



USER MANUAL

BT010

ELECTRONIC AUTO PARTS TESTER



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1. INTRODUCTION



The **BT010 Electronic Auto Parts Tester** was especially designed to test components of the electrical and electronic systems in motor vehicles.

The following automotive components can be tested:

- Sensors that provide variable voltage, variable frequency and pulse signal. Some examples of these sensors are: TPS, EGR, MAF, CKP, temperature sensors, magnetic sensors, Hall sensors, fuel level meters, etc.
- Electronic or electromechanical regulators for alternator, 12 or 24 Volts, type A or type B, common or controlled by the ECU type PD or PWM. BSS and LIN type regulators controlled by the ECU (Electronic Control Unit) can be tested to check the stand-alone adjustment voltage
- Electronic ignition modules controlled by a pickup coil or by the vehicle's ECU
- Electronic or contact breaker points ignition coils. This allows for testing coils with built-in ignition module, and coils with two, four or six high-voltage outputs. In addition to the high-voltage spark gap test, a kilovolt meter is also available to measure the output voltage from the coil and reach a more accurate diagnosis of the status of the ignition coil
- Electrical parts that require DC power supply in the 12 or 24 Volt range, such as: common and halogen lamps, horns, alarms, electric fans, windshield wipers, etc.
- Other electrical parts, such as: alternator rotors, alternator rectifiers, rectifier diodes, light and horn relays, flasher relays, starter motor auxiliary relays, oil sensors, etc.

It is NOT possible to test alternators or starter motors with this equipment, because they are parts that require a special condition and high operating currents that cannot be supplied by the Tester's internal power supply. Fuel pumps can be powered with the Tester, but it must be taken into account that for proper testing a mechanical assembly is required that allows for measuring flow, pressure and current.

The Tester works with 110/220 Volts AC power voltage. The voltage should be selected with the switch at the back of the equipment, which comes set to 220V by default.

The Tester is delivered with the following wiring harnesses and testing accessories:

1.1. A set of cables for tests using the power supply (PU01):



1.2. A set of cables for testing ignition coils or sensors (PU02):



1.3. An accessory for testing regulators controlled by the vehicle's ECU:



1.4. An auxiliary coil for testing ignition modules and propulsion coils (BA01):



1.5. A high-voltage probe (KV40):



NOTE: The high-voltage probe (KV40) is installed at the back of the Tester.

1.6. An auxiliary lamp for testing regulators, flasher relays and others (LA01):



1.7. An auxiliary resistor, for testing Hall type sensors (RA01):



1.8. A wiring harness for regulator testing (RM01):



IDENTIFICATION OF THE REGULATOR TESTING HARNESS (RM01)			
TEST TIP COLOR	COLOR	SYMBOL USED	NAME
RED		D+	Triodiode
GREEN		B+, S, IG	Positive from Battery
BLACK		D-	Ground
YELLOW		DF	Field
ORANGE		L	Lamp
BLUE		W, V	Stator

1.9 A wiring harness for ignition module testing (RM02):



IDENTIFICATION OF THE MODULE TESTING HARNESS (RM02)			
TEST TIP COLOR	COLOR	SYMBOL USED	NAME
RED		B+	Positive from Battery
BLACK		Ground	Ground
ORANGE		+ Signal	Distributor Signal
VIOLET		- Signal	Distributor Signal
GREEN		Coil	Negative from Coil
BLUE		Sensor	Logical Tip

The testing harnesses are installed at the front of the equipment, using the corresponding connector. These are not interchangeable, so there is no possibility of error in the connection. It is important to note the right position of the harness connectors. They should enter smoothly. If you try to connect them in reverse position or force them in, the connection pins may be damaged.

NOTE: The catalogue of images with detailed testing information for each element is available at www.gauss.com.br/en/bt010.

2. AUTO PARTS TESTER DESCRIPTION

It is advisable to read the content of this manual before using the Tester. The four main testing modules that make up the equipment will be described in this section:

- Sensor Testing Module
- Power Supply Testing Module
- Regulator Testing Module
- Ignition Coil/Module Testing Module

2.1 Sensor Testing Module



It consists of a 2x16 character LCD screen, three plugs and a push button, allowing for testing the sensors as described in section 3.1 - Sensor Testing.

2.2 Power Supply Testing Module

This consists of a DC power supply with 12 and 24 Volts, with maximum current capacity of 10 Amperes. This module has a digital screen that shows the voltage (Volts) or current (Amperes) provided. Right beneath the digital screen is a switch for change the unit of measure between "VOLTS" and "AMPS".

NOTE: In case of short-circuit, the power supply is immediately deactivated to prevent damage. To reactivate it, press the "POWER SUPPLY/RESET" button.



When the Tester is turned on, the power supply testing module will be deactivated. To turn it on, press the "POWER SUPPLY/RESET" button. The default start-up voltage is 12 Volts. To switch to 24 Volts, press the corresponding button.

2.3 Regulator Testing Module



The regulator testing module consists of:

- Red button, "ALTERNATOR REGULATOR" – starts up the regulator testing module. To exit, press the "POWER SUPPLY/RESET" button
- "TYPE A" and "TYPE B" switch – selects the type of regulator field to be tested
- "TEST" switch – hold it down to perform the test on the regulators
- LEDs in the colors yellow, green and red identified as: "LOW, NORMAL, HIGH" – serve to determine the voltage range of the regulator ("SET POINT")
- 25-pin connector for connecting the regulator testing harness (RM01)
- "FIELD" lamp – works like the alternator rotor and allows for observing the control performed by the regulator
- "PILOT" lamp – works as the lamp on the dashboard of vehicles and indicates a failure in the loading system

NOTE: The rated voltage of the regulator is selected with the "12" or "24" Volts buttons on the power supply testing module. The adjusted voltage of the regulator is shown on the digital screen, on the left side.

To end the test with regulators, press the "POWER SUPPLY/RESET" button.

2.4 Ignition Coil/ Module Testing Module



The Ignition Coil and Ignition Module testing module only operates at 12 Volts. In order to enter this module, the Tester must be in starting condition, in which the power supply is at 12 Volts and the regulator testing module is deactivated.

This module consists of the following parts:

- "MODULE/COIL" button – allows for starting up the testing system. To exit, press the "POWER SUPPLY/RESET" button

- 25-pin connector - connection for the ignition module testing harness (RM02)
- “SPEED” switch – allows for reducing or increasing signal frequency, simulating the speed variation in the vehicle
- “SIGNAL SELECTOR” switch – allows for selecting the type of input signal for operating the ignition module
 - o Position 1 – magnetic “PICK-UP” signal
 - o Position 2 – “HALL” effect signal
 - o Position 3 – default “RENAULT” signal
 - o Position 4 – default “DELCO-DIS” signal

The testing method is described in section 3.4 of this manual

- Spark Gap - allows for observing the high-voltage spark when testing the ignition coils and modules
- “R/EXT”, “R/INT” and “NEG” plugs – connection for cables for testing the ignition coils (PU02)
- High-voltage cable for testing the ignition coils
- 3-pin DIN type connector – High-Voltage Probe connection (KV40)
- High brightness LEDs – allow for analyzing some ignition module output signals, testing optical sensors and Hall type signals built into the modules
- Digital screen – indicates the high-voltage value (in Kilovolts) generated by the tested ignition coil

NOTE: If a short circuit occurs between the **RED** and **BLACK** test tips of the module testing harness (RM02), the power supply will be deactivated immediately to prevent damage. To reactivate the ignition coil and module testing module, press the “POWER SUPPLY/RESET” button and then the “MODULE/COIL” button.

3. TESTING METHODS

3.1 Sensor Testing

This module allows for testing sensors with variable voltage or variable frequency signals. In addition, it allows for checking the output signal from the regulators controlled by the vehicle’s ECU and the output signal to the tachometer in some ignition modules.

The sensor testing module is always active, so that it can be used by other testing modules of the equipment.

To start the test, first select the type of signal to be measured: Variable voltage or variable frequency. There are three plugs: **RED**, reference voltage +5 Volts; **GREEN**, input signal to be measured, and **BLACK**, ground signal.

The procedures to test each type of sensor can be found on the website www.gauss.com.br/en/bt010

3.2 TESTS WITH THE POWER SUPPLY MODULE

The power supply allows for testing automotive parts that require 12 or 24 volts for operation.

To use it, turn on the Tester, press the “POWER SUPPLY/RESET” button and the green LED should light up. The initial available voltage is 12 Volts. To change it to 24 Volts, press the 24V button. The power output plugs (positive and negative) are right beneath the “12V” and “24V” selection buttons. They are used to supply power to the part to be tested.



The digital screen shows the DC voltage or current consumed. Right below the screen is a switch that allows for select reading in Volts or Amperes.



ATTENTION: The maximum current capacity of the power supply is 10 Amperes, so don’t test parts that consume current above this threshold to avoid overloading the power supply, which could damage it.

The power supply has short-circuit protection. If this occurs, to reactivate it, remove the short circuit between the testing cables and press the “POWER SUPPLY/RESET” button.

3.2.1 Lamp Testing

First select the voltage at the Tester power supply (12 Volts or 24 Volts) that corresponds to the rated voltage of the lamp, then connect the connection cables at the points indicated below, remembering that incandescent lamps have no polarity.



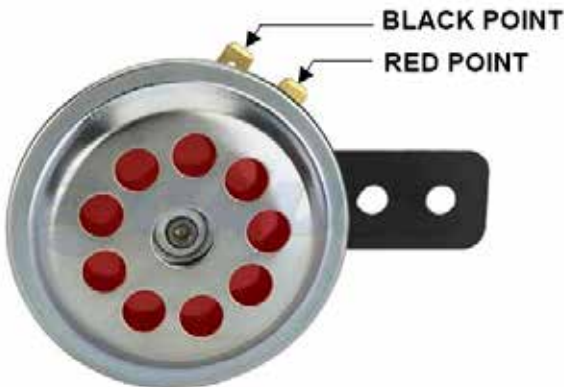
NOTE: To test halogen lamps with three terminals (two filaments), connect the connection cables for the “Low Light” test and then for the “High Light” test. If one of the filaments doesn’t light up, the lamp is defective.

If the voltage applied to the lamp does not match the manufacturer’s specification, it may present low light or immediately burn out.

ATTENTION: Remember to NEVER hold the halogen light by its glass lamp. This could expose you to serious burns when testing and damage the lamp. Preferably, wear safety gloves and protective goggles to prevent accidents.

3.2.2 Horn Testing

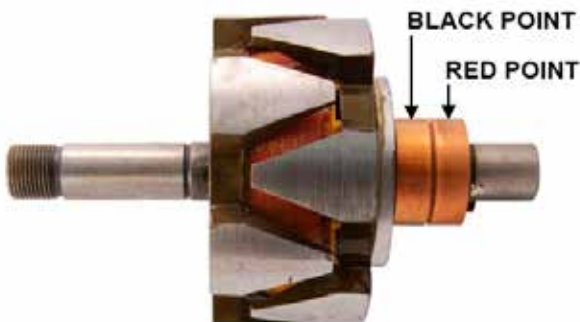
Select the voltage at the Tester power supply (12 Volts or 24 Volts) corresponding to the horn specification, then connect the connection cables according to the instructions below.



NOTE: Electronic horn models have defined polarity at the terminals and the correct connection to the power supply must be followed for proper functioning. Horn sold in bass and treble pairs should be tested separately to prevent overloading and damage to the power supply.

3.2.3 Alternator Rotor Testing

To measure rotor consumption, select the "AMPS" option on the power supply testing module and set the voltage to the value for the rotor specification (12 Volts or 24 Volts). Connect the connection cables to the collector rings on the rotor as indicated in the image below. Watch the current consumption of the rotor on the digital display. If the values are not close to 4.0 Amperes for 12-Volt alternator rotors or 2.0 Amperes for 24-Volt alternator rotors, the rotor is defective.



To check the condition of the rotor winding, firmly connect the connection cables to the collector rings and, with the power supply connected, remove one of the cables quickly, noting the spark that forms between the rotor ring and the tip of the testing cable. The spark should be

bright and white. If the spark is very weak and accompanied by yellow sparks, the rotor may have a defective winding with shorted turns and should be replaced.

NOTE: If at any time you notice that the digital display has a voltage other than 12 or 24 Volts, contact technical support and ask for a technical review of the Tester to check the condition of the power supply, and do not use it. Remember that powering a component with voltage higher than those designed can cause damage to the component.

3.3 Alternator Regulator Testing

First, find the technical information for the model to be tested on the website www.gauss.com.br/en/bt010:

- Press the "ALTERNATOR REGULATOR" button
- Select the rated voltage of the regulator (12 Volts or 24 Volts)
- Select the type of regulator: TYPE A or TYPE B. TYPE A is when one of the alternator rotor power supply brushes is permanently connected to the POSITIVE battery terminal and TYPE B is when one of the alternator rotor brushes is permanently connected to ground (NEGATIVE battery terminal)
- Connect the testing harness (RM01) as indicated in the instructions for each regulator, abiding by the colors corresponding to each function
- In regulators with a "LAMP" pin, the PILOT LAMP and the YELLOW LED on the Tester's "SET POINT" indicator should light up
- Press and hold the "TEST" button during the regulator test. Watch the digital screen to check the adjusted voltage and compare it to the value informed for the model. Check the "SET POINT" LEDs: GREEN LED indicates that the adjusted voltage is within the NORMAL range (between 13.8 and 14.9 Volts), but there are exceptions duly shown on the website. In regulators with lamp pin, the PILOT LAMP should go out, indicating that the lamp control is working properly. The "FIELD" lamp should light up and, in some regulator models, a slight oscillation may be observed, demonstrating the field current control

NOTE: Wait approximately 5 seconds for the reading to stabilize. Some regulators have "LAMP" and "IGNITION" pins and reversing the connection can cause damage to the regulator being tested.

Regulators with "AUX" terminal - regulator signal output terminal to control an auxiliary relay in addition to the lamp. To observe this control, connect the auxiliary lamp (LA01) supplied with the Tester between the orange and black tips of the cable harness (RM01). Before performing the test, the Tester's pilot lamp will light up and the auxiliary lamp (LA01) will remain off. During the test, the pilot lamp should turn off and the auxiliary lamp (LA01) should light up.

Regulators with "DFM", "FR", "LI" terminal - regulator pulse output terminal to the vehicle's Electronic Control Unit to inform about the regulator's functioning. To

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check its operation, use the sensors test module in the Frequency function. Using the PU02 cable set, connect the green tip to the "IN" input and the red tip to the "+ 5V REF" input, then connect the green alligator clip to the DFM, FR or LI terminal attached with the red alligator clip (+ 5V REF). Perform the regulator test and, during the test, the DFM (FR, LI) signal output frequency and the percentage of the time that the signal remains high should appear on the LCD screen of the sensors test module.

Regulators with "P", "W" terminal - regulator pulse output terminal generally used for the vehicle's tachometer. To check its operation, use the sensors test module in the Frequency function. Using the PU02 cable set, connect the green tip to the "IN" input, and then connect the green alligator clip to the "P" or "W" terminal. During the test, the LCD display will show the output frequency to the tachometer.

Regulators with "D", "PWM" terminal - this regulator terminal is used by the vehicle's Electronic Control Unit to control the voltage set point. The Tester is supplied with a PD/PWM DRIVER that allows for testing this type of regulator by simulating the signal sent by the Electronic Control Unit to the regulator. To perform the test, follow the procedure below:

- Connect the green cable of the DRIVER to the **GREEN** cable of the regulator testing harness (RM01) and the black cable of the DRIVER to the black cable of the harness
- Connect the white cable of the DRIVER to the "D" or "PWM" terminal of the regulator
- If the regulator is a "PD" type, connect the blue cable of the DRIVER to the "P" terminal of the regulator
- Connect the regulator testing harness (RM01) as indicated on the instructions and perform the test

3.3.1 Use of PD/PWM Driver

The "PD/PWM" DRIVER is a device for testing regulators controlled by the vehicle's Electronic Control Unit.

To start the test using this device, select the control method corresponding to the regulator via the PD/PWM switch. Connect the green and black cables to the respective cables on the regulator testing harness (RM01). Connect the white cable to the input pin and, when necessary, the blue cable to the output pin of the regulator, corresponding to communication with the vehicle's control unit.

NOTE: Some regulators have different connections and the identification of pins is available for each model individually.

Switch "V1" and "V2" may be used to vary the input signal to check whether the regulator is responding to the selected control method.

The **GREEN** LED indicates the driver signal output (simulating the electronic control unit) to the regulator

and the yellow LED indicates the regulator communication signal output to the electronic control unit.



To perform operating diagnostics on the PD/PWM Driver:

Test the "PWM" signal: Connect the green and black cables to the respective cables on the regulator testing harness (RM01). Activate the regulator testing module. Connect the white wire to the blue wire of the driver. The yellow LED should flash, indicating proper communication. The green LED stays on.

Test the "PD" signal: Press the TYPE A button on the regulator testing module. Connect the green and black cables to the respective cables on the regulator testing harness (RM01). Still on the regulator testing harness, connect the black cable to the yellow cable. Hold the "TEST" button down and observe the green LED that should go out while the voltage increases, indicating proper functioning of the "PD" signal.

3.4 Ignition Module Testing

First, find the technical information for the model to be tested on the website www.gauss.com.br/en/bt010:

- Press the "POWER SUPPLY/RESET" button to activate the equipment's power supply
- Connect the testing harness (RM02) as indicated for the model, abiding by the colors corresponding to each module function
- Select the type of input signal corresponding to the module being tested. Note: the type of input signal is indicated in the module instructions on the website. The Tester has four types of input signals: Signal 1 (Pick-up) is the signal for modules controlled by magnetic effect. Signal 2 (Hall) is the signal sent by the electronic control unit to control the ignition module. Signal 3 (Renault) is used in some Renault ignition modules and signal 4 (Delco) is used in some Chevrolet ignition modules
- Press the "MODULE/COIL" button to activate this testing module. A high-voltage spark should appear in the spark gap. To test the module at different speeds, press the "SPEED" button up to increase the module tripping speed and down to reduce speed. At the top of the "SPEED" button is a blinking yellow LED, indicating the trip output. If there is no high-voltage spark in the spark gap, the module is defective

- To end the test, press the “POWER SUPPLY/RESET” button

NOTE: If a short circuit occurs between the RED cable and the BLACK cable of the module testing harness (RM02), the power supply is immediately deactivated. Press the “POWER SUPPLY/RESET” button and then the “MODULE/COIL” button to reactivate the ignition module testing module.

NOTE 2: In some cases, it may be necessary to reverse the connection of cables corresponding to the distributor signal. Where only the + Signal tip is indicated, the other tip (- Signal) is connected to the ground.



3.4.1 Use of Auxiliary Coil

In the coil testing module, connect the red cable from the auxiliary coil (BA01) to the “R/EXT” plug and the black cable from the auxiliary coil (BA01) to the “NEG” plug. Activate the Ignition Coil/Module testing module and bring the metal tip of the coil closer to the location indicated in the instructions to activate the ignition modules that require the use of this accessory.

3.4.2 Ignition Coils

The Ignition Coils can be divided into two groups: ignition coils with integrated module and ignition coils without integrated module. Both may have one, two, four or six high-voltage outputs.

To test them, first find the technical information for the model to be tested on the website www.gauss.com.br/en/bt010:

- Press the “POWER SUPPLY/RESET” button to activate the power supply testing module. The voltage should be set to 12 Volts.
- Connect the testing harness (RM02) as indicated in the instructions for each coil, abiding by the colors corresponding to each function
- At the coil’s high-voltage output, connect one of the Tester’s two high-voltage cables. If the coil has two or more outputs, a pair of high-voltage outputs should be tested each time. The instructions indicate which high-voltage outputs form pairs. The cables carry the high voltage to the SPARK GAP, where the leap of sparks can be observed

during the coil testing

- In coils with built-in ignition module, set the trip signal to the number 2 (Hall)
- Press the “MODULE/COIL” button and note that a high-voltage spark appears in the spark gap. If the coil has two outputs under test, there will be two high-voltage arcs in the spark gap
- To test the coil at different speeds, press the “SPEED” button up to increase tripping speed and down to reduce speed
- To end the test, press the “POWER SUPPLY/RESET” button



ATTENTION: AFTER CONNECTING ALL THE CABLES, PLACE THE IGNITION COIL ON A NON-METALLIC BASE TO PREVENT ACCIDENTS. WEAR GLOVES THAT WITHSTAND HIGH VOLTAGE WHEN PERFORMING TESTS. IF YOU DON'T, YOU MIGHT RECEIVE AN ELECTRIC SHOCK. DO NOT REMOVE THE HIGH-VOLTAGE CABLES FROM IGNITION COIL DURING THE TEST FOR ANY REASON, BECAUSE HIGH-VOLTAGE SPARKS MAY JUMP TO THE COIL SUPPLY CABLES AND EVEN TO THE EQUIPMENT’S INTERNAL ELECTRONIC CIRCUITS, CAUSING DAMAGE TO THE EQUIPMENT OR TO THE COIL. FOR THIS REASON, JUST OBSERVE THE SPARK LEAP IN THE TESTER’S SPARK GAP.

3.4.3 Using the Kilovolt Meter

The Kilovolt meter can be used as a supplement to the test described above. To use it, follow the procedure below:

- Install the HIGH-VOLTAGE PROBE at the 3-terminal DIN type connector at the back of the equipment.
- Activate the Ignition Coil/Module Testing Module. The digital screen will show the ignition coil’s output voltage value in Kilovolts
- To perform the test, bring the High-Voltage Probe closer to the point indicated in the image on the website www.gauss.com.br/en/bt010. It is crucial for the metal tip of the probe to touch the metal part of the coil’s high-voltage output, otherwise the voltage reading will be incorrect. If necessary, use a metal extender to achieve contact
- The technical information for ignition coils provide the high-voltage values for each model. In general, consider that an ignition coil for contact breaker points generates about 15.0 KV; an electronic ignition coil generates more than 20.0 KV and a DIS system coil (commonly called “Pen”) generates about 14.0 KV

3.4.4 Using the Logical Tip

In the “MODULES/COILS” testing module, a LOGICAL TIP is available on the BLUE cable of the module testing harness (RM02). This tip allows for running diag-

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nostics on the state of cables/terminals of the Module Testing (RM02) and Regulator Testing (RM01) harnesses.

To check the status of any of the cables, connect the **BLUE** (logical tip) cable of the module testing harness (RM02) to the tip of the cable you want to check and the **GREEN** or **RED** LED should light. If no LED lights up, this means that the cable being checked is broken. During the test, avoid touching the logical tip clips and the wiring harness tips to prevent false readings.

The logical tip also allows for testing "HALL" and "OPTICAL" type sensors, as per the testing instructions for each Module or Sensor.

The **GREEN** LED on indicates a LOW voltage level, and the **RED** LED on indicates a HIGH voltage level. If the two LEDs light up at the same time, this indicates the presence of a pulsed signal that changes from high to low level.

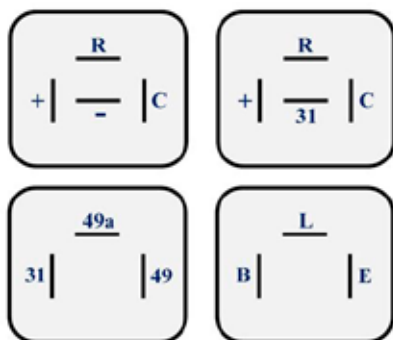
3.5 OTHER TESTS

3.5.1 Flasher Relay Testing

Flasher Relays can be classified into two types: those that use a ground terminal for operation and those that do not. In both types, there is an "electronic" version when using electronic components in the build, and an "electromechanical" version when using thermal elements.

Flasher Relay with Ground Terminal:

This relay has three terminals or four when it has an output for the pilot lamp. Below is the most common distribution of terminals, and a table with the symbols used by manufacturers to identify the connection terminals:



TERMINAL	SYMBOLS	TIP
Positive supply	+ ; 49 ; B	Green
Ground	- ; 31 ; E	Black
Charge	C ; 49a ; L	Yellow
Pilot lamp	R	Auxiliary Lamp

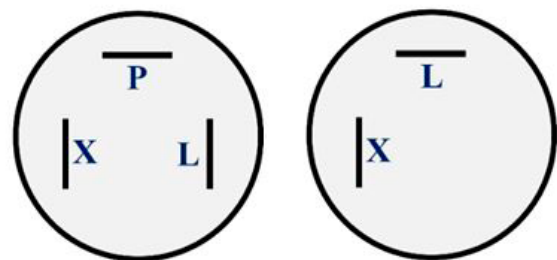
Testing procedure:

- In the regulator testing module, select "TYPE B"
- Select the rated voltage of the relay (12 Volts or 24 Volts)

- Connect the cables of the regulator testing harness (RM01) using the terminal identification table above as a guide
- Press the "ALTERNATOR REGULATOR" button. The FIELD lamp should start coming on and off, indicating that the relay is in good condition
- If the relay has a pilot lamp terminal, connect the Auxiliary Lamp (LA01) between the relay's lamp output and the ground wire
- To end the test, press the "POWER SUPPLY/RESET" button

Flasher Relay without Ground Terminal:

This relay has two terminals or three if it has a terminal for the pilot lamp. The distribution of connection terminals is shown below:

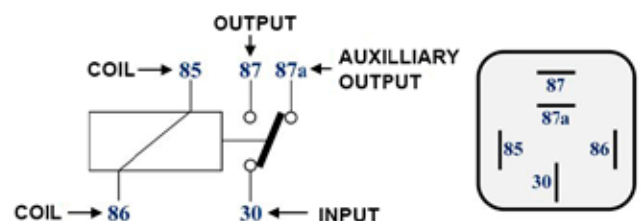


Testing procedure:

- In the regulator testing module, select "TYPE B"
- Select the rated voltage of the relay (12 Volts or 24 Volts)
- Connect the tips of the regulator testing harness (RM01) as follows:
 - o Terminal X with green cable tip
 - o Terminal L with yellow cable tip
 - o Terminal P with Auxiliary Lamp (LA01), connecting the other end of the Auxiliary Lamp to the ground wire
- Press the "ALTERNATOR REGULATOR" button. The FIELD lamp should start coming on and off, indicating that the relay is in good condition
- To end the test, press the "POWER SUPPLY/RESET" button

3.5.2 Relay Testing

The most common relays on the market have 4 or 5 terminals identified as follows:



Some manufacturers include a small diagram printed on the relay. Use it as a guide.

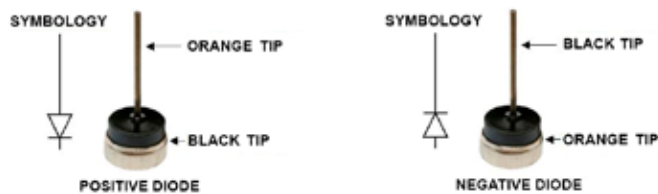
The distribution of terminals may change from one relay to another. To test them, follow the procedure below:

- Activate the regulator testing module
- Select the rated voltage of the relay (12 Volts or 24 Volts)
- Connect the BLACK cable to terminal “30” and to terminal “85”
- Connect the ORANGE cable to terminal “87”
- Touch the GREEN cable to terminal “86”. The relay activation should be heard and the pilot lamp should light up
- If it’s a 5-terminal relay, change the ORANGE cable to terminal “87a” and repeat the procedure

3.5.3 Diode Testing

Diodes are used in alternator rectifiers (rectifier plates, triodiode). Its function is to allow the current to pass in a single direction.

3.5.3.1 Individual Diode

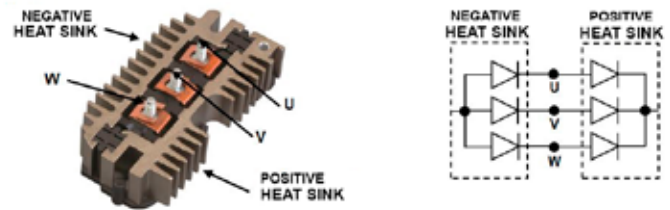


To test this type of diode, follow this procedure:

- Activate the regulator testing module
- Positive diode test:
 - o Connect the ORANGE cable to the rod and the BLACK cable to the base of the diode
 - o Watch the “PILOT” lamp, which should light up
 - o Reverse the cable connections. Now the “PILOT” lamp should not light up
- Negative diode test:
 - o Connect the BLACK cable to the rod and the ORANGE cable to the base of the diode
 - o Watch the “PILOT” lamp, which should light up
 - o Reverse the cable connections. Now the “PILOT” lamp should not light up
- If the lamp lights up at both connections during the test, the diode is in SHORT CIRCUIT and not working
- If the lamp does NOT light up at either of the two connections during the test, the diode is OPEN and not working

3.5.3.2 Rectifier

The rectifier testing procedure is similar to that of the individual diodes, with the particular detail that the diodes are grouped into heat sinks: Positive or Negative.



The figure above shows a rectifier and the equivalent symbology. To perform the test, follow the procedure below:

- Activate the regulator testing module
- Positive heat sink test:
 - o Connect the BLACK cable to the positive heat sink
 - o Touch the tip of the ORANGE cable to each of the phases (U, V, W)
 - o The “PILOT” lamp should come on when touching the orange cable to each phase
 - o Reverse the connections, securing the ORANGE cable to the positive heat sink
 - o Touch the tip of the BLACK cable to each of the phases (U, V, W)
 - o Now the “PILOT” lamp should not light up when touching the black cable to each phase
- Negative heat sink test:
 - o Connect the ORANGE cable to the negative heat sink
 - o Touch the tip of the BLACK cable to each of the phases (U, V, W)
 - o The “PILOT” lamp should come on when touching the black cable to each phase
 - o Reverse the connections, securing the BLACK cable to the negative heat sink
 - o Touch the tip of the ORANGE cable to each of the phases (U, V, W)
 - o Now the “PILOT” lamp should not light up when touching the orange cable to each phase
- If the lamp lights up at both connections during the test, the diode is in SHORT CIRCUIT
- If the lamp does NOT light up at either of the two connections during the test, the diode is OPEN
- If the rectifier has shorted or open diodes, the rectifier is defective and must be replaced

TECHNICAL SPECIFICATIONS OF THE BT010 ELECTRONIC AUTO PARTS TESTER	
Power Supply Voltage	127V or 220V (Selectable via switch)
Power on Standby	45 W
Power with Maximum Charge	310 W
Fuse	10 A / 250 V / 6 x 30 mm
Sizes	44 (L) x 36 (P) x 16 (A) cm
Approximate Net Weight	9,4 kg
Approximate Gross Weight	11,5 kg

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4. WARRANTY

The BT010 Electronic Auto Parts Tester has a one-year total warranty that covers spare parts and labor necessary for the eventual repair of any damage suffered by the equipment under normal usage conditions. It does not cover damage caused by accidents unrelated to use of the equipment, such as falls, liquid spills or fire.

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