

EN

INSTRUCTIONS
LAYER THICKNESS
MEASURING DEVICE



Table of contents

Information on the use of these instructions 2

Safety 2

Information about the device 4

Transport and storage 6

Operation 6

PC software 11

Errors and faults 12

Maintenance and repair 12

Disposal 12

Information on the use of these 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.

Notice

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:



BB20



<https://hub.trotec.com/?id=43284>

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 an aggressive atmosphere.
- Protect the device from permanent direct sunlight.
- Do not open the device.
- Do not remove any safety signs, stickers or labels from the device. Keep all safety signs, stickers and labels in legible condition.
- Use batteries of type AAA.
- 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. 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).

Intended use

Only use the device for coating thickness measurements. Observe and comply with the technical data.

Any use other than the intended use is regarded as misuse.

Reasonably foreseeable misuse

Do not use the device in potentially explosive atmospheres, for measurements in liquids or at live parts.

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

Personnel qualification

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.

Notice

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

Notice

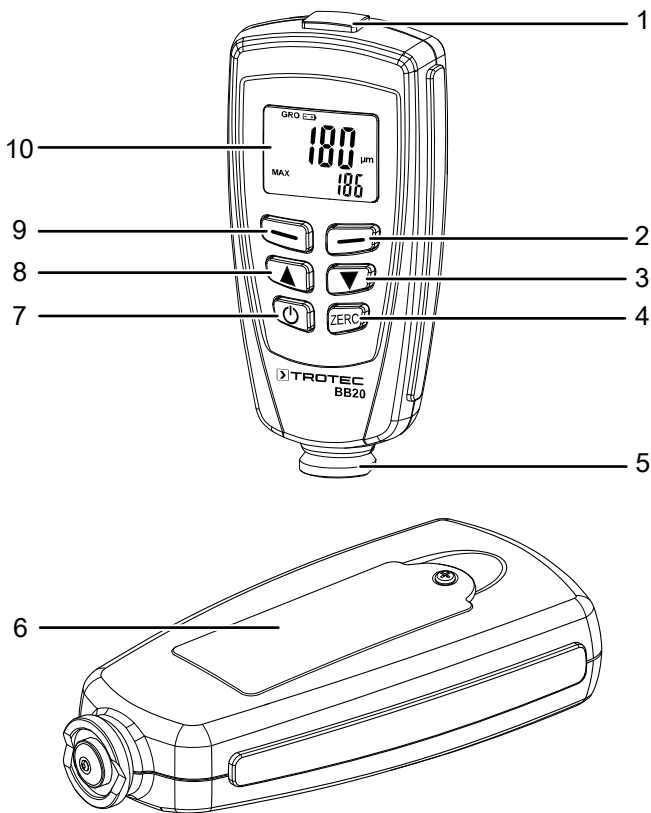
Do not use abrasive cleaners or solvents to clean the device.

Information about the device

Device description

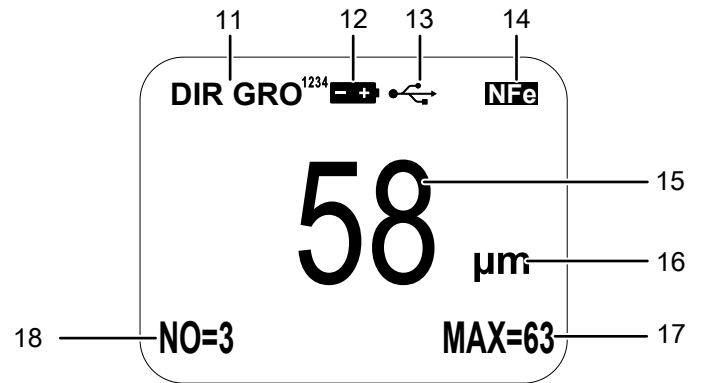
The device BB20 is used to determine the coating thickness on ferromagnetic and non-ferromagnetic metal surfaces. The measuring device functions according to the magnetic induction principle (for coatings on ferromagnetic surfaces) or the eddy-current principle (for coatings on non-ferromagnetic surfaces). The BB20 is a compact and versatile device suitable for quick, precise and non-destructive measurements of coating thicknesses.

Device depiction



| No. | Designation |
|-----|--------------------------------|
| 1 | USB interface |
| 2 | Blue button (back / cancel) |
| 3 | ▼ button |
| 4 | ZERO button |
| 5 | Sensor |
| 6 | Battery compartment with cover |
| 7 | Power button |
| 8 | ▲ button |
| 9 | Red button (select / confirm) |
| 10 | Display |

Display



| No. | Designation | Function |
|-----|--|---|
| 11 | Working mode indication | current operating mode <i>DIR</i> = direct mode <i>GRO</i> = group mode |
| 12 | Battery indication | Battery charge level |
| 13 | PC access indication | The device is connected to a PC. |
| 14 | Sensor mode indication | current sensor mode <i>Auto</i> = automatic selection of sensor mode <i>NFe</i> = eddy current principle for non-ferrous metals <i>Fe</i> = magnetic induction principle for magnetic surfaces |
| 15 | Measurement value display | current measured value |
| 16 | Unit indication | currently set measuring unit <i>µm</i> <i>mm</i> <i>mils</i> |
| 17 | Statistics indication | currently set statistical value <i>AVG</i> = Average value <i>MAX</i> = Maximum value <i>MIN</i> = Minimum value <i>Sdev</i> = Standard deviation |
| 18 | Indication of the number of measurements | Number of measurements already performed |

Technical data

| Parameter | Value | |
|--|---|---|
| Model | BB20 | |
| Sensor | F (ferrous metals) | N (non-ferrous metals) |
| Functional principle | Magnetic induction | Eddy current |
| Measuring range | 0 to 1250 µm 0 to 49.21 mils | 0 to 1250 µm 0 to 49.21 mils |
| Possible metallic substrates (examples) | Iron, steel | Copper, aluminium, zinc, bronze and others |
| Guaranteed tolerance (of the measured value) | 0 to 850 µm ($\pm 3\% \pm 1\ \mu\text{m}$) 850 to 1250 µm ($\pm 5\%$) 0 to 33.46 mils ($\pm 3\% \pm 0.039\ \text{mils}$) 33.46 to 49.21 mils ($\pm 5\%$) | 0 to 1000 µm ($\pm 3\% \pm 1.5\ \mu\text{m}$) 850 to 1250 µm ($\pm 5\%$) 0 to 33.46 mils ($\pm 3\% \pm 0.059\ \text{mils}$) 33.46 to 78.7 mils ($\pm 5\%$) |
| Accuracy | 0 to 50 µm (0.1 µm) 50 to 850 µm (1 µm) 850 to 1250 µm (0.01 mm) 0 to 1.968 mils (0.001 mils) 1.968 to 33.46 mils (0.01 mils) 33.46 to 49.21 mils (0.1 mils) | 0 to 50 µm (0.1 µm) 50 to 850 µm (1 µm) 850 to 1250 µm (0.01 mm) 0 to 1.968 mils (0.001 mils) 1.968 to 33.46 mils (0.01 mils) 33.46 to 49.21 mils (0.1 mils) |
| Minimum bending radius | 1.5 mm | 3 mm |
| Diameter of the smallest measuring surface | 7 mm | 5 mm |
| Critical primary layer thickness | 0.5 µm | 0.3 µm |
| Ambient temperature | 0 to 40 °C (32 to 104 °F) at 20 to 90 % RH | |
| Power supply | 2 batteries 1.5 V AAA | |
| Dimensions (length x width x height) | 114 x 27 x 54 mm | |
| Weight | 152 g | |

Scope of delivery

- 1 x Layer thickness measuring device BB20 (without batteries)
- 1 x Transport case
- 1 x Steel and aluminium base plate with different film thicknesses for calibration
- 1 x USB cable
- 1 x Quick guide
- 1 x PC software

Transport and storage

Notice

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 transport case 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
- stored inside the transport case supplied in order to protect the device from external influences
- at the temperature specified in the technical data
- Batteries are removed from the device

Operation

General information on measurements

If the calibration has been carried out correctly, the measured value lies within the guaranteed measuring tolerance. Incorrect measured values can be deleted in the menu. The last value results from the statistical calculation and the guaranteed degrees of tolerance of the measured value.

Observe the following instructions to obtain correct measured values:

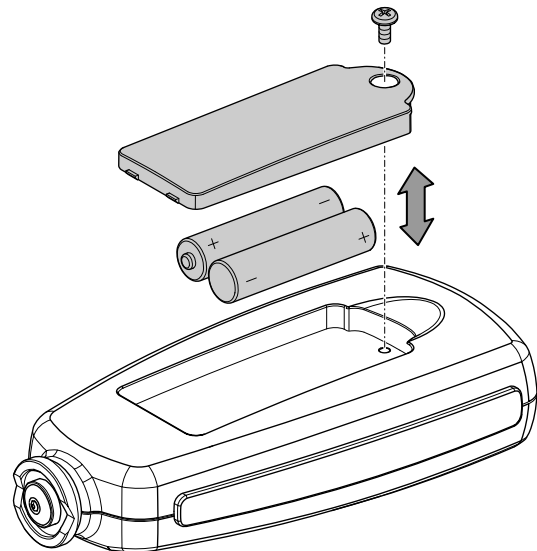
- Strong electrical or electromagnetic fields can influence the measured values.
- Carry out a suitable calibration before each measurement.
- The measuring tip is to be cleared of contamination prior to each calibration.
- Wait for at least 4 seconds after each measurement before proceeding to the next measurement as the device does not respond to measurement sequences carried out too quickly.

Inserting the batteries

Notice

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

Insert the batteries before first use.



1. Loosen the screw and open the battery compartment (6).
2. Insert the new batteries in the battery compartment with correct polarity.
3. Place the cover back on the battery compartment and reinsert the screw.

Switching the device on



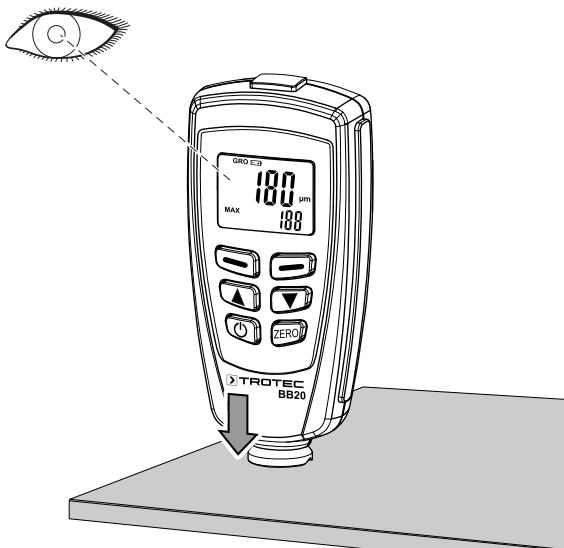
Info

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. Press the *Power* button (7).
 - ⇒ The display will be switched on and the device ready for operation.

Carrying out a measurement

- ✓ The appropriate calibration has been successfully completed.
1. Select the desired measuring mode (see "Setting the measuring mode").
 2. Select the desired working mode (see "Setting the measuring mode").
 3. Position the sensor (5) on the material to be measured and perform the measurement.
 - ⇒ The measured value will be displayed in the measurement value display (15).
 - ⇒ The measurement will be acknowledged with an acoustic signal.
 - ⇒ The number of measurements already performed is displayed in the *number of measurements* indication (18).



Menu structure

You can adjust various settings for measurements and for saving the measured values in the main menu of the device. The exact procedure for each setting is explained below.

| Main menu | Submenu | Options/indications |
|-----------------------------|--|---|
| <i>Statistic view</i> | <i>Average view</i> <i>Minimum view</i> <i>Maximum view</i> <i>Number view</i> <i>Standard deviation view (Sdev. view)</i> | - |
| <i>Options</i> | <i>Measure mode</i> | <i>Single mode</i> <i>Continuous mode</i> |
| | <i>Working mode</i> | <i>Direct</i> <i>Group 1</i> <i>Group 2</i> <i>Group 3</i> <i>Group 4</i> |
| | <i>Used probe (Used probe)</i> | <i>AUTO</i> <i>Fe</i> <i>Not Fe</i> |
| | <i>Units (Unit setting)</i> | μm <i>mils</i> <i>mm</i> |
| | <i>Background illumination (Backlight)</i> | <i>On</i> <i>Off</i> |
| | <i>LCD Statistic</i> | <i>Average</i> <i>MAX</i> <i>MIN</i> <i>Standard deviation (Sdev.)</i> |
| <i>Limit values (Limit)</i> | <i>Limit value settings (Limit settings)</i> | <i>Upper limit value (High limit)</i> <i>Lower limit value (Low limit)</i> |
| | <i>Delete limit value (Delete limit)</i> | - |
| <i>Delete</i> | <i>Current data</i> | - |
| | <i>All data</i> | - |
| | <i>Group data</i> | - |

| Main menu | Submenu | Options/ indications |
|--|-------------------------------|-------------------------|
| Measured value indication (<i>Measure view</i>) | - | - |
| <i>Calibration</i> | Activate (<i>Enable</i>) | - |
| | Deactivate (<i>Disable</i>) | |
| | Delete zero <i>N</i> | |
| | Delete zero <i>F</i> | |

You can use the buttons (2, 3, 8, 9) to navigate through the menu:

1. Press the *Red* button (9) to call up the main menu.
2. Use the ▼ (3) and ▲ (8) buttons to select the desired menu item.
3. Confirm the selection with the *Red* button (9).
4. Use the ▼ (3) and ▲ (8) buttons to select the desired setting or submenu.
5. Confirm the selection with the *Red* button (9).
6. Press the *Blue* (2) button to return to the main menu from a submenu or to exit the main menu.

Statistics

The device is able to calculate statistics based on 80 measurements. A total of 400 measured values can be saved.

No measured values are saved in direct mode, however, calculating statistics is possible. If you change between the different working modes or if you switch the device off, statistics are deleted from the direct mode.

The following statistical values are calculated:

- **AVG:** Average
- **MIN:** Minimum value
- **MAX:** Maximum value
- **NO.:** Number of measured values in working mode
- **Sdev.:** Standard deviation

Proceed as follows to view the saved statistics:

1. Open the *Statistic view* menu.
2. Select the submenu to open the desired statistics.
 - ⇒ The corresponding statistic value is displayed in the measurement value display (15).

Memory space

If the memory space is full in group mode, statistics will no longer be updated. However, measurements can still be carried out. These measurements will not be part of the statistics.

If the memory space is full in single measurement mode, *FULL* appears on the display.

If the memory space is full in direct mode, old measurements are replaced by new ones and statistics will be updated.

Setting the measuring mode

You can use the device to carry out measurements in different measurement modes:

- **Single mode:**
After every measurement, an acoustic signal will be emitted. All measurements are automatically saved.
- **Continuous mode:**
The sensor must not be lifted between the individual measurements. No acoustic signal will be emitted after the measurement. All measurements are automatically saved.

To adjust the measuring mode, please proceed as follows:

1. Open the *Options* menu.
2. Open the *Measure mode* submenu.
3. Select the desired measuring mode.

Setting the working mode

You can use the device to carry out measurements in different working modes:

- **Direct mode**
 - This mode is suitable for quick and easy measurements. Measurements are cached during a measurement series.
 - Once the device is switched off or changes into another working mode, the measurement results will be deleted. The statistical analysis programme is able to assess 80 measurements. Once the memory is full, the oldest measurements will be overwritten.
- **Group 1-4**
 - The GROUP mode comprises group 1 to 4. In each group, 80 individual and 5 statistical measurements can be saved.
 - Calibration and limit values can be adjusted and saved individually.
 - Once the memory is full, current measurements will no longer be saved. Measurements can be carried out as usual.

To set the working mode, please proceed as follows:

1. Open the *Options* menu.
2. Open the *Working mode* submenu.
3. Select the desired working mode.
 - ⇒ Depending on the selected working mode, the respective indication appears on the display (11).

Setting the sensor mode

You can select three different sensor modes:

- **AUTO**
The sensor automatically selects a mode.
- **Fe**
The sensor operates according to the magnetic induction principle if it is placed on a magnetic surface.
- **Not Fe**
The sensor operates according to the eddy-current principle if it is placed on non-magnetic metals.

To adjust the sensor mode, please proceed as follows:

1. Open the *Options* menu.
2. Open the *Used probe* submenu.
3. Select the desired sensor mode.
⇒ Depending on the selected working mode, the respective indication appears on the display (14).

Units

You can choose between metric (μm and mm) and imperial (mils) units.

If the measured value exceeds 850 μm , the device switches to mm .

To change the unit, proceed as follows:

1. Open the *Options* menu.
2. Open the *Unit setting* submenu.
3. Select the desired unit.
⇒ The respective unit (16) appears after the measured value (15).

Background illumination

Please proceed as follows to switch the background illumination on or off permanently:

1. Open the *Options* menu.
2. Open the submenu *Backlight*.
3. Select the desired setting.

To switch the background illumination on or off during a measurement, press the *Blue* button (2).

Indication of statistics

You can select a statistic that is permanently shown on the display (17). You can choose between the following statistics:

- *Average*
- Maximum value (*MAX*)
- Minimum value (*MIN*)
- Standard deviation (*Sdev.*)

Please proceed as follows to select the statistic:

1. Open the *Options* menu.
2. Open the submenu *LCD Statistic*.
3. Select the desired statistic.
⇒ The selected statistical value is indicated in the *Statistics* display (17), e.g. *MAX=63* for the maximum value.

Automatic switch-off

The device comes equipped with an automatic switch-off function that switches it off after 3 minutes of inactivity.

1. Open the *Options* menu.
2. Open the submenu *Auto poweroff*.
3. Select the *Disable* option to deactivate the automatic switch-off function.
4. Select the *Enable* option to activate the automatic switch-off function.

Limit value functions

Limit values can be entered using the *Limit* function. It is possible to enter limit values before, during or after carrying out measurement series.

1. Open the *Limit* menu.
2. Open the *Limit setting* submenu.
⇒ Use the ▼ (3) and ▲ (8) buttons to select the upper limit value in the *High limit* and the lower limit value in the *Low limit* section.
3. To delete the limit value, open the *Delete limit* submenu and confirm the setting.

Each measured value beyond the fixed tolerance limit appears on the display as follows:

- **H:** Measured value is above upper limit value.
- **L:** Measured value is below lower limit value.

Deleting measured values

You can delete specific measured values or the entire measurement history:

- **Current Data**
Deletes the last measured value.
- **All Data**
All data can be deleted during the respective working mode.
- **Group Data**
Includes the option to delete all data. In addition, the limit values and one-point and two-point calibration values will be deleted.
 1. Open the *Delete* menu.
 2. Select the measured values you would like to delete.

Measured value indication

Open the *Measure view* menu to view all measured values of the respective groups.

Calibration mode

Carry out a calibration before each measuring operation.

You can perform the calibration e.g. at an untreated or uncoated spot of the object to be tested or use the set included in the scope of delivery.



Info

Please bear in mind that the device at hand is a precision measuring device that can determine coating thicknesses of no more than a few micrometres (1 μm is equivalent to one thousandth of a millimetre).

The surface condition of most measuring objects is hardly ever perfectly even and homogeneous, even though it might appear differently to the naked eye. Observed under the microscope, even the smoothest surface looks much like a mountain and valley landscape. The tiniest of scratches, cavities or contaminations can therefore already have a negative effect on the expected measurement result, seeing as they will also be a part of the measurement to a greater or lesser extent. It does, however, not affect the accuracy of the device. Even after the calibration unexpected measurement deviations of a few micrometres always have to be regarded in this context.

Hence it is important to handle the supplied calibration accessories with care to avoid scratches and dirt on their respective surface as far as possible.

1. Open the *Calibration* menu.
2. Select *Enable*.
⇒ You will automatically return to the *Calibration* menu.
3. Press the *Blue* button (2) to return back to the start screen. Calibration is carried out here.
⇒ One of the following indications are shown on the display:
cal zero: There is **no** one-point or two-point calibration.
cal 1 or *cal 2*: There is a one-point or two-point calibration.
zero y: There is a zero-point calibration.

Zero point calibration

- ✓ An **uncoated** sample is required.
- 1. Activate the calibration mode.
- 2. Place the sensor (5) onto an **uncoated** sample. The calibration sample is to be identical with the actual sample in terms of material composition, shape and surface condition.
⇒ The following message will be displayed:
<x.x μm >
- 3. Lift the sensor again and keep it away from the sample (at least 10 cm).
- 4. Press and hold the *ZERO* button (4) for approx. 2 seconds.
⇒ The following result appears on the display:
<0.0 μm >
CAL1
ZeroY
⇒ The calibration is terminated.

One-point calibration

This calibration is suited for high-precision measurements, e.g. for thin coatings.

- ✓ A calibration film, a coated and an **uncoated** sample are required.
- 1. Carry out a zero-point calibration.
- 2. Place the calibration film on the **uncoated** sample.
- 3. Place the sensor (5) onto an **uncoated** sample.
⇒ The measurement is effected.
- 4. Lift the sensor again.
- 5. Use the ▼ (3) and ▲ (8) buttons to select the required film thickness. The film thickness should be at least the size of the estimated coating thickness.
- 6. Repeat steps 3 to 5 several times.
- 7. Carry out the measurement on a coated sample.
- 8. Press the *ZERO* button (4) to adopt the current calibration.

Two-point calibration

This calibration is especially suited for measurements on rough surfaces or for high-precision measurements.

- ✓ You need two films of different film thickness. The thicker film should be approx. 1.5 times thicker than the thinner film.
- 1. Carry out a zero-point calibration.
- 2. Using the first film, carry out a one-point calibration.
- 3. Using the second film, carry out a one-point calibration.

Calibration on radiated surfaces

Values of layer thickness measurements carried out on radiated surfaces are usually too high. The average thickness can be determined as follows:

Method A

1. Carry out the one-point and two-point calibration as described above. Use a smooth sample with the same surface curvature and the same material type as the measuring object that is to be used later on.
2. In order to determine the average value X_0 , carry out approx. 10 measurements on the uncoated sample.
3. Afterwards, carry out approx. 10 measurements on the coated sample to determine the average value X_m .
 - ⇒ The difference between both average values is the average coating thickness X_{eff} . Take the standard deviation of both values X_m and X_0 into account.
$$X_{eff} = (X_m - X_0) \pm S$$

Method B

1. Carry out a zero calibration with approx. 10 measurements on an uncoated sample.
2. Then carry out a one-point calibration on the uncoated sample.
3. Carry out further calibrations with films of different thicknesses (max. thickness 50 µm). Together, these films should be as thick as the assumed layer thickness.
 - ⇒ The layer thickness can be read off as with method A.

Method C

1. Carry out the two-point calibration with two films as described above.
2. Use several 50 µm films to approach the actual surface as precisely as possible.
 - ⇒ The layer thickness can be read off as with method A.

Reset

Resetting deletes the entire data in all memories. Please proceed as follows to perform a reset:

1. Switch the device off.
2. Simultaneously press the *ZERO* button (4) and the *Power* button (7).
 - ⇒ The indication *sure to reset* appears on the display.
3. Press the *Red* button (9) to confirm the reset or the *Blue* button (2) to cancel the process.

The device automatically switches back on.

Switching the device off

1. Press the *Power* button (7).
 - ⇒ The device switches off.

PC software

Using the software *Coating Thickness Tester* stored measurement data can be called up and saved via USB cable.

The software is available for download at www.trotec.de.



Info

The supplied free software is designed for useful basic functionalities. The manufacturer assumes no liability with regard to this free software and also provides no support on that score. The manufacturer accepts no liability concerning the use of this free software and is under no obligation to make adjustments or to further develop updates or upgrades.

Installation requirements

Ensure that the following minimum requirements for installing the PC software are fulfilled:

- Supported operating systems:
 - Windows 7
 - Windows 8
 - Windows 8.1
 - Windows 10
- Hardware requirements:
 - Standard USB interface
 - Min. 7 MB of free hard disk space
 - Recommended resolution: 1280*1024 with 16 bit
 - .NET Framework 2.0 or higher

Installing the PC software

1. Insert the data medium with the software into the drive or download the current software from the *Service* area of Trotec download centre.
2. Double-click the installation file *Setup.exe*.
3. Follow the instructions of the installation wizard.

Starting the PC software

1. Connect the device to the PC using the supplied USB cable.
2. Start the PC software.
 - ⇒ The software connects to the device.
 - ⇒ Data stored on the device can now simply be visualised in form of a chart or graphic.

Saving measured values (export)

You can export a selected group as csv or txt file and save it on your PC. There the table looks as it does in the software.

1. Open the desired file.
2. You select either *Save *.TXT* or *Save *.CSV*.

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.

The device does not switch on:

- Check the charging status of the batteries. Change the batteries, if required.
- Check that the batteries are properly positioned. Check the polarity is correct.
- Never carry out an electrical check yourself; instead, contact the manufacturer's customer service service.

Table of faults

The following error codes can be displayed:

| Error code | Cause of error |
|------------------|--|
| Err1, Err2, Err3 | Faulty contact between sensor and mainboard |
| Err1 | Faulty signal of eddy-current sensor |
| Err2 | Faulty signal of magnetic induction sensor |
| Err3 | Faulty signals of both sensors |
| Err4, Err5, Err6 | No meaning, reserved for later versions of the device |
| Err7 | Faulty measurement. There might be a hardware problem. |

Maintenance and repair

Battery change

A battery change is required, when the battery indication (12) lights up or the device can no longer be switched on. See chapter Operation.

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.

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.

Trotec GmbH

Grebener Str. 7
D-52525 Heinsberg

☎ +49 2452 962-400

☎ +49 2452 962-200

✉ info@trotec.com

www.trotec.com