

EN

OPERATING MANUAL
CLAMP METER



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Notes regarding the instructions


Symbols


 **Warning of electrical voltage**
 This symbol indicates dangers to the life and health of persons due to electrical voltage.

 **Warning**
 This signal word indicates a hazard with an average risk level which, if not avoided, can result in serious injury or death.

 **Caution**
 This signal word indicates a hazard with a low risk level which, if not avoided, can result in minor or moderate injury.

Note
 This signal word indicates important information (e.g. material damage), but does not indicate hazards.

 **Info**
 Information marked with this symbol helps you to carry out your tasks quickly and safely.

 **Follow the manual**
 Information marked with this symbol indicates that the instructions must be observed.

You can download the current version of the instructions and the EU declaration of conformity via the following link:




BE38



<https://hub.trotec.com/?id=40557>

Safety

Read this manual carefully before starting or using the device. Always store the manual in the immediate vicinity of the device or its site of use.

 **Warning**
Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and / or serious injury.
Save all warnings and instructions for future reference.

- The device is supplied with a warning sign. Prior to initial start-up, make sure to paste the corresponding warning sign in your local language, if available, over the one present at the rear of the device as described in chapter Operation. Otherwise, choose a label in a language you know.



- Do not use the device in potentially explosive rooms or areas and do not install it there.
- Do not use the device in aggressive atmosphere.
- Protect the device from permanent direct sunlight.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Do not open the device.
- Never charge batteries that cannot be recharged.
- Different types of batteries and new and used batteries must not be used together.
- Insert the batteries into the battery compartment according to the correct polarity.
- Remove discharged batteries from the device. Batteries contain materials hazardous to the environment. Dispose of the batteries according to the national regulations.
- Remove the batteries from the device if you will not be using the device for a longer period of time.
- Never short-circuit the supply terminal in the battery compartment!
- Do not swallow batteries! If a battery is swallowed, it can cause severe internal burns within 2 hours! These burns can lead to death!
- If you think batteries might have been swallowed or otherwise entered the body, seek medical attention immediately!

- Keep new and used batteries and an open battery compartment away from children.
- Observe the storage and operating conditions (see Technical data).
- Disconnect the measuring cables from the device before replacing the batteries.

Intended use

Only use the device for measurements within the measuring ranges and overvoltage categories specified in the technical data. Use the specified measuring equipment (clamp meter, measuring cable or non-contact voltage detector, depending on the device).

To use the device for its intended use, only use accessories and spare parts which have been approved by Trotec.

Foreseeable misuse

Do not use the device in potentially explosive atmospheres, when wet or very humid.

Unauthorized modifications of the device are forbidden.

Personnel qualifications

People who use this device must:

- master the 5 safety rules of electrical engineering
 - 1. De-energise
 - 2. Secure against restart
 - 3. Verify de-energised state (bipolar)
 - 4. Earth and short-circuit
 - 5. Cover neighbouring live parts
- use the voltage detector following safe working procedures.
- be aware of the dangers that occur when working with electric devices in damp areas.
- take measures to protect themselves from direct contact with live parts.
- have read and understood the instructions, especially the Safety chapter.

Residual risks



Warning of electrical voltage

Electric shock due to insufficient insulation! Check the device and the measuring cables for damages and proper function before each use.
If you detect damages, do not use the device any longer.
Do not use the device when either the device or your hands are damp or wet!
Do not use the device when the battery compartment or the housing is open.



Warning of electrical voltage

Electric shock due to contact with live parts! Do not touch any live parts. Secure neighbouring live parts by covering them or by switching them off.



Warning of electrical voltage

When performing non-contact measurements of the current, disconnect the measuring cables from the device beforehand.



Warning of electrical voltage

There is a risk of a short-circuit due to liquids penetrating the housing!
Do not immerse the device and the accessories in water. Make sure that no water or other liquids can enter the housing.



Warning of electrical voltage

Work on the electrical components must only be carried out by an authorised specialist company!



Warning

Risk of suffocation!
Do not leave the packaging lying around. Children may use it as a dangerous toy.



Warning

The device is not a toy and does not belong in the hands of children.



Warning

Dangers can occur at the device when it is used by untrained people in an unprofessional or improper way!
Observe the personnel qualifications!



Caution

Keep a sufficient distance from heat sources.

Note

To avoid damages to the device, make sure that the correct measuring range is selected before carrying out a measurement.

If you are unsure, select the largest measuring range.
Remove the measuring cables from the measuring point before changing the measuring range.

Note

To prevent damages to the device, do not expose it to extreme temperatures, extreme humidity or moisture.

Note

Do not use abrasive cleaners or solvents to clean the device.

Note

Before commissioning, check the function of the device at a known voltage source, e.g. on a known and safe 230 V voltage source or on a known and safe 9 V battery. Select the correct measuring range!

Information about the device

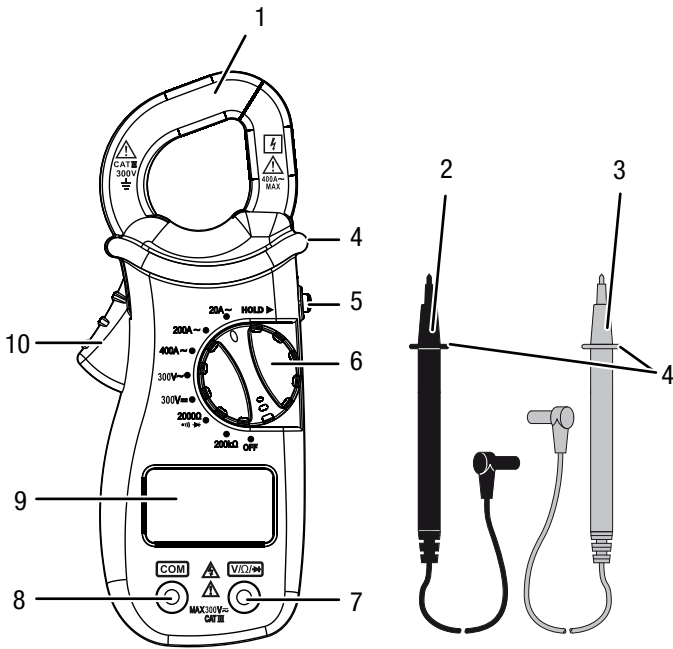
Device description

Using the clamp meter BE38 alternating current, AC voltage, DC voltage, resistances or the continuity of circuits, fuses and contacts can be checked.

The current measurement is effected without contact via the electromagnetic field, which is why the electric circuit does not have to be interrupted for this method. Therefore, running systems, which cannot be switched off separately, can also be checked.

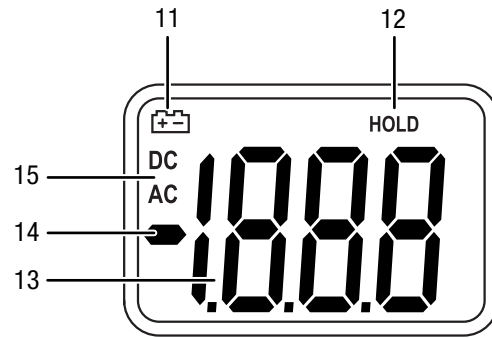
Owing to the galvanic isolation, the measuring signal is also potential-free towards the variable to be measured.

Device depiction



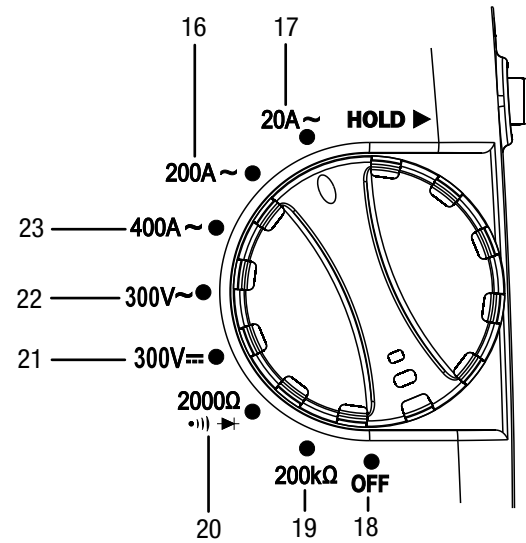
No.	Designation
1	Clamp
2	Measuring cable (black)
3	Measuring cable (red)
4	Protection against contact
5	HOLD button
6	Rotary switch
7	Connection for measuring cable (red)
8	Connection for measuring cable (black)
9	Display
10	Lever for opening the clamp

Display



No.	Designation
11	Battery indication
12	Display is frozen
13	Measurement value display
14	Display of positive and negative poles inverted
15	Direct or alternating current display

Rotary switch



No.	Designation
16	Measuring alternating current of up to 200 A
17	Measuring alternating current of up to 20 A
18	Switching the device off
19	Measuring resistance of up to 200 kΩ
20	Measuring resistance of up to 2000 Ω / diode testing / continuity testing
21	Measuring DC voltage of up to bis 300 V
22	Measuring AC voltage of up to bis 300 V
23	Measuring alternating current of up to 400 A

Technical data

Parameter	Value
Model	BE38
Weight	155 g (incl. batteries)
Dimensions (length x width x height)	148 x 27 x 60 mm
Max. diameter of conductor	approx. 25 mm
Measuring rate	3 per second
Input resistance (V AC and V DC)	9 MΩ
Frequency range alternating current	50/60 Hz (AAC)
Frequency range AC voltage	40 - 400 Hz (VAC)
Ambient conditions	0 °C to 40 °C with up to 75 % RH
Storage conditions	-20 °C to 60 °C with up to 85 % RH
Battery	3x 3 V CR2032 button cell batteries
Overvoltage protection	Category III 300 V
Type of protection	IP20

Measuring ranges

Measuring range	Resolution	Accuracy	Measuring range exceeded
AC voltage			
300 V	1 V	± (1.2 % + 3 digits)	- (*)
DC voltage			
300 V	1 V	± (1.0 % + 2 digits)	- (*)
Alternating current			
20 A	10 mA	± (3.0 % + 5 digits)	The figure 1 will be indicated on the display.
200 A	100 mA	± (2.5 % + 5 digits)	The figure 1 will be indicated on the display.
400 A	1 A	± (2.5 % + 5 digits)	- (*)
Resistance			
2000 Ω	1 Ω	± (1.2 % + 2 digits)	The figure 1 will be indicated on the display.
200 kΩ	100 Ω	± (1.5 % + 2 digits)	The figure 1 will be indicated on the display.

(*): When exceeding the measuring range, the measured value might be displayed nonetheless.

Please observe the measuring range and the overvoltage protection! Measurements above the given measuring range are not permitted!

Scope of delivery

- 1 x clamp meter BE38
- 2 x safety measuring line with test probe
- 3 x button cells 3 V CR2032
- 1 x manual

Transport and storage

Note

If you store or transport the device improperly, the device may be damaged.

Note the information regarding transport and storage of the device.

Transport

For transporting the device use a suitable bag to protect it from external influences.

Storage

When the device is not being used, observe the following storage conditions:

- dry and protected from frost and heat
- protected from dust and direct sunlight
- the storage temperature complies with the values specified in the Technical data
- Remove the batteries from the device.

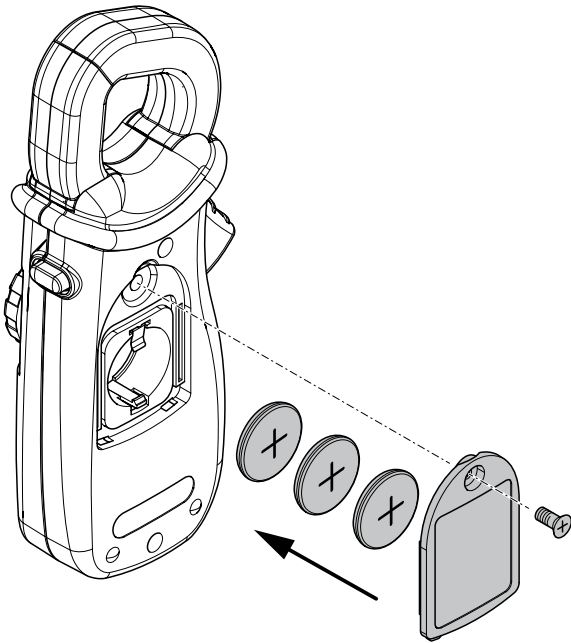
Operation

Inserting the batteries

- Insert the supplied batteries before first use.

Note

Make sure that the surface of the device is dry and the device is switched off.



1. Loosen the screw and open the cover of the battery compartment.
2. Remove the used batteries, if any, and dispose of them according to the national regulations.
3. Insert the new batteries in the battery compartment with correct polarity.
4. Close the battery compartment and fasten the cover in place.

Changing the location



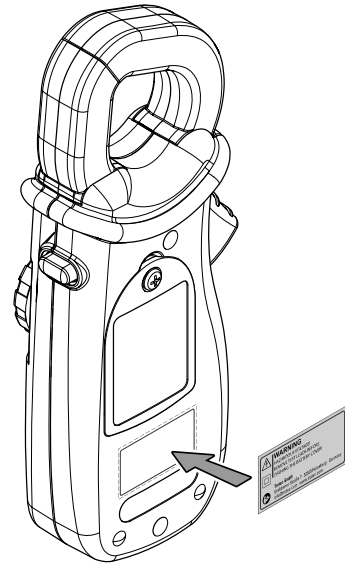
Info

Please note that moving from a cold area to a warm area can lead to condensation forming on the device's circuit board. This physical and unavoidable effect can falsify the measurement. In this case, the display shows either no measured values or they are incorrect. Wait a few minutes until the device has become adjusted to the changed conditions before carrying out a measurement.

Attaching the warning sign

Prior to initial start-up, check whether the warning sign at the rear of the device is in your local language, if not, paste the proper one over it. A warning sign in your native language is supplied along with the device. Please proceed as follows to attach the warning sign to the rear of the device:

1. Remove the label in your local language from the supplied film.
2. Affix the label in the intended position at the rear of the device.



Measurement with cable

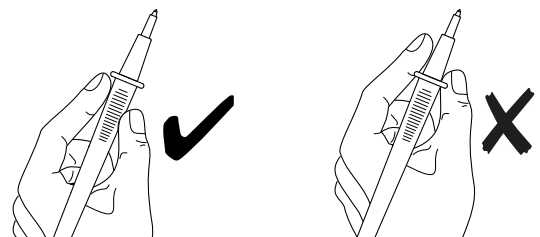


Warning of electrical voltage

Risk of electric shock and risk of injury!

Make sure that the power of the electric circuit is switched off and all capacitors are completely discharged.

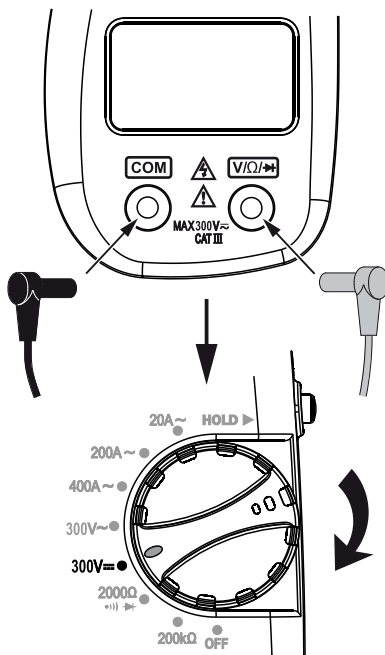
- Make sure to observe the device's nominal voltage specified in the technical data during the measurement.
- Check the measuring cables for damaged insulation before each measurement.
- When holding onto the measuring cables, make sure not to reach behind the protection against contact (4):



Performing a voltage measurement

Please proceed as follows to measure the DC voltage:

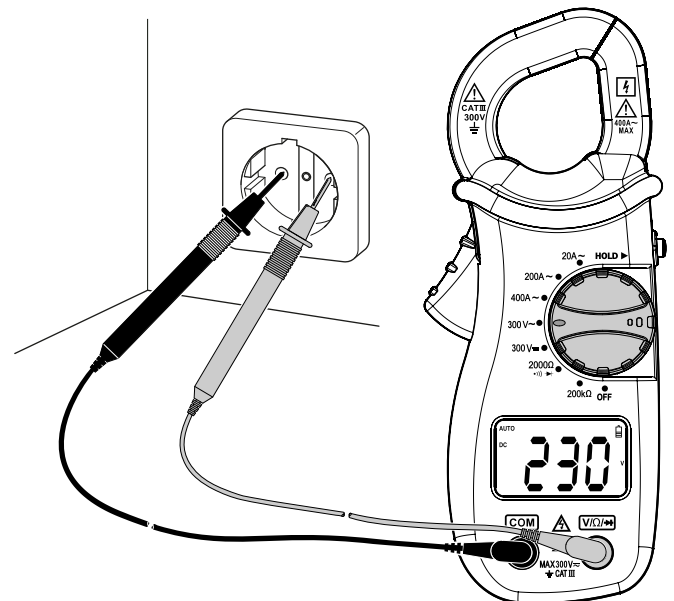
1. Connect the black measuring cable (2) to the connection for the black measuring cable (7) and the red measuring cable (3) to the connection for the red measuring cable (6).
2. Turn the rotary switch (6) to position 21.
 - ⇒ The alternating current/direct current icon is displayed in the direct current indication (15) on the display.



Please proceed as follows to measure the AC voltage:

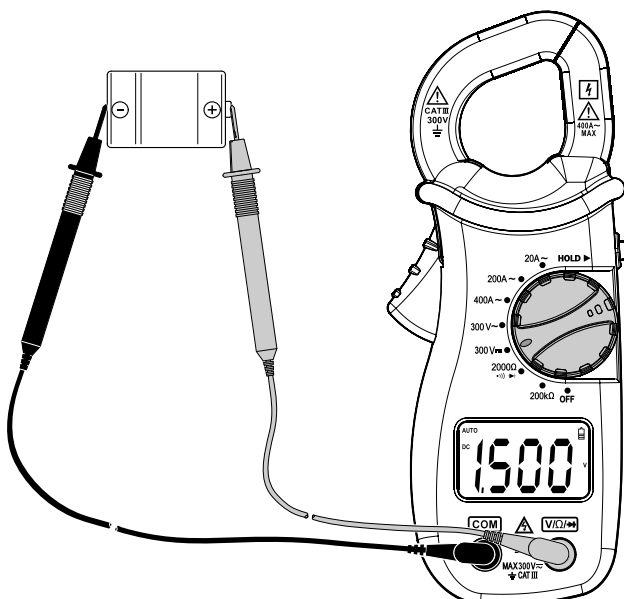
1. Connect the black measuring cable (2) to the connection for the black measuring cable (7) and the red measuring cable (3) to the connection for the red measuring cable (6).
2. Turn the rotary switch (6) to position 22.
 - ⇒ The alternating current icon is displayed in the direct current indication (15) on the display.
3. Tap the desired measuring points of the electric circuit with the test probes at the measuring cables with correct polarity.
 - ⇒ The measured value will be displayed in the measurement value display (13).

Example:



3. Tap the desired measuring points of the electric circuit with the test probes at the measuring cables with correct polarity.
 - ⇒ The measured value will be displayed in the measurement value display (13).

Example:



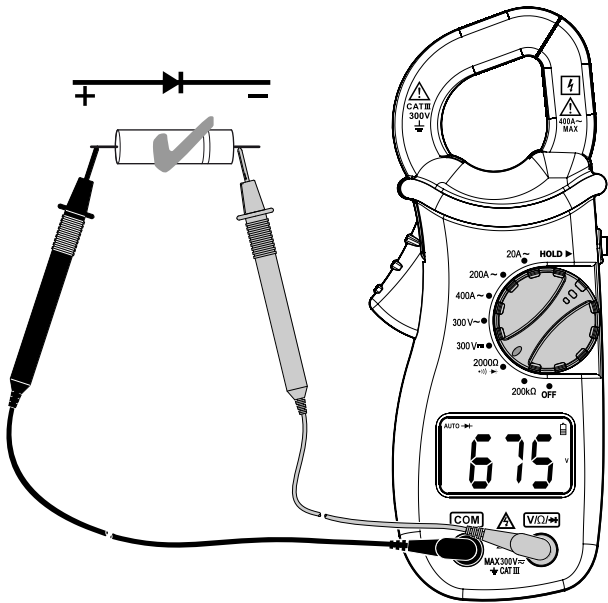
Resistance measurement

1. Set the rotary switch to position **2000 Ω** (20) or **200 kΩ** (19).
2. Hold the measuring tips to the object to be tested.
 - ⇒ The measuring result will be indicated in the measurement value display (13).

Continuity measurement / diode test

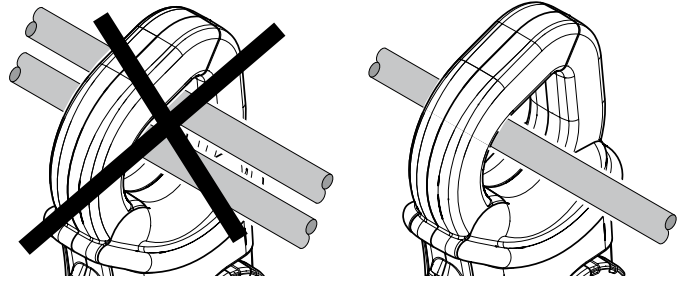
1. Set the rotary switch to the **2000 Ω** (20) position.
2. Connect the measuring tips to the diode or the circuit to be tested.
 - ⇒ If during the continuity measurement the resistance is less than or equal to 30 Ω, an acoustic signal will be emitted.
 - ⇒ For the diode test the voltage will be indicated on the measurement value display (13) in mV.
 - ⇒ If the *OL* indication (exceedance of the measuring range) is displayed during the diode test, swap the measuring tip connections at the diode.
 - ⇒ The component's forward voltage will be displayed (approx. 0.2 V to 0.3 V for Ge diodes and approx. 0.5 V to 0.8 V for Si diodes).

⇒ You can tell that the diode is defective by the fact that it either has a short circuit (approx. 0.4 V can be measured in both directions) or is open (*OL* is displayed in both directions).



Info

Only measure one conductor at a time to ensure an unambiguous measurement result.



Please proceed as follows to measure the amperage of alternating currents (AC):

1. Depending on the desired measuring range, turn the rotary switch (6) to the following positions:
 - position (23) for 400 A,
 - position (16) for 200 A or
 - position (17) for 20 A.

If you are not familiar with the measuring range, select the highest amperage (position (23) for 400 A) and change to a smaller measuring range if necessary.

2. Squeeze the lever (10) to open the clamp (1) and insert the conductor to be measured centrally in the clamp.
3. Use the clamping jaws' alignment marks on the clamp (1) as guidance to properly centre the conductor.
 - ⇒ The measured value will be displayed in the measurement value display (13).

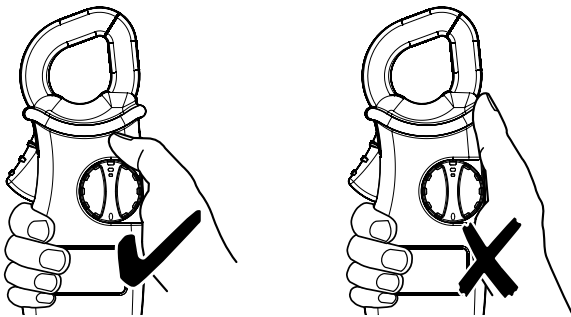
Performing measurements with the clamp



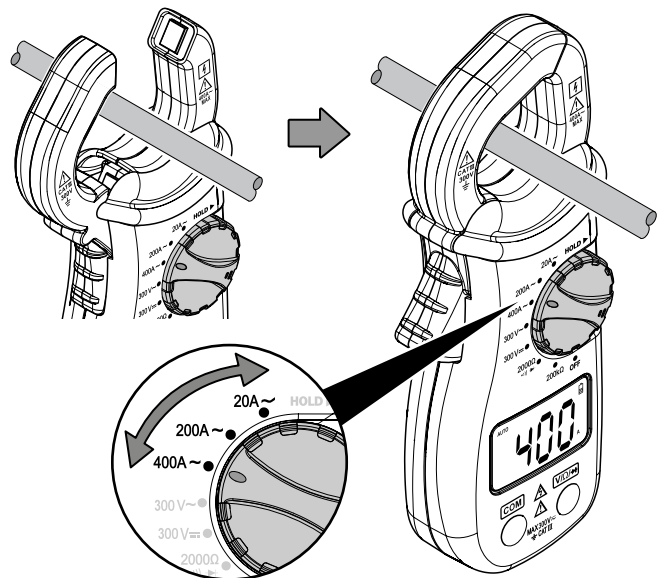
Warning of electrical voltage

Risk of electric shock and risk of injury!

- Disconnect the measuring cables from the device.
- When holding onto the clamp meter, make sure not to reach behind the protection against contact (4):



- When performing measurements, align the conductor to be tested in the centre of the clamp.



Further functions

Freezing the displayed measured value

The hold function allows you to freeze the currently measured result in the measurement value display (13). To do so, please proceed as follows:

1. Carry out a measurement.
2. Press the *HOLD* button (5).
 - ⇒ An acoustic signal is emitted.
 - ⇒ The current measured value is frozen in the measurement value display (13).
 - ⇒ The icon for the hold function (12) appears on the display.
3. Press the *HOLD* button (5) again to deactivate the HOLD function.

Switch-off

Please proceed as follows to switch the device off:

1. Turn the rotary switch (6) to the switch position OFF (18).
 - ⇒ The device switches off.

Maintenance and repair

Battery change

A battery change is required when the battery status indication flashes or the device can no longer be switched on (see chapter Inserting the batteries).



Info

In case of a low battery the displayed values may be inaccurate or incorrect! If so, stop using the measuring device and exchange the batteries immediately.

Cleaning

Clean the device with a soft, damp and lint-free cloth. Make sure that no moisture enters the housing. Do not use any sprays, solvents, alcohol-based cleaning agents or abrasive cleaners, but only clean water to moisten the cloth.

Repair

Do not modify the device or install any spare parts. For repairs or device testing, contact the manufacturer.

Errors and faults

The device has been checked for proper functioning several times during production. If malfunctions occur nonetheless, check the device according to the following list.

Display segments are only faintly visible or flicker:

- The battery voltage is too low. Exchange the batteries immediately.

The device displays implausible measured values:

- The battery voltage is too low. Exchange the batteries immediately.

Disposal

Always dispose of packing materials in an environmentally friendly manner and in accordance with the applicable local disposal regulations.



The icon with the crossed-out waste bin on waste electrical or electronic equipment is taken from Directive 2012/19/EU. It states that this device must not be disposed of with the household waste at the end of its life. You will find collection points for free return of waste electrical and electronic equipment in your vicinity. The addresses can be obtained from your municipality or local administration. You can also find out about other return options that apply for many EU countries on the website <https://hub.trotec.com/?id=45090>. Otherwise, please contact an official recycling centre for electronic and electrical equipment authorised for your country.

The separate collection of waste electrical and electronic equipment aims to enable the re-use, recycling and other forms of recovery of waste equipment as well as to prevent negative effects for the environment and human health caused by the disposal of hazardous substances potentially contained in the equipment.



In the European Union, batteries and accumulators must not be treated as domestic waste, but must be disposed of professionally in accordance with Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators. Please dispose of batteries and accumulators according to the relevant legal requirements.

Only for United Kingdom

According to Waste Electrical and Electronic Equipment Regulations 2013 (SI 2013/3113) (as amended) and the Waste Batteries and Accumulators Regulations 2009 (SI 2009/890) (as amended), devices that are no longer usable must be collected separately and disposed of in an environmentally friendly manner.

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