

EN

ORIGINAL INSTRUCTIONS
MICROWAVE RADIATION
MEASURING DEVICE



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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:



BR16



<https://hub.trotec.com/?id=44636>

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.

- 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.

Intended use

Only use the device for indoor microwave radiation measurements within the measuring range specified in the technical data.

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 unsheltered outdoors areas, in potentially explosive atmospheres or for measurements in liquids.

Any unauthorised changes, modifications or alterations to the device are forbidden.

Personnel qualifications

People who use this device must:

- have read and understood the instructions, especially the Safety chapter.

Residual risks



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 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.

Information about the device

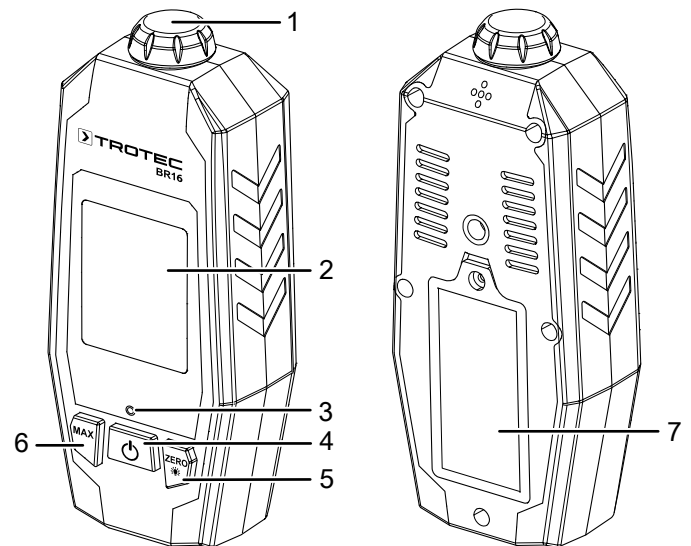
Device description

Using the BR16 radiation measuring device, microwave emissions from all high-frequency devices functioning on 2.45 GHz ISM band can be localized.

If the determined value exceeds the maximum limit value of 5 mW/cm² recommended by the EMA / FDA, the BR16 radiation measuring device automatically alerts the user by means of an acoustic warning signal and additional warning indication on the display.

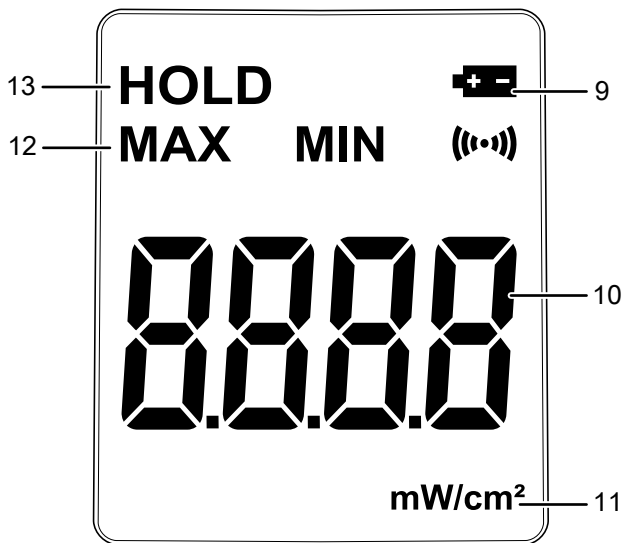
The device is equipped with a maximum value and hold function as well as a backlit display.

Device depiction



No.	Operating element
1	Sensor
2	Display
3	LED (warning indication)
4	Power button
5	ZERO button
6	MAX button
7	Battery compartment

Display



No.	Operating element
9	Battery status indication
10	Measurement value display
11	Indication of the unit
12	MAX indication
13	HOLD indication

Technical data

Parameter	Value
Model	BR16
Measuring range	0 to 9.99 mW/cm ²
Accuracy	± 1 dB
Resolution [mW/cm ²]	0.01
Alarm limit value	5.0 mW/cm ²
Frequency range	Calibrated to 2.45 GHz
Display	LCD monochrome
Operating temperature	0 °C to 50 °C (32 °F to 122 °F) with 10 % to 80 % RH
Power supply	9 V battery
Switch-off	After approx. 15 minutes of non-use.
Weight	155 g
Dimensions (length x width x height)	141 mm x 58 mm x 33 mm

Scope of delivery

- 1 x device
- 1 x 9 V battery
- 1 x Device bag
- 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 the bag included in the scope of delivery in order to protect the device from external influences.

Storage

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

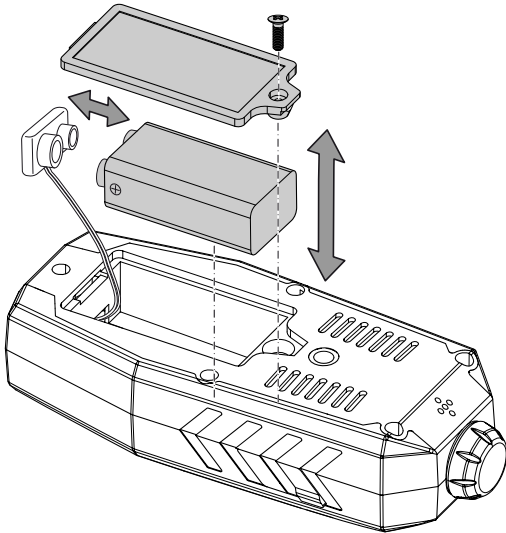
- dry and protected from frost and heat
- protected from dust and direct sunlight
- with a cover to protect it from invasive dust if necessary
- the storage temperature complies with the values specified in the Technical data
- Remove the battery from the device.

Operation

Inserting the battery

Note

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



1. Loosen the screw at the battery compartment (7).
2. Open the cover of the battery compartment.
3. Use the battery clip to connect the new battery with correct polarity.
4. Re-insert the cover of the battery compartment and secure it using the screw.

Switching the device on

Note:

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.

1. Briefly press the Power button (4).
 - ⇒ The display will be switched on and the device ready for operation.

Device calibration

Carry out the calibration in an environment that is free from microwave radiation as far as possible. In this way it is ensured that the measuring results will not be biased by incorrect calibration.

1. Press and hold the *ZERO* button (5) for approx. 3 seconds to calibrate the device.
 - ⇒ "0" is indicated on the measurement value display.
 - ⇒ You can start the measurement process.

Preparing the measurement process

Prepare the measurement if you want to check a microwave oven:

1. Place a glass of cold water into the microwave oven.
2. Set the control of the microwave oven to the highest power level.
3. Keep the measuring device ready and switch on the microwave oven for approx. 1 minute.

Carrying out a measurement

1. Point the device at the area to be measured. Observe a minimum distance of approx. 5 cm.
2. If you are checking a microwave oven, slowly move the sensor along the door seal and window of the microwave oven at a distance of approx. 5 cm.
 - ⇒ The measurement value display (10) indicates the currently measured value in mW/cm^2 .



Info

If the limit value of $5 \text{ mW}/\text{cm}^2$ is exceeded, the LED (3) flashes and a beep signal is emitted. In this case, clean the door seals of the microwave oven using lukewarm water and repeat the measurement process. Have the microwave oven inspected by a technician if the measured value exceeds the limit value again.



Warning of hot surface

Risk of scalding! Leave the glass inside the microwave oven for some time. If necessary, use suitable protective gloves to remove the glass. In case of injuries caused by scalding apply cold water immediately. Remove the wet clothes immediately and let cold water run over the scalded skin parts. Consult a doctor.

Displaying the maximum value

1. Briefly press the *MAX* button (6).
 - ⇒ *MAX* (12) and *HOLD* (13) is shown on the display. The "Indicate maximum value" function is now active. The measurement value display (10) now shows the highest value measured instead of the current value. The indication will only change if new, higher values, are measured.
2. Press the *MAX* button (6) again to stop the maximum value indication.

Switching the background illumination on and off

1. Press the *ZERO* button (5) to switch on the background illumination of the display.
 - ⇒ The background illumination switches on.
2. Press the *ZERO* button (5) again to switch off the background illumination of the display.
 - ⇒ The display illumination switches off.

Switching the device off

1. Briefly press the Power button (4).
 - ⇒ The device is switched off.

⇒ The maximum value stored is reset.

Maintenance and repair

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.

Fault	Remedy
Display segments are only faintly visible or flicker.	The battery voltage is too low. Exchange the batteries immediately.
The device displays implausible measured values.	

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.

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