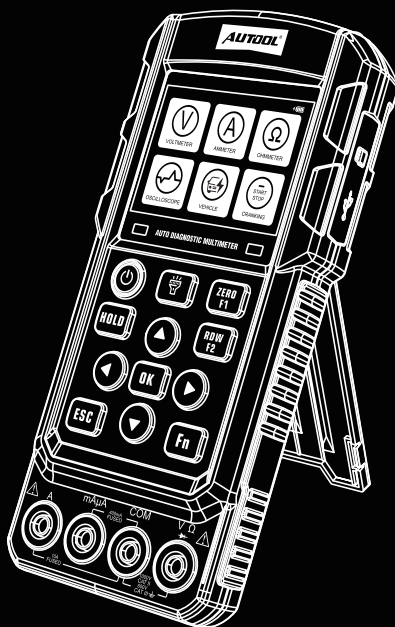


AUTOOL DM303

Auto Diagnostic Multimeter

User Manual

用户手册





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CAUTIONS

Safe operation guidelines



For the correct use of the instrument, please read the full text of this manual carefully before use, especially the "safety precautions".

- ▶ The automobile diagnostic multimeter is designed and produced in strict accordance with GB4793.1 Safety Requirements for Electronic Measuring instruments and IEC61010 Safety Standard, and conforms to double insulation, overvoltage standards (CATII1000V, CATIII600V) and safety standards of pollution level 2. Please operate the instrument according to usage instructions in the Manual; otherwise, it might weaken or lose protection function of the instrument.
- ▶ Before use, check that the insulation layer of the probe is intact without damage or breakage. If any obvious damage to insulation of probe or instrument shell, or you believe that the instrument cannot work normally, please do not use the instrument any more.
- ▶ While using a probe, put your fingers behind its finger protection ring.
- ▶ Do not apply voltage above 1000Vrms between instrument terminal and grounding terminal to prevent electric shock and instrument damage.
- ▶ In case of measured voltage higher than DC60V and 42Vrms, be careful to prevent electric shock.
- ▶ Before covering up the rear cover of the instrument, it is strictly forbidden to use the instrument; otherwise there will be risks of electric shock.
- ▶ Measured signals are not allowed to exceed the regulated limit value to prevent electric shock and instrument damage.
- ▶ It is not allowed to use current to test terminals or voltage at current gear.
- ▶ A self-recovery fuse is used inside the instrument. Do not change the internal wiring of the instrument to avoid damaging the instrument and endangering safety.
- ▶ When the battery symbol is shown in red on the LCD, the battery should be replaced timely to ensure the measurement

accuracy.

- ▶ Do not operate the instrument in the high temperature, high humidity environment. Especially, do not store the instrument in the wet environment, as the instrument performance may deteriorate if being wetted.
- ▶ Clean the instrument enclosure with a wet cloth and a gentle detergent, and do not use abrasive agents or solvents.

PRODUCT INTRODUCTION

Overview

- The automobile diagnostic multimeter is a hand-held new diagnostic oscillographic multimeter integrating digital oscilloscope, digital multimeter, automobile circuit and automobile signal inspection, which is designed with the embedded digital control technology.
 - The multimeter mode can measure the AC / DC voltage and current, resistance, diode forward voltage drop, on-off and frequency.
 - Oscilloscope mode is a complete intelligent measurement system, which includes signal input, data sampling, data processing and automatic search, with the waveform test bandwidth of 500KHZ. With a variable sampling frequency, the slowly varying signal amount can be measured. It is applicable to measuring and observing various signals on the automobile circuit during the car overhaul, including the motor drive signal and motor power voltage of new energy vehicle, fuel car engine ignition pulse signal, camshaft signal, crankshaft signal, wheel speed sensor signal, oxygen sensor signal and so on;
 - Car circuit detection can online test the low voltage circuit, prompt high voltage or line leakage and output the power supply voltage. It can also output the power voltage to test the parts of the car, or lower the voltage to drive the parts of the car, such as lights; Test the battery voltage when the oil-fueled vehicle starts, and judge whether the vehicle starting system and the battery are in good condition;
 - The analog signal output can be applied to the car ECU detection and can simulate the square wave and sine wave output and simulate the fuel injection signal to drive the fuel injection nozzle; Check the data signal K line and CAN bus signal in the vehicle.
-

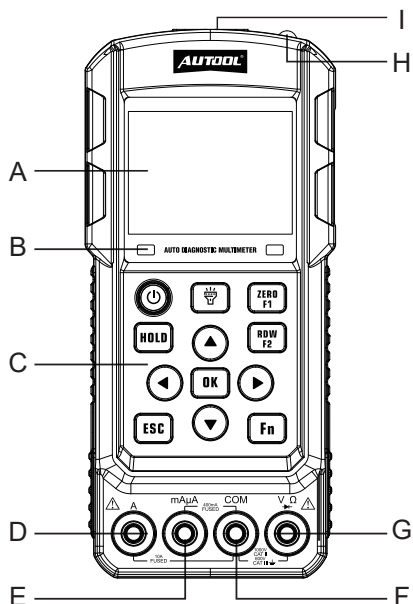
Composite indicator

The multimeter function and the oscilloscope function are integrated together on the instrument. When measuring the voltage signal using a probe, switch to the oscilloscope function with **[Fn]** key to facilitate the use and observation of signal waveform.

- LCD is a 2.8-inch color screen, with a resolution of 320*240;
- Input impedance for the voltage measurement: it is 2~3M Ω when the voltage is lower than 160V; it is 10M Ω when the voltage is higher than 160V. The maximum input voltage is 1000Vpp; The analog bandwidth is 500KHz; The voltage range is converted automatically;
- The 10A terminal fuse for current measurement is 15A self-recovery fuse, and the maximum measurable current is 20A; The current measurement mA/uA terminal fuse is 0.5A self-recovery fuse, and the maximum measurable current is 200mA;
- Working temperature: 0~40°C(32~104°F) Humidity: \leq 75%;
- Storage temperature: 10~50°C(14~122°F) Humidity: \leq 70%;
- Altitude: 2000m.

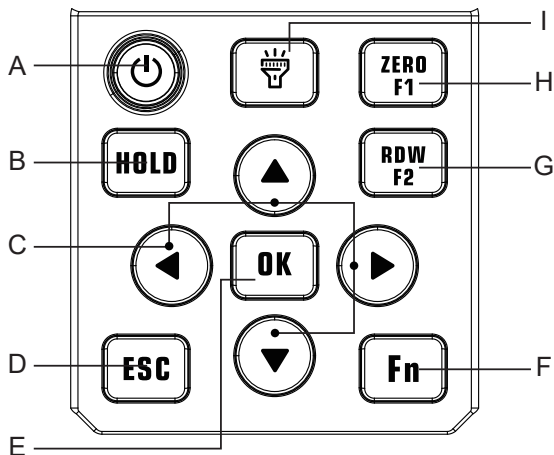
PRODUCT STRUCTURE

Structure diagram



A	Display screen	B	Power supply indicator
C	Button	D	10A current input
E	mA/uA measurement input	F	COM measurement input
G	Diode, voltage, resistance, frequency measurement input	H	Lighting lamp
I	DB15 interface		

Button function



A	Power key	Press for power-on, press for about 0.3 seconds to turn off the power when it is on, and long press 3 seconds to reset the instrument.
B	HOLD	Pause Hold / Measurement key.
C	Direction button	Select the functional items.
D	ESC	Return key.
E	OK	Enter key.
F	Fn	Measurement mode switch key.
G	F2	Function keys, defined by the test function.
H	ZERO / F1	Function key, quick reset setting, or defined by test function.
I	Lighting key	Press the light on / off.

**Cable
number**

Cable Number			
Name	NO.	Distribution Head No.	Functions
Multi-functional detection line	C01	C01 - 1	DC connector, connected to the battery clip line
		C01 - 2	Terminals for injector test and Automobile relay test
		C01 - K	K line signal line
		C01 - CAN+	CAN+ signal line
		C01 - CAN-	CAN- signal line
		C01 - GND	Ground wire
		C01 - SIN	Sine wave signal line
		C01 - S1	5V signal line
		C01 - S2	Square signal line
Battery clip line	C02		
Ignition pulse signal detection line	C03		Sensing high-voltage line signal
Automotive circuit detection line	C04	C04 - 1	DC connector, connected to the battery clip line
		C04 - 2	Probe terminal
Jumper(Black)	C05		
Jumper(Green)	C06		
Jumper(Yellow)	C07		

OPERATIONS INSTRUCTION

Functional operation guidelines

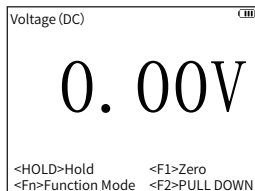
- The instrument is equipped with a power switch and the automatic sleep function. The automatic sleep time can be set to 1-30 minutes. The key tone of the instrument can be set to turn on and off, but the warning tone cannot be turned off. The brightness of the screen can be set. The brightness can be set according to the actual operation environment, and the battery time can be extended by appropriately lowering the brightness.
- The help function of the instrument provides a brief operation description.
- The instrument is configured in one or more languages according to the sales area. Please contact your local dealer for different languages.
- After turning on the power supply, according to the displayed icon, use the **[up/down/left/right]** direction keys to move the current option, and press **[OK]** to enter the function item.

Voltage measurement

- Insert the red probe into the “V” jack and the black probe into the “COM” jack;



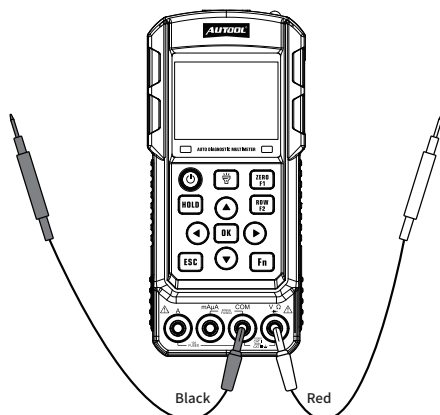
- Enter the function item, displayed as shown below:



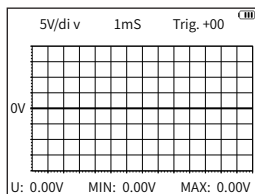
- The current measured value is displayed. If the voltage fluctuates, press the **[HOLD]** key to maintain the display status. If there is no voltage signal, the displayed value is non-zero, the red and black probe can be shorted, and press the **[F1]** key at the same time to perform the quick zeroing operation. **[F2]** key is used to remove the induction power at the measurement point. Press **[F2]** key during the measurement, which is equivalent to a 10K resistance connected the red and black probe. This function is suitable for detecting the induction voltage of the new energy vehicle. Press **[Fn]** key to switch to the AC voltage measurement and the oscilloscope mode to observe the signal waveform; In the voltage measurement or oscilloscope mode, the range is automatically converted, and the maximum measurable voltage signal is 1000V;
- In the voltage measurement mode, the probe only inputs signal, but no pulse signal, without interference to the measured point.

Oscilloscope

- Insert the red probe into the “V” jack and the black probe into the “COM” jack. The instrument does not have a dedicated BNC interface. The oscilloscope is used as an expanded function of voltage signal detection, which greatly facilitates user operation and is particularly suitable for vehicle maintenance.



- Enter the function item, displayed as shown below:

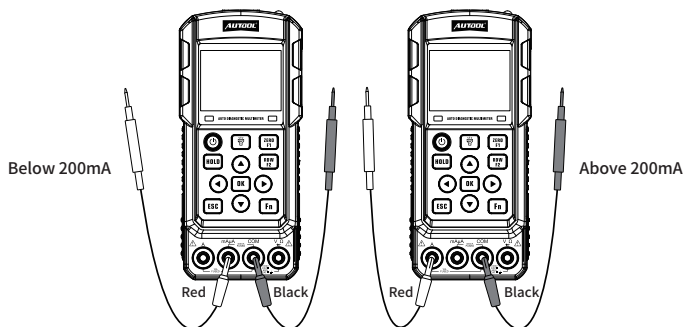


- Display the current signal waveform, 5V/grid - display the voltage scale value, and press the **[up]** and **[down]** keys to change during measurement; 1ms-scan time scale value; during measurement, press the **[left]** and **[right]** keys to change; Trigger+01 - displays the correction value of the trigger level, which can be changed by pressing **[F1 / F2]**. The trigger level is the average value of the current waveform automatically calculated. The positive value of trigger correction indicates the increase value of trigger level correction, and the negative value of trigger correction indicates the decrease value of trigger level correction;
- Press the **[HOLD]** button to pause the display of the waveform. When the waveform is suspended, the **[up / down / left / right]** keys can be used for the left and right movement control of the waveform, so as to facilitate the comparison and observation of the waveform.

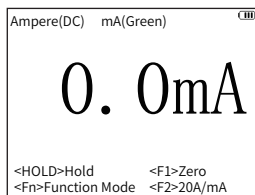
- In the process of voltage signal measurement, the instrument automatically changes the range and the maximum measurable voltage signal is 1000V;

Current measurement

- Measure the current below 200mA, insert the red probe into the green “mAuA” jack, and insert the black probe into the “COM” jack;
- Measure the current above 200mA, insert the red probe into the yellow “A” jack, and insert the black probe into the “COM” jack;

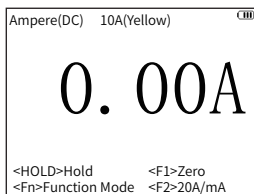


- Enter the function item, displayed as shown below:



- The current measured value is displayed. If the current fluctuates, press the **[HOLD]** key to maintain the display status. If there is no current signal, the displayed value is non-zero, the red and black probe can be shorted, and press the **[F1]** key at the same time to perform the quick zeroing operation. **[F2]** key is used to switch the large current measurement, **[Fn]** key is used to convert measurements of DC current and AC current.

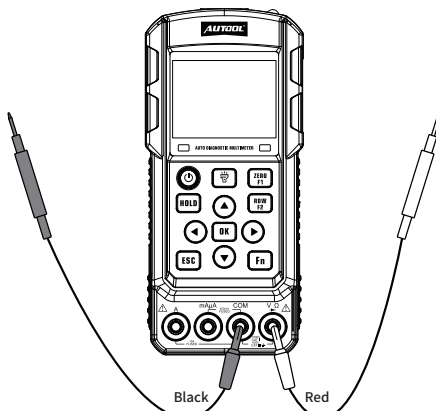
- Press **[F2]** key and switch to detect high current mode as shown below:



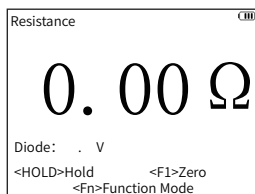
- In the high current mode, the maximum measurable current is 20A and the maximum measurable continuous current is 10A. There is 15A 30V self-recovery fuse inside, which can protect the instrument from damage due to excessive current in the use of vehicle detection. However, the detection of current in 220V / 380V strong current circuit cannot prevent damage caused by excessive current, and cannot exceed the measurable current range during use.

Resistance test

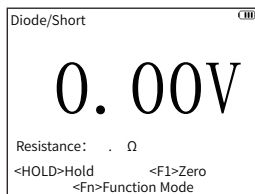
- Insert the red probe into the “Ω” jack and the black probe into the “COM” jack;



- Enter the function item, displayed as shown below:



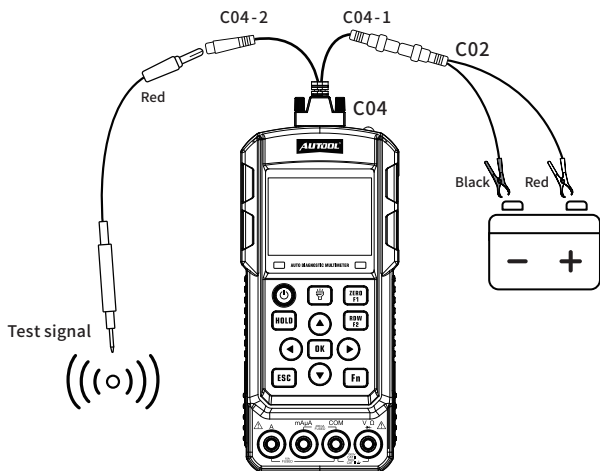
- The instrument detection resistance and the diode are two-in-one function display. Press **[Fn]** key to switch the display mode. When measuring the resistance, the resistance can be set as the main display; when measuring the diode, the diode can be set as the main display; As shown in the following figure:



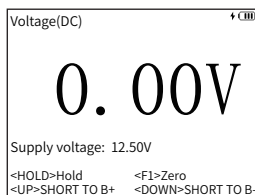
- The resistance value displayed is the resistance value when measuring the resistance, and the voltage value displayed is the pressure drop value when measuring the diode. Connect the red and black probe, and press **[F1]** key for zeroing. If the resistance is excessive low, the instrument will give a sound prompt.

Automotive circuit test

- Insert the special wire for automobile circuit into the multi-functional interface (top of the machine), connect the battery clip line, clamp the red clip on the positive plate of the automobile battery, clamp the black clip on the negative plate of the automobile battery, and use the probe to detect the automobile circuit. During the detection process, the probe will send a test signal to detect the electric leakage of the circuit.

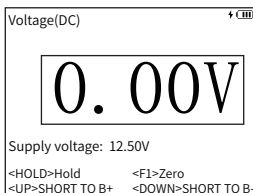


- Enter the function item, displayed as shown below:

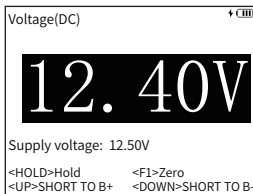


- Connecting the battery for power supply, the instrument will obtain the external power;
- The instrument displays the current probe voltage value and the voltage value of the power clip;
- Insert the probe into the COM port of the instrument, showing the voltage is zero; if not zero, press **[F1]** key to zero;
- Detect the circuit on the automobile using a probe, showing the current detection voltage. If the voltage is a constantly changing signal, press **[Fn]** key to enter the oscilloscope for observation; if the detected voltage is lower than 0.7V, the instrument will automatically detect the leakage; if the figure with blue background is displayed and there is a sound prompt, it indicates that the circuit resistance to ground is lower than

10K. If the circuit is insulated to ground, it indicates that the circuit has leakage, as shown in the following figure:



- If the detected voltage is very high and close to the power supply voltage, the instrument will display a number on the red background with a sound prompt, indicating that the circuit voltage is high, which may be a power supply line. If it is an insulated line, it indicates that the line is leaking to the power supply, as shown in the following figure:

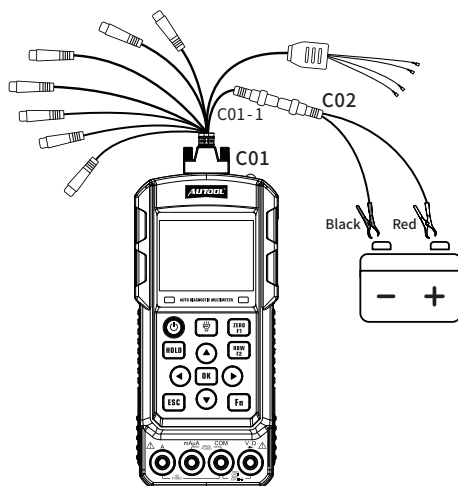


- Probe power supply function on instrument line: Press the **[up]** function key, and the probe outputs the power supply voltage;
- Probe grounding function on instrument line: Press the **[down]** function key, and the probe is short circuited to the negative pole of the power supply;
- Test function of automotive electrical appliances: The instrument outputs a power supply voltage value through the probe to drive the automobile electrical appliances to work. It judges whether the electrical appliances are damaged by observing whether the electrical appliances are working, or drive the automobile electrical appliance through short connecting the special probe to the negative pole, and then judge whether the electrical appliance is damaged by observing whether the electrical appliance is working. For example, check whether the turn signal is intact and use the probe to detect the current voltage value of the two leads of the lamp. If both lines are

close to zero voltage, connect the probe to one line, press the up key of the instrument, and observe whether the lamp is on. If it is not on, replace it with another line. If the lamp is normal, one line will turn on the lamp when it is powered. If both lines cannot turn on the lamp when it is powered, the lamp is damaged.

Car start-up test

- Insert the multi-function detection line into the multi-function interface (the top of the machine), connect the battery clip line, clamp the red clip on the positive plate of the car battery, clamp the black clip on the negative plate of the car battery, and turn off the car engine;



- Enter the function item, displayed as shown below:

CRANKING TEST + CHH	
CURRENT:	12.27V
MINIMUM VOLTAGE:	
START	12.27V
MIN VALUE > 9.6V	
PLEASE START THE ENGINE AND WAIT 15 SECONDS.	

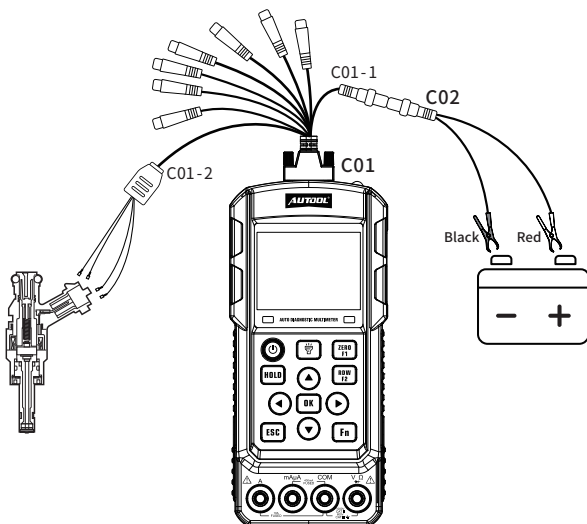
- At this point, start the engine and wait for 15 seconds, as shown below:

CRANKING TEST + CHH	
CURRENT:	13.87V
MINIMUM VOLTAGE:	
START	10.20V
MIN VALUE > 9.6V	
NORMAL	

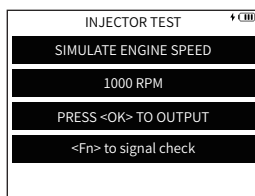
- During the vehicle start process, the minimum battery voltage is detected above 9.6V, indicating the normal state. If the lowest voltage is below 9.6v, indicating the low voltage. The possible reasons for low voltage are battery aging, large mechanical flow, etc. It is necessary to further check the corresponding components, among which battery aging is the most important reason.

Injector test

- The instrument can directly drive the injector for testing, and can also detect the real-time injector signal of the vehicle;
- Insert the multi-function detection line into the multi-function interface (top of the machine), connect the battery clip line, clamp the red clip on the positive plate, clamp the black clip on the negative plate, and connect the removed injector to the multi-function line, as shown in the figure below:



- Enter the function item, displayed as shown below:

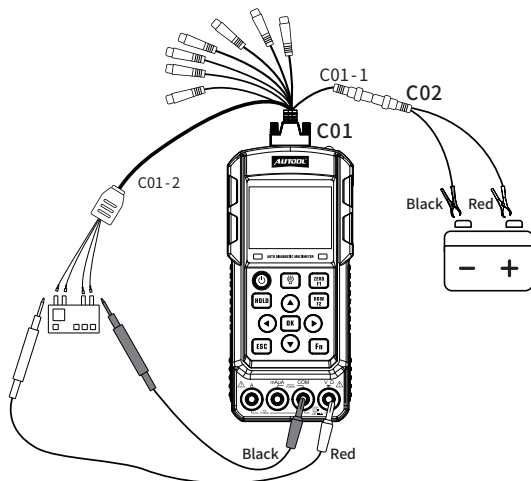


- When first entering the function interface, there is no drive signal output, so press **[OK]** to output the injector drive signal. It can test the electromagnetic injector, including GDI injector. When it cannot drive 120V injector, a slight sound may be heard.
- Press **[OK]** to stop or start the injector working.
- The simulation speed may be adjusted with **[up / down / left / right]** keys. At all speeds, the analog drive signal is a 3mS low-voltage pulse.
- The injector drives a signal pulse width of 3ms;

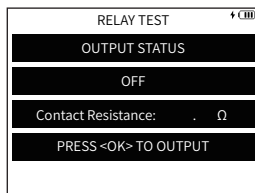
- Press **[Fn]** key to turn to the oscilloscope display mode, insert the red probe into V jack, and connect the injector pin with the red probe to observe the working waveform of the injection nozzle. At this time, the fuel injection drive and the oscilloscope function are running simultaneously.
- Without connecting the fuel injector, press **[Fn]** key to switch to the oscilloscope display mode, which can also detect the operating waveform of the fuel injector during vehicle operation. It is necessary to insert the red probe into the V jack, the black probe into the COM jack, the black probe touch the body ground or battery negative, and the red probe touch the connection line of the fuel injector.

Automobile relay test

- Insert the multi-functional detection line into the multi-functional interface (top of the machine), connect the battery clip line, clamp the red clip on the battery positive plate and the black clip on the battery negative plate. The red clip of the C01-2 transfer line is clamped at the bottom of a coil of the relay, the black clip is clamped on the bottom of the other coil of the relay, insert the red probe into the Ω jack, and the black probe into the COM jack.



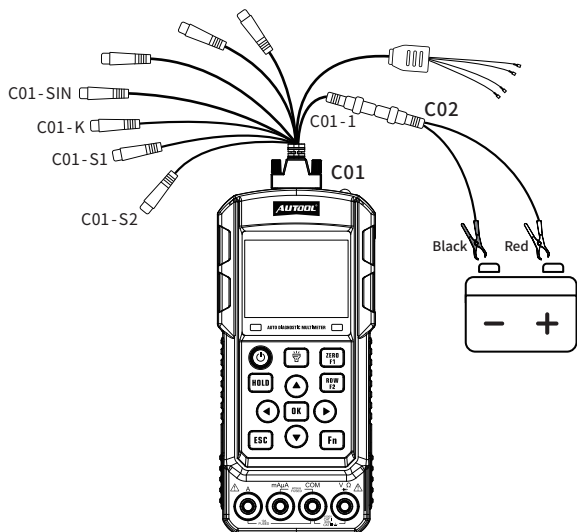
- Enter the function item, displayed as shown below:



- Press **[OK]** to output the relay drive signal which is the same with the battery voltage. We can hear the relay on/off sound. When contacting the contact pin of automotive relay using the red and black probe, we can observe the resistance for the contact on/off and observe the conditions of relay.
- Vehicles using 12V battery can test 12V car relay and 24V battery can test 24V car relay. Please do not use it to test relays with different operating voltages. Especially, do not use a 12V battery to test relays below 6V or a 24V battery to test 12V breakers; Normally, the vehicle with a 12V battery will use a 12V relay and the vehicle with a 24V battery will use a 24V relay.

Analog signal test

- The instrument analog outputs basic square wave and sine wave signals. If other signal simulation is required, contact the manufacturer to customize non-standard products.
- The independent output signal of the instrument is a square wave close to 5V and a sine wave close to 5Vpp. If 12V square wave needs to be generated, the battery needs to be connected for power supply.
- Insert the multi-function detection line into the multi-function interface (the top of the machine). If the 12V square wave signal is required, then connect the battery clip line and connect to the battery;



- **Output signal:**

- The “square wave” is identified as the signal line to output the 12V square wave signal.
- The “K-line” is identified as the signal line to output the 5V square wave signal.
- The “sine wave” is identified as the signal line to output the sine wave signal.
- The “5V signal” is identified as the signal line to output 0V~4.5V peak-valley sine wave signal.
- The “ground line” is identified as the grounding line, which is connected to the application system.

- **Output signal frequency:**

1Hz~10KHz Duty cycle: 10%~90%

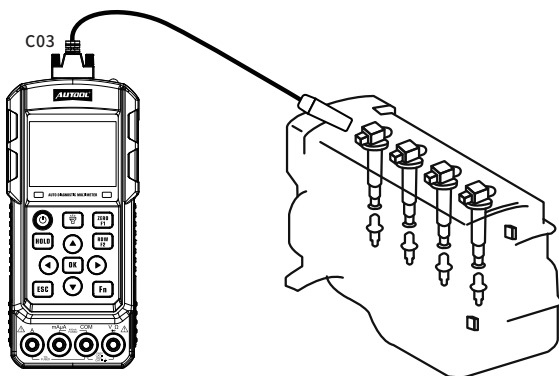
- Enter the function item, displayed as shown below:

SINE/SQUARE WAVE OUTPUT ^{+CH1}	
frequency:	1000 Hz
duty cycle:	50 %
PRESS <OK> TO OUTPUT	
<Fn> to signal check (f<6000)	
<F1><F2> set duty cycle	

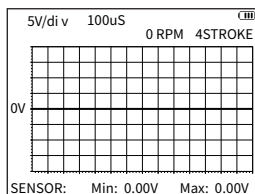
- When you first enter the functional interface, there is no analog signal output. Press **[OK]** to output the signal.
- Press **[up / down / left / right]** keys to adjust the analog frequency and press **[F1 / F2]** to adjust the duty cycle of square signal.
- Press **[OK]** to output/stop the output signal .
- Press **[Fn]** key to enter the synchronous oscilloscope for observation, insert the red probe to V jack. Contact the signal output line to observe the analog signal waveform.
- When the analog signal is above 6000Hz, the oscilloscope mode is prohibited.

Ignition pulse signal test

- Insert the Ignition pulse signal detection line into the multifunctional interface (top of the machine).
- Close to the sensor head (top yellow area) to the ignition of the engine cylinder.



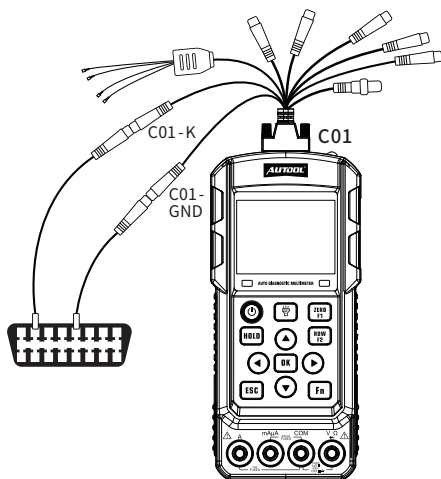
- Enter the function item, displayed as shown below:



- Press **[up / down]** keys to adjust the waveform amplitude.
- Press **[left / right]** keys to adjust the time value.
- Press **[F1]** to select the engine cylinder type and ignition, which is used to calculate the engine speed. The option "distributor" represents the high-voltage signal on the distributor of the old engine, the option "2-stroke" represents the cylinder ignition pulse signal of the 2-stroke engine, and the option "4-stroke" represents the ignition pulse signal of the four stroke engine;
- The speed value shown is the engine speed value calculated from the single cylinder ignition pulse signal. During the test, the sensor head shall be close to an ignition wire or an ignition coil of a cylinder, and not close to two or more ignition pulse signal wires. If multiple ignition wires are arranged together, the position close to the spark plug can be selected for detection.

K line data

- Insert the multi-function detection line into the multi-function interface (the top of the machine). The "K line" identification line connects the extension wire and probe; the "ground wire" identification line connects the extension wire and probe; the ground wire probe is connected to the ground wire end of the vehicle circuit (such as the 5 pin of the standard OBD-II), and the K line probe is connected to the K line bus in the vehicle circuit. Note to distinguish K lines on the automotive circuit. For example, the 7-pin of the standard OBD-II is K line, and there are multiple K lines in the car for connecting various low-speed electrical appliances in the car.



- The instrument provides the detection capability of the 5V signal lines and the 12V signal lines. When connected to the 5V signal line, the signal on the K line is 5V signal, and when connected to the 12V signal line, the K line is 12V signal.
- The instrument can test K line Baud rate 1200 / 2400 / 4800 / 9600 / 10400 / 19200 / 38400 / 57600 / 115200. If there is no Baud rate that the user needs, please contact the manufacturer to customize the non-standard products.
- Enter the function item, displayed as shown below:

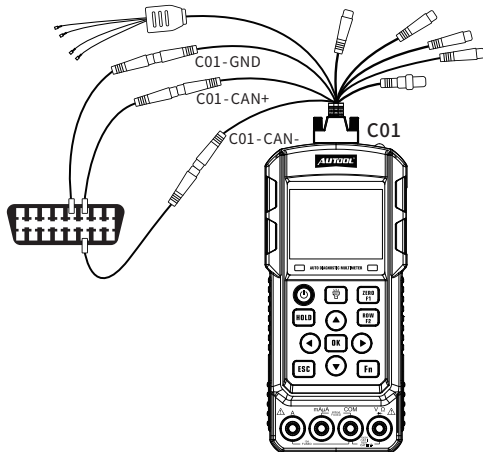
K Line Date:	BPS 10400	← C01
82 19 F0 A8 01 34 BF F0 19 E8		
01 00 04 FF FF FF FF 01 04 FF		
00 00 00 02 02 FF FF 0C 02 FF		
FF 0D 01 FF 1C 01 FF 1F 02 FF		
FF 20 04 FF FF FF FF 21 02 FF		
FF 30 01 FF 31 02 FF FF 40 04		
<F1>Clear <Fn><LEFT><RIGHT>set BPS		

- Press **[F1]** to clear the current display data.
- Press **[HOLD]** to keep the current display state. In the hold state, press the **[up / down]** keys to scroll back and forth to view the received data.

- Press the **[left/right]** keys in the receiving state to change the baud rate of communication.

CAN bus data

- Insert the multi-function detection line into the multi-function interface (the top of the machine). The “CAN+” identification line connects the extension wire and probe; the “CAN-” identification line connects the extension wire and probe; the “ground wire” identification line connects the extension wire and probe; the ground wire probe is connected to the ground wire end of the vehicle circuit (such as the 5 pin of the standard OBD-II); the CAN+ wire probe is connected to the bus CANH in the vehicle circuit; the CAN wire probe is connected to the bus CANL in the vehicle circuit. Note to distinguish the CAN lines on the car circuit. For example, 6 pin of the standard OBD-II is CANH line and 14 pin is CANL line. The car interior also has a multiple CAN bus to connect the various electronic controllers inside the car.



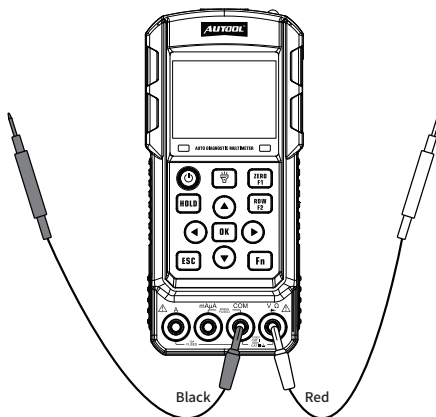
- The instrument can test CAN bus Baud rate 500K/250K/125K/100K/83.33K/50K/33.33K. If there is no baud rate that the user needs, please contact the manufacturer to customize the non-standard products.
- Enter the function item, displayed as shown below:

CANBUS Date: BPS 500000	+ CAN
ID1: 7ff MASK: 7ff	
ID2: 7ff MASK: 7ff	
01 00 04 FF FF FF FF 01 04 FF	
00 00 00 02 02 FF FF 0C 02 FF	
FF 0D 01 FF 1C 01 FF 1F 02 FF	
FF 20 04 FF FF FF FF 21 02 FF	
FF 30 01 FF 31 02 FF FF 40 04	
<F1>Clear <Fn><LEFT><RIGHT>set BPS	

- Press **[F1]** to clear the current display data.
- Press **[HOLD]** to keep the current display state. In the hold state, press the **[up/down]** keys to scroll back and forth to view the received data.
- Press the **[left/right]** keys in the receiving state to change the baud rate of communication.

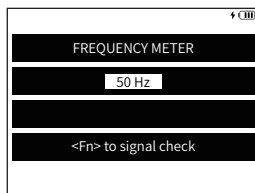
Frequency measurement

- Insert the red probe into the “V” jack and the black probe into the “COM” jack;
- The red probe is connected to the signal to be tested, and the black probe is connected to the ground line of the signal source to be tested.



- The measured signal voltage amplitude is the maximum voltage value of 1000V.

- The measured signal frequency is 1Hz~1MHz.
- Enter the function item, displayed as shown below:



- It displays the frequency of currently detected. Due to the large input impedance of the instrument, the induced interference signal will be displayed when it is not connected to the signal to be measured. It should be connected to the effective signal source during the measurement and the signal source voltage V_{pp} should be larger than 1V.

OTHER PROBLEMS

Software upgrading

- The instrument can update the application software with MicroSD card and copy the updated file to SD card. Insert the instrument SD holder and restart up. If the instrument detects an available upgrade file, it will be displayed on the screen and press **[OK]** directly. If you only need to update the data file, the instrument will automatically read in the corresponding file after power on.
- The update file is published by the manufacturer of the instrument and is accessible to the user through the distributor.

Equipment identification number

- The instrument has a unique identification number that cannot be changed by the user. The manufacturer confirms whether the instrument is legal according to the unique identification number, and the manufacturer may provide after-sales service according to the instrument identification number.

MAINTENANCE SERVICE

Our products are made of long-lasting and durable materials, and we insist on perfect production process. Each product leaves the factory after 35 procedures and 12 times of testing and inspection work, which ensures that each product has excellent quality and performance.

Maintenance To maintain the performance and appearance of the product, it is recommended that the following product care guidelines be read carefully:

- Be careful not to rub the product against rough surfaces or wear the product, especially the sheet metal housing.
- Please regularly check the product parts that need to be tightened and connected. If found loose, please tighten it in time to ensure the safe operation of the equipment. The external and internal parts of the equipment in contact with various chemical media should be frequently treated with anti-corrosion treatment such as rust removal and painting to improve the corrosion resistance of the equipment and extend its service life.
- Comply with the safe operating procedures and do not overload the equipment. The safety guards of the products are complete and reliable.
- Unsafe factors are to be eliminated in time. The circuit part should be checked thoroughly and the aging wires should be replaced in time.
- Adjust the clearance of various parts and replace worn (broken) parts. Avoid contact with corrosive liquids.
- When not in use, please store the product in a dry place. Do not store the product in hot, humid, or non-ventilated places.

WARRANTY

From the date of receipt, we provide a three-year warranty for the main unit and all the accessories included are covered by a one-year warranty.

Warranty access

- The repair or replacement of products is determined by the actual breakdown situation of product.
- It is guaranteed that AUTOOL will use brand new component, accessory or device in terms of repair or replacement.
- If the product fails within 90 days after the customer receives it, the buyer should provide both video and picture, and we will bear the shipping cost and provide the accessories for the customer to replace it free of charge. While the product is received for more than 90 days, the customer will bear the appropriate cost and we will provide the parts to the customer for replacement free of charge.

These conditions below shall not be in warranty range

- The product is not purchased through official or authorized channels.
- The product breakdown because the user does not follow product instructions to use or maintain the product.

We AUTOOL pride ourselves on superb design and excellent service. It would be our pleasure to provide you with any further support or services.

Disclaimer

All information, illustrations, and specifications contained in this manual, AUTOOL reserves the right to modify this manual and the machine itself with no prior notice. The physical appearance and color may differ from what is shown in the manual, please refer to the actual product. Every effort has been made to make all descriptions in the book accurate, but inevitably there are still inaccuracies, if in doubt, please contact your dealer or AUTOOL after-service centre, we are not responsible for any consequences arising from misunderstandings.

RETURN & EXCHANGE SERVICE

Return & Exchange

- If you are an AUTOOL user and are not satisfied with the AUTOOL products purchased from the online authorized shopping platform and offline authorized dealers, you can return the products within seven days from the date of receipt; or you may exchange it for another product of the same value within 30 days from the date of delivery.
- Returned and exchanged products must be in fully saleable condition with documentation of the relevant bill of sale, all relevant accessories and original packaging.
- AUTOOL will inspect the returned items to ensure that they are in good condition and eligible. Any item that does not pass inspection will be returned to you and you will not receive a refund for the item.
- You can exchange the product through the customer service center or AUTOOL authorized distributors; the policy of return and exchange is to return the product from where it was purchased. If there are difficulties or problems with your return or exchange, please contact AUTOOL Customer Service.

China	400-032-0988
Oversea Zone	+86 0755 23304822
E-mail	aftersale@autooltech.com
Facebook	https://www.facebook.com/autool.vip
YouTube	https://www.youtube.com/c/autooltech

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您可以访问偶然网址: www.autooltech.com, 或发送邮件至: aftersale@autooltech.com, 与偶然公司进行联系, 征得其手册使用权之书面同意。

注意事项

安全规程

⚠ 在使用本仪器之前，请先仔细地通读一遍本手册，熟悉一下产品，避免造成人身伤害和仪器产品损坏事故。

- ▶ 汽车诊断万用表严格遵循GB4793.1电子测量仪器安全要求以及安全标准IEC61010进行设计和生产，符合双重绝缘、过电压标准（CATIII1000V、CATIII600V）和污染等级2的安全标准。请遵循本手册的使用说明使用该仪表，否则仪表所提供的保护功能可能会削弱或失效。
- ▶ 使用仪表前应检查表笔绝缘层是否完好，有无破损及断线。如发现表笔线或仪表壳体的绝缘层已明显损坏，或者判定仪表已无法正常工作，请勿再使用仪表。
- ▶ 在使用表笔时，用户的手指必须放在表笔手指保护环之后。
- ▶ 不要在仪表终端及接地之间施加1000Vrms以上的电压，以防电击和损坏仪表。
- ▶ 被测电压高于直流60V和交流42Vrms的场合，应小心谨慎，防止触电。
- ▶ 仪表后盖没有盖好前，严禁使用仪表，否则有电击的危险。
- ▶ 被测信号不允许超过规定的极限值，以防电击和损坏仪表。
- ▶ 禁止使用电流测试端子或在电流档去测试电压。
- ▶ 仪表内部使用自恢复保险装置，请勿随意改变仪表内部接线，以免损坏仪表和危及安全。
- ▶ 当LCD上显示电池符号为红色时，应及时更换电池，以确保测量精度。
- ▶ 不要在高温、高湿环境中使用仪表，尤其不要在潮湿环境中存放仪表，受潮后仪表性能可能劣化。
- ▶ 维护保养请使用湿布和温和的清洁剂清洁仪表外壳，不要使用研磨剂或溶剂。

产品简介

概述

- 汽车诊断万用表采用嵌入式数字控制技术设计，集数字示波器、数字万用表、汽车电路、汽车信号检查等功能于一体的手持式新型诊断示波万用表。
 - 万用表模式可测量交/直流电压和电流、电阻、二极管正向压降、通断、频率。
 - 示波器模式是一个完整的智能化测量系统，其中包括信号输入、数据采集、数据处理和自动搜捕。波形测试带宽为500KHZ，采用可变采样频率，可测量缓慢变化的信号量，适用于汽车检修时测量和观察汽车电路上的各种信号量，包括新能源汽车上的电机驱动信号、电机动力电压，燃油汽车发动机的点火脉冲信号、凸轮轴信号、曲轴信号、轮速传感器信号、氧传感器信号等。
 - 汽车电路检测可在线测试汽车低压电路，提示电压高或线路漏电，还可输出电源电压用于测试车上的部件，或拉低电压驱动车上的部件，如灯光等；可测试燃油汽车启动时的蓄电池电压，判断车辆启动系统及蓄电池是否状态良好。
 - 模拟信号输出可以应用于汽车ECU检测，可模拟方波和正弦波输出，也可以模拟喷油信号驱动喷油嘴；可以检测车辆内的数据信号线K线和CAN总线信号。
-

综合指标

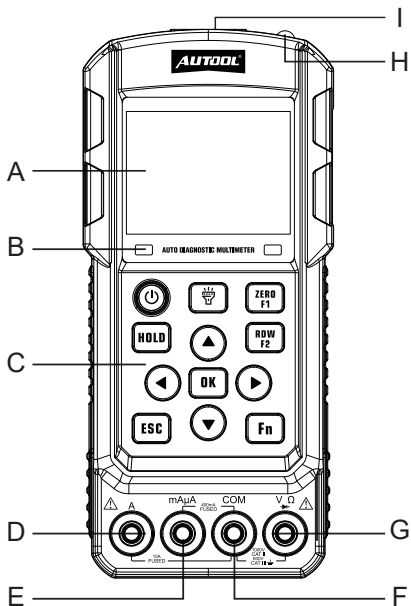
本仪表万用表功能和示波器功能合二为一，使用表笔测量电压信号时，通过[Fn]键可切换到示波器功能，方便使用和观察信号波形。

- LCD为2.8英寸真彩屏，分辨率为320*240；
- 电压测量输入阻抗，电压低于160V时为2~3M Ω ，电压高于160V时为大于10M Ω ，最大输入电压为1000Vpp；模拟带宽为500KHz；电压量程自动转换；
- 电流测量10A端子保险为15A自恢复保险，最大可测量电流为20A；电流测量mA/uA端子保险为0.5A自恢复保险，最大可测量电流为200mA；

- 工作温度: 0~40°C(32~104°F), 湿度: ≤75%;
- 储存温度: -10~50°C(14~122°F), 湿度: ≤70%;
- 海拔高度: 2000米。

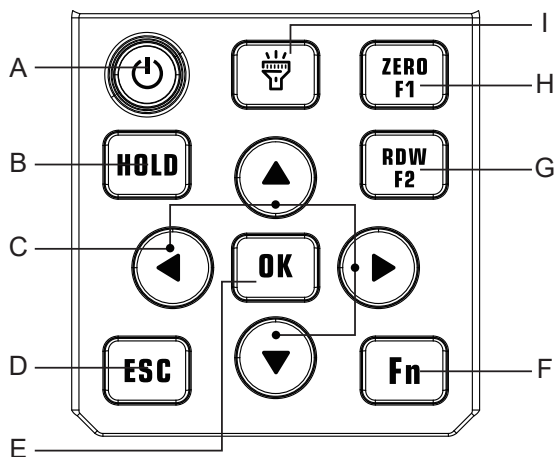
产品结构

结构图



A	显示屏	B	电源指示灯
C	按键	D	10A电流输入端
E	mA/uA测量输入端	F	COM测量输入端
G	二极管、电压、电阻、 频率测量输入端	H	照明灯
I	DB15接口		

按键功能



A	电源开关键	按下打开电源, 开机状态下按电源键约0.3秒关闭电源, 长按3秒仪器会复位
B	HOLD	暂停保持/测量键
C	方向键	选择功能项目使用
D	ESC	返回键
E	OK	进入键
F	Fn	测量模式切换键
G	F2	功能键, 由测试功能定义使用
H	ZERO/F1	功能键, 快捷归零设置, 或由测试功能定义使用
I	照明按键	按下打开/关闭照明灯

配线编号

配线编号			
名称	编号	分线头编号	分线头功能说明
多功能检测线	C01	C01 - 1	DC端, 蓄电池夹线端
		C01 - 2	喷油嘴测试和汽车继电器测试
		C01 - K	K线信号线
		C01 - CAN+	CAN+信号线
		C01 - CAN-	CAN-信号线
		C01 - GND	接地线
		C01 - SIN	正弦波信号线
		C01 - S1	5V信号线
		C01 - S2	方波信号线
蓄电池夹线	C02		
点火脉冲信号检测线	C03		感应高压线信号
汽车电路检测线	C04	C04 - 1	DC端, 蓄电池夹线端
		C04 - 2	表笔接线端
转接线(黑色)	C05		
转接线(绿色)	C06		
转接线(黄色)	C07		

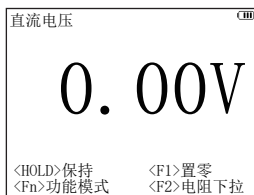
操作说明

- 功能操作指引**
- 仪表设置有电源开关，同时可设置自动休眠功能，可设置自动休眠时间为1~30分钟；仪表的按键音可设置打开/关闭，但警示音不可关闭；屏幕的亮度可设置，可根据实际使用环境设置亮度，适当调低亮度可延长电池使用时间。
 - 仪表的帮助功能项提供了简要操作说明。
 - 仪表根据销售地区配置有一种或多种语言，如需要不同的语言请联系当地经销商。
 - 开启仪表电源后，请根据显示图标，按[上下左右方向键]移动当前选项，按[OK]键进入功能项。

- 电压测量**
- 将红表笔插入“V”插孔，黑表笔插入“COM”插孔。



- 进入功能项，显示如下图示：



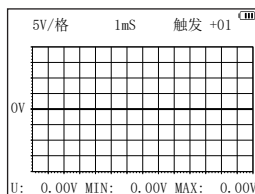
- 显示当前测量值，如果电压波动，按[HOLD]键可保持显示状态，如果没有电压信号时，显示值为非零值，可将红黑表笔短接，同时按下[F1]键，执行快速归零操作。[F2]按键用于消除测量点的感应电，在测量时按下[F2]键，相当于在红黑表笔并接了一个10K电阻，此功能适用于检测新能源车辆的感应电压。按下[Fn]键，可切换到交流电压测量和示波器模式观察信号波形；在电压测量或示波器模式下，量程都是自动转换的，最大可测量1000V电压信号。
- 在电压测量模式下，表笔只输入信号，不会输出任何脉冲信号，不会对被测量点造成干扰。

示波器

- 将红表笔插入“V”插孔，黑表笔插入“COM”插孔，仪表没有专用BNC接口，示波器作为电压信号检测的扩展功能使用，极大方便了用户操作，特别适用于汽车维修方面。



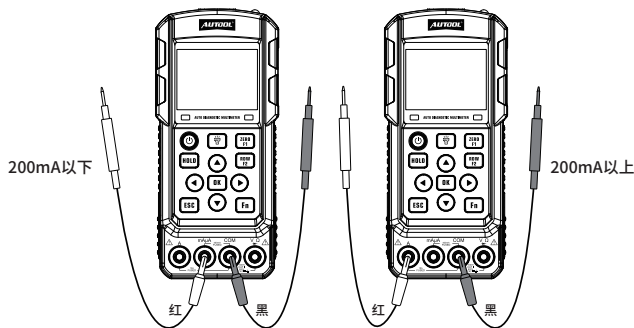
- 进入功能项，显示如下图示：



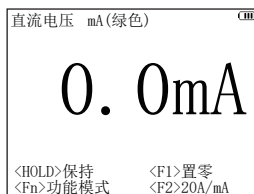
- 显示当前信号波形，5V/格-显示电压刻度值，测量时按[向上向下键]可改变；1mS-扫描时间刻度值，测量时按[向左向右键]可改变；触发+01-显示触发电平修正值，按[F1/F2]键可改变，触发电平为自动计算当前波形的平均值，触发修正为正值表示触发电平修正增加量，触发修正为负值表示触发电平修正减少量。
- 按[HOLD]键可暂停显示波形，在波形暂停时，[上下左右方向键]功能用作对波形的上下左右移动控制，方便做波形的比较和观察。
- 电压信号测量过程中，仪表自动转换量程，最大可测量1000V电压信号。

电流测量

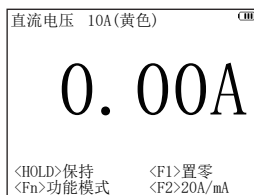
- 测量200mA以下电流，将红表笔插入绿色“mA_A”插孔，黑表笔插入“COM”插孔；测量200mA以上电流，将红表笔插入黄色“A”插孔，黑表笔插入“COM”插孔。



- 进入功能项，显示如下图所示：



- 显示当前测量值，如果电流波动，按[**HOLD**]键可保持显示状态，如果没有电流信号时，显示值为非零值，可将红黑表笔短接，同时按下[**F1**]键，执行快速归零操作。[**F2**]按键用于切换大电流测量，[**Fn**]键用于转换直流电流和交流电流的测量。
- 按[**F2**]键，显示切换到检测大电流模式，如下图所示：



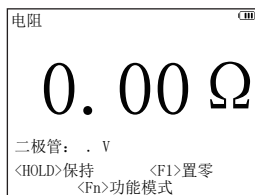
- 在大电流模式下，最大可测量电流为20A，最大可测量连续电流为10A，内部有15A 30V自恢复保险，在汽车检测使用中可保护仪表不会因为电流过大而损坏，但在220V/380V的强电电路中检测电流，则不能避免电流过大而造成的损坏，使用过程中不可超过可测量电流范围。

电阻测量

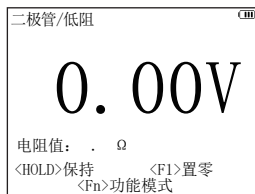
- 将红表笔插入“Ω”插孔，黑表笔插入“COM”插孔。



- 进入功能项，显示如下图所示：



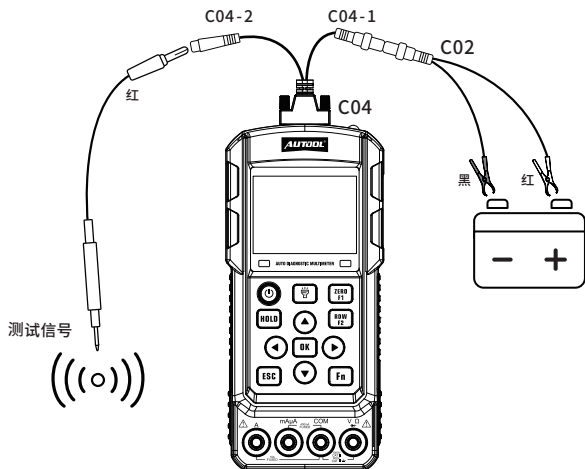
- 仪表检测电阻和二极管为二合一功能显示，按[Fn]键可切换显示模式；测量电阻时，可设为电阻为主要显示；测量二极管时，可设为二极管为主要显示。显示如下图所示：



- 显示的电阻值为测量电阻时的阻值，显示的电压值为测量二极管时的压降值，将红黑表笔短接，按[F1]键可设置显示归零。检测到电阻过低时，仪表会发出声音提示。

汽车电路测试

- 将汽车电路检测线插入多功能接口(机器顶部), 连接蓄电池夹线和红表笔, 将红色夹子夹在汽车蓄电池正极上, 将黑色夹子夹在汽车蓄电池负极上, 使用红表笔检测汽车电路, 在检测过程中, 红表笔会发出测试信号, 用于检测电路漏电状况。

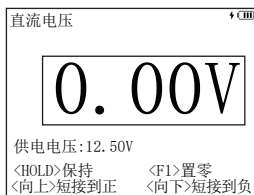


- 进入功能项, 显示如下图示:



- 接上蓄电池供电, 仪表会获取外部电源。
- 仪表显示当前表笔电压值, 显示电源夹供电电压值。
- 将表笔插入仪表的COM口, 显示电压为零, 如果不为零, 按[F1]键可归零。
- 用表笔检测汽车上的电路, 显示当前检测电压值, 如果电压不为

断变化的信号，按[Fn]键可进入示波器进行观察；如果检测到的电压很低，低于0.7V，仪表会自动检测漏电状态；如果显示蓝底数字，并有声音提示，表示电路对地电阻低于10K值；如果是对地绝缘的线路，则表示线路存在漏电情况。如下图示：



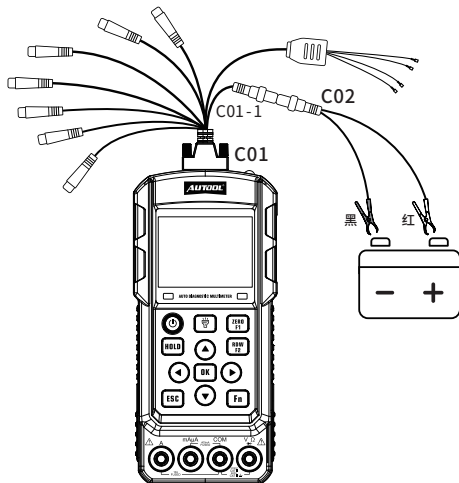
- 如果检测到的电压很高，接近电源电压，仪表会显示红底数字，并有声音提示，表示电路电压高，可能为供电线路；如果是绝缘线路，则表示线路对电源漏电。如下图示：



- 仪表线上表笔供电功能：按[向上]键，表笔输出电源电压。
- 仪表线上表笔接地功能：按[向下]键，表笔短接到电源负极。
- 汽车电器测试功能：仪表通过在线上表笔输出一个供电电压值，来驱动汽车电器工作，通过观察电器是否工作来判断该电器是否已损坏，又或者通过在线上表笔驱动短接到电源负极，来驱动汽车电器工作，通过观察电器是否工作来判断该电器是否已经损坏；例如，检测转向灯是否完好，用表笔检测灯的两根引线当前电压值，如果两根线都是接近零电压，用表笔接到一根线上，点按仪表的向上键，观察灯是否点亮；如果不亮，换另一根线测试，如果灯为正常，就有一根线供电会点亮灯；如果两根线供电都不能点亮灯，说明灯已经损坏。

汽车启动测试

- 先将多功能检测线插入多功能接口(机器顶部), 然后连接蓄电池夹线, 再将红色夹子夹在汽车蓄电池正极上, 将黑色夹子夹在汽车蓄电池负极上, 关闭汽车发动机。



- 进入功能项, 显示如下图所示:

启动测试	
实时电压:	12.27V
最小电压值:	12.27V
启动发动机	
最小电压值 > 9.6V	
请发动引擎并等待15秒	

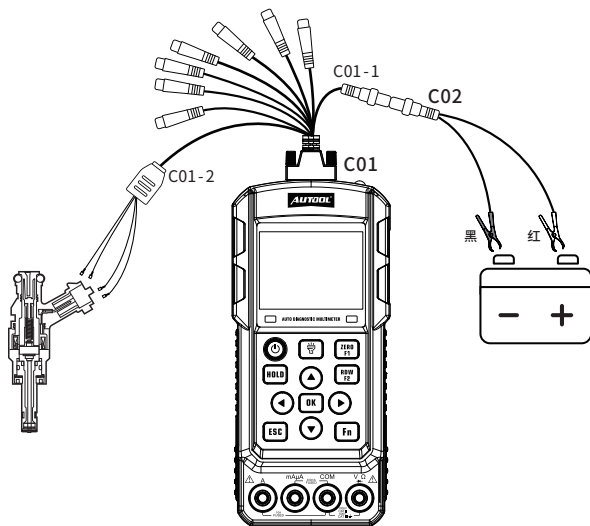
- 此时, 发动引擎, 等待15秒, 如下图所示:

启动测试	
实时电压:	13.87V
最小电压值:	10.20V
启动发动机	
最小电压值 > 9.6V	
正常	

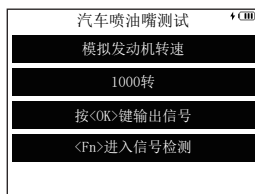
- 在车辆启动过程中，检测到蓄电池最低电压高于9.6V，显示为正常状态；如果检测到最低电压低于9.6V，则提示电压太低；电压过低的可能原因为蓄电池老化、启动机电流过大等，需进一步检查相应的部件，其中蓄电池老化是最主要的原因。

喷油嘴测试

- 仪表能够直接驱动喷油嘴进行测试，也可以检测车辆实时喷油嘴信号。
- 先将多功能检测线插入多功能接口(机器顶部)，然后连接蓄电池夹线；再将红色夹子夹在汽车蓄电池正极上，将黑色夹子夹在汽车蓄电池负极上，将拆下的喷油嘴连接到多功能线上。



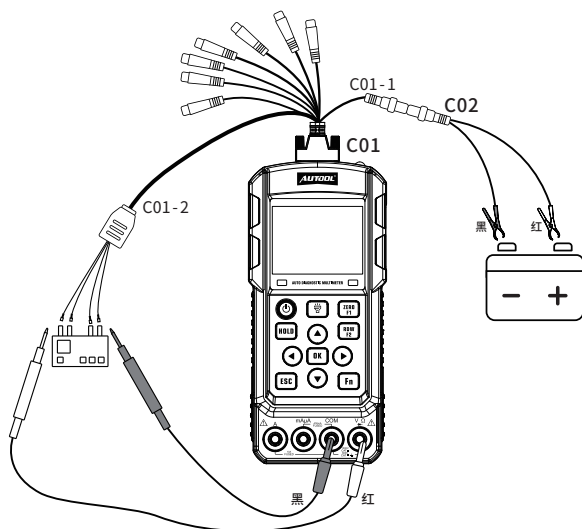
- 进入功能项，显示如下图示：



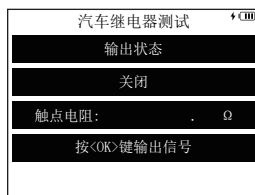
- 刚进入功能界面时，是没有驱动信号输出的，需要按下[OK]键，才会输出喷油嘴驱动信号；可测试电磁式喷油嘴，包括GDI喷油嘴，但不能驱动120V电压电体喷油嘴，测试时可能会听到轻微的声音。
- 按[OK]键停止或启动喷油嘴工作。
- 按[上下左右方向键]调节模拟转速，在所有转速下，模拟驱动信号都是3mS低电压脉冲。
- 喷油嘴驱动信号脉冲宽度3mS。
- 按[Fn]键转入示波器显示模式，将红表笔插入V插孔，用红表笔连接喷油嘴引脚可观察喷油嘴工作波形，此时喷油驱动和示波器功能同步运行中。
- 不连接喷油嘴，按[Fn]键转入示波器显示模式，同样可以检测车辆运行中的喷油嘴工作波形，需要将红色表笔插入V插孔，黑色表笔插入COM孔，将黑色表笔接触车身搭铁或蓄电池负极，红色表笔接触喷油嘴接线。

汽车继电器测试

- 先将多功能检测线插入多功能接口(机器顶部)，连接蓄电池夹线，红色夹子夹在汽车蓄电池正极上，黑色夹子夹在汽车蓄电池负极上；将C01-2分线的红色夹子夹在继电器的一个线圈脚上，黑色夹子夹在继电器的另一个线圈脚上，将红表笔插入Ω插孔，黑表笔插入COM孔。



- 进入功能项，显示如下图所示：

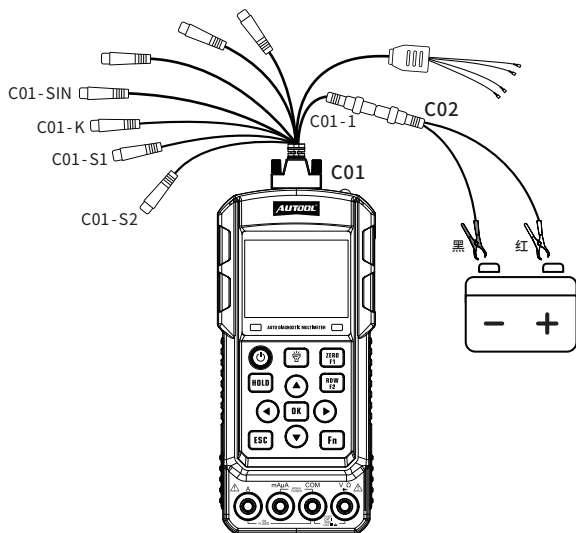


- 按[OK]键，仪表输出与蓄电池电压相同的继电器驱动信号，可听到继电器接通和关闭的声音，用红、黑表笔接触汽车继电器的触点引脚，可观察到触点接通和关闭时的电阻值，可根据观察到的电阻判断继电器的好坏状况。
- 使用12V蓄电池的车辆，可以测试12V的汽车继电器，使用24V的蓄电池，可以测试24V的汽车继电器；请不要用于测试不同工作电压的继电器，特别是不能使用12V蓄电池去测试6V以下的继电器，也不要使用24V蓄电池去测试12V的断电器；通常情况下，12V蓄电池的车辆会使用12V的继电器，24V蓄电池的车辆会使用

24V的继电器。

模拟信号测试

- 仪表模拟输出基本的方波和正弦波信号，如需要其它信号模拟，需要联系品牌方定制非标产品。
- 仪表单独输出信号为接近5V的方波和接近5Vpp的正弦波，如果需要产生12V的方波，需要连接蓄电池供电。
- 将多功能检测线插入多功能接口(机器顶部)，如果需要12V方波信号，再连接蓄电池夹线，并连接到蓄电池上。



- 输出信号：
 - “方波”标识信号线输出12V方波信号；
 - “K线”标识信号线输出5V方波信号；
 - “正弦波”标识信号线输出正弦波信号；
 - “5V信号”标识信号线输出0V~4.5V峰谷值正弦波信号；
 - “地线”标识为接地线，与应用系统地线相连接。

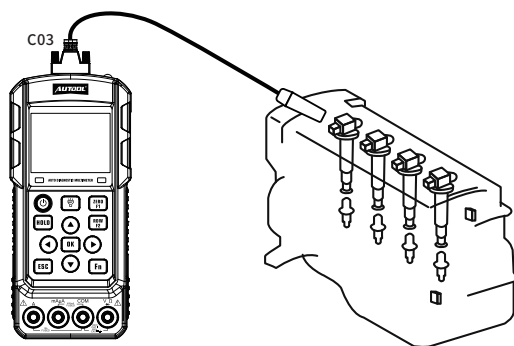
- 输出信号频率：
1Hz~10KHz 占空比: 10%~90%
- 进入功能项，显示如下图所示：



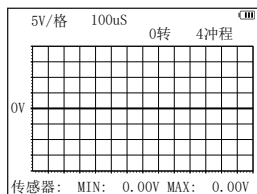
- 刚进入功能界面时，是没有模拟信号输出的，需要按下[OK]键，才会输出信号。
- 按[上下左右方向键]可调节模拟频率值，按[F1/F2]键调节方波信号占空比。
- 按[OK]键输出/停止输出信号。
- 按[Fn]键进入同步示波器观察，可用红色表笔插入V插孔，接触信号输出线观察模拟信号波形。
- 当模拟信号在6000Hz以上时，禁止进入示波器模式。

点火脉冲 信号测试

- 将点火脉冲信号检测线插入多功能接口(机器顶部)。
- 使用时将传感器头部(顶端黄色区域)靠近发动机气缸的点火线。



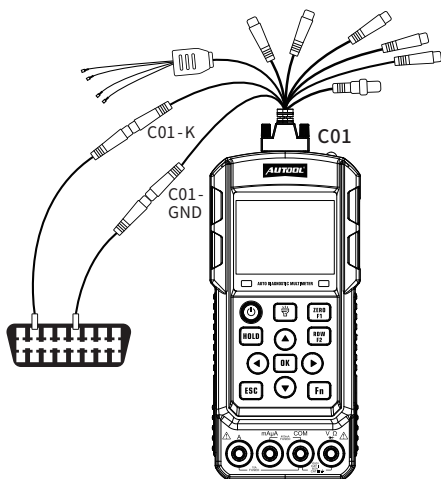
- 进入功能项，显示如下图所示：



- 按[上下方向键]调整显示波形幅度。
- 按[左右方向键]调整时间值。
- 按[F1]键选择发动机气缸类型及点火，用于计算发动机的转速；选项“分电盘”表示老式发动机的分电盘上的高压信号；选项“2冲程”表示二冲程发动机的气缸点火脉冲信号；选项“4冲程”表示四冲程发动机的点火脉冲信号。
- 显示的转速值为单气缸点火脉冲信号计算出来的发动机转速值，在测试过程中要注意将传感器头部靠近一根点火线上，或者靠近一个缸的点火线圈上，不要靠近两条或多条点火脉冲信号线上；如果多条点火线排在一起时，可选择靠近火花塞的部位进行检测。

K线数据

- 将多功能检测线插入多功能接口(机器顶部)，“K线”标识线连接延长线和探针，“地线”标识线接延长线和探针，地线探针接入车辆电路的地线端(如标准OBD-II的5脚)，K线探针接入车辆电路中的K线总线上；注意区分汽车电路上的K线，如标准OBD-II的7脚为K线，汽车内部也有多路K线用于连接车内各种低速电器。



- 仪表提供了5V信号线路和12V信号线路的检测能力；当连接到5V信号线上，K线上的信号为5V信号；当连接到12V信号线上，K线上的信号为12V信号。
- 仪表设置可测试的K线波特率为：1200/2400/4800/9600/10400/19200/38400/57600/115200，如果没有用户需要的波特率，请与品牌方联系，进行非标产品的定制。
- 进入功能项，显示如下图所示：

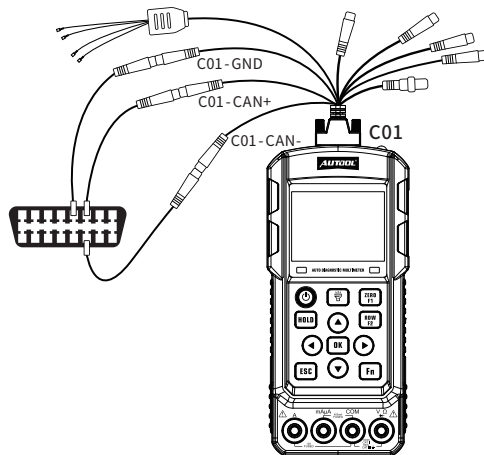
K 线数据		BPS 10400		+ CH0	
82	19	F0	A8	01	34
BF	F0	19	E8		
01	00	04	FF	FF	FF
01	04	FF	FF	01	04
00	00	00	02	02	FF
0C	02	FF			
FF	0D	01	FF	1C	01
FF	1F	02	FF		
FF	20	04	FF	FF	FF
21	02	FF			
FF	30	01	FF	31	02
FF	FF	40	04		

<F1>清除 <Fn><LEFT><RIGHT>设置速度

- 按[F1]键清除当前显示数据。
- 按[HOLD]键保持当前显示状态，在保持状态下，按[上下方向键]，可以向前向后翻阅接收到的数据。
- 在接收状态下按[左右方向键]，可改变通讯的波特率。

CAN总线数据

- 将多功能检测线插入多功能接口(机器顶部), “CAN+” 标识线连接延长线和探针, “CAN-” 标识线连接延长线和探针, “地线” 标识线接延长线和探针; 地线探针接入车辆电路的地线端(如标准OBD-II的5脚), CAN+线探针接入车辆电路中的总线CANH上, CAN-线探针接入车辆电路中的总线CANL上; 注意区分汽车电路上的CAN线, 如标准OBD-II的6脚为CANH线, 14脚为CANL线, 汽车内部也有多路CAN总线用于连接车内各种电子控制器。



- 仪表设置可测试的CAN总线波特率为: 500K/250K/125K/100K/83.33K/50K/33.33K, 如果没有用户需要的波特率, 请与品牌方联系, 进行非标产品的定制。
- 进入功能项, 显示如下图所示:

CANBUS 数据		BPS 500000	+ CAN
ID1:	7ff	MASK: 7ff	
ID2:	7ff	MASK: 7ff	
01	00 04 FF FF FF FF 01 04 FF		
00	00 00 02 02 FF FF 0C 02 FF		
FF	0D 01 FF 1C 01 FF 1F 02 FF		
FF	20 04 FF FF FF FF 21 02 FF		
FF	30 01 FF 31 02 FF FF 40 04		
<F1>清除 <Fn><LEFT><RIGHT>设置速度			

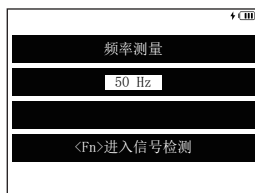
- 按[F1]键清除当前显示数据。
- 按[HOLD]键保持当前显示状态，在保持状态下，按[上下方向键]可以向前向后翻阅接收到的数据。
- 在接收状态下按[左右方向键]，可改变通讯的波特率。

频率测量

- 将红表笔插入“V”插孔，黑表笔插入“COM”插孔。
- 红色表笔连接到待测信号上，黑色表笔连接到待测信号源的地线。



- 可测量的信号电压幅度为最大1000V的电压值。
- 可测量的信号频率为1Hz~1MHz。
- 进入功能项，显示如下图所示。



- 显示当前检测到的频率，由于仪表输入阻抗比较大，没有连接到待测信号上时，会显示感应到的干扰信号，测量时需要连接到有效的信号源上，信号源电压 V_{pp} 应大于1V。
-

其它问题

软件升级

- 仪表可通过MicroSD卡更新应用软件，具体操作步骤为：先将升级文件拷贝到SD卡上，插入仪表的SD卡座，重新开机，如果仪表检测到可用升级文件，会显示在屏幕上，直接按[OK]键即可；如果只需更新数据文档文件，仪表开机后会自动读取相应的文件。
 - 更新文件由仪表的品牌方发布，用户可通过经销商获取。
-

设备识别号

- 仪表有一个唯一的识别号，用户是无法更改的，品牌方根据唯一的识别号确认本仪表是否合法，品牌方可根据设备识别号提供售后服务。

维修保养服务

您所拥有的AUTOOL产品选用持久耐用的材料，AUTOOL坚持精益求精的生产工艺，每一件产品出厂都经过35道工序及12次质检工作，从而确保每一件产品都拥有卓越的品质及性能。所以您的AUTOOL产品值得您定期维护保养，使其产品将能够长期稳定地工作。

维修保养

维护保养是为了保持产品性能和外观，我们建议您仔细阅读以下产品保养指南：

- 注意不要将产品与粗糙表面摩擦或揉搓产品，特别是钣金外壳。
- 对产品中需要紧固和连接的部位经常进行检查，如发现松动应及时紧固，以保证产品的安全运行。对与各种化学介质接触的产品外部和内部零件要经常进行除锈、喷漆等防腐处理，以提高产品的抗腐蚀能力，延长产品的使用寿命。
- 遵守安全操作规程，不超负荷使用产品。产品的安全防护装置齐全可靠，及时消除不安全因素。电路部分彻底检查，老化电线要及时更换。
- 定期清洗和更换易耗部件；调整各部位配合间隙和更换磨损（已坏）部件清洁时，避免产品接触带腐蚀性的液态物品。
- 不使用时，请将产品存放于干燥的位置。不要将产品存放在高温、潮湿或不通风的地方。

保修服务

AUTOOL主机自客户签收日起享有3年保修期。其所含附件自客户签收日起享有1年保修期。

保修方式

- 根据具体的故障情况对产品进行免费修理或更换；
- 我方保证所有更换的部件、附件或产品都是全新；
- 在客户收到产品90天内出现故障同时提供视频和图片，我方承担运费并免费提供相应配件给客户更换。收到产品超过90天，客户承担相应的费用，我方免费提供配件给客户更换；

以下情况不在免费保修范围：

- 非正规渠道购买AUTOOL的产品；
- 未按产品说明书要求使用和维护造成的损坏；

在AUTOOL，我们为精湛的设计和卓越的服务感到自豪。我们很乐意为您提供更多的支持或服务。

声明

偶然公司保留更改产品设计与规格的权利，届时恕不另行通知。实物外观与颜色可能与说明书中显示的有差别，请以实物为准。我们已尽最大努力力求使书中所有描述准确，但仍难免有不妥之处。如有疑问，请联系经销商或偶然售后服务中心。本公司对产品拥有最终解释权，不承担任何因误解而产生的后果。

退换货服务

退换货

- 如果您对从线上授权购物平台和线下授权经销商所购买的 AUTOOL 产品不满意, 根据《AUTOOL 全球销售条款》, 您可以自收到产品之日起七日内退货; 或者在产品交付之日起的 30 日内调换等值的其他产品。
- 退回及调换的产品必须处于完全可销售状态, 并附上相关销售单单据, 所有相关配件、纸质发票 (如有)。
- AUTOOL 将会对寄回退货的商品进行检查, 以确保其处于完好无损的状态并且符合条件, 相关条件详情请参阅《AUTOOL 全球销售条款》。任何未通过检查的商品将退还给您, 您将不会获得商品退款。
- 您可以通过客户服务中心或 AUTOOL 授权经销商调换产品; 退换货原则为从哪里购买, 就从哪里退换货。如果您退换货遇见困难或者阻碍, 请联系 AUTOOL 客户服务中心。通过客户服务中心退换货时, 我们建议您通过下面的方式进行:

中国区域致电	400-032-0988 / 18929303778
售后微信号	18929303778
海外区域致电	+86 0755 23304822
E-mail	aftersale@autooltech.com
Facebook	https://www.facebook.com/autool.vip
YouTube	https://www.youtube.com/c/autooltech

- 如您的退换货得到确认, 您将收到确认信息和邮件。