AD100+
Smart Alternator Tester
Instruction Manual

The AD100+ is a handheld tester that is used to test and diagnose alternator charging problems by replicating the digital signals from a vehicle's ECU. The AD100+ tester can test an alternator while it is still installed on a vehicle or on a test bench.

The tester can provide information on whether the alternator's voltage regulator can communicate correctly with the vehicle's ECU and if the alternator responds correctly to the tester's simulated ECU input parameters.

The AD100+ can now be updated by NFC from a compatible Android mobile phone.

Regulator Testing Protocols:

COM, LIN, BSS(BSD)	Mercedes, Opel, Audi, BMW, Renault, VW, Ford
24V LIN GRC	Mercedes
SIG	Ford, Volvo, Mazda
P-D	Mazda
L-RVC	GM, Vauxhall, Opel
RLO	Toyota
iSTARS Combined Alternator-Starters	PSA *

an optional software upgrade is required
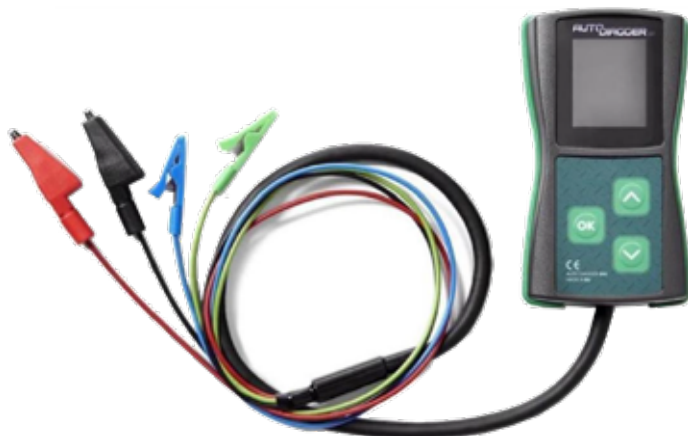
Lead Colour Code and Description

RC (Green)   COM signal connection.
M (Blue)   DFM digital field monitor.
B+ (Red)   Battery positive in tested circuit, tester power supply.
B- (Black)   Battery negative in tested circuit, tester ground.

The device powers on automatically after connecting power to the B+ and B- leads. The test subject selection menu will then appear. The desired parameter is selected by pressing the ▲ and ▼ buttons and confirmed by a short press on the OK button to enter the testing mode.

After pressing OK, the display will present the following information:
1. voltage of the tested circuit (large digits)
2. required voltage (small digits on the top of the display)
3. alternator load DF/DFM (%)

The green RC and blue M cables should be connected to the correct pins in the voltage regulator's socket. Some of the regulators may require connecting other signals (usually B+) with a separate cable to operate correctly.

The blue M cable can be left disconnected when testing in COM mode.

In the testing mode, buttons ▲ and ▼ will change the required voltage value. It should be monitored whether changing the required voltage causes a corresponding change in the alternator/regulator output, and whether the DFM reading matches the actual state.

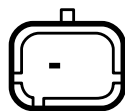Press and hold the OK button to leave the testing mode and return to the selection menu.
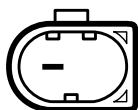
COM - LIN / BSS TESTING
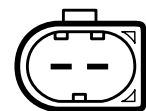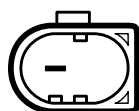
COM DFM   COM/LIN   COM/LIN2

LIN2   COM   LIN
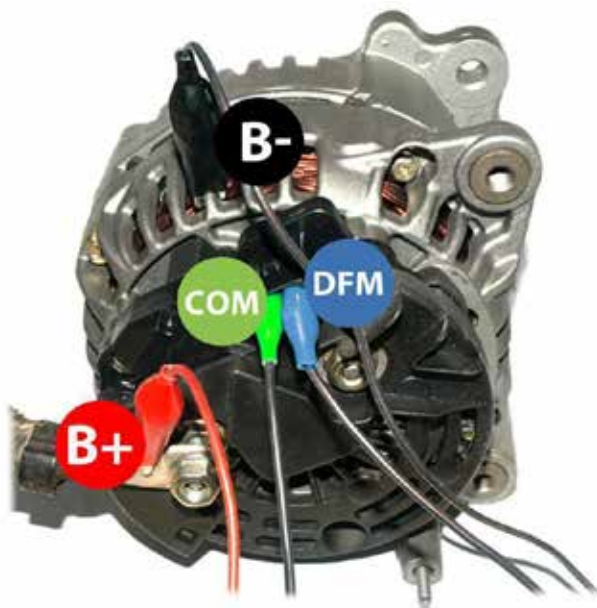
Alternator Connection:

COM pin	**RC (Green)**
DFM pin	**M (Blue)**
B+ connector	**B+ (Red)**
Alternator bracket/casing	**B- (Black)**

E38-2029 COM/LIN

Green **Blue**
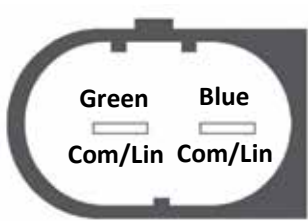
Com/Lin Com/Lin
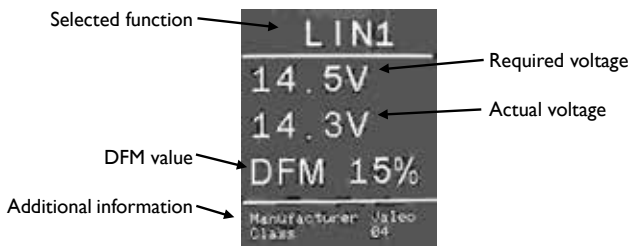
COM - LIN / BSS TESTING

Select the COM function from the main menu and confirm by pressing the OK button:

```
COM
RLO
SIG
P - D
L - RVC
```

The device will go into the COM testing mode and display the following information:

Selected function ➔ **LIN1**
14.5V ← Required voltage
14.3V ← Actual voltage
DFM value ➔ **DFM 15%**
Additional information ➔ Manufacturer Valeo
Class 04

During the test, after starting the alternator drive, the actual voltage value should correspond to the required value and the DFM value should correspond to the current alternator load.

Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.
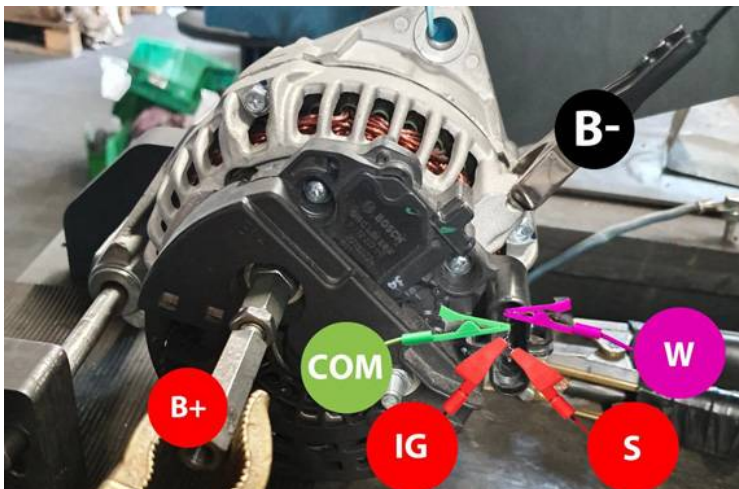
LIN 24v - GRC LIN Testing
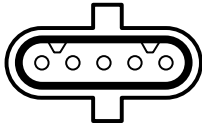
W LIN 15 S DFM

Alternator connection:

W pin   Existing tachometer connection.
LIN pin   **RC (Green)**
15 pin (IG)   Existing 15 / ignition connection.
S pin (Battery Sense)   Existing S / battery sense connection.
DFM pin   Leave disconnected.
B+ connection   **24V B+ (Red)**
Alternator bracket/casing   **24V B- (Black)**

The **M (Blue)** is left disconnected when testing.

The connection of the S, 15(IG), and W pins are connected independently of the AD100+, by using the connectors located in the vehicle or on the testbench.

LIN 24v - GRC LIN Testing

Select the LIN24 function from the main menu and confirm by pressing the OK button.

The device will go into the LIN24 testing mode and display the following information:
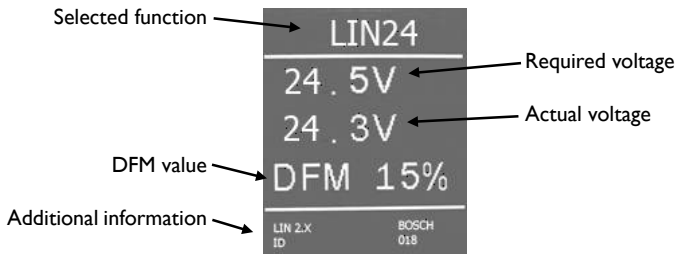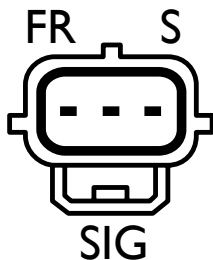

During the test, after starting the alternator drive, the actual voltage value should correspond to the required value and the DFM value should correspond to the current alternator load.

Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.

SIG - Testing

Alternator connection:

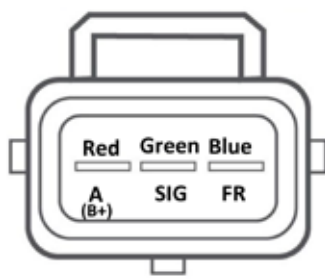|	
FR pin	**M (Blue)**
SIG pin	**RC (Green)**
S pin	Existing S / battery sense connection
B+ connection	**B+ (Red)**
Alternator bracket/casing	**B- (Black)**
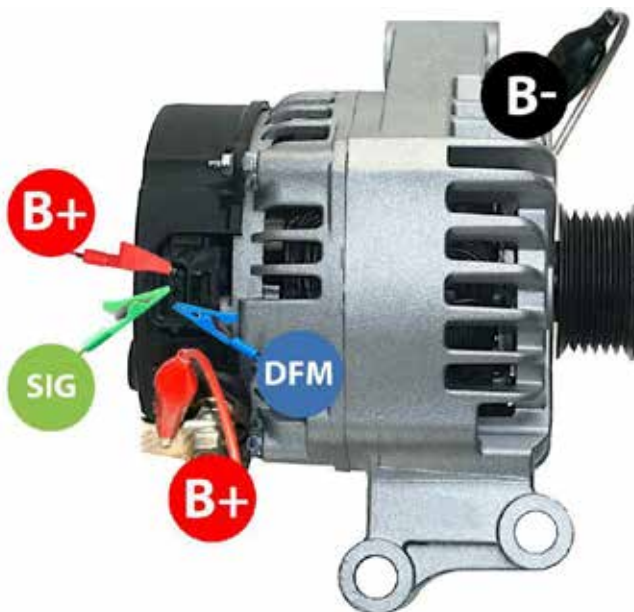
The connection of the S pin is connected independently of the AD100+, by using the connectors located in the vehicle or on the testbench.

E38-2013 SIG Autolite/Ford

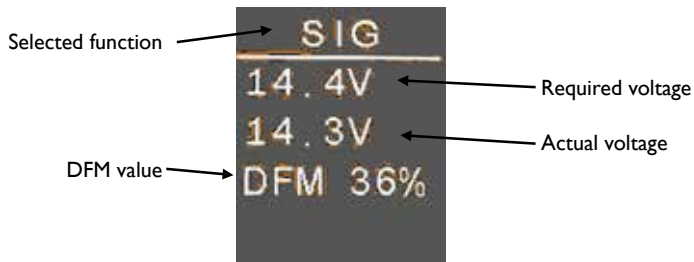Red Green Blue

A
(B+)   SIG   FR

SIG - Testing

During the test, after starting the alternator drive, the actual voltage value should correspond to the required value and the DFM value should correspond to the current alternator load.

Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.

After connecting the testing device, the main menu will appear on the display:

Select the SIG function and confirm by pressing the OK button. The device will go into the SIG testing mode and display the following information:

Selected function

Required voltage

Actual voltage

DFM value

P-D - Testing

D P   D P
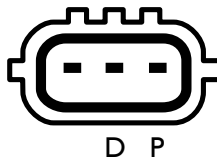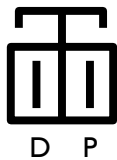
Alternator connection:

D pin	**RC (Green)**
P pin	**M (Blue)**
B+ connection	**B+ (Red)**
Alternator bracket/casing	**B- (Black)**
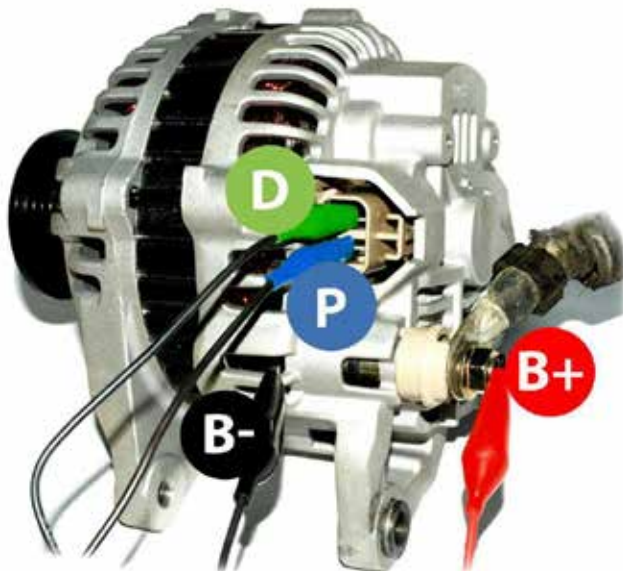
P-D - Testing

After connecting the testing device, the main menu will appear on the display:

```
COM
RLO
SIG
P-D
L-RVC
```

Select the P-D function and confirm by pressing the OK button.
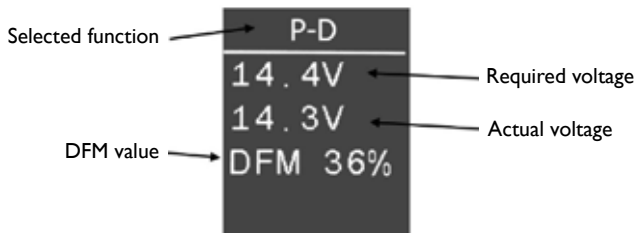
Selected function ⟶ P-D

14.4V ⟵ Required voltage

14.3V ⟵ Actual voltage

DFM value ⟶ DFM 36%

During the test, after starting the alternator drive, the actual voltage value should correspond to the required value. Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.

L-RVC - Testing
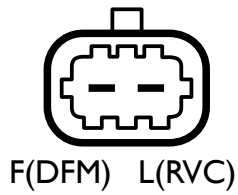
F(DFM)   L(RVC)

Alternator connection:

L(RVC) pin	**RC (Green)**
F (DFM) pin	**M (Blue)**
B+ connection	**B+ (Red)**
Alternator bracket/casing	**B- (Black)**

E38-2032 RVC/DFM GM

Blue — DFM
Green — RVC
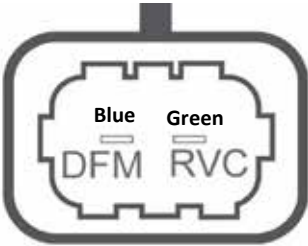
L-RVC - Testing

After connecting the testing device, the main menu will appear on the display:

```
COM
RLO
SIG
P-D
L-RVC
```
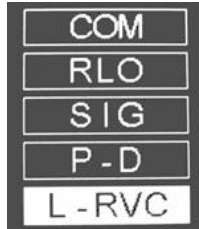
Select the L-RVC function and confirm by pressing the OK button. The device will go into the L-RVC testing mode and display the following information:
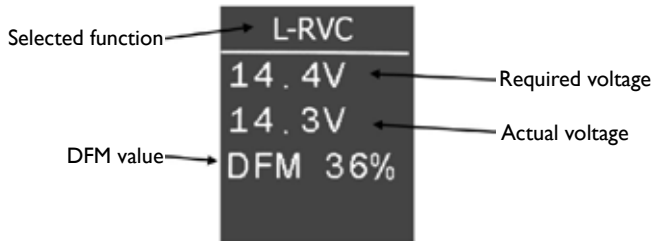
Selected function → L-RVC
14.4V ← Required voltage
14.3V ← Actual voltage
DFM value → DFM 36%
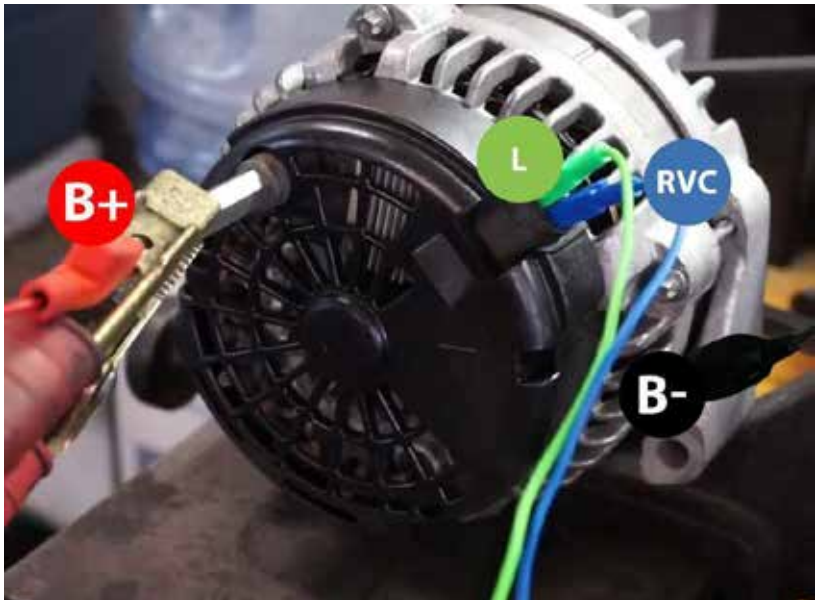
During the test, after starting the alternator drive, the actual voltage value should correspond to the required value and the DFM value should correspond to the current alternator load.

Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.

RLO - Testing
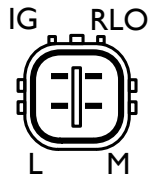
Alternator connection:

IG pin	Existing IG connection.
RLO pin	**RC (Green)**
L pin	Existing L (Control Lamp) connection.
M pin (DFM)	**M (Blue)**
B+ connection	**B+ (Red)**
Alternator bracket/casing	**B- (Black)**
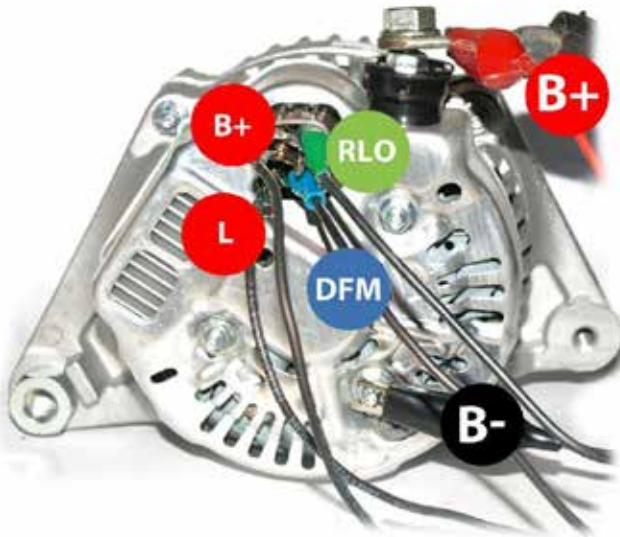
The connection of the L and IG pins are implemented independently of the AD100+, by using the connectors located in the vehicle or on the testbench.

E38-2014 RLO Denso

Red
B+

IG ⌐⌐⌐ RLO   **Green**

Test

Light

Black

L   M   **Blue**

RLO - Testing

After connecting the testing device, the main menu will appear on the display:

```
COM
RLO
SIG
P - D
L - RVC
```

Select the RLO function and confirm by pressing the OK button. The device will go into the RLO testing mode and display the following information:
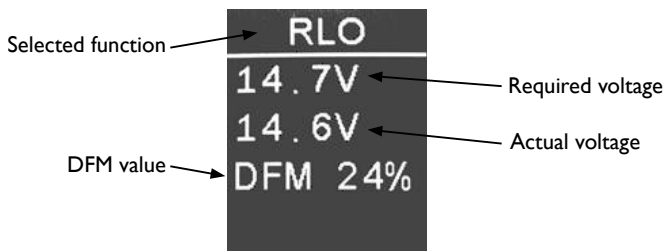
Selected function → **RLO**

14.7V ← Required voltage

14.6V ← Actual voltage

DFM value → DFM 24%

During the test, after starting the alternator drive, the actual voltage value should correspond to the required value and the DFM value should correspond to the current alternator load.

Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.

JAS OCEANIA

I-Stars - Testing
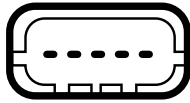
B+ D D LIN GND

i-STARS connections:

Plug:

B+ connection	Existing alternator battery positive.
LIN pin	**RC (Green)**
GND pin	Existing alternator ground.

Power cables:

B+ connection	**B+ (Red)**
Alternator bracket/casing	**B- (Black)**

The **M (Blue)** is left disconnected when testing.
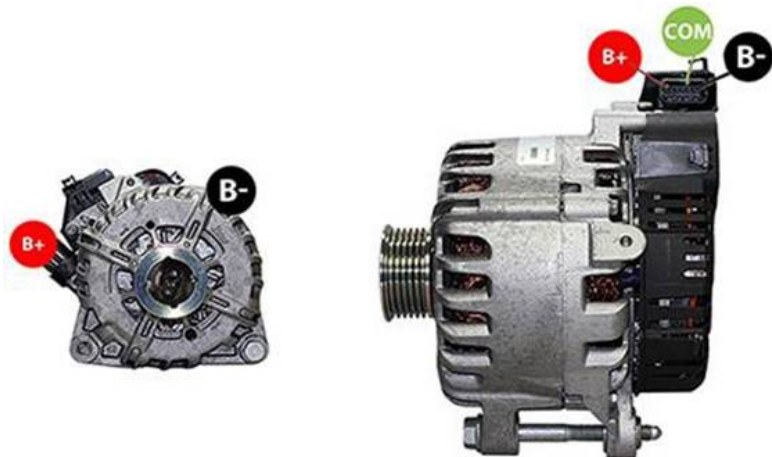
The connection of the B+ and GND pins are implemented independently of the AD100+, by using the connectors located in the vehicle or on the testbench.

I-Stars - Testing

Select the COM function from the main menu and confirm by pressing the OK button.

```
COM
RLO
SIG
P - D
L - RVC
```

The device will go into the COM testing mode and display the following information:

Selected function ────→ **I-STAR**

14.5V ←──── Required voltage

14.3V ←──── Actual voltage

DFM value ────→ **DFM 15%**

Additional information ────→ Manufacturer Valeo / Class 04

During the test, after starting the alternator drive, the actual voltage value should correspond to the required value and the DFM value should correspond to the current alternator load. Some discrepancies between the voltage values are acceptable. What is important is the appropriate reaction of the alternator – increasing or decreasing the output voltage according to the required voltage.

Troubleshooting

Can the device be damaged due to improper connection?
The device is resistant to connection errors from typical applications and voltage ranges.

Can the device damage connected units?
The device cannot directly damage any connected units, however the range of voltage sent to the alternator is very broad and includes prohibited values (over 15V), which can result in electrical system errors if the alternator is tested without removing it from the vehicle.

Can the device or connected units be damaged by selecting an improper testing function?
The only consequence of selecting an improper testing mode is the lack of a response from the connected alternator.

Does the blue M connector have to be connected at all times?
Some alternators with a COM interface do not have an analogue DFM output. In this case, the M wire is left unconnected.

Is it possible to use longer wires to connect units?
The device works with wires up to 5 metres long.

Can the testing device be used for 24V systems?
Yes.

After connecting the device, the display does not illuminate, show the start screen, or the main menu – what should I do?
In this case, check if the testing device is properly connected, if the voltage of the connected system is correct, and if yes, check the continuity of the connection wires.

How to store the testing device?
The device is best stored in the included case, in a warm, dry room.

How to remove stains from the enclosure?
The device should be protected against exposure to any liquids or other substances that can penetrate the enclosure. Stains are to be removed with a soft, moist cloth and a mild detergent. Do not use naphtha, paint thinners, or solvents as they may lead to fogging of the display and damaging the coating.

Can the testing device be mounted on a testing table?
Yes, if it can be done without damaging the device's enclosure. Do not drill any holes or put any screws through the enclosure.

Why does the device display an error in the COM mode when the alternator stops revolving?
Digitally controlled voltage regulators generate error information, displayed on the testing device, upon detecting parameters outside the allowable range. In the case of alternator stoppage, this is a simply a lack of revolutions error which should disappear once the rotor starts spinning again. This type of behaviour is standard and confirms the alternator is working properly.

Troubleshooting

Why does an alternator with a COM interface start working only after I change the required voltage for the first time?
This is due to the alternator voltage regulator function. This type of behaviour is standard and confirms the alternator is working properly.

Can the testing device be used to test alternators with a F1 – F2 connector?
Such alternators work with an external voltage regulator and require a different testing methodology.

Tester Update

The AD100+ is equipped with NFC (Near Field Communication) that enables wireless software updates. Updates are safe and the device always holds both the new and last version of the software for easy rollback.

Device Serial Number
Every AD100+ device has a unique serial number. This number is required to get update information and to purchase new software updates. Please record your AD100+ serial number and store in a safe place.

To view the AD100+ serial number:

1. Power up the device.
2. While in the main menu press the ▲ button together with the OK button. [1]
3. Keep them pressed until the update menu appears on the screen. [2]

You will then be able to read your serial number and your current software version.

[1]   [2]

Software Update Requirements
12V power source (e.g. vehicle battery, bench power supply).
Android mobile phone with NFC, Internet WiFi, and installed AD100+ updater app.

Tester Update

1. Power up AD100+.
2. While in main menu press UP arrow and while holding press OK button, keep buttons pressed until the update menu appears on screen. [1]
3. Release buttons.
4. Acknowledge update by pressing OK button. [2]

[1]

[2]

5. On phone please enable flight mode, after that please enable WiFi and NFC. [3]
6. Check that you have Internet connection on the phone.
7. Run AD100+ updater app on your phone. [4]

[3]

[4]

Tester Update

8. Place phone on the AD100+ (AD100+ NFC antenna is located at the bottom, the phone NFC antenna is usually located under the battery).

9. The application will automatically start to update the software when NFC antennas are aligned. [5]

10. After the software is transferred press OK button on AD100+. [6]

[5]

[6]

11. Turn off the device.

12. While powered off press and hold the OK button. [7]

13. With OK button pressed, power on the device.

14. From the menu choose "IMAGE UPDATE" and press OK. [8]

15. Press OK to accept the update.

16. After an update is done, turn off the power and turn back on again.

[7]

[8]

Notes

JAS

OCEANIA

Australia's Automotive
Electrical Specialist

Ordering made EASY with eJAS