GEDORE
KLANN EXPERIENCE

Operating instructions EN

KL-0840-100 K

Digital Battery Tester with Printer

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Imprint

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We refer to our general terms and conditions, which can be found in the imprint at:

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KL-0840-100K__EN250405.indd

TABLE OF CONTENTS

ⓘ This table of contents contains **interactive elements** with which the desired chapters can be accessed quickly and conveniently on digital devices with just one ***click***.

1. READ AND UNDERSTAND FOR YOUR SAFETY

These operating instructions are intended to familiarise you with the operation of the digital battery tester. Therefore read and understand these operating instructions **before using** the battery tester and observe all safety and warning instructions for safe use! Misuse can result in **SEVERE INJURIES**! The operating instructions are part of the battery tester. Therefore keep them in a safe place so that you can access them at any time, and always pass them on to subsequent users of the battery tester! The battery tester complies with the recognised rules of technology as well as the relevant safety regulations!

1.1 Target group

These operating instructions are **exclusively** intended for skilled personnel in specialised motor vehicle workshops!

The battery tester **may only be** used by skilled personnel in specialised motor vehicle workshops who are familiar with the basic regulations on work safety and accident prevention!

- **Never** allow unauthorised, inexperienced persons, minors and children or persons with limited physical, sensory, and mental abilities to use the battery tester!

1.2 Obligations of the owner

Pursuant to the German Ordinance on Industrial Safety and Health *(BetrSichV)*, employers are obliged to provide their employees with safe work equipment in accordance with the recognised rules of technology and the relevant safety regulations!

- The owner of the battery tester **must** ensure that **only** trained personnel in specialised vehicle workshops use the battery tester!
- The owner of the battery tester **must** ensure that the instructions for use are available to the user and that the user has completely read and understood the operating instructions for use **before** using the battery tester!
- The owner of the battery tester **must** ensure that the user is familiar with the basic regulations on work safety and accident prevention and that the personal protective equipment is available to him!

1.3 Intended use

The battery tester ...

- **may only** be used for vehicles using 6 / 12 / 24 Volt LEAD ACID, GEL, AGM, EFB or LITHIUM batteries to check and log the status of battery, generator and starter system!
- **may only** be used with **GEDORE Automotive** genuine spare parts and accessories!
- **may only** be used in the way described in these operating instructions!

⚠ Any other use can lead to **SEVERE INJURIES**!

KL-0840-100K__EN250405.indd

1.4 Reasonably foreseeable misuse

The battery tester ...

- **must never** be used for other batteries or in any other way than intended!
- **must never** be modified, converted, or used for other purposes without authorisation!

⚠ **Always** use the battery tester as intended. Any other use can result in **SEVERE INJURIES**!

1.5 Work environment

Only use the battery tester in a safe working environment and **do not** expose it to extreme temperatures, direct sunlight or extreme humidity and moisture!

- The workplace **must** be clean and tidy.
- The workplace **must** be sufficiently large and illuminated.
- The workplace **must** be on a solid and non-skidding floor.
- The workplace **must** be safeguarded against access of unauthorised persons.
- The workplace **must** be at room temperature between 0°C and +50°C.

1.6 Labelling of the warnings

Warnings warn of potential **hazards**. **Always** observe these warnings to avoid **DEATH** or **INJURIES**! For better differentiation, warnings in these operating instructions are classified as follows:

Warning sign	Meaning
⚠WARNING	**Indicates** a hazardous situation which, if not avoided, could cause **DEATH** or **SEVERE INJURIES.**
⚠CAUTION	**Indicates** a hazardous situation which, if not avoided, could cause **MODERATE** or **MINOR INJURIES**.
CAUTION	**Indicates** a situation which, if not avoided, could cause damage to the tool or an object in its vicinity.
ⓘ	**Note** on important information and useful tips.

1.7 Basic safety instructions and warnings

⚠WARNING - Failure to observe this warning may result in an accident

When using the battery tester, **always** observe the following safety and warning instructions as well as measures to avoid **SERIOUS INJURIES** as well as property damage due to hazards, misuse, abuse and unsafe handling!

- Therefore read and understand these operating instructions **before using** the battery tester and observe all safety and warning instructions for **safe use**!
- **Always** work with the battery tester in accordance with the basic regulations on work safety, accident prevention and environmental protection!
- **Always** use the battery tester as intended. **GEDORE Automotive** does not accept any liability or warranty or guarantee claims for injuries and damage resulting from improper use or disregard of the safety regulations.
- **Before each use, check the battery tester carefully** for damage, loose parts, or unauthorised modifications. **Never** use it if you notice any such deficiencies! Professional inspection and repair may only be carried out by specially trained personnel from **GEDORE Automotive**!
- **Only** use original spare parts and accessories from **GEDORE Automotive** for the battery tester!
- **Always** observe the vehicle-specific manufacturer's specifications when working with the battery tester!
- **Never** use the battery tester when you are tired or under the influence of alcohol, drugs, or medication!
- Only charge the battery tester with a CE-tested power supply unit. Recommended output: 5 Volt (DC) / 2 Ampere
- **Before using** the battery tester, make sure that **no** unauthorised persons are in the immediate work environment!
- **Only** test a battery in a well-ventilated environment and **avoid** sparks, flames and other sources of heat in the direct vicinity! Batteries generate hazardous gases that can ignite and explode!
- **Do not** wear any metal objects such as rings, bracelets, necklaces, watches, etc. when working with batteries. These can cause a short-circuit at the battery and lead to serious skin burns!
- After contact with battery acid, **immediately** rinse the affected area, such as the eyes, with a copious amount of water and see a doctor where necessary!
- When connecting the battery tester, pay attention that the crocodile clips make firm and complete contact with the battery terminals. Otherwise the measurements could be falsified.
- Always wear your personal protective equipment when working.
- It is **essential** to avoid sharp blows or knocks against the battery tester!
- Interrupt your work **immediately** if you are unsure about using the battery tester and contact **GEDORE Automotive**, **if necessary**!

1.8 Care / storage

CAUTION

Improper care and storage can damage the battery tester.

- **Never** immerse the battery tester in water, solvents, or other cleaning liquids.
- After use, clean all parts of the battery tester with a dry and clean cleaning cloth.
- Store the battery tester and the operating instructions in a dry and clean place.

KL-0840-100K__EN250405.indd

1.9 Repair

⚠CAUTION

Improper repair of the battery tester can lead to **INJURIES**.

- If damage, loose parts or unauthorised modifications have been found on the battery tester, it must no longer be used for safety reasons!
- Repair may only be carried out by specially trained personnel from **GEDORE Automotive**!
- **Only** use original spare parts and accessories from **GEDORE Automotive** for the battery tester!

If necessary, contact us, **GEDORE Automotive** for a professional inspection and repair of the battery tester.

1.10 Environmentally friendly disposal

Dispose of the battery tester and its packaging material in an environmentally compatible way in accordance with the legal requirements. If necessary, ask your local authorities about environmentally friendly disposal options.

1.11 Duty to provide information pursuant to the Electrical and Electronic Equipment Act *(ElektroG)*

Electrical and electronic equipment contains harmful substances and valuable resources. Therefore, do not dispose of defective appliances in household waste, but recycle them separately. This is indicated by the symbol of the crossed-out dustbin on the appliance. If your old appliance cannot be reused, you are welcome to send it to us at the following address:

GEDORE Automotive GmbH
Breslauer Straße 41
78166 Donaueschingen

We subsequently undertake the complete taking back and professional disposal via our certified waste disposal companies.

1.12 Duty to provide information pursuant to the Battery Act *(BattG)*

Please note that our electrical and electronic equipment can contain batteries. Batteries must not be disposed of in household waste. This is indicated by the symbol of the crossed-out dustbin on the appliance. As the end user, you are legally obliged to return them. Batteries may contain harmful substances that can damage the environment or health if not stored or disposed of properly. Used batteries can be returned to established collection points, e.g. municipal collection points, retailers or to us at **GEDORE Automotive GmbH**. Used batteries may only be returned to collection points when discharged and with the battery terminals protected against short-circuits!

The symbols on the batteries have the following meaning:

Crossed-out dustbin = The battery must not be disposed of in household waste.
Pb = Battery contains more than 0.004% lead by mass.
Cd = Battery contains more than 0.002% cadmium by mass.
Hg = Battery contains more than 0.0005% mercury by mass.

2. PRODUCT DESCRIPTION

2.1 KL-0840-100 K - Digital battery tester with printer

Universally applicable for vehicles with 6/12/24 Volt LEAD, GEL, AGM, EFB and LITHIUM batteries. For example installed in motorcycles, cars, commercial vehicles, vans, buses, construction machinery, agricultural machinery, boats, ride-on mowers and many more.

For a fast, professional checking and logging of the status of battery, generator and starter system.

- Professional 3-in-1 battery tester with integrated test log output
  - Testing the battery: Voltage (V), cold test current (A), internal resistance (mΩ), charging and battery status (%)
  - Testing the generator: Ripple of the rectifier diode (mV), no-load voltage and load voltage (V)
  - Testing the starter system: Min/max start voltage (V) and starting time (ms)
- Menu-guided operation and test results within seconds
- Illuminated 3.2" LCD colour display with high-quality keypad
- Testing of battery in assembled or disassembled state
- Test result output even with deeply discharged batteries by means of integrated rechargeable battery
- Real-time monitoring inside the vehicle by means of 2.50 m long measuring line
- Supports 9 battery standards according to EN, DIN, IEC, SAE, CA, CCA, BCI, MCA and JIS standards
- Fully insulated crocodile clips and integrated reverse polarity protection
- Simple menu-guided operation in 13 languages
- Sturdy and impact resistant housing with circumferential rubber edge
- Test log output via integrated thermal printer
- Tested and certified according to CE / RoHS

2.2 Specifications

Appliance dimensions: ..... 255 x 104 x 36mm

Display: ..... 3.2" LCD colour display (320x240 pixel)

Battery voltage range: ..... 6 / 12 / 24 Volt

Battery rated capacity range: ..... 1 Ah - 260Ah

Battery model range: ..... LEAD acid battery, AGM battery, AGM spiral cell battery, GEL battery, EFB battery, lithium battery.

Battery cold test current range: ..... EN: 10 - 2000A / DIN: 10 - 1400A / IEC: 10 - 1400A / SAE: 10 - 2000A / CA: 10 - 2000A / CCA: 10 - 2000A / BCI: 10 - 2000A / MCA: 10 - 2000A, JIS: 26A17 - 245H52

Supported languages: ..... German, English, French, Spanish, Italian, Portuguese, Polish, Romanian, Dutch, Chinese, Japanese, Korean, Persian

Operating temperature: ..... 0° to 50 °C

Power supply: ..... 3.7V lithium polymer battery (2000mAh)

Weight: 2.4kg

2.3 Scope of delivery

Item	Description	Quantity
A	Digital battery tester	1
B	Measuring line with crocodile clips	1
C	Thermal paper roll (57mm x 18m x 12mm, Ø 40mm, 55g)	2
D	USB charging cable (5V)	1
-	Plastic case	1

3. OPERATION AND FUNCTION OVERVIEW

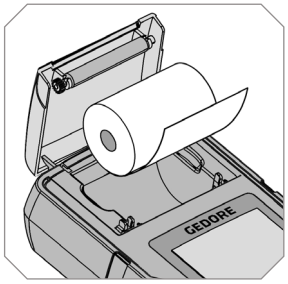
This overview shows basic components, designations, information and instructions for using the battery tester.

3.1 Overview battery tester

Unlocking lug
Pull the unlocking lug to exchange the thermal paper roll.

Lithium polymer battery (3.7V / 2000mAh)
The internal rechargeable battery is permanently installed in the battery tester and can be charged via the USB socket.

Thermal paper roll
(57mm x 18m x 12mm / Ø 40mm / 55g)
Pay attention to the installation position when installing the thermal paper roll!



Thermal printer
To print out the test logs, press the PRINT key after the measurement.

Menu-guided operation
*For further information, see **Chapter 3.2***

USB socket (mini-socket)
To charge the internal lithium polymer rechargeable battery. Recommended power supply unit output:
5 Volt (DC) / 2 Ampere

POWER key
Press to switch the battery tester on or off.

PRINT key
Press to print out the test log after completion of a measurement.

ESC key
Press to skip to the previous stepor to abort or finish a measurement.

OK key
Press to skip to the next step or to start a measurement.

Reverse polarity protection
Swapping the battery terminals accidentally will not cause any damage to the battery tester.

ARROW key
Press to navigate to the left/right or up/down through the appliance menu.

Measuring socket
To connect the measuring line with the crocodile clips.

Automatic start function
When connecting a battery, the battery tester is automatically switched on.

KL-0840-100K__EN250405.indd

3.2 Overview appliance menu

The battery tester has a menu-guided user interface
which guides you automatically through the various test procedures.

Motorcycle / car/ commercial vehicle

Enables a menu-guided battery test specifically according to vehicle type. Testing includes the battery voltage, the battery cold test current, the internal battery resistance and the charge state and general condition of the battery.

*For further information, see **Chapter 3.3***

Voltage test

Enables testing of the battery voltage curve in real time and a representation of voltage peaks. To conclude, the voltage curve can be saved and retrieved from the data memory.

*For further information, see **Chapter 3.4***

Starting test

Enables a menu-guided starting test. In the course of this, the minimum and maximum battery voltage during the starting process and the exact starting time are checked.

*For further information, see **Chapter 3.6***

Data memory

Enables retrieving and deleting the last battery test and the stored voltage tests.

Print (USB)

Currently without function!

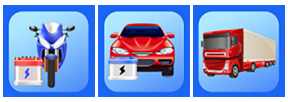
Settings

Enables setting the language, switching signal tones on or off, performing an appliance test, setting date and time, and retrieving the software version.

Generator test

Enables a menu-guided generator test. Testing includes the ripple and level of the battery charge voltage in the idling and partial load range.

*For further information, see **Chapter 3.5***



3.3 Battery test

Before starting the voltage test, switch off the engine,
switch off all consumers and follow the further instructions on the battery tester.

1. Select vehicle: Is it a motorcycle, car or commercial vehicle?
2. Select battery position: Is the battery currently installed in the vehicle or dismounted?
3. Select battery type: Is it a LEAD, GEL, AGM, EFB or LITHIUM battery?
4. Select the cold test current standard: Does the battery comply with the EN, DIN, IEC, SAE, CA, CCA, BCI, MCA or JIS standard?
5. Select the cold test current value: How high is the cold test current value specified on the battery in Ampere (A)?

Indicates the internal battery resistance in milliohm (mΩ). An extremely elevated value can indicate a cell short-circuit in the battery.

Indicates the battery charge status (SOC), or optionally by pressing the ARROW keys, the battery health status (SOH) in percent (%). A low value can indicate a bad charge state or defect of the battery.

Indicates the previously set <u>setpoint</u> of the battery cold test current in Ampere (A).

Indicates the <u>actual value</u> of the battery cold test current in Ampere (A). A high deviation from the setpoint can indicate a defect of the battery.

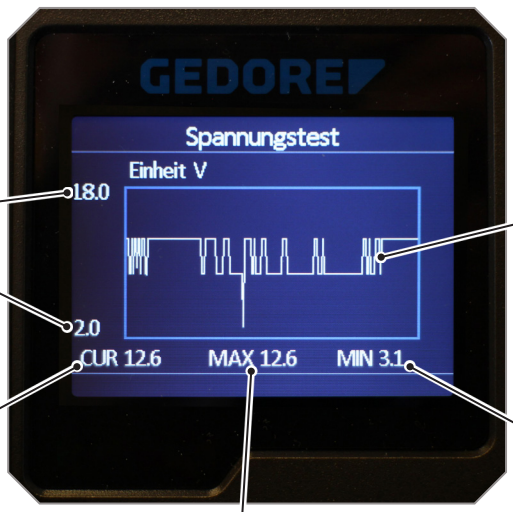
Indicates the test status.
GREEN = test result good
YELLOW = test result invalid
RED = test result bad

Indicates the battery voltage in Volt (V). A very low value can indicate a bad charge status or defect of the battery.

Indicates the result of the battery test.
BATTERY GOOD = *The battery is generally in a good condition.*
REPLACE = The battery is defective and should be replaced.
GOOD + RECHARGE = The battery is generally in a good condition, but should be recharged.
CHARGE + NEW TEST = The battery is depleted and should for a start be recharged.
DEFECTIVE CELL = The battery has a cell short-circuit and should be replaced.

3.4 Voltage test

Expert's tip:
With the voltage test, sporadic voltage peaks and dips can be made visible and saved.
Thanks to the long measuring line, this can for instance also be done during a test drive.



Indicates the measuring range of the oscillograph in Volt (V).

Indicates the battery voltage curve on the oscillograph. High voltage peaks or dips can indicate a defective charging cable, a slipping belt or a defect of the generator.

Indicates the current voltage in Volt (V).

Indicates the minimum voltage in Volt (V).

Indicates the maximum voltage in Volt (V).

KL-0840-100K__EN250405.indd

3.5 Generator test

Before starting the generator test, switch off engine, switch off all consumers and follow the further instructions on the battery tester.

Indicates the ripple of the generator charging voltage in millivolt (mV). A high value can indicate a defect of the rectifier in the generator or a loose charging cable.

Indicates the generator charging voltage measured in the partial load range in Volt (V).

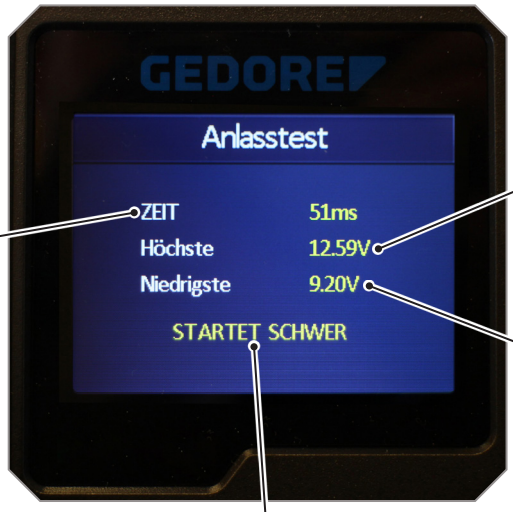
Indicates the generator charging voltage measured in the idling range in Volt (V).

Very high or low values can indicate a defect of the generator, rectifier or a loose charging cable.

Indicates the result of the generator test.
PERFORMANCE GOOD = *The generator charge voltage is generally good.*
PERFORMANCE HIGH = *The generator charge voltage is too high, the battery and other consumers can be damaged.*
PERFORMANCE LOW = *The generator charge voltage is too low, the battery cannot be adequately charged.*
STRONG RIPPLE = *The generator charge voltage is too rippled, the battery and other consumers can be damaged.*
NO RESULT = *The generator charge voltage cannot be measured, the battery cannot be adequately charged.*

3.6 Starting test

Before starting the starting test, switch off engine, switch off all consumers and follow the further instructions on the battery tester.



Shows the measured time of the starting process in milliseconds (ms). A high value can indicate a defect of the battery, a defect of the starter or generally a bad starting behaviour or heavy running of the engine.

Indicates the highest battery voltage measured during the starting process in Volt (V).

Indicates the lowest battery voltage measured during the starting process in Volt (V). A very low value can indicate a defect of the battery or a very sluggish starting process.

Indicates the result of the starting test.
STARTS NORMALLY = *The starting process is normal, battery and starter performance are good.*
STARTS SLUGGISHLY = *The starting process is sluggish, there is possibly a defect of the battery or the starter system.*

5. EU DECLARATION OF CONFORMITY *(Original EU Declaration of Conformity)*

Name and address of the manufacturer
GEDORE Automotive GmbH
Breslauer Straße 41
78166 Donaueschingen, GERMANY

CE

We herewith declare that the product that is described below

Designation: Digital battery tester
Series / type: KL-0840-100 K

complies with all relevant provisions of the **EMC Directive 2014/30/EU** *on the electromagnetic compatibility of electrical and electronic equipment,* the **Low Voltage Directive 2014/35/EU** *on the harmonisation of the laws of the Member States relating to the making available on the market* of electrical equipment designed for use within certain voltage limits and the **RoHS Directive 2011/65/EU and 2015/863/EU (ROHS III)** *on the restriction of the use of certain hazardous substances in electrical and electronic equipment.*

The declaration loses its validity if the product is converted or modified without our consent.

Applied harmonised EN standards:

EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019 - *Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1: General requirements*

EN 55011:2016 + A1:2017 + A11:2020 + A2:2021 - *Industrial, scientific and medical equipment - Radio disturbance - Limits and methods of measurement*

EN IEC 55014-1:2021 - *Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission*

EN IEC 61000-6-1:2019 - *Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments*

EN IEC 61326-1:2021 - *Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements*

EN 62321-1:2013 - *Determination of certain substances in electrotechnical products - Part 1: Introduction and overview*

Other applied national technical standards and specifications:
DIN EN IEC/IEEE 82079-1:2021-09 - *Preparation of instructions for use of products - Part 1: Principles and general requirements*

Authorised representative of GEDORE Automotive GmbH for the compilation of all technical documents:
Head of product development, Breslauer Straße 41, 78166 Donaueschingen, GERMANY

Donaueschingen, 23 May 2024

Patrick Mau, Managing Director of **GEDORE Automotive GmbH**

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