

Operation Manual

Battery Tester for 6 V and 12 V Batteries

62553



Illustration similar, may vary depending on model

Read and follow the operating instructions and safety information before using for the first time.

Technical changes reserved!

Due to further developments, illustrations, functioning steps, and technical data can differ insignificantly.

Updating the documentation

If you have suggestions for improvement or have found any irregularities, please contact us.



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Introduction

Thank you for purchasing this quality product. **To minimise the risk of injury we urge that our clients take some basic safety precautions when using this device. Please read the operation instructions carefully and make sure you have understood its content.**

Keep these operation instructions safe.

Note! To ensure perfect condition and safe operation, the user must observe and comply with the safety and warning instructions in these instructions.

Intended use

The intended use of the device is to test 6 V and 12 V batteries and accumulators. Any other use than specified is not permitted!

Operating conditions/safety instructions

- The device may only be operated at the voltage specified for it.
- The operating position of the unit is horizontal and resting on the rubber feet so that the display points upwards.
- It is essential to ensure that the technical specifications given in this manual are observed. Exceeding the specified values may cause damage to the unit or the object to be tested.
- The unit must not be placed in the vicinity of strong high-frequency or magnetic fields, as this may cause the unit to enter an undefined operating state, resulting in incorrect test results.
- Ventilation slits or vents prevent an excessive rise in temperature. Keep materials such as flammable substances or paper away from the unit.
- Do not install the unit in a place where it is exposed to high humidity or vibrations.
- The device is intended for use in dry and clean rooms.
- If condensation forms, wait up to 2 hours for the unit to acclimatise.
- Protect the unit from moisture, splashes of water, and the effects of heat.
- The unit must not be used in conjunction with highly flammable and combustible liquids.
- This device may only be used by persons with limited physical, sensory, or mental abilities or a lack of experience or necessary expertise if they have been introduced to the use of the device by a competent person familiar with the device and responsible for them, and if they are supervised by this person.
- Children must not use the device and must be supervised in its vicinity to ensure that they do not play with the device.
- Do not operate the assembly in an environment where flammable gases, vapours, or dust are present.
- Repairs may only be carried out by a trained electrician. Only original spare parts may be used for repairs. The use of different spare parts can lead to serious damage to property and personal injury.
- The unit must always be disconnected from the test object before use.
- Before commissioning, always check if the unit or assembly is suitable for the desired application. In case of any uncertainties or questions, contact a specialist.

Product features and description

- Portable
- No external power supply required
- Tests can be completed in a short time
- Impact resistant
- No annual calibration required
- Copper-plated high performance terminal blocks
- Ventilated



With this device, the performance of a 6 V or 12 V battery or accumulator can be measured. The device measures the battery voltage at a current flow of approx. 100 A.

The voltage of a “good” and fully charged battery remains relatively constant under load. On the other hand, with a “bad” battery, the voltage collapses quickly. The measurement results are displayed by a precise analogue measuring unit, whose scale is designed for different battery sizes and types.

Operating the tester



Warning! When handling lead-acid batteries, highly explosive detonating gas may be produced. This oxyhydrogen gas can be ignited by a spark, cigarette, or open flame, causing the battery or accumulator to burst. This causes the sulphuric acid inside to be sprayed and can lead to severe burns.

Therefore, always wear protective goggles when handling lead-acid batteries. Avoid contact of the battery with skin and clothing and wear rubber gloves. Do not smoke near the battery and avoid naked flames. Ensure adequate ventilation.

Discharged lead-acid batteries freeze at extremely low temperatures. Never check a frozen lead-acid battery! Never place the tester or tools on the battery! Never test a lead-acid battery for longer than 10 min!

In the event of eye contact with acid, immediately rinse the eye with clear water for at least 5 min and seek medical attention immediately! Under no circumstances use medication or eye drops without doctor's instructions.

Things to know about (rechargeable) lead-acid batteries

- The efficiency of a lead-acid battery decreases as temperatures fall. A fully charged battery has only 40 % of the starting power at -18 °C that it normally has at 25 °C .
- Most batteries break down due to overcharging.
- Heavy discharging does not damage the cells of a battery, but overcharging does.
- A warm battery charges faster than a cold one.
- All batteries are subject to normal self-discharge, which increases with increasing temperature. The self-discharge of maintenance-free batteries is less than that of normal lead-acid batteries.
- Batteries should be stored in as cool a place as possible to keep self-discharge low. **Attention!** The battery must not be frozen!
- A fully charged battery freezes at approx. -65 °C , a 50 % charged battery at -26 °C and a 25 % charged battery already from -15 °C .
- A battery stored in a discharged state “sulphates” and loses its capacity.

Battery load test

1. Connect the battery tester to the battery.

- a) If the battery is still installed in a vehicle, switch off the engine of the vehicle and switch off all other consumers in the vehicle.
Note: The on-board voltage can drop very sharply during the test (especially if the batteries are severely discharged or defective), which can trigger an alarm system, for ex., or trigger a car radio with anti-theft protection (coding). In any case, make sure that the coding of the radio is deactivated before the load test or have the code ready to deactivate the alarm.
- b) Connect the black terminal of the test device directly to the negative battery pole (NEG, N, -), the red one directly to the positive battery terminal (POS, P, +).



- c) A battery voltage dependent on the battery's state of charge is now shown on the display instrument of the device. If the displayed voltage is less than 12.4 V (6.2 V), the battery should be charged by a load test. If the voltage is still below 12.4 V (6.2 V) after charging, it can be assumed that the battery is defective.
- d) **If the needle of the display is at the extreme left end of the display, the battery tester is connected with the wrong polarity.**

2. Determine the correct measuring range on the scale.

- a) Determine the capacity or cold test current of the battery under test. The cold test current is also printed on the battery as "CCA" (Cold Cranking Amps) in Ampere (A).
- b) On the scale, you will find a green area below 12 V, graduated from 200–1000 CCA. To evaluate the test result, select the scale corresponding to the battery.
- c) If no cold test current is printed on the battery, use the table below to select the appropriate scale:

Battery capacity (Ah)	Cold test current CCA (A)
36–44	200
55–66	400
75–88	600
95–110	800
180	1000

3. Press the test switch for 10 s.

Observe the indicator needle of the instrument carefully. Remember where the needle is at the end of the 10 s. Assess the battery according to the following battery load analysis.

Battery load analysis

Loading test	Battery condition
Ok (green field)	The battery is in good condition and can be fully charged if necessary.
Weak (yellow field) = Needle rests constantly.	Battery performance is not satisfying. The battery is either defective or partially discharged. Determine the battery charge level with a hygrometer (measure acid density)
Bad (red field) = Needle drops constantly.	The battery is faulty (e.g., due to a bad cell). As a counter-check, release the switch and observe the reaction of the voltmeter. If the display returns to 12 V within a few seconds, the battery is defective. If, on the other hand, the battery voltage rises slowly, the battery is probably only very severely discharged.



Assessment of the state of charge via the battery acid density

If the acid density at 27 °C is 1.24 kg/dm³ or less, please first charge the battery before carrying out further tests and check the acid density again after one hour of standing time.

Acid density at 27 °C (kg/dm ³)	State of charge	Actions
1,25–1,28	Charged	Test possible
1,20–1,24	Half charged	Charging recommended
Lower as 1,20	Poorly charged	Load immediately

The acid density should be the same in all cells of a good battery. Maximum permissible tolerance between highest and lowest measured value of the 6 cells: 0.03 kg/dm³. If the acid density is the same in all cells but less than 1.25 kg/dm³, please charge the battery.

Temperature compensation

- Due to the chemical reactions that take place in a lead-acid battery, the test results depend on the battery temperature. To obtain the most accurate test results possible, compensation must be carried out from approx. –8 °C.
- This is achieved by subtracting 50 amperes of cold test current from the printed value of the battery's cold test current for each –10 °C cold. This means that at –20 °C 100 A and at –30 °C 150 A cold test current are subtracted.
- Example: If the printed battery cold test current is 500 A and the test is carried out at –18 °C, use the 400 CCA scale.

Testing the charging system

With the help of the battery tester, many small general faults in the charging circuit can be quickly and easily detected. The motor should be at normal operating temperature for testing.

- Connect the battery tester to the vehicle battery with the correct polarity.
- Start the engine and run it at a speed of at least 1500 1/min.
- Do **not** operate the test switch on the unit!
- Read the display when the electrical consumers (light, fan, etc.) are switched off. The needle should be in the green area ("Ok") at approx. 14 V.
- When the electrical consumers are switched on, the needle should remain in the green area.
- If the needle is in the red area above or below the green area, this indicates a fault in the charging circuit (e.g., defective charge controller).

Testing the starter motor

This test detects excessive current consumption of the starter motor. Excessive current consumption of the starter motor leads to an overload of the battery and thus shortens its life. This test should only be carried out if the battery load test was previously completed with "OK."

For testing the motor should have normal operating temperature.

- Connect the test device to the vehicle battery with the correct polarity.
- Press the test button for max. 10 s and note down the voltage value while keeping the test button pressed.
- Disconnect the engine ignition cable from the spark plug so that the engine does not start when starting.
- Now try to start the engine. Make a note of the voltage during the starting procedure.



- e) Compare the two voltages with the yellow table printed in the display (“STARTER TEST”). The upper table row refers to the “LOAD VOLTS,” i.e., the voltage measured during the load test with the unit. Below this voltage value, the table shows the corresponding minimum starting voltage (“MIN. CRANK VOLTS”).

Example: You measure a voltage of 10.4 V during the load test and the voltage collapses to 9.5 V during starting. According to the table, a starting voltage of up to 8.2 V is acceptable. The starter engine is all right. If a starting voltage of less than 8.2 V is measured, a short circuit in the starter, a fixed bearing in the starter, etc. could be the reason for excessive power consumption.

Technical data

Dimensions (L×W×H) (mm)	290 × 110 × 75
Ampere range (A)	300–1000
Testing procedure	100 A load current
Cable length (cm)	2 × 30
Other	2 clamping pliers with 30 cm supply cable

Malfunctions on the device

If it can be assumed that safe operation is no longer possible, the device must be taken out of operation and secured against inadvertent operation.

This applies if

- the unit shows visible damage.
- the device is no longer functional.
- parts of the unit are loose or loose.
- the connecting cables show visible damage.

Disposal regulations

EU guidelines regarding the disposal of scrap electric devices (WEEE, 2012/19/EU) were implemented in the law related to electrical and electronic equipment and devices.

All WiTec electric devices that fall under the WEEE regulations are labelled with the crossed-out wheeled waste bin logo. This logo indicates that this electric equipment must not be disposed with the domestic waste.

The company WiTec Technik GmbH has been registered in the German registry EAR under the WEEE-registration number DE45283704.

Disposal of used electrical and electronic devices (intended for use in the countries of the European Union and other European countries with a separate collection system for these devices).

The logo on the article or on its packaging points out that this article must not be treated as normal household waste but must be disposed to a recycling collection point for electronic and electrical waste equipment. By contributing to the correct disposal of this article you protect the environment and the health of your fellow men. Environment and health are threatened by inappropriate disposal.



Material recycling helps reduce the consumption of raw materials.

Additional information on recycling this article can be provided by your local community, municipal waste disposal facilities, or the store where you purchased the article.

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