AUTOOL BT260 Vehicle Electrical Circuit Tester User Manual

Contents

AUTOOL BT260 Vehicle Electrical Circuit Tester

FAQs

- **Q: How do I update the device online?**
  - A: To update the device online, connect it to a computer with internet access and follow the instructions provided on the manufacturer's website.
- **Q: How do I activate components for testing?**
  - A: The component activation can be done by following the specific instructions for MOMENT, LATCH, or PULSE modes as indicated in the user manual. Press and release the corresponding buttons based on the desired mode.

PRODUCT INFORMATION

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SAFETY INFORMATION

CAUTIONS

Warning Before using the instrument, please read this manual carefully for proper operation.

- Always perform automotive testing in a safe environment.
- Do not attempt to operate or observe the tool while driving a vehicle, operating or observing the tool will cause driver distraction and could cause a fatal accident.
- Wear safety eye protection that meets ANSI standards.
- Keep clothing, hair, hands, tools, test equipment, etc. Away from all moving or hot engine parts.
- Operate the vehicle in a well-ventilated work area. Exhaust gases are poisonous.
- Put blocks in front of the drive wheels and never leave the vehicle unattended while running tests.
- Use extreme caution when working around the ignition coil, distributor cap, ignition wires and spark plugs. These compo-nents create hazardous voltages when the engine is running.
- Put the transmission in P (for A/T) or N (M/T) and make sure the parking brake is engaged.
- Keep a fire extinguisher suitable for gasoline/chemical / electrical fires nearby.
- Don’t connect or disconnect any test equipment while the ignition is ON or the engine is running.
- Keep the scan tool dry, clean free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the scan tool when necessary.
- Our company is not responsible for any damage caused by unintentional or deliberate misuse of our products or tools.

Overview

The BT280 is the newest generation intelligent electrical system circuit tester with a 2.4-inch large-size LCD screen display. It is dedicated to test all 9V~30V vehicle electrical systems. BT280 is convenient, fast and intelligent!

Specifications

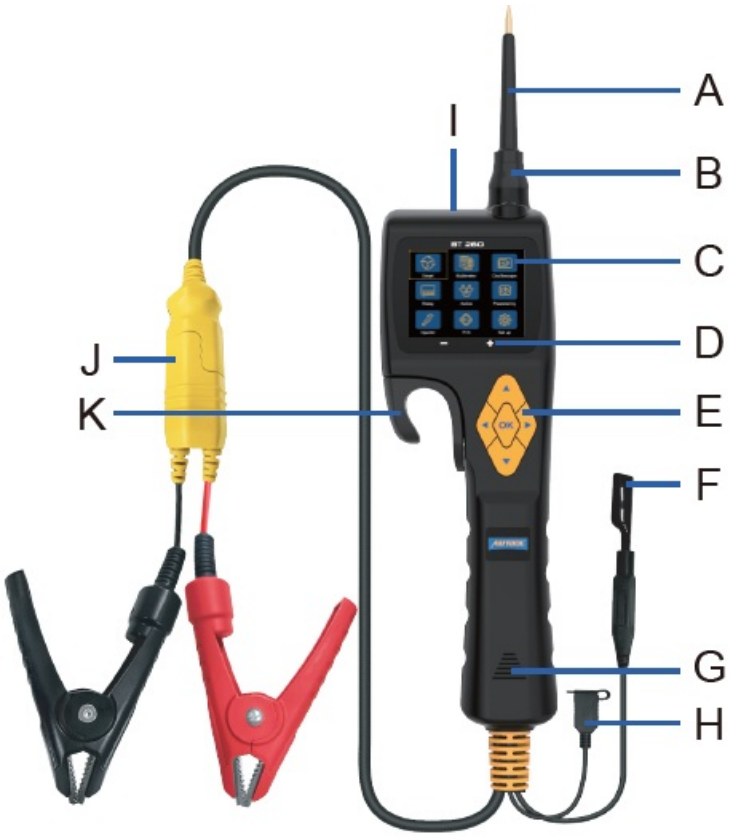
Display	**(320*240 DPI)** **TFT color display**
Working temperature	**0~60°C (32~140°F)**
Storage temperature	**–40~70°C (-40~185°F)**
External power supply	**12V or 24V** **Powered by battery**
Minimum working voltage	**9V**
Maximum working voltage	**30V**
Maximum measuring voltage	**100V**
Minimum measuring voltage	**0.1V**
Resistance measurement range	**1ohm~200K ohm**
Current measuring range	**0~18A**
Maximum continuous current	**18A**

Features

- Smart Test – Auto Detect Volts and Ohms
- Multimeter Mode (Voltage, Resistance, Diode, Open & Short, Current, Frequency)
- Circuit Breaker Protection (Current Adjustable)
- Screen Background Changeable
- Relay Test
- Diode Test
- Oscilloscope Test
- 0~5V Power Supply
- Component Activation
- Positive & Negative Test
- Multi-Languages
- Online update

PRODUCT STRUCTURE

Structure diagram



- A – Probe Tip – Contact the circuit or component for testing.
- B – Front LED Light – Used for lighting in dark working areas or when working at night.
- C – LCD Screen – Display test results.
- D – Red / Green LED Indicator – Positive and negative indicator light.
- E – Key Button Operation – 5 Keys Navigating for fast operation.
- F – Auxiliary Ground Lead – Auxiliary clip of ground lead (probe negative).
- G – Speaker – Buzzer for warning or reminder.
- H – USB Port – Update by connect PC with USB cable to probe.
- I – Relay Test Port – Connect the relay test cable.
- J – Power Connector – Connect the battery clip to the car battery and extension cable.
- K – HOOK – Hook the probe in a suitable place to avoid broken and being convenient in use.

PRODUCT USE

Power supply connection

The Probe is powered by the vehicle battery. Connect the RED clip to the positive pole of the battery, and the BLACK clip to the negative pole of the battery. The machine will automatically start to enter the working interface, The front LED light will illuminate the test area, which is convenient for operation in the dark area.

KEY Button operation

The Probe equipped with a multi-function button adopts the latest scientific design. There are 5 physical buttons “Left”, “Right”, “Up”, “Down” and “OK”.

In different functional interfaces, the key functions performed are not exactly the same.

- Left key – Navigation key or exit key.
- Right key – Navigation key.
- Up key – Navigation key or voltage output, numerical adjust-ment.
- Down button – Navigation button or voltage output, numerical adjustmen.
- OK – Confirm key.

Circuit breaker protection

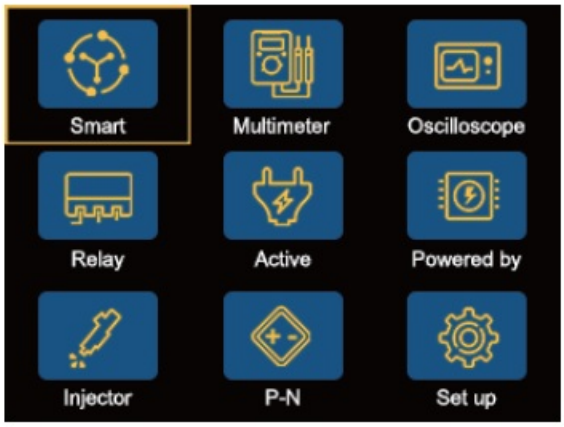
- Short – Circuit automatic protection – if the current is overloaded, its internal circuit breaker system will automatically tip for protec-tion. The circuit breaker monitors this tool at all times. As an essential safety measure to prevent overload, it is a very practical function.
- Fuse Protection – Equipped with a 25amp fuse in the auxiliary grounding lead, which can be protected when the device is short-circuited or overloaded.

NOTE:

Do not use the BT280 probe to test the voltage of the house-hold AC Power (such as 110V, or 220V plug), it may cause serious injury and property damage for improper operation.

WORKING MODE

This probe adopts a 2.4-inch large color screen and 9-grid interface design, with clear display, simple operation and quick in use. You can select working mode through the navigation buttons and press OK to enter.



Smart test

The main test functions of this mode: are voltage test, resistance test, and Positive/negative test. (display as VDC, OHM). It is mainly used for quick test without switching between different test modes. Automatically recognize the measured signal and display values of voltage or OHMs.

Voltage Test Result

- How to use: When the probe clip (auxiliary ground lead) is connected to the ground wire, the probe will automatically enter the voltage display mode when a voltage signal is detected on the probe Tip, it will display the test voltage.
- As shown in the figure, “BATT” means that the battery supply voltage is 9.9V, and “VDC” is the current test DC

voltage value of 10.0V.

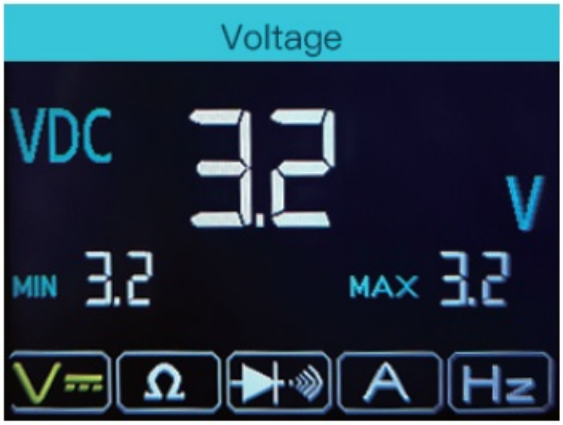
Resistance Test Result

- H ow to use: When the probe clip (auxiliary ground lead) is connected to an electrical circuit of resistance and the probe tip is connected to the other end of the resistance, the probe will automatically enter into the resistance display mode and display the resistance values.
- As shown in the figure: “BATT” means that the battery supply voltage is 9.9V, and “OHM” is the current test resistance value of 0.0 Ω.

Postive / Negative Test

When the probe detected a voltage deviation of ±0.8v from the power supply, the RED LED lights ON, meanwhile, it displays the voltage values, and the speaker sounds regularly. When Probe detected the negative signal of the power supply, the GREEN LED lights ON, and the speaker sounds regular. (Speaker Enable / Disable in Setting)

Multimeter mode



Functions Display

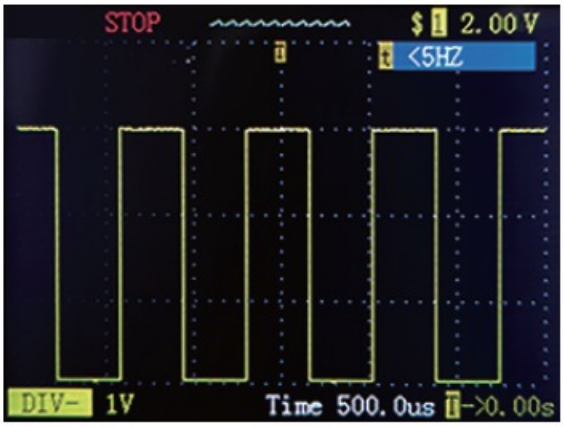
- The bottom of the interface is the functional
  - **right, are**: DC voltage (VDC), resistance (OHM), diode/continui-ty test (DIO), current (AMP), and frequency (HZ).

How to use

Press the “right” button to select the test mode. Press “Left” Button to exit.

- **DC voltage (VDC):**
  - Connect the probe clip (auxiliary ground lead) to the negative pole, and connect the probe Tip to the measured voltage.
- **Resistance (OHM):**
  - Connect the probe clip (auxiliary ground lead) to one side of the Resistance being measured, and the probe tip to the other side.
- **Diode / Continuity Test (DIO):**
  - Connect the probe clip (auxiliary ground lead) to one side of the Diode being measured, and the probe tip to the other side. Meanwhile, it will display the voltage and show positive and negative of diode.
- **Current (AMP):**
  - The probe is connected in series in the circuit under test, it will display the current value.
- **Frequency (HZ):**
  - Display the frequency of the measured signal and duty cycle value.

Oscilloscope mode

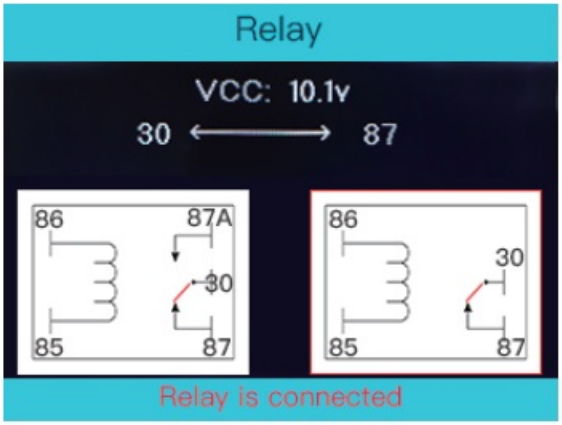


Instructions

- “ START / STOP” (press “OK” to Start or Stop waveform refresh).
- “ DIV” voltage per grid (test range 1~49V) press up and down keys to adjust the voltage value). “Time” time parameter.
- “HZ” Display test frequency.

*Press and hold left key to exit this working mode.

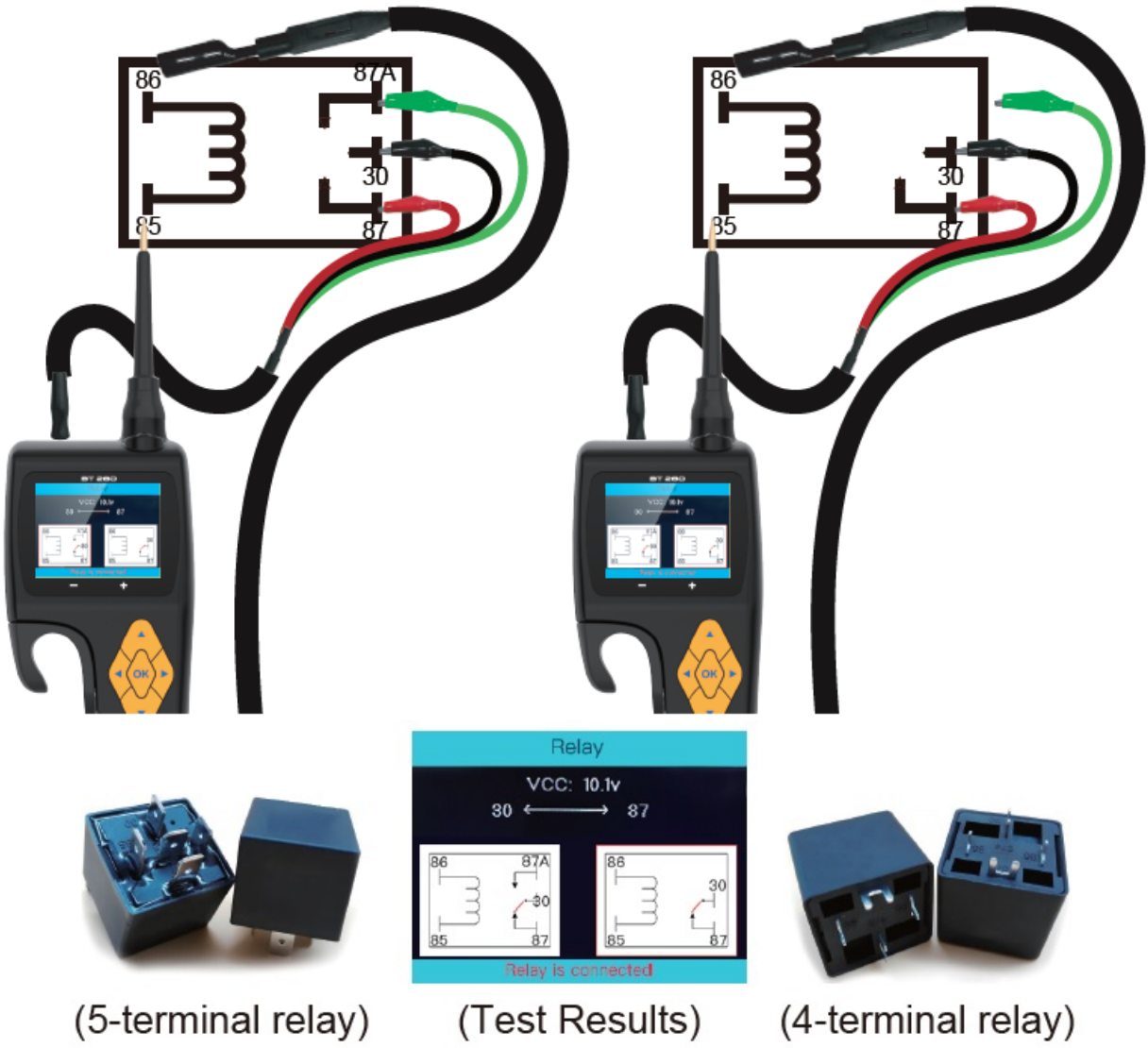
Relay test



Instructions

- The “VCC” at the top of this interface displays the power supply voltage value. it shows 2 types of common automotive relay diagrams (5-terminal relay and 4-terminal relay). Press “Left” button to move selection, Press “OK” button to view the wiring connection diagram of these 2 different relays.

Relay wiring connection as figure below:



For example, Test a 5-terminal relay

- Connect the relay test wire to probe.
- Connect the black wire to the relay terminal 30#.
- Connect the green wire to the relay terminal 87A#.
- Connect the red wire to the relay terminal 87#.
- Connect the auxiliary ground wire (negative clip) to terminal 86#.
- Connect the Probe Tip to the relay terminal 85#.
- Press the “UP” button to trigger the test.

* The relay test result will be displayed at the bottom.

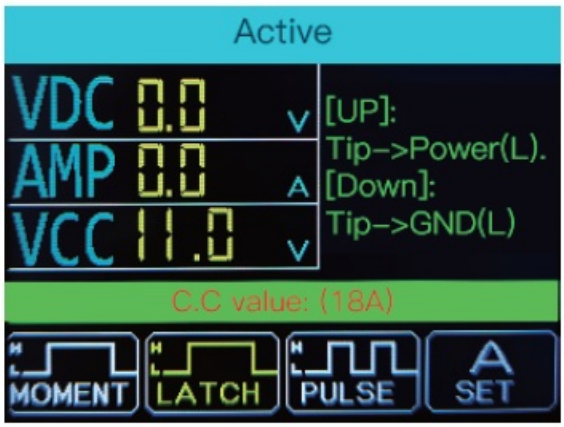
Component Activation

NOTE:

- The activation mode is only designed for supply powers or ground, and cannot be used for any sensitive electronics equipment (such as ECU, sensor module), otherwise there is a risk of burning out components.
- Do not perform any tests on any ECU module, SRS (air bag) system before the system is completely disabled or unplugged.

- Supply power to the electrical system will cause damage to the vehicle's sensitive electronic components, so we strongly recommend that you refer to the vehicle manufacturer's schematic diagram and diagnostic process.

The component activation function is designed to generate activa-tion signals to the tested components, such as activating lights, motors and other onboard electric equipment.

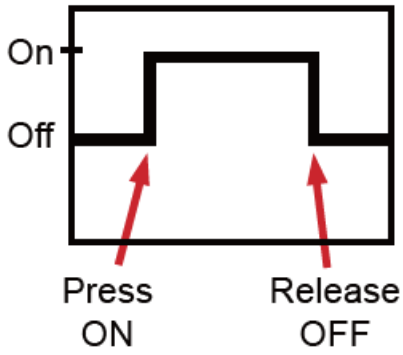


Display Value

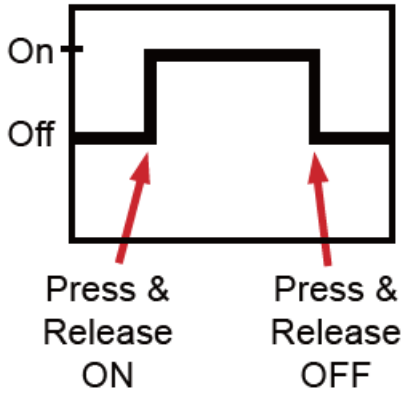
- **VDC**: Detected Voltage
- **AMP**: Detected Current
- **VCC**: Power Supply Voltage

Activation Type

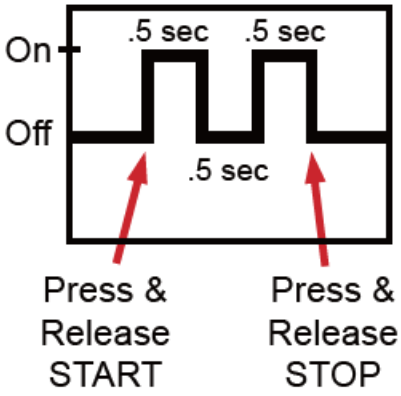
- **"MOMENT" Mode:**
  - Press "Right" button to select the activation mode to MOMENT mode. Press and hold the "UP" / "Down" button to perform the power supply, Release "UP" / "Down" button to stop.



- **"LATCH" Mode:**
  - Press "Right" button to select the activation mode to LATCH mode. Press the "UP" / "Down" button to perform the power supply, Press "UP" / "Down" button again to stop.



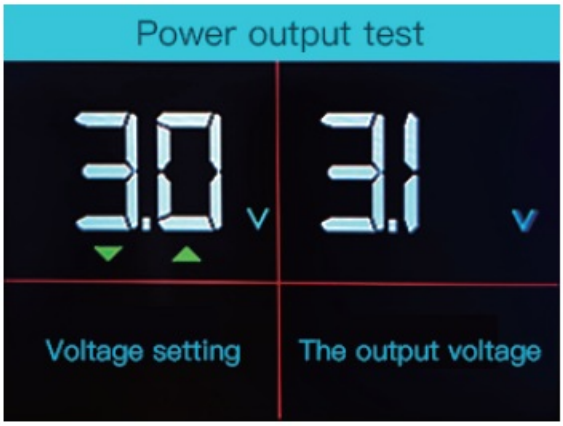
- **“PULSE” Mode:**
  - Press “Right” button to select the activation mode to PULSE mode. Press the “UP” / “Down” button to perform the power supply, and automatically supply power cycles in 1 second.



- **“SET” Circuit Breaker:**
  - Press “Right” button to select the activation mode to SET mode.
  - Press “UP” / “Down” button to adjust the overload current values from 1A~18A.

If the current flowing through the probe is greater than the set value, it will cut off the power and stop activation.

0~5V Power supply



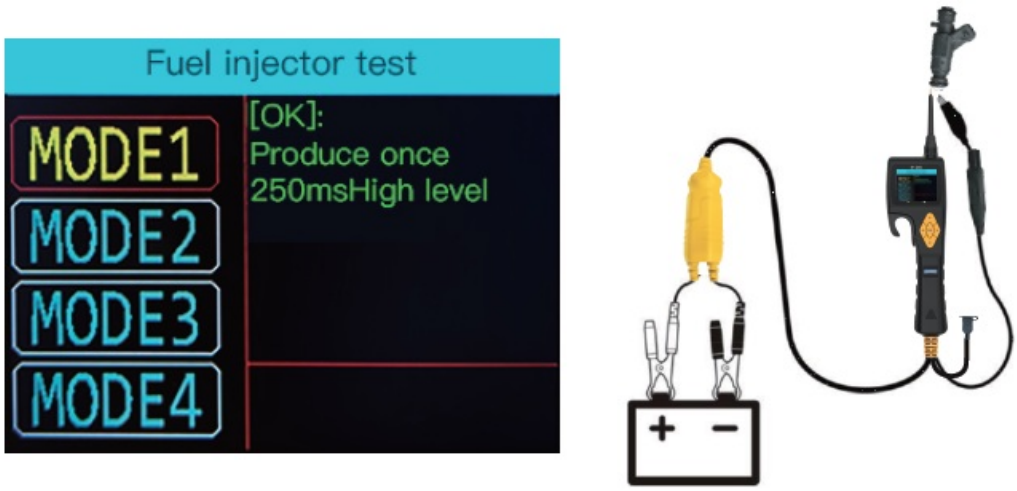
- The 0-5V power supply function is useful when checking the wiring to the ECU/ ECM. After you check the sensor with a multimeter, if there is still a problem, you can simulate the voltage output by the sensor to verify the wiring to the ECU.
- You can use the OBD scanner to diagnose the result in the ECU, you can set a power supply voltage from 0 to 5V (current <100mA) in 0.5-volt increments.
- There is a set point voltage alarm, in case the circuit connected to the probe tip will force the voltage to be

higher or lower than the set point voltage to 0.1 volts, the device will sound an alarm to know that the output voltage is different from the set voltage. It can be disconnected and check for short circuits or other

NOTE:

0-5V power supply mode designed as an active mode, but its function is different from the component activation mode. It can adjust the voltage output under 5V and limit the current to 100mA. (This is safety to avoid burning out electric compo-nents).

Injector test



The probe outputs different pulse signals to the injector, and check the injector spraying status. This function can help diagnose injector conditions. It can work with any fuel pressure tester.

Signal Output Mode

- **MODE 1:**
  - Press “OK” button to activate probe outputs 1 pulse. Pulse width is 250ms.
- **MODE 2:**
  - Press “OK” button to activate probe outputs 50 pulses. Pulse width is 7ms.
- **MODE 3:**
  - Press “OK” button to activate probe outputs 100 pulses. Pulse width is 4ms.
- **MODE 4:**
  - Press “OK” button to activate probe outputs continuously at the rate of 50 pulses in 1450ms. every pulse width is 7ms, press “OK” button again to stop.

Test Fuel Injector

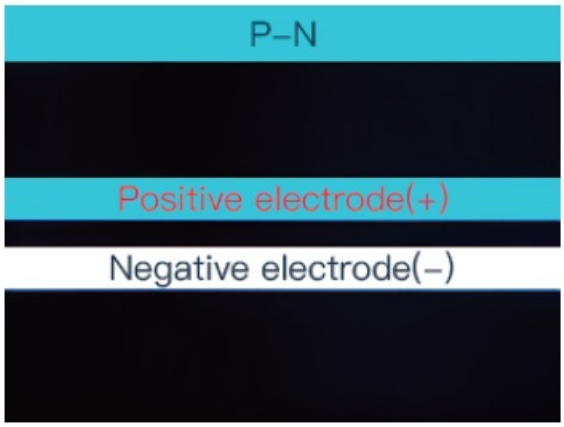
- Turn off the Vehicle’s engine
- Connect the BLACK clip to the negative terminal of the battery and the RED clip to the positive terminal of the battery.
- Unplug the connector from the fuel injector, connect the probe auxiliary ground lead to the negative side of the injector, and probe tip to the positive side of the injector.
- After enter into the injector test function, select the test mode. Pr ess “OK” button to trigger the test.

- Check the injector spraying status to diagnose the condition.

Positive /Negative test

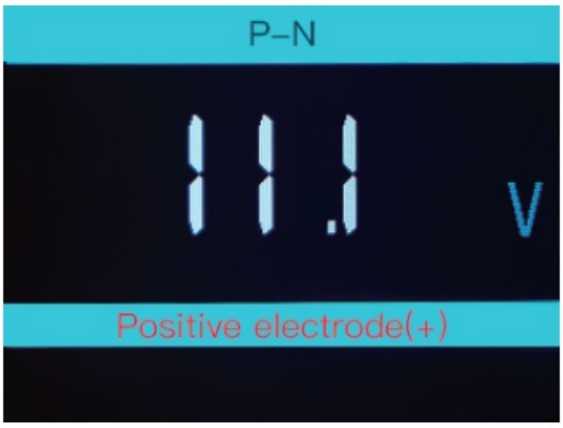
How to use

- Connect the probe negative clip to the vehicle ground wire, use the probe tip to find the positive/negative wire of the electric circuit system. The following interface is displayed default state:



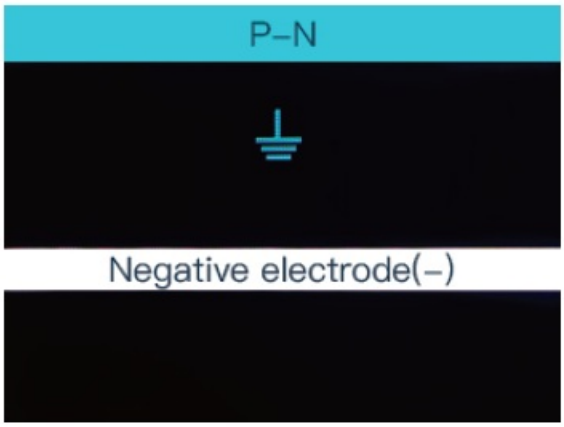
Positive Interface

- After detected positive signal, it will display voltage values and positive (+) symbol.



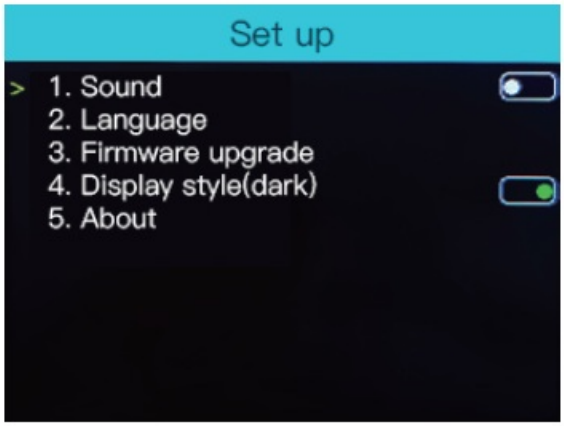
Negative Interface

- After detected negative signal, it will display ground icon and negative (+) symbol.



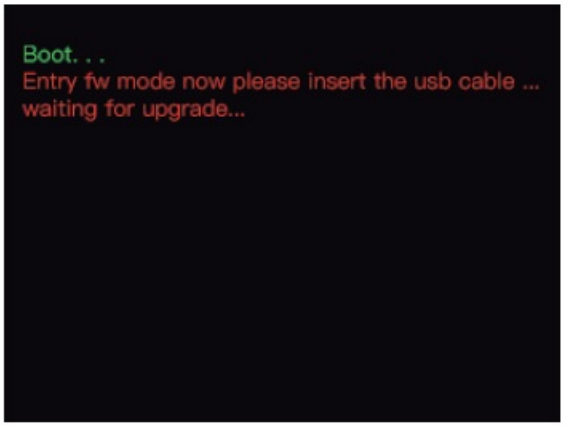
Setting

- From setting interface, you can set, sound, language, update, screen, use “UP” and “DOWN” button to select, press “OK” button to change parameters. Press “LEFT” button to save and exit.



Online Update

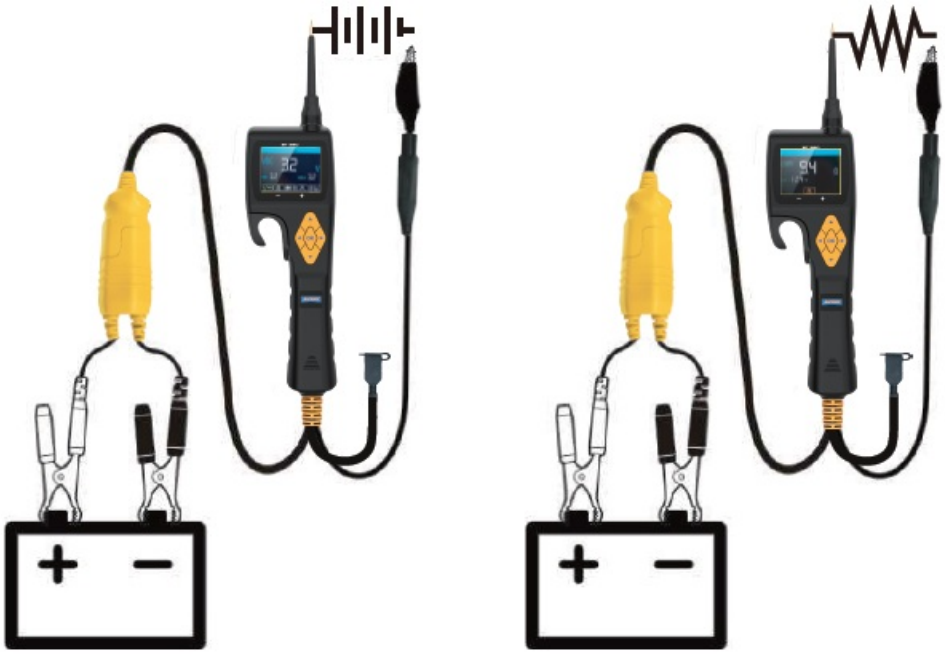
- After in setting interface, select update menu to enter into update mode. Connect PC with USB cable to probe, open update tool on computer to start update.
- Press “LEFT” and “OK” button on the same time to enter into update mode. Connect PC with USB cable to probe, open update tool on computer to start update.



TEST APPLICATIONS

Continuity testing

When the probe is in the “Multimeter mode” select resistance test function, Use the probe tip with chassis ground of the vehicle or auxiliary ground lead, continuity can be tested on wires and components attached or disconnected from the vehicles electrical system. When the Probe is contacting a good ground, the LCD Screen will display “0.0Ω” and the green LED indicator will also light up. If the Sound enabled from setting, the buzzer will beep at the same time.



- In other cases, the LCD screen will only display the resistance value.
- If the resistance is greater than 200 KΩ, the LCD screen will display “0L” There is another way to verify the continuity of the connection to the ground or battery, while in component activa-tion mode, you can supply power to the electrical system. if the circuit breaker trips, it means that this connection is a good connection with low resistance.

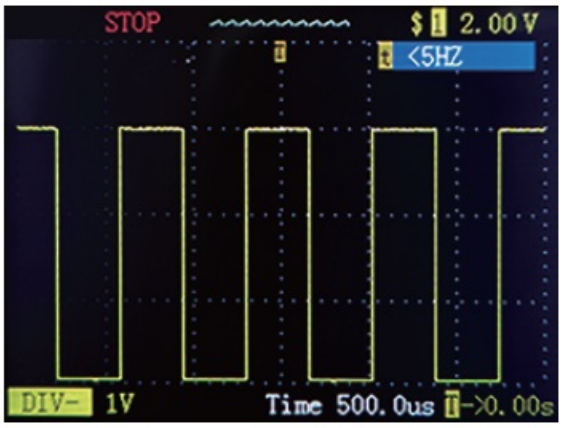
NOTE:

- Do not perform any tests on any ECU module, SRS (air bag) system before the system is completely disabled or unplugged.
- You can use the Probe Tip to pierce the plastic insulation on a wire to run test.

Signal circuit testing (Oscilloscope test)

Use an OBD2 Scanner to read out the FAULT CODE (DTC) from the vehicle and found the problem is with some kind of sensor circuit, there is a fast way to testing the sensors conditions with this probe. For example, if you suspect that the problem is with the MAP sensor circuit of the vehicle, follow this procedure to testing the sensor.

- Enter into oscilloscope mode , use the probe tip with chassis ground or auxiliary ground lead.
- Connect the vacuum pump to the M.A.P. sensor.
- Touch the probe tip to the positive terminal of the M.A.P. sensor and observe the LCD screen. Generally it should be with a Sine Waveform in good condition.
- Apply vacuum pump.
- Release the vacuum pump and observe the reading on the LCD screen.

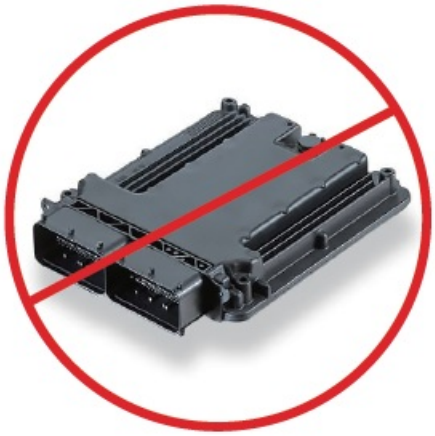


If the waveform reading is abnormal, there should be a problem with this sensor.

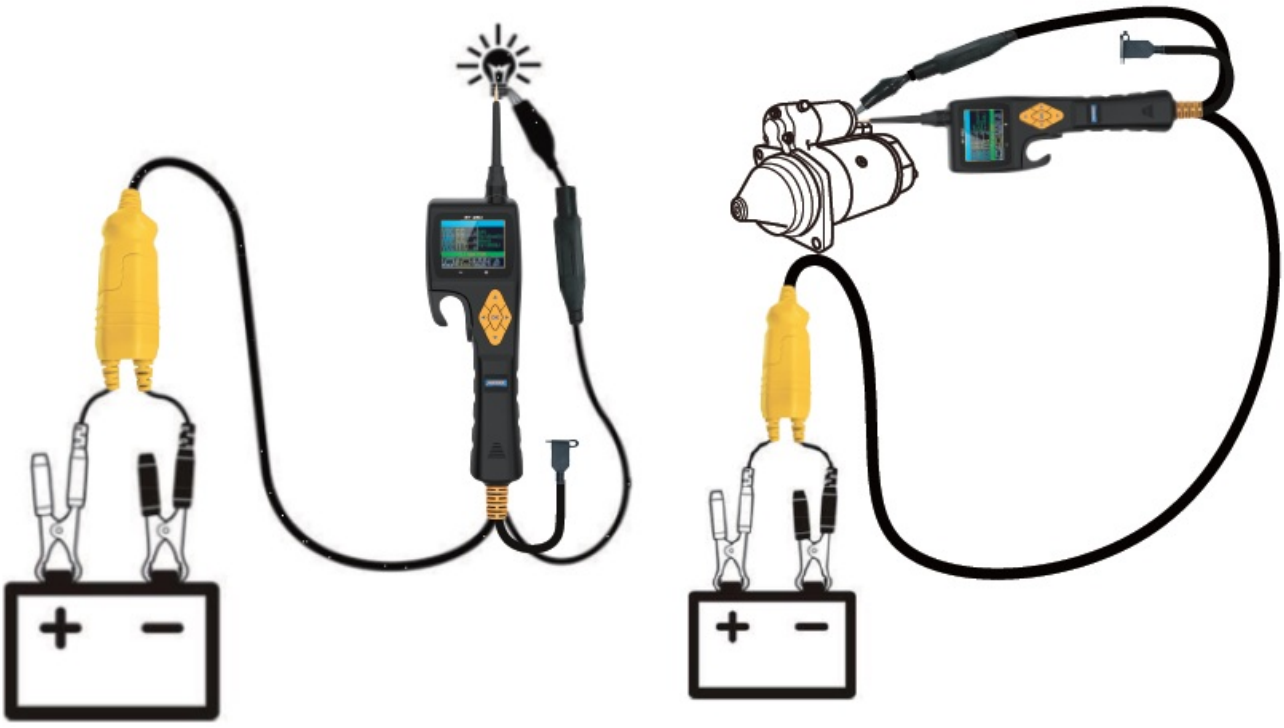
Activating components in your hand

For Example: Test a bulb working condition

- Hook up the battery clip to power supply.
- Enter into component activation, select MOMENT modification.
- Connect the auxiliary ground lead to the negative terminal of the component being tested, Connect the probe tip to the positive terminal of the component, press “up” button to trigger the activation test.
- The LCD screen will display the value of VDC, AMP, and VCC.



If the Probe restart for the circuit breaker tripped or the displayed message OVERLOADED on LCD screen, you can adjust the overload current value and repeat the above operation to further activation. (To avoid burning out the component, please refer to the specification and parameter of the component and then set the OVERLOAD CURRENT VALUE)



If the probe circuit breaker tripped, it means the probe is overloaded. This could happened by the following reasons:

- You have connected the probe tip to the direct ground or negative voltage.
- The component you are testing is short-circuited.
- The component is a very high current component (such as STARTER MOTOR).

Activating components in vehicle

NOTE:

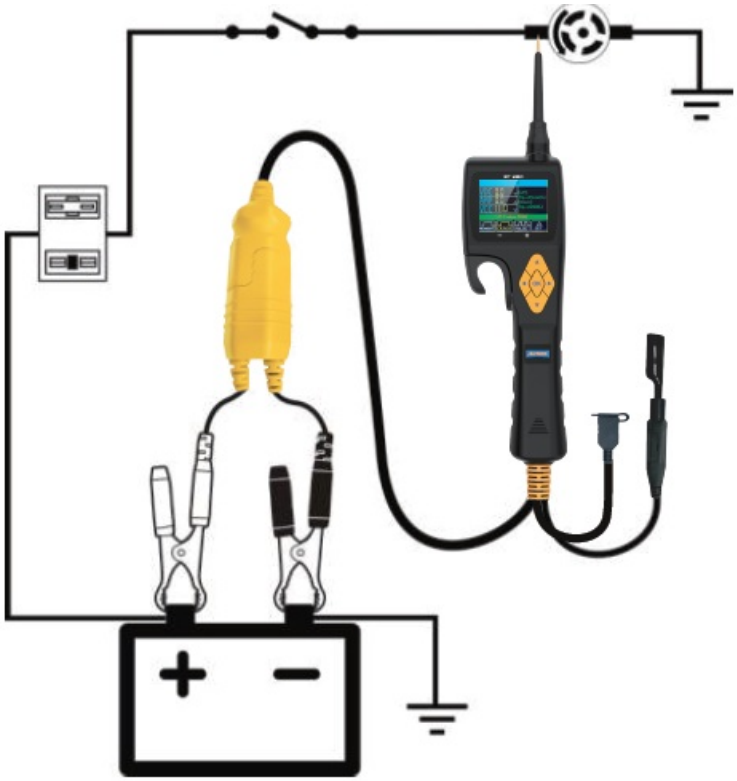
- The activation mode is only designed for supply powers or ground, and cannot be used for any sensitive electronics equipment (such as ECU, or sensor module), otherwise, there is a risk of burning out components.
- Do not perform any tests on any ECU module, SRS (air bag) system before the system is completely disabled or unplugged.
- Supply power to the electrical system will cause damage to the vehicle's sensitive electronic components, so we strongly recommend that you refer to the vehicle manufacturer's schematic diagram and diagnostic process.

Test Procedure:

- Hook up the battery clip to power supply.
- Enter into component activation, select the MOMENT mode function.
- Connect the auxiliary ground lead to the negative terminal of the component being tested.
- Connect the probe tip to the positive terminal of the component, press "UP" button to trigger the activation test.
- The LCD screen will display the value of VDC, AMP, and VCC.

If the probe restarts for the circuit breaker tripped or the displayed message OVERLOADED on LCD screen, you

can adjust the overload current value and repeat the above operation to further activation. (To avoid burning out the component, please refer to the specification and parameter of the component and then set the OVERLOAD CURRENT VALUE)



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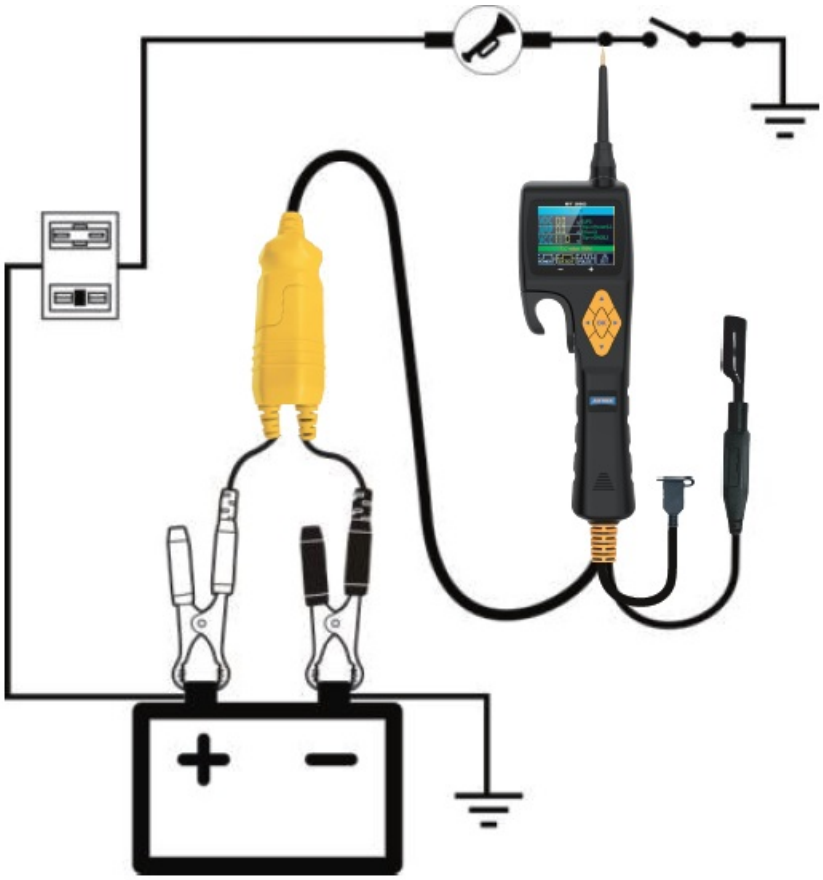
- You have connected the probe tip to the direct ground or negative voltage.
- The component you are testing is short-circuited.
- The component is a very high current component. (such as STARTER MOTOR)

Activating components/Ground

Test Procedure

- Hook up the battery clip to power supply.
- Enter into component activation, select MOMENT mode function.
- Connect the auxiliary ground lead to the negative terminal of the component being tested.
- Connect the probe tip to the positive terminal of the component, press “DOWN” button to trigger activation test.
- The LCD screen will display the value of VDC, AMP, and VCC.

If the probe restart for the circuit breaker tripped or the displayed message OVERLOADED on LCD screen, you can adjust the overload current value and repeat the above operation to further activation. (To avoid burning out the component, please refer to the specification and parameter of component and then set the OVERLOAD CURRENT VALUE)



If the probe circuit breaker tripped, it means the probe is overloaded. This could happened by the following reasons:

- You have connected the probe tip to the direct ground or negative voltage.
- The component you are testing is short-circuited.
- The component is a very high current component. (such as STARTER MOTOR)

NOTE:

If you are contacting a protected circuit, the vehicle fuse can be burn-out or probe tripped if you apply ground to it.

Checking for bad ground contacts

Use the probe tip to find the suspected ground wire.

- Enter into component activation interface. Select MOMENT mode function, set the overload current to 1A.
- Connect probe tip to a suspected wire.
- Press “OK” button to trigger power supply.

The RED led light will ON and LCD screen will display values of VDC, AMP and VCC, if the VDC value is almost the same as VCC and AMP value is minimum approach to 0A. it means this is not true ground. Otherwise, if probe circuit breaker tripped or display OVERLOADED, It is probably the ground.

NOTE

Keep in mind that high current components such as starter motor will also trip the circuit breaker.

Following & Locating short circuits

In most cases, a short circuit will appear as a blown fuse or a tripping of an electrical protection device (such as a circuit breaker tripping). This is the best place to start check the short circuit.

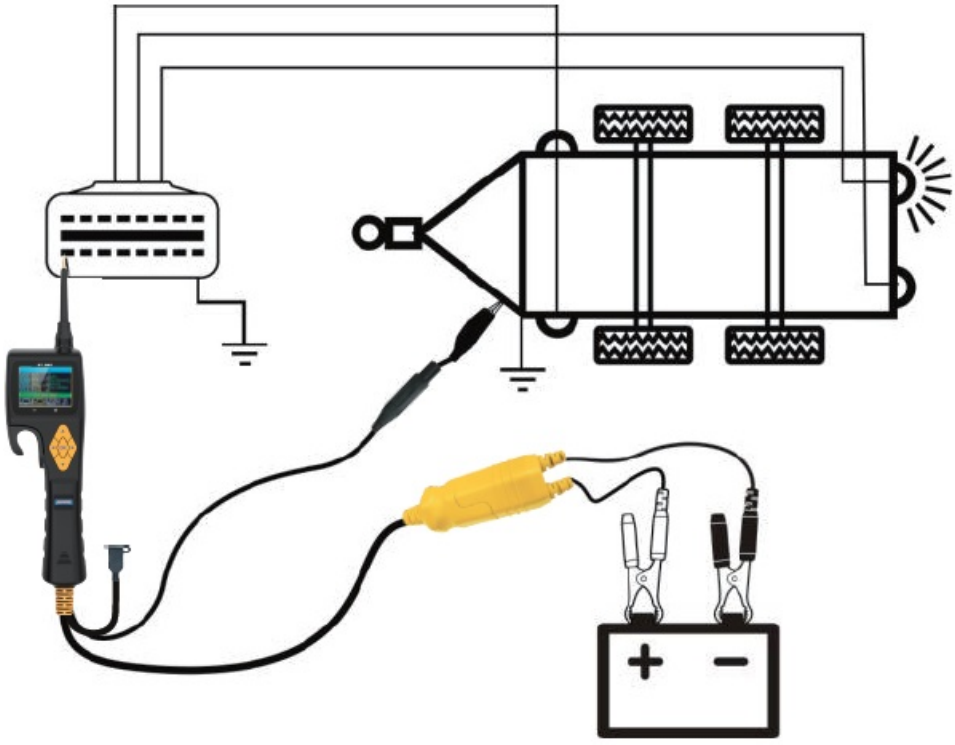
- Remove the blown fuse from the fuse box.
- Use the probe tip to activate each of the fuse contacts.
- While the circuit breaker trips is a short circuit. Record the number or color of the wire.
- Trace the wire as far as possible.

Here is an example for this application.

- If you are tracing a short circuit in the brake light circuit, you will know that the wiring harness must pass through the wire at the door sill, Locate the color-coded wire in the harness and expose it.
- While in component activation interface select MOMENT mode. Use the probe tip to contact the marked wire, press the “UP” button to trigger power supply.
- If the circuit breaker tripped, you have verified the shorted wire. Cut the wire and power supply each end with probe tip again.
- Follow the wire in the shorted direction and repeat this process until the short is located.

Trailer lights and connection test

When the probe is in multimeter or SMART test, connect the probe auxiliary ground lead to the trailer light, and insert the probe tip into the OBD socket to display the current voltage. With this method you can check the function and direction ofthe connector and trailer lights. If you find the trailer light connection correctly, you can use the “Component Activation” function to test whether the trailer light is working or not working.



DESCRIPTION OF ACCESSORIES

Name	Name
BT280 Unit with 6 meters test line	Solid copper test probe tip
Extension connection line	Alligator battery clip
Relay test line	Probe adapter
25Amp fuse	User manual
ABS Toolbox	

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

Fro m the date of receipt, we provide a three-year warranty for the ma in 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 the product.
- It is guaranteed that AUTOOL will use brand-new components, accessories 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 resumes the right of 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.

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Documents / Resources

	AUTOOL BT260 Vehicle Electrical Circuit Tester [pdf] User Manual BT260, BT260 Vehicle Electrical Circuit Tester, Vehicle Electrical Circuit Tester, Electrical Circuit Tester, Circuit Tester, Tester

References

- SUNNYSOFT
- Tool Tech
- AUTOOL: Inspect Before Car Repair
- SUNNYSOFT
- User Manual