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Trademark Information

Important Safety Precautions

Important: To avoid personal injury, property damage, or accidental damage to the product, read all of the information in this section before using the product.

- Never collide, throw, or puncture X-431 EURO TAB, and avoid falling, extruding and bending it.
- Do not insert foreign objects into or place heavy objects on your device. Sensitive components inside might cause damage.
- Do not use X-431 EURO TAB in exceptionally cold or hot, dusty, damp or dry environments.
- In places using X-431 EURO TAB may cause interference or generate a potential risk, please turn it off.
- X-431 EURO TAB is a sealed unit. There are no end-user serviceable parts inside. All internal repairs must be done by an authorized repair facility or qualified technician. If there is any inquiry, please contact the dealer.
- Never place X-431 EURO TAB into apparatus with strong electromagnetic field.
- Keep X-431 EURO TAB far away from magnetic devices because its radiations can damage the screen and erase the data stored on X-431 EURO TAB.
- DANGER: Do not attempt to replace the internal rechargeable lithium battery. Contact the dealer for factory replacement.
- CAUTION: Please use the included battery and charger. Risk of explosion if the battery is replaced with an incorrect type.
- Do not disconnect power abruptly when X-431 EURO TAB is being formatted or in process of uploading or downloading. Or else it may result in program error.
- Do not delete unknown files or change the name of files or directories that were not created by you, otherwise your X-431 EURO TAB software might fail to work.
- Be aware that accessing network resources can leave your X-431 EURO TAB vulnerable to computer viruses, hackers, spyware, and other malicious activities that might damage your device, software or data. It is your responsibility to ensure that you have adequate protection in the forms of firewalls, antivirus software, and anti-spyware software and keep such software up to date.

Precautions on Using X-431 EURO TAB

Before using this test equipment, please read the following safety information carefully.

- Always perform automotive testing in a safe environment.

- If the diagnostic connector remains unused for a long period of time, it is suggested to unplug the connector from vehicle's DLC to conserve battery power.
- Wear an ANSI-approved eye shield when testing or repairing vehicles.
- The vehicle shall be tested in a well ventilated work area, as engines produce various poisonous compounds (hydrocarbon, carbon monoxide, nitrogen oxides, etc.)
- Do not connect or disconnect any test equipment while the ignition is on or the engine is running.
- Put blocks in front of the drive wheels and never leave the vehicle unattended while testing.
- Keep the test equipment dry, clean, free from oil, water or grease. Use a mild detergent on a clean cloth to clear the outside of the equipment as necessary.
- Do not drive the vehicle and operate the test equipment at the same time. Any distraction may cause an accident.
- Keep clothing, hair, hands, tools, test equipment, etc. away from all moving or hot engine parts.
- Before starting the engine, put the gear lever in the Neutral position (for manual transmission) or in the Park (for automatic transmission) position to avoid injury.
- To avoid damaging the test equipment or generating false data, please make sure the vehicle battery is fully charged and the connection to the vehicle DLC (Data Link Connector) is clear and secure.
- Automotive batteries contain sulfuric acid that is harmful to skin. In operation, direct contact with the automotive batteries should be avoided. Keep the ignition sources away from the battery at all times.

Precautions on Operating Vehicle's ECU

- Do not disconnect battery or any wiring cables in the vehicle when the ignition switch is on, as this could avoid damage to the sensors or the ECU.
- Do not place any magnetic objects near the ECU. Disconnect the power supply to the ECU before performing any welding operations on the vehicle.
- Use extreme caution when performing any operations near the ECU or sensors. Ground yourself when you disassemble PROM, otherwise ECU and sensors can be damaged by static electricity.
- When reconnecting the ECU harness connector, be sure it is attached firmly, otherwise electronic elements, such as ICs inside the ECU, can be damaged.

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1 Introduction

1.1 Product Profile

X-431 EURO TAB is a new Android-based vehicle trouble diagnostic tool developed by LAUNCH.

It features wired network, meanwhile it also supports WLAN communication, which enables you to surf the Internet, update App and diagnostic software online, perform remote diagnostics, getting your job faster and easier.

Featuring Android 4.4 operating system, 2.0GHz 8-core CPU and 10.1" HD display, it has functions of vehicle diagnosis, oscilloscope, ignition, sensor, multimeter, browser and battery test etc. High definition multimedia output extending display function is available. As a result, it has strong practicability and high performance-price ratio, which is a helpful assistant for vehicle repair and maintenance.

1.2 Features

1. Diagnose:
- VINscan quick test and manual diagnosis are available. Diagnosis functions include: Read DTCs, Clear DTCs, Read Data Stream, Special Functions etc.
- Remote diagnosis: This option aims to help repair shops or technicians launch instant messaging and remote diagnosis, making the repair job getting fixed faster.
- Special function: All kinds of maintenance and reset functions can be done.
- One-click Update: Lets you update your diagnostic software online.
- Diagnostic feedback: Enables you to submit the vehicle issue to us for analysis and troubleshooting.

2. WLAN connection and Ethernet connection are supported.
3. High definition output interface is provided for connecting the external projectors or displays.
4. Equipped with Universal Serial BUS port for connecting the add-on modules such as Scopebox, Sensorbox and Batterybox.
5. Web browser: Users can make online search and visit any website.

1.3 Technical Specifications

A. X-431 EURO TAB Tablet

Item	Description

Operating system	Android 4.4
CPU	8-core Processor, 2.0GHz
Display	10.1 inch touch screen with 1920 x 1200P resolution
Memory	2GB
Hard disk	64GB (Expandable to 128GB via TF card)
Connectivity	• Ethernet/Wi-Fi (802.11 b/g/n) • USB: 2.0 • Bluetooth 2.0
Camera	2.0MP front-facing camera + 8.0MP rear-facing camera
Sensor	Gravity Accelerometer
Audio Input/Output	• Microphone • Speakers • 3.5mm stereo headset jack
Battery	15000 mAh lithium-polymer battery
Operating Temp.	-10℃ ~ 55℃(14 ~131℉)
Storage Temp.	-20℃ ~ 70℃(-4 ~158℉)

B. VCI Connector

Item	Descriptions
Working Voltage	DC 9V ~ 18V
Working Current	About 85mh
Standby Current	About 55mh
Dimension	70mm x 42.5mm x 20mm
Weight	< 100g
Working Temp.	-10℃ ~ 55℃(14 ~131℉)

Storage Temp.	-20℃ ~ 70℃(-4 ~158℉)
Relative Humidity	20% ~ 90%

2 Knowledge of X-431 EURO TAB

The X-431 EURO TAB system is mainly composed of one X-431 EURO TAB tablet (See Chapter “2.1”), one docking station and one VCI connector (See Chapter “2.2”).

- X-431 EURO TAB tablet – the central processor and monitor for the system (See Chapter “2.1”).

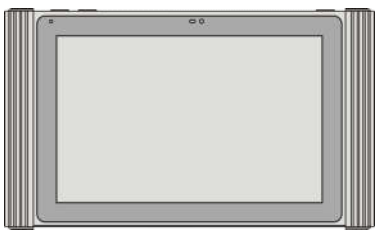


Fig. 2-1 X-431 EURO TAB tablet

- VCI connector – the device for accessing vehicle data (See Chapter “2.2”).

Fig. 2-2 VCI connector

2.1 X-431 EURO TAB tablet

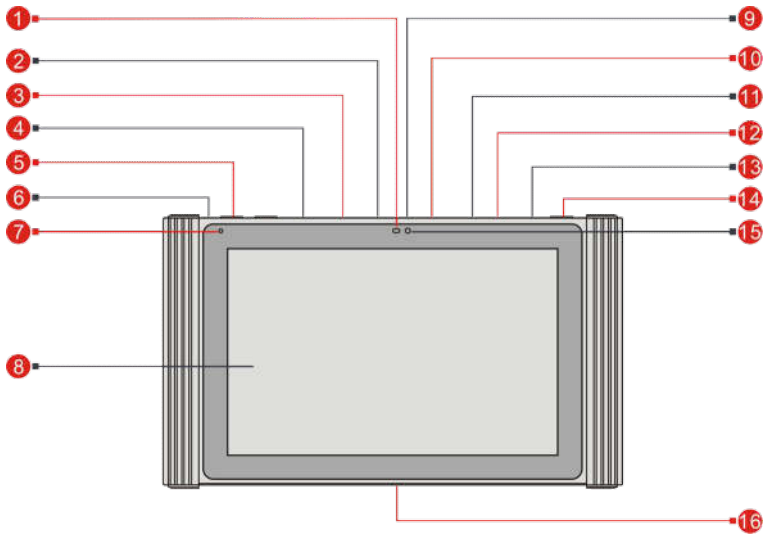


Fig. 2-3 X-431 EURO TAB tablet

1	**Ambient Light Sensor**	
2	**USB2 Port**	To connect add-on USB modules (Scopebox, Sensorbox or Batterybox) while extending X-431 EURO TAB function.
3	**Ethernet Port**	To connect the Ethernet cable for wired network.
4	**DC IN Port**	To connect the included power adaptor.
5	**VOLUME +/- Key**	To adjust the volume.
6	**Reset Switch**	To restart the tablet.
7	**Microphone**	
8	**Touch Screen**	

9	**USB1 Port**	Only reserved for Micro USB cable.
10	**HDMI Port**	To connect an external projector or monitor with HDMI interface.
11	**Memory Card Slot**	To insert a memory card for storage extension.
12	**SIM Card Slot**	Only reserved for future use.
13	**Earphone Jack**	
14	**POWER/Screen Lock Key**	In Off mode, press it to turn on the X-431 EURO TAB tablet. In On mode: • Press it to activate the LCD if the LCD is off. • Press it to turn off the LCD if the LCD lights up.
15	**Front Camera**	
16	**Charging Slot**	To recharge X-431 EURO TAB.

2.2 VCI Connector (Only applies to 12V cars)

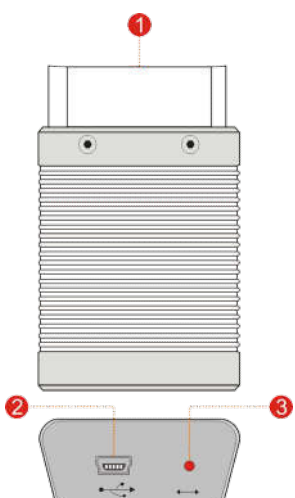


Fig. 2-4 VCI Connector

1	**OBD-16 diagnostic connector**	To connect on vehicle's OBD II DLC.
2	**Mini USB port**	For connecting the USB cable to X-431 EURO TAB.
3	**Mode Indicators**	There are 3 modes available: • It illuminates Red while the connector is plugged into the vehicle's DLC. • Blue indicates it is working in Bluetooth mode. • It illuminates Green when the connector is connected to X-431 EURO TAB via USB cable.

2.3 Package List

Common accessories for each X-431 EURO TAB are same, but for different destinations, the accessories of X-431 EURO TAB may vary. Please consult from the local agency or check the packing list supplied with X-431 EURO TAB together.

- X-431 EURO TAB tablet ……..……..……x 1
  - Docking station……..……x 1
  - VCI connector ……..……..……x 1
- Power adaptor ……..……x 1
  - OBD II extension cable……..……x 1
  - OBD I adaptor……..……..……x 1
- Cigarette lighter cable……..……x 1
- Battery clamps cable……..……x 1
- USB cable……..……x 1
  - Password envelope……..……x 1
  - Ethernet crossover cable……..……x 1
  - BMW F chassis

programming line .....x 1 ➢ Wi-Fi printer.....x 1

➢ Non-16pin diagnostic connector kit .....x 1

➢ Quick Start Guide .....x 1

3 Preparations

3.1 Charging X-431 EURO TAB

Choose any one of the followings to charge your X-431 EURO TAB:

A. Use the included 5V power adaptor: Connect one end of the power adaptor to DC IN port of X-431 EURO TAB, and the other end to the AC outlet. Never use other similar adaptors other than the included one to charge X-431 EURO TAB.

B. Use the docking station(optional): Follow the steps described as below to charge your X-431 EURO TAB:

1. Locate the charging slot on the bottom of X-431 EURO TAB tablet and the docking station. See Fig. 3-1 & Fig. 3-2.

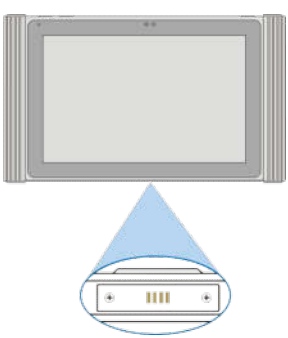


Fig. 3-1

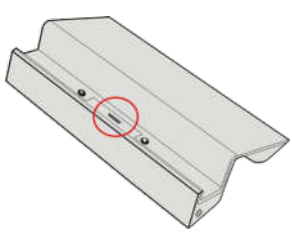


Fig. 3-2

2. Align the charging slots, and then dock the tablet into the station to ensure that it firmly sits on the docking station. Refer to Fig. 3-3.

Fig. 3-3

3. Insert one end of the power cord of the docking station into the power jack, and then plug the other end into the AC outlet. If appears on the screen, it indicates it is being charged.
4. If the logo changes into , it indicates that the battery is fully charged.

3.2 Using Battery

- If the battery remains unused for a long period of time or the battery is completely discharged, it is normal that the tool will not power on while being charged. Please charge it for a period of 5 minutes and then turn it on.
- Please use the included power adaptor to charge your tool. No responsibility can be assumed for any damage or loss caused as a result of using power adaptors other than the one supplied.
- While X-431 EURO TAB has low battery, a beep will sound. If it is very low, X-431 EURO TAB will be switched off automatically.

3.3 Power On/Off

3.3.1 Power on

Press [POWER] to turn the tool on.

Note: If it is the first time you have used this tool or the tool remains idle for a long period of time, the tool could fail to turn on. Please charge the tool for a minimum of 5 minutes and attempt to turn on again.

3.3.2 Power off

Press [POWER] for 3 seconds, an option menu will pop up on the screen. Tap “Power off” to turn the tool off.

To perform a forced shutdown, press [POWER] for more than 8 seconds until the screen goes dark.

3.5 Lock & Unlock Screen

Many screen lock modes are available on X-431 EURO TAB.

Note: You are recommended to set screen lock as "None" since X-431 EURO TAB is a frequently used diagnostic tool.

3.5.1 Lock the screen

- When it is ON, press [POWER] once to lock the screen.
- The system will lock the screen automatically after X-431 EURO TAB remains idle over the preset standby time.

3.5.2 Unlock the screen

Press [POWER] to activate the screen and drag the lock to "Unlock" position.

Note: If you define as unlock using the pattern, you have to draw the right target pattern to unlock it.

3.6 Screen Layout

On-screen keys and status bar are as follows:

1		to visit the official website.
2		to capture the current screen and all captured screenshots are stored in the Screenshots folder.
3		shows whether the VCI connector is connected properly or not. If connected, a tick icon appearing on the button indicates the tablet is communicating with the VCI connector.
4		to return to the Android System's home screen.
5		to display a list of applications that are currently running or recently used. To open an application, tap it. To remove an application, swipe it upwards.
6		to return to the previous screen or exit an application.

3.7 Notification Panel

The notification bar is used to display some activities, such as new message, to do list and running tasks. You can also open the notification bar to view the reminder or activity notification.

3.8 Adjust Brightness

Tips: Reducing the brightness of the screen is helpful to save the power of X-431 EURO TAB.

1. On the home screen, tap Settings -> Display -> Brightness level.
2. Drag the slider to adjust it.

3.9 Set Standby Time

If no activities are made within the defined standby period, the screen will be locked automatically and the system enters sleep mode to save power.

1. On the home screen, tap Settings -> Display -> Sleep.
2. Choose the desired sleep time.

3.10 Set Screen lock

This function is designed to lock the screen and buttons to avoid accidental operations while X-431 EURO TAB keeps unused.

1. On the home screen, tap Settings -> Security -> Screen lock.
2. Choose the desired screen lock mode and follow the on-screen instructions to finish your setting.

Note: You are recommended to set screen lock as "None" since X-431 EURO TAB is a frequently used diagnostic tool.

3.11 Network Setting

There are 2 kinds of network connection available on X-431 EURO TAB.

3.11.1 Wired Connection

1. Connect the Ethernet crossover cable to X-431 EURO TAB directly.
2. On the home screen, tap "Settings" -> "More" -> "Ethernet" and then check the box "Use the Ethernet".

3.11.2 Connect to a Wi-Fi network

X-431 EURO TAB has built-in Wi-Fi that can be used to get online. Once you're online, you can register your X-431 EURO TAB, browse the Internet, get and update apps and send email on your network.

Note: Once WLAN is set as ON, X-431 EURO TAB will consume more power. While WLAN keeps unused, please turn it off to conserve battery power.

1. On the home screen, tap Settings -> WLAN.
2. Tap or slide the WLAN switch to ON, X-431 EURO TAB starts searching for all available wireless LANs.
3. Choose the desired Wi-Fi access point / network,
   - If the network you chose is open, you can connect directly;
   - If the selected network is encrypted, you have to enter the right security key (network password).

When this tool is in range, it will connect to the previously linked network automatically.

4 Initial Use

4.1 Getting Started

For new users, please follow the operation chart shown in Fig. 4-1 to start using X-431 EURO TAB.

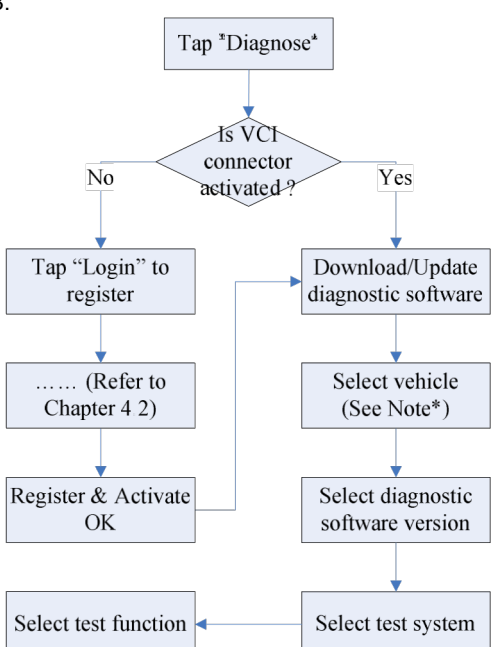


Fig. 4-1

Note*: If “VIN Scan” function is performed, this step shall not apply.

4.2 Register & Download Diagnostic Software

4.2.1 User registration

On the home screen, tap the application icon to launch it, and then tap “Login” to enter the login interface of diagnosis software.

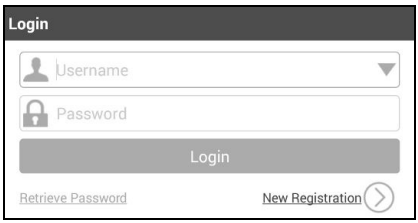


Fig. 4-2

1. If you are a new user, tap “New Registration” to enter the sign-up page. See Fig. 4-3.

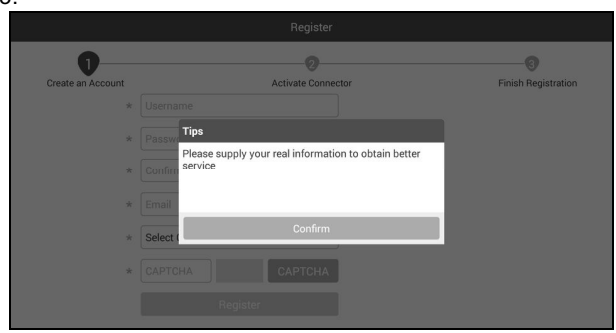


Fig. 4-3

In Fig. 4-3, fill in the information in each field (Items with * must be filled). After inputting, tap “Register”, a screen similar to the following will appear:

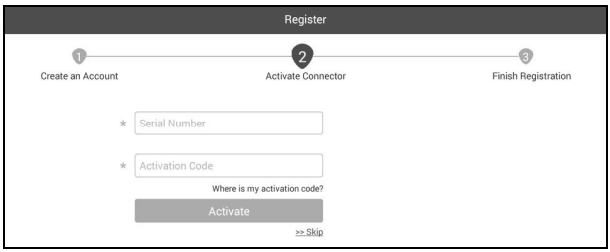


Fig. 4-4

In Fig. 4-4, input the Serial Number and Activation Code, which can be found in the password envelope.

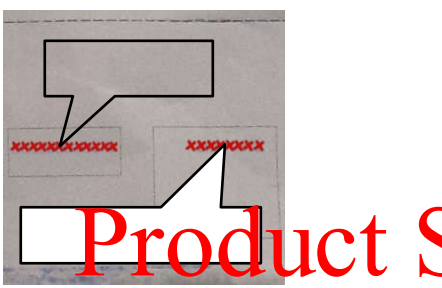


Fig. 4-5

Note: To exit and activate it later, tap “Skip”. In this case, you can activate your connector by tapping “Activate Connector” in “My Data”. For details, please refer to Chapter 13.4.

Tap “Activate” to finish your registration. See Fig. 4-6.

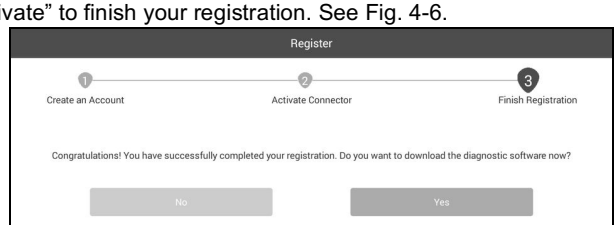


Fig. 4-6

To download the diagnostic software, tap “Yes” to enter the download page.

Tap “No” to download and install it later.

On download page, tap “Update” to start downloading. To pause downloading, tap “Stop”. To resume it, tap “Continue”. Once download is complete, the system will install the software package automatically.

Notes:

- In process of download, please make sure the tablet has a strong Wi-Fi signal. It may take several minutes to finish it, please be patient to wait.
- To use the VINScan function, you have to download the corresponding diagnostic software and AutoSearch file.

2. If you have registered to be a member, input your name and password, and then tap the “Login” button to enter the main menu screen directly.

Note: The X-431 EURO TAB has an auto-save function. Once the username and password are correctly entered, the system will automatically store it. Next time you login the system, you will not be asked to input the account manually.

3. If you forgot the password, tap “Retrieve password” and then follow the on-screen prompts to reset a new password.

4.2.2 Function menu

Swipe the screen from the right to display the function menu. It mainly includes the following items:

Name	Description
Diagnose	Configures X-431 EURO TAB to operate as a diagnostic tool.
Special Functions	To perform some maintenance items, including electronic throttle position reset, ABS bleeding, oil lamp reset etc.
Software Upgrade	To update vehicle diagnostic software.
Remote Diagnosis	This option aims to help repair shops or technicians to get the repair job fixed faster.
Diagnostic Feedback	To feed back the recent 10 diagnostic logs to us for issue analysis.
Maintenance Help	Includes How-to Videos, operation skills and user manual etc.

Toolbox	Includes browser, oscilloscope, sensor, multimeter, battery, etc.
My Data	To manage My Connector, My Report, Change Password and Logout etc.
Settings	Allows you to configure system settings.
Custom	Use this option to append the frequently used module into the function menu screen.

4.3 Diagnosis Methods

X-431 EURO TAB tablet supports 2 communication methods with the VCI connector: wireless Bluetooth and USB cable. You may choose any one of the methods to diagnose a vehicle.

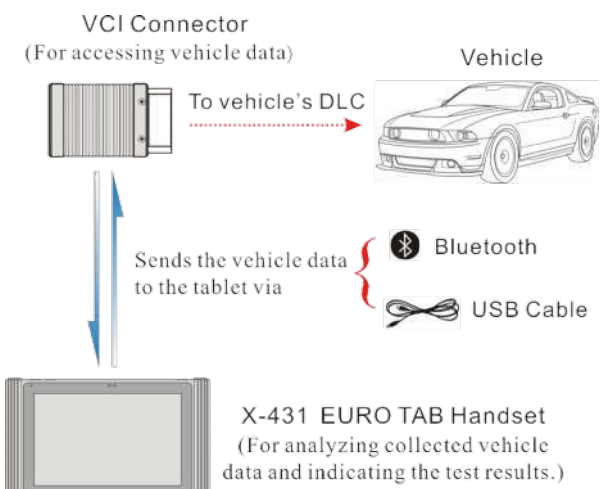


Fig. 4-7 **Notes:**

- While using the diagnosis via Bluetooth, the VCI connector should be paired with the X-431 EURO TAB tablet. If no Bluetooth setting is done before diagnostic software is launched, you can also configure it while using the software.

- To obtain stable communication, you are strongly recommended to perform the vehicle diagnosis via USB cable. In this case, the USB cable is required to connect the VCI connector and the X-431 EURO TAB tablet.

4.4 Connections

4.4.1 Preparation

Normal testing conditions

- Turn on the vehicle power supply.
- Vehicle battery voltage range should be 9-14Volts. • Throttle should be in a closed position.

4.4.2 DLC location

The DLC (Data Link Connector) is typically a standard 16 pin connector where diagnostic code readers interface with the vehicle's on-board computer. The DLC is usually located 12 inches from the center of the instrument panel (dash), under or around the driver's side for most vehicles. If Data Link Connector is not located under dashboard, a label should be there telling location. For some Asian and European vehicles, the DLC is located behind the ashtray and the ashtray must be removed to access the connector. If the DLC cannot be found, refer to the vehicle's service manual for the location.

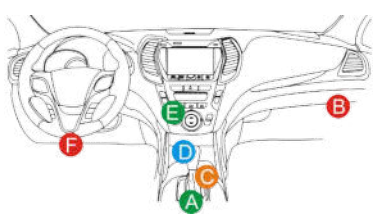


Fig. 4-8

4.4.3 Vehicle connection

The method used to connect the diagnostic connector to a vehicle's DLC depends on the vehicle's configuration as follows:

- A vehicle equipped with an OBD II management system supplies both communication and 12V power through a standardized DLC.
- A vehicle not equipped with an OBD II management system supplies communication through a DLC connection, and in some cases supplies 12V power through the cigarette lighter receptacle or a connection to the vehicle battery.

Follow the steps mentioned below to connect OBD II vehicle:

1. Locate vehicle's DLC socket.
2. Plug the VCI connector into the vehicle's DLC socket (It is suggested to use the OBD II extension cable to connect the VCI connector and DLC socket.).

Fig. 4-9

3. Choose one of the two ways to obtain power from:
   A. Power adaptor: Connect one end of the included power adaptor to DC IN port of X-431 EURO TAB tablet, and the other end to AC outlet.
   B. Internal battery pack

For non-OBDII vehicle, proceed as follows:

1. Locate vehicle's DLC socket.
2. Select the corresponding non-16pin connector.
3. Plug the non-16pin end of the connector into the DLC socket, and the other end to the OBD I adaptor, and then tighten the captive screws.
4. Connect the other end of the adaptor to the included VCI connector.
5. To supply power to OBD I adaptor from:

   A. Cigarette Lighter Cable: Connect one end of the cigarette lighter cable to vehicle's cigarette lighter receptacle, and the other end to the power jack of OBD I adaptor.

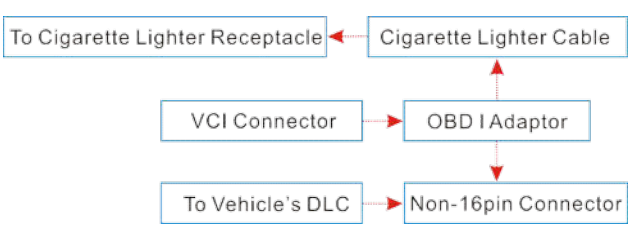


Fig. 4-10

   B. Battery Clamps Cable: Connect one end of the battery clamps cable to vehicle's battery, and the other end to the power jack of OBD I adaptor.

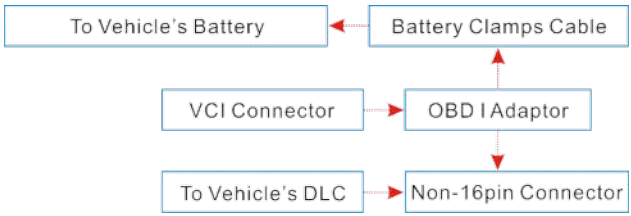


Fig. 4-11

5 Diagnosis & Reset

5.1 Start Diagnostics

Tap “Diagnose” to enter the vehicle selection page.

2 approaches are provided for you to access the vehicle diagnostic software. Choose any one of the following ways:

1. VINSCAN enables you to access it more quickly.

In this case, automatic scan (OBD VIN) and manual input (INPUT VIN) are available.

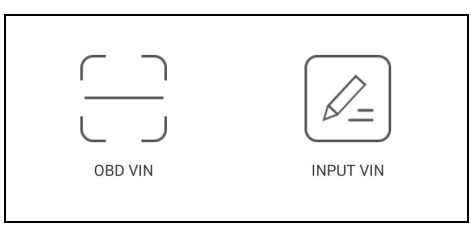


Fig. 5-1

OBD VIN: In this mode, the VCI connector should be plugged into the vehicle’s DLC first, and then a Bluetooth communication should be established between X-431 EURO TAB and the vehicle.

Tap “OBD VIN” to start VIN scanning on the vehicle ECU. Once the test vehicle is successfully identified, X-431 EURO TAB will guide you to the diagnostic software of the vehicle directly.

Note: Before using this function, the corresponding diagnostic software and Auto search file need to be downloaded on your tool first while downloading the diagnostic software.

INPUT VIN: In this mode, you need to input the VIN manually. In general, vehicle identification numbers are standardized - all contain 17 characters. VIN characters may be capital letters A through Z and numbers 1 through 0; however,

the letters I, O and Q are never used in order to avoid mistakes of misreading. No signs or spaces are allowed in the VIN.

The most recognizable location for this number is in the top left corner on the vehicle's dashboard. Other locations include the driver's door or post, and the firewall under the hood.

Tap "INPUT VIN" and a screen similar to Fig. 5-2 will appear:

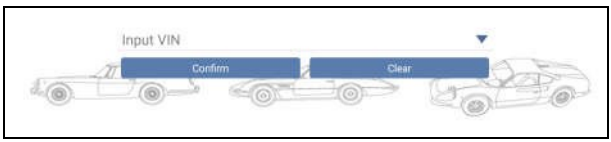


Fig. 5-2

Input the VIN, and tap "Confirm" to enter the diagnostic software of the vehicle.

2. Tap a corresponding diagnostic software logo, and then follow the on-screen instruction to access the diagnostic software.

Take Demo as an example to demonstrate how to diagnose a vehicle. 1).

Tap the "DEMO", a screen similar to the following appears:

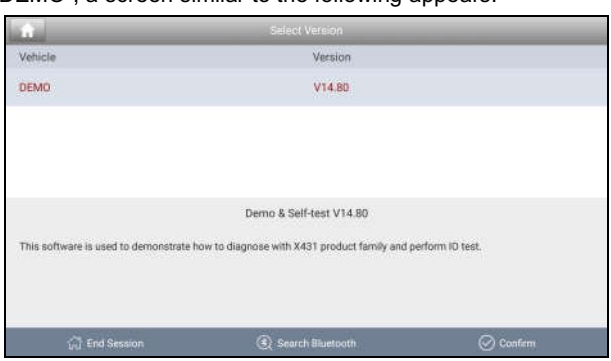


Fig. 5-3

2). Tap "Demo" to ignore Bluetooth connection and jump to the test item selection screen. (Note: No Bluetooth connection is required for DEMO program.)

Fig. 5-4

5.1 Health Report (Quick Test)

This function varies from vehicle to vehicle. It enables you to quickly access all the electronic control units of the vehicle and generate a detailed report about vehicle health.

Tap “Health Report”, the system start scanning the ECUs. Once the scanning is complete, a screen similar to the following appears:

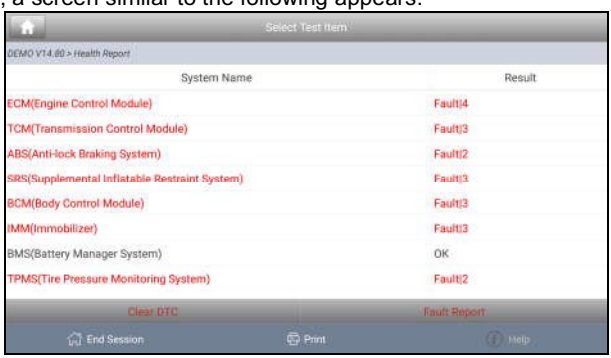


Fig. 5-5

In Fig. 5-5, the tested system with fault code appears in red and the system with OK displays in black (normally).

Tap the desired system to enter the test function selection page. For detailed operations on test function, please refer to Chapter 5.3.

On-screen Buttons:

Clear DTC: Tap to clear the existing diagnostic trouble codes. See Chapter 5.1.2.

Fault Report: Tap to view the health report in details. See Chapter 5.1.1.

5.1.1 View fault report

This function allows you to view the health report in details.

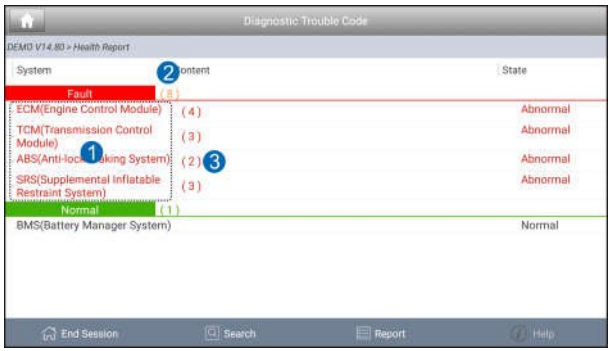


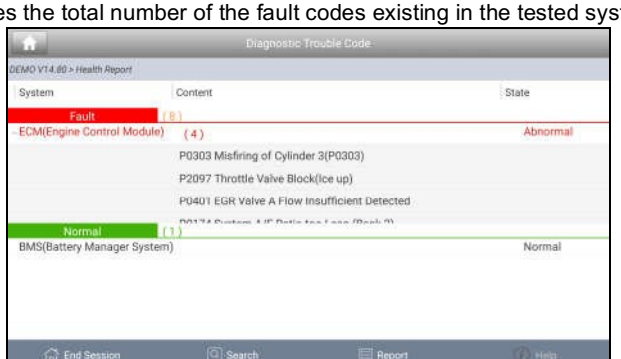
Fig. 5-6

In Fig. 5-6,

1 indicates the tested system with fault codes. Tap certain system to view the detailed definitions of the DTCs. See Fig. 5-7.

2 stands for the total number of the tested systems.

3 indicates the total number of the fault codes existing in the tested system.



On-screen Buttons:

Search: Highlight a certain DTC item, and then tap it to launch the browser to search for more detailed information about the selected DTC online.

Report: To save the current data in text format. All reports are saved under the tab "Diagnostic Report" in "My Report" from "Profile" menu. For details on report operations, please refer to Chapter 13.1 "My Report".

5.1.2 Clear DTC

This function lets you clear the existing diagnostic trouble codes in health report. Tap “Clear DTC”, a confirmation dialog box appears. Tap “Yes” to clear all the diagnostic trouble codes. Tap “No” to abort it.

5.2 System Scan

This option allows you to quickly scan which systems are installed on the vehicle.

In Fig. 5-4, tap “System Scan”, the system start scanning the systems. Once the scanning is complete, the screen will display the result. See Fig. 5-8.

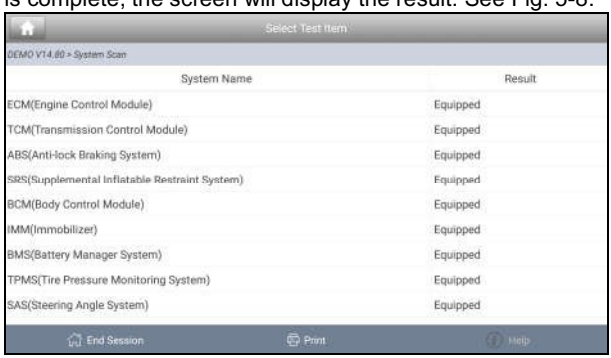


Fig. 5-8

In Fig. 5-8, tap the desired system to advance to the test function selection page. For detailed operations on test function, please refer to Chapter 5.3.

5.3 System Selection

This option allows you manually select the test system and function step by step.

In Fig. 5-4, tap “System Selection”, the screen displays as follows:

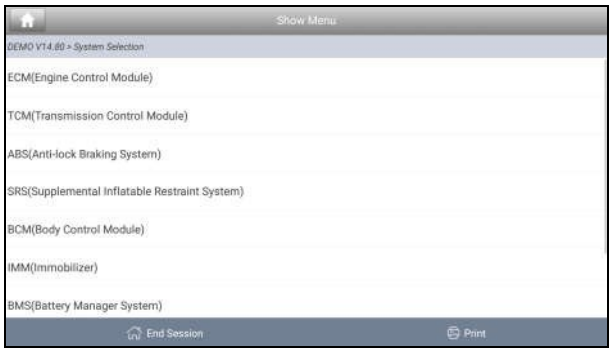
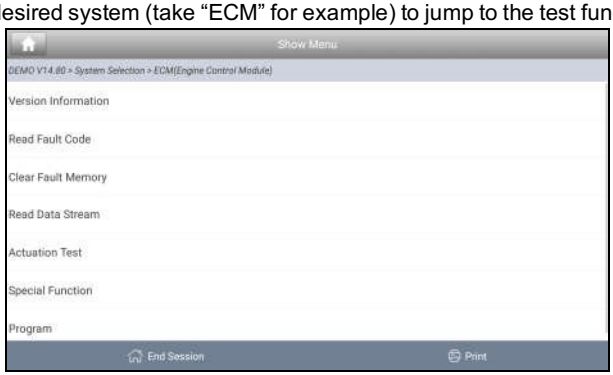


Fig. 5-9

Swipe the screen from the bottom to view the vehicle system on the next page. Tap the desired system (take “ECM” for example) to jump to the test function page.



Note: Different vehicle has different diagnostic menus.

5.3.1 Version Information

This function is used to read the version information of system mode, vehicle VIN, software and ECU.

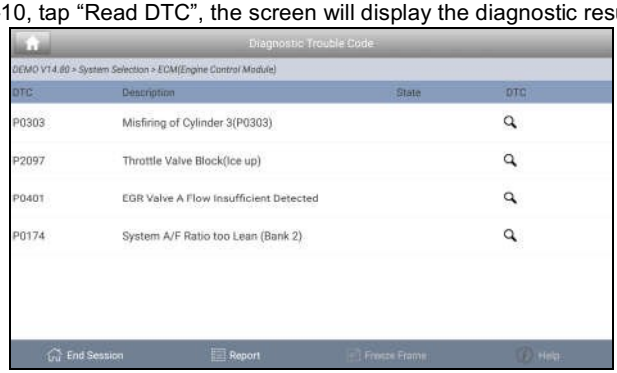
In Fig. 5-10, tap “Version Information”, the screen displays as Fig. 5-11.

Tap “OK” to confirm and exit.

5.3.2 Read Fault Code

This function displays the detailed information of DTC records retrieved from the vehicle’s control system.

In Fig. 5-10, tap “Read DTC”, the screen will display the diagnostic result.



Fig

On-screen Buttons:

Search: Highlight a certain DTC item, and then tap it to search for more information about the selected DTC online.

Report: To save the current data in text format. All reports are saved under the tab “Diagnostic Report” in “My Report” from “Profile” menu. For details on report operations, please refer to Chapter 13.1 “My Report”.

Freeze Frame: When an emission-related fault occurs, certain vehicle conditions are recorded by the on-board computer. This information is referred to as freeze frame data. Freeze frame data includes a snapshot of critical parameter values at the time the DTC is set.

5.3.3 Clear Fault Memory

After reading the retrieved codes from the vehicle and certain repairs have been carried out, you can use this function to erase the codes from the vehicle. Before performing this function, please be sure the vehicle's ignition key is in the ON position with the engine off.

In Fig. 5-10, tap "Clear Fault Memory", a confirmation dialog box pops up on the screen.

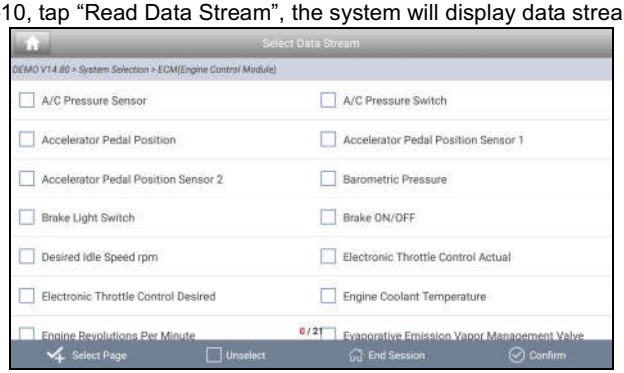
Tap "Yes", the system will automatically delete the currently existing trouble code.

Note: The trouble code will not disappear until the trouble was completely cleared.

5.3.4 Read Data Stream

This option retrieves and displays live data and parameters from the vehicle's ECU.

In Fig. 5-10, tap "Read Data Stream", the system will display data stream items.



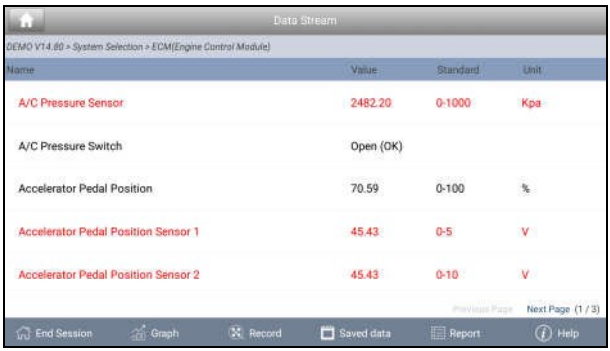
On-screen Buttons:

Select Page: Tap it to select all items of the current page. To select certain data stream item, just check the box before the item name.

Unselect: Tap it to deselect all data stream items.

Confirm: Tap it to confirm and jump to the next step.

After selecting the desired items, tap "Confirm" to enter the data stream reading page.



Notes:

1. If the value of the data stream item is out of the range of the standard (reference) value, the whole line will display in red. If it complies with the reference value, it displays in black (normal mode).
2. The indicator 1/X shown on the bottom of the screen stands for the current page/total page number. Swipe the screen from the right/left to advance/return to the next/previous page.

On-screen Buttons:

Graph: After selecting, tap it to view the waveform. There are 3 types of display modes available for data viewing, allowing you to view various types of parameters in the most suitable way.

✓ Graph – displays the parameters in waveform graphs. Refer to Fig. 5-15.

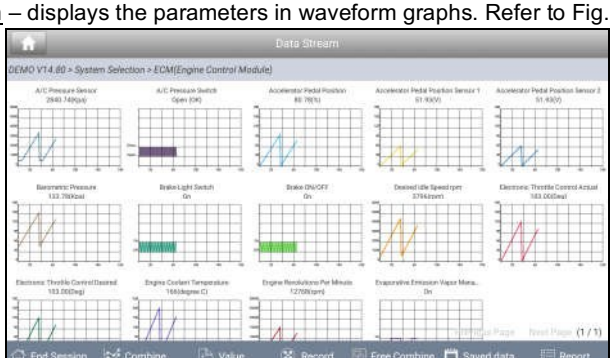


Fig. 5-15

- ✓ Value – this is the default mode which displays the parameters in texts and shows in list format.
- ✓ Free Combine – this option is mostly used in graph merge status for data comparison. In this case, different items are marked in different colors. See Fig. 5-16.

Fig. 5-16

Record: Tap to start recording diagnostic data for future playback and analysis. The saved file follows the naming rule: It begins with vehicle type, and then the record starting time and ends with .x431 (To differentiate between files, please configure the accurate system time). The file is stored in "My Report" under "Profile" menu. For details on playback operations, please refer to Chapter 13.1 "My Report".

To stop reading the data stream, tap ☐ before the recording progress bar.

Save data: Tap to save the current waveform as a diagnostic record. **Report:** Tap to access to "My reports".

5.1.5 How to view diagnostic history?

Generally once a vehicle diagnosis is performed, X-431 EURO TAB will record the every details of diagnostic process. The History function provides a quick access to the tested vehicles and users can resume from the last operation, without the necessity of starting from scratch.

1. Tap "History" tab on the diagnosis main menu screen, all diagnostic records will be listed on the screen in date sequence.

   Where the box with light blue background indicates that no DTCs are found on this vehicle and the light yellow box indicates that the vehicle has DTCs.
2. Tap a certain box to enter the history records.

3. Tap “Restore” to directly jump to the system selection screen.
4. Tap the desired system to enter and follow the instructions on the screen to proceed.

5.2 Special (Reset) Function

In addition to amazing & powerful diagnostic function, X-431 EURO TAB also features various service functions. The most commonly performed service functions contain:

- Oil Reset Service
- Steering Angle Calibration
- Electronic Parking Brake Reset
- Battery Register / Battery Maintenance
- ABS Bleeding
- Electronic Throttle Position Reset / Learn
- Diesel Particulate Filter (DPF) Regeneration
- Tire Pressure Monitor System Reset

Oil Reset Service

This function can be performed in the following cases:

1. If the service lamp is on, you must provide service for the car. After service, you need to reset the driving mileage or driving time so that the service lamp turns off and the system enables the new service cycle.
2. After changing engine oil or electric appliances that monitor oil life, you need to reset the service lamp.

Steering Angle Calibration

1. To reset the steering angle, first find the relative zero point position for the car to drive in straight line. Taking this position as reference, the ECU can calculate the accurate angle for left and right steering.
2. After replacing the steering angle position sensor, replacing steering mechanical parts (such as steering gearbox, steering column, end tie rod, steering knuckle), performing four-wheel alignment, or recovering car body, you must reset the steering angle.

Electronic Parking Brake Reset

1. If the brake pad wears the brake pad sense line, the brake pad sense line sends a signal sense line to the on-board computer to replace the brake pad.

After replacing the brake pad, you must reset the brake pad. Otherwise, the car alarms.

2. Reset must be performed in the following cases:
   a) The brake pad and brake pad wear sensor are replaced.
   b) The brake pad indicator lamp is on.
   c) The brake pad sensor circuit is short, which is recovered.
   d) The servo motor is replaced.

Electronic Throttle Position Reset/Learn

This function enables you to initialize the throttle actuators so that the "learned" values stored on ECU are returned to the default state. Doing so can accurately regulate throttle (or idle engine) operations to control the amount of air intake.

Throttle matching must be performed in the following cases:

a) The ECU is replaced and the ECU does not yet store throttle working features.
b) The ECU is disconnected from power and the ECU memory is lost.
c) The throttle assembly is replaced.
d) The intake pipe is replaced or removed, which affects idle speed control by ECU and throttle body.
e) The throttle is cleaned. Although the idle throttle potentiometer features remain unchanged, with the same throttle opening, the air inflow has changed and idle speed control features have changed.

Battery Register/Battery Maintenance

This function enables you to perform a resetting operation on the monitoring unit of vehicle battery, in which the original low battery fault information will be cleared and battery matching will be done.

Battery matching must be performed in the following cases:

a) Main battery is replaced. Battery matching must be performed to clear original low battery information and prevent the related control module from detecting false information. If the related control module detects false information, it will invalidate some electric auxiliary functions, such as automatic start & stop function, sunroof without one-key trigger function, power window without automatic function.
b) Battery monitoring sensor. Battery matching is performed to re-match the control module and motoring sensor to detect battery power usage more accurately, which can avoid an error message displaying on the instrument panel.

ABS Bleeding

This function allows you to perform various bi-directional tests to check the operating conditions of Anti-lock Braking System (ABS).

1. When the ABS contains air, the ABS bleeding function must be performed to bleed the brake system to restore ABS brake sensitivity.
2. If the ABS computer, ABS pump, brake master cylinder, brake cylinder, brake line, or brake fluid is replaced, the ABS bleeding function must be performed to bleed the ABS.

Tire Pressure Monitor System Reset

1. After the tire pressure MIL turns on and maintenance is performed, the tire pressure resetting function must be performed to reset tire pressure and turn off the tire pressure MIL.
2. Tire pressure resetting must be performed after maintenance is performed in the following cases: tire pressure is too low, tire leaks, tire pressure monitoring device is replaced or installed, tire is replaced, tire pressure sensor is damaged, and tire is replaced for the car with tire pressure monitoring function.

Diesel Particulate Filter (DPF) Regeneration

DPF regeneration is used to clear PM (Particulate Matter) from the DPF filter through continuous combustion oxidation mode (such as high temperature heating combustion, fuel additive or catalyst reduce PM ignition combustion) to stabilize the filter performance.

DPF regeneration may be performed in the following cases: a)
The exhaust back pressure sensor is replaced.

b) The PM trap is removed or replaced.

c) The fuel additive nozzle is removed or replaced.

d) The catalytic oxidizer is removed or replaced.

e) The DPF regeneration MIL is on and maintenance is performed.

f) The DPF regeneration control module is replaced.

6 Software Update

If you did not download the software in process of product registration or a pop-up message prompting you that some new software can be updated, you may use this option to download it or keep it synchronized with the latest version.

Tap “Software Upgrade” on the function menu to enter the update center.

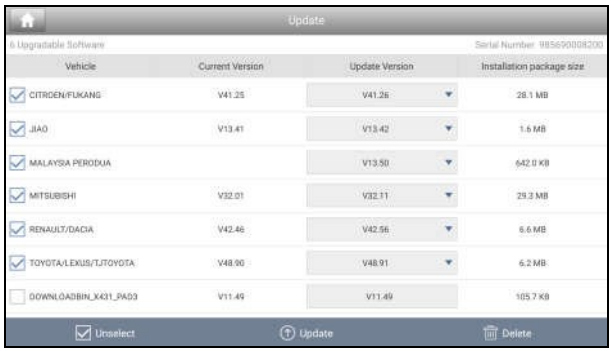


Fig. 6-1

By default, all diagnostic software is selected. To deselect certain software, tap “Unselect”, and then check the box next to vehicle model. Tap “Update” to start downloading. It may take several minutes to finish it, please be patient to wait. To pause downloading, tap “Stop”. To resume it, tap “Continue”. If network connection failure occurs, tap “Retry” to try again.

Once download is finished, the software packages will be installed automatically.

7 golo Business Manager

This module is an individual business management application specially developed for repair shops. Before using it, you need to download the application and register a golo business account.

On this platform, you can provide nearby car owners with attentive service to develop new business opportunities, manage technicians and golo customers more efficiently, monitor customer’s vehicle running status in real-time manner and perform remote assistance anywhere etc. It is very helpful to increase productivity and boost shop revenue.

Tap “golo” on the function menu to enter golo business manager account. See Fig. 7-1.

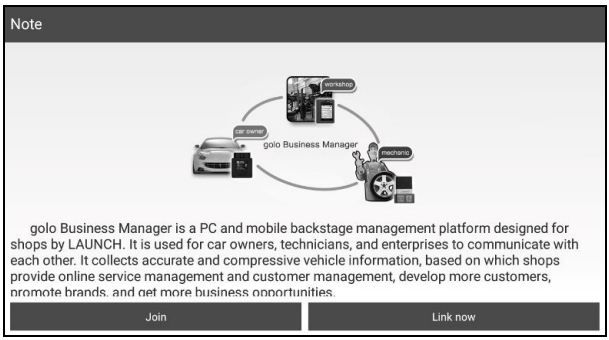
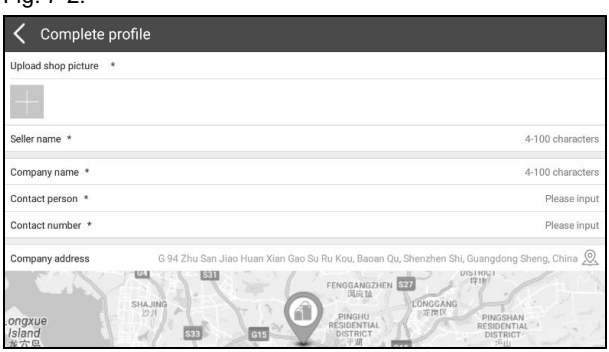


Fig. 7-1

A. If you had no golo business manager account, tap “Join” to enter a screen similar to Fig. 7-2:



Fill in the required items:

- To upload the shop picture, tap the + logo to choose the desired photo.
- To locate company address, tap the GPS location icon to obtain it automatically.
- To define the item “Model specialized”, tap the > icon to select the vehicle models.

After entering, tap “Submit” to confirm. “Sign up successfully” will pop up and the system will jump to golo main menu screen.

B. If you have a golo business manager account, tap “Link now” to bind this tool to it.

Fig. 7-3

For more detailed operations on this module, please refer to the user manual included within this application.

8 Remote Diagnosis

This option aims to help repair shops or technicians launch instant messaging and remote diagnosis, making the repair job getting fixed faster.

Tap “Remote Diagnosis” on the function menu, the screen appears blank by default.

8.1 Interface Layout

Fig. 8-1

1	Exit button	Tap it to navigate to the previous screen.
2	Search bar	Directly input the username of the X-431 EURO TAB to start searching, and then tap the desired one to add it into your friend list.
3	Message tab	Once an incoming message reaches, a red dot will appear on the upper right corner of the tab.
4	Contact tab	Tap to enter the friend list.

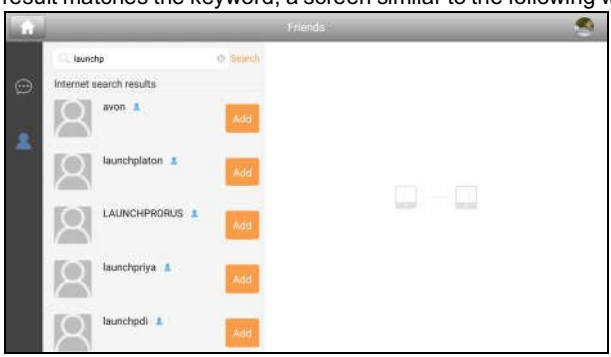
8.2 Add Friends

In the search bar, input the partner’s username and tap “Search” button next to the search bar to starts searching from Launch’s golo business database.

The partner must be the users who have registered their Launch's diagnostic tools. They may be the following:

- Workshop
- Technician
- golo users

Once the result matches the keyword, a screen similar to the following will appear:



Tap "Add", a dialog box pops up:

Tap "CONFIRM" to send your request.

Once the partner receives the request, a beep will sound. Tap the "Message" tab, tap "Agree" to confirm and his/her name will appear in the friend list.

8.3 Start Instant Messaging

Note: The I/M(Instant Messaging) function is open to all users who had Launch's diagnostic tool equipped with this module. But for remote diagnosis, it only can be launched between two diagnostic tools that have the same product configurations.

After adding your friend, tap the desired friend's logo to enter a screen similar to the following:

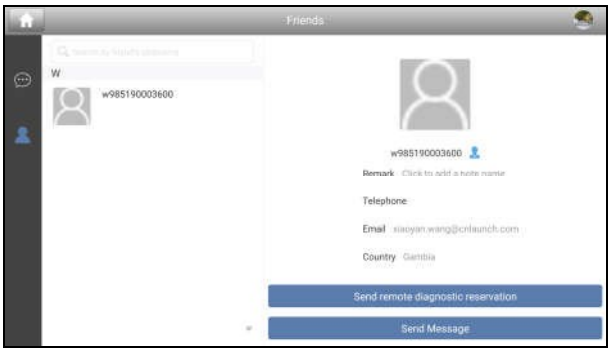


Fig. 8-4

Tap “Send Message” or tap the desired username directly from the friend list to enter the instant messaging interface.

Tap the input field and use the on-screen keyboard to enter the text message, and then tap “Send” to send it; tap to send the voice message; tap to choose to send files, pictures etc.

8.4 Launch Remote Diagnosis

Note: Before performing this operation, please make sure the following no matter which side sends the remote request:

- Turn on the vehicle power supply.
- Throttle should be in a closed position.
- The VCI connector should be properly connected to the vehicle’s DLC and a successful communication is required.
- The same diagnostic software is installed on both sides.

Tap to display mo

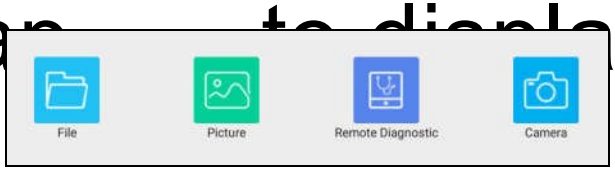
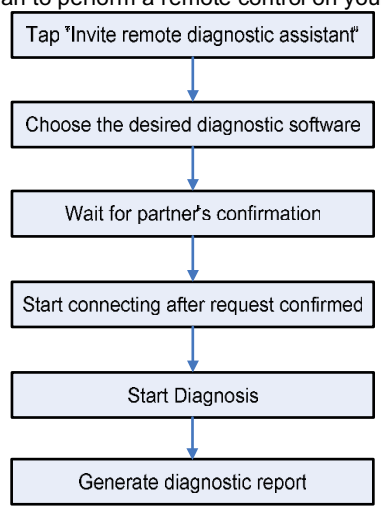
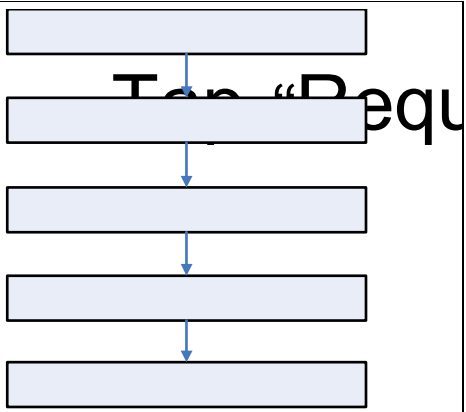


Fig. 8-5

Tap “Remote Diagnostic”, a pull-down menu including the following options appears:

Actions	Results
Send remote diagnostic reservation	Tap it and input the reservation title or scheduled date of the remote diagnosis, and then tap “Confirm” to send.
Invite remote diagnostic assistant	If you need support, just use this option to invite a technician to perform a remote control on your tool. 
Request control remote device	Request to control the partner’s device remotely to help him diagnose the vehicle.

	
Cancel	To cancel this operation.

9 Sensorbox (Toolbox)

9.1 Product Summary

X-431 EURO TAB provides an optional function of automotive sensor simulation test. “Sensor” function is specially designed to diagnose and simulate vehicle sensor faults quickly and conveniently, including “DC voltage simulation”, “Fixed frequency simulation”, “Predefined waveform simulation” and “Hand-painted waveform simulation”.

Vehicle sensors are the signal input devices for electrical control systems, which can transform all kinds of running parameters, such as vehicle speed, coolant temperature, engine RPM, air flow, throttle opening, etc., into the electronic signal for the vehicle computer who can optimize the engine running status per the above-mentioned parameters to keep the engine working in a prime status.

Meanwhile, it integrates the functions of automobile multimeter (For detailed operations on multimeter, please refer to Chapter 10), which enables users to perform voltage, resistance and frequency test. (The function utilizes the same hardware device as the sensor module)

It features automotive sensor simulation test and multimeter test function. **Sensorbox**

Parameters	**Scope**
Precision	±5%
Voltage range	-5V~+5V
Max output current	70mA
Predefined frequency range	0~150Hz
Square-wave signal pulse frequency	0~15KHz
Square-wave signal duty ratio	10%~90%

Multimeter

Parameters		**Scope**
Precision		±5%
Voltage test	Testing range	DC-400V~+400V
	Input impedance	10Mohm
Resistance test	Testing range	0~40Mohm
Frequency test	Testing range	0~25KHz
	Input impedance	1000Gohm
	Input voltage	1~12V

9.2 Structure & Accessories

9.2.1 Sensorbox structure

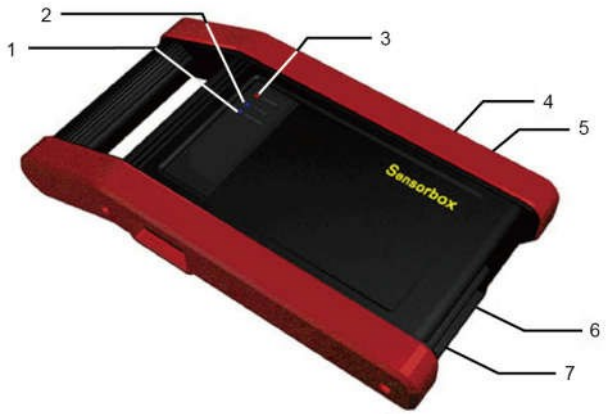


Fig. 9-1 Structural diagram of Sensorbox

Table 9-1 shows the ports and indicators for X-431 EURO TAB sensorbox

No.	Name	Description
1	Data receiving indicator	Indicator (green) for receiving data from main unit.
2	Data sending indicator	Indicator (green) for sending data to main unit.
3	Power indicator	It keeps steady on (red) after the sensorbox is powered on.
4	Type-B USB port	Connect to main unit with USB cable when it
		is applied as separated USB device.
5	Power connector	Connect to power supply through the power adaptor.
6	COM	Common terminal of multimeter
7	VΩHz	Testing terminal of multimeter

9.2.2 Sensorbox accessories

The sensorbox accessories include sensor test cable, probe etc. See Table 9-2.

As the product configuration can be different, the accessories included with the product may differ from the accessories listed on this manual. Please see the packing list attached to the product for the detailed accessories. Table 9-2 Accessory checklist

No.	Name	Picture
1	Sensor test cable	
2	Sensor probe	
3	Multimeter probe	
4	Electronic control converting cable 1	
5	Electronic control converting cable 2	
6	Electronic control converting cable 3	
7	Electronic control converting cable 4	

9.3 Sensor Simulation

9.3.1 Connections

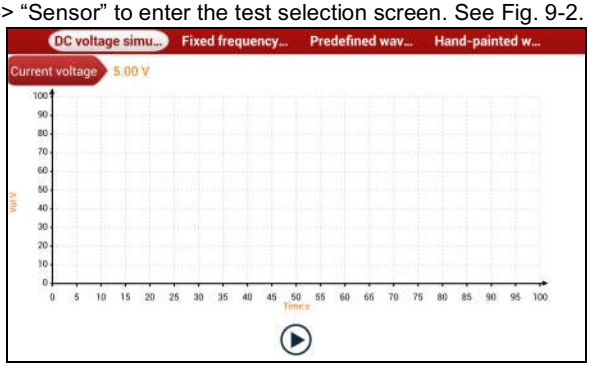
1. Firstly, power the X-431 EURO TAB tablet on.
2. Plug one end of the sensor test cable (black) into the “COM” interface of the sensorbox, and then the other end to the test probe or electronic control converting cable.
3. Connect one end of the sensor test cable (red) into the “VΩHz” interface of the sensorbox, and then the other end to the test probe or electronic control converting cable.

Note: Choose corresponding cables and test probes according to different terminals.

9.3.2 Simulation test

Simulation test enables users to exactly judge if the sensor is good or not to avoid replacing components blindly. For example, the trouble code indicates the fault is in water temperature sensor itself. But we need to confirm whether the fault results from water temperature sensor or the connections between ECU and sensors, or ECU itself. In this case, we can make full use of simulation test to input the signal of simulating water temperature sensor, instead of water temperature sensor, to the microcomputer. If the engine works better and the fault vanishes, the fault is in the water temperature sensor. If the fault still occurs, input the signal to the corresponding terminals of ECU. Consequently, if the fault disappears, the fault lies in the connection between water temperature sensor and ECU, otherwise, the fault exists in ECU.

After all connections are properly made (refer to Chapter 9.3.1 for details), launch X-431 EURO TAB application and enter the function menu interface, then tap “Toolbox” -> “Sensor” to enter the test selection screen. See Fig. 9-2.



1. DC voltage simulation

In Fig. 9-2, tap [Current voltage], then tap “+” or “-” to adjust the output voltage value. Alternatively, user can also tap edit box, then use the on-screen keyboard to input the desired value directly. After selecting or inputting the desired voltage based on the working characteristics of sensor, tap the ▶ button, then the X-431 EURO TAB will begin to output the simulation voltages. Please note the red probe is the output terminal of simulation voltage.

2. Fixed frequency simulation

This option enables you to simulate the square wave signal of pulse frequency of 0.1 ~ 15 kHz, amplitude range of -5V ~ +5V and duty cycle 10% ~ 90%.

In Fig. 9-2, tap “Fixed frequency simulation” to enter a screen similar to Fig. 9-3.

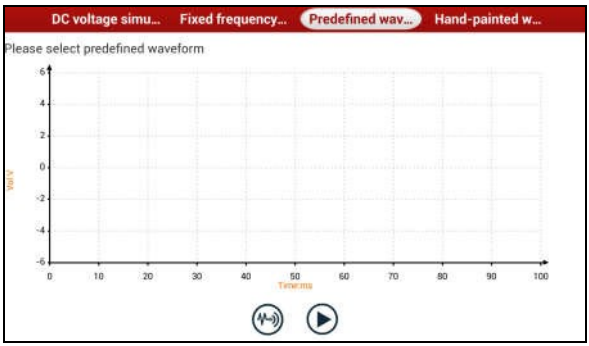
Fig. 9-3

Tap the setting option tab, then tap “+” or “-” to adjust the output. After setting, tap ▶ to perform the test.

3. Predefined waveform simulation

X-431 EURO TAB provides some common sensor waveforms which have been predefined to facilitate users to simulate sensor signals. As long as you call out the predefined waveform, then tap ▶ to start simulating output of corresponding sensor waveform and no more parameter settings of simulation waveform are required.

In Fig. 9-3, tap “Predefined waveform simulation” to enter the screen shown as Fig. 9-4.



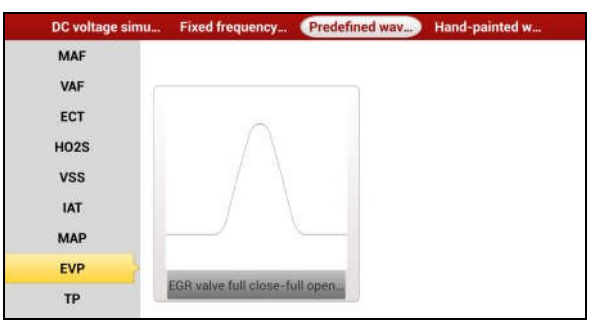


Fig. 9-5

In Fig. 9-5, the left setting column stands for sensor types and the right area displays waveform. The sensor types are explained as below:

ECT: Coolant Temperature Sensor

EVP: EGR Valve Position Sensor

HO2S: Heated Oxygen Sensor

IAT: Intake Air Temperature Sensor

MAF: Mass Air Flow Sensor

MAP: Manifold Absolute Pressure Sensor

TP: Throttle Position Sensor

VAF: Volume Air Flow Sensor

VSS: Vehicle Speed Sensor

For example, tap “ECT” – “Warm (NTC Thermistor)” in Fig. 9-5, the right screen will display the waveform of the sensor.

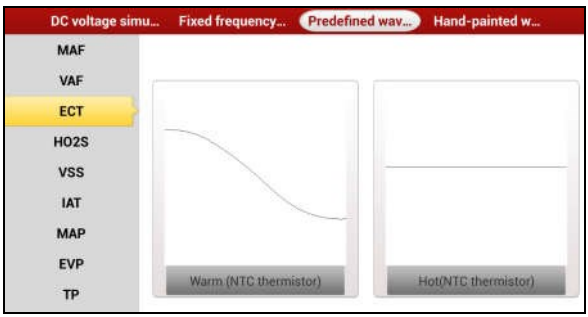
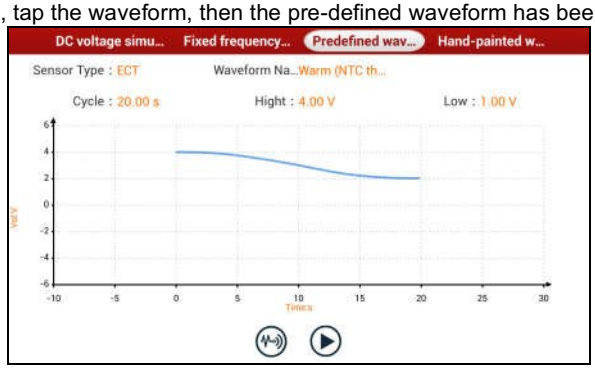


Fig. 9-6

In Fig. 9-6, tap the waveform, then the pre-defined waveform has been set.

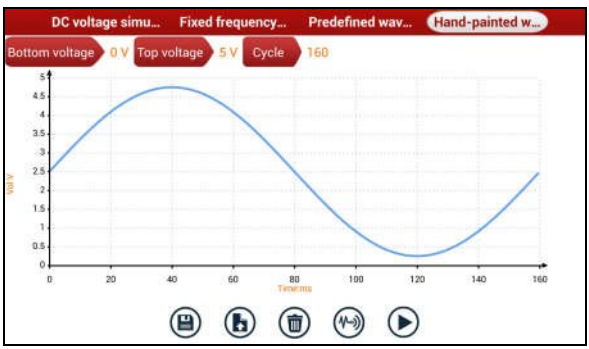


4. Hand-painted waveform simulation

This option offers great convenience for users to simulate special waveform or fault wave. Users only draw the shape of waveform which needs to be simulated in central drawing area, and then configure some parameters on the top, namely high level, low level, and cycle of waveform, then tap ▶, X-431 EURO TAB will output a waveform as desired.

Warning: Just draw a complete periodic waveform (when it is output, the system will regard the waveform in the drawing area as a periodic one). Users should draw as large as wave in drawing zone so that the system can sample more points to reduce tolerance.

In Fig. 9-2, tap "Hand-painted waveform simulation", a screen similar to Fig. 9-8 will appear.



[]: Save the current waveform.
[]: Loads the previously saved hand-drawn waveform.
[]: Clear all hand-drawn waveform.
[]: Click to call out the predefined waveform for reference.
[]: Continues the following operation.

9.3.3 Precautions on checking vehicle sensor

- Hold the connector when plugging or unplugging it. Do not pull the cable for unplugging.
- At first check the fuse, fusible line and terminals. Then check others after eliminating these faults.
- When measuring voltage, the ignition switch should be on and the battery voltage should not be less than 11V.
- When measuring voltage, please shake the lead lightly in the vertical and horizontal direction for more precision.
- When checking whether there is open in the line, disconnect the CEU and the relevant sensor at first, then measure the resistance among the ports of sensor in order to determine whether open-circuit / contact fault exists or not.

- When checking if there is a short in the line, please disconnect the CEU and the relevant sensor, then measure the resistance value of the ports between the connected port and the vehicle body. If the resistance value is more than 1MΩ, no fault occurs.
- Before disassembling the engine electrical control system cable, cut off the power supply, that is, turn the ignition switch OFF and disconnect the cables on the battery poles.
- Contact the test probe and the two terminals/ the two leads to be measured when measuring the voltage between the two terminals or the two leads.
- Contact the red test probe to the terminal/ the cable to be measured, and the black probe to the ground when measuring voltage of one terminal/ one cable.
- When checking the continuity of the terminals, contacts and leads, the method for measuring their resistances can be used.
- Check the faults in the terminals of the CEU to sensors, relays, etc.
- There are two test probes in the testing wire. The black one is the common signal terminal (signal GND); the red one is the input terminal for voltage, resistance, and frequency test and output terminal for simulation voltage, simulation frequency and oxygen sensor. Please choose the correct probes to match the different terminals.

10 Multimeter (Toolbox)

10.1 Main Menu

Make sure the X-431 EURO TAB handset and the sensorbox are properly connected (Refer to Chapter 9.3.1 Connections for details), launch X-431 EURO TAB application, tap “Toolbox” -> “Multimeter” to display the test menu.

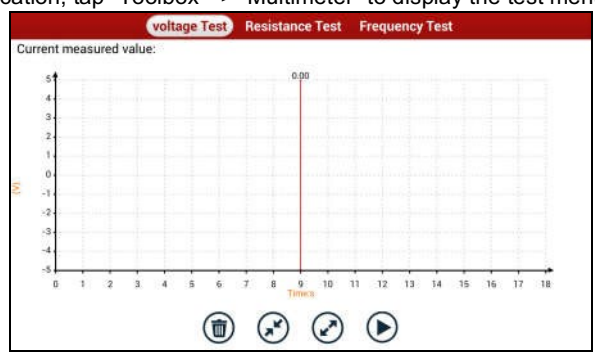


Fig. 10-1

Tap the desired test to perform related test.

The operation method on **Resistance Test** and **Frequency Test** is identical to that of **Voltage Test**. Here take Voltage test as an example for demonstration.

Tap “Voltage Test”, a screen similar to Fig. 10-2 appears:

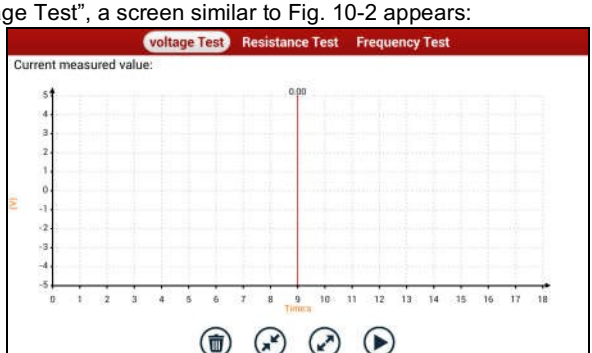


Fig. 10-2

The following operations can be done:

[]: Erases the currently displayed waveform and display it starting from the left.

[]: Reduces the range and zoom in the waveform.

[]: Increase the range and zoom out the waveform.

[]: Starts or stops the testing process.

10.2 Test Sample

Knock sensor testing

(1) Resistance test for knock sensor

Switch ignition “OFF”, unplug the wire connector of knock sensor, test the resistance between the wire terminal and the case of knock sensor with “Resistance test” function, it shall be ∞ (disconnected), and if it is 0Ω(conductive), which means the knock sensor shall be replaced. For the magnetostriction knock sensor, it can also test the resistance by the “Resistance measurement” function; the resistance shall be compliant with the specified value (see specific service manual for the detailed data), otherwise, the knock sensor shall be replaced.

(2) Checking for the output signal of knock sensor

Unplug the wire connector of knock sensor, check voltage between knock sensor connector terminal and ground wire of knock, it should be output pulse voltage; otherwise, the knock sensor shall be replaced.

Coolant temperature sensor testing

(1) Resistance test for coolant temperature sensor

On vehicle testing:

Switch ignition “OFF” and unplug the wire connector of coolant temperature sensor, then use the “Resistance measurement” to test the Resistance between two terminals of sensor. The relationship between the resistance and the temperature is in inversely proportion (negative temperature coefficient), which shall be less than 1kΩ during warming up.

Independent testing:

Unplug the wire connector of coolant temperature sensor, then remove the sensor from the engine; place the sensor into a breaker with water and heat the water, then use the “Resistance measurement” to test the Resistance between two terminals of coolant temperature sensor at different water temperature.

Compared the measured value with the standard value, if the Resistance is not compliant with the standard, then the coolant temperature sensor shall be replaced.

(2) Output signal voltage testing for coolant temperature sensor

After installing the coolant temperature sensor, plug the wire connector of sensor, and then switch ignition ON, test the output signal voltage between the two terminals of wire connector. The tested voltage shall be in inverse proportional with the coolant temperature. When the harness of coolant temperature sensor is disconnected, the voltage shall be about 5V if the ignition switch is ON.

11 Batterybox (Toolbox)

11.1 Product Summary

X-431 EURO TAB provides an optional function of automotive battery test, which adopts the latest state-of-the-art conductance testing technology in the world and can test vehicle's battery status. Two testing environments (Inside the Vehicle and Outside the Vehicle) are available and applicable to battery test. In addition to battery test, charging system and actuation system test can be done while Inside the Vehicle is selected.

It supports various battery standards and specifications, including CCA, DIN, IEC, EN, JIS, SAE and GB etc. It is specifically designed to help car owner, repair workshop, battery factory use battery test instrument properly and determine whether the battery is normal or not.

Battery test aims to check starting plumbic acid storage batteries for vehicles, ship, boats and aviations, etc. It can test all kinds of batteries complying with CCA, DIN, JIS, EN, GB and SA standards. For detailed test standards, please refer to Table 11-1.

Table 11-1 Test standard

Standards	Standard (Full name)	Test capacity range
CCA	Battery Council International	100～1700
DIN	Deutsche Industry Normen	100～1200
JIS	Japanese Industry Standard	26A17～245H52
EN	Europe Norm	100～1700
IEC	National Electrical Commission	100～1200
GB	Chinese National Standard	100～1200
SAE	Society of Automotive Engineers	100～1700

11.2 Test Environment

11.2.1 Test environment

Inside the vehicle test indicates that the battery connects to loading devices, such as engine, etc. After doing battery test, it can perform charging system and actuation system test, which is proceeded as a whole simultaneously. Charging system and actuation system test is not required but must not be performed before battery test. Because it is difficult for vehicle technicians to judge where is faulty exactly if they have the faintest idea of battery's status itself.

Outside the vehicle test indicates that the battery is disconnected from all loading devices on vehicles. Therefore, only battery test is supported in this condition.

11.2.2 Battery status and description

There are mainly 5 states as follows:

No.	States	Descriptions
1	Good battery	Indicates battery is normal.
2	Replace battery	Indicates that battery is aged or becomes rejected, or battery life cycle approaches to be exhausted. In this case, battery voltage appears to be normal, but battery itself is not well, i.e. battery polarity board has been completely vulcanized or aged. Please replace battery immediately.
3	Good-recharge	Stands for low battery. The battery is good itself.
4	Charge-retest	It is better for a few batteries to be fully charged before testing in order to avoid judging in error under special conditions.
5	Bad cell	Indicates one of the battery cells is bad and cannot work normally, but for which one is bad, it can't be verified. In this case, battery voltage is generally lower than 11V, mainly resulting from internal circuitry damage, such as short circuit, open circuit, dummy weld etc.

11.3 Batterybox Structure & Accessories

11.3.1 Batterybox structure

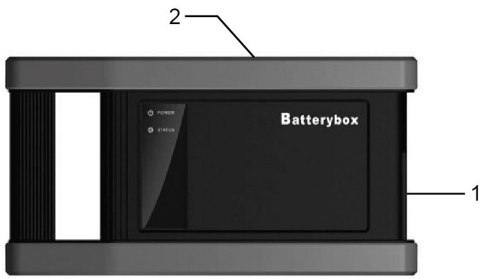


Fig.11-1 Batterybox structure diagram

1. Battery connector: Connect to vehicle's battery for battery test.
2. B type USB terminal: Connect to the X-431 EURO TAB tablet with a B-shaped USB cable.

11.3.2 Test accessories

Fig. 11-2 Kelvin clip

Fig. 11-3 A/B cable

11.4. Connections & Operations

11.4.1 Connection

Connect one end of the A/B cable to the B type USB terminal of the batterybox, and then connect the other end to the USB port of X-431 EURO TAB tablet. This connection applies to outside the vehicle test and inside the vehicle. Notes:

1. Wait about 10 seconds and begin to communicate since the batterybox needs to initialize after connection is complete, otherwise, communication may fail.
2. Red lamp on the batterybox means it has been successfully powered up; If the green light is always on, it indicates the clip is well connected; while the green light blinks,

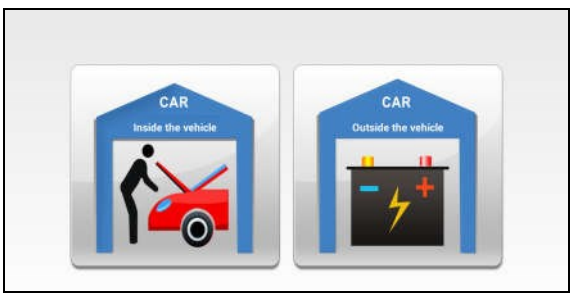
it indicates that the clip has poor contact. Do not perform any test until the clip and A/B cable are properly connected.

11.4.2 Inside the vehicle test

Battery test and charging system & actuation system test can be done in this mode.

1. Battery test

Enter battery test main menu, and select a desired test environment as shown in Fig. 11-4.

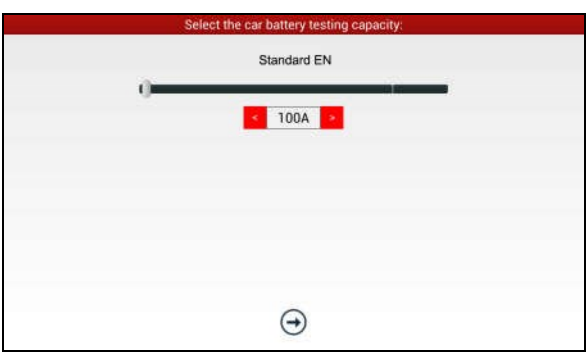


Note: The sequences of inside the vehicle and outside the vehicle test are almost the same, but under inside the vehicle condition, all loads in vehicles must be powered off for getting an exact test value.

1. Firstly, the system detects whether floating electricity exists or not before testing. If yes, turn on the headlamp to remove it. Otherwise, the system starts test program directly.
2. Tap [Inside the vehicle], the system starts detecting floating electricity automatically. If floating electricity is detected, it will prompt you to turn on the headlamp.
3. Follow the on-screen instructions to turn on headlamp, the system starts removing floating electricity.
4. Once the floating electricity is removed, a prompt message box “The floating electricity has been removed, please turn off the headlamp to continue the testing” will appear on the screen.

system will continu

en.



5. Follow the on-screen instructions to turn off the headlamp and tap [OK], the , the system will enter Select testing capacity screen. Users can select corresponding standard capacity value according to battery model marked on battery.

7. Tap and the testing result will appear on the screen.

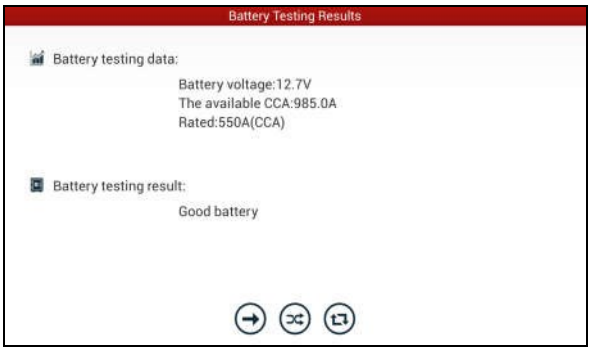


Fig. 11-7

[]: Tap it to perform the charging system and starting system test.

[]: Tap to test it again.

[]: Tap it to reset the test.

2. Charging system and starting system test

While performing this test, the battery's charging voltage value and starting voltage can be obtained in case of engine starting and accelerating. Based on the data, the system will judge whether battery's charging and actuation status is normal or not.

Tap in Fig. 11-7, a dialog box will pop up as Fig. 11-8.

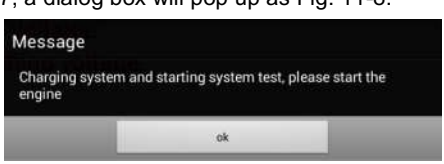


Fig. 11-8

After detecting engine starting, follow the instructions on the screen to increase the speed.

The system begins to receive test data information after acceleration was detected, as shown in Fig. 11-9.

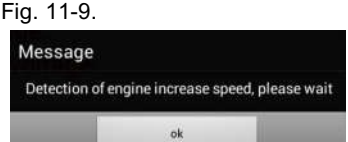


Fig. 11-9

Tap [OK], test data will be shown on the screen.

Note: It is unnecessary to perform charging system and start system test after finishing battery test, but battery test must be done before undergoing charging system and starting system test.

11.4.3 Outside the vehicle test

It only applies to battery test and detecting floating electricity will be ignored while performing battery test.

On Fig. 11-4, tap [Outside the vehicle] to select battery test standard.

The following operation steps are identical to Steps 6~7 in Chapter 11.4.2 Battery test. Please refer to it for details.

11.5 Precautions on Battery Test

For the purpose of getting accurate test results, unless otherwise special required, all loads need to be power off such as headlamp, engine etc. before testing battery.

The operating time required for charging system and actuation system test varies from person to person. If the engine does not start or accelerate within 30 seconds, the system will prompt you “receiving timeout” and return to the initial status.

Whether Engine is off or not has no influence on charging and actuation test result after increased speed is detected, but other loads need to be powered off. The accuracy of battery voltage, charging voltage, start voltage is 0.01V in test results; CCA (Cold Cranking Amps) precision is 5CCA.

Generally, charging voltage value is greater than starting voltage.

Charging voltage range is as follows: 13.8--14.5V for domestic vehicle; 13.3--15.5V for imported vehicles. The voltage varies with different car models, so you have to judge based on related vehicle models. In general, the DC voltage is stable, but it also varies with different revolution speed.

Starting voltage range: The value higher than 9.6V is regular, otherwise it is too low. Due to different situations, whether the starting voltage is higher or not does not mean the vehicles or batteries are faulty. For detailed faults, other special equipments are needed. To validate the accuracy of the value, the best method is to collect the signals of starting and charging voltage and observe it on an oscillometer.

Generally, the voltage is lower than 11V for the bad cell battery, but it is possible that the battery is completely exhausted or has a serious low capacity. In this case,

just recharge your battery. Bad cell always happens when the loads on a stopping vehicle are turned on for a long time.

Please note that it is normal for quick detecting of “Increase speed” because it follows the theory of detecting “Increase speed”: If the detected voltage is higher than the previous battery test voltage, the system will prompt you a message of “Engine has been speeded”

It has no influence on test result in the event that engine’s output voltage or engine revolution is not very stable. No matter whether the vehicle is accelerated or not, the output voltage only differs within 0.2V.

While doing inside the vehicle test, Kelvin clip is always found to be in poor contact. To remain it in good contact, please shake it several times before testing. Take down the battery connector, and test it again, the value probably varies. The deviation may arise from battery connector.

Pay more attention to connect the clip. The battery poles connect with conductor, which makes the clip has a poor connection when testing battery. A tolerance of dozens of CCA occurs if the clip is out of position, or oil, dust attaches on the pole. The gear and main body of clip should be fully matched with battery poles. **Notes:**

1. Battery poles inside the vehicle are enveloped by connectors, which may produce some errors for test results. The tolerance results from the resistance of connectors. The greater the resistance value is, the greater the tolerance becomes. But generally, the tolerance does not affect the test conclusion.
2. Testing the battery separately generates an exact test result. The battery box is a very useful auxiliary tool for quick test. If any problems were found, test it separately for getting an exact test result.

12 Oscilloscope (Toolbox)

12.1 Introduction

The Scopebox is an optional add-on module of X-431 EURO TAB, including automotive oscilloscope and automotive ignition waveform.

Automotive oscilloscope can make the auto repair technician quickly judge the faults on automotive electronic equipment and wiring, and the oscilloscope sweep speed is far greater than the signal frequency of such vehicles, usually 5-10 times of the measured signal. The automotive oscilloscope not only can quickly acquire the circuit signal, but also can slowly display the waveform to observe and analyze. It can also record and store the tested signal waveform which can be recalled to observe for the fast signal, having great convenience to failure analysis. Either high-speed signal (e.g.: Injection nozzle, intermittent fault signal) or the slow-speed signal (e.g. the throttle position change and the oxygen sensor signal) can be observed through automotive oscilloscope in an appropriate waveform.

The electronic signal can be compared and judged via measuring five parameters indexes. The five parameters are the amplitude (the maximum voltage of signal), the frequency (the cycle time of signal), the shape (the appearance of signal), the pulse width (the duty cycle or the time range of signal), and the array (the repetition characteristic of signal), which can be tested, displayed, saved by the automotive oscilloscope. Via the waveform analysis can further detect the circuit fault on sensors, actuators, circuits, and electronic control units, etc.

12.2 Structure & Accessories

12.2.1 Scopebox structure

Fig 12-1 Scopebox Structure Diagram

Table 12-1 shows the ports and indicators for the Scopebox.

No.	Name	Description
1	Fixed signal generator	Generate a square signal with fixed 1K frequency.
2	CH1	Channel 1
3	CH2	Channel 2
4	CH3	Channel 3
5	CH4	Channel 4
6	External trigger	External trigger signal
7	B-shaped USB interface	Connect main unit via USB cable as separated individual USB devices.
8	Power interface	Connect to power supply via the power adapter.
9	Communication indicator	It blinks in process of data communication.

10	Running indicator	It remains steady green after the Scopebox
		is running.
11	Power indicator	It keeps steady red after the Scopebox is powered on.

12.2.2 Scopebox accessories

The Scopebox includes the secondary pickup cable for 4-channel oscilloscope, crocodile clips for 4-channel oscilloscope, etc. See Table 12-2.

As the product configuration can be different, the accessories included with the product may differ from the accessories listed on this manual. Please see the packing list attached to the product for the detailed accessories.

Table 12-2 Accessory checklist

No.	Name	Picture
1	Secondary ignition pickup for 4-channel oscilloscope	
2	Crocodile clips for 4-channel oscilloscope	
3	Direct ignition extension cable	
4	6-way universal guide line for 4-channel oscilloscope	
5	BNC to 4mm connector test cable	

6	Pin connector suite for 4-channel oscilloscope	

12.3 Connection & Initial Use

12.3.1 Connection

The Scopebox should work with the X-431 EURO TAB tablet.

1. Firstly, power on the X-431 EURO TAB tablet.
2. Then plug one end of ground cable of the Scopebox into external trigger channel (GND), and the other end should be grounded.
3. Connect one end of probe cable to the CH1, CH2, CH3, or CH4 on the Scopebox, and the other end to related signal terminal.

Warning: Please use the specific capacitance probe when diagnosing the ignition high voltage line. Never connect the Scopebox to the ignition secondary circuit directly.

12.3.2 Initial interface introduction

Fig. 12-2 displays the initial interface of the Scopebox.

Fig. 12-2

No.	Descriptions

1	Signal display area
2	Horizontal Settings: Controls the time base.
3	Vertical Settings: Controls the amplitude of the displayed signal.
4	Trigger Settings: Controls the start event of the sweep.
5	Channel Selection Button
6	Function Menu [Auto]: It indicates auto trigger setting. [Ref]: There are expert reference and base reference available. Expert reference enables you to recall your customized expert database, whereas base reference provides automatic pre-setting function of specialized sensors. [File]: Provides save snapshot, snapshot manager, waveform record and waveform replay. [View]: Calibration and display settings are available. [Measure]: Includes signal source measurement, horizontal measurement, vertical measurement and clear measurement. [Settings]: Shows/hides the parameter settings area including horizontal settings, vertical settings and trigger settings. / [Start/Stop]: Starts/stops collecting waveforms.

12.4 Operations

12.4.1 Channel selection and attributes setting

<1> Channel selection

There are two ways available for channel selection:

A. Select from the channel tab shown at the bottom of the waveform display area

B. Select from Vertical settings

Note: For better comparison and identification, each channel and waveform are marked in different colors.

Fig. 12-3

<2> Channel attributes & trigger setting

Channel attributes can be set via horizontal settings and vertical settings.

Horizontal Settings

User can make some settings directly by tapping < or > next to options.

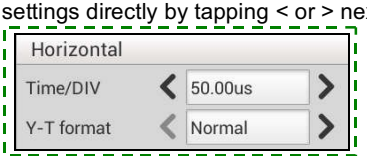


Fig. 12-4 Options

descriptions:

Menu	Comments/Settings
Time/DIV	Horizontal scale. If the waveform acquisition is stopped (using the button), the Time/DIV selector expands or compresses the waveform.
Y-T format	The conventional oscilloscope display format. It shows the voltage of a waveform record (on the vertical axis) as it varies over time (on the horizontal axis).

Vertical Settings

The trigger determines when the Scopebox starts to acquire data and display a waveform. When a trigger is set up properly, it can convert unstable displays or blank screens into meaningful waveforms.

When the Scopebox starts to acquire a waveform, it collects enough data so that it can draw the waveform to the left of the trigger point. The Scopebox continues to acquire data while waiting for the trigger condition to occur. After it detects a trigger, the Scopebox continues to acquire enough data so that it can draw the waveform to the right of the trigger point.

User can make some settings directly by tapping < or > next to options.

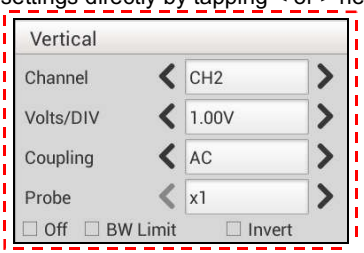


Fig. 12-5 Options

descriptions:

Menu	Comments/Settings
Channel	To select the channel source.
Volts/DIV	It is defined as “Volts/Division” and mainly used to change the resolution.
Coupling	Trigger coupling determines what part of the signal passes to the trigger circuit. AC, DC and Ground are included: AC: Blocks the DC component of the input signal. DC: Passes both AC and DC components of the input signal. Ground: Disconnects the input signal.

Probe	When using a probe, the Scopebox allows you to select the attenuation factor for the probe. The attenuation factor changes the vertical scaling of the Scopebox so that the measurement results reflect the actual voltage levels at the probe tip.
BW Limit	ON: Limits the channel bandwidth to 20MHz to reduce display noise. OFF: Get full bandwidth.
Invert	ON: Turn on the invert function. OFF: Restore to the original display of the waveform.

Trigger setting

Trigger indicates that when certain waveform meets the conditions that are predefined according to the requirements, the Scopebox acquires the waveform and its adjacent section, and then presents it on the screen.

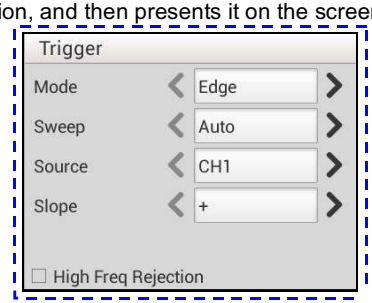


Fig. 12-6

1) If **Edge** trigger is selected (An edge trigger determines whether the Scopebox finds the trigger point on the rising or the falling edge of a signal.):

Menu	Comments/Settings

Sweep	The sweep mode determines how the Scopebox behaves in the absence of a trigger event. The Scopebox provides three trigger modes: Auto, Normal, and Single. Auto: It allows the Scopebox to acquire waveforms even when it does not detect a trigger condition. If no trigger condition occurs while the Scopebox is waiting for a specific period, it will force itself to trigger. When forcing invalid triggers, the Scopebox can not synchronize the waveform, and then waveform seems to roll across the display. If valid triggers occur, the display becomes stable on the screen. Normal: This mode allows the Scopebox to acquire a waveform only when it is triggered. If no trigger occurs, the Scopebox keeps waiting, and the previous waveform, if any, will remain on the display. Single: In this mode, it only acquires the waveform that generates for the first time the trigger conditions are met,
	and then stops after finishing capture.
Source	Select which channel as trigger signal.
Slope	+ : Trigger on rising edge - : Trigger on falling edge
High Freq Rejection	Reject high frequency signals when selected.

2) If **Pulse Width** trigger is selected (Pulse trigger occurs according to the width of pulse. The abnormal signals can be detected through setting up the pulse width condition):

Menu	Comments/Settings

Sweep	The sweep mode determines how the Scopebox behaves in the absence of a trigger event. The Scopebox provides three trigger modes: Auto, Normal, and Single. Auto: It allows the Scopebox to acquire waveforms even when it does not detect a trigger condition. If no trigger condition occurs while the Scopebox is waiting for a specific period, it will force itself to trigger. When forcing invalid triggers, the Scopebox can not synchronize the waveform, and then waveform seems to roll across the display. If valid triggers occur, the display becomes stable on the screen. Normal: This mode allows the Scopebox to acquire a waveform only when it is triggered. If no trigger occurs, the Scopebox keeps waiting, and the previous waveform, if any, will remain on the display. Single: In this mode, it only acquires the waveform that generates for the first time the trigger conditions are met, and then stops after finishing capture.
Source	Select which channel as trigger signal.
Condition	To select pulse condition.
Pulse Width	Set required pulse width.
High Freq Rejection	Reject high frequency signals when selected.

12.4.2 Auto

The Scopebox has an Auto feature that sets up the Scopebox automatically to display the input signal in a best fit.

Tap  , the Scopebox may change the current settings to display the signal. It automatically adjusts the vertical and horizontal scaling, as well as the trigger coupling, position, slope, level and mode settings.

12.4.3 View Settings

<1> Calibration

This option adjusts the Scopebox's internal circuitry to get the best accuracy. Use this function to calibrate the Scopebox's vertical and horizontal systems.

Tap and then tap [Calibration], a dialog box similar to Fig. 12-7 will appear.

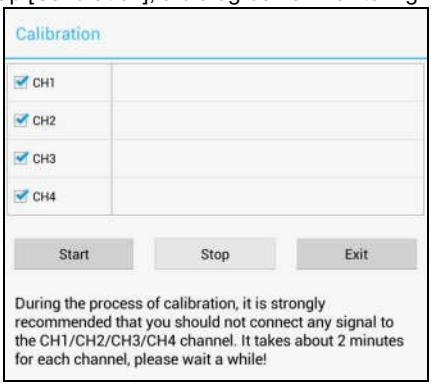


Fig. 12-7

Check the box before the channel to select it. To deselect it, just uncheck it. After choosing the desired channel(s), tap [Start] to start calibration and [Start] button will be temporarily invalid during calibrating. Tap [Stop] to stop calibrating. Once it becomes active, it indicates calibration has completed.

Note: In process of calibration, make sure CH1/CH2/CH3/CH4 has no signal input. Moreover, calibration may take several minutes and please be patient to wait.

<2> REF settings

Reference waveforms are saved waveforms to be selected for display. The reference function will be available after saving the selected waveform to non-volatile memory.

Tap and then [REF] to enter the REF setting screen.

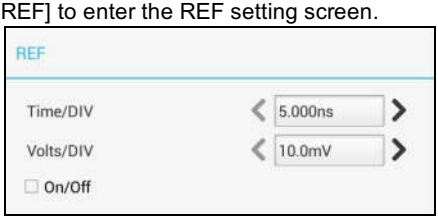


Fig. 12-8

Tap < or > to select the desired reference value for time/DIV and volts/DIV. To show or hide the REF, just check/uncheck the box before On/Off.

<3> Display settings

Tap and then [Display settings] to enter the setting screen.

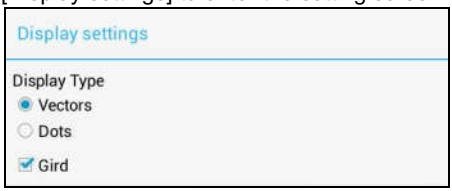


Fig. 12-9

Select “Vectors” or “Dots” to display waveforms as vectors or dots. Check / uncheck the box before Grid to turn on/off grid display.

12.4.4 Measure

<1> Channel source

Tap and then [Source], a screen similar to Fig. 12-10 will appear.

<2> Horizontal / Vertical measure

Horizontal Measure / Vertical Measure are used to measure voltage parameter and time parameter respectively. Drag A line upwards or downwards to control voltage. Move A line left or right to fine-tune timebase. A line is a solid line and B line is a dotted line.

Ta n [H
ap

Note: If no desired channel is selected, the system will take the current source as the default channel.

<3> Clear measure

Tap and then [Clear Measure], the system will clear the measurement result on screen.

12.4.5 File management

<1> Save snapshot

While viewing sampling data, tap and then [Save Snapshot] to store the current screen.

<2> Snapshot manager

While viewing sampling data, tap and then [Snapshot Manager] to enter. View, delete and edit operations are supported.

<3> Record waveform

This function is used to record input waveforms that are acquired by the Scopebox at a specific period, and save it as waveform file which can be recalled in future.

It can be performed only when the Scopebox is collecting data in Normal mode.

Tap , then select [Record] from the pop-up menu to start recording.

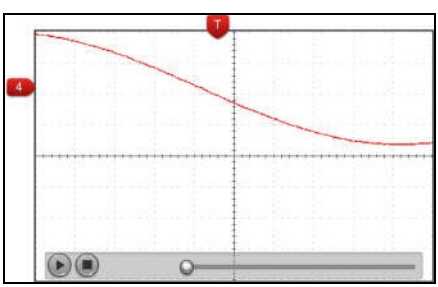
Fig. 12-12

Tap [Start] to start recording with a minimum record length of 10 frames, and [Stop] to stop recording. While recording, the recorded pages will be shown on the screen.

<4> Load waveform for playback

The Import function enables you to import the stored waveform file for playback and review. During replaying, the Scopebox stops collecting data automatically.

Tap , then select [Waveform replay] from the pop-up menu to enter:



To delete the waveform file, tap

Tap to return to the previous screen.

12.4.6 Expert reference

<1> Expert Reference

By default, it appears blank. As a matter of fact, Expert reference database is generated by doing the following:

1. Open and edit a snapshot.

2. Select “Joint the expert database” (refer to the following illustration), and then tap to save the waveform being displayed on the screen as REF.

<2> Base Reference

Preset waveforms of some sensors are available for your reference.

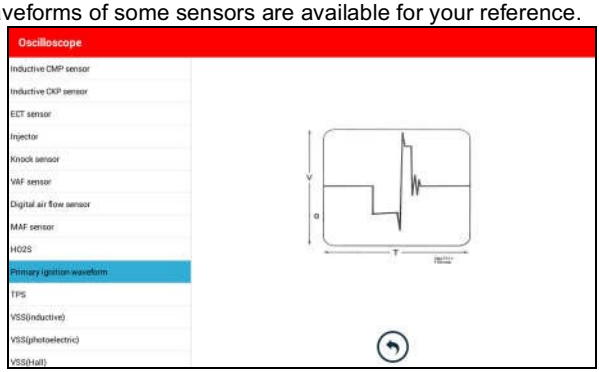


Fig. 12-16

13 My Data

This function allows users to manage personal information and VCI connector.

13.1 My Report

This option is used to view, delete or share the saved reports.

Tap "**My Report**", there are total 3 options available.

In case the DTC result is saved on Read Trouble Code page, the files will be listed under **Diagnostic Report** tab.

If user records the running parameters while reading data stream, it will be saved as .x431 file and appear under **Diagnostic Record** tab.

Tap the desired one to enter, a screen similar to the following displays:

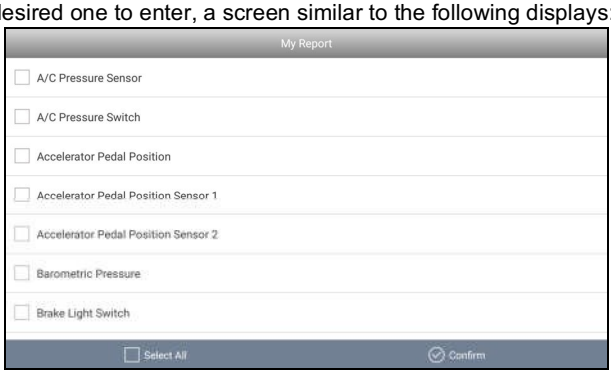


Fig. 13-1

Select the desired data stream items and tap "Submit" to jump to the playback page.

On-screen Buttons:

Graph – displays the parameters in waveform graphs.

Value – this is the default mode which displays the parameters in texts and shows in list format.

Combine – this option is mostly used in graph merge status for data comparison. In this case, different items are marked in different colors.

Frame Playback – plays back the recorded data stream items frame by frame. Once it is in frame playback mode, this button changes into "Auto Playback".

Remote Diagnostic Report lists all diagnostic reports generated in process of remote diagnosis.

13.2 My Connector

This option allows you to manage all your activated VCI connectors.

If several VCI connectors are activated on this tool, a list of connectors will be displayed on the screen. Once you choose the connector that belongs to other account, you have to log out, and then input the right account to continue.

13.3 Diagnostic connector connection management

This option is used for X-431 EURO TAB to deactivate pairing up with the VCI connector via Bluetooth.

* Note: please be sure to keep the VCI connector powered on while performing the operation.

13.4 Activate Connector

This item lets you to activate a new VCI connector.

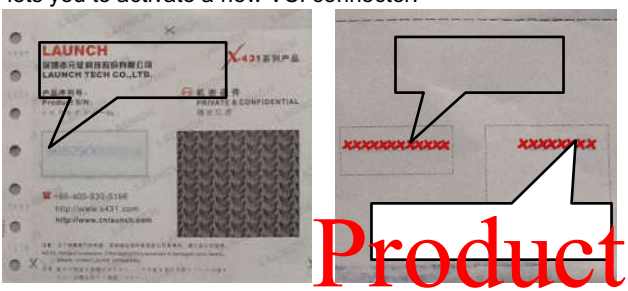


Fig. 13-3

Input the Serial Number and Activation Code, and then tap “Activate” to activate the connector.

For details on how to obtain Activation Code, tap the link below to get help.

13.5 Firmware Fix

Use this item to upgrade and fix diagnostic firmware. During fixing, please do not cut power or switch to other interfaces.

13.6 Profile

Use this item to view and configure personal information.

13.7 Change password

This item allows you to modify your login password.

14 Settings

It enables you to make some application settings and view software version information etc.

14.1 Units of Measurement

It is designed to configure the measurement unit. Metric System and English System are available.

14.2 Print Information

This option lets you define your print information. It mainly includes Workshop, Address, Telephone, Fax and License Plate. After inputting, tap “Save”.

14.3 Launch Printer Connection

This option is designed to establish a wireless connection between X-431 EURO TAB and the Wi-Fi printer (sold separately) while performing printing operations.

Follow the steps below to connect the printer.

1. Tap “Printer Connection”.

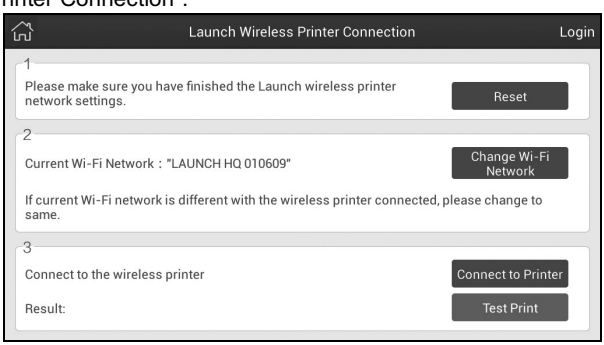


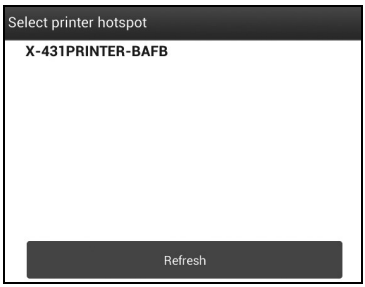
Fig. 14-1

A. If it is the first time you have operated this printer, please proceed the following:

2. For initial use, you are suggested to reset the printer: Press and hold [MODE] & [FEED] for 8 seconds, the following resetting command will be printed out: at + default = 1 ok at + reboot = 1 rebooting...
3. Tap “Reset” to configure Wi-Fi printer.

   Step 1: Connect the printer:

   Tap “Scan” to select the desired printer hotspot named with X-431PRINTER-XXXX (XXXX stands for 4 characters), and then tap “Connect” to enter Step 2.



Step 2: Join the Wi-Fi printer into LAN:

Tap “Scan” to select the desired local Wi-Fi network from the list, and type in the security password (If it is an open network, password is not required), and then tap “Confirm”.

Fig. 14-3

4. Once the Wi-Fi network of the printer is connected and the printer is found, tap “Printing test” to test the printing.

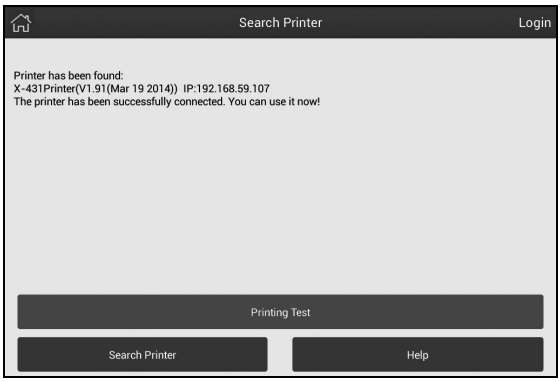


Fig. 14-4 Now

you can use the Wi-Fi printer to print!

If the printer is not found, please reset the printer to default factory settings (refer to Step 2 for details) and check whether the current device and the printer are on the same LAN.

B. If you have configured the Wi-Fi printer to the LAN:

2. Tap “Connect to Printer”:

a). If the local network remains as it is, tap “Test Print” directly to test the printing.

b). If the local network changes, you have to reset the Wi-Fi printer.

14.4 Network test

It enables you to test whether the current network environment is good or not. It is normal that you may encounter a logout while testing.

14.5 About

The software version information and disclaimer are included.

14.6 Log Out

To logout the current user ID, tap “Exit from current account”.

15 Wi-Fi Printer

This Wi-Fi printer is an optional accessory of X-431 EURO TAB. The built-in Wi-Fi module enables you to easily print the real time test results without connecting any USB cable.

Compared to conventional printers, it is smaller and easier to carry. Meanwhile, being free of paper spindle, it is also simple and fast to load printing paper. In addition to the included DC power adaptor, it can be powered alternatively by the built-in rechargeable battery, which enables you to use it anytime and anywhere.

Furthermore, this printer has auto-hibernate and auto power-off features. While it does not perform printing operation, it will enter auto sleeping mode to save power. If no activities are made within 30 minutes, it will power off automatically. To start printing, users need to power it on again.

15.1 General controls

Fig. 15-1

1	**Side lock notch**
2	**Paper outlet**

3	**POWER button**	Press and hold it for 2 seconds to turn it on/off.
4	**MODE (ready) button**	Press it to get the printer ready or switch it to manual feed mode.
5	**FEED (paper test) button**	Press it to test whether thermal paper is properly installed while the MODE indicator goes out.
6	**CHARGE indicator**	• [Green]: Indicates the battery is fully charged. • [Red]: Indicates it is charging.
7	**DC 9V adaptor jack**	*Note: The USB port next to it is disabled. Do not attempt to insert the cable into it.
8	**Rechargeable battery**	

15.2 Thermal paper loading

This Wi-Fi printer applies thermal paper roll with size of Φ30×57mm. Follow the steps described as below to load it.

1. Hold the side notches on the front of the printer and lift it up to open the cover.

Fig. 15-2

2. Place the unpacked thermal paper into the compartment with its starting end approaching to the paper outlet (refer to the figure shown as below). Reversing paper direction will result in that no results will be printed out.

Fig. 15-3

3. Pull out some printing paper and introduce it along the slot until it comes out of the paper outlet shown as below. Otherwise, paper cannot be fed.

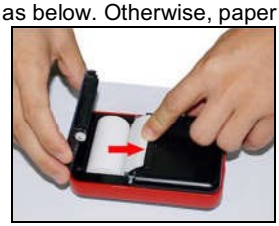


Fig. 15-4

4. Close the paper cover and press it down until you hear a click (see the figure shown on the next page).

Fig. 15-5 **Notes:**

A. After loading the paper, users need to check whether the paper can be fed normally. For details, please refer to “How to print test results”.

B. If the printer keeps printing for a long time, the thermal matrixes (shown as below) will overheat. To avoid a risk of burning injury, please do NOT touch the matrixes.

Fig. 15-6

***Note:** The printer applies the thermal paper, which should be prevented from being heated before printing, otherwise, the paper would be no longer effective or printing result disappears.

15.3 Using the rechargeable battery

The included rechargeable battery must be installed to ensure that the printer can print the test result normally. This printer utilizes a 7.2V, 1200mAh rechargeable Lithium battery. Do the following steps to install and charge it:

1. Align the latches on the bottom of the battery with the holes on the battery compartment.

Fig. 15-7

2. Press the battery down until it is firmly fitted.
3. Press the [POWER] button for 2 seconds to turn it on. If the battery is low, the [POWER] indicator blinks. In this case plug the included adaptor into an outlet to charge it in time. While charging, the charge indicator turns red. After charging is complete, the indicator will turn green. The normal charging time is 2 hours.

Notes:

A. Please use the included DC adaptor and rechargeable battery only. We assume no responsibilities for any personal injury or loss resulting from using other adaptors or rechargeable batteries not specified in this user manual.

B. If the printer keeps unattended for a long period, please remove the rechargeable battery.

15.4 Printer connection

The printer can work as a Wi-Fi peer-to-peer printer or a Wi-Fi hotspot printer.

A. While used as a Wi-Fi peer-to-peer (P2P) printer, follow the steps described below to make Wi-Fi connection:

Note: This mode configures the printer as auxiliary equipment and only works with X-431 EURO TAB. In this case, the X-431 EURO TAB cannot surf the Internet.

1. Tap “Settings” on the home screen.
2. Tap “Wi-Fi” and slide its switch to ON.

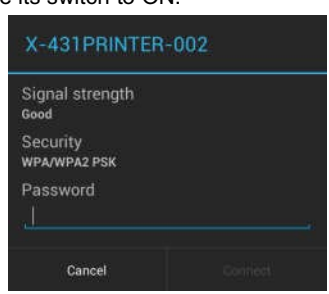


Fig. 15-8

3. Locate and tap the X-431PRINTER-XXX (XXX stands for 3 numbers).
4. Input the identity password (default factory value is 12345678) and tap “Connect”. “Connected” will appear on the screen once it is successful.

B. If used as a Wi-Fi hotspot printer, refer to Chapter 14.3 “Printer connection” to make Wi-Fi connection and settings.

*Note: This mode only applies to WLAN environment and works with Android-based diagnostic tools manufactured by LAUNCH. Other Android-based devices equipped with this app only can perform the functions of printer configuration and printing test.

15.5 How to print test results?

There are three indicators on the printer:

* **[POWER]**: Power indicator

[Red]: Indicates that the printer is on.

[Red & blink]: Indicates that the battery is low.

[Off]: Indicates the printer is off.

* **[MODE]:** Ready indicator

[Green]: Indicates that the printer is ready.

[Green & blink]: Indicates that no thermal paper is loaded or the printer runs out of paper.

[Off]: Indicates that the printer is switched to manual feed mode.

* **[FEED]:** Paper test indicator

[Green]: Indicates that users can press the [FEED] button to check whether the paper is fed normally.

[Off]: Indicates that manual mode is off.

Press the [POWER] button for 2 seconds to turn it on, the [MODE] indicator blinks and then remains on (Every time you load or change the paper, press the [MODE] button to turn the indicator off first, and then press [FEED] to test whether the paper can be fed properly). When the [MODE] indicator is on, it shows that the printer is ready.

If a printer button appears on the bottom of the screen, it means that printing operation can be done. Tap it to start printing.

16 Others

16.1 Email

The function allows you to send and receive email.

16.1.1 Configure an email account

Note: Before sending or receiving email, you have to set up an email account. In addition, this function required a stable network connection.

1. On the home screen, tap **Email**.
2. Choose the desired email account type.
3. Input email address and password, tap “Next”.

Note: If “Manual setup” is selected, please consult your email service provider for detailed parameter setting.

4. Follow the on-screen instructions to proceed until the system prompts you that the account setup has been finished.

16.1.2 Add an email account

1. Tap **Settings** -> **Accounts**.
2. Tap **Add account**.
3. Choose the desired account type.

16.2 Browser

16.2.1 Open browser

On the home screen, tap **Browser** to launch the browser. You can choose the desired homepage or input the website address to browse.

Fig. 16-1 1

Return to the previous page.

2 Advance

3 Refresh

4 Close th

16.2.2 Download files

Files, pictures, and applications can be downloaded from the website in browser.

For example:

Tap and hold a picture, then choose “Save image” from pop-up menu to download it.

To download a link, tap and hold it, and then choose “Save link”.

To protect your X-431 EURO TAB and personal data, please download applications from trusted sources. To configure it, tap **Settings** -> **Security**, and then slide the Unknown sources switch to off.

16.3 Synchronization

You can transfer media files and APK between the PC and X-431 EURO TAB.

16.3.1 Connect to PC

1. Use the USB cable to connect the X-431 EURO TAB to your PC.
2. Swipe from the top, a message “Connected as a media device” appears.

16.3.2 Run on PC

Perform the following steps: •

Locate the new disc.

- Copy the files.

16.3.3 Install an application

Do the following steps:

1. Tap **Settings** -> **Security**, and set the “Unknown sources” to ON, which allows you to install apps from unknown sources.
2. A dialog box appears on the screen, tap “OK” to confirm.
3. Set the tool as “Connected as a media device”, and copy the APK file from the PC to the tool.

16.4 Clear Cache

Doing so clears all browsing records and accounts and enables X-431 EURO TAB to run smoothly and quickly.

1. Tap **Settings** -> **Apps**.
2. Tap ⋮ and select “Sort by size” to arrange all applications in size order.

3. Tap certain application, then tap “Clear Cache” to release the space these cache files are occupied.

17 FAQ

1. How to save power?

- Please turn off the screen while X-431 EURO TAB keeps idle.
- Set a shorter standby time.
- Decrease the brightness of the screen.
- If WLAN connection is not required, please turn it off. ➢ Disable GPS function if GPS service is not in use.

2. What should I do in case I forgot the screen lock?

You can set screen lock as pattern or password. If you forgot the password, please consult your device provider or reset your device.

Warning: Resetting may cause data loss. Before use, please make sure important data has been backed up.

3. How to do if the system runs slow?

In this case, please do the followings:

> Check all running applications and stop the unnecessary applications (Steps: Settings -> Apps -> Running -> Tap the desired application and then tap “Stop”).

> Check all installed applications, remove the unnecessary applications (Steps: Settings -> Apps -> Downloaded -> Tap the desired application and then tap “Uninstall”).

If all steps mentioned above are finished and the system still works slowly. Please try to close the system and reboot your X-431 EURO TAB.

4. How to reset X-431 EURO TAB?

Resetting may cause data loss. Before doing so, please make sure important data and information has been backed up.

Do the following to reset X-431 EURO TAB:

1. Tap “Settings” -> “Back & Reset”.
2. Tap “Factory data reset”.
3. Tap “Reset tablet”.
4. Tap “Clear all data” to start resetting until the tool automatically reboots.

6. Why some videos on the website can be not played?

It possibly results from:

1. The current browser does not support Flash playing;
2. Flash player does not support this video.

Try to use other browsers to watch it or install other Flash player.

7. The data and time of X-431 EURO TAB can not be set.

It is because Automatic date & time is set on your X-431 EURO TAB. Tap Settings > Date & time, deselect “Automatic date & time” and then set the date and time manually.

Warranty

THIS WARRANTY IS EXPRESSLY LIMITED TO PERSONS WHO PURCHASE LAUNCH PRODUCTS FOR PURPOSES OF RESALE OR USE IN THE ORDINARY COURSE OF THE BUYER'S BUSINESS.

LAUNCH electronic product is warranted against defects in materials and workmanship for one year from date of delivery to the user.

This warranty does not cover any part that has been abused, altered, used for a purpose other than for which it was intended, or used in a manner inconsistent with instructions regarding use. The exclusive remedy for any automotive meter found to be defective is repair or replacement, and LAUNCH shall not be liable for any consequential or incidental damages.

Final determination of defects shall be made by LAUNCH in accordance with procedures established by LAUNCH. No agent, employee, or representative of LAUNCH has any authority to bind LAUNCH to any affirmation, representation, or warranty concerning LAUNCH automotive meters, except as stated herein.

Disclaimer

The above warranty is in lieu of any other warranty, expressed or implied, including any warranty of merchantability or fitness for a particular purpose.

Purchase Order

Replaceable and optional parts can be ordered directly from your LAUNCH authorized tool supplier. Your order should include the following information:

Order quantity
Part number
Part name

Customer Service

Any question during the operation, please call 86-755-84528722.
If your unit requires repair service, return it to the manufacturer with a copy of the sales receipt and a note describing the problem. If the unit is determined to be in warranty, it will be repaired or replaced at no charge. If the unit is determined to be out of warranty, it will be repaired for a nominal service charge plus return freight. Send the unit pre-paid to:

Attn: Customer Service Department LAUNCH
TECH. CO., LTD.
Launch Industrial Park,

North of Wuhe Avenue,
Banxuegang, Bantian,
Longgang, Shenzhen, Guangdong
P.R.China, 518129
Launch website: http://www. cnlaunch.com
http://www.x431.com

Statement:
LAUNCH reserves the rights to make any change to product designs and specifications without notice. The actual object may differ a little from the descriptions in the manual in physical appearance, color and configuration. We

have tried our best to make the descriptions and illustrations in the manual as accurate as possible, and defects are inevitable, if you have any question, please contact local dealer or after-sale service center of LAUNCH, LAUNCH does not bear any responsibility arising from misunderstandings.