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Instruction Manual
Digital Coating Thickness Gauge

SAUTER TE

Version 1.2
08/2018
GB

PROFESSIONAL MEASURING

TE-BA-e-1812

GB

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Version 1.2 08/2018

Instruction Manual

Digital Coating Thickness Gauge

Thank you for buying the digital thickness gauge by SAUTER. We hope you will be happy with the high quality of this measuring instrument and its numerous functionalities. Should you have any questions, requests and suggestions, do not hesitate to contact us.

Available models:

- TE 1250-0.1 F
- TE 1250-0.1 N
- TE 1250-0.1 FN

Summarize:

This thickness gauge is small, lightweight and handy. Although its components are complex and advanced, it is convenient and easy to use.
Its durability allows to use it for many years, provided all the guidelines in this User Manual are complied with strictly.
This is why you should always have it within arm's reach!

Please note: Before first use of the new measuring instrument it is recommended to adjust it as described in chapter 5. Thanks to this, you will ensure higher quality of measurements right from the start.

1 Functions

» This device meets the requirements of ISO 2178, ISO 2361 as well as DIN, ASTM and BS. Consequently, it can be used both in laboratories and in difficult environmental outdoor conditions.

» F-type measuring probe is used to measure the thickness of non-magnetic layers, e.g. paint, plastic, enamelled porcelain, copper, zinc, aluminium, chrome, lacquer etc. Such layers should be placed on magnetic metals, e.g. steel, iron, nickel etc. This measurement method is frequently used to measure thickness of galvanised coatings, lacquer coatings, enamelled porcelain coatings, phosphate coatings, copper and aluminium plates, alloys etc.

» N-type measuring probe is used to measure non-magnetic and insulation layers on non-magnetic metals.
It is used to measure thickness of anodized, lacquer, glazed coatings, paints, enamels, plastic coatings, powder coatings etc. They should be placed on non-magnetic substrate materials, e.g. aluminium, steel sheet, non-magnetic stainless steel etc.

» Automatic sensing of the substrate material.

» Manual or automatic switch-off to save batteries.

» Two measurement modes: individual and continuous.

» Conversion from metric to imperial units.

» Large measurement range and high resolution.

» Backlit display for the accurate readout.

» Can be connected to the PC for data transmission via RS-232 interface (for statistical purposes). The cord and software available as accessories (ATC-01).

2 Technical Specifications

Display: LCD, 4-digit, digit height 10 mm, backlit

Measurement range: 0–1250 µm/0–50 mil (standard)
(other measurement range can be set)

Resolution: 0.1 µm (from 0 to 99.9 µm)
1 µm (above 100 µm)

Uncertainty of measurement:
— Standard: 3% of the measurement value or Min value ±2.5 µm
For the tolerance ±100 µm of the typical measurement range, if the two-point calibration has also been carried out in that tolerance range.
— *Off-Set Accur*: 1% of the measurement value or Min value ±1.0 µm
In the range of ±50 µm round Off-Set Accur point.

PC connection: via RS-232C interface

Power supply: 4 ×1.5 V, AAA batteries (UM-4)

Environmental conditions: temperature from 0 to 50°C
air humidity below 80%

Dimensions: 131 × 65 × 28 mm (5.0 × 2.6 × 1.6 in)

Weight: ca. 81 g (without batteries)

Scope of delivery:
— Plastic case
— User Manual (in DE and EN), other languages available in the Download tab at www.kern-sohn.com
— Measuring probe F (in TE 1250-0.1F and TE 1250-0.1FN models)
— Measuring probe N (in TE 1250-0.1N and TE 1250-0.1FN models)
— Both measuring probes, F and N in TE 1250-0.1FN model
— 1 set of adjustment films, available with every model
— (Aluminum) calibration plate in TE 1250-0.1N and TE 1250-0.1FN models
— (Iron) calibration plate in TE 1250-0.1F and TE 1250-0.1FN models

Optional accessories:
— Software and RS-232C cord: ATC-01
— Adapter from RS-232 to USB: AFH 12
— Adjustment films (spare parts' order): ATB-US07
— External F-type measuring probe: ATE-01
— External N-type measuring probe: ATE-02

3 Operating Panel Description

here: TE 1250-0.1FN model

3-1 Measuring probe
3-2 Display
3-3 "ZERO" button
3-4 "Plus" button
3-5 "Minus" button
3-6 "ON/OFF" (multipurpose) button
3-7 "µm/mil" switch button (keyboard shortcut)
3-8 Battery compartment/cover — back
3-9 Port of RS-232C interfaces
3-10 "S/C" (single/continuous) measurement mode button

4 Measurement Procedure

4.1 Insert the F- or N-type measuring probe, depending on the measured object.

4.2 Switch the instrument on, pressing "ON/OFF" 3-6. The display 3-2 will display "0". The instrument TE can recognize the measuring probe (sensor) while displaying the relevant symbol, i.e.: "Fe" (= F) for ferrous metals or "NFe" (= N) — for non-ferrous metals.
4.3 Place the measuring probe 3-1 on the measured layer. The layer thickness can be read on the display. The measurement result can be adjusted by pressing "Plus" 3-4 or "Minus" 3-5 key. Remember the measuring probe should not be situated in the immediate vicinity of the measured coating or calibration plate.

4.4 To carry out another measurement, raise the measuring probe 3-1 by more than 1 cm, until '0" is displayed again, and repeat step 4.3.

4.5 If there are any measurement inaccuracies, it is recommended to adjust the measurement instrument as described in chapter 5 before you start measuring.

4.6 The device can be switched off by pressing "ON/OFF".
Otherwise, it will switch off automatically 50 s after a button was last pressed.

4.7 The measurement result can be displayed in µm or mil:
— press the switch button 3-7 **or**
— press "ON/OFF" 3-6 button and hold it until the display shows "UNIT", then press "ZERO" 3-3.
This process lasts 7 seconds altogether (after you have pressed "ON/OFF").

4.8 To change from "individual" to "continuous" and the other way round, you should
— press the "SC" button 3-10 **or**
— press the "ON/OFF" 3-6 button and hold it until "SC" is displayed. Next, press the "ZERO" button 3-3. **((•))** symbol means the continuous measurement mode, while "S" the individual (single) measurement mode.
This process lasts 9 seconds (after you have pressed "ON/OFF" key).

5 Adjustment

5.1 Zero setting Zero adjustment for "F" and "N" materials should be carried out separately.
When "F" is displayed, use the iron adjustment plate, and when "N" is displayed, use the aluminum adjustment plate.
Place the measuring probe 3-1 on the adjustment plate carefully. When you press "ZERO" 3-3 button, the display will show "0" without raising the measuring probe.

Please note: Zero adjustment will be useful, when the measuring probe is not placed directly on the adjustment plate or other uncoated substrate material.

5.2 Choose the appropriate adjustment film for the typical measurement range.

5.3 Place the chosen adjustment film on the adjustment plate or uncoated standard material.

5.4 Press the measuring probe carefully to the adjustment film and rise again. The readout will be displayed. It can be adjusted again by pressing "Plus" 3-4 or "Minus" 3-5 buttons. However, to do it, you should raise the measuring probe above the adjustment plate or the sample.

5.5 Step 5.4 should be repeated until the required measurement accuracy is achieved.

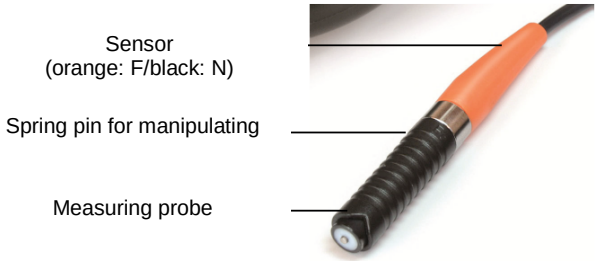
6 Battery replacement

6.1 Batteries should be replaced once the battery symbol is displayed.
6.2 Slide the battery compartment cover 3-8 out of the measurement instrument and remove the batteries.
6.3 Insert batteries (4 × 1.5 V, AAA/UM-4), paying attention to their polarity.
6.4 If the device is unused for an extended period of time, remove the batteries.

7 Adjustment films

The scope of delivery comprises adjustment films, including various films with different measurement ranges which, however, always cover the measurement range of 20 to 2000 µm They are available also as optional accessories, product ATB-US07.

8 Correct measurement of layer thickness using external sensors



The sensor should be held by the lower pin segment and pressed against the measured object slightly.
The black, ribbed pin segment moves on the spring. The spring presses the sensor head against the measured object with a pre-defined force, eliminating any measurement errors in this way.
Moreover, the measurement errors can be avoided by carrying out many test measurements before the first use.

9 General guidelines

9.1 The measurement instrument should always be adjusted using the substrate material to be used for the proper measurement instead of the delivered calibration plate. This will ensure higher measurement accuracy.

9.2 The measuring probe can be worn. The measuring probe service life usually depends on the number of measurements and the roughness of the measured layer. The probe should always be replaced by qualified specialists.

10 Resetting to factory settings

Resetting to factory settings is recommended in the following circumstances:
— Absolute inability to measure any further;

— deteriorated measurement accuracy due to drastic changes in the operating environment of the measurement instrument;
— following replacement of the measuring probe.

Factory settings include both settings for "Fe" (F) and "NFe" (N) materials. It can be set for one or both of them.

The procedure is described below:
It is different for "Fe" and "NFe" symbols displayed. After "Fe" is displayed, the factory setting for "Fe" material is set, and after "NFe" is displayed", the factor setting for "NFe" material is set.
- Press the "ON/OFF" 3-6 button and hold it until "CAL" is displayed. This process lasts ca. 5 seconds after you have pressed "ON/OFF".
- After the display shows F:H (or NF:H), raise the measuring probe more than 5 cm. Next, press "ZERO" again, the device will be switched again to the measurement mode. The factory settings have been restored.
Please note: This process should always be completed within 6 consecutive seconds. Otherwise, it will be terminated by the device automatically and the resetting will be ineffective.

11 Comments

LN function enables to change the measurement instrument linearity entered during adjustment (it is controlled by "ON/OFF" button and lasts ca. 11 seconds after the button has been pressed).
However, it is recommended not to change the **LN value**, as such a change may result in displaying different measurement results.
Every change of LN value can significantly reduce the measurement accuracy. This value should be set solely by specialists.

As a general rule: The higher the LN value is, the lower the readout result for the same layer thickness is. Small change in LN value results in high change in the readout result in the upper measurement range (for 500 µm/20 mil).

To adjust LN value:

Press the "ON/OFF" button. This process lasts ca. 11 seconds after this button was pressed.
To change this value, press "Plus" or "Minus" button, and after "LN" is displayed, release "ON/OFF" button. The value will be saved. To complete the process, press "ZERO".
A. The readout result in the lower range can be adjusted by pressing "Plus" or "Minus" button.
B. LN value should be increased when the readout value in the lower range is correct (e.g. 51 µm), and in the upper it is too high (e.g. 432 µm).

And the other way round, LN value should be decreased when the readout value in the lower range is correct (e.g. 51 µm), and in the upper it is too low (e.g. 432 µm).
C. The processes in A and B should be repeated until the readout for every adjustment film is satisfactory in terms of its accuracy.

Please note:
To see the CE declaration, click the link below:
https://www.kern-sohn.com/shop/de/DOWNLOADS/