

Operating instructions

Battery tester 12/24 V MW 336



Intended use

The product is intended for checking the voltage of vehicle batteries (12/24 V). Power is supplied to the product via the vehicle battery undergoing testing.

Operate in dry environments only.

For safety and approval purposes, you must not rebuild and/or modify this product. If you use the product for purposes other than those described above, the product may be damaged. In addition, improper use can cause hazards such as short circuiting, fire, electric shock etc. Read the instructions carefully and keep them. Make this product available to third parties only together with its operating instructions.

This product complies with the statutory national and European requirements. All company names and product names are trademarks of their respective owners. All rights reserved.

Delivery content

- Battery tester
- Connection cable with alligator clips (approx. 29 cm)
- Connection cable with cigarette lighter plug (approx. 34 cm)
- Connection cable with ring eyelets (approx. 27 cm)
- Operating instructions

Description of symbols



The symbol with a flash in a triangle indicates health risks e.g. due to electric shock.



The symbol with an exclamation mark in a triangle indicates important instructions contained in these operating instructions that must be followed.



The arrow symbol alerts the user to the presence of important tips and notes on using the device.

Safety instructions



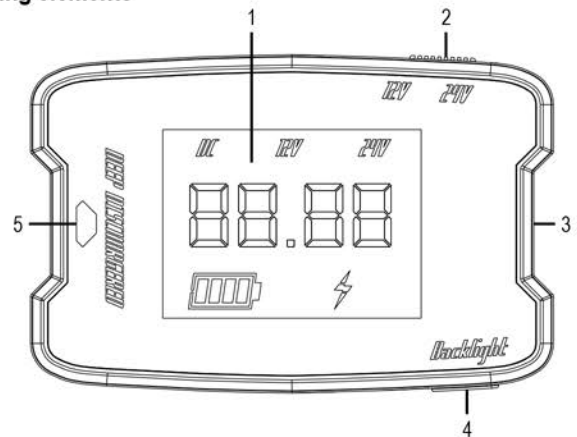
Read the operating instructions carefully and especially observe the safety information. If you do not follow the safety instructions and information on proper handling in this manual, we assume no liability for any resulting personal injury or damage to property. Such cases will invalidate the warranty/guarantee.



- The device is not a toy. Keep it out of the reach of children and pets.
- Do not leave packaging material lying around carelessly. These may become dangerous playing material for children.
- Protect the product from extreme temperatures, direct sunlight, strong jolts, high humidity, moisture, flammable gases, vapours and solvents.
- Do not place the product under any mechanical stress.
- If it is no longer possible to operate the product safely, take it out of operation and protect it from any accidental use. Safe operation can no longer be guaranteed if the product:
 - is visibly damaged,
 - is no longer working properly,
 - has been stored for extended periods in poor ambient conditions or
 - has been subjected to any serious transport-related stresses.
- Please handle the product carefully. Jolts, impacts or a fall even from a low height can damage the product.
- Also refer to the safety and operating instructions of the vehicles connected to the product.
- For installations in industrial facilities, follow the accident prevention regulations for electrical systems and equipment of the government safety organization or the corresponding authority for your country.

- In schools and training facilities and hobby and self-help workshops, the use of measuring devices must be monitored by trained and responsible personnel.
- Never use the product immediately after it has been brought from a cold room into a warm one. The condensation generated could destroy the product. Allow the device to reach room temperature before connecting and using it. This may take several hours.
- Do not overload the product. Observe all specifications.
- The red and the black alligator clip or eyelet may not come into contact.
- Do not operate the product with wet hands.
- Do not cover the product during use.
- Never touch a bare metal part of the alligator clips or eyelets during operation.
- Keep the product away from ignition sources or open flames; do not smoke when handling the product. There is a risk of explosion!
- The product is not suitable for use in explosive environments.
- Do not operate the product near inflammable materials or gases. There is a risk of explosion!
- Use protective gloves to shield your skin from battery acid and oxidized alligator clips or eyelets.
- Never touch any moving/rotating vehicle parts.
- Never touch any hot vehicle parts. Risk of burning!
- Make sure that the alligator clips or eyelets are connected correctly (negative/positive pole) to the vehicle battery and do not come into contact with any other objects.
- When using car batteries that are not maintenance-free, make sure the caps are closed while connecting/disconnecting the battery tester.
- Lead acid batteries generate explosive gases during normal use that could ignite by sparks. Avoid sparks/short circuits at any costs. Never short-circuit any contacts.
- Caution: Sparks may occur when connecting the alligator clips or eyelets to the battery terminals.
- It is essential that you ensure sufficient ventilation. Carbon monoxide leaking while the engine is running is highly toxic. Never inhale exhaust fumes.
- Always wear protective goggles when working with lead acid batteries, in order to protect your eyes from contact with lead acid.
- Consult an expert when in doubt about operation, safety or connection of the device.
- Maintenance, modifications and repairs are to be performed exclusively by an expert or at a qualified shop.
- If you have questions which remain unanswered by these operating instructions, contact our technical support service or other technical personnel.

Operating elements



- 1 Display
- 2 Voltage selector
- 3 Power connection
- 4 Button for backlight
- 5 Warning LED

Operation

- Use the voltage selector (2) to set the voltage of the battery you wish to test (12 or 24 V).
- Select one of the included cables.
- Connect the barrel plug to the power connection (3).
- Connect the red alligator clip or eyelet to the positive terminal on the vehicle battery. Connect the black alligator clip or eyelet to the negative terminal on the vehicle battery.
Connect the cigarette lighter plug to the cigarette lighter socket of your vehicle.
- To activate the backlight for 5 seconds, press the backlight key (4).

→ In case of doubt, check the product's working order on a vehicle battery you are certain is working properly.

If the display does not light up during testing, check whether the alligator clips or eyelets are connected to the battery correctly.

Also check whether the vehicle battery terminals are oxidized or dirty as this may affect contact to the alligator clips or eyelets.

Display

a) 12 V

Battery voltage	Battery symbol	Lightning symbol	Warning LED	Meaning
---	---	---	lights up	Voltage is under 5 V. The battery must be charged or replaced immediately.
5 - 11 V	---	---	lights up	The battery must be charged immediately.
11 - 12 V	1 bar	---	---	The battery must be charged immediately.
12 - 12.5 V	2 bars	---	---	The battery is operational but must be charged soon.
12.5 - 13 V	3 bars	---	---	The battery is operational but must be charged soon.
13 - 13.7 V	4 bars	---	---	The battery is fully charged and operational.
13.7 - 14 V	sequential display	flashes	---	The charging system is functioning correctly.
14 - 15 V	4 bars	lights up	---	The battery will be fully charged shortly.
15 - 17 V	flashes	flashes	---	The battery is probably overloaded.

b) 24 V

Battery voltage	Battery symbol	Lightning symbol	Warning LED	Meaning
---	---	---	lights up	Voltage is under 5 V. The battery must be charged or replaced immediately.
5 - 22 V	---	---	lights up	The battery must be charged immediately.
22 - 24 V	1 bar	---	---	The battery must be charged immediately.
24 - 25 V	2 bars	---	---	The battery is operational but must be charged soon.
25 - 26 V	3 bars	---	---	The battery is operational but must be charged soon.
26 - 27.7 V	4 bars	---	---	The battery is fully charged and operational.
27.7 - 28.7 V	sequential display	flashes	---	The charging system is functioning correctly.
28.7 - 30 V	4 bars	lights up	---	The battery will be fully charged shortly.
>30 V	flashes	flashes	---	The battery is probably overloaded.

Replacing the fuse

- Turn the cap on the end of the cigarette lighter plug counter clockwise.
- Remove the defective fuse and replace it with a new, identical fuse (see technical data).
- Replace the cap and tighten it by turning it clockwise.

Notes on car batteries

- Most of the damage caused to lead acid batteries is because of overload.
- Warmer batteries charge faster than cold batteries.
- Every battery discharges itself. The discharge current of maintenance-free batteries is one of the lowest.
- Batteries that have not been charged for longer periods of time easily sulfate (sulfur deposits on the plates), resulting in a loss of capacity.

Cleaning and care

- Always disconnect the cable from the product before cleaning.
- Under no circumstances use aggressive cleanings agents, cleaning alcohol or other chemical solutions since these can penetrate the housing or impair functionality.
- Clean the product with a dry, fibre-free cloth.
- Remove any battery acid from the alligator clips or eyelets immediately to prevent corrosion.
- Remove any terminal grease and dirt from the alligator clips or eyelets to ensure correct contact.

Disposal



Electronic devices are recyclable waste and must not be disposed of in the household waste. At the end of its service life, dispose of the product in accordance with applicable regulatory guidelines.

You thus fulfill your statutory obligations and contribute to the protection of the environment.

Technical data

Measuring range.....	7 – 30 V
Accuracy.....	±0.2 V
Fuse.....	T 2A 250V
Operating conditions.....	0 to +40 °C, 20 - 85 % RH
Storage conditions.....	-25 to +60 °C, 10 - 90 % RH
Dimensions (L x W x H).....	76 x 49 x 19 mm
Weight.....	45 g