Bedienungsanleitung
User Manual

PCE-CT 65 Schichtdickenmessgerät | Thickness Gauge

DE Version 1.0
EN Version 1.0

Letzte Änderung / last change: 18 October 2017

English
Contents

Thank you for purchasing a coating thickness tester from PCE Instruments.

1 Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. Damage or injuries caused by non-observance of the manual are excluded from our liability and not covered by our warranty.

- The device must only be used as described in this instruction manual. If used otherwise, this can cause dangerous situations for the user and damage to the meter.
- The instrument may only be used if the environmental conditions (temperature, relative humidity, …) are within the ranges stated in the technical specifications. Do not expose the device to extreme temperatures, direct sunlight, extreme humidity or moisture.
- The case should only be opened by qualified PCE Instruments personnel.
- Never use the instrument when your hands are wet.
- You must not make any technical changes to the device.
- The appliance should only be cleaned with a damp cloth. Use only pH-neutral cleaner, no abrasives or solvents.
- The device must only be used with accessories from PCE Instruments or equivalent.
- Before each use, inspect the case for visible damage. If any damage is visible, do not use the device.
- Do not use the instrument in explosive atmospheres.
- The measurement range as stated in the specifications must not be exceeded under any circumstances.
- Non-observance of the safety notes can cause damage to the device and injuries to the user.

We do not assume liability for printing errors or any other mistakes in this manual.

We expressly point to our general guarantee terms which can be found in our general terms of business.

If you have any questions please contact PCE Instruments. The contact details can be found at the end of this manual.

2 Specifications

2.1 Technical specifications

Sensor type	F	N
Operating principle	Magnetic induction	Eddy-current principle
Measurement range	0 … 1350 µm	0 … 1350 µm
	0 … 53.1 mils	0 … 53.1 mils
Measurement accuracy	0 … 1000 µm ±(2.5 % + 2 µm)	0 … 1000 µm ±(2.5 % + 2 µm)
	1000 … 1350 µm (±3.5 %)	1000 … 1350 µm (±3.5 %)
	0 … 39.3 mils ±(2 % ± 0.08 mils)	0 … 39,3 mils ±(2 % ± 0.08 mils)
	39.3 … 53.1 mils (±3.5)	39,3 … 53,1 mils (±3.5)
Resolution	0 … 100 um (0.1 µm)	0 … 100 µm (0.1 µm)
	100 … 1000 um (1 µm)	100 … 1000 µm (1 µm)
	1000 … 1350 µm (0.01 mm)	1000 … 1350 (0.01 µm)
	0 … 10 mils (0.01 mils)	0 … 10 mils (0.01 mils)
	10 … 53.1 (0.1 mils)	10 … 53.1 (0.1 mils)
Minimum radius of curvature	1.5 mm	3 mm
Diameter of minimum area	7 mm	5 mm
Smallest detectable thickness	0.5 mm	0.3 mm
Operating conditions	0 … +40 °C, 20 … 90 % RH	

2.2 Delivery contents

1 x coating thickness tester PCE-CT 65
5 x calibration plate foil
1 x calibration plate iron
1 x calibration aluminium
2 x 1.5 V AAA battery
1 x USB-cable
1 x carrying case
1 x manual

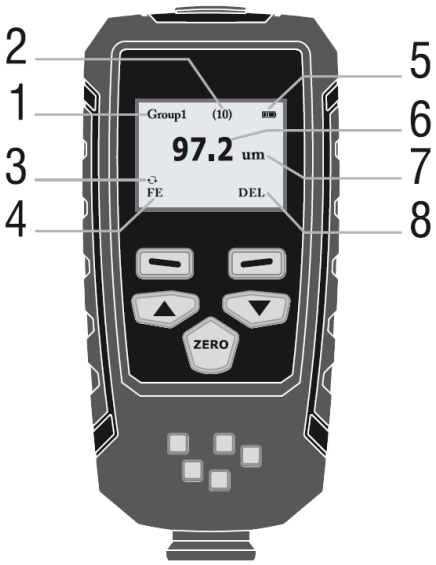
A software can be downloaded here: https://www.pce-instruments.com/deutsch/download-win_4.htm.

3 System description

3.1 Device

1. LC-Display
2. “Select” / “Power” key
3. “Up” key
4. “Delete” / “Zero” key
5. “Back” key
6. “Down” key
7. Battery compartment cover

3.2 Display



1. Working mode
2. Number of measured data in working mode
3. Automatic measurement mode
4. Ferrous or non-ferrous materials (switches automatically in automatic mode)
5. Battery level indicator
6. Measurement values
7. Unit
8. Delete data

3.3 Function keys

Key name	Function
“Select” key	Press the key to switch the device on, off and to confirm your choice.
“Up” key	Use the key to move upwards in the submenus and to enter the working mode.
“Zero“ Key	Calibration for ferrous and non-ferrous metals.
“Back“ Taste	Use the key to go one step back or to delete the last measured value.
“Down” key	Use the key to move downwards in the submenus and to change the working mode.

4 Getting started

4.1 Power supply

To switch on the device, you need to press and hold the “Select” key. In case the coating thickness tester does not react, check if the batteries have been inserted correctly or if they are flat.

 If the symbol is shown, the batteries need to be replaced immediately.
Please note that the instrument may make faulty measurements if the battery voltage is too low.
ATTENTION: When switching on the instrument, make sure that there are no metallic objects within a distance of 10 cm. A zero calibration is recommended when switching on the coating thickness tester.

4.2 Replace the battery

- Switch off the device
- Open the tightening screw
- Open battery lid
- Remove the old batteries
- Insert the new batteries
- Close the battery compartment cover
- Close the tightening screw again
  Attention: Make sure that the batteries are inserted correctly (correct polarity).

5 Operation

Press the „Power“ key to switch on the device. The instrument will then enter measurement mode. Hit the “Select” key to enter the menu.

5.1 Measurement

5.1.1 Choosing the working mode

Working mode: there are 31 working modes for this instrument. The data that are measured in Group0 will not be saved.
In the other 30 working modes, the measurement data can be saved to a ring buffer.

1. Press the “Select” key to enter the menu.
2. After that, the submenu “working mode” is already highlighted.
3. Press the “Select” key to enter the submenu.
4. Use the “Up” and “Down” keys to choose the working mode.
5. Press the “Select” key to open the selected working mode.
6. Press the “Back” key.

5.1.2 Choosing the measurement mode (sensor)

The sensor is able to measure in three measurement modes.
AUTO: When in automatic measurement mode, the sensor chooses the measurement mode by itself. If it is placed on steel (magnetic surface), it works according to the magnetic induction principle. If it is placed on non-ferrous metals, it works according to the Eddy-current principle.
Fe: The sensor works according to the magnetic induction principle.
No-Fe: The sensor works according to the Eddy-current principle.

1. Press the “Select” key.
2. Press the “Up” or “Down” key to choose the working mode.
3. Press the “Selection” key to open the selected working mode.
4. Press the “Back” key.

5.2 Settings

5.2.1 Units

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “Set”.
3. Press the “Select” key to enter the submenu.
4. Press the “Up” / “Down” keys to get to the submenu “Unit”.
5. Press the “Select” key to select the submenu.
6. Use the “Up” / “Down” keys to choose the desired unit.
7. Press the “Select” key to confirm your choice.
8. Press the “Back” key twice to return to measurement mode.

5.2.2 Backlight

In the submenu “Backlight”, it is possible to adjust the brightness of the backlight.

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “Set”.
3. Press the “Select” key to enter the submenu.
4. Press the “Up” / “Down” keys to get to the submenu “Backlight”.
5. Press the “Select” key to select the submenu “Backlight”.
6. Use the “Up” / “Down” keys to set the desired brightness.
1. When the brightness has been set correctly, press the “Back” key three times to return to measurement mode.

5.2.3 Automatic shutdown

The automatic shutdown can be deactivated in the related submenu. If it stays activated, the coating thickness tester is automatically shut down off after three minutes of inactivity.

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “Set”.
3. Press the “Select” key to enter the submenu.
4. Press the “Up” / “Down” keys to get to the submenu “Auto-power-off”.
5. Press the “Select” key to select the submenu “Auto-power-off”.
6. Use the “Up” / “Down” keys to activate or deactivate the function.
7. Press the “Select” key to confirm your choice.
8. Press the “Back” key twice to return to measurement mode.

5.2.4 Adjust the contrast

The LCD is influenced by temperatures and humidity when displaying measurements. Therefore, it is possible to adjust grey scales.

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “Set”.
3. Press the “Select” key to enter the settings.
4. Press the “Up” / “Down” keys to get to the submenu “Contrast”.
5. Press the “Select” key to select the submenu.
6. Use the “Up” / “Down” keys to adjust the grey scales.
7. Press the “Select” key to confirm your choice.
8. Press the “Back” key to return to measurement mode.

5.2.5 Serial number

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “Set”.
3. Press the “Select” key to enter the submenu.
4. Press the “Up” / “Down” keys to get to the submenu “Information”.
5. Press the “Select” key to view information on the serial number.
6. If you have all desired information, press the “Back” key to return to measurement mode.

5.3 Data

5.3.1 Read out data

You can review the gathered data for every mode. Choose “all-delete” to delete all measurements within the groups.

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “View”.
3. Press the “Select” key to enter the submenu.
4. Press the “Up” / “Down” keys to choose the working mode.
5. Press the “Select” key to confirm the working mode.
6. Use the “Up” / “Down” keys to view the measurement data.
7. Press the “Back” key to leave the mode or use the “Select” key to delete the data from that working group.

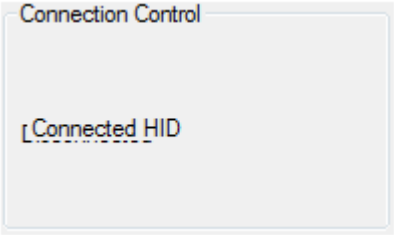
5.3.2 Delete data

The system allows you to delete data in three different ways.

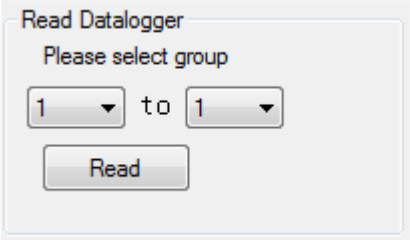
a. Delete current data: During measurements, you can delete the data that has been taken last by pressing the “Back” key.
b. Delete all data: Enter the “View” menu (measure view). Here, you can delete all data and statistics.
c. Group data: Enter the menu for the working groups (working mode). Here, you can delete certain groups.

5.4 Software

The delivered software is kept very simple but delivers extensive information on the measurement results at the same time. It only needs to be downloaded, installed on your computer and be started afterwards. The PCE-CT 65 can then be connected to the computer using the USB cable. After this, the instrument needs to be started. If the device is recognized by the computer, the software shows the following message in the top left corner:



When the instrument is connected, you can choose which working group(s) should be chosen:



When the data has been read out, there will be a dialogue window and the software will display “Read successful!” and the values will be shown in the table.

The different working modes can be selected in the area “Data filtering”. In the table, there are the single measurements (“No.”), the corresponding working group (“Group”) and which material has been measured with what thickness (“Data”).

The statistics can be found on the right-hand side. Here, you can find the maximum, minimum and the average value for that working group. The statistics are also divided into ferrous and non-ferrous material. For the two material classes, you can also find the maximum, minimum and average value there. In addition, the software also displays how many measurements have been made on ferrous materials on the one hand and also on non-ferrous materials on the other hand.

Please note that the measurement device needs to be switched on during the analysis. If it should automatically switch off, it will also be disconnected from the computer and further analysis will not be possible. If you want to avoid this, it is recommended that the automatic power off-function is disabled in the settings.

6 Calibration

Zero calibration can be performed for this instrument. This zero calibration can either be made for ferrous or for non-ferrous materials. In addition, it is possible to delete faulty calibrated zero points.

6.1 Zero calibration for ferrous (Fe) and non-ferrous (No-Fe) metals

If the instrument is in automatic mode, the calibration can only be made if the selection between ferrous or non-ferrous has been made before the calibration:

1. Press the “Select” key.
2. Use the “Up” / “Down” keys to get to the submenu “Calibration”.
3. Press the “Select” key to enter the submenu.
4. Choose the calibration that is to be performed, using the arrow keys and confirm your choice with the “Select” key.
5. After this, you need to place the PCE-CT 65 on the calibration plate (make sure it is the right one) and the calibration will be made automatically.

If the coating thickness tester is not in automatic mode, the calibration can be made without any prior settings. Press and hold the “Zero” key to make a zero calibration for ferrous and non-ferrous metals in normal measurement mode.
When the instrument is in “Fe”-mode, the zero calibration will be made for ferrous metals. If the coating thickness tester is in the “No-Fe”-mode, the zero calibration will be made for non-ferrous metals (less than 50 µm is effective).

6.2 Delete Fe or No-Fe zero points

1. Press the “Select” key to enter the menu.
2. Use the “Up” / “Down” keys to get to the submenu “Calibration”.
3. Press the “Select” key to enter the submenu for calibrations.
4. Press the “Up” / “Down” keys to delete the zero point for ferrous or non-ferrous materials.
5. Press the “Select” key to confirm.
6. Use the “Back” key to leave the menu.

7 Maintenance

7.1 Troubleshooting

There are certain errors that can occur during the use of the coating thickness tester. The following messages may help to identify and eliminate those errors.
Err1: Fe sensor error
Err2: No-Fe sensor error
Err3: Both sensors are faulty
Err4: Fe sensor error
Err5: No-Fe sensor error

8 Warranty

You can read our warranty terms in our General Business Terms which you can find here: https://www.pce-instruments.com/english/agb.

9 Disposal

For the disposal of batteries, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

If you have any questions, please contact PCE Instruments.

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User manuals in various languages
(français, italiano, español, português, nederlands, türk, polski, русский, 中文)
can be downloaded here: www.pce-instruments.com

Specifications are subject to change without notice.