PROMET

High-Precision Ohm Meters

Operating Instructions
PROMET L100s

KoCoS Messtechnik AG
Südring 42
34497 Korbach, Germany
Phone +49 5631 9596-40
info@kocos.com
www.kocos.com

KoCoS
A FRIEND OF ENERGY

Contents

1 About this document 4
1.1 Other applicable documents 4
1.2 Validity of the present document 4
1.3 Warning marks and symbols 4
1.4 Typographical conventions 4
1.5 Basic safety information 5
1.5.1 General information 5
1.5.2 Qualifications of operating personnel 5
1.5.3 Intended use 5
1.5.4 Safe operation 6
1.5.5 Personal protective equipment 6
1.5.6 Special safety instructions for battery packs 6
2 High-Precision Ohm Meter PROMET L100s 7
2.1 Compact, high-precision ohm meter 7
3 Commissioning 8
3.1 Transport and storage 8
3.1.1 Transportation of Li-ion battery packs 8
3.1.2 Unpacking 8
3.2 Requirements to be fulfilled by the installation location 8
3.3 Akkupack und Ladegerät 9
Insert battery pack 9
Remove battery pack 9
3.3.1 Charging status display 9
Battery 9
4 Operation 10
4.1 Overview front panel 10
4.2 Switching the device on and off 10
4.3 Connections and interfaces 11
4.3.1 High-current outputs 11
Status display 11
4.3.2 Voltage measurement inputs „U IN“ 11
4.3.3 Current clamp „CC“ 11
4.3.4 Temperature sensor „Temp.“ 12
4.3.5 USB and RJ45 interface 12
4.4 Control panel with touch screen 12
4.4.1 Touch screen functions 13
Battery charge status 13
Temperature 13
Current clamp 13
Current clamp measuring ranges 13
Measuring current output time 14
Measuring range 14
Test current 14
Result list 14

4.5 Settings 15
4.5.1 ACTAS 15
4.5.2 Test mode „Probe" 15
4.5.3 Remarks 15
4.5.4 Constraints 16
Limit values 16
Temperature coefficient 16
4.5.5 Options 16
5 Carrying out measurements 17
5.1 Resistance measurement 17
5.1.1 Connection 17
5.1.2 Measurement 17
Manual setting of the measuring time 19
5.2 Resistance measurement with temperature compensation 20
5.2.1 Anschluss 20
5.2.2 Setting the material constant 20
5.3 Resistance measurement with earthing on both sides 21
5.3.1 Connection 21
5.3.2 Connecting and configuring the current clamp 22
Current clamp measuring range editor 22
5.4 Resistance measurement on inductive loads 23
5.4.1 Connection 23
5.4.2 Configuration 24
5.4.3 Measurement 25
5.5 Test probe measuring mode 26
5.5.1 Testing via voltage trigger 26
5.5.2 Testing with test probes KP 200 26
6 Results 27
6.1 Show results 27
6.2 Delete 28
6.3 Editing 28
7 Maintenance and service 29
7.1 Firmware-Update 29
7.2 Calibration 32
7.2.1 Calibration confirmation 32
7.2.2 Handling of calibration intervals 32
7.3 Adjustment 32
8 Guarantee conditions 33
9 Technical data 34

Copyright © 2024 by KoCoS Messtechnik AG. All rights reserved.

No part of this document may be reproduced or processed, duplicated or distributed using electronic systems in any form (print, photocopy, microfilm or other method) without the prior written consent of KoCoS Messtechnik AG.

KoCoS Messtechnik AG is not liable for damage resulting from misuse, nor for repairs and alterations made by unauthorized third parties. This document has been produced with great care. However, KoCoS Messtechnik AG does not accept liability for errors due to negligence.

Note: all the product names which appear in this document are brands of the companies concerned.

Even if a trademark symbol ® or ™ is not given, it does not necessarily follow that a term used in this document is not a brand name.

1 About this document

These operating instructions describe how to commission, connect, operate, control and maintain a PROMET L100s high-precision ohm meter.

These operating instructions are intended for:

- Persons who know how to switch on and off, enable, earth and identify electrical circuits and devices/systems in accordance with the applicable safety standards
- Trained operating personnel in electrical installations

1.1 Other applicable documents

A number of other documents apply in conjunction with these operating instructions. The manufacturer is not liable for damages resulting from failure to comply with information contained in any of these documents.

All documentation pertaining to the commissioning, settings configuration, operation and maintenance of a PROMET L100s high-precision ohm meter also applies.

1.2 Validity of the present document

These operating instructions apply only to high-precision ohm meters with the type designation **PROMET L100s**.

The type designation and the serial number of the measuring device are detailed on the rating plate.

1.3 Warning marks and symbols

Symbol	Explanation
	**DANGER** This symbol indicates the presence of an immediate risk associated with electric voltage. If this risk is not avoided, death or serious injury may result.
	**CAUTION** This symbol indicates the presence of a potential risk associated with improper use. If this risk is not avoided, personal injuries or material damage may result.
	**NOTE** This symbol highlights notes and information.

1.4 Typographical conventions

Symbol	Explanation
➢	This symbol highlights instructions which require action on the part of the user
1. 2.	Numbered lists are used for actions which must be carried out in the order given
■	This symbol marks the items of a list

1.5 Basic safety information



CAUTION

The safety information and regulations detailed below must be complied with!
The relevant regulations issued by the appropriate institutions for statutory accident insurance and prevention (professional and trade associations) must be followed.

1.5.1 General information

DANGER



Failure to comply with safety information, incorrect use of the high-precision ohm meter, or use other than the intended use can endanger property and personnel and result in damage or injury.

These operating instructions must be read and understood in full before the high-precision ohm meter is put into operation. They must be kept for future reference and be made available to anyone who uses the measuring device throughout its operational life.

1.5.2 Qualifications of operating personnel

The high-precision ohm meter may only be used by qualified personnel in accordance with safety rules and regulations. The statutory provisions and safety regulations for the specific application must also be observed when using the measuring device.
The term "qualified personnel" refers to persons who are familiar with the set-up, commissioning and operation of the product and who have appropriate qualifications:

- Training or instruction and authorization to switch on and off, isolate, earth and mark accordingly electrical circuits and devices in accordance with safety standards
- Instruction in accordance with the regulations of the appropriate institutions for statutory accident insurance and prevention (professional and trade associations)
- Safety standards in the care and use of appropriate safety equipment



The operating software offers the option of managing a list of users and their respective access rights. This makes it possible to give only selected persons access to specific functions of the measuring device (see the user manual for the operating software).

1.5.3 Intended use

The high-precision ohm meter is manufactured in accordance with the state of the art and recognized safety rules.

However, improper use or use other than the intended use can endanger the life and limb of users or third parties and cause damage to the measuring device or other property.

The manufacturer is not liable for consequential damage arising as a result of use other than the intended use. Any claims under the guarantee are void.

No modifications may be made to the measuring device other than those which are described in this document or in the other applicable documents.

The ohm meter may only be used for the applications listed below:

- Determination of resistances
- Dynamic determination of resistances in combination with ACTAS switchgear test systems

1.5.4 Safe operation

If there is any reason to suppose that the ohm meter cannot be operated without risk, it must be put out of operation immediately and secured against unintended start-up.
This applies if, for example:

- there is obvious damage to the measuring device or accessories.
- the measuring device or accessories do not work properly although the power supply is intact.
- the measuring device or accessories have been exposed to unfavourable conditions for a significant length of time (e.g. storage at temperature and humidity levels which are beyond the permissible limits without gradual adjustment to the indoor environment, condensation or other similar conditions).
- the measuring device or accessories have been exposed to undue transport stresses even if there is no visible external damage.

1.5.5 Personal protective equipment

The regulations on personal protective equipment laid down by the company operating the measuring device at the installation location apply. No additional protective equipment is required.

1.5.6 Special safety instructions for battery packs



- Protect battery packs from moisture



- Do not expose battery packs to fire!



- A slightly acidic, flammable liquid can escape from defective Li-ion battery packs!



- If battery fluid leaks and comes into contact with your skin, rinse immediately with plenty of water. If battery fluid gets into your eyes, rinse them with clean water and seek medical treatment immediately!
- Do not use defective or deformed battery packs!
- Do not open the battery packs!
- Do not touch or short-circuit the battery pack contacts!

2 High-Precision Ohm Meter PROMET L100s



2.1 Compact, high-precision ohm meter

PROMET L100s is a high-precision, battery-operated micro-ohm meter for ohmic and inductive loads. The use of four-wire measuring technology and high test currents of up to 100 A enable PROMET L100s to meet the most stringent accuracy requirements for the determination of d.c. and winding resistances in the µΩ range, for example for transformers.
Operation independent of the supply voltage and the light weight guarantee high flexibility even for portable use.

The micro-ohmmeter is equipped with a replaceable rechargeable battery that offers full mobility and independence from the power grid. The innovative design enables quick battery replacement and ensures uninterrupted work and increased efficiency.

The measuring device is operated and controlled either by means of the built-in control panel equipped with a high-resolution, resistive 5" touch screen, function keys or together with an ACTAS switchgear test system.

By connecting a PC directly to the device, the measurement results saved in the device can be downloaded and managed with the aid of the user-friendly software. Used in combination with an ACTAS test system, static and dynamic determination of the main contact resistances of switchgear devices is also possible.

3 Commissioning

Proper transport, specialist storage, set-up and commissioning and careful operation, maintenance and servicing are essential in order for this measuring device to function perfectly and safely.

Check that the delivery is complete and was not damaged during transport. Do not put the measuring device into operation if there is any damage.

3.1 Transport and storage



The following regulations apply for the transport and storage of the measuring device:

- Keep upright; avoid strong vibrations and mechanical influences
- Only use the transport bag or carrying case for transport
- Keep the measuring device dry
- Protect the measuring device from direct sunlight and heat

3.1.1 Transportation of Li-ion battery packs

The shipment of Li-ion battery packs is subject to dangerous goods legislation (UN 3480 and UN 3481). When shipping Li-ion battery packs, the currently valid regulations must be observed and, if necessary, information must be obtained from the transport company. Certified packaging is available from the manufacturer. Only ship battery packs if the housing is undamaged and no liquid is leaking. Secure the contacts against short circuits (e.g. insulate with adhesive tape).

3.1.2 Unpacking

Unpack with care using suitable tools only. Keep the original packaging for future transport.

- Check the packing list to make sure no items are missing
- Perform a visual inspection to check that the measuring device is in perfect condition

3.2 Requirements to be fulfilled by the installation location

- Impermissible environmental conditions may result in damage to the measuring device and jeopardize safe operation
- Ensure environmental conditions conform to the technical data specified
- Avoid air pollution
- Avoid high levels of air humidity
- The measuring device is not protected against the ingress of moisture. Damp and wetness can damage the device and cause dangerous short circuits
- When the measuring device is moved from a cold environment into a warm one, condensation can be a source of danger

DANGER
Gases may ignite as a result of sparking which may occur while connecting or operating the measuring device.
Do not use the measuring device in environments with explosive gases, vapours or dust.

3.3 Akkupack und Ladegerät

The PROMET L100s is powered by an 18V LiHD battery pack. KoCoS recommends the use of a LiHD battery pack with at least 4 Ah. The battery pack and charger are not included in the scope of delivery and are available from tool dealers or directly from KoCoS. The following must be observed when using the battery pack and charger:

- Before using the battery pack, read the operating instructions supplied with the battery pack carefully and completely.
- Fully charge the battery pack before use. Follow the instructions for charging the battery pack in the operating instructions supplied with the charger.

Li-Ion battery packs "Li-Power" have a capacity and signal display: Press the button on the back and the charge status is indicated by the LED lights.

If an LED light flashes, the battery pack is almost empty and needs to be recharged.

- Do not recharge a fully charged battery pack.
- Recharge the battery pack if the power drops.
- Remove the battery from the PROMET L100s and charge it if it will not be used for a longer period of time. Do not store the battery pack in the charger after charging.
- Do not store the battery pack in the PROMET L100s.
- If the device is not used for a longer period of time, the battery packs should be stored at a charge level of 80%.
- After long periods of storage, the battery may need to be charged and discharged several times to maintain maximum performance.

To maintain the battery capacity, it should be charged at least twice a year.



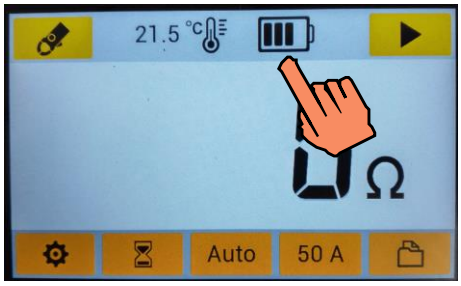
Insert battery pack

- ➢ Insert the battery pack into the milled grooves in the housing cover
- ➢ Pull the battery pack release to the right and push the battery pack down until it clicks into place

Remove battery pack

- ➢ Pull the battery pack release to the right, push the battery pack upwards and remove it forwards, taking the milling grooves into account.

3.3.1 Charging status display



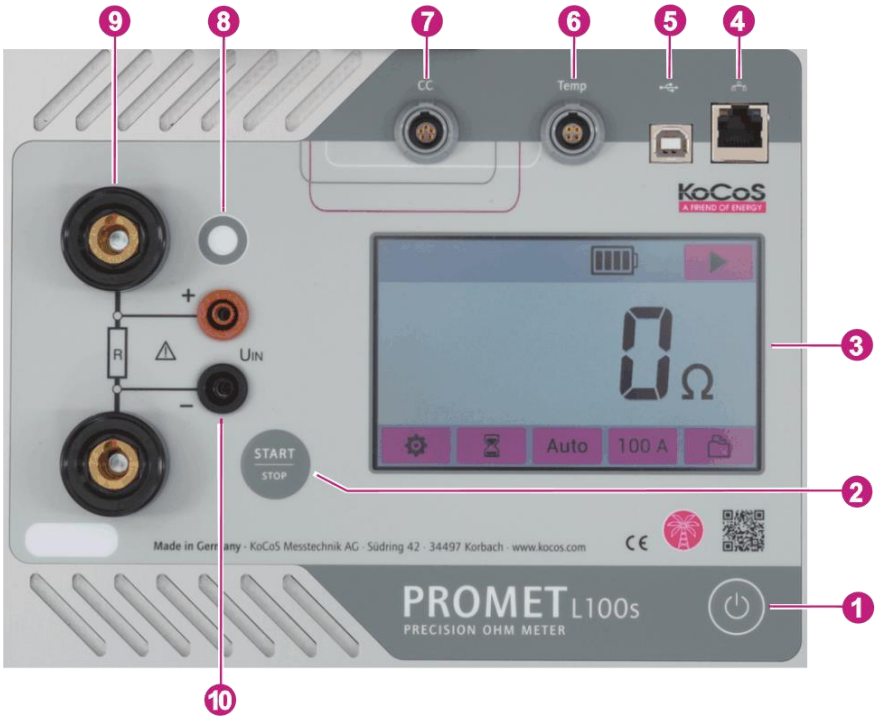
Battery

The battery charge status is displayed with an icon at the top of the screen, see under **Touchscreen functions**.

Operation of the device is automatically interrupted if the battery voltage falls below a certain minimum value.

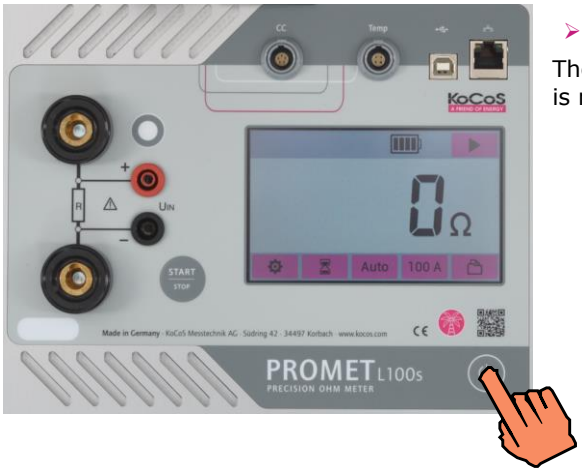
4 Operation

4.1 Overview front panel



1	On/Off key and operating status indicator	6	Temperature sensor input
2	Start/Stop key	7	Current clamps input
3	Touch screen	8	Status display for high-current output
4	RJ45 interface	9	High current output
5	USB interface	10	Voltage measurement input

4.2 Switching the device on and off

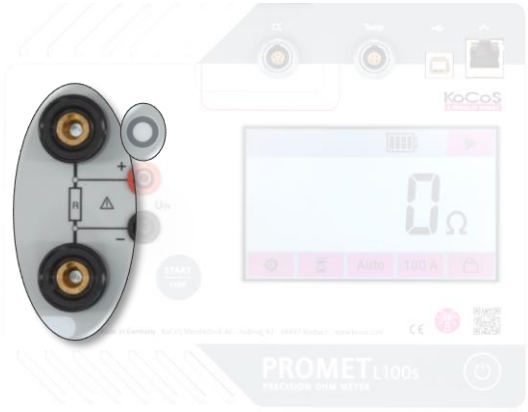


➢ Press and briefly hold the on/off button

The device is switched on/off as soon as the button is released.

4.3 Connections and interfaces

4.3.1 High-current outputs



Constant currents of up to 100 A are output via the high-current outputs. The measuring range for recording the test current is automatically adjusted.

Status display

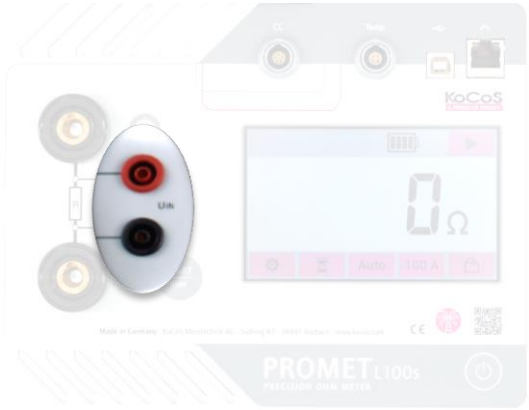
The display shows the status of the measurement:

LED lights up red: Current output and measurement active



WARNING
It is imperative that any applicable safety regulations on the use of high currents be observed!

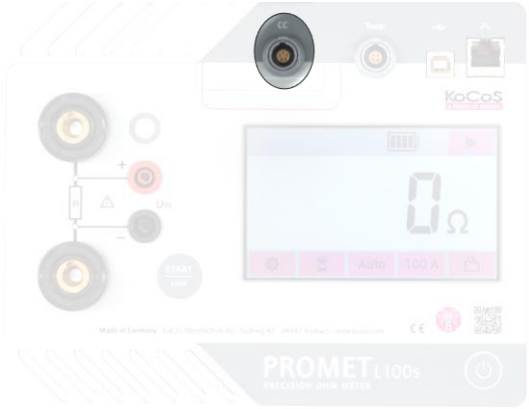
4.3.2 Voltage measurement inputs „U IN"



The voltage measurement inputs are used to measure the voltage drop across the measurement object.

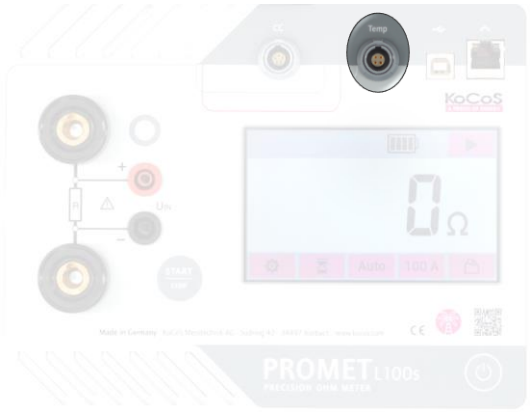
The measuring ranges can be assigned automatically depending on the measurement value or can be switched manually, see the section of these operating instructions titled **Touch screen functions**.

4.3.3 Current clamp „CC"



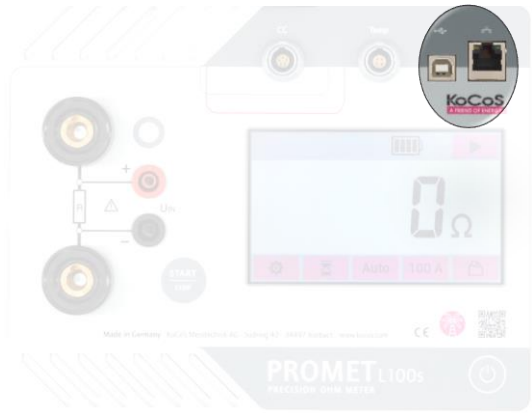
Connection socket for the optional current clamp for measuring the current via the earth conductor. For more information, see the section of these operating instructions titled **Resistance measurement with earthing on both sides**.

4.3.4 Temperature sensor „Temp."



Connection socket for the optional external temperature sensor for the temperature measurement on the measurement object. For more information, see the section of these operating instructions titled **Resistance measurement with temperature compensation**.

4.3.5 USB and RJ45 interface



USB interface

The passive USB interface is used for the communication with a PC or laptop. It is not possible to connect another passive USB device (such as a USB flash drive) to this interface.

Ethernet interface

The device also features an Ethernet interface for communication with a PC or an ACTAS test system.

To avoid communication problems, only one of its two available serial interfaces (RJ45 or USB) should be used at any one time.

4.4 Control panel with touch screen

The control panel consists of a high-resolution, resistive 5" touch screen and function keys. Optical and acoustic signals are an additional source of information and provide feedback on settings and measurements.



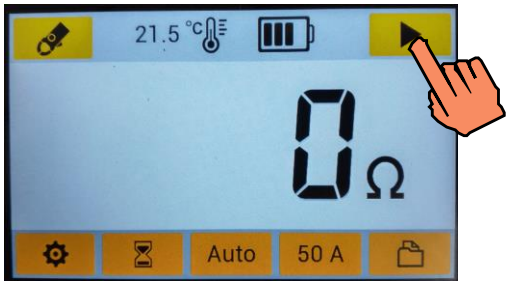
Touch screen
Using the touch screen, it is possible to carry out all basic tasks connected with operation and configuration. In addition, information about the system status and an overview of the configured signal values is displayed.

START/STOP
Starts and stops measurements.

The resistive touch screen reacts to pressure and can therefore also be operated when wearing gloves, for example.

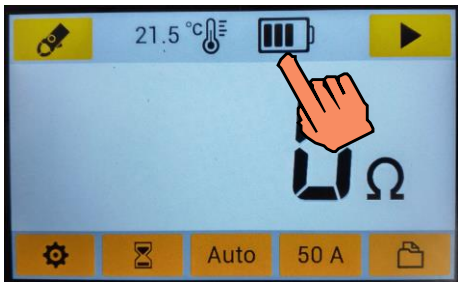
To avoid damage, never use hard or sharp objects to operate the touch screen!

4.4.1 Touch screen functions



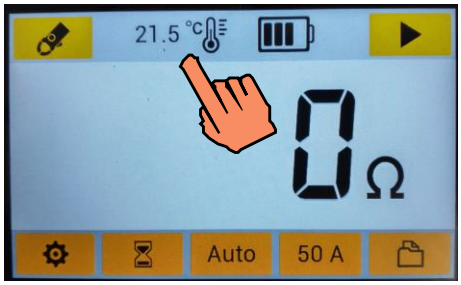
Start / Stop

- Starting and ending measurements



Battery charge status

Display for the battery charge status, see also under **Commissioning**.



Temperature

As soon as a corresponding sensor is connected, the measured temperature is displayed, see under **Resistance measurement with temperature compensation**.

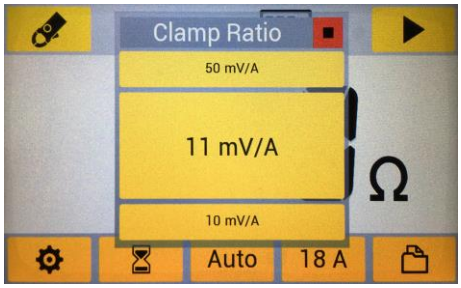


Current clamp

If a current clamp is connected, the button with the current clamp symbol is displayed.

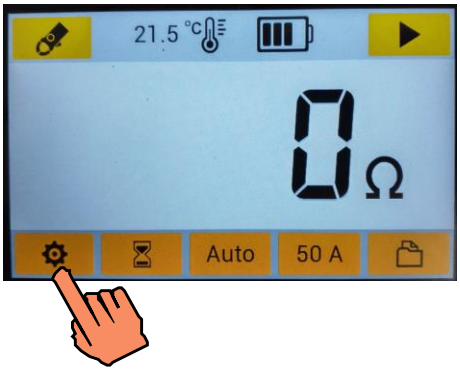
- Tap on the display

The current clamp measuring range editor is called up.



Current clamp measuring ranges

- Set the measuring range of the connected current clamp



Settings

- Set parameters for the test environment and options for the test system, see **Settings**.



Measuring current output time

- Set the duration of the current output for a measurement or deactivate the function



Measuring range

Display and setting for the voltage measuring range.

- Tap on the display

You can switch between the following measuring ranges:

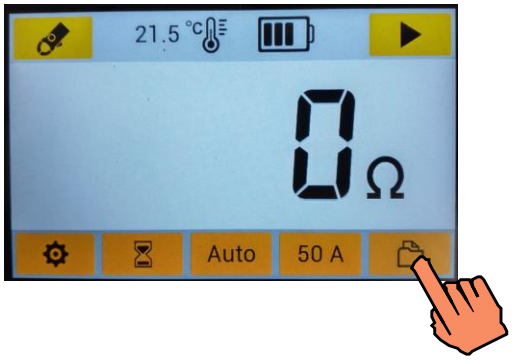
- Auto
- 25 mV
- 250 mV
- 2,5 V



Test current

Display and setting for the test current.

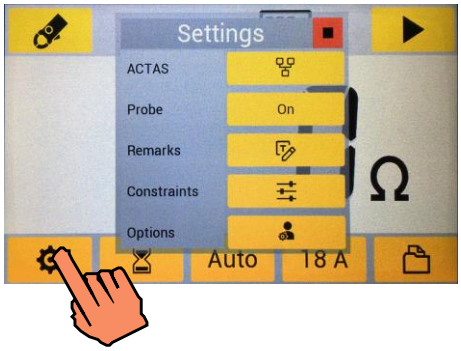
- Tap on the display
- Change test current step by step by tapping in the upper/lower field
- Fine adjustment by tapping or sliding in the middle field



Result list

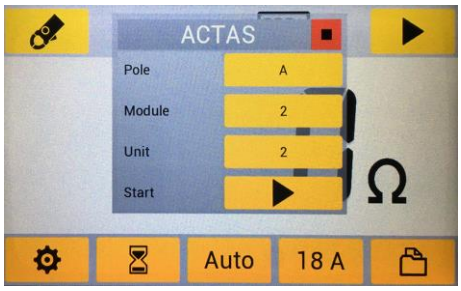
Saved measurement results can be displayed and deleted in the Results menu, see under **Results**.

4.5 Settings



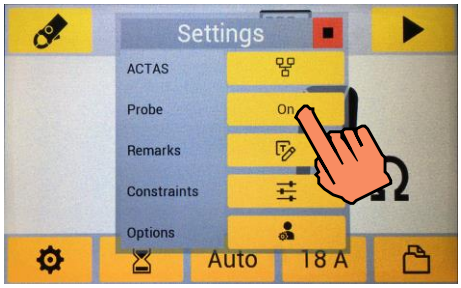
The **Settings** selection is called up.

4.5.1 ACTAS



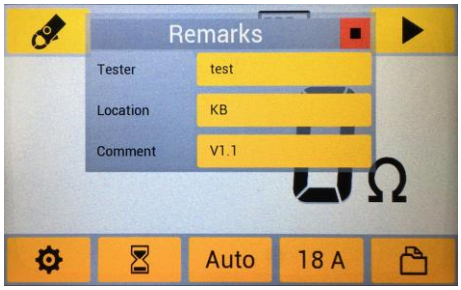
For the switchgear test with ACTAS, you can set which pole, which module and which unit is measured, see under **Nomenclature in the main circuit** in the ACTAS operating instructions.

4.5.2 Test mode „Probe"



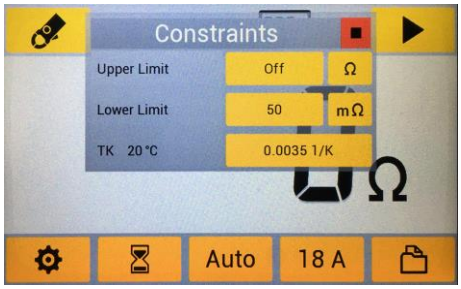
In test mode **Probe**, measurements can be carried out with test probes, in particular with the Kelvin test probes KP 200, see **Carrying out measurement** / **Test probe measurement mode**.

4.5.3 Remarks



- Enter data and comments for the results list

4.5.4 Constraints



Limit values

Setting the limit values for resistance measurement.

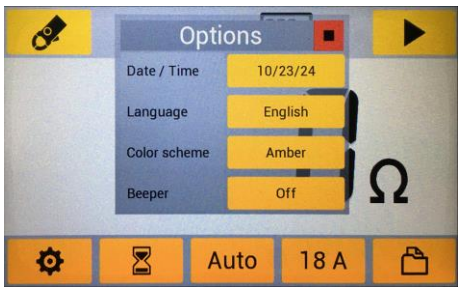
- Values for the upper and lower limit can be set by tapping

If **OFF** is displayed, the application is carried out without limit values.

Temperature coefficient

For the measurement with temperature compensation, the temperature coefficient of the material to be referenced during the measurement can be specified, see Resistance measurement with temperature compensation.

4.5.5 Options



Under **Options**, the setting is made for

- Date and Time
- Language
- Color scheme
- Beeper

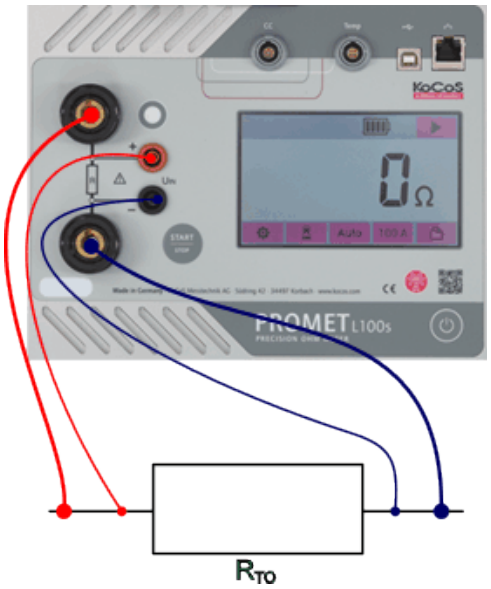
5 Carrying out measurements

- To connect the measurement object, only the original cables and clamps delivered by the manufacturer may be used
- Always check that the cables and clamps are in perfect condition before use, paying particular attention to the insulation
- The measurement object may only be connected to or disconnected from the measuring device when it is absolutely certain that no test values are available at the outputs

5.1 Resistance measurement

For the four-wire measurement (Kelvin measurement), four separate leads are connected. Two leads for the high-current connection and two further leads for measuring the voltage drop across the measurement object.
Using this measurement method, very precise results can be obtained when carrying out measurements on low-value resistors.

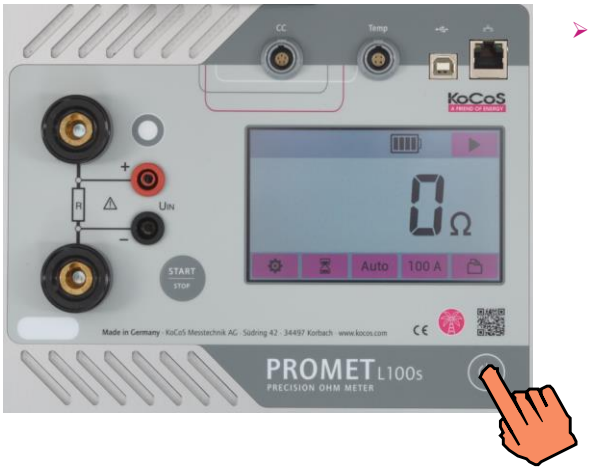
5.1.1 Connection



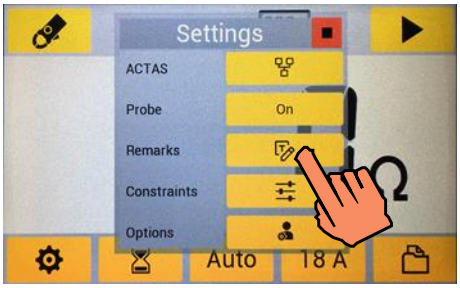
When using the four-wire measurement it is important to ensure that the voltage connections lie between the high-current connections. The position of the high-current connections on the measurement object is irrelevant.
However, the clamps of the voltage connections must be connected precisely at the points across which the resistance is to be determined.

➢ Connect the measurement object

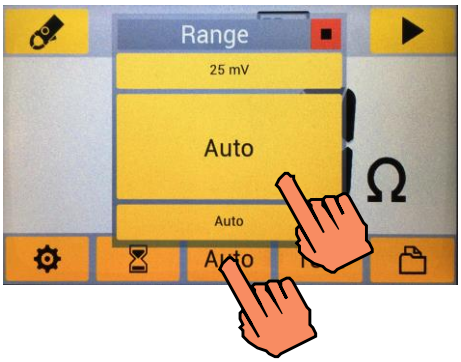
5.1.2 Measurement



➢ Press **the On/Off** key to switch on the device

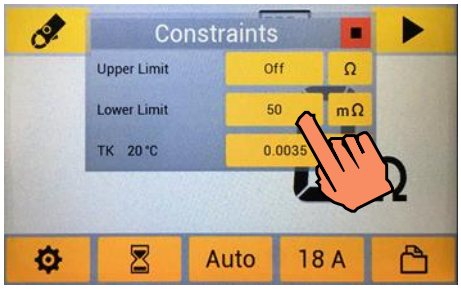


➢ Adjust test data for the entry in the test report under **Settings/Remarks**



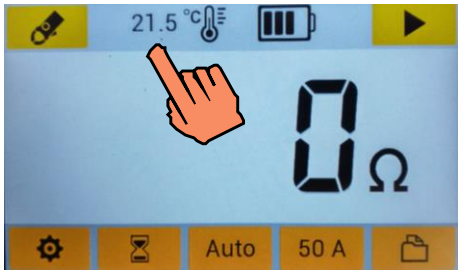
➢ Select measuring range

- Auto
- 25 mV
- 250 mV
- 2,5 V

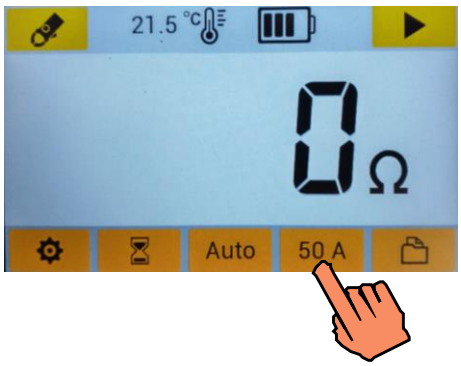


➢ Set limit values

The limit values can be changed or deactivated under **Settings/Constrains**.



The temperature display is active if a temperature sensor is connected and the material coefficient of the material is set.



➢ Set the measuring current depending on the measured object

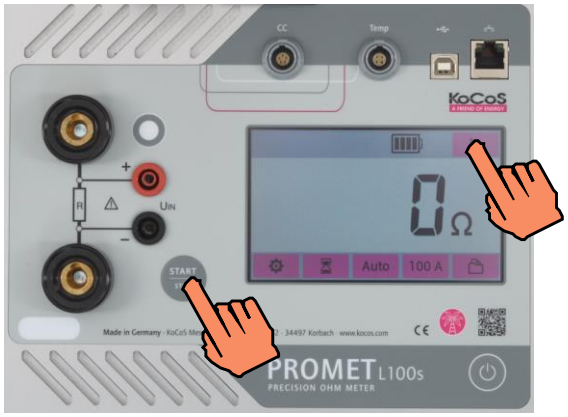
Tapping in the display calls up an input editor

Manual setting of the measuring time

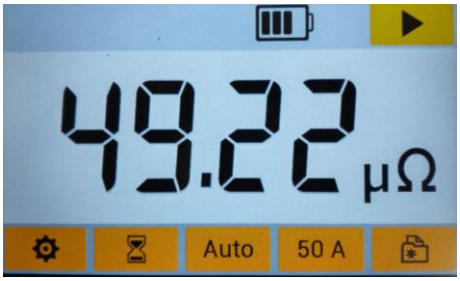
The measuring time and thus the output duration for the measuring current can be set manually. The function for setting the measuring time can be activated/deactivated. If the function is deactivated, the measuring current is automatically only output for as long as is necessary for reliable measurement.



If the function is activated, the setting is displayed in the button.



➢ Start measurement with the **START/STOP** button or the Start/Stop button on the display

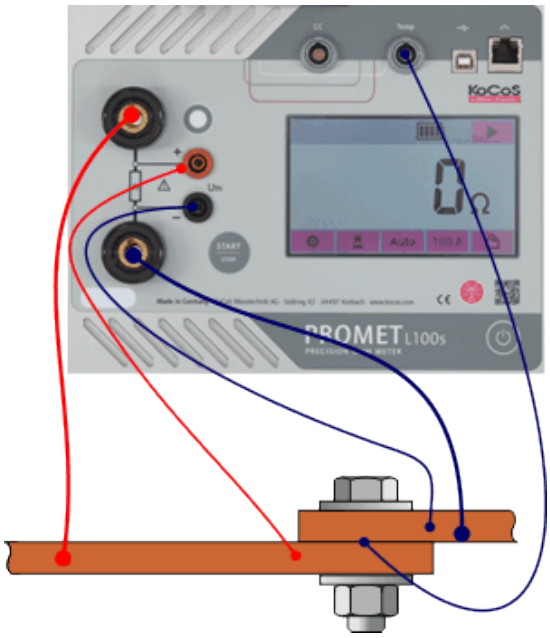


The resistance measurement result is shown on the display and saved directly. If results are saved that have not yet been called up, a * is displayed in the button symbol.

5.2 Resistance measurement with temperature compensation

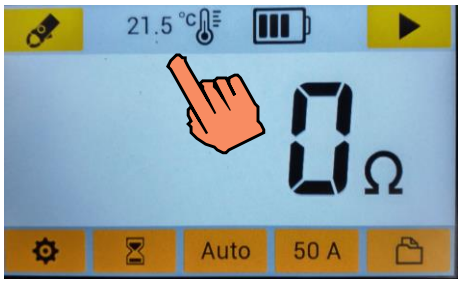
Resistances can be measured with temperature compensation. For this purpose, the temperature at the measuring point is recorded with a sensor and the resistance value is calculated to the reference temperature.

5.2.1 Anschluss



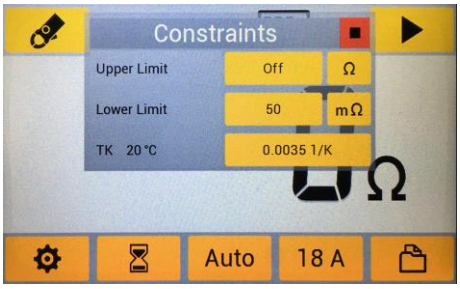
- Connect the temperature sensor to the measuring device and position it so that it detects the temperature of the object being measured

5.2.2 Setting the material constant



- Connecting the temperature sensor

The temperature measured at the sensor is shown on the display.



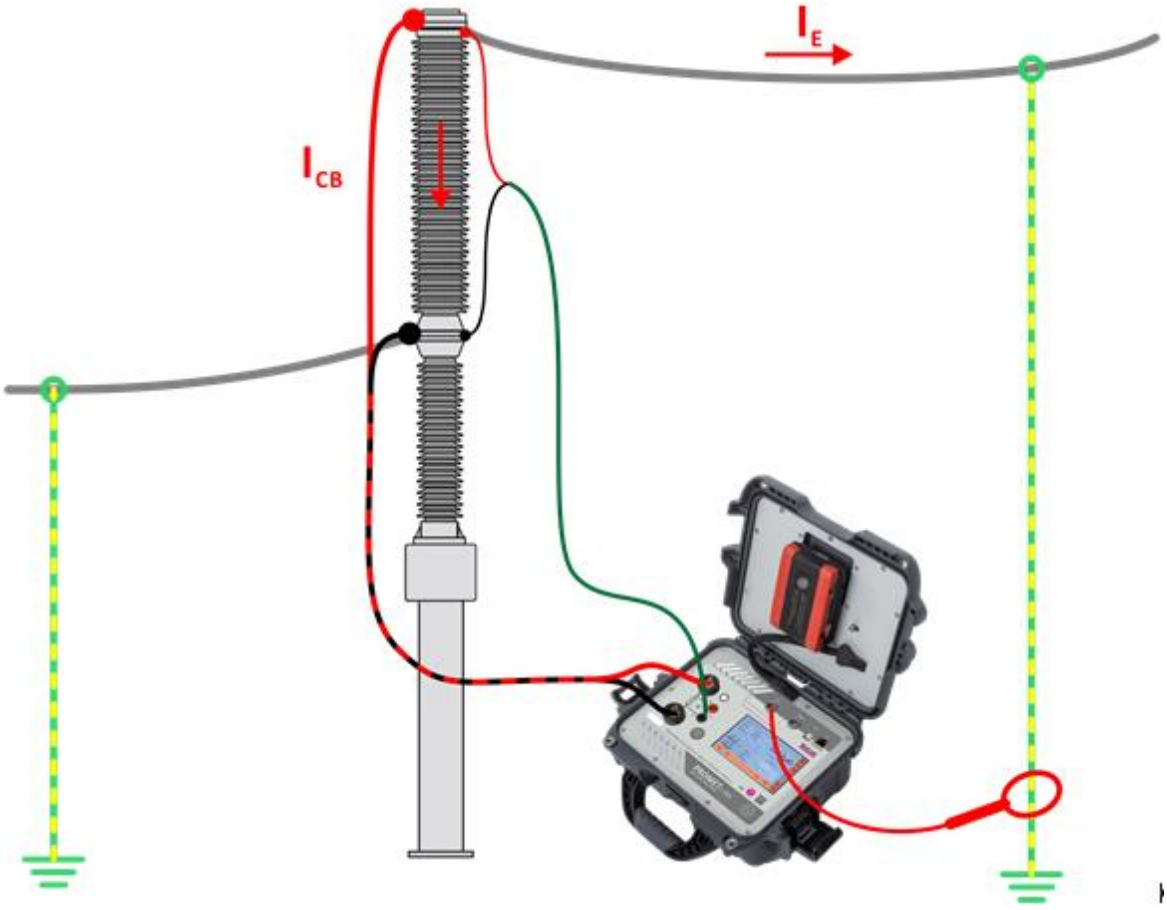
Set the temperature coefficient of the material used under **Settings/Constraints**.

5.3 Resistance measurement with earthing on both sides

Resistances can also be determined correctly if the measurement object is earthed on both sides. To do this, the current flowing through the earth is measured using a current clamp and taken into account accordingly when calculating the resistance.

5.3.1 Connection

- Connect current and voltage cables with the correct polarity
- If the temperature of the measured object is to be taken into account, an external temperature sensor must be connected and positioned accordingly
- Connect and configure the current clamp and connect it to the grounding of the measurement object

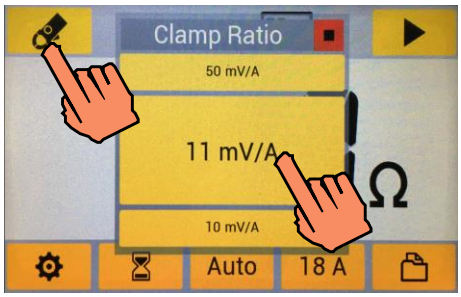


5.3.2 Connecting and configuring the current clamp



- Connect the current clamp to the **CC** socket

The current clamp is displayed as a button at the top left.



Current clamp measuring range editor

- Tap the current clamp button

The current clamp measuring ranges can be defined in the editor.

5.4 Resistance measurement on inductive loads

The PROMET L100s can be used to measure resistances on inductive loads such as HV, MV and LV transformers, motors, current transformers, etc.

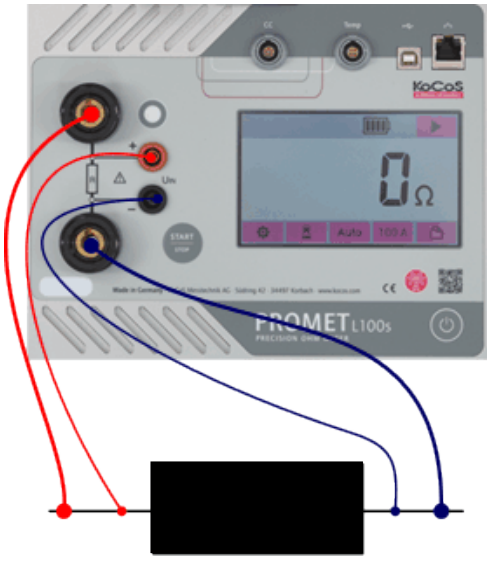


- Due to high inductance, caution is advised when measuring on transformers. To protect against discharge arcs when disconnecting the current lines, the measuring device frees the transformer core from stored energy when a measurement has been completed. During discharge, the LED next to the connections lights up red.
- In order to avoid the risk of electric shock, the user must wait until the charging has dropped to zero and the warning signal has gone out after the measurement has been completed. Only then the current terminals may be opened!
- The current lines of the transformer must never be removed when the warning in the display is still visible.
- Often the measurement of the resistance on inductors is shorter than the discharging of the stored energy afterwards.

The temperature sensor can also be used for resistance measurement on inductive loads and the temperature coefficient of the winding material can be taken into account.

The measurement duration is set via the output time setting and depends on the inductance of the measurement object.

5.4.1 Connection

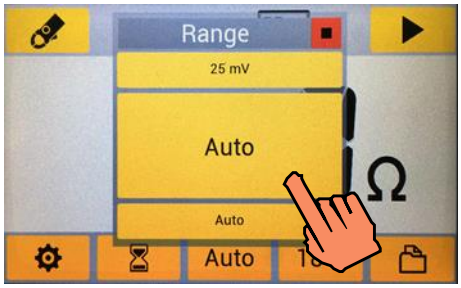


L_{TO}

When using the four-wire measurement it is important to ensure that the voltage connections lie between the high-current connections. The position of the high-current connections on the measurement object is irrelevant.
However, the clamps of the voltage connections must be connected precisely at the points

➢ Connect the measurement object

5.4.2 Configuration



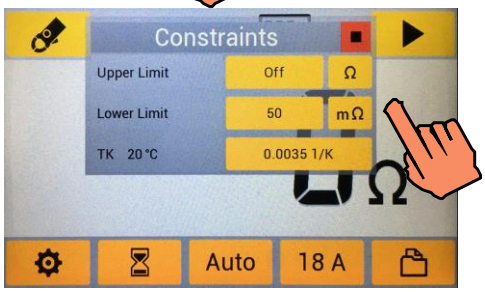
➢ Select measuring range

- Auto
- 25 mV
- 250 mV
- 2,5 V

The measuring time and thus the output duration for the measuring current can be set manually. The function for setting the measuring time can be activated/deactivated.
If the function is deactivated, the measuring current is automatically only output for as long as is necessary for reliable measurement.

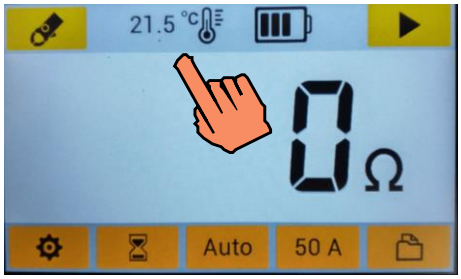


If the function is activated, the setting is shown on the display.



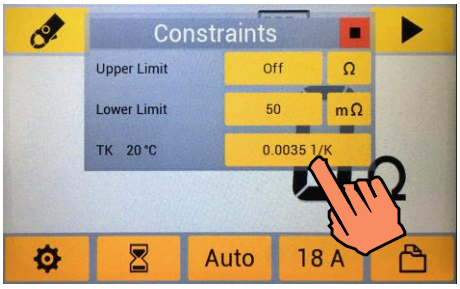
➢ Set limit values

The limit values can be set or deactivated under **Settings/Constraints**.



➢ Connecting the temperature sensor

The measured temperature is shown on the display



➢ Set the temperature coefficient of the material used under **Settings/Constraints**

5.4.3 Measurement



➢ Start measurement with the **START/STOP** button or the Start/Stop button on the display



The resistance value is shown on the display.

The inductive load is charged during the measurement. The resistance value fluctuates during charging; the resistance value is only stable after charging is complete

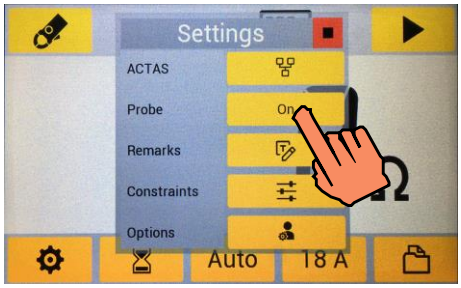
After the set output time, the current output is stopped and the resistance value is displayed



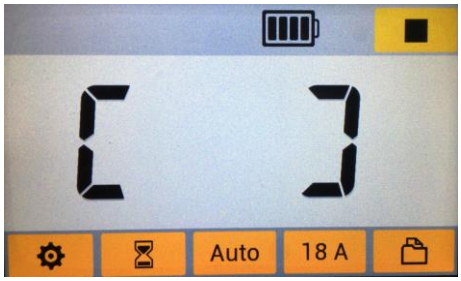
At the end of the measurements, while the inductive load is discharging, the LED next to the connections lights up red to indicate the discharge status.

The connections can only be safely disconnected after discharge has been completed!

5.5 Test probe measuring mode



In **Probe** mode, measurements can be carried out with test probes, in particular with the Kelvin test probes KP 200.



If the test probe mode is activated, a prompt to position the test probes is displayed after pressing the start button.

5.5.1 Testing via voltage trigger

- Connect current to the test object
- Start measuring mode with the **Start/Stop** button

Brackets [] are displayed, PROMET waits for the test probes to be placed on the test object.

A measurement is only carried out when the voltage measurement is fully contacted, i.e. current is output, measuring ranges are determined and the resistance value is measured. Once the measurement has been completed, the next measurement must be activated with Start/Stop.

5.5.2 Testing with test probes KP 200



- Start measuring mode with the **Start/Stop** button

Brackets [] are displayed, PROMET waits for the test probes to be placed on the test object.
A measurement is only carried out when the test probes are safely and fully contacted (voltage and current contact), i.e. current is output, measuring ranges are determined and the resistance value is measured.
Once the measurement has been completed, the next measurement with the KP200 test probes must be activated with **Start/Stop**.

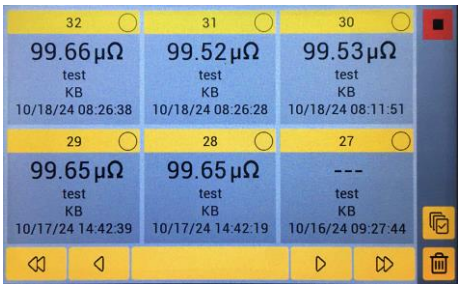
6 Results



Every measurement taken is saved directly, without additional confirmation. If results are saved that have not yet been called up, a * is displayed in the file symbol of the button.

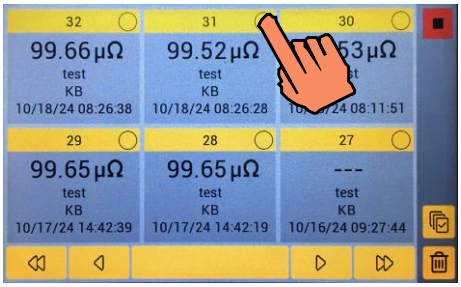
➢ Tap on the file icon

The results list is called up.

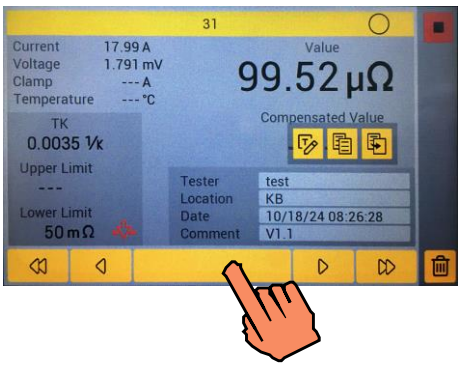


Saved measurement results can be displayed, deleted and edited in the results list.

6.1 Show results

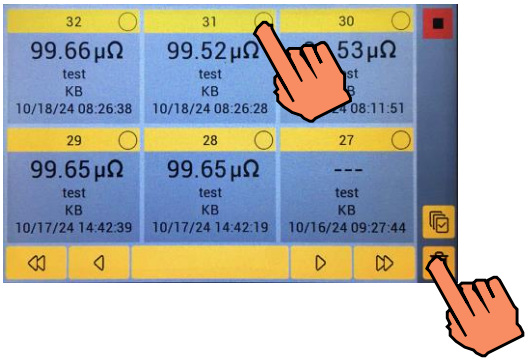


➢ Open the desired test by tapping on it



In the results display, the next or previous entry can be selected using the <>, << >> buttons. The results can also be selected by dragging over the middle button.

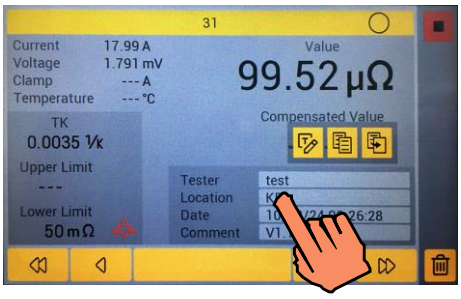
6.2 Delete



- Select tests to be deleted
- Confirm selection with "Wastebasket" button

The selected tests are deleted.

6.3 Editing



Results can be subsequently edited in the comments, limit values and temperature coefficients sections:
If the limit values and temperature coefficient are changed, the result is re-evaluated/re-calculated.

- Tap on the area to be changed

The change menu is displayed:

 Change text or setting

 Copy changes to clipboard

 Insert changes from clipboard

When pasting, the changes are copied to the currently open test and to the test template. If several tests are selected in the results list, they will all receive the changed settings.

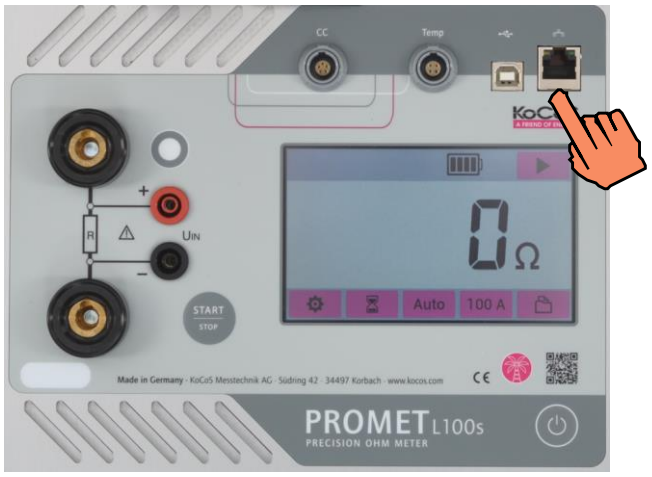
7 Maintenance and service

The device contains no parts which can be serviced by the user.

Only use a soft, lint-free cloth to clean the device. If it is very dirty, the cloth may be dampened slightly. Do not use any cleaning agents which contain solvents. Do not allow moisture to get inside the device.

7.1 Firmware-Update

Firmware updates are part of maintenance and are required to maintain the performance and reliability of the device. Installation is carried out with the **KoCoS Firmware Updater** programme using a PC connected via Ethernet.



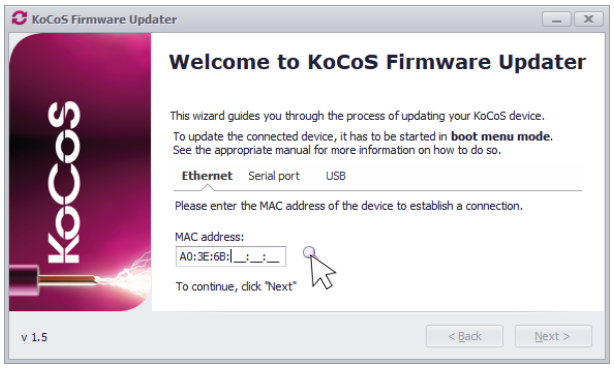
- If not already installed, install the **KoCoS Firmware Updater** programme on the PC

The programme is usually installed under **C:\Program Files (x86)\KoCoS\...**

- Copy the update file (*.kfp) to the PC
- Connect the PROMET L100s to the PC via an Ethernet cable, serial port or with a USB



- Start the **Firmware Updater** programme on the PC

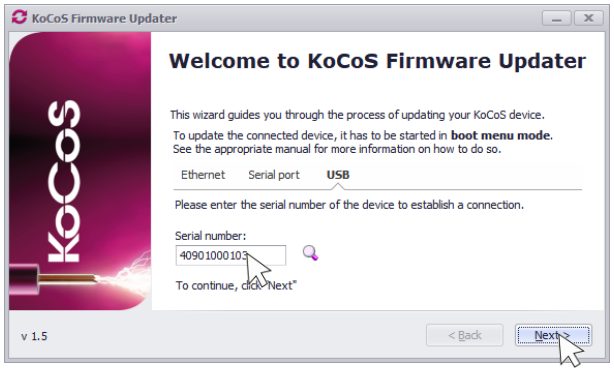


- Depending on the interface used, select the corresponding function Ethernet, Serial port or USB
- Search for the connected device using the search function

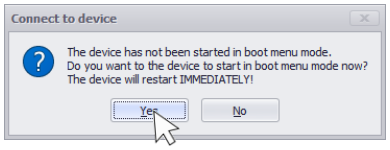


All connected and recognized devices are displayed.

- Select the device to be updated and confirm with **Ok**



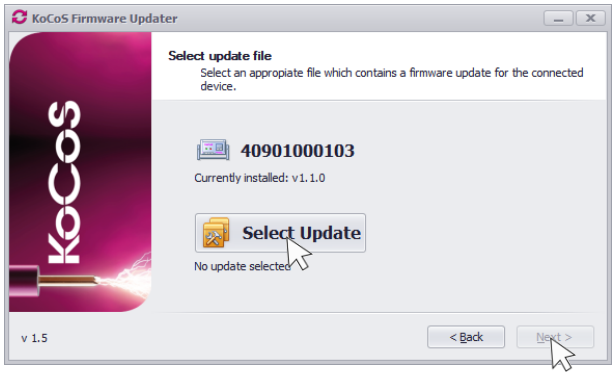
- Depending on the interface, enter the serial number or the MAC address
- Continue with **Next**



- Confirm restart in boot mode with **Yes**



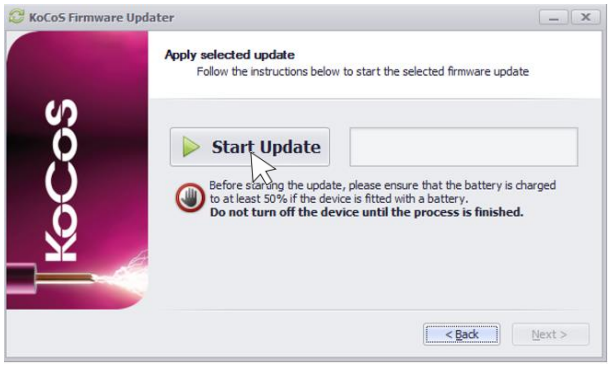
PROMET L100s is started in boot mode.



- Click **Select Update** and select update file
- Continue with **Next**

NOTICE

Once an update has been started, it must not be interrupted. Before starting an update, check the power supply; if operated by battery, ensure that the battery is sufficiently charged. Do not switch off the device during the update!



➢ Start update with **Start Update**

The installation is carried out.



The update is complete when the message **Firmware update finished** is displayed.

➢ Click **Finish** and quit Firmware Updater

Switch the device off and on again to start the new firmware

After switching on, the version of the installed firmware package is shown for a short time in the top left-hand corner of the display.

7.2 Calibration

Regular calibration is necessary in order to ensure the validity of the results obtained with KoCoS test and measuring systems.

During calibration, the systematic deviation of the values output by a device from a traceable standard which serves as a reference is determined and documented. A traceable standard has its own calibration, which can be traced back to a national standard via a chain of other higher-ranking standards. Calibration does not involve any intervention in respect of the device, it remains unchanged. Calibrations are carried out under defined reference conditions. The deviations detected during calibration are documented in a calibration certificate.

7.2.1 Calibration confirmation

This device has been tested and calibrated in accordance with the published technical data.

Calibration has been carried out using measuring devices which are compared and set in accordance with certified measurement standards at regular and suitable intervals.

7.2.2 Handling of calibration intervals

According to the applicable guidelines, the user is always responsible for regular calibration and for the definition of calibration intervals. As the manufacturer, KoCoS cannot define calibration intervals for devices, because changes in accuracy depend, among other things, on the individual requirements of the user, the frequency of use and the degree of stress on the devices.

Based on experience, KoCoS recommends an initial calibration interval of 2 years. The value is a recommendation for calibration after the first period of use. Based on the detected deviations, the user then determines the following intervals himself and corrects them continuously in accordance with further experience.



The accuracy of a calibration is determined by the accuracy of the measuring devices used, the environmental conditions and the methods used. If suitable measuring devices, environmental conditions and methods are not available, the calibration should be carried out by the manufacturer.

7.3 Adjustment

If the deviations detected during calibration are outside the tolerance limits, the device should be adjusted.

During adjustment, the device is adjusted in such a way that the systematic deviations from the standard are minimized and lie within the specified tolerance limits. This involves setting the output values of the device to the known value of the standard under defined reference conditions.



During adjustment, an intervention takes place that has a lasting effect on the device. Because this change can influence the accuracy, function and safety of the adjusted device, adjustments may only be carried out by the manufacturer or by organizations and persons accredited by the manufacturer.

8 Guarantee conditions

KoCoS Messtechnik AG guarantees that this product will function correctly for two years from the date of the invoice. During this period defective devices are repaired free of charge; alternatively, defective devices, or certain components of such devices, are replaced.

If a defect occurs, the device can be sent in for repair after consultation with the service department of KoCoS Messtechnik AG. For devices which have been repaired, the guarantee is still valid for the rest of the remaining guarantee period and for at least 90 days after the repair for those parts affected by the repair.

This guarantee does not cover:

- Defects resulting from unauthorized modifications or attempts to make repairs carried out by persons not authorized to do so.
- Defects arising from improper use, e.g. through overvoltage
- Mechanical damage caused by external influences
- Fuses and other materials subject to wear

No guarantee is undertaken for the suitability of the product for a specific application.

KoCoS Messtechnik AG is not liable for indirect, direct, especial or consequential damage stemming from the use of this product.

9 Technical data

Current source	Outputs, quantity	1
	Test current	1…100 ADC
	Output voltage	10 VDC
	Adjustable step value	1 A
Voltage measurement	Inputs, quantity	1
	Measuring ranges	25 mV – 250 mV – 2.5 V
Resistance		Up to 2.5 Ω
Accuracy		0.2 %
Measuring time	Range	1…100 A: up to 60 s
	Adjustable step value	1 s
Power supply	Supply voltage	Battery operation independent of the power supply
	Measurements	> 300 Measurements at 100 A
Battery operation	External charger	Battery voltage: 12 - 36 V Mains voltage: 220 - 240 V (EU, country-specific) Mains frequency: 50 - 60 Hz Output power: 55 W Loading time for 18 V/4.0 Ah: 80 min
	Battery pack	Type: LiHD Voltage: 18 V Capacity: 4 Ah
Temperature meas. input	Type	Two-wire (PT 1000)
	Temperature range	-20°C…80°C
Current clamps meas. input	Range	2 VAC/DC
High-current connections	High-current sockets	9 mm
Measurement connections	Safety sockets	4 mm
Housing		Hard-top case
Dimensions	(W x H x D) mm	318 x 152 x 257
Weight		4.5 kg
Display		High-resolution, resistive 5" touch screen
Operation		Touchscreen, Start/stop button
Internal data memory	Capacity	4 GB
Interfaces	PC interfaces	RJ45 (Ethernet), USB-B
PC		PROMET - Operating software for Windows
Environment	Operating temperature	-10…50°C
	Storage temperature	-20…60°C
	Relative humidity	5…80%, non-condensing
	Protection class	IP67 (closed)
	Safety	DIN EN 61010-1 300 V~CAT II
	Product standard	DIN EN 61326-1
Measurement functions		Resistance measurement on ohmic resistances Resistance measurement with earthing on both sides Resistance measurement with temperature compensation Static and dynamic resistance measurement with ACTAS systems