

F4SN HD Commercial Pad

VII

FCAR Tech USA

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FCAR Tablet scanner maintenance and use precautions.

- This machine does not allow unauthorized removal;
- Avoid causing strong collisions with this unit;
- Avoid putting the unit close to the magnetic field;
- Do not leave the unit in a high temperature environment for a long time;
- Do not leave the unit in a low temperature environment for a long time;
- Click on the screen, don't use too much force or use sharp weapon;
- Do not use water and chemical solvents to clean the unit. Use a soft cloth and a mild detergent to clean the unit.

Vehicle Inspection Precautions

- It must be operated in accordance with the safety regulations of the truck repair industry. Pay special attention to the influence or damage caused by environmental factors such as acid and alkali, poison gas and high pressure and heavy objects;
- Sulphuric acid is contained in automobile battery liquid. Sulphuric acid is corrosive to skin. When operating, direct contact between battery liquid and skin should be avoided. Special attention should be paid to not splashing into eyes and no fire near;
- There are many toxic compounds in the exhaust gas of the engine. Avoid inhalation. Park the

vehicle in a well-ventilated place during operation;

- When the engine is running at a high temperature, avoid contact with high temperature parts such as water tanks and exhaust pipes;
- Before starting the engine, the brake hand brake should be pulled, and the shift lever should be placed in neutral (manual transmission) or P-range (automatic transmission) to avoid accidents when the vehicle is started;
- Before the vehicle is repaired, pull the parking brake, the transmission gear is hung in the neutral or P gear, and lower the driver's seat side glass door and window;
- If the engine can start, warm the car to normal temperature (water temperature is about 80 °C), and turn off the auxiliary appliances (such as air conditioning, lighting, sound, etc.);
- Locate the car diagnostics and check that the diagnostics line is intact and connect to the Tablet for diagnosis. Otherwise, it is not necessary to test to avoid damage to the Tablet. If necessary, measure the voltage of the diagnostic socket with a multimeter;
- Instrument use precautions;
- When testing with FCAR series products, it is necessary to handle them lightly, keep away from heat source and electromagnetic field, avoid interference to the main machine;
- You can't click on touch screen with sharp tools. It is recommended to use matching touch pen operation;
- When the electrical components are energized, the circuit cannot be disconnected to prevent self-inductance and mutual inductance current from damaging the sensor and the vehicle ECU;
- When the appliance is working normally, it is strictly forbidden to bring the magnetic object close to the vehicle control unit, otherwise the vehicle control unit may be damaged;
- When disassembling the car control unit or electrical components, the ignition switch must be turned off for 1 minute;
- Never operate the diagnostic equipment while driving the vehicle to avoid accidents.

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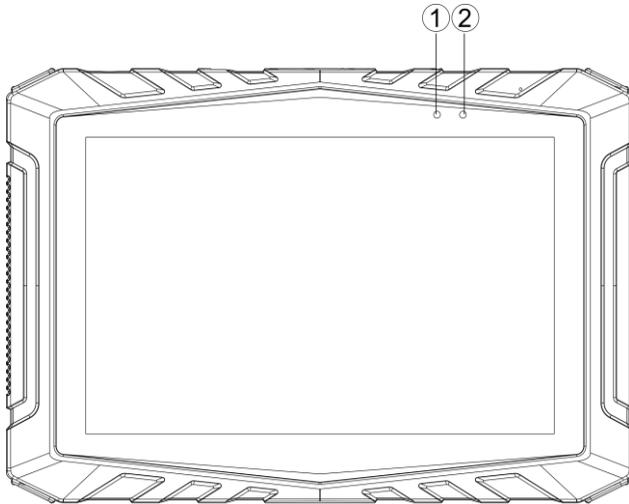
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1. Product Description

1.1 Product Description

The F4S-N HD Pad Pro is a sophisticated truck diagnostic system which coverage the most diesel and gasoline vehicle's electric control systems in OEM level. The scanner not only has extensive coverage in most light duty, medium duty and heavy-duty trucks and off road equipment with additional domestic passenger vehicle coverage, but also has comprehensive functionalities: diagnostic, testing, calibration, OEM level bidirectional functions. All vehicle software are preloaded. It works independently without WIFI, great for roadside service or remote facility. The software will never expire, It is also featuring remote diagnostic, remote print, customized data export and vehicle healthy report. The F4SN is designed for your truck or equipment daily repair or maintenance needs with fast scan, simple-easy use, and affordable cost.

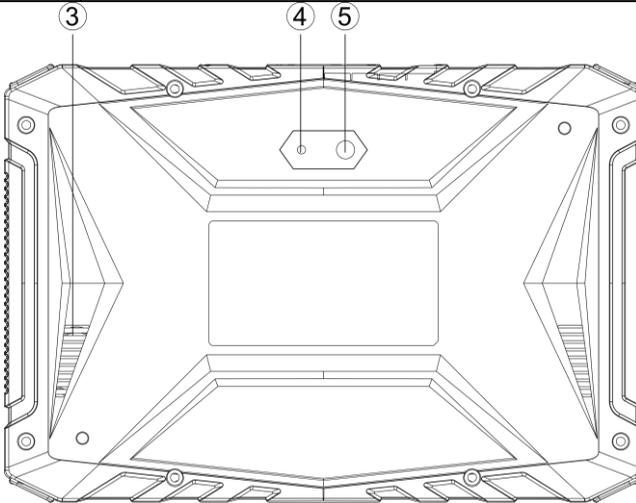
1.2 Tablet Structure Description

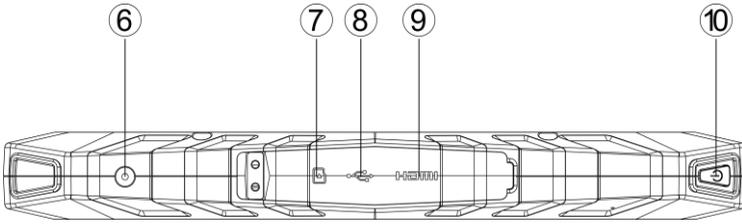


Serial Number	Name	Description
①	Light Sensor	External light intensity sensing
②	Power Light	Charging light

Tablet Parameter

System	Android 7.0 Multitask Operating System
Processor	MT8783 eight-core , 13GHz Cortex-A53 Architecture processor
Display	IPS 8" Resolution: 800*1280
Touch screen	8-inch 5-point capacitive screen, G+G, Hardness 7H or more, scratch-resistant, TP thickness:1.1mm, COF
RAM	3GB RAM & 64GB ROM, Also supports 128GB TF memory card
Connection	WiFi & Bluetooth 2.0/4.0
Camera	Rear 13 megapixels, flashing light
Interface	HDMI HD interface, USB2.0, TF slot, power interface
Size	232mm*159mm*27mm
Power	DC 12V/3A
Working Temperature	0°C to 40°C
Storage temperature	-20°C to 60°C
Temperature	55% Non condensing



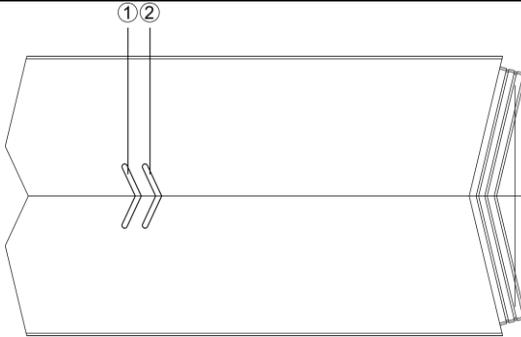


Serial Number	Name	Description
③	External Horn Hole	Used to external sound playback
④	Camera	Used to take a photo or record a video
⑤	Flash Light	Used to provide light when the light is weak
⑥	DC Power Outlet	For tablet charging or powering
⑦	TF Card Slot	Store TF card location
⑧	USB Type-C Interface	Used to connect a computer and use the tablet as a USB flash drive
	USB Interface	For tablet and VCI connection or connection to U disk
⑨	HDMI Interface	Standard HDMI interface for connecting to TV HD output
⑩	Power switch	Used to turn the tablet on or off, or to lock the screen

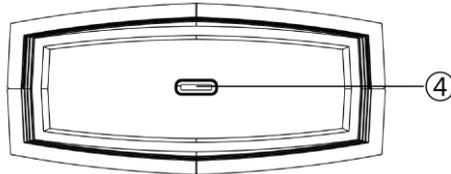
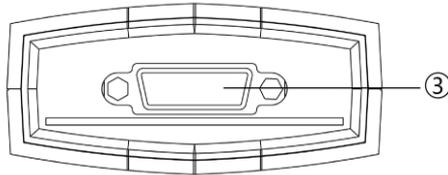
Note: USB Type-C interface and USB interface cannot be used simultaneously !

1.3 VCI Structure Description

The VCI box model of F4S-N Series products is FV100, the structure is shown below:



Serial Number	Name	Description
①	Power light	Lights up red when the power is supplied
②	Diagnostic light	Green light flashes when communicating with the vehicle



Serial Number	Name	Description
③	DB15 interface	Connect to the main test line and connected to the vehicle via the diagnostic connector
④	USB Type-C interface	Connect to a flat panel Tablet or upgrade the FV100

FV100 Parameter

Processor	Cortex®-M3
Frequency	72MHZ
Bluetooth	V2.1+EDR, BT2.0 & BT4.0
RAM	128KB

2. Tablet power on/off and function menu description

2.1 Tablet Power Supply

The Tablet can be charged in the following ways:

Power adapter: Connect one end of the AC/DC power adapter to the DC power port of the Tablet and the other end to the wall outlet. The power adapter can charge the built-in battery pack (the built-in battery is fully charged to keep the device working continuously for 4 hours or more).

Note! The voltage of the power supply should be within the scope of the product Tablet. Exceeding the range may cause damage to the product.

2.2 Power On

Press and hold the power switch of the tablet Tablet (about 5 seconds) to power on the Tablet, enter the following welcome interface, the system starts running.



2.3 Power Off

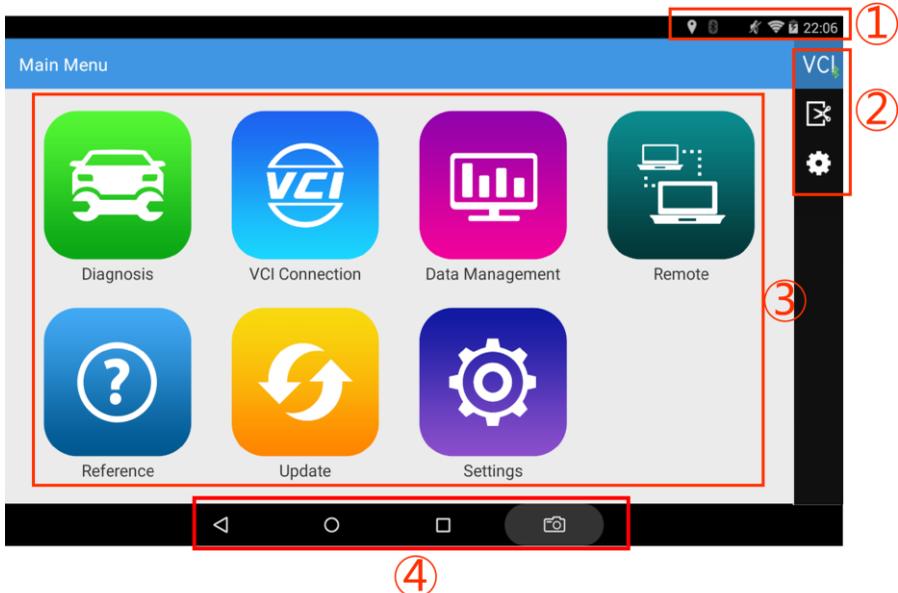
All vehicle communication must be terminated before turning off the diagnostic equipment. If forced shutdown during communication may cause problems with the vehicle's electronic control module, please exit all diagnostic applications before shutting down.

The shutdown procedure is as follows:

- 1) Short press the tablet Tablet power switch (about 2 seconds)
- 2) In the pop-up prompt, click [Shutdown] to turn off the tablet Tablet.

2.4 Introduction to Each Function Menu

After the system is powered on, enter the function main menu, as shown in the figure:



- ① Status icon: is the default icon for the standard Android operating system
- ② Toolbar (see Table 1)
- ③ Function main menu (see Table 2)

④ Navigation bar (see Table 3)

Tip: It is recommended to lock the screen at any time when you are not using the device to protect your system information and save battery power. Tap the power/lock screen button once, the screen will automatically lock the screen. Excessive force or long press may cause the button to malfunction or enter the shutdown interface.

Table 1: Toolbar

Icon	Function Name	Function description
	VCI connection	VCI box connection and status display (always available throughout diagnostics)
	Screenshot	Capture the current visual screen with one click (always available throughout the diagnostic operation)
	Settings	"Settings" function shortcut

Table 2: Function Main Menu

Icon	Function Name	Function description
	Diagnosis	Car diagnostic procedures, see section 3
	VCI connection	Establish and manage communication connections with VCI devices, see section 3
	Data Management	Used to view and manage saved data files, see section 4
	Remote	Run this program to establish remote assistance with the FCAR after-sales technical team, see section 5
	Reference	Provide online information, online videos, device usage instructions and other help information, see section 6
	Update	Online upgrade of system firmware, software, model software, etc., see section 7
	Settings	Set up and view system information, see section 8

Table 3: Navigation Bar

Icon	Function Name	Function description
	Return	Return to the previous interface
	Homepage	Return to the main interface of the Android system
	Recently used program	Display the list of recently used program thumbnails, click on the program thumbnail to open the program, and swipe up the program thumbnail to close the program
	Screenshot	Capture the current visual screen

3.Diagnosis

The diagnostic program establishes a data connection through the vehicle's electronic control system that has been connected to the VCI device (FV100), which can read vehicle diagnostic information, view data streams, and perform action tests.

- To establish good communication between the diagnostic program and the vehicle, you need to perform the following operations:
 - 1) Connect the VCI box to the vehicle diagnostics stand and provide power;
 - 2) Establish communication between VCI and tablet via Bluetooth pairing or USB data cable;
 - 3) Check the VCI connection status in the upper right corner of the screen (see 3.2.2). The connection is successful and the vehicle can be diagnosed.

- How to perform vehicle diagnostics: Establish a good communication between the diagnostic program and the vehicle under test, see 3.2.
 - 1) Select the model, see 3.3.
 - 2) Vehicle diagnostics are performed by “automatically scanning” all systems of the vehicle or "testing by system" to detect a specific control unit, see 3.5.

Detailed instructions will be given below.

3.1 Technical Requirements Before Diagnosis

3.1.1 Equipment Requirements

The F4S-N gasoline version intelligent diagnostic instrument is equipped with the main engine and various test connectors when it leaves the factory. When testing, the corresponding test joints are selected according to the type of automobile diagnostic seat, while the standard OBD-II model only needs to use a standard OBD II-16 joint connection, and no other diagnostic joints need to be connected.

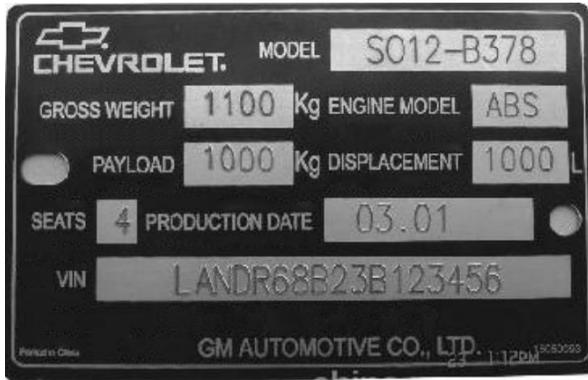
3.1.2 Vehicle Requirements

Gasoline version vehicle requirements:

- ✧ Ignition switch ON gear;
- ✧ The car battery voltage should be between 11~14V or 24~27V (subject to vehicle power supply)
- ✧ The accelerator pedal is in the closed state, that is, the idle coupling point;
- ✧ The ignition timing and idle speed should be within the standard range. The water temperature and transmission oil temperature reach the normal working temperature (water temperature 90~110°C, transmission oil temperature 50~80°C);
- ✧ Diagnostic line connection is normal.

3.1.3 Service Technician Request

- ✧ Must have a basic knowledge of automotive electronics;
- ✧ Understand the basic operation of this product and familiarize yourself with this manual;
- ✧ The phenomena of vehicle faults can be basically distinguished between mechanical faults and electronic control faults;
- ✧ Understand vehicle origin, production year, vehicle type, engine type and other information.



3.2 Vehicle Connection

3.2.1 VCI Box Connecting with Vehicle

Before connecting VCI box to vehicle, it is necessary to judge whether the diagnostic seat of the test vehicle is standard OBD-II interface or non-standard OBD-II interface.

- Vehicles compatible with the OBD-II management system can be connected to the vehicle diagnostics and powered by a standard OBDII-16 connector;
- Vehicles that are not compatible with the OBD-II management system need to select the corresponding connector; some vehicles need to supply power to the VCI box through other power sources.

Here are the instructions for the two connection methods.

① Standard OBD-II interface connection

Vehicles connected to the standard OBD-II interface need only use a standard OBDII-16 connector to connect, no need to connect other connectors, as shown in Figure 3.2-1:



Figure 3.2-1 Connection of the standard OBD-II interface

Instructions:

- 1) Determine the location and interface of the diagnostic seat;
- 2) Connect one end of the main test lead to the DB15 connector of the FV100 and tighten the fixing bolts;
- 3) Connect the other end of the main test lead to the OBDII-16 connector;
- 4) Connect the OBDII-16 connector to the main test lead to the vehicle diagnostics;
- 5) At this time, the VCI box (FV100) is powered by the vehicle diagnostic seat, and the power indicator light is on.

Note: After the test is completed, please rotate the fixing bolts and then gently pull off the main test line to avoid damage to the diagnostic interface.

② Non-OBD-II interface connection

For vehicles connected to non-OBD-II interfaces, need to connect the main test cable to their corresponding dedicated connectors, as shown in Figure 3.2-2:

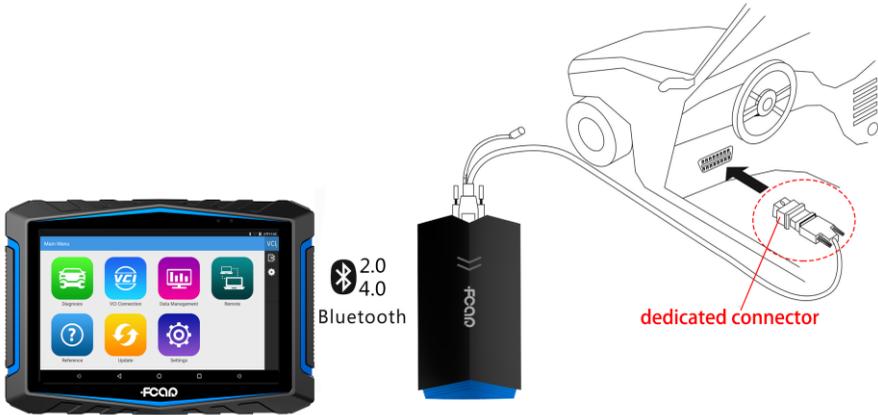


Figure 3.2-2 Connection of non-OBD-II interface

Instructions:

- 1) Determine the location and interface of the diagnostic seat;
- 2) Connect one end of the main test lead to the DB15 connector of the FV100 and tighten the fixing bolts;
- 3) Connect the other end of the main test cable to a dedicated connector corresponding to the vehicle;
- 4) Connect the dedicated connector that is connected to the main test cable to the vehicle diagnostic socket;
- 5) At this time, the VCI box (FV100) is powered by the vehicle diagnostic seat, and the power light is on.

3.2.2 Tablet connecting with VCI Box

After the VCI box is connected to the vehicle, the connection between the Tablet and the VCI box needs to be matched, and the vehicle diagnosis can be performed after the matching is completed; the VCI box supports two ways of communicating with the tablet Tablet: Bluetooth pairing and USB cable.

Pairing via Bluetooth :

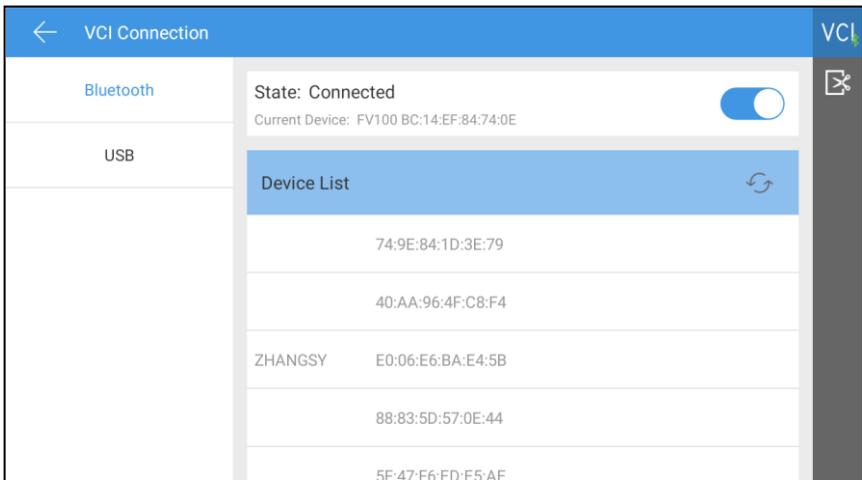
- 1) Turn on the tablet Tablet power;

2) Select [VCI Connection] in the function main menu; select [Bluetooth] in the connection mode;

3) Click the Scan “” icon on the right side of the device list to automatically scan nearby Bluetooth devices.

4) Select target Bluetooth to match;

5) When the matching is completed, the VCI icon in the upper right corner of the screen changes from “” to “” to indicate that the Bluetooth pairing is successful and the vehicle diagnosis can be performed.

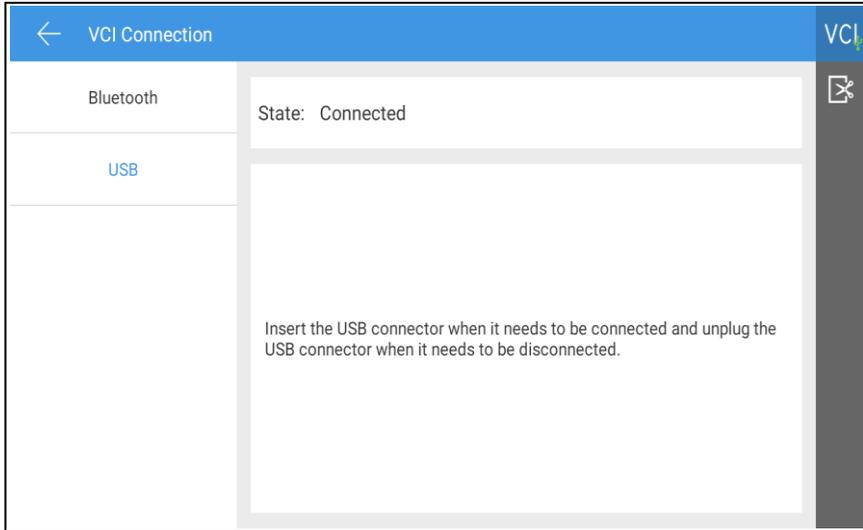


Note: If the Bluetooth device is not searched, the signal strength of the transmitter may be too weak. In this case, please be as close as possible to the VCI Bluetooth device.

Via USB cable

The USB connection is the fastest communication method between the tablet and the VCI device. Please use the dedicated USB cable configured by our factory to connect. After the connection is completed, the VCI icon in the upper right corner of the screen changes from “” to “”, indicating that the USB connection is successful.

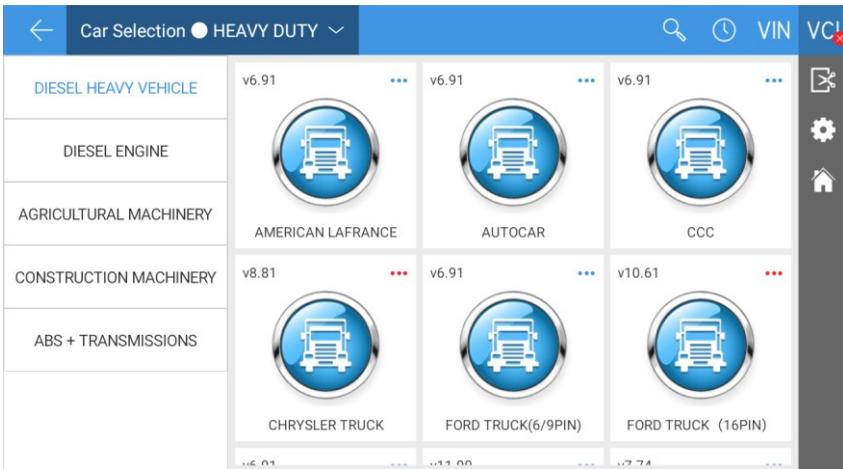
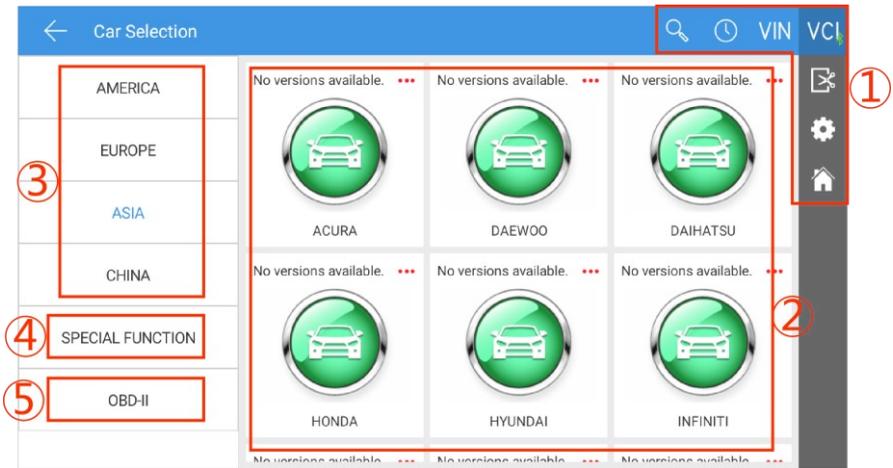
Vehicle diagnostics are available.



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

3.3 Vehicle Selection

When all the above connections are completed, click [Diagnostics] on the main menu of the function to start the vehicle diagnosis. The following figure shows the vehicle selection interface.



- 1) Toolbar (see Table 1)
- 2) For the model manufacturer and related detection functions, click on the “” in the upper right corner of the model to view the function list and other related information of the model.
- 3) Asian, European, American major brand car selection menu
- 4) Special function, see 3.6
- 5) General OBD-II Vehicle diagnostics, see 3.7

Table 1:

Icon	Name	Function description
	Search	One-click search for major brand models
	History Record	View maintenance history, quick access to diagnostics, view model menus, model version information, and more
	VIN code	Identify models by manually or automatically scanning the VIN code
	Homepage	Return to function main menu

The diagnostic program needs to select the vehicle first to enter the diagnostic function of the system module. There are several ways to identify the vehicle in the FCAR F4S-N series:

- By manual selection
- By "automatic identification" model function
- Direct access to the vehicle system module
- By automatically scanning VIN code
- By manually entering VIN code
- By OBD II access mode

3.3.1 Manual Vehicle Selection

Manually select the model as the menu boot mode, only need to follow the screen prompt for a series of choices, specific options will vary according to the type measured. For a large number of gasoline models can be quickly found through the search toolbar to find the car brand, and then according to the screen tips to select; You can also find the vehicle brand through the origin of the car (I. e., Chinese, Asian, European, American), and then select according to the screen prompt, until the vehicle to be tested is identified accurately.

3.3.2 Automatic Vehicle Selection

The new “automatic recognition” model function of the intelligent diagnosis system of the FCAR can skip the step of selecting the vehicle by hand, obtain the specific vehicle information directly from the vehicle ECU, and quickly enter the diagnosis interface after confirmation. Take Lincoln as an example:

1. Select an American train [FORD] on the model selection interface;
2. Click [Auto Vehicle Selection] from vehicle selection to automatically identify vehicle information;
3. Carefully check whether the vehicle information is correct, click [OK] directly into the vehicle diagnosis interface.

3.3.3 Direct Access to Vehicle System

If you are very clear about the cause of the vehicle failure, you only need to enter a specific system module. The currently supported vehicle electronic control system includes engine system, anti-lock braking system, airbag, and below, take Bosch M797 engine system as an example:

- 1) Select [ENGINE SYSTEM] under the Chinese train group menu in the model selection interface;
- 2) Select [Bosch] on the engine electronic control system interface;
- 3) Select [Bosch M797 engine control module] in Bosch engine interface, the system automatically enters the function test interface.

3.3.4 Automatic scan VIN code

The automatic scanning VIN code of the FCAR intelligent diagnosis system can identify all CAN technology compatible vehicles. The automatic VIN code scanning function is convenient for the service technician to quickly find the target vehicle:

- 1) Click the [VIN] function icon in the model selection interface and select [AUTO];
- 2) Click [Start Scan], the diagnostic device starts to scan the VIN code on the ECU;
- 3) After successfully identifying the vehicle, the system will guide you into the vehicle diagnostic interface.

3.3.5 Manual input VIN code

For models that do not support automatic scanning of VIN code, the FCAR Intelligent Diagnostic System also supports manual input of VIN code as follows:

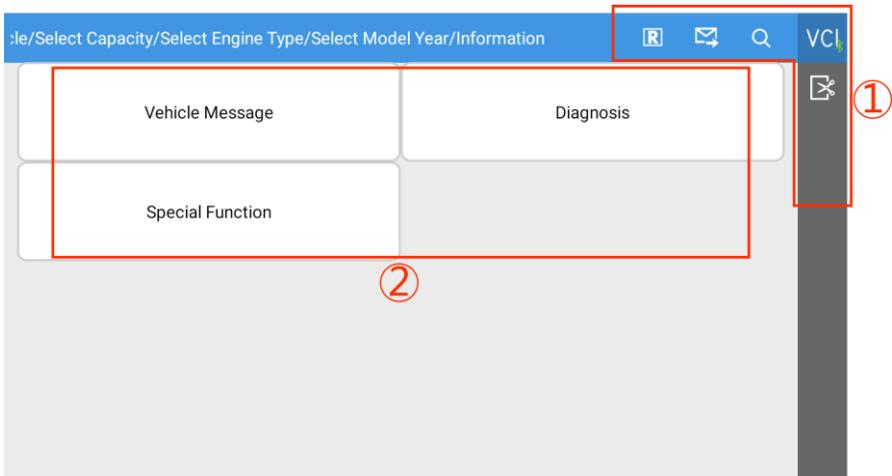
- 1) Click the [VIN] function icon on the model selection interface, select [MANUAL];
- 2) Enter the correct VIN code in the input box, click the search[]icon on the right, the system will automatically display the searched model;
- 3) After successfully identifying the vehicle, the system will guide you into the vehicle diagnostic interface.

3.3.6 General OBD access mode

In some cases, because the database does not support or the vehicle has other functional features, the diagnostic device cannot identify the vehicle and establish communication through the normal channel. At this time, the OBDII or EOBD test can be performed through the OBD direct access function. See 3.7.

3.4 Introduction to Diagnostic and other Advanced functions

After the vehicle selection is completed, the vehicle diagnosis can be performed. The main interface of the diagnosis is as follows:



- 1) Toolbar and status bar (see Table 1)
- 2) Diagnostic function main interface (see 3.4.1)

Table 1:

Icon	Function Description
	Create test reports to view, print, send test reports, etc. in “Data Management”
	One-key feedback to feedback problems in the vehicle diagnosis process to the FCAR after-sales technical team

3.4.1 Diagnostic function main interface

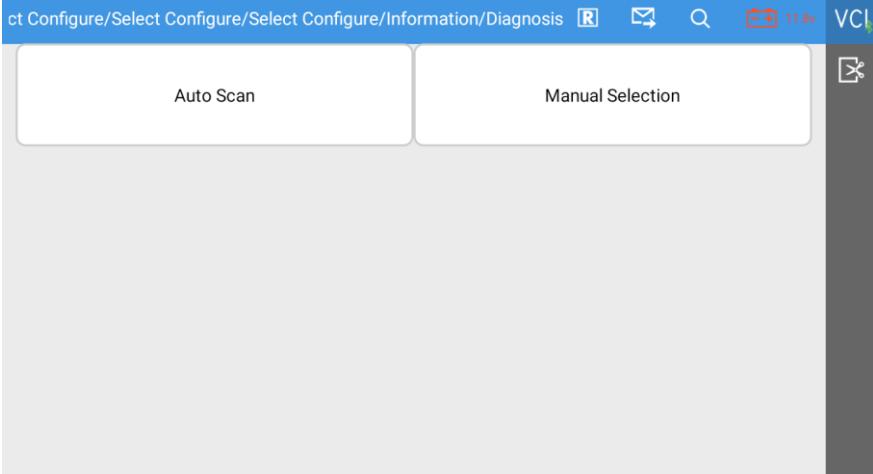
The main interface of the diagnosis mainly displays the function options of the selected model. The interface options are slightly different depending on the selected model.

The main function interface usually includes the following options:

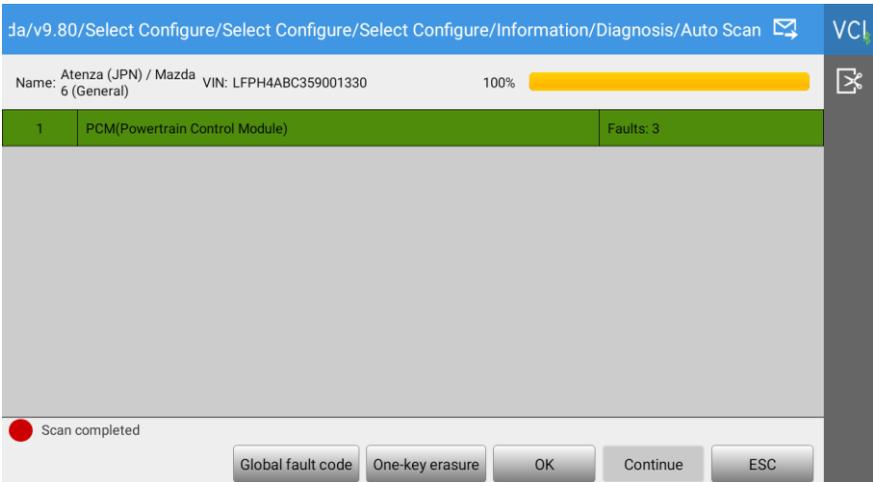
- **Vehicle information:** Click to view the vehicle information to be tested, including: model, engine model, displacement, vehicle identification number, etc.
- **Diagnosis:** It can diagnose the vehicle's electronic control system, including reading fault codes, clearing fault codes, reading live data, and actuation test.
- **Special function:** The selected models have different special functions and the displayed function names are slightly different. This option may sometimes be displayed as special functions, service data, maintenance reset or other similar names.

3.5 Diagnosis

Select [Diagnosis] to enter the vehicle system module in two ways: **automatic scanning** and **manual selection**.



Automatic Scan: Select this option, the diagnostic program will automatically scan all the systems of the vehicle under test, and support the reading of global fault codes, one-key clearing and other functions, the following figure is the automatic scanning interface:

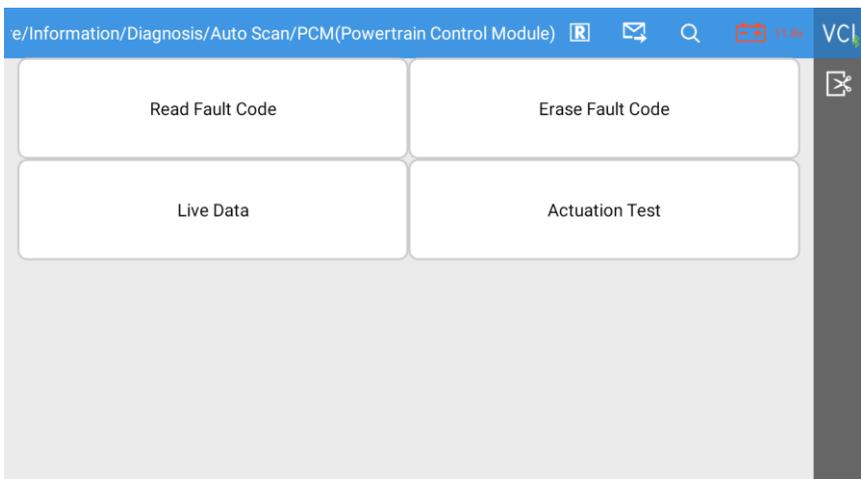


The following table is a functional button in automatic scanning:

Function name	Function description
Global fault code	Click to view vehicle full system fault code
One-key erasure	One-key erasure system all fault codes

OK	Select any system module, click OK to enter the module diagnostic interface.
Pause	Click Pause, the program will automatically pause the scan and display as [Continue]
ESC	Exit auto scan and return to the previous operation interface

Manual Selection: Select this option, the diagnostic program will display all vehicle control units, select a control unit, enter the diagnostic interface of the control unit, as shown below. (If the model is not configured, it can not establish communication with the vehicle ECU)



Read Fault Code: read and display DTC information retrieved from the vehicle system module

Erase Fault Code: clear the fault code and freeze frame data retrieved from the vehicle system module

Read Live Data: read and display the current system module real-time running parameters, this option may sometimes display as “real-time data”

Actuation Test: perform component testing for a specific subsystem

3.5.1 Read Fault Code

Read and display the fault code retrieved in the current vehicle system module and explain the fault content, as shown in Figure 3.5-1:

Code	Description	State	Search
B1681	PATS transceiver fault.	CMDTCs	
U0121	Lost Communication With The ABS Control Module	CMDTCs	
U0155	Lost Communication With The Instrument Panel Cluster Control Module	CMDTCs	

Figure 3.5-1 Read Fault Code

3.5.2 Erase Fault Code

Please read and save the read fault code before erasing fault code for later viewing and comparison.

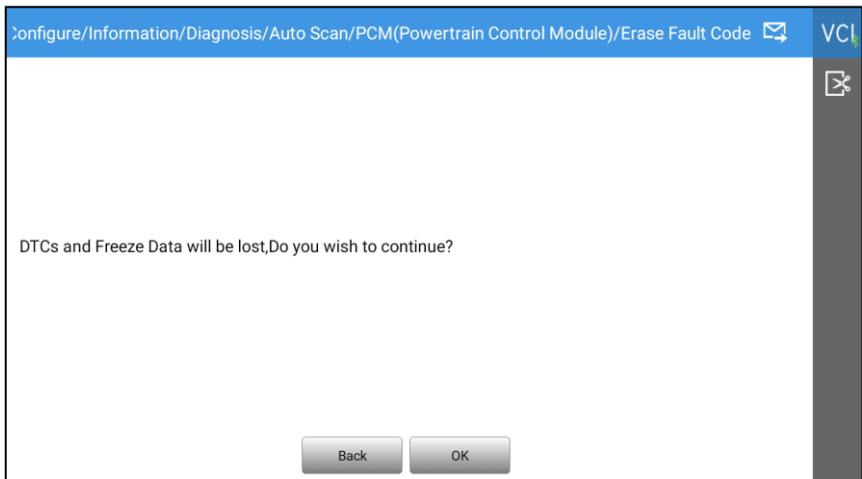


Figure 3.5-2 Erase Fault Code

➤ **How to erase fault code**

- 1) Select [Erase Fault Code] on the control module diagnosis interface;
- 2) At this point, the diagnostic system will pop up the prompts “Turn off the engine and turn on the ignition switch”, “The fault code and freeze frame data will be cleared, do you want to continue?”, select [OK]; (Note: This step requires strict operation of the vehicle according to the menu prompts)
- 3) When another prompt message pops up, select [Back] and re-execute the read fault code function to verify whether the fault code has been cleared.

Fault code analysis step:

- 1) Read and record all fault codes;
- 2) Erase all fault codes;
- 3) Simulate the conditions of the fault and conduct a road test;
- 4) Read and record the fault code at this time;
- 5) Distinguish between incidental fault codes (independent fault codes or historical fault codes) and persistent fault codes (current fault codes or associated fault codes);
- 6) Distinguish between major and secondary fault codes associated with fault symptoms;
- 7) Distinguish the major fault codes in many fault codes or related fault codes (it may be

the cause of other fault codes);

- 8) According to the above analysis, the sensor, the actuator or the control computer and the related circuit state represented by the fault code are further accurately detected, and the exact position of the fault occurs.

3.5.3 Read Live Data

Select this function, the real-time operating parameters of the selected system module will be displayed on the screen. The data parameters of different models or different control modules will be different, as shown in Figure 3.5-3.

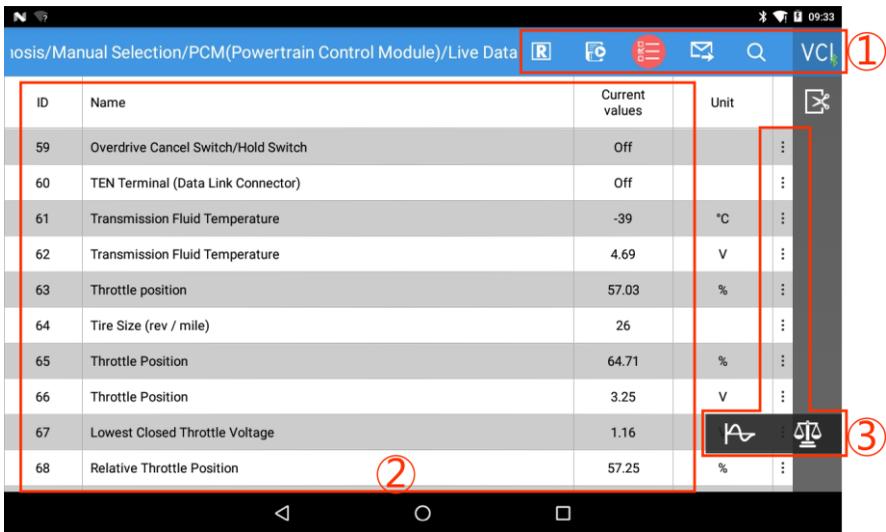


Figure3.5-3 Read Live Data

- 1. Toolbar, see Table 1
- 2. Data stream display area
- 3. Hidden column, see Table 2

Table 1

Function icon	Function description
---------------	----------------------

	Record Live Data
	Select menu

Table 2

Function icon	Function description
	Function hiding icon
	Live data waveform
	Live data comparison

Live data waveform

In the live data display interface, click any value in the hidden bar to run the parameter item, and select the [live data Waveform] function icon“”, You can view the running parameters in the data flow waveform mode, as shown in Figure 3.5-4, select the return in the lower right corner“” return to the numerical display status.

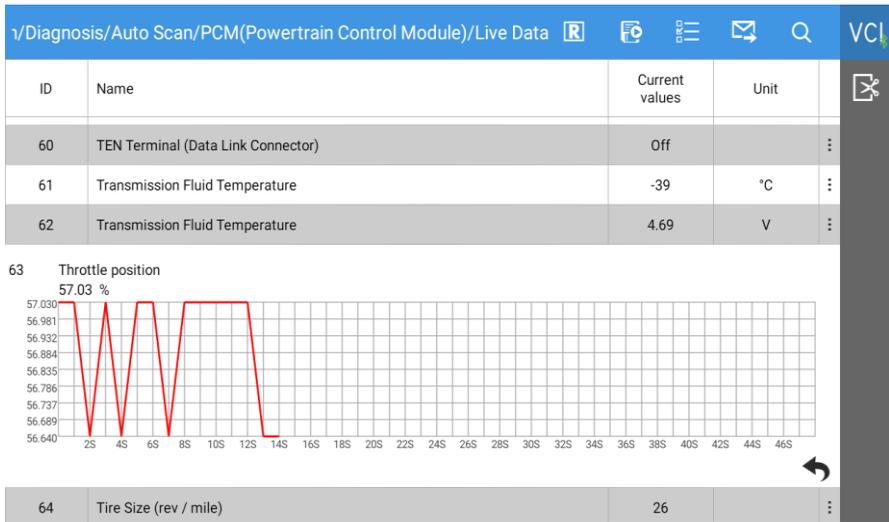


Figure 3.5-4 Live Data Waveform

Live data recording and comparison function

FCAR intelligent diagnosis system supports the recording and saving of data streams, and it can be viewed infinitely in [Data Review]. It also supports the comparison function of data streams. When the vehicle is in good condition, the data stream is collected and saved for the next test. Provide data reference via data stream comparison function when encountering vehicles of the same model.

➤ How to record live data

- 1) Click the [Select] function icon “”, in the upper right corner, select the parameter items you want to record in the pop-up window, and select [OK] to return;
- 2) Select the [Live Data Recording] function icon “”, enter the saved file name

in the pop-up window (the file name is best named after the vehicle information for review), select [OK] to return;

- 3) Click [OK] to start recording, manually slide the touch screen slowly to the last data column; click the [Stop] button in the lower left corner to stop recording and automatically save the live data;
- 4) The live data is recorded and the system automatically saves it (Hint: the live data can be recorded for up to 2 minutes). [Data Review] in the data management function to view the saved data stream.

➤ **How to perform live data comparison**

- 1) Click the [Select] function icon "", In the pop-up window, select the parameter item that needs to be compared with the data, and select [OK] to return;
- 2) Click the [Live Data Comparison] function icon "", in any hidden column on the right. In the pop-up dialog box, select the data file of the same model saved, and select [OK] to return;
- 3) At this point, the live data interface has a column "comparison value", as shown in Figure 3.5-5, the service technician can quickly find and eliminate the vehicle fault problem through system parameter comparison.

ID	Name	CMPR values	Current values	Unit	
59	Overdrive Cancel Switch/Hold Switch	Off	Off		⋮
60	TEN Terminal (Data Link Connector)	Off	Off		⋮
61	Transmission Fluid Temperature	-39	-39	°C	⋮
62	Transmission Fluid Temperature	4.69	4.69	V	⋮
63	Throttle position	57.03	56.64	%	⋮
64	Tire Size (rev / mile)	26	26		⋮
65	Throttle Position	64.31	64.31	%	⋮
66	Throttle Position	3.23	3.23	V	⋮
67	Lowest Closed Throttle Voltage	1.16	1.16	V	⋮
68	Relative Throttle Position	57.25	57.25	%	⋮

Figure 3.5-5 Live Data Comparison

3.5.4 Actuation Test

By performing this function to access the vehicle-specific subsystem and perform component testing, when performing the motion test, the diagnostic device inputs an instruction to the ECU to drive the actuator, and thereby determines whether the actuator of the vehicle electronic control system and its line are normal. . Different control systems for different models, the test options are different, please refer to the menu display.

The following is an example of the air conditioner compressor command state under Ford's PCM (Powertrain Control Module).

➤ How to perform actuation test

- 1) Enter the Ford PCM (Powertrain Control Module) diagnostic interface by selecting the model automatically or manually;
- 2) Select [Actuation Test] on the diagnosis interface;
- 3) Test item selection [ACC_CMD (air conditioner compressor command status)];
- 4) [On] and [OFF] buttons are used to drive the air conditioner compressor operation. When an operation is successfully completed, the screen will display "Operation Successful" or other similar prompt information, as shown in Figure

3.5-6;

- 5) According to the implementation, test whether the working state of the air conditioner compressor is normal. Click [Back] to exit the test.

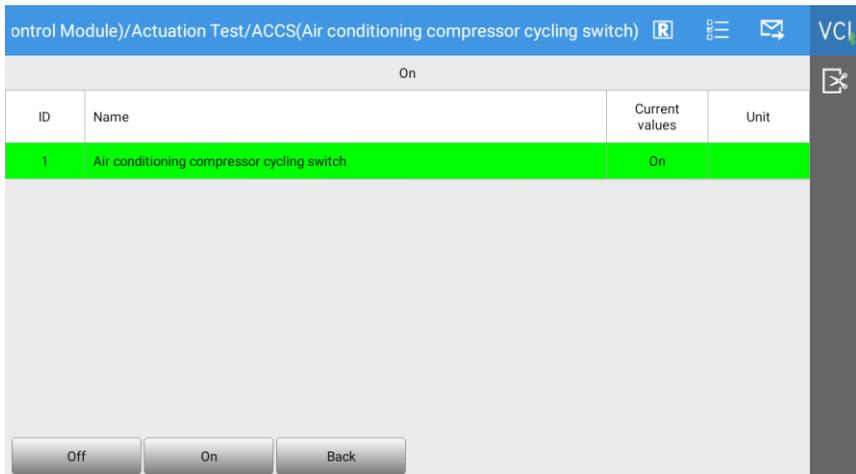


Figure 3.5-6 Actuation Test

Note: The control buttons will be different depending on the selected test item, such as “On”, “Off” or “+” “-”.

The “data customization” function of some models of the FCAR model can also check the working status or values of other actuators and sensors associated with the component based on the actuation test, helping the service technician to find the vehicle fault more accurately and quickly.

➤ **How to use data customization for actuation test**

- 1) Enter the Ford PCM (Powertrain Control Module) diagnostic interface by selecting the model automatically or manually;
- 2) Select [Actuation Test] on the diagnosis interface;
- 3) Test item selection [ACC_CMD (air conditioner compressor command status)];
- 4) In the air conditioner compressor command status interface, click the selection menu “” in the pop-up window to check the data flow related to the status of the component, select [OK] to return;

- 5) At this time, a few lines of data flow are automatically added under the “air conditioning compression command state”, and the two buttons of [OFF] and [ON] are used to drive the operation of the air conditioner compressor, and the air conditioner is tested according to the execution status and the state of the newly added data stream. Whether the working state of the compressor is normal, as shown in Figure 3.5-7:

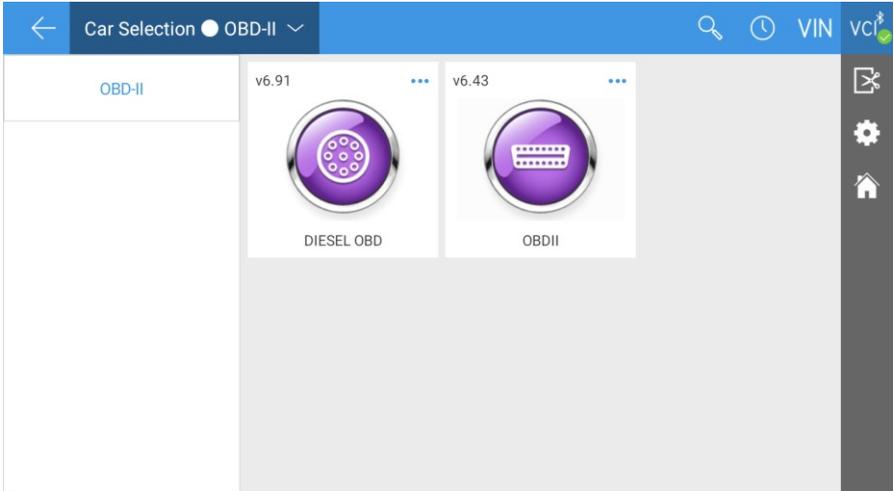
On			
ID	Name	Current values	Unit
1	Air conditioning compressor cycling switch	On	
2	A/C Request Signal	Off	
3	Generator field current control duty signal	17.37	%
4	generator output voltage	8.37	V

Off On Back

Figure 3.5-7 Data Customization

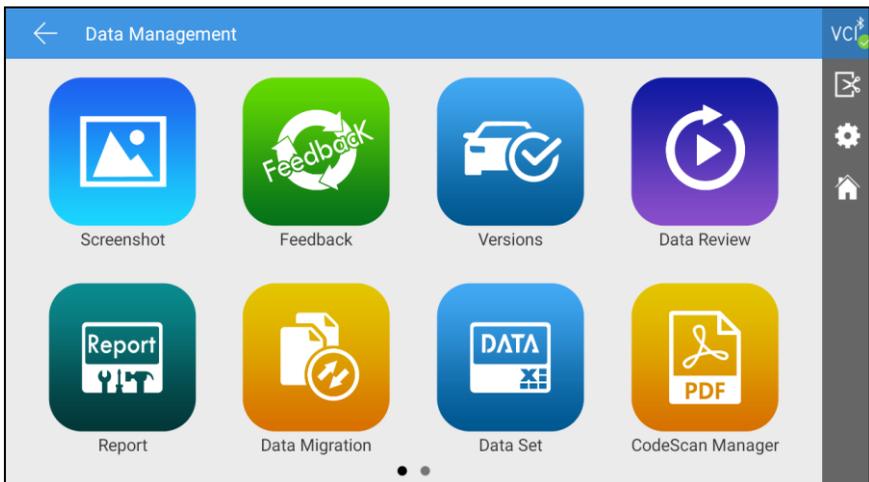
3.6 General OBDII

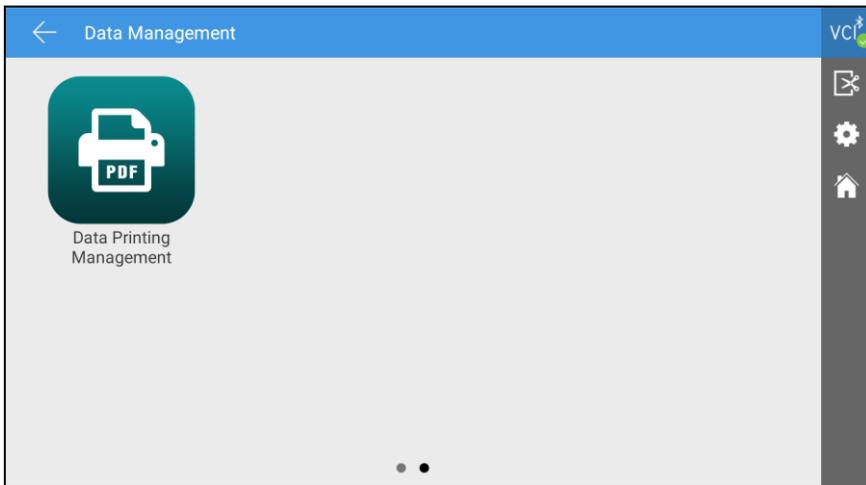
On the main interface of “Car Selection”, there is a quick access option for “OBDII” vehicle diagnosis. This option can be used to quickly check the fault code and find out the cause of the fault that caused the fault indicator to light up. Check monitor status prior to emission certification testing, verify successful repairs, and perform other emissions-related maintenance. The OBD Direct Access option can also be used to test all OBDII/EOBDII compatible vehicles not included in the diagnostic system database.



4.Data Management

The “Data Management” application is used to save, view, or print saved files. Most of the files are generated by the toolbar operation of the vehicle diagnostic interface.





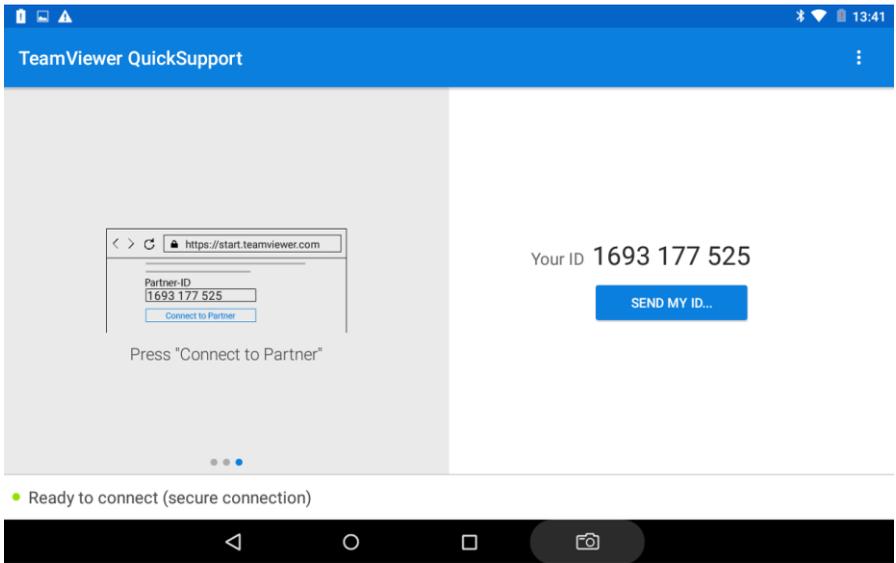
5.Remote Diagnosis

This feature allows you to receive remote service and support from FCAR after-sales technicians to assist with vehicle diagnostics.

➤ How to receive technical support from FCAR

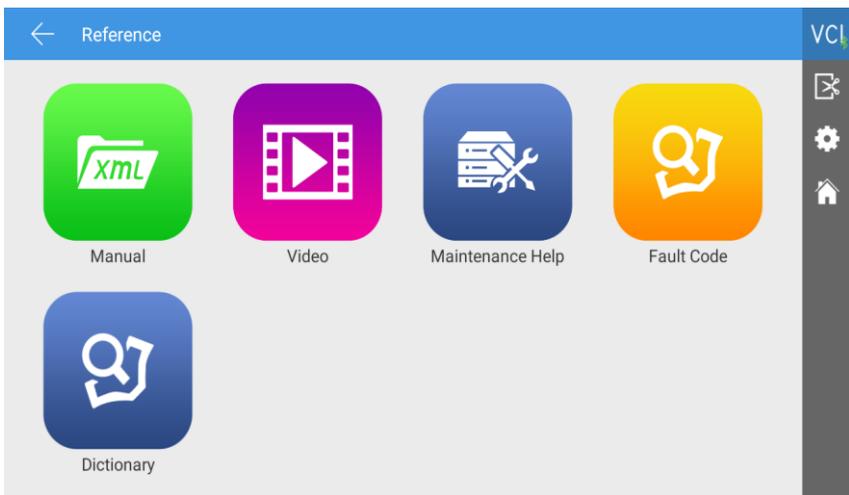
- 1) Turn on the tablet Tablet power;
- 2) Select [Remote Diagnosis] in the function main menu to open Team Viewer, and the system automatically generates and displays the device ID;
- 3) Inform your FCAR after-sales team (service hotline 0086-755-82904730) with your device ID number, waiting for a remote control request to you;
- 4) After receiving the request, the system selects [Allow] to accept in the pop-up window, or select [Reject] to reject it.

Make sure the device is connected to the Internet before receiving remote assistance.



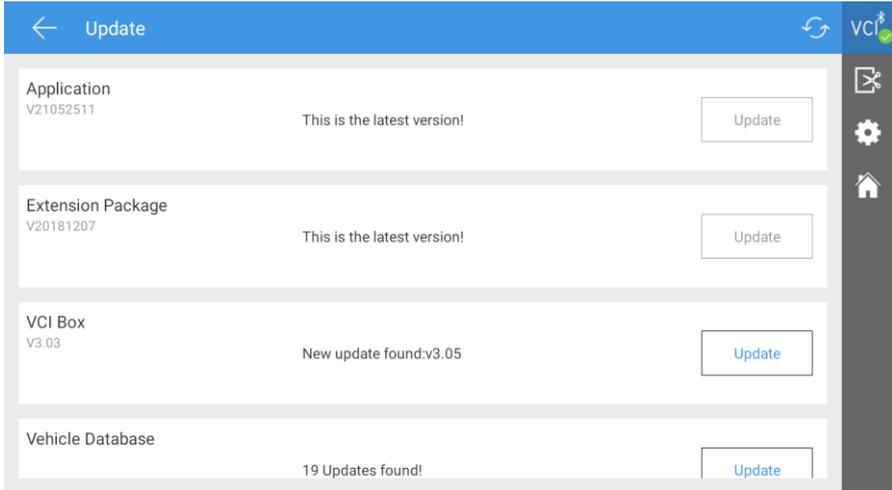
6.Reference Guide

Built-in machine instructions, fault code query, dictionary and other maintenance assistance and other maintenance materials for users to view and learn.



7.Upgrade

Open [Upgrade] in the function main menu, the system will automatically search for the latest update program, as shown below, click [Upgrade] to upgrade the model and other applications to the latest version.

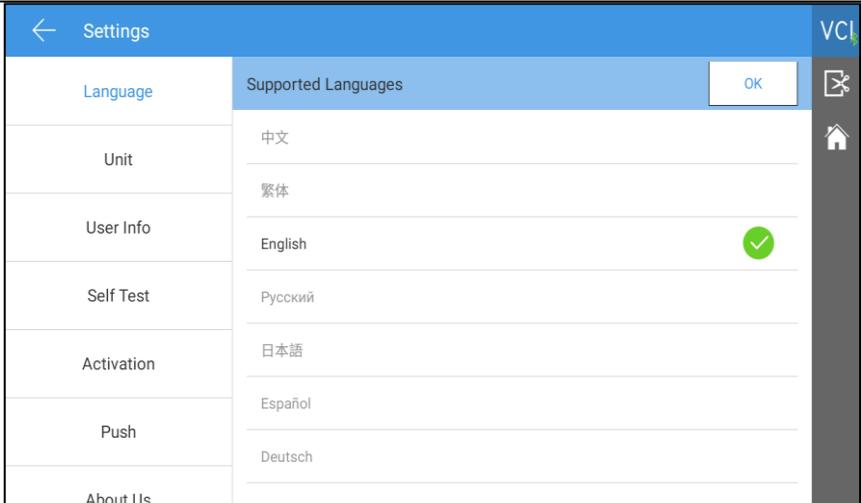


8.Settings

In the function main menu, select [Settings] to open the setting interface. On this interface, you can adjust the following system settings:

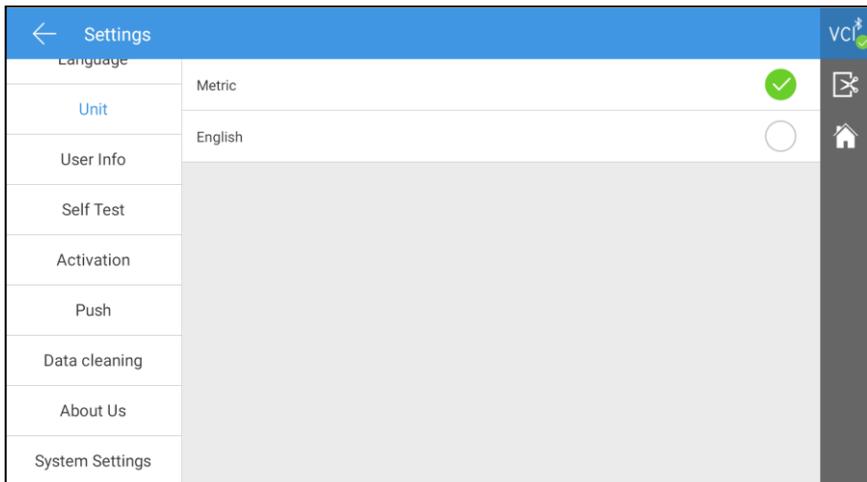
8.1 Language Settings

The FCAR F4S-N series fault diagnosis instrument supports multiple language settings, please set according to your needs.



8.2 Unit

This option allows you to set the data flow units in the diagnostic software. Please select metric or imperial as needed.



8.3 User Info

Set up your personal information: name, phone number, email address, address, etc.

Settings	
Language	Company
Unit	Name
User Info	Telephone
Self Test	Email
Activation	Address
Push	EDIT
Data cleaning	
About Us	

8.4 Self Test

Connect the device according to the screen illustration, click [Start Test] to check the main test line, OBD-II connector open circuit, short circuit, judge its good or bad.

The function is used for testing the open circuit of the VCI box and the main testing cable. If the test failed, please contact FCAR aftersales service personnel for timely support according to the prompt information.

See the above connection instructions: VCI box + main testing cable + self-test connector + power adapter.

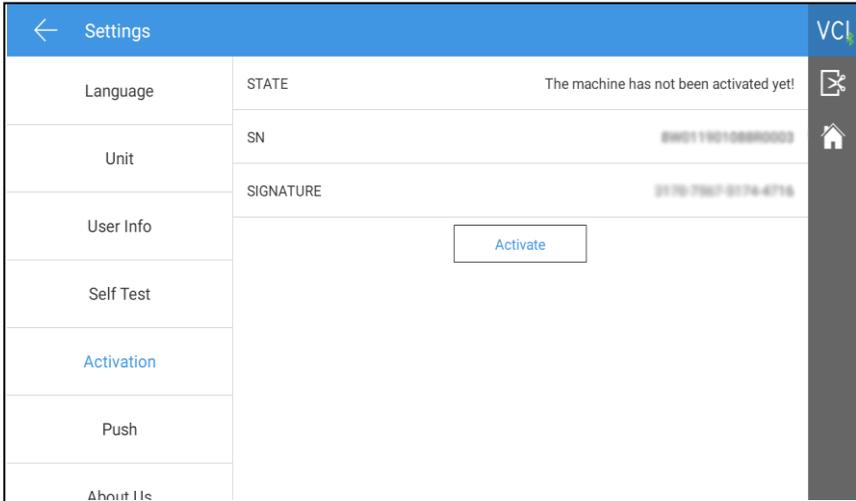
Warning:

1. Please use the 12V AC adapter configured by our company.
2. Do NOT connect to the vehicle or ECU, or it will damage the VCI box or the vehicle.

Start Test

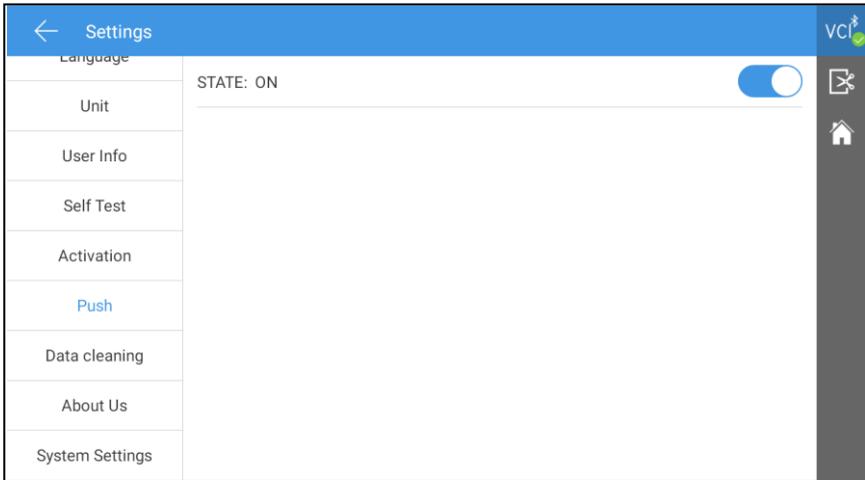
8.5 Activation

The FCAR products are activated several times at the factory. When you turn on the phone, you will be prompted: "You are using the trial version, you have ** chances to use", connect to the network to enter the settings, click [Activation], the machine can be activated.



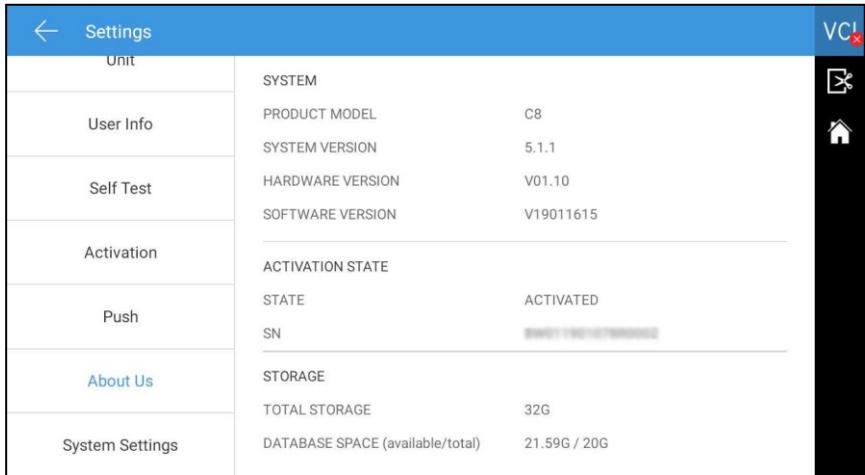
8.6 Message Push

Through the "message push" feature, the tablet Tablet can receive periodic online messages from the server, such as system update notifications or other service message notifications. It is recommended that you always turn this feature on so that you can receive the latest update service in a timely manner.



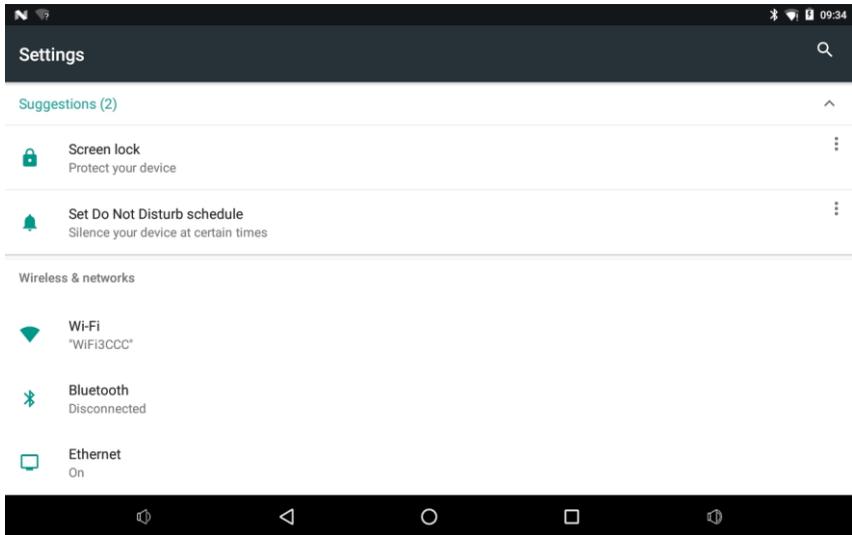
8.7 About us

Can view Tablet system information, activation status, storage status, etc.



8.8 System Settings

Set up for Android.



Maintenance and Maintenance Storage Environment

Storage Environment

- 1) Store the FCAR car fault computer diagnostic device in a flat, dry, temperature-friendly place when not in use;
- 2) Do not place the FCAR car fault computer diagnostic device in direct sunlight or near a heating device;
- 3) Do not place the FCAR car fault computer diagnostic device within the magnetic field;
- 4) Do not place it where it is susceptible to smog or water or oil splashing;
- 5) Do not place in a location subject to vibration, dust, moisture or heat;
- 6) When the Tablet is dirty, please cut off the power, wring the soft damp cloth and wipe the case.

Tablet Protection

- 1) Try to gently handle the Tablet to avoid impact;
- 2) When connecting the test leads and the car diagnosis, carefully insert and remove the screws. When using, tighten the fastening screws to avoid damage to the interface during the movement. After use, loosen the screws and then unplug the main test leads to avoid damage to the diagnostic interface;
- 3) After using the instrument, put accessories such as test leads and connectors back into the box to avoid loss.

Screen Maintenance

- 1) The surface of the screen will absorb dust due to static electricity. It is recommended to buy a special wiper for LCD screen to clean the screen of the main unit;
- 2) Do not wipe the dust with your fingers to avoid fingerprints; do not use chemical cleaners to wipe the screen;
- 3) Please do not place the product next to electrical equipment that generates electromagnetic interference, so as not to affect the display effect;
- 4) Please do not expose the screen to direct sunlight or ultraviolet light for a long time, so as not to affect the screen life.

Cautions

- 1) It is forbidden to switch the Tablet frequently, suddenly power off, power supply is unstable, etc.;
- 2) Unplug the power plug when not in use to avoid aging of electrical components due to long-term power supply;
- 3) Avoid exposure to volatile acid-base chemical air to avoid corrosion on the Tablet hardware;
- 4) Do not use a chemical such as banana water, engine cleaner, or gasoline to wipe the Tablet;
- 5) Do not place any objects on the display to avoid cracking of the touch screen or damage to internal components caused by heavy pressure;
- 6) If you do not use it for a long time, please turn on the FCAR Tablet regularly to avoid the Tablet being damp.

Warranty

In order to reach better life, we recommend that you take care of the scanner and follow the following instruction to receive product warranty:

1. In accordance with the following terms and conditions, and you have passed the machine activation or user registration, if the product has defects in materials or processes, Shenzhen FCAR Technology Co., Ltd. (hereinafter referred to as "FCAR Technology") will provide products warranty service.

2. Your product must be purchased through a product dealer authorized by FCAR Technology. If you purchase the product through an abnormal channel, the purchaser must bear the cost of the product repair service.

3. The following items of the product: product use instructions, internal and external packaging boxes, promotional gifts and other consumable items are not covered by the warranty.

4. The product shall be purchased from the date of purchase (subject to the valid purchase certificate and valid warranty card of this product). If the product has performance failure caused by non-human damage, you may choose to repair the product or replace the same model within one month. Free warranty for mainframe, main test leads, connectors, and power adapters within one year.

5. In any of the following cases, your product will not be covered by the free warranty service:

1) Faults, defects or defects caused by the quality of non-FCAR technology products: including improper use of the product according to the product manual, improper operation of the product, impact, drop, self-assembly, improper connection of accessories, transport or storage of the product Improper, resulting in erosion, rust, etc. caused by pressure loss, penetration of liquid or food;

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

3) Product Tablet serial number and warranty card product serial number do not match,

product quality inspection label or barcode is removed, altered or damaged;

4) Disassembly and repair and 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 measures:

1) You can self-test the product according to the product help information. If there is no hardware quality problem, you can try to upgrade the product;

2) You can call the FCAR Technology Customer Service Hotline (0086-755-82904730) for the correct service information;

3) After obtaining a valid reply from the company, you must send the product to the company's designated address for repair and maintenance, otherwise your product will not be repaired and maintained in time. If it happens, it will be at your own risk.

7. During the warranty service, you will bear the costs associated with the delivery of the product to or from the designated location of FCAR Technology: including packaging, transportation, transportation, insurance, etc.

8. The free warranty service you enjoy under this warranty is the only measure for the loss of the product during the warranty period. FCAR Technology is not responsible for any direct or indirect damages.

9. All warranty information, product features and specifications of the product will be announced on the latest promotional materials and website of FCAR Technology without prior notice.



Shenzhen Fcar Technology Co., Ltd.



Shenzhen Fcar Technology Co., Ltd.



Certification

This product has been strictly inspected as qualified products and met the company standards.

Product name	
Product serial number	
Date of production	
Inspector	



Warranty card

Product name	
Product serial number	
Purchase date	

Company name: _____

User address: _____

Contact person: _____

Contact number: _____

