XTUNER®

PT101

Automotive Circuit Tester
Users Manual

www. idutex. com

CATALOG

1. Safety Precautions and Warnings

To prevent personal injury or damage to vehicles and/or the test tool, read this instruction manual first and observe the following safety precautions at a minimum whenever working on a vehicle:

● Always perform automotive testing in a safe environment.

● 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 components create hazardous voltages when the engine is running.

● Put the transmission in PARK (for automatic transmission) or NEUTRAL (for manual transmission) 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 tool dry, clean, free from oil/water or grease. Use a mild detergent on a clean cloth to clean the outside of the test tool, when necessary.

● When the power switch in the tool is depressed battery current/voltage is conducted directly to the tip which may cause sparks when contacting ground or certain circuits. Therefore the tool should NOT be used around flammables such as gasoline or its vapors. The spark of an energized tool could ignite these vapors. Use the same caution as you would when using an arc welder

2. Using the Test Tool

2.1 Appearance and Controls

Figure 1

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2.2 Specifications

Display	TFT color display (160 x 128 PPI)
Dimensions	195 mm (7.68”) *50.5 mm (1.99”)*33mm
External Power	12.0 - 30.0V power provided via vehicle battery. Recommended 12v power supply
Min Operating Voltage	8 VDC
Max Operating Voltage	12 VDC
Max Tip Voltage	40 Volts
Probe Tip Resistance to Ground	1000 K Ohms
Computer Safe	0.1mA floating tip
Voltage Measurement	0 to 40 VDC / VAC
Voltage Resolution	0V -to 40V – 0.01V (10mV)
Glitch Capture	> 50 µS Min Pulse Width
Power Feed Test	< 3 mA
Resistance Measurement	0 Ohms to 1M Ohms
Frequency Measurement	40 Hz to 20KHz
Circuit Breaker	8 Amp Thermal – Auto Reset

Breaker Trip Response	8 Amps = No Trip 8 Amps = 1 sec. Short Circuit = 0.3 sec.
Operating Temperature	-20°C (-4°F) to 50°C (122°F)
Storage Temperature	-40°C (-40°F) to 65°C (149°F)

2.3 Product Included

(1) User manual.

(2) Cigarette lighter adapter.

(3) Battery hookup clips.

(4) Probe tip.

(5) Extension cable.

(6) Rugged blow molded case.

2.4 General Description

Thank you for purchasing the XTUNER PT101 Diagnostic Electronic Circuit tester. The tool is the best electrical tester for reducing diagnostic time in all 6 to 30 volt vehicle electrical systems. After a simple hook-up of the tool to the vehicle's battery, you can:

● determine at a glance if a circuit is positive, negative, or open without having to reconnect clips from one battery pole to another.

● test for continuity with its built-in auxiliary ground lead.

● by depressing the power switch, conduct a positive or negative battery current to the probe tip for testing the function of an electrical component without the use of jumper wires.

● test for poor ground contacts instantly without performing voltage drop tests. The tool is also short-circuit protected; its internal circuit breaker will trip if it becomes overloaded.

● follow and locate short circuits without wasting fuses. The tool's long cable allows you to test along the entire length of the vehicle without constantly searching for suitable vehicle grounds.

2.5 Power

The tool is powered via the vehicle battery. **Connect the RED battery clamp to the POSITIVE terminal of the vehicle"s battery, and the BLACK clamp to the NEGATIVE terminal.**

2.6 Quick Self-Test

Before you test a circuit or component, be sure your tool is in good order by doing a quick self-test.

With the tool connected, perform a quick self-test. The power switch is a momentary rocker switch located on the tool's body. Flanking the switch are positive and negative markings.

Press the Power Switch forward to activate the tip with a positive voltage. The Red LED should light and the LCD display will read the battery voltage.

Press the Power Switch rearward to activate the tip with a negative voltage. The Blue LED should light and the LCD display will read the "0.0V" (ground).

Your tool is working correctly and is now ready for use. (Figure 2)

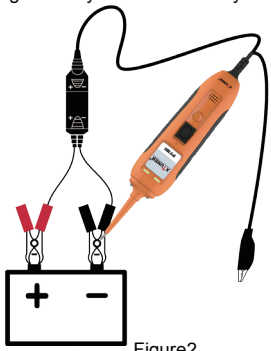

Figure2

***IMPORTANT**: When powering-up components, you can increase the life of power switch in the tool if you first press the switch, then contact the tip to the component. The arcing will take place at the tip instead of the contacts of the switch.*

2.7 Circuit Breaker

The tool is short-circuit protected. Its internal circuit breaker will trip if it becomes overloaded. The circuit breaker is a valuable test tool as well as a safety measure to protect the tool from overload.

When circuit breaker tripped, All other functions of the tool are still active, which means you can still probe a circuit and observe the voltage reading. When the circuit breaker is tripped, the tool will NOT be able to conduct

battery current to the tip even when the power switch is pressed. Intentionally tripping the breaker and using the tool to probe can be considered an added precaution against accidental pressing of the power switch.

2.8 Work mode

There are four modes to diagnose the electrical systems, which can be accessed by depressing the Mode Button and cycling through each one.

DC voltage

While the tool in this mode, contact the probe tip to a circuit, then the LCD display will read the DC voltage with a resolution of 0.01 volt.(Figure 3)

Figure 3

AC voltage

While the tool in this mode, contact the probe tip to a circuit, then the LCD display will read the Max. voltage, the Min. voltage, frequency. (Figure 4)

Figure 4

Resistance

While the tool in this mode, contact the probe tip to a circuit, then the LCD display will read the resistance between the tip and auxiliary ground lead. (Figure 5)

Figure 5

Diode

While the tool in this mode, contact the probe tip to a circuit, then the LCD display will read the diode voltage between the tip and auxiliary ground lead. (Figure 6)

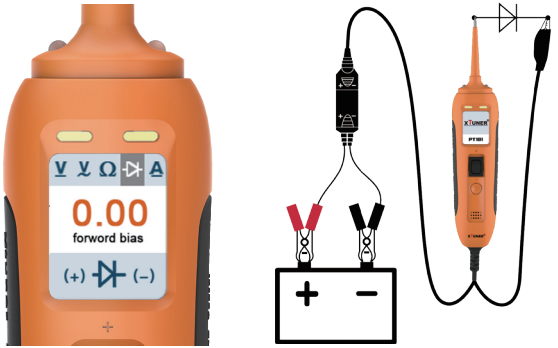

Figure 6

Current

While the tool in this mode, contact the probe tip to a circuit and press the power switch up, then the LCD display will read the current with a resolution of 0.1 A.(Figure 7)

⚠ Please do not test when power up more than 20V.

Figure 7

3. Test Applications

3.1 Voltage & Polarity Testing

While the tool is in DC Voltage mode, contact the probe tip to a POSITIVE circuit. The red LED will light and the LCD displays the voltage with a resolution of 0.01V, a high pitched tone will sound.

If contact the probe tip to a NEGATIVE circuit, the blue LED will light and the LCD displays the voltage with a resolution of 0.01V, a low pitched tone will sound.

If contact the probe tip to an OPEN circuit, neither of the LED will light.(Figure 8)

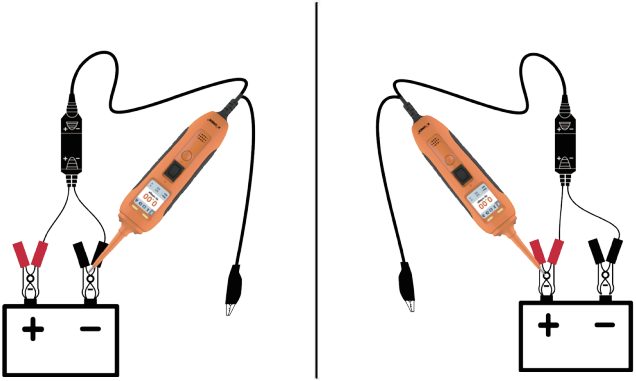

Figure 8

3.2 Continuity Testing

While the tool is in Resistance mode, using the probe tip with chassis ground or the auxiliary ground lead, continuity can be tested on wires and components attached or disconnected from the vehicle"s electrical system.

When the probe tip is contacting a good ground, the LCD will indicate “0 Ω ” and blue LED will be on, a low pitched tone will sound. （Figure 9）

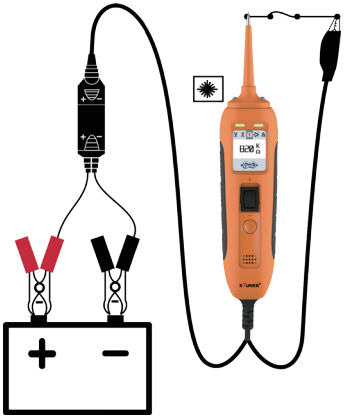

Figure 9

● In other cases, the LCD only indicates the resistance value. (Figure 10)

Figure 10

● If the resistance value is greater than 1MΩ , the LCD will show “1.”.

NOTE: You can use the probe tip to pierce the plastic insulation on a wire. This means that you can test the circuit without disconnecting anything.

3.3 Signal Circuit Testing

Once you extract a DTC from the vehicle and realize that troubleshooting begins with some kind of sensor circuit, there is a quick test you can perform to verify the code. Testing your sensor is easy while using the tool.

For example, you suspect there is a problem with your M.A.P. sensor circuit, then follow the procedure involved with testing this sensor:

● Set the tool in AC Voltage mode, using the probe tip with chassis ground or the auxiliary ground lead.（Figure 11）

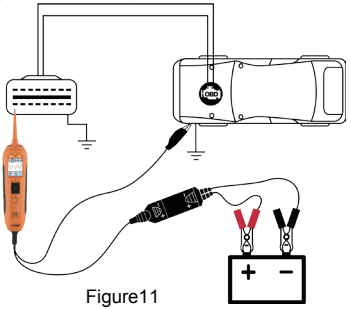

Figure11

● Connect vacuum pump to MAP sensor.

● Contact the probe tip to the MAP sensor positive terminal and observe the LCD readings which should be a sine wave in normal condition.

● Apply vacuum.

● Release vacuum and observe the LCD readings.（Figure 12）

Figure 12

If the LCD readings are abnormal, there is a problem with this sensor.

3.4 Activating Components in Your Hand

While the tool is in DC Voltage mode, by using the probe tip in connection with the auxiliary ground lead, components can be activated right in your hand, thereby testing their functions.

Connect the auxiliary ground lead to the negative terminal or ground side of the component being tested. Then contact the probe tip to the positive terminal of the component, the blue LED should light, indicating continuity through the component.

While keeping an eye on the blue LED, quickly press and release the power switch forward. If the blue LED went out and the red LED came on, you may proceed with further activation. Rock the power switch forward and hold it down to provide power to your component. With the power switch rocked forward, power will flow from the positive lead on the battery into the probe tip, through the tip into the component‟s positive terminal, into the component and out of the component, through the auxiliary ground lead and back into the tool, and back to the vehicle”s battery”s ground. (Figure 13)

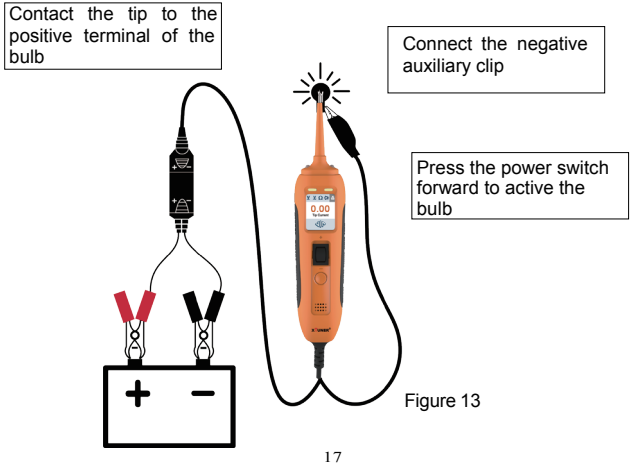

Figure 13

If the circuit breaker tripped, the tool has been overloaded. This could happen for the following reasons:

- The contact you are probing is a direct ground or negative voltage.
- The component you are testing is short-circuited.
- The component is a very high current component (i.e., starter motor).

If the circuit breaker is tripped, reset it by waiting for it to cool down (15 sec.) and then Reboot the device.

3.5 Testing Trailer Lights and Connections

While the tool in DC Voltage mode, clip the auxiliary ground lead to the trailer ground, probe the contacts at the jack and then apply voltage to the probe tip. This lets you check the function and orientation of the connector and trailer lights. (Figure 14)

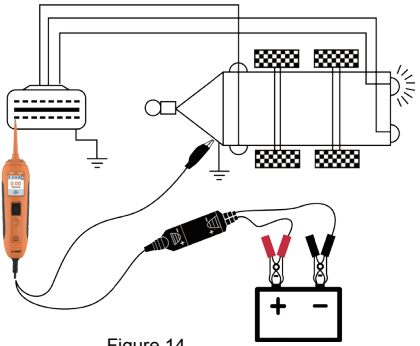

Figure 14

If the circuit breaker tripped, that contact is likely a ground. Reboot the device by letting it cool down for 15 seconds until it clicks into place.

3.6 Activating Components in The Vehicle

While the tool in DC Voltage mode, contact the probe tip to the positive terminal of the component, the blue LED should light, indicating continuity to ground. While observing the blue LED, quickly depress and release the power switch forward. If the blue LED went out and the red LED came on, you may proceed with further activation. (Figure 15) If the blue LED went off at that instant or if the circuit breaker tripped, the tool has been overloaded. This could happen for the following reasons:

- The contact you are probing is a direct ground.
- The component you are testing is short-circuited.
- The component is a very high current component(i.e., starter motor).

If the circuit breaker is tripped, Reboot the device by waiting for it to cool down(15 sec.)

WARNING : Haphazardly applying voltage to certain circuits can cause damage to a vehicle's electronic components. Therefore, it is strongly advised to use the vehicle manufacturer's schematic and diagnosing procedure while testing.

NOTE : When powering up components, you can increase the life of power switch if you first press the switch, then contact the tip to the component. The arcing will take place at the tip instead of the contacts of the switch.

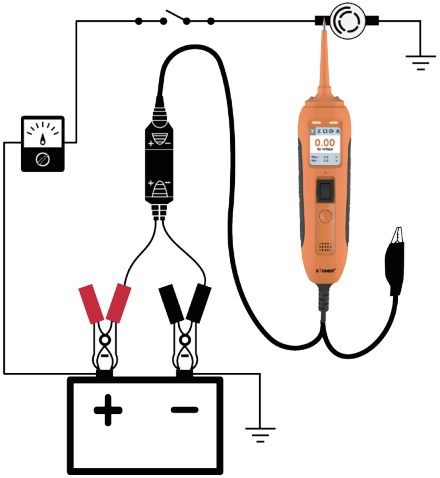

Figure 15

3.7 Activating Components w/Ground

While the tool in DC Voltage mode, contact the probe tip to the negative terminal of the component, the red LED should light. While observing the red LED, quickly depress and release the power switch rearward. If the red LED went out and the blue LED came on, you may proceed with

further activation. (Figure 16) If the blue LED went off at that instant or if the circuit breaker tripped, the tool has been overloaded. This could happen for the following reasons:

- The contact you are probing is a direct positive voltage.
- The component you are testing is short-circuited.
- The component is a very high current component(i.e., starter motor).

If the circuit breaker is tripped, reset it by waiting for it to cool down (15 sec.) and then Reboot the device.

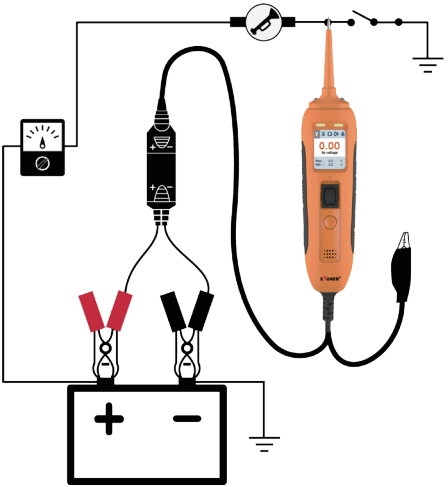

Figure 16

WARNING : With this function, if you are contacting a protected circuit, a vehicle's fuse can be blown or tripped if you apply ground to it.

3.8 Checking for Bad Ground Contacts

Probe the suspected ground wire or contact with the probe tip.

Observe the blue LED. Depress the power switch forward then release. If the blue LED went out and the red LED came on, this is not a true ground..

If the circuit breaker tripped, this circuit is more than likely a good ground. Keep in mind that high current components such as starter motors will also trip the circuit breaker.

3.9 Following & Locating Short Circuits

In most cases a short circuit will appear by a fuse or a fusible link blowing or an electrical protection device tripping (i.e., a circuit breaker). This is the best place to begin the search.

- Remove the blown fuse from the fuse box.
- Use the probe tip to activate and energize each of the fuse contacts. The contact which trips the circuit breaker is the shorted circuit. Take note of this wire"s identification code or color.
- Follow the wire as far as you can along the wiring harness.

Here is an example for this application.

● If you are following a short in the brake light circuit, you may know that the wire must pass through the wiring harness at the door sill. Locate the color-coded wire in the harness and expose it.

● Probe through the insulation with the probe tip, and depress the power switch forward to activate and energize the wire.

● If the circuit breaker tripped, you have verified the shorted wire. Cut the wire and energize each end with the probe tip. The wire end which trips the circuit breaker again is the shorted circuit and it will lead you to the shorted area.

● Follow the wire in the shorted direction and repeat this process until the short is located.

3.10 Red/Blue Polarity LED

The Red/Blue Polarity LED lights up when the probe tip voltage matches the battery voltage within ±0.8 volts. It is added information that could be valuable to the technician.

If the circuit you are testing is not within a 0.8 volt (plus or minus) of supply voltage, you will see the voltage reading on the LCD but you will not hear a tone or see a red or blue LED. This tells you either you have a voltage drop in excess of 0.8 volt from battery voltage or you are probing a circuit that has an increase of a 0.8 volt or more over battery voltage.

To determine battery voltage, simply remove the tip from the circuit and press the power switch forward. Battery voltage will then be displayed on the LCD. The difference between the battery voltage and what is read on the circuit is either voltage drop or voltage increase. This allows you to determine a voltage drop without running back to check the battery. It"s just another one of time saving feature the tool has.

4. Test Tool Know-how

(1) Is the computer and air bag safe?

The tool LED and LCD pull no more than 1 milliamp of current, therefore when using it as a test light or multimeter it is computer and airbag safe. However, pressing the power switch is a different story. When you press the switch forward, you are conducting full battery current to the tip of the probe. There is a nice safety feature built into the tool. Simply connect the extra ground lead to the tool and press the power switch forward until it trips the circuit breaker. This will prevent power from going to the tip but still allow you to use the tool as a multimeter.

(2) Why do I have no power at the tip when I am pressing the power switch forward but the red LED is on?

The power switch goes through a lot. It is one of the few things that go wrong with the tool. The switch is a consumable that needs to be replaced on occasion. We have made it real simple to not only change it but also buy a new switch. The switch can be snapped out and replaced in seconds.

You can buy switches from your IDUTEX authorized tool supplier.

The tool with the Rocker Switch slots makes it easy to replace a worn switch in the field without having to send it in for repair.

Power Switch replacement procedure:

- Remove the worn switch with a pry tool. Be careful when applying force. (Figure 17)

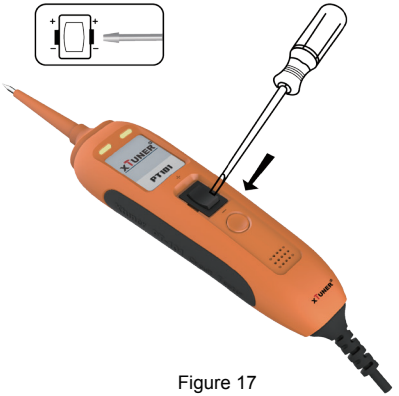

Figure 17

- Make sure to install the switch straight and press until flush with casing. (Figure 18)

Figure 18

It is recommended you get two when buying. One for us to provide, and the other for additional cost. This will fix your tool now and give you a spare so you won't experience any down time in the future.

5. Equipment Repair

5.1 Product acceptance

When receiving the product, please be sure to open the package inspection. If there are any defects, omissions or other abnormal conditions, please keep the relevant documents of the product and contact us immediately, otherwise it will be deemed as waiving the claim.

5.2 Product warranty

Users and distributors who purchase IDUTEX products through normal procedures enjoy one year of free product warranty services. Warranty service is limited to failures caused by human factors under normal use, such as: wrong use, improper operation, unauthorized modification or disassembly, failure caused by cleaning,accidents due to transportation, product falling, vibration, natural disasters, improper storage environment, Failure caused by improper maintenance, etc., is not covered by the warranty.

5.3 Product warranty process

Send the product to your local dealer or send it to IDUTEX, attach the proof of purchase, warranty card, fill in the following information: company name, contact person, mobile phone number, problem description, and attach the purchase invoice.

5.4 Over-warranty product maintenance regulations

If the product needs to be repaired by our company after the warranty period, we will charge the repair fee appropriately, and the freight will be borne by the user.

For products that have passed the maintenance period, our technical support personnel will fax the maintenance fee list to the user, and if it is repaired after confirmation by the user, the customer will remit the repair cost to the designated account of our company after confirmation. Maintenance costs to the account, my company can be repaired.

6 Contact Us

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● Any questions or need technical support, please email us : support@idutex.com; info@idutex.com.

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