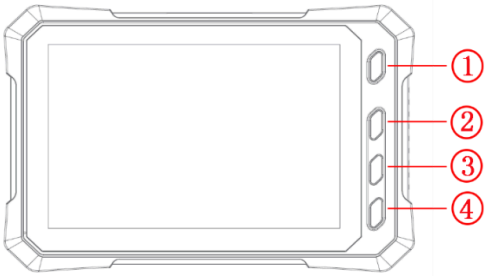
Product introduction

1.1 Introduction

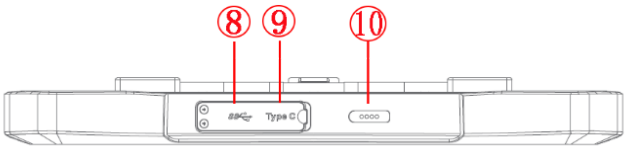
The FCAR F9S is a full-featured tablet running the Android 11 operating system, with 8 GB of RAM, 128 GB of storage and a high-capacity 10,000 mAh lithium cobalt battery. It also supports GPS positioning and 4G mobile communication.

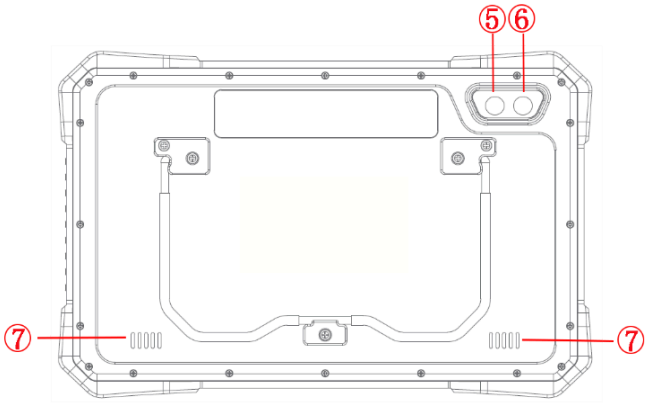
On the software side, it runs the latest FCAR software, known as the FCAR Ecosystem, which brings together all of FCAR's vehicle inspection software and quickly generates comprehensive vehicle inspection reports.

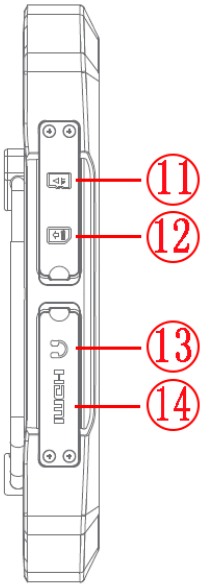
1.2 Tablet layout



No.	Name	Description
1	Brightness	Sets the brightness to maximum. For finer adjustment, use the Android system menu, or swipe down twice from the top right corner of the screen to open the brightness bar and adjust it directly.
2	Home	Returns to the app main menu
3	Back	Returns to the main system screen
4	Power button	Switches the tablet on or off, or locks the screen







No.	Name	Description
5	Camera	Takes photos or records video
6	Flash	Provides light in low-light conditions
7	External speaker port	For sound playback through an external speaker
8	USB port	Connects the tablet to the VCI or to a USB flash drive.
9	USB Type-C	Charging or data transfer
10	Magnetic charging port	Charging (DC 12 V, 2 A)
11	TF card slot	Holds the TF card (**optional**)
12	SIM card slot	Holds the SIM card
13	3.5 mm headphone jack	Headphone jack
14	HDMI port	Standard HDMI interface: connects to a TV for HD output

Name	Specifications
CPU	Quad-core 1.8 GHz processor
System	Android 11
Memory	8 GB RAM and 128 GB ROM; also supports a 128 GB TF memory card
Screen	10.1”, 16:10, 1280 × 800
Touch screen	Capacitive touch screen
Camera	8 megapixels, with flash
2G/3G/4G	LTE-FDD/LTE-TDD/WCDMA/GSM

Wi-Fi	2.4 GHz + 5 GHz
Bluetooth	BT 4.2/5.0
GPS	GPS and BeiDou satellite navigation system
Sensors	Light sensor / accelerometer (G-sensor)
Battery	10,000 mAh / 3.7 V
Dimensions	306 × 197 × 26 mm
Operating temperature	−10 to 50 °C
Storage temperature	−20 to 60 °C

Note: some product batches do not support 2G/3G/4G mobile communication. Check the details of the product you purchased.

CHAPTER 2

Tablet power on/off and function menu

2.1 Charging the tablet

The tablet can be powered in the following ways:

- AC/DC power adapter
- Built-in battery

Connect one end of the AC/DC power adapter to the tablet's DC power port and the other end to a wall socket. The power adapter charges the built-in battery.

Note: The supply voltage must be within the range accepted by the tablet. Exceeding this range may damage the product.

2.2 Power on



Press and hold the tablet's power button (about 3 seconds) to switch it on; the system then starts up.

> **Tip**: we recommend locking the screen whenever you are not using the device, to protect your system information and save battery power. Press the power/lock button gently once to lock the screen. Pressing too hard or holding the button down may cause it to malfunction or open the power-off screen.

2.3 Power off

All communication with the vehicle must be ended before switching off the diagnostic tool. Forcing a shutdown during communication may cause faults in the vehicle's control unit (ECU), so close all diagnostic applications before switching off.

To switch off the tablet:

1) Briefly press the tablet's power button (about 2 seconds).
2) Tap `Power off` in the pop-up prompt to switch off the tablet.

PART 2

The FCAR software

F9S-W | F9S-WE | F9S-D | F9S-G | F9S-GE

Login, main menu, vehicles, updates, data and AI assistant



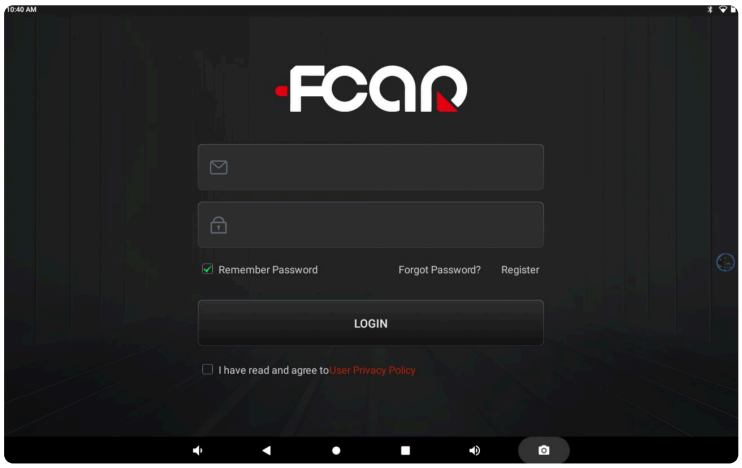
CHAPTER 3

System login

You need to log in with an account to access the FCAR vehicle diagnostic system; the first time, you will need to register.

Proceed as follows:

1) Enter your e-mail address and password. If you do not have an account, tap `Register`.
2) Tick “Remember Password” and “Please read and check ‘User Agreement’”.
3) Tap `Login` to enter the diagnostic system.



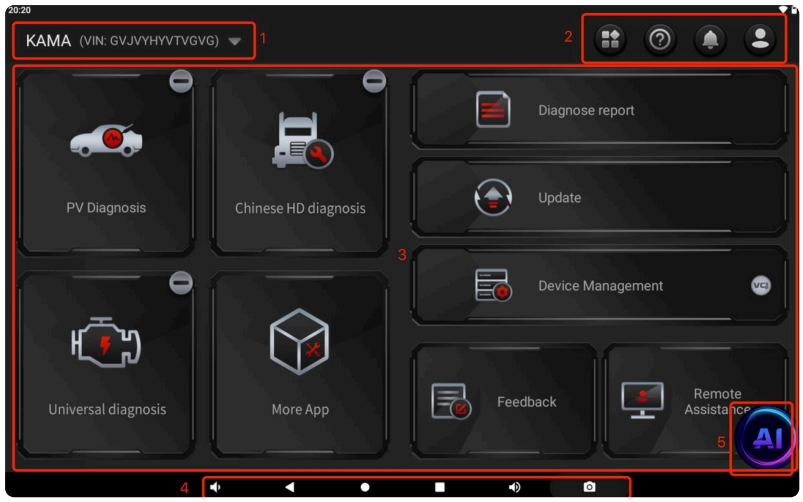
3.1 Log out



Tap the Personal Center icon in the toolbar in the upper right corner of the screen to open the `Personal Center` page, then select `Log Out`.

3.2 Main menu options

After logging in, the following main menu opens:



1) Selecting the vehicle to inspect (see Table 1)
2) Toolbar (see Table 2)
3) Main menu (see Table 3)
4) AI (see Table 4)

Table 1: Selecting the vehicle to inspect

Once the current vehicle is selected, all the checks you carry out are linked to that vehicle and a complete vehicle report is generated.

Table 2: Toolbar

Icon	Function	Description
	Back to Desktop	Returns to the system desktop
	Reference Guide	Provides help information such as equipment instructions, repair assistance, fault code (DTC) lookup, etc.
	Message Center	Receives and displays system messages
	Personal Center	Manages the user profile and settings

Table 3: Main menu

Icon	Function	Description
	Universal Diagnosis	Diagnoses the vehicle, with basic and special functions
	Chinese HD Diagnosis	Diagnosis of Chinese commercial vehicles, with basic and special functions
	PV Diagnosis	Passenger car diagnosis, with basic and special functions

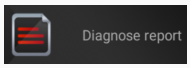
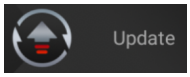
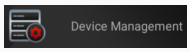
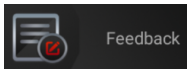
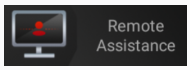
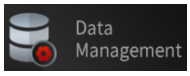
	More App	Installs more applications from the FCAR ecosystem
	Diagnosis Report	Vehicle inspection report center
	Update	Online update of the system software, vehicle software, etc.
	Device Management	VCI connection via Bluetooth/USB and firmware update
	Feedback	Instantly reports to FCAR any problems encountered while using the application
	Remote Assistance	Runs this program to receive remote assistance from the FCAR after-sales technical team
	Data Management	Browses and manages saved data files

Table 4: AI

Icon	Function	Description
	AI	AI assistant that helps you solve any problem quickly

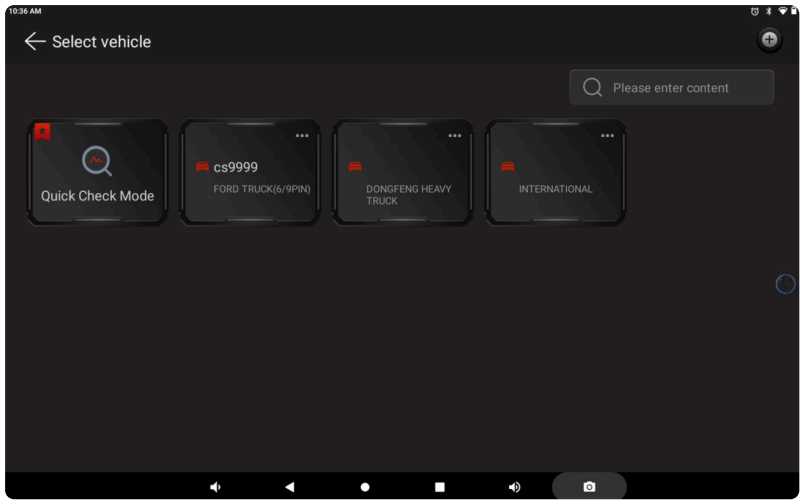
CHAPTER 4

Main menu functions

4.1 Select vehicle



When you enter the main menu, no vehicle is selected by default in the upper left corner and is displayed. To associate a vehicle, tap the drop-down button in the upper left corner to open the vehicle selection page, shown in the figure below:



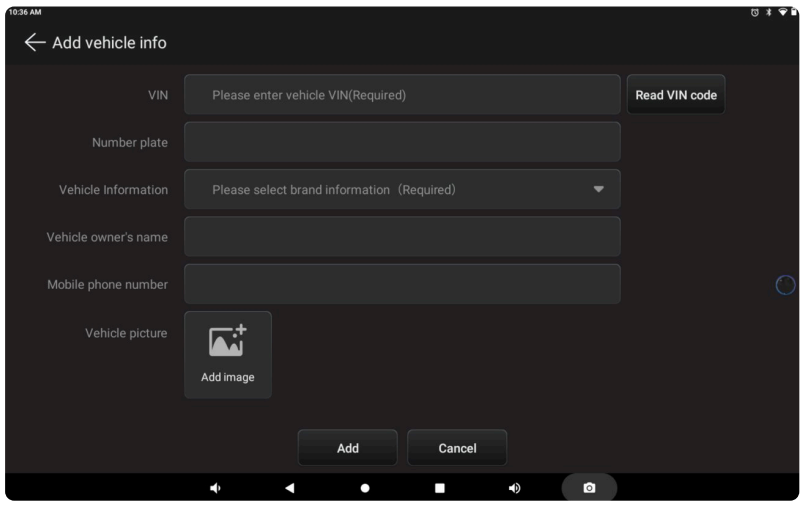
Note: select the vehicle to associate before entering the main menu to perform any inspection operation, so that the vehicle inspection report is saved. This report brings together the results of all the FCAR ecosystem equipment for the corresponding inspection of the vehicle, and is a good way to keep the vehicle's complete inspection history.

1) Select Quick Check Mode: none of the inspection items you perform will be saved as inspection reports.

2) If the vehicle you want to associate is not on the vehicle selection page, tap “Check vehicle” and create the vehicle to associate it. Vehicles you create are also added to the vehicle list so you can select them quickly next time.

3) For previously created vehicles, tap ••• in the top right corner of a vehicle to edit or delete it: Edit changes the vehicle information; Delete removes the vehicle from the list of created vehicles.

The functions for creating a vehicle are described below:



The information for creating a vehicle is as follows:



1) VIN: required. You can enter it manually or, with the VCI connected, tap to read the vehicle's VIN automatically.

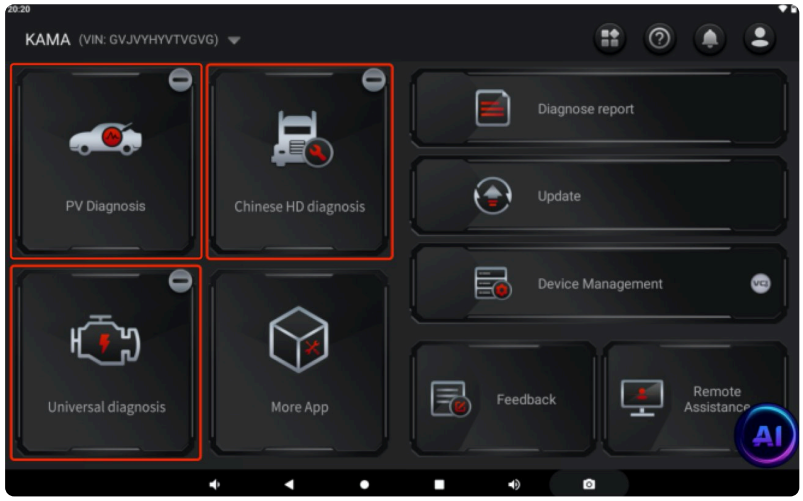
2) License plate number: optional; fill it in if you need it.

3) Model information: required; you need to select the vehicle brand and other related information. When you later diagnose the vehicle, the system loads this information automatically, so you do not have to enter the brand and other details again before starting the diagnosis: it takes you straight to your vehicle's brand.

4) Owner's name, mobile phone number and vehicle image: these three items are optional.

4.2 Vehicle inspection ecosystem software

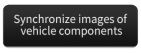
1) Vehicle Diagnosis: PV Diagnosis, Chinese HD Diagnosis and Universal Diagnosis



2) Borescope: the borescope is mainly used in two ways:







a/ You can open it from the main menu; you will first be prompted to connect the borescope with a USB cable. Once it is connected, tap the top right corner to upload the image of the vehicle part captured by the borescope to the tablet.

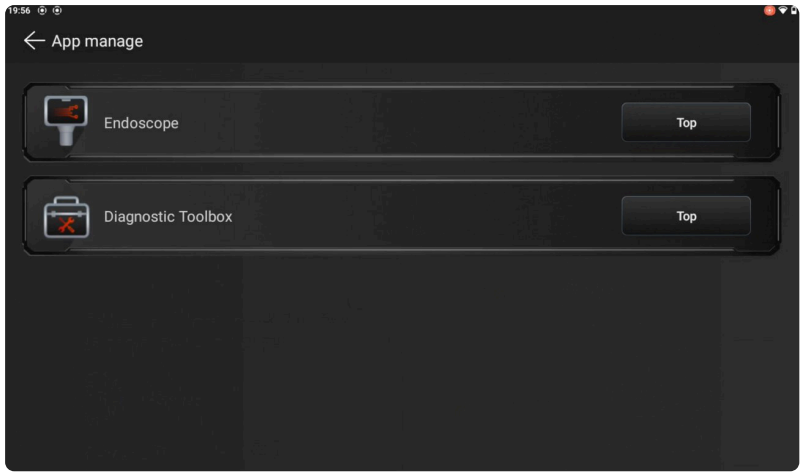




b/ You can also upload borescope images from the report page.

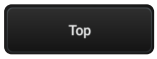
3) More applications

Shows all the peripheral software in the FCAR ecosystem, which inspects the vehicle with different applications and stores the results together in one report to generate a complete vehicle report. At present the borescope is integrated; other equipment will be added soon.



In the More App module you can:

- Download/install/uninstall



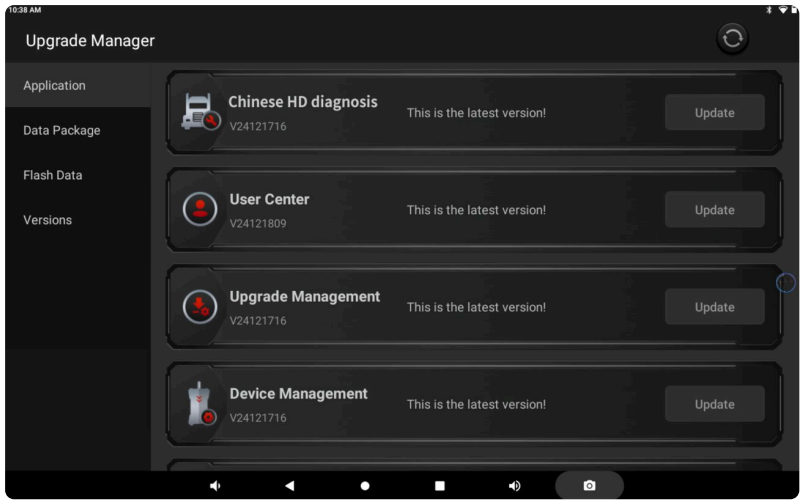


- Top Home (pin to the home page): tap “Top Home” on an app and its icon  appears on the main menu page ; you can also tap to remove it from the home page. Note: `Vehicle Diagnostics` is shown on the main menu by default and cannot be removed from the home page.

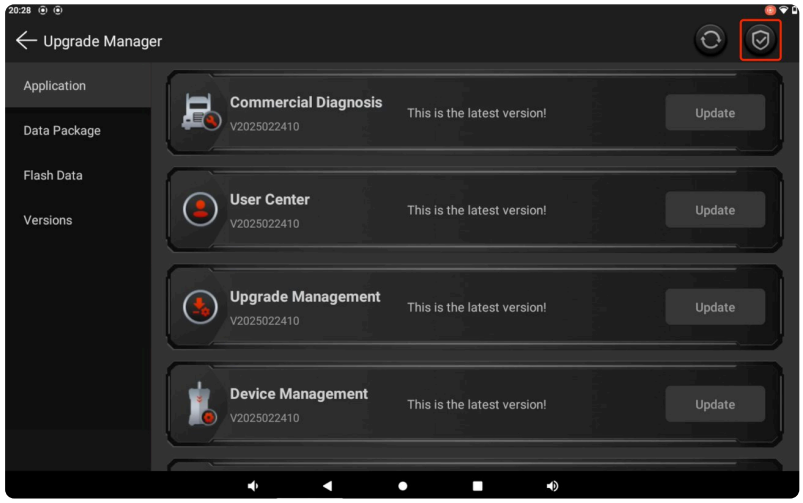
CHAPTER 5

Update

Connect the device to the internet to update the software and vehicle models and keep the product's functions up to date. Open **`Update`** from the main menu and the system automatically searches for the latest updates, as shown below; tap **`Update`** to update the vehicle models and other applications to the latest version.



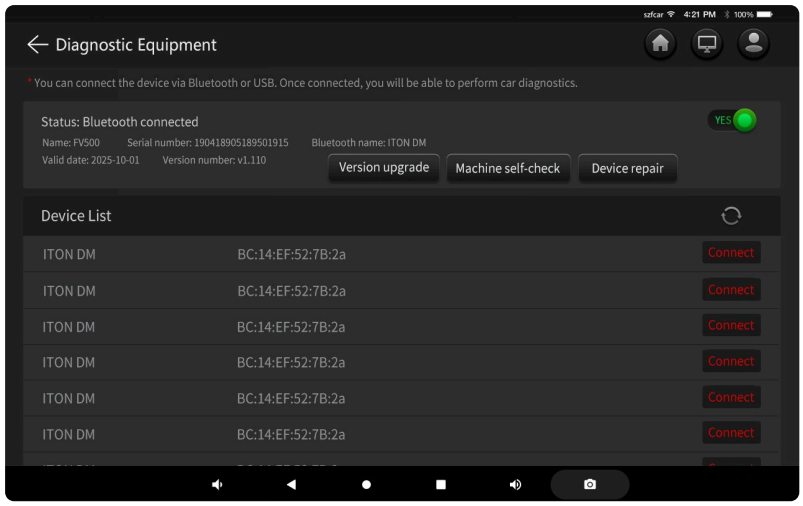
After connecting the VCI for the first time, go to `Upgrade Management` and tap the  icon in the top right corner of the page to authorize the vehicle models. This greatly reduces the time needed to download the vehicle software.



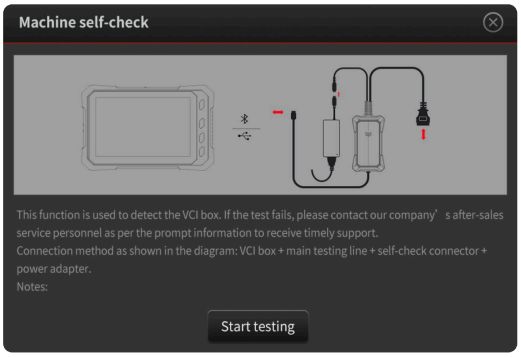
CHAPTER 6

Device management

VCI device management module. Here you can choose to connect the VCI via Bluetooth or USB. Once it is connected, you can run diagnostics and view the VCI version information. You can also update the VCI firmware, run a self-test and repair the device.



- Version upgrade: updates the VCI firmware to give you access to more features.
- Self-test:



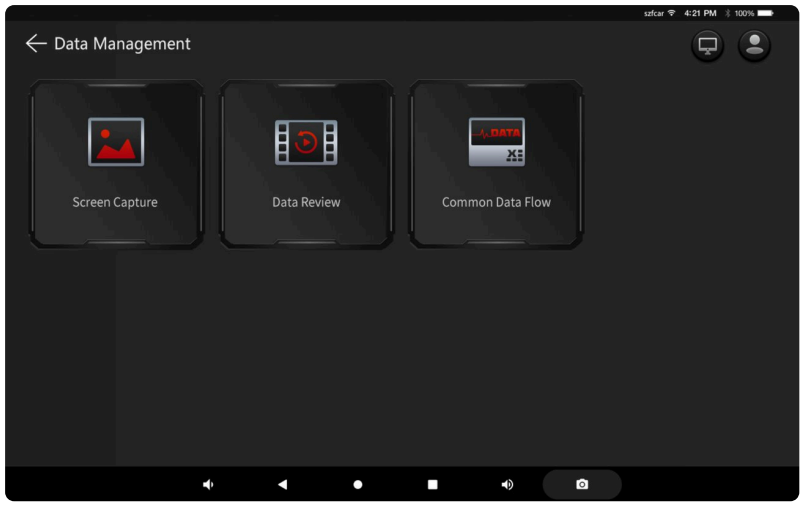
- Device repair:



CHAPTER 7

Data management

The `Data Management` application is used to save, view or print saved files. Most files are generated from the toolbar of the vehicle diagnosis screen.

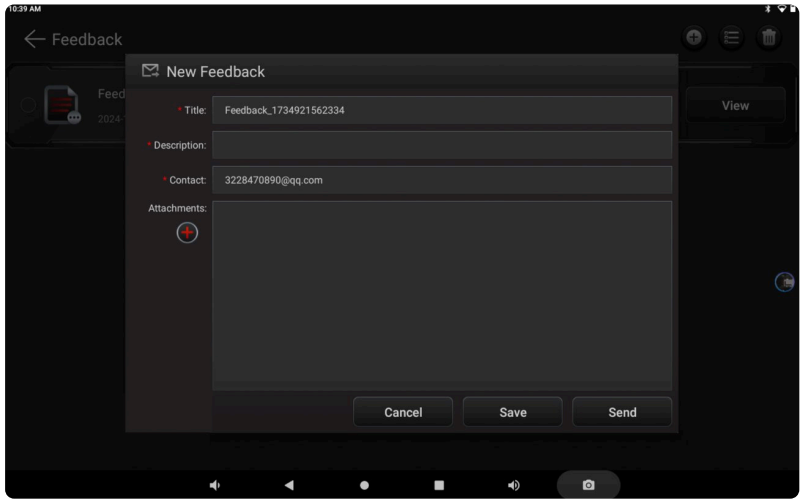


CHAPTER 8

Feedback

If you have problems using the system, you can send feedback to FCAR with a single tap and we will follow it up specifically.

When sending feedback, you need to classify the problem. Select the problem type to help our technicians solve it as quickly as possible.



CHAPTER 9

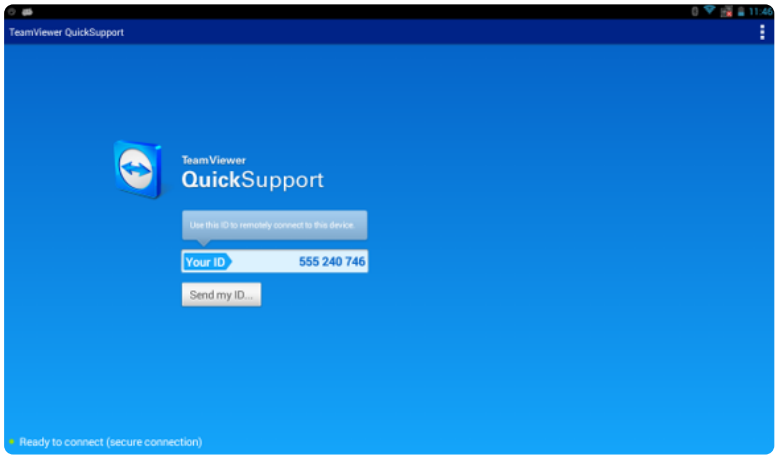
Remote assistance

This function lets you receive remote service and support from FCAR after-sales technicians to help you with vehicle diagnosis.

- How to receive technical support from FCAR

1) Select `Remote Assistance` in the main menu to open the TeamViewer screen; the system automatically generates and displays the device ID.
2) Send your device ID to the FCAR after-sales team and wait for them to send you the remote control request.
3) When you receive the request, select `YES` to accept it or `NO` to reject it in the pop-up window.

> **Note:** make sure the device is connected to the internet before receiving remote assistance.



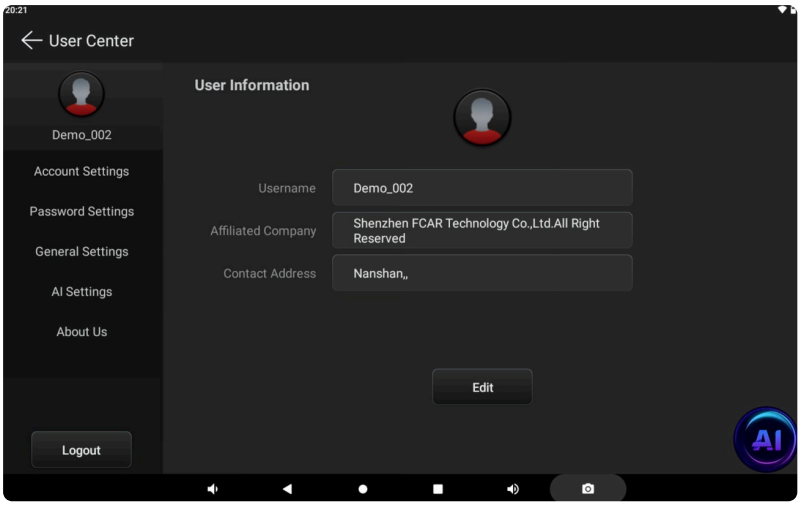
CHAPTER 10

Personal Center

Tap the icon in the toolbar in the upper right corner of the screen. On this screen you can adjust the following system settings:

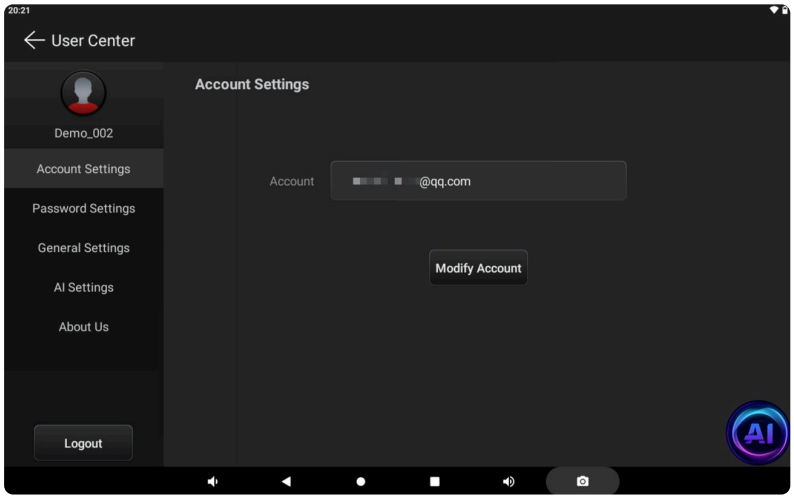
10.1 User info

Set your personal information.



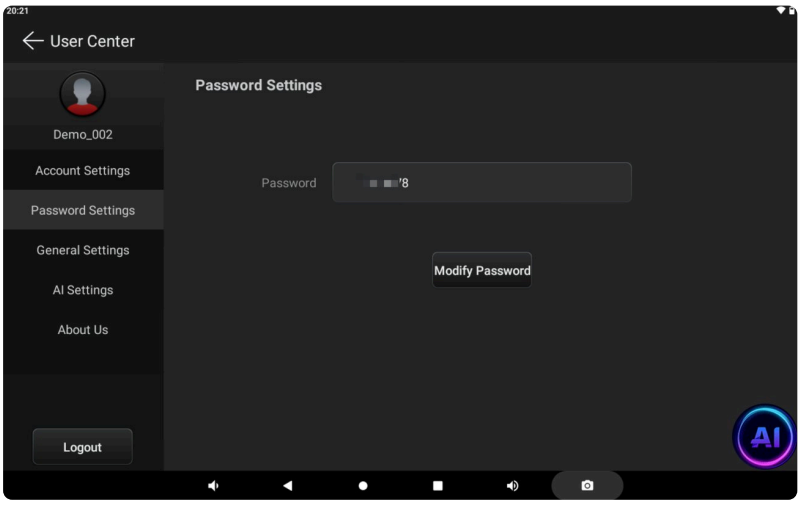
10.2 Account settings

You can change the e-mail account you log in with.



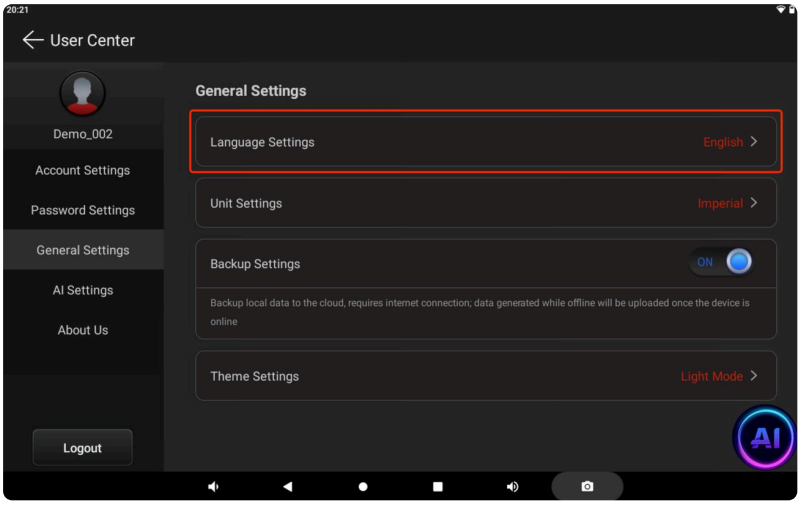
10.3 Password settings

You can change your login password.



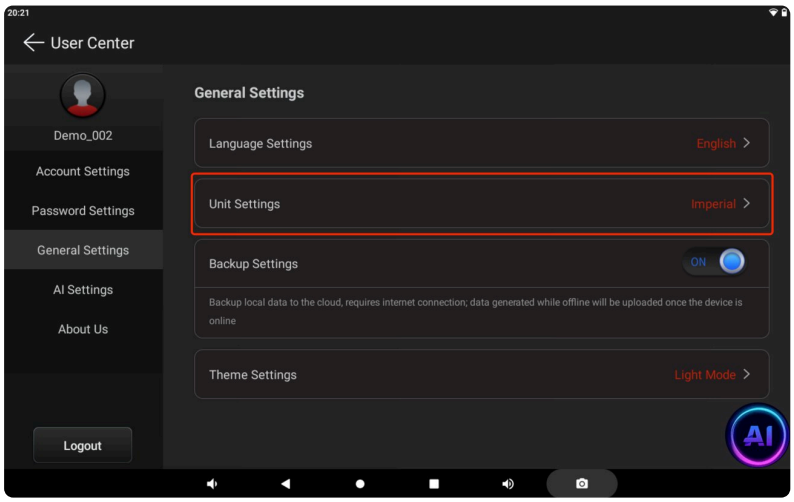
10.4 Language

The diagnostic system supports multiple languages; set it according to the languages available on the model you purchased.



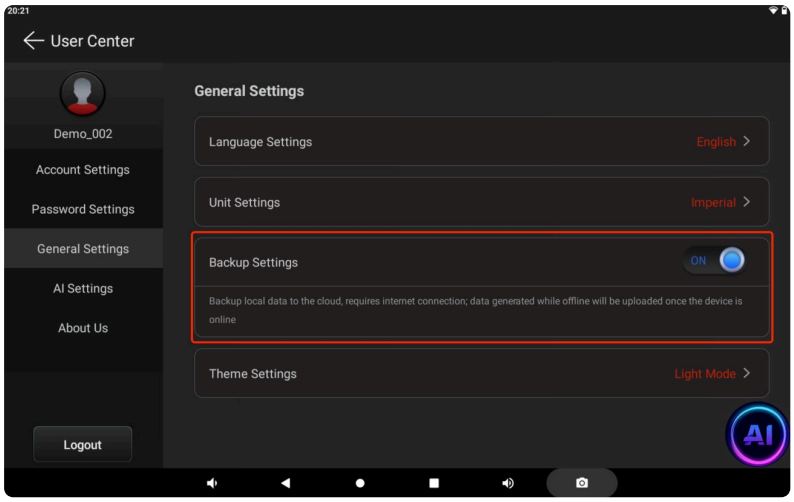
10.5 Units

This option sets the units of the live data in the diagnostic software: metric or imperial.



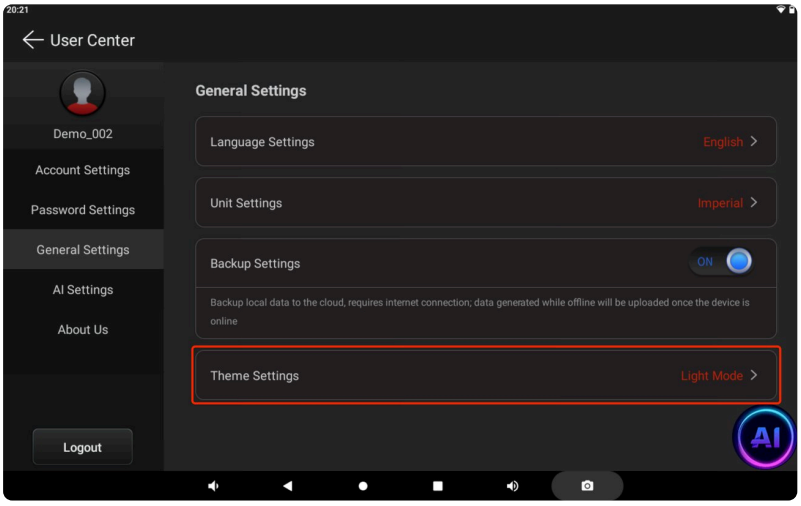
10.6 Backup

When this function is enabled, diagnostic data is uploaded to the cloud server when you diagnose a vehicle through the `Cloud Diagnosis` menu.



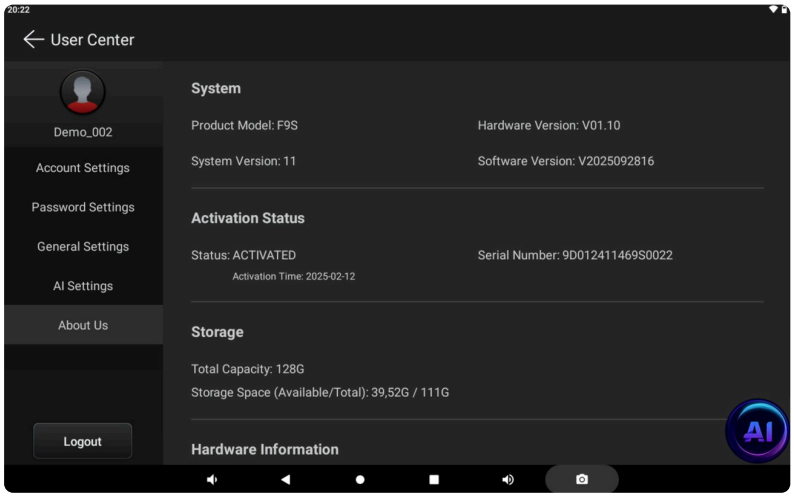
10.7 Theme settings

You can change the software theme color to suit your preferences.



10.8 About us

This screen shows system information, activation status, storage, etc.



10.9 System settings

You can configure the basic Android system settings.

10.10 Log out

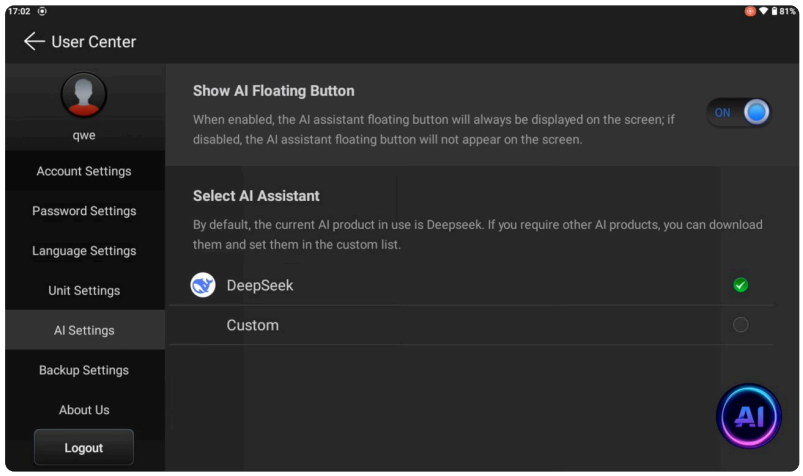
This menu is used to log out of the system.

CHAPTER 11

AI

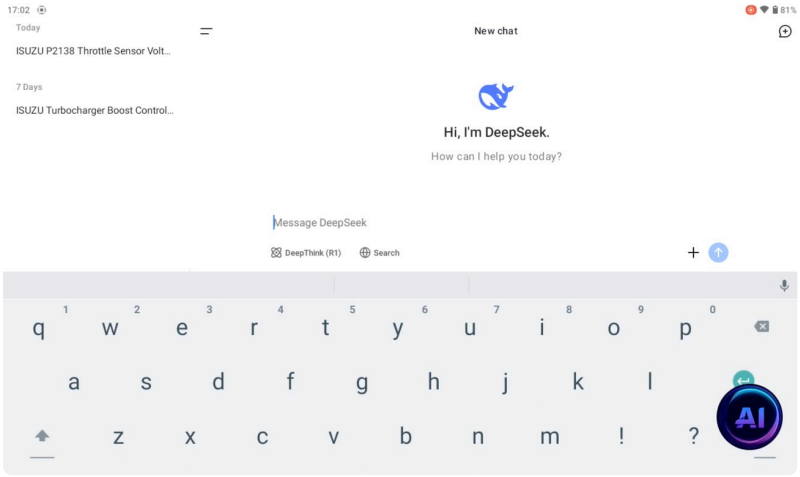
The AI assistant helps you analyze diagnostic data, and you can also ask it for help with any issue you encounter during diagnosis.

The AI features are mainly available in the following sections of the software:

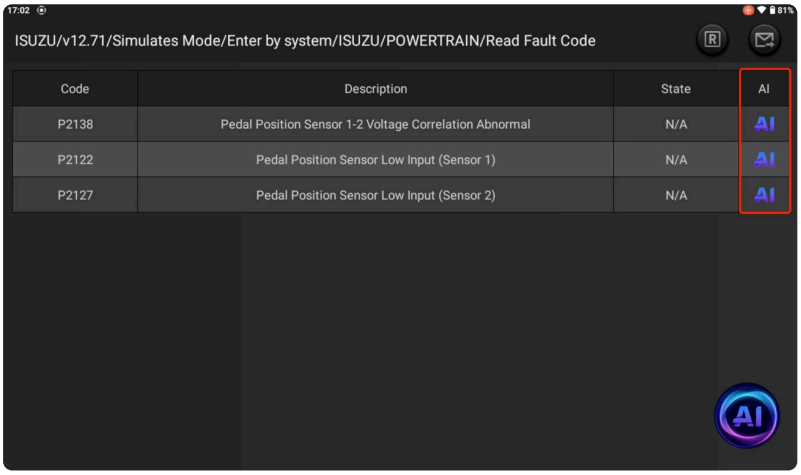


1、 AI settings: DeepSeek is built in by default, but you can also install other AI apps (APK) yourself. Then, in `Settings`, switch to “Custom” to select the installed AI app. From then on, tapping the AI functions on the pages above opens the AI app you have chosen.

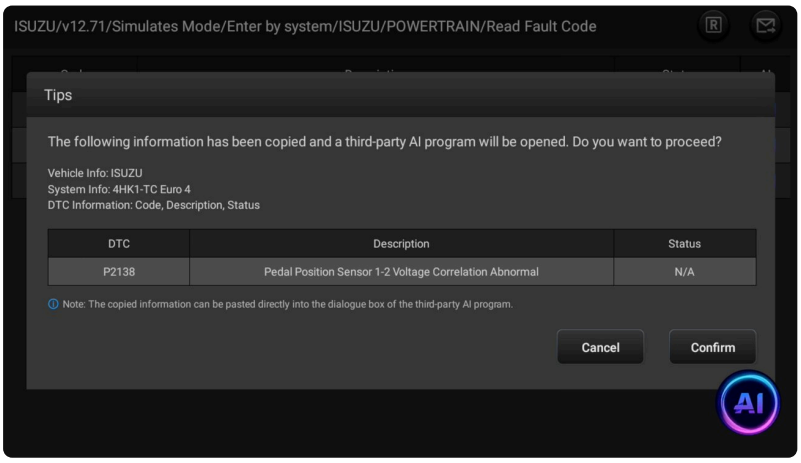
2、 AI assistant: go to the `Main Menu`; an AI floating window appears in the lower right corner of the page. Tap it to open the DeepSeek app.



3、 Fault code AI analysis

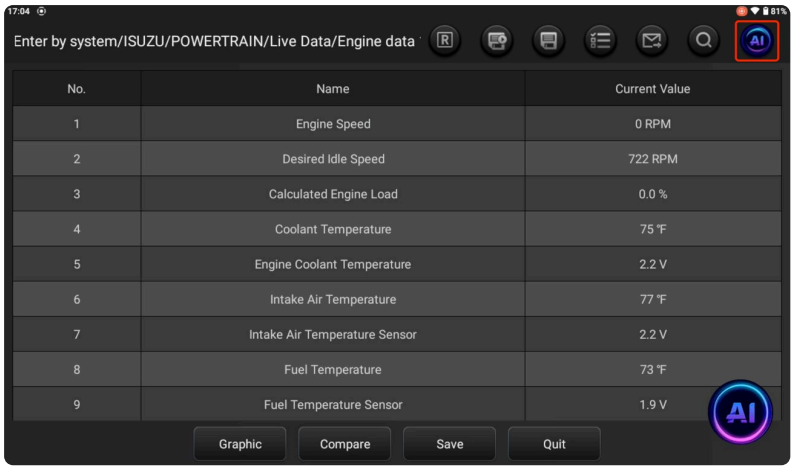


Tap and the software asks whether you want to copy the fault code for AI analysis. Once you confirm, the software opens the AI app: long-press the input box and tap to paste the fault code for AI analysis.



4、 Live data AI analysis

The process is the same as for fault code analysis: tap in the top right corner, copy the current live data and pass it to the AI app for analysis.


17:04
81%
Enter by system/ISUZU/POWERTRAIN/Live Data/Engine data
No.
Name
Current Value
1
Engine Speed
0 RPM
2
Desired Idle Speed
722 RPM
3
Calculated Engine Load
0.0 %
4
Coolant Temperature
75 ℉
5
Engine Coolant Temperature
2.2 V
6
Intake Air Temperature
77 ℉
7
Intake Air Temperature Sensor
2.2 V
8
Fuel Temperature
73 ℉
9
Fuel Temperature Sensor
1.9 V
Graphic
Compare
Save
Quit

PART 3

Passenger car diagnosis

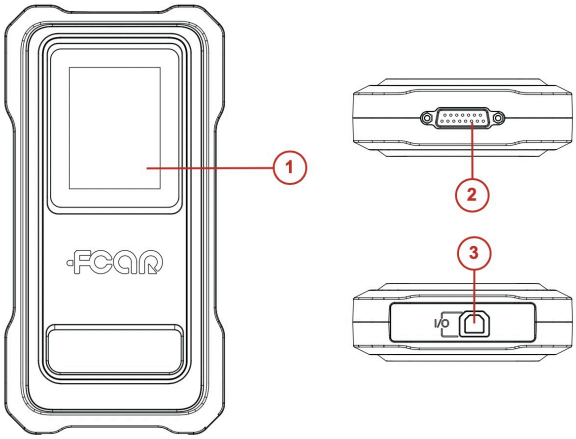
VCI FV400 | F9S-W | F9S-WE | F9S-G | F9S-GE

With the FV400 vehicle communication interface (VCI)



CHAPTER 12

Hardware overview



No.	Name	Description
1	Screen	2.8-inch screen with 240 × 320 resolution
2	Diagnostic port	Communicates with the vehicle through the diagnostic connection cable
3	I/O data port	USB Type-B port designed to provide stable communication during ECU programming or immobilizer key programming.

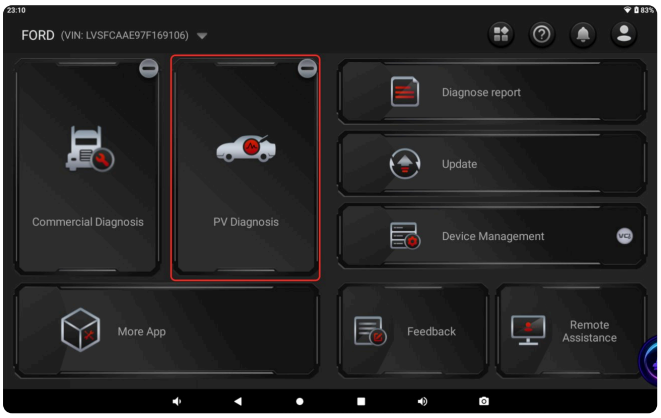
FV400 main specifications

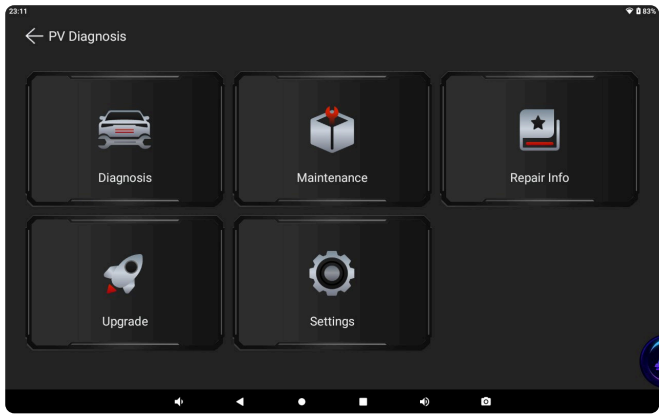
Operating system	LINUX
Screen	2.8 inches, 240 × 320
Memory	256 MB
Storage	8 GB
Operating voltage	9–18 V
Operating temperature	-10 °C to 50 °C
Storage temperature	-20 °C to 60 °C

CHAPTER 13

Menu access

Select `PV Diagnosis` from the main menu to enter passenger car diagnosis.





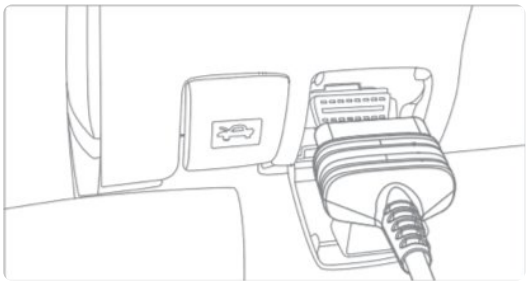
13.1 Activating the device

The first time you use it, you will be asked whether you want to activate the device. Select `Activate`: the device is activated and all functions can be used normally.

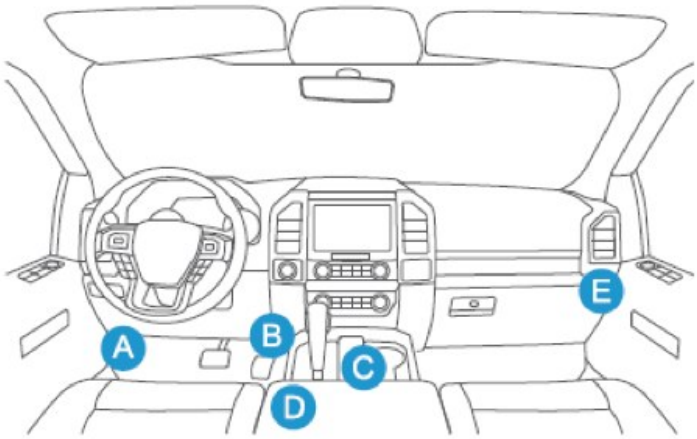
13.2 VCI connection

Vehicles with OBD-II

Connect the FV400 VCI to the vehicle's diagnostic socket (OBD-II) with the OBD diagnostic cable.

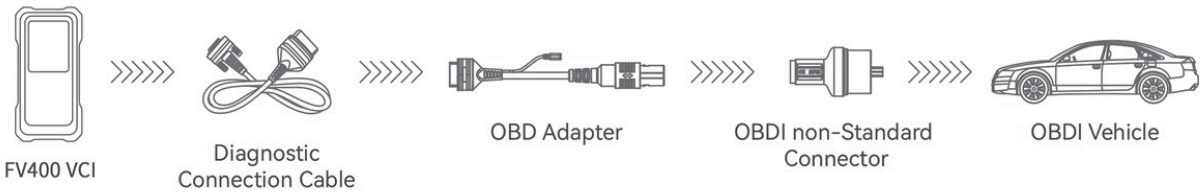


The vehicle's OBD-II socket is usually located under the dashboard on the driver's side, above the pedals. The five most common locations are shown below.



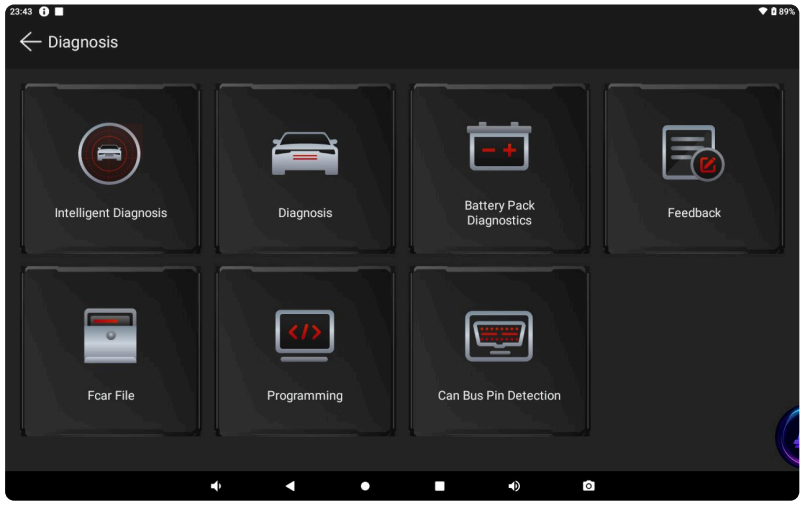
Vehicles with OBD-I

Refer to the following diagram for the detailed connection:

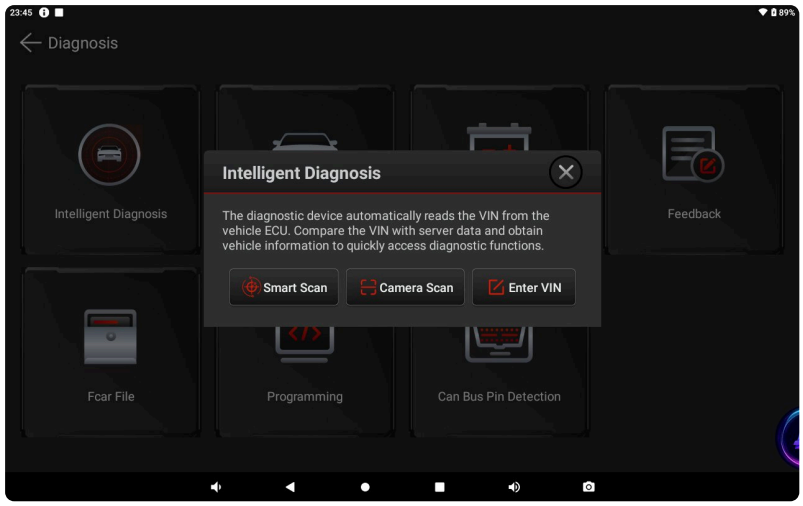


- **Tip:** for the types of OBD-I connectors available, refer to the packing list.

13.3 Diagnosis



Intelligent diagnosis



Intelligent diagnosis compares the vehicle's VIN with the server database to obtain the vehicle information and diagnose it quickly. Compared with the traditional method of selecting the make, model and version menu by menu, it is much faster and avoids selection errors.

There are currently three ways to do this:

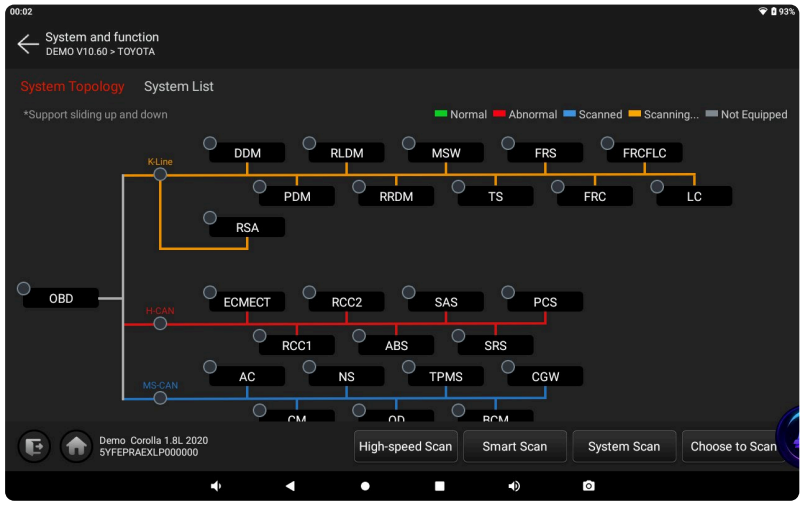
- Smart Scan: the diagnostic tool is connected to the vehicle and reads the VIN from the vehicle's ECU.
- Camera Scan: take a photo of the vehicle's VIN with the camera and it is recognized automatically.
- Enter VIN: enter the vehicle's VIN manually.

Diagnosis

Lets you select the vehicle make and model manually for diagnosis.

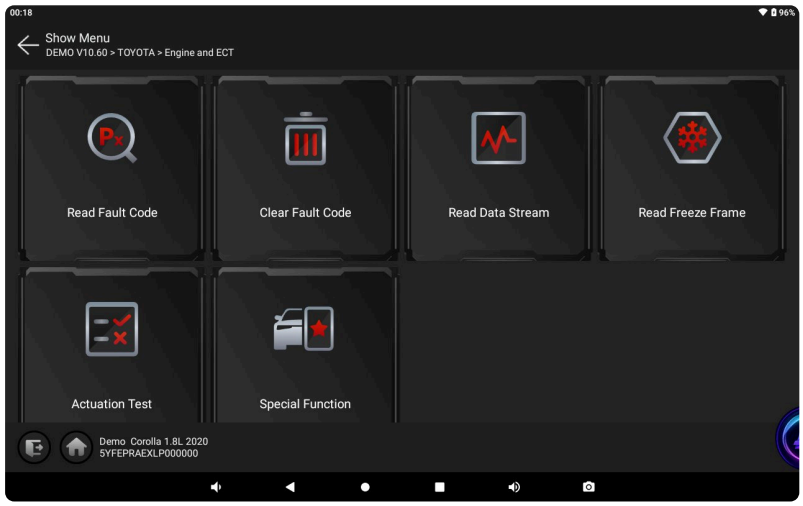
Enter vehicle diagnosis and tap the software icon of the make you want to diagnose. Once communication with the vehicle is established, select the information requested, such as model, year and engine displacement. The selection menu may vary depending on the model. When you have finished, the diagnostic functions screen opens.

The F9S series supports the diagnostic topology map function.



- **System Topology:** shows in a topology diagram how the vehicle's control units are distributed and connected, so you can see it at a glance.

- **System List:** shows the vehicle systems as a list.
- **Other functions:** special functions, programming, ADAS calibration and other functions can be accessed at the top. The function menus may vary depending on the vehicle model.
- **High-speed Scan:** scans all systems simultaneously, which greatly speeds up the process.
- **Tip:** currently only some models support High-speed Scan, and a system may occasionally be missed during the scan.
- **Smart Scan:** gives you quick access to all the vehicle's systems and generates a detailed vehicle health report.
- **System Scan:** checks which systems are fitted to the vehicle.
- **Choose to Scan:** select the vehicle electronic control system you want to scan.
- Tap the control unit (ECU) and the function selection screen opens.
- Tap the function you want to run.



1) Version Information: reads the version information of the vehicle's ECU.
2) Read Fault Code: reads the fault codes (DTCs) stored in the ECU memory to help the technician locate the cause of the fault.
3) Clear Fault Code: the system automatically clears the existing fault codes.
4) Read Data Stream: displays and records live data (actual values) from the ECUs.
5) Actuation Test: checks whether the actuators in the electronic control system are working correctly.
6) Special Function: used to write data to the control unit, such as ECU data calibration or ECU programming. Some service functions are also included here.

Performs professional-level diagnostic testing of the high-voltage battery packs and battery modules of electric and hybrid vehicles, with several diagnostic modes: via the OBD socket and via the low-voltage connector of the battery pack.

By analyzing key cell data such as voltage, temperature and the voltage difference between cells in real time, it helps you locate battery faults accurately, and provides guidance for battery diagnosis and repair.

- **Tip:** the F9S includes this feature. If you need it, contact your dealer to purchase the EV PACKAGE and activate it.

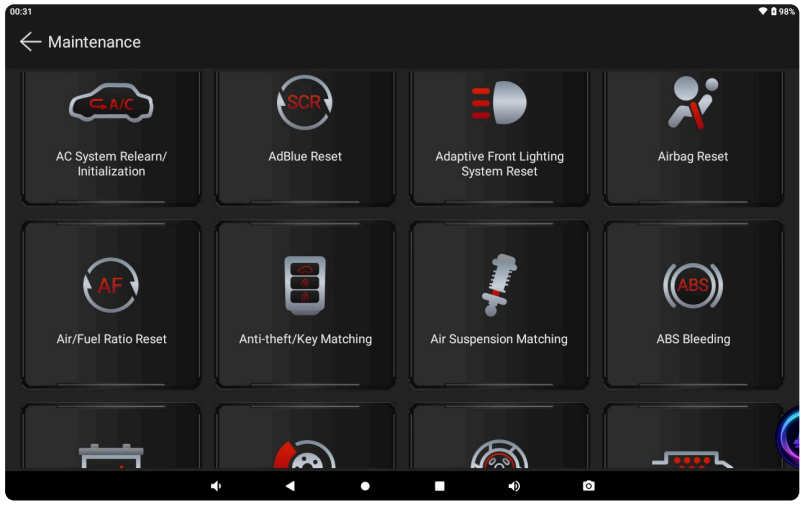
If you encounter a problem you cannot solve or a bug in the diagnostic software during diagnosis, you can send the 20 most recent test records to the FCAR team. When we receive your feedback, we will analyze it and solve the problem as soon as possible to improve the quality of our products and your user experience.

Used to record and build a history of the diagnosed vehicles. Each file is created from the vehicle's VIN and the inspection time, and includes all the data linked to that VIN, such as diagnostic reports, live data recordings and photos.

Pin detection measures the voltage and identifies the protocols supported on the pins of the vehicle's diagnostic socket (OBD-II). If the results do not match the actual vehicle configuration, the corresponding pin may be faulty.

13.4 Service functions

The F9S series currently supports 41 common service functions:



AC: A/C system relearn/initialization

When the A/C control unit or an actuator is replaced, or the control unit memory is lost, the air conditioning initialization learning procedure must be performed.

ADBLUE: AdBlue reset

Resets the urea system after the diesel exhaust fluid (AdBlue) has been replaced or topped up.

AFS: Adaptive front lighting system reset

Initializes the adaptive headlight system.

SRS: Airbag reset

Resets the airbag data to clear the airbag crash fault indicator.

A/F: Air/fuel ratio reset

Sets or learns the air/fuel ratio parameters.

ABS: ABS bleeding

Helps bleed the air from the brake system.

BMS: Battery matching

Registers the battery after replacement.

GEARBOX: Gearbox learning

Relearns the crankshaft position sensors.

EPB: Brake pad reset

Assists with brake pad replacement and reset.

CLUTCH: Clutch matching

Clutch pedal position or switch learning. After replacing the control unit, replacing or removing the transmission, or replacing the clutch, this function learns the contact point and position at which the clutch starts to transmit engine torque. It applies to adaptive clutches.

ECB: Electronic water pump activation

Use this function to activate the electronic water pump before bleeding the cooling system.

DPF: DPF regeneration

Designed specifically for diesel particulate filter systems: DPF regeneration, teach-in after replacing DPF components, and DPF teach-in after replacing the engine control unit.

ECU: ECU reset

The ECU reset service commands the ECU to reset itself via diagnostic commands. There are several types of reset, distinguished by sub-function parameters.

EGR: EGR adaptation

Learns the exhaust gas recirculation (EGR) valve after it has been cleaned.

PB: Engine power balance monitoring

During the power stroke of each cylinder, the function monitors crankshaft acceleration to determine the relative power contributed by each cylinder.

ETS: Electronic throttle adaptation

Initializes the throttle actuators to their default state.

FRM: FRM matching

Replacing the battery without switching off the ignition, shorting the battery terminals or other unprofessional battery handling can easily damage the FRM module. Typically, the CPU data on the circuit board is lost and control of the lights, doors and windows fails. If the data has been lost, simply rewrite exactly the same data set to the module to fix it.

GW: Gateway module data calibration

After replacing the gateway control unit, there may be inconsistencies (for example in the VIN), so calibration is required.

GEAR: Gear learning

The crankshaft position sensor learns the machining tolerances of the crankshaft reluctor wheel and stores them in the ECU, so that engine misfires can be diagnosed more accurately.

GPF: Gasoline particulate filter regeneration

After prolonged use, the particulate filter causes higher fuel consumption and lower engine output; the GPF then needs to be replaced or regenerated.

HVB: High-voltage battery diagnostics

Used to diagnose the high-voltage battery and check its status. Most hybrid vehicles have this function.

ICCS: Intelligent cruise control system

Used to match the intelligent cruise control module after replacement or repair.

IMMO: Immobilizer/key matching

Disables lost keys and adds new keys. ONLY for vehicles with a simple immobilizer system.

INJEC: Injector coding

Writes the new injector code to the vehicle system so that each cylinder receives the correct injection quantity.

LANGUAGE: Language

Changes the language of the vehicle's systems.

MAPS: Motor angle calibration

When the rotor position detected by the motor's angular position sensor deviates from the actual rotor field position, the motor angle must be calibrated.

NOX: NOx sensor reset

Resets the catalytic converter learned values stored in the ECU.

ODO: Odometer reset

Copies, writes or rewrites the mileage value.

OIL: Oil reset

After an oil change, resets the service indicator so that the engine oil life system starts a new calculation, and turns off the oil warning light.

RLS: Rain/light sensor settings

The rain sensor adjusts the wiper frequency, and the light sensor controls the automatic headlights according to the ambient light. This function lets you adjust their initial parameters.

SAS: Steering angle reset

Resets the steering angle to zero so that the vehicle drives straight.

SEAT: Seat calibration

Calibrates the memory of replaced or repaired seats.

START/STOP: Start/stop settings

Configures the automatic start/stop function in the ECU.

ROOF: Sunroof initialization

Initializes the sunroof when it is locked or does not close.

SUS: Air suspension matching

Adjusts the body height sensor for level calibration.

TPMS: TPMS reset

Resets the tire pressure monitoring system.

TRANSPORT: Transport mode

Deactivates transport mode.

TURBO: Turbocharger matching

Learning after replacing turbocharging system components, or resetting the turbocharger learned values.

TYRE: Tire size adjustment

Sets the size parameters of modified or replaced tires.

WINDOW: Window calibration

Performs door window learning to restore the ECU's initial memory.

Tip: more service functions may be added with new software releases; check the notes of each update.

13.5 Repair info



OBD fault code library

Lets you look up the definitions of the vehicle's OBD fault codes.

Coverage list

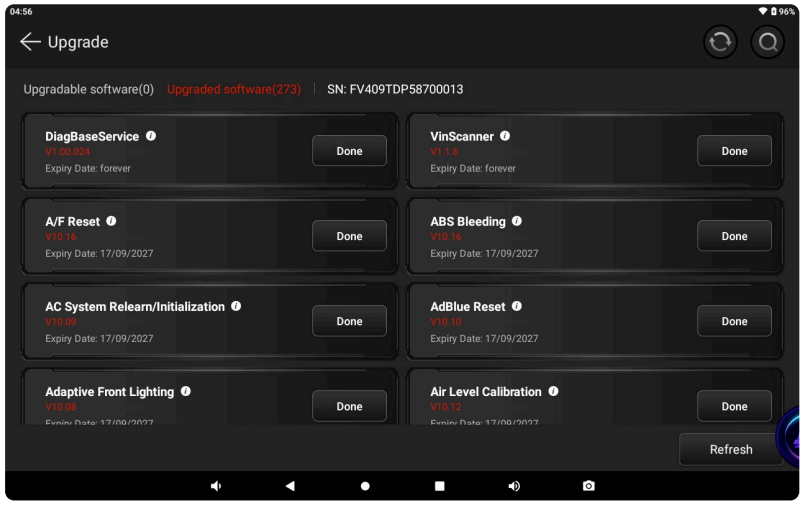
Enter the vehicle make, model, year and other information to check the supported functions and diagnostic systems.

User manual

The electronic manual can be found here.

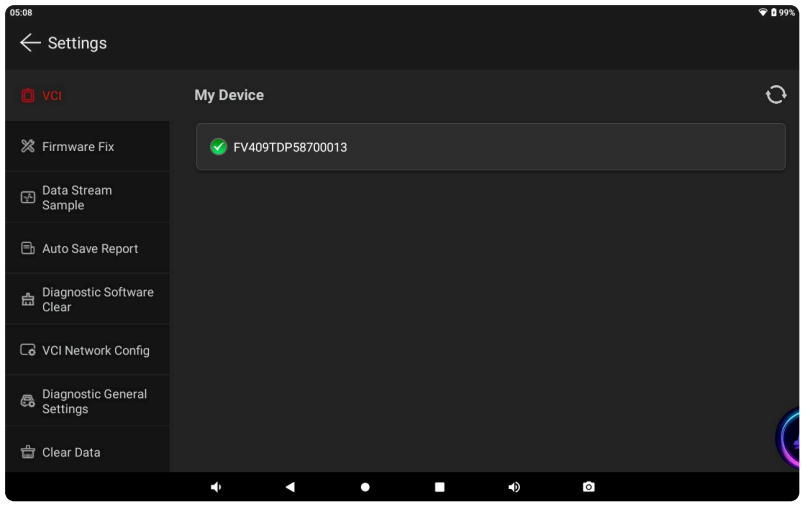
13.6 Upgrade

The Upgrade section shows update information for the software supported by the device. To get better features and update services, we recommend updating the software regularly.



- **Upgradable software:** list of software that can be updated.
- **Upgraded software:** list of downloaded software.
- **Renewals:** if the software validity period of the device has expired, only software versions released before the expiry date can be downloaded. Contact your dealer in good time to purchase a software renewal.
- **Tip:** keep the network connection active during the update. Updating a lot of software may take some time; please wait. If you need to delete any software, you can do so in `Settings` → `Diagnostic Software Clear`.

13.7 Settings



VCI

Shows information about the bound device.

Firmware Fix

Repairs the VCI firmware and the remote firmware. If diagnosis behaves abnormally, you can try repairing it.

Data Stream Sample

This function lets you manage the recorded live data sample files.

Auto Save Report

The Auto Save Report function stores the user information for diagnostic reports in advance. When it is enabled, diagnostic reports are generated faster and you do not have to fill in the same details repeatedly.

Diagnostic Software Clear

This option clears some cache files and frees up storage space.

VCI Network Config

Connects the VCI to a Wi-Fi network from the tablet.

Diagnostic General Settings

Enables or disables the Sline Update function and keeps two software versions.

Clear Data

Clears this application's data, including settings, account login information, database and other application data.

PART 4

Commercial vehicle diagnosis

VCI FV500 | F9S-D | F9S-G | F9S-GE

With the FV500 vehicle communication interface (VCI)



CHAPTER 14

Hardware overview



No.	Name	Description
1	USB Type-C	Connects to the tablet or updates the FV500
2	Diagnostic indicator	Flashes while communicating with the vehicle
3	Power indicator	Lights up when power is supplied
4	DC power port	Power supply from a DC source
5	OBD diagnostic port	Connects to the vehicle

FV500 main specifications

Processor	32-bit RISC-V
Frequency	648 MHz
Bluetooth	BT 4.2 (BLE)
RAM	800 KB
Flash memory	8 MB

CHAPTER 15

Preparation before diagnosis

Once a data connection has been established between the VCI and the vehicle's electronic control system, the diagnostic program can read vehicle diagnostic information, view live data, perform actuation tests and carry out other functions.

- To ensure good communication between the diagnostic program and the vehicle, proceed as follows:

1) Connect the VCI to the vehicle's diagnostic socket (OBD-II) and make sure it is powered;
2) Establish communication between the VCI and the tablet via Bluetooth pairing or the USB data cable;
3) Check the VCI connection status in the “Device Management” module. Once the VCI is connected, you can start diagnosing the vehicle.



4) To generate a diagnostic report, you need to associate the vehicle you are diagnosing: tap the button in the upper right corner of the main menu and enter the vehicle being inspected. If you do not select one, no vehicle is associated by default and the diagnostic results will not be saved as a diagnostic report.

- How to diagnose a vehicle

1) Establish good communication between the diagnostic program and the vehicle under test (see section 3.2).
2) Select the vehicle type.
3) Diagnose the vehicle either by running an “Auto Scan” of all its systems or by manually selecting the control unit you want to test.

These steps are explained in detail below.

15.1 Technical requirements before diagnosis

Vehicle requirements

- Turn the ignition switch to ON;
- The vehicle battery voltage should be between 11–14 V or 24–27 V (depending on the vehicle's electrical system);
- The accelerator pedal must be released, i.e. in the idle position;
- Ignition timing and idle speed must be within the standard range, and the coolant and transmission oil must be at normal operating temperature (coolant: 90–110 °C; transmission oil: 50–80 °C);
- Finally, the diagnostic cable must be properly connected.

Technician requirements

- Basic knowledge of automotive electronics;
- Understanding of the basic operation of this product and familiarity with this manual;
- Ability to tell, from the symptoms of the vehicle under test, whether the fault is mechanical or in the electronic control system;
- Knowledge of the vehicle's origin, year of manufacture, model, engine type, etc.



CHAPTER 16

Commercial vehicle diagnosis

For commercial vehicle diagnosis, use the FV500 VCI.

16.1 Vehicle connection

Connecting the VCI to the vehicle

Before connecting the VCI to the vehicle, check whether the vehicle's diagnostic socket is a standard OBD-II socket or a non-standard one.

- For vehicles compatible with OBD-II, the integrated standard OBD-II connector is all you need to connect the VCI to the diagnostic socket and power it;
- For vehicles not compatible with OBD-II, you need to select the corresponding connector; on some vehicles the VCI must also be powered from another power source on the vehicle.

The two connection methods are explained below.

Standard OBD-II socket connection

For vehicles with a standard OBD-II socket, simply connect the OBD connector of the integrated main test cable; no other connectors are needed, as shown in Figure 3.2-1:

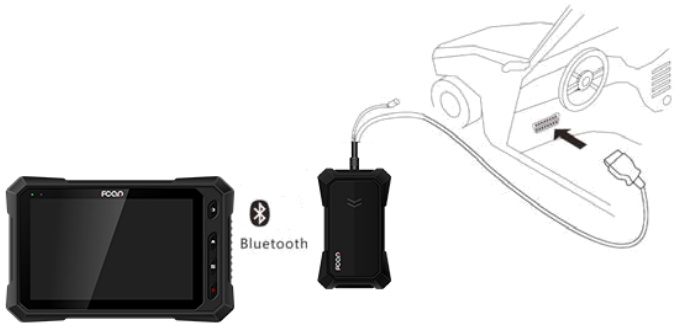


Figure 3.2-1 Connection to a standard OBD-II socket

Instructions:

1) Locate the diagnostic socket and check the connector type;

2) Connect the integrated OBD-II connector of the VCI to the vehicle's diagnostic socket;

3) The VCI is now powered by the vehicle's diagnostic socket and the power indicator lights up.

> **Note:** When the test is complete, loosen the fixing screws and then gently unplug the main test cable to avoid damaging the diagnostic socket.

Non-OBD-II socket connection

For vehicles with a non-OBD-II socket, you need to connect the main test cable to the corresponding dedicated connector, as shown in Figure 3.2-2:

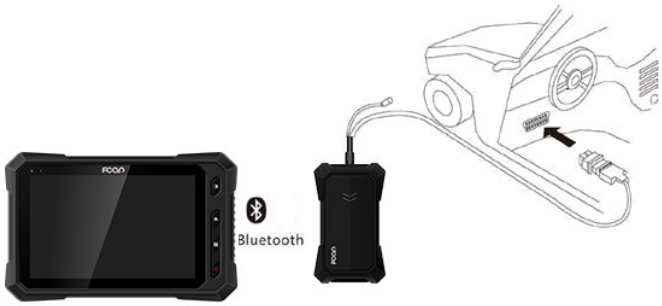


Figure 3.2-2 Connection to a non-OBD-II socket

Instructions:

1) Locate the diagnostic socket, check the connector type and whether an external power source is needed;

2) Connect the VCI main test cable to the dedicated adapter for the vehicle;

3) Connect the dedicated connector, attached to the main test cable, to the vehicle's diagnostic socket;

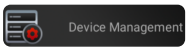
4) The VCI is now powered by the vehicle's diagnostic socket and the power indicator lights up (if it does not light up, the diagnostic socket may not be live; in that case you can power the VCI from the cigarette lighter socket or with the battery clamps).

Connecting the tablet and the VCI

Once the VCI is connected to the vehicle, it must be paired with the tablet; when pairing is complete, you can start diagnosing the vehicle. The VCI communicates with the tablet in two ways: Bluetooth pairing or USB cable.

Bluetooth pairing

1) Switch on the tablet and log in to the program's main menu;





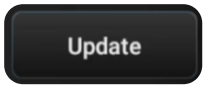
2) Tap the device management button , then tap the open button above the VCI list to scan for nearby VCIs you can connect to;



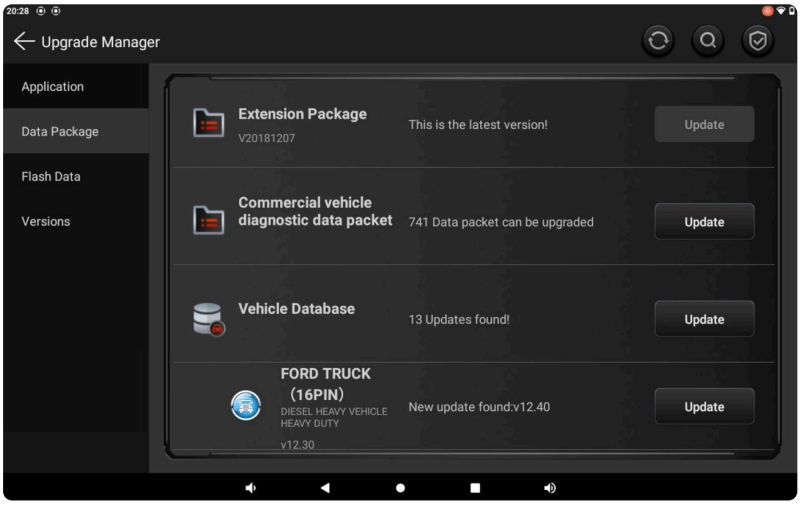
3) Tap “Connect”. Once connected, return to the main menu: the connection status in the device management module changes from  to .

4) Go to `Upgrade Management` to get the list of vehicle models available for diagnosis.

---After activating the FV500 for the first time, tap the  icon in the top right corner of the page to authorize the vehicle models. This authorizes on the FV500 the vehicle model files already downloaded to the tablet, so that the FV500 has diagnostic permission for those models. Be sure to perform this step.

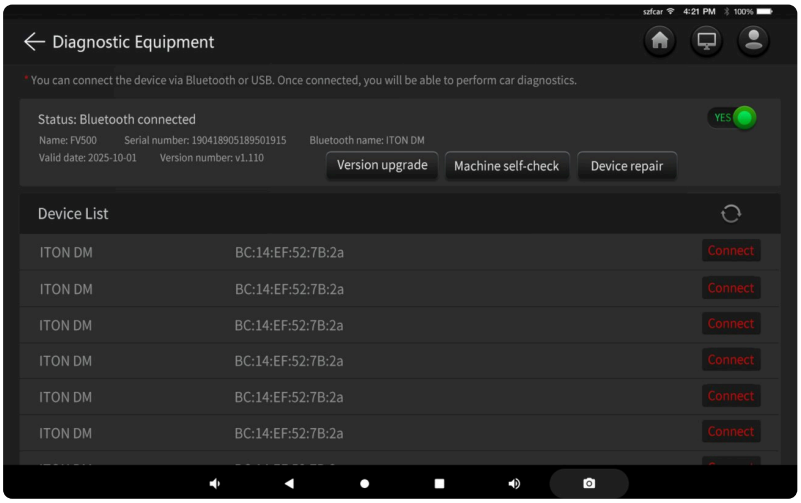


-- Go to `Upgrade Management`. When the button next to a vehicle model is highlighted, a new version is available for that model. Tap the button to update it: you will get more comprehensive functions and a better experience during diagnosis.





5) Select vehicle diagnosis to start the diagnosis.



> **Note**: If the signal is too weak, the Bluetooth device cannot be found. In that case, move the tablet as close as possible to the VCI.

USB cable connection



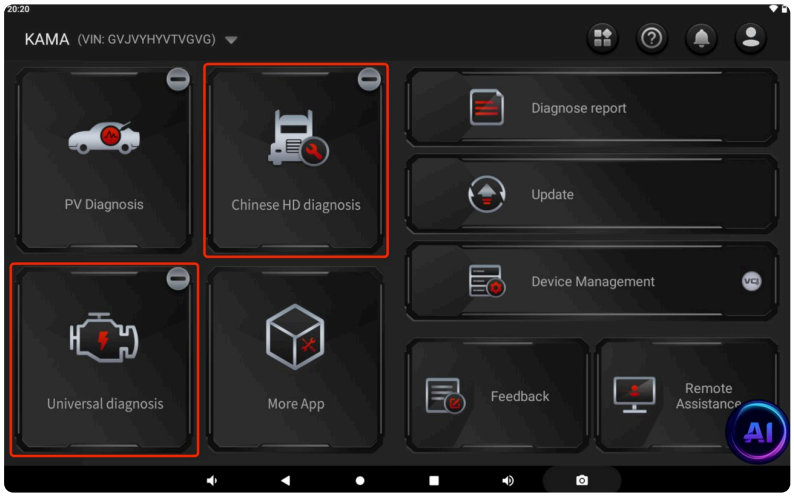
USB is the fastest communication method between the tablet and the VCI. Use the dedicated USB cable supplied by the factory. Once connected, the VCI status icon on the screen changes from  to , indicating that the USB connection was successful; you can then start diagnosing the vehicle.

> **Note**: The two connection methods cannot be used at the same time!

16.2 Select vehicle

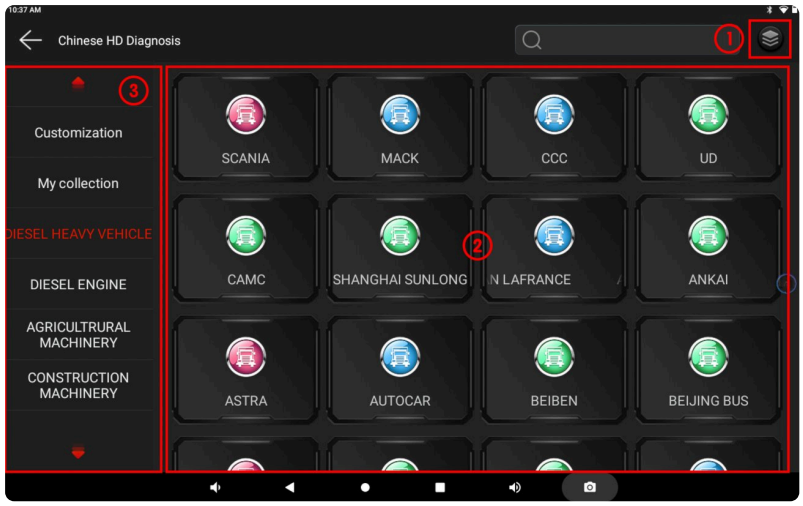
Associating the vehicle works exactly as for passenger cars: see “Select vehicle” in part 2.

16.3 Diagnosis



The diagnostic functions are explained below using a commercial vehicle as an example.

FCAR commercial vehicle diagnosis is organized by vehicle application and electronic control system. Model selection uses guided menus: the technician makes a series of choices based on the actual configuration of the vehicle under test and the on-screen prompts until the vehicle is accurately identified. The specific choices vary depending on the model being tested.



1. Toolbar (see Table 1)
2. Manufacturer
3. Model and function selection menu (see the following section for how to use each function)

Table 1:

Icon	Function	Description
	Diagnostic package	Shows the current package version and the version history

16.4 Model selection

The diagnostic program requires you to select the vehicle model before entering the system module diagnostic functions. The vehicle can be identified in the following ways:

- By manual selection
- By automatic identification
- By generic OBD-II access

Manual selection

This is the guided menu mode: simply make a series of choices following the on-screen prompts. The specific options vary depending on the vehicle type. You can also find the make quickly with the toolbar search function and then select according to the on-screen prompts.

Automatic identification

The new self-identification function skips manual selection: it reads the specific vehicle information directly from the vehicle's ECU and, after confirmation, quickly enters the diagnostic screen. At present this function supports some models (check the function menu for details). Taking Bosch as an example:

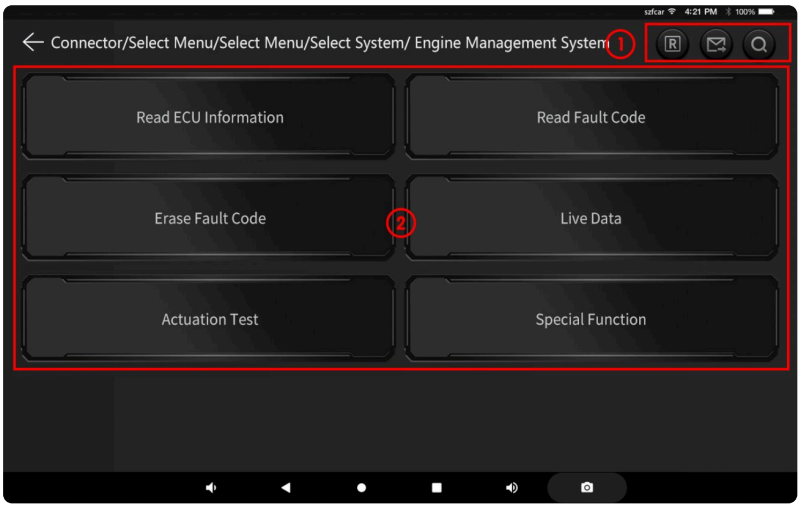
1) On the commercial vehicle diagnosis selection screen, select `Electronic System`;
2) On the electronic control system screen, tap [**Bosch - Bosch (China 4,5,6) self-identification**] to identify the vehicle automatically.

Generic OBD access

In some cases, because the database does not support the vehicle or because of other vehicle characteristics, the diagnostic tool cannot identify the vehicle and establish communication in the normal way. In that case, you can run a generic OBD-II or EOBD test with the direct OBD access function.

16.5 Diagnosis and other advanced functions

Once the vehicle type is selected, you can start diagnosing the vehicle. The main diagnosis screen is shown in the figure below:



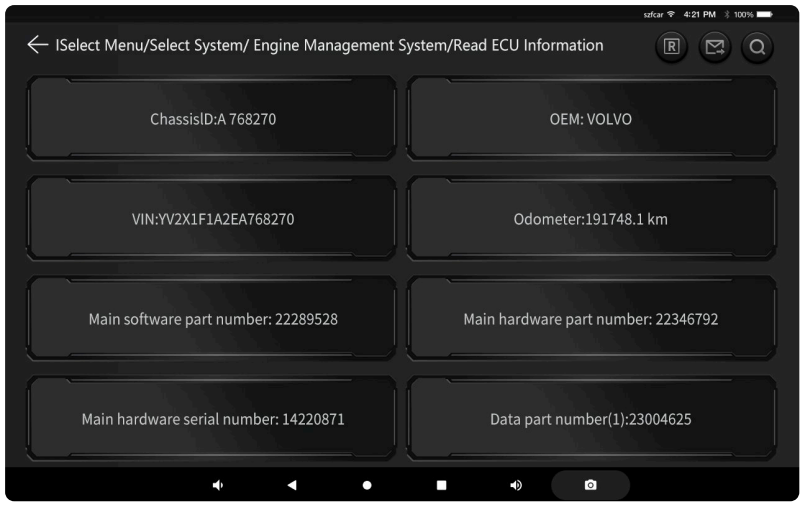
1) Toolbar and status bar (see Table 1)
2) Main diagnostic functions screen

Table 1:

Icon	Function description
	Creates a test report. You can view, print and send test reports in “Data Management”
	One-tap feedback: reports problems encountered during vehicle diagnosis to the FCAR after-sales technical team
	One-tap search for models of the major brands

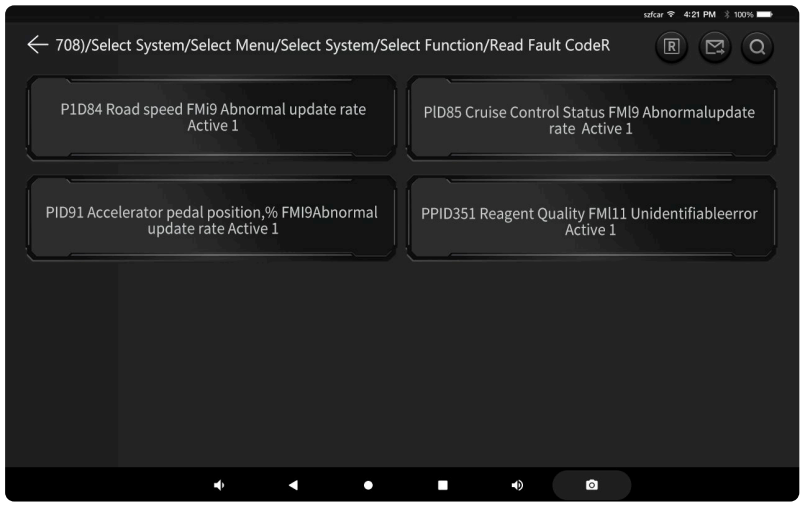
Version information

Reads and displays the ECU version information (hardware and software) of the vehicle under test.



Read fault codes

Reads and displays the fault codes (DTCs) from the system module of the vehicle under test and explains what each fault means.

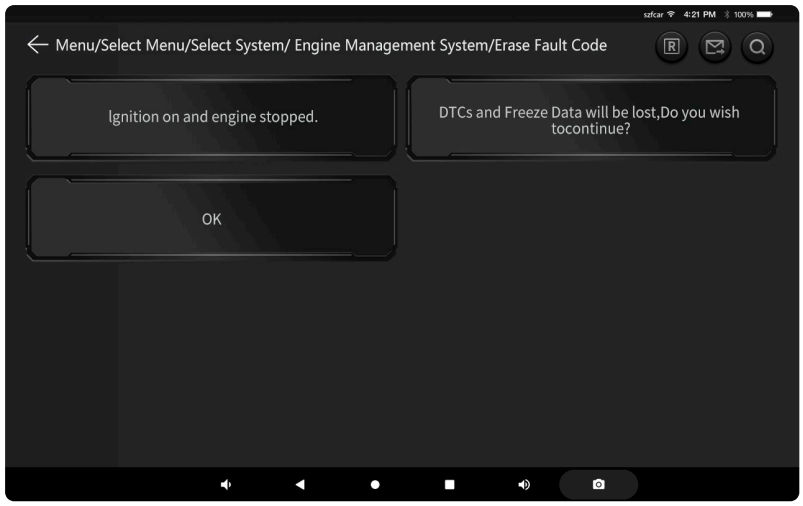


Erase fault codes

Before erasing the fault codes, write down and save the codes read so that you can review and compare them later.

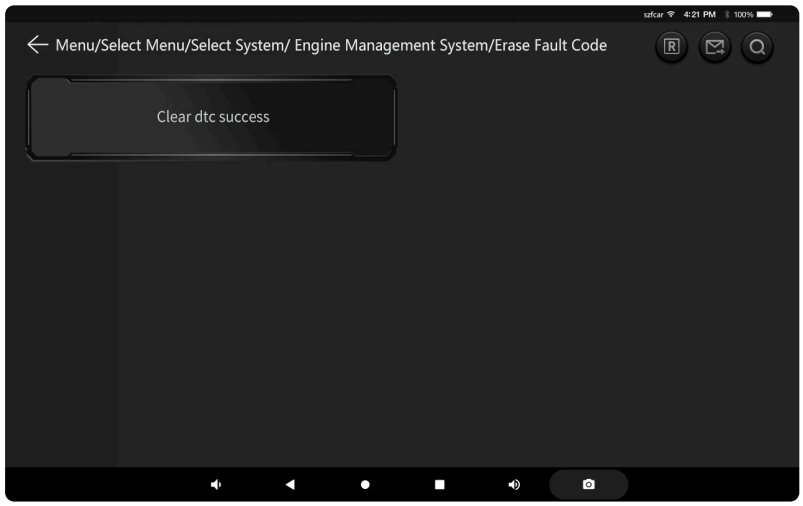
How to erase fault codes

1) Select `Erase Fault Code` on the diagnosis screen;
2) The prompt shown in the figure below appears. Tap `OK` to erase the fault codes.



Note: In this step, operate the vehicle strictly according to the menu prompts.

3) When the next prompt appears, select `Return` and read the fault codes again to check that they have been erased.



Fault code analysis steps

1) Read and record all fault codes;
2) Erase all fault codes;
3) Reproduce the conditions under which the fault occurs and carry out a road test;
4) Read and record the fault codes again;
5) Distinguish between intermittent fault codes (independent or historical codes) and persistent fault codes (current or associated codes);
6) Distinguish between the major and minor fault codes associated with the symptom;
7) Identify the major fault codes among all the fault codes or associated codes (they may be the cause of the others);
8) Based on this analysis, you can further check the sensor indicated by the fault code and the circuit condition of the related actuator or control unit, and pinpoint where the fault has occurred.

Read live data

When you select this function, the real-time operating parameters of the selected system module are displayed on the screen. The parameters shown vary depending on the model and control module, as shown in the figure below:

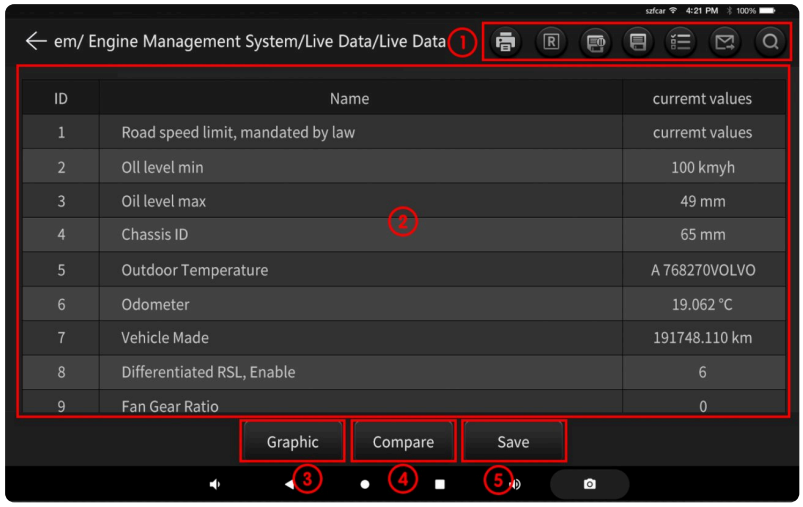


Figure 6.2.4-1 Live data

1) Toolbar (see Table 1)
2) Live data display area
3) Live data graph
4) Live data comparison
5) Save the current live data (for later comparison)

Table 1:

Icon	Function description
	Saves and exports the live data as a PDF document
	Adds live data or fault codes to the vehicle inspection report: 1) If the vehicle was associated before diagnosis, tap the icon and the live data or fault codes are saved directly under that vehicle; 2) If no vehicle was selected before diagnosis, tap the icon and a pop-up window asks whether you want to associate a vehicle; if so, select or create the vehicle in the pop-up page.
	Recorded live data can be viewed in `Data Review` in `Data Management`
	The current live data can be saved as an Excel document and viewed in `Data Set` in `Data Management`
	Selection menu
	One-tap feedback: reports problems encountered during vehicle diagnosis to the FCAR after-sales technical team

Live data graph

On the live data screen, select `Graphic` to view the real-time operating parameters as a graph, as shown in Figure 6.2.4-2; select `List` to return to the numerical view.

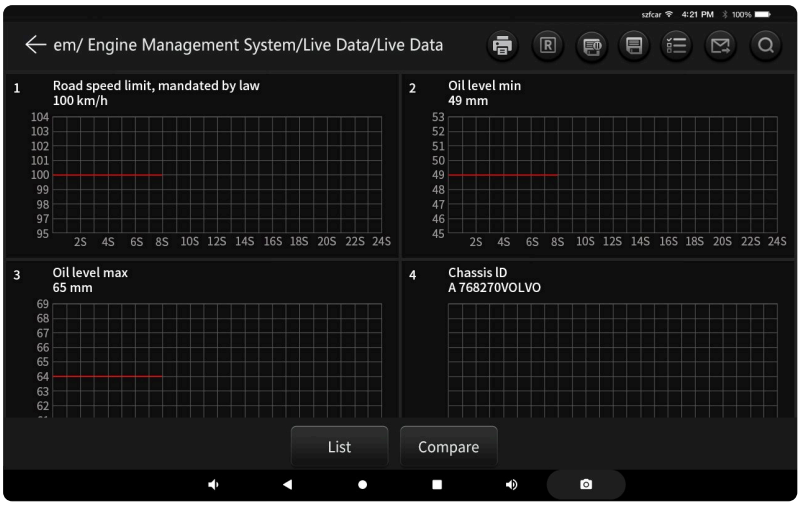


Figure 6.2.4-2 Live data graph

Recording and comparing live data

The system lets you record and save live data and view it as many times as you like in `Data Management` / `Data Review`; it also supports live data comparison. When the vehicle is in good condition, record and save its live data: the next time you test it, or when you work on a vehicle of the same model, you will have reference data for the comparison function.

How to record live data

1) Tap the function icon in the upper right corner, tick the parameters you want to record in the pop-up window and select `OK` to return;
2) Select the function icon , enter the file name in the pop-up window (preferably using the vehicle information, for easy reference) and select `OK` to return;
3) The system starts recording. Tap the button in the lower left corner to stop recording and save the live data automatically.
4) When recording ends, the system saves the data automatically (**Note**: up to 2 minutes of data can be recorded). To view the saved data, select `Data Review` in `Data Management`.

How to compare live data

1) Tap the function icon in the upper right corner, tick the parameters you want to compare in the pop-up window and select `OK` to return;
2) Tap `Compare`, select a saved data file for the same vehicle type in the pop-up dialog box and press `OK` to return;
3) An additional “comparison value” column now appears on the live data screen, as shown in Figure 6.2.4-3. By comparing the system parameters, the technician can quickly find and fix vehicle faults.

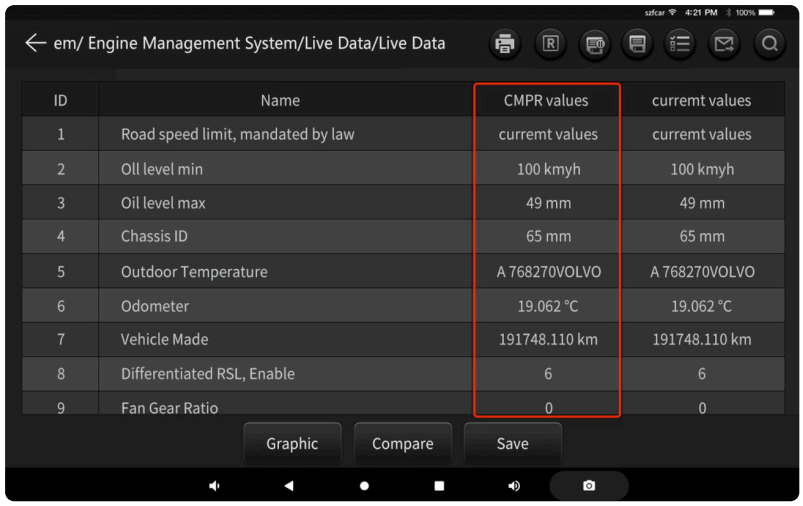


Figure 6.2.4-3 Live data comparison

Actuation test

This function lets you access specific vehicle subsystems and test their components. During the actuation test, the diagnostic tool sends commands to the ECU to drive the actuators and checks whether the actuators of the vehicle's electronic control system and their circuits are working correctly. The available tests vary depending on the model and control system; follow what is shown on the screen.

- How to perform an actuation test

1) Select `Actuation Test` on the diagnosis screen;
2) Select a test item;
3) Follow the on-screen prompts strictly;
4) Tap the Back button to exit the test.

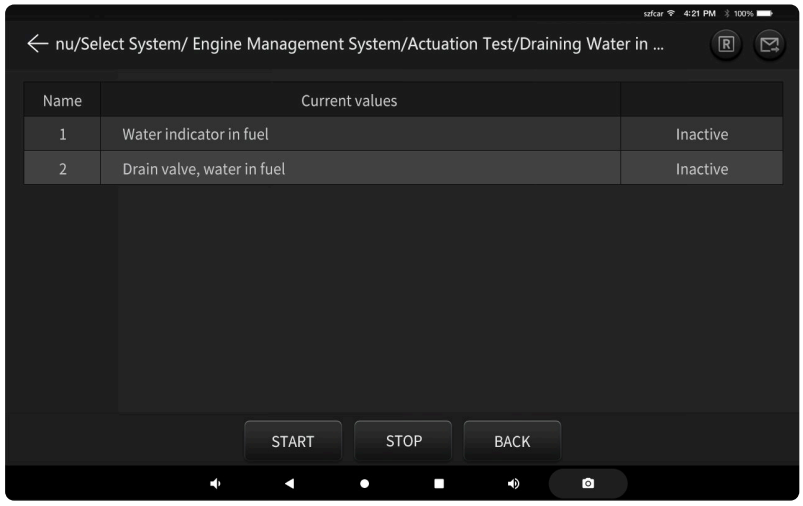


Figure 6.2.5-1 Actuation test

> **Note:** The control buttons vary depending on the selected test item, e.g. “Start”, “On”, etc.

Special functions

Special functions perform the adaptation of individual components. They are mainly used to recalibrate or configure components after they have been repaired or replaced, so that the components of the electronic control system work together; otherwise the system will not operate correctly.

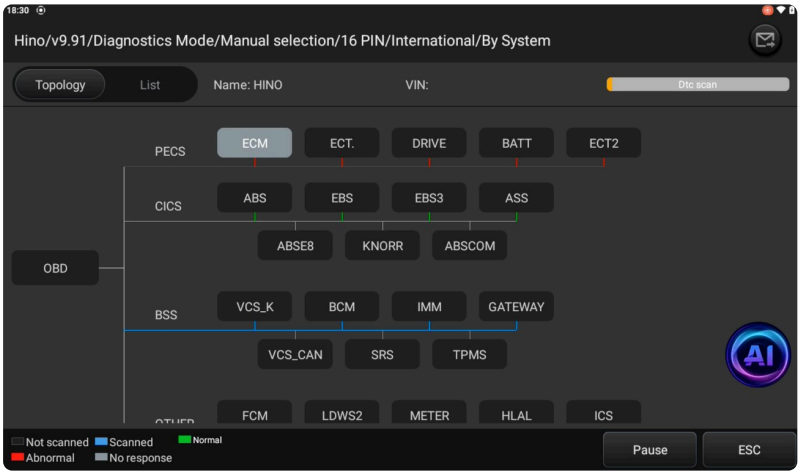
The main adaptation screen uses guided menus. Read the on-screen prompts carefully and follow them. The specific procedure varies depending on the model being tested.

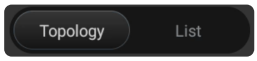
The general steps of an adaptation are as follows:

1) Select the model and the relevant configuration;
2) Wait for the program to establish communication with the vehicle's ECU and select the function you want to perform; some functions can only be performed when specific conditions are met;
3) Read the on-screen information carefully, check the vehicle status indicated and strictly follow the menu prompts;
4) When the adaptation is complete, the screen displays messages such as “Operation success” or “Matching completed”.

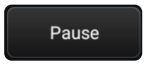
Topology diagram

Taking a HINO model as an example: tap to enter Autoscan; by default, the automatic scan is shown as a topology diagram.





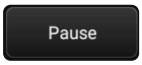
1) Tap the tab in the top left corner to switch to list view

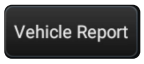


2) Pause: tap in the bottom right corner



3) Exit: tap in the bottom right corner





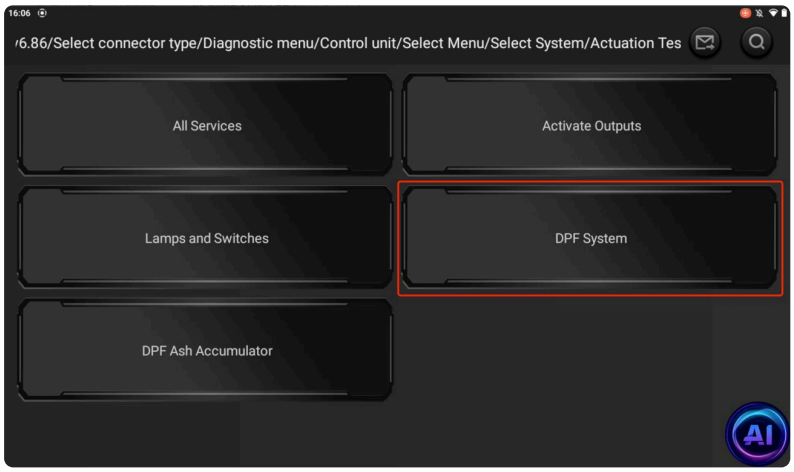
4) View Report: when the automatic scan is complete, the button in the bottom right corner changes; tap it to open the inspection report page.

5) Select any system to enter it and continue with its individual diagnosis.

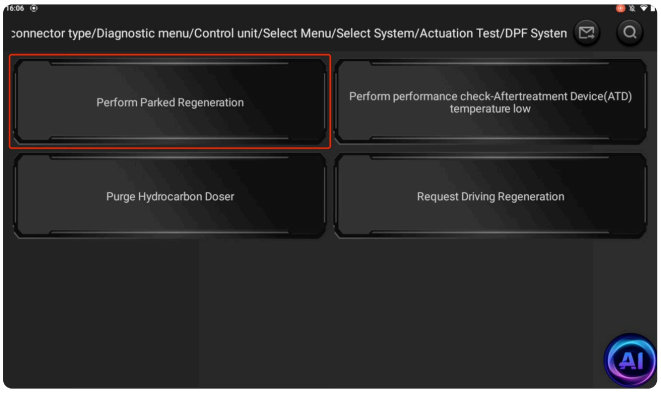
DPF visualization

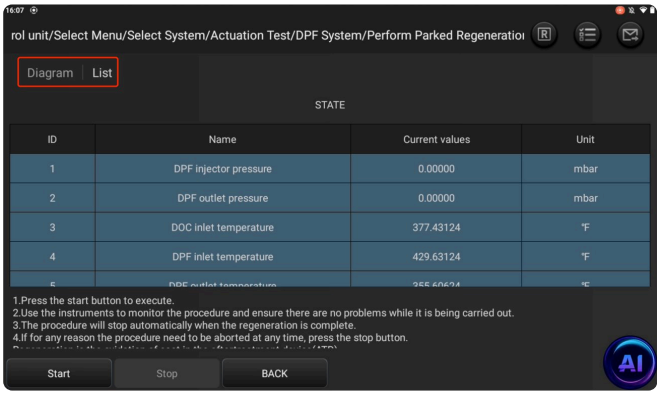
This feature is only available on certain vehicle models, for example Detroit models:

Select the DPF system

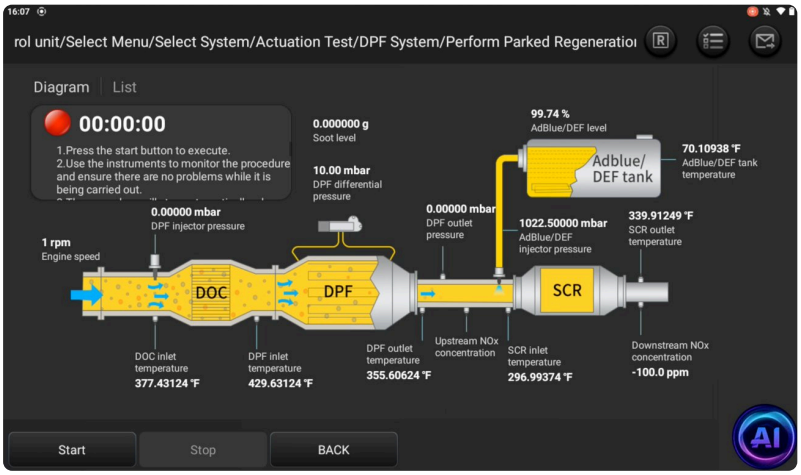


Select “Perform Parked Regeneration”.





Start the DPF regeneration; the list view is shown by default. Tap the “Diagram” button in the top right corner of the page (shown below) to switch to the DPF visualization page.

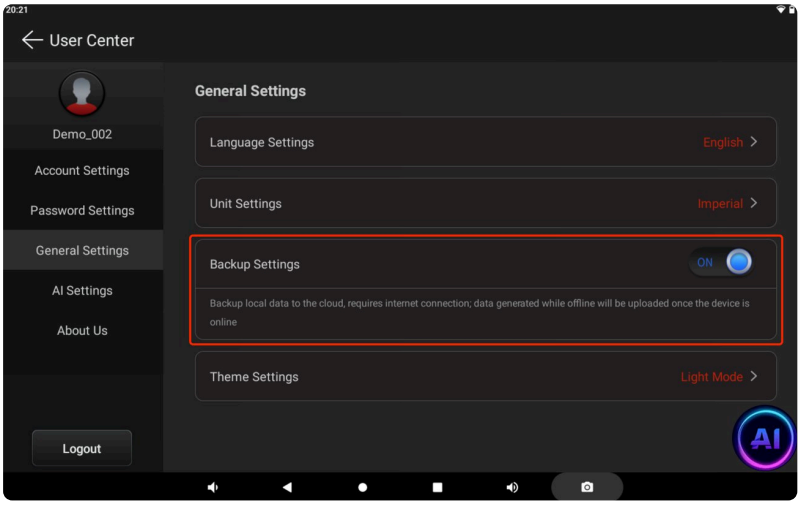


The DPF visualization page displays data values that change as the DPF process runs.

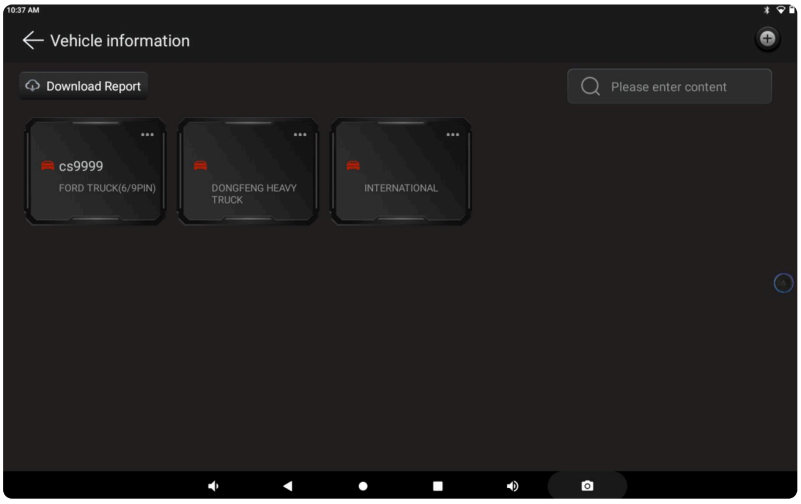
16.6 Diagnostic report

This function is used to associate vehicles when diagnosing them. The vehicle diagnostic data can be saved locally on the tablet and also uploaded to the cloud server.

> **Note:**
>
> Diagnostic data is uploaded to the cloud server only if `Data Backup` is switched on in the Personal Center page.

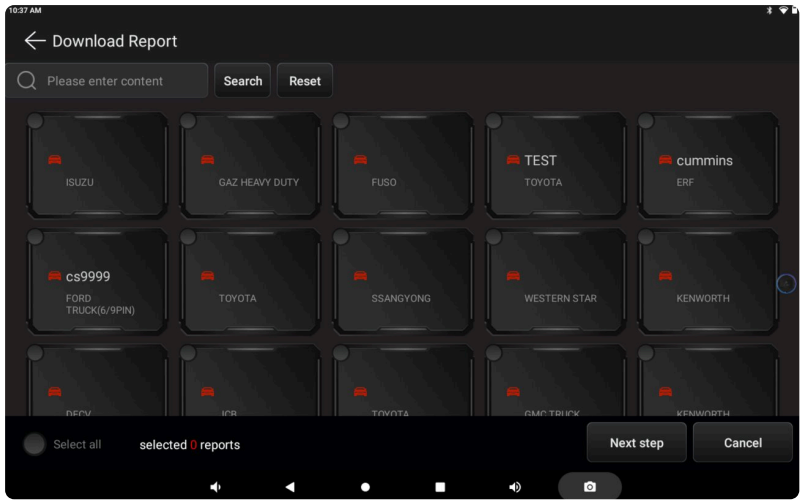


1) `Inspection Report` By default, the list of vehicles associated with local reports is displayed; select any vehicle to open its inspection report.

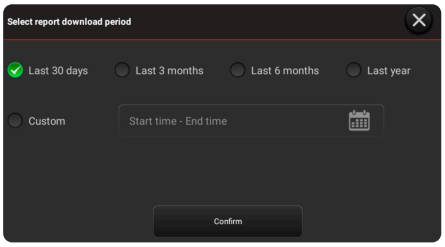


- To download cloud reports:

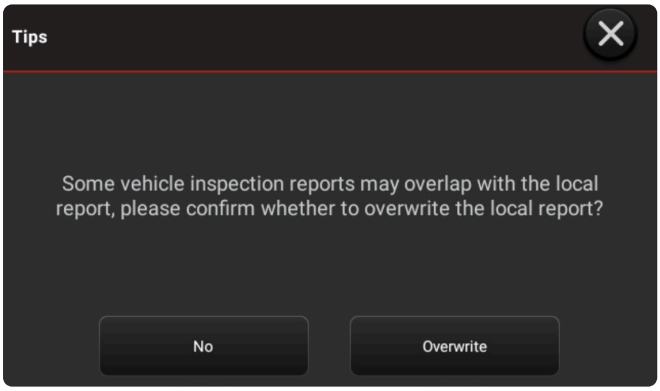
Select the vehicle whose report you want to download

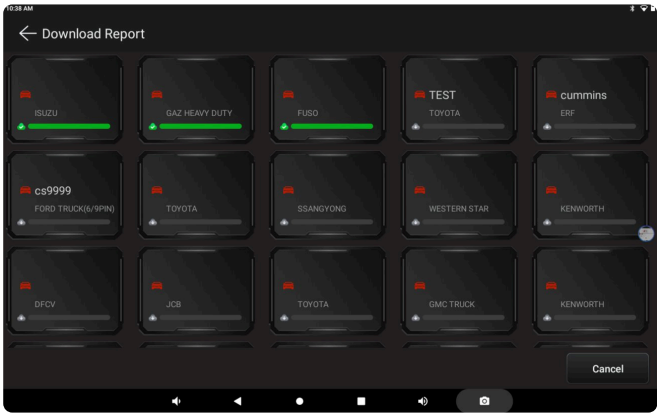


Download by report save date



Some cloud reports may already exist locally; you will need to choose whether to overwrite the duplicate local reports

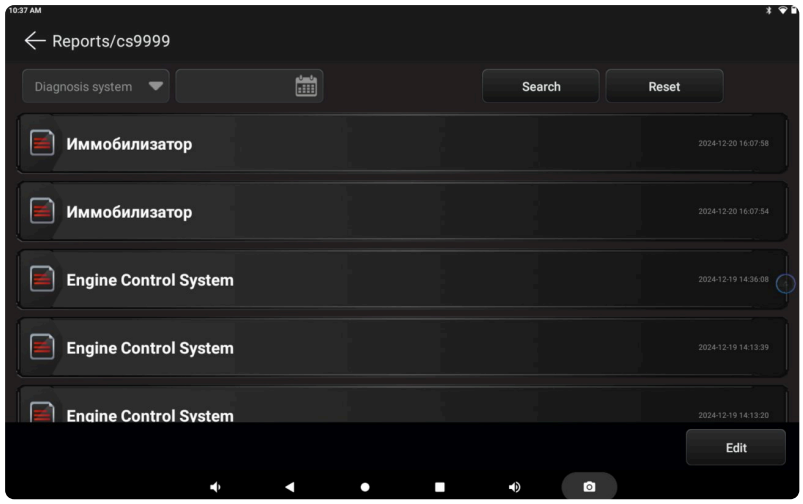




Start the download; you can cancel it from the bottom right corner.

- Viewing reports:

Opening a vehicle shows all its local inspection reports



You can do the following:

Query/reset: filter by license plate number/VIN, diagnosed system and inspection date range.

Compare: select the same system of the vehicle and check its reports from different dates to compare the inspection results.





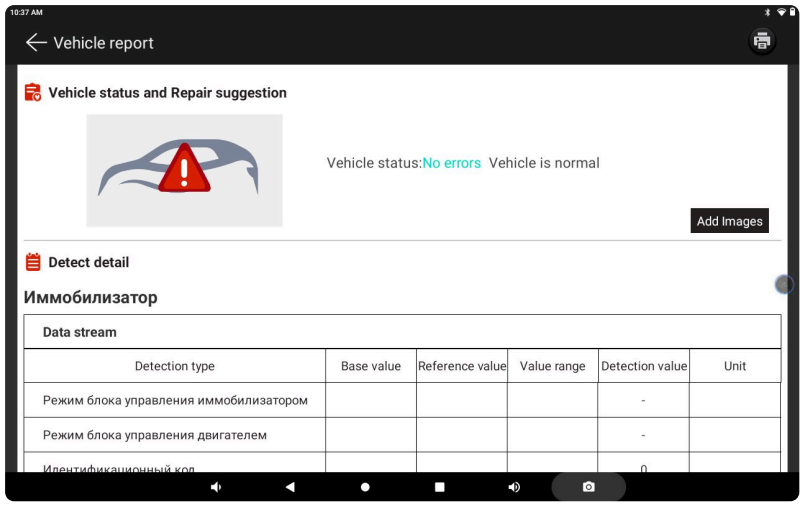
> **Note:** when “Hidden Same Item” in the upper right corner is switched on, the comparison list does not show data with identical results; only data with different results is shown.

Delete: you can select several inspection reports to delete; once deleted, they no longer appear on the tablet.

- Edit/delete vehicles: note that deleting a vehicle also deletes its local reports.

Add Images

- View Report: you can view a breakdown of the vehicle's inspection report and tap the upload button to upload images of vehicle parts captured with the borescope.



FCAR F9S

Warranty

Thank you for choosing the FCAR F9S. To get the most out of the product, we recommend that you always follow the maintenance, storage and operating recommendations in this user manual. These requirements are designed to maximize the service life of the product.

1. Under the following terms and conditions, and provided that you have activated our product and registered on the website of Shenzhen FCAR Technology Co., Ltd. (hereinafter “FCAR”), we provide a free warranty service for defects in hardware materials or workmanship.

2. The product must be purchased from a dealer authorized by FCAR. If the product is purchased from anyone other than an FCAR authorized dealer, the buyer will bear the full cost of product repair services.

3. The following items are excluded from the warranty: items subject to wear and tear such as product instructions, inner and outer packaging, promotional gifts, SD card, card reader, stylus, printing consumables, etc.

4. From the date of purchase (subject to valid proof of purchase and a valid product warranty card), if the product suffers a performance failure within the first month that is not caused by use other than as recommended or by uncontrollable environmental events, you can choose to have it repaired by our service department or replaced with a new product of the same model. After that, the tablet, connectors and power adapter are covered by a one-year warranty.

5. You will not be entitled to free warranty service in any of the following situations:

1.) Failures, defects or flaws not directly related to the quality of FCAR products, including but not limited to: failure to use the product according to the user manual, impacts, drops, disassembly by anyone other than FCAR-approved service personnel, connection of unsuitable accessories, impact damage due to improper transport or storage of the product, erosion and/or corrosion caused by ingress of liquids or food, etc.

2) Natural wear and tear of the product, including but not limited to the casing, buttons, touch screen, accessories, etc.;

3) The product serial number does not match the serial number on the warranty card, or the product's quality inspection label or barcode has been removed, altered or damaged;

4) Disassembly, repair or modification without the approval of FCAR Technology.

6. If the product has quality problems or malfunctions during the warranty period, you can take the following steps:

1) Run a self-test on the product following the product help information. If there is no hardware quality problem, try updating the product.

2) Contact the local dealer where you purchased the product or the FCAR Europe technical service (serviciotecnico@efitaller.com) to obtain the correct service information.

3) Once authorized by the company, the product must be sent to the designated address for repair and maintenance; otherwise it cannot be repaired in good time. Losses caused by customer negligence or failure to follow the company's instructions are at your own risk.

7. During warranty repair, you will bear the costs of sending the product to the repair center designated by FCAR, including packaging, transport, insurance and other expenses.

8. Within the warranty period and under this warranty clause, you can obtain free warranty service for losses due to product defects. FCAR shall not be liable for any direct or indirect loss you incur.

9. All product warranty information and changes to product functions and specifications will be published in FCAR's latest promotional materials and on its official website. The website or promotional materials may be changed without further notice.

One connected workshop, flawless diagnostics.

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