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Instruction Manual
Digital Coating Thickness Gauge

SAUTER TC

Version 1.2
08/2017
GB

Illustration: TC 1250-0.1FN

PROFESSIONAL MEASURING

TC -BA-e-1712

GB

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Version 1.2 08/2017

Instruction Manual
Digital Coating Thickness Gauge

Thank you for buying a SAUTER digital Coating Thickness Gauge. We hope you are pleased with your high quality Thickness Gauge with its big functional range.
If you have any queries, wishes or helpful suggestions, do not hesitate to call our service number.

Models available:

- TC 1250-0.1 F
- TC 1250-0.1 N
- TC 1250-0.1 FN
- TC_car 1250-0.1FN (separate instruction manual available)

Summarize:

This coating thickness gauge is small in size, light in weight and easy to carry. Although it is complex and advanced, it is convenient to operate. Its ruggedness will allow many years of use if all the instructions are followed carefully.
Please keep this instruction manual always within reach!

Annotation: It is strongly recommended to adjust the new instrument before the first use, as described in paragraph 5. By doing this, you will achieve a much better measurement result right from the start.

1 Features

» This instrument meets the standards of both, ISO 2360 and DIN as well as ASTM and BS. It is suitable for the laboratory and for use under “harsh field” conditions.

» The F- sensor measures the thickness of non-magnetic coatings, e.g. paint, plastics, enameled porcelain, galvanic coatings, phosphorescent layers chrome, lacquer layers, copper plates, aluminum plates, alloys, paper etc.
These layers are located on magnetic metals, e.g. steel, iron, nickel etc.

» The N- sensor measures the thickness of non-magnetic coatings on non-magnetic metals. It is used on anodizing, varnish, paint, enamel, plastic coatings, powder etc.
It can be applied on non-magnetic materials like aluminium, brass, stainless steel etc.

»The N- sensor measures the thickness of non-magnetic coatings on non-magnetic metals. It is used on anodization, varnish, paint, enamel, plastic coatings, powder coatings etc. These can be applied on non-magnetic materials like aluminium, brass, non-magnetic stainless steel and others.

»Die FN-sensor is a combination of both sensors and this way, it is applicable for both application ranges.

» automatic base material recognition.
» manual or automatic Auto-Power off to conserve batteries
» metric /imperial conversion from µm / mil
»Two measurement modes: single and continuous (S= single/ C= continuous)
» Large measurement range and high resolution
» Data transfer to PC possible by RS232 interface
Cable and software can be obtained as optional accessory ATC-01.

2 Specifications

Display: 4 digits, 10mm LCD

Measurement range: 0- 1250 µm/ 0- 50 mil (default)

Resolution: 0.1 µm (0 to 99.9 µm)
1 µm (over 100 µm)

Accuracy:
- Standard: 3% of the measured value or ± 2.5 µm or 0.1mil
This is valid within a tolerance range of ± 100 µm around the individually measured range, if a two-point calibration was performed within this tolerance range.
-- *Off-Set Accur:* 1 % of the measured value or Min ± 1.0 µm
This is valid within ± 50 µm around the *Off-Set Accur* point.

PC- interface: with RS-232C interface

Power supply: 4x 1.5V AAA (UM-4) battery

Operating conditions: Temperature: 0 to 50°C
Humidity: less than 80%

Dimensions: 127 x 67 x 28mm (5.0 x 2.6 x 1.1Inch)

Weight: about 81g (batteries not included)

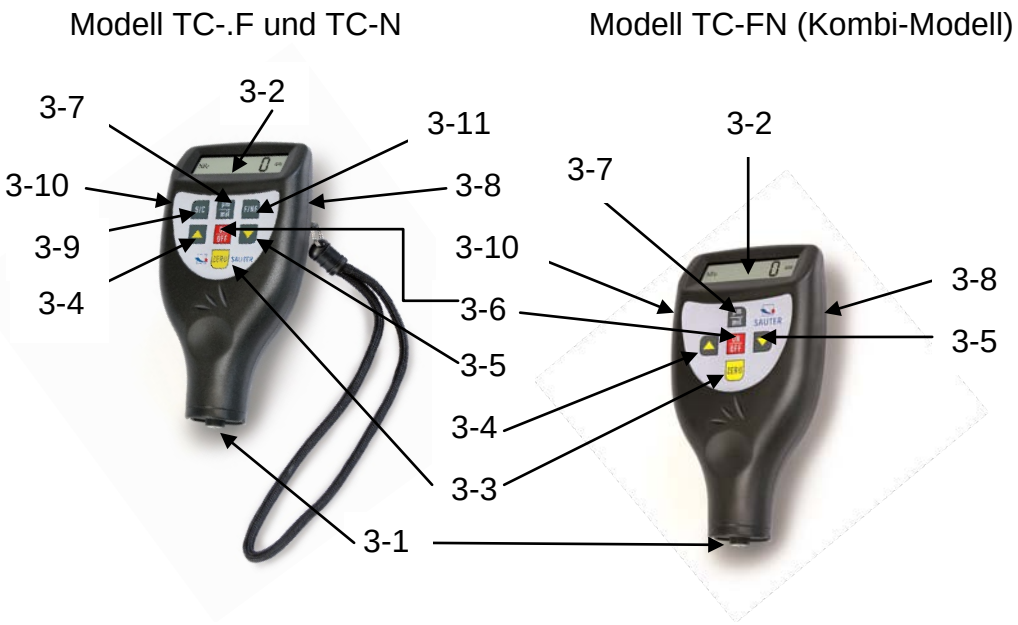
Scope of delivery: - Carrying case
- Instruction manual

According to types: 1. Incorporated sensor at F model:
TC 1250-0.1 F, with button F/N
2. Incorporated sensor at N model:
TC 1250-0.1 N, with button F/N
3. Incorporated sensor at FN model:
TC 1250-0.1 FN, without button F/N u. S/C

- Adjustment foils, at every model
- Zeroing plate (Aluminum) at N model
- Zeroing plate (iron) at F model
- 2 Zeroing plates (Aluminum and iron) at FN combination model

Optional accessory: Cable & software for RS-232C: ATC-01

3 Front Panel description



3-1 Sensor: F, N or FN
3-2 Display
3-3 Zero- key
3-4 Plus- key
3-5 Minus- key
3-6 Power on/ Power off- key (multi-functional)
3-7 µm/ mil conversion key (shortcut key)
3-8 Battery compartment/ cover
3-9 S/C- key (single/ continuous)
3-10 Jack for RS-232C interface
3-11 F/ N- key

4 Measuring procedure

a) Power- key 3-6 has to be pressed to switch on the instrument. `0` will be shown on the display 3-2. The instrument TC 1250-0.1FN recognizes the sensor itself by the symbol `Fe` (=F) for magnetic metals or ` NFe`(=N) for non-magnetic metals which is indicated on the display. It switches to the automatic measurement mode, which also correctly identifies the zeroing plate or any other base material.

b) The sensor 3-1 has to be placed onto a coating layer to be measured. The reading on the display is the thickness of the coating layer. This can be corrected by pressing the Plus- key 3-4 or the Minus- key 3-5(*Offset- Accur* function). For doing this, the sensor should be kept away from the measured object or the base plate.

c) For the next measurement just lift the sensor 3-1 for more than 1cm, it will be displayed “0” and step 4.2 has to be repeated.

d) If an accuracy of measurement is suspected, we recommend calibrating the instrument before measuring, as described in part 5.

e) The instrument can be switched off by pressing the Power- key 3-6. Or it will switch itself off 50 seconds after the last key operation.

f) The measurement unit can be indicated in `µm` or `mil`. To convert:
- by pressing the conversion key 3-7 **or** by pressing the Power- key 3-6 and without releasing it until `UNIT` appears on the display. Then the Zero- key 3-3 has to be pressed. Measurement unit changes when the Power- key is released. All in all, this operation lasts about 7 seconds (from starting to press the Zero-key or / to press the Power-key).

g) To change the measurement mode from `single` to `continuous` or the other way round, the Power- key 3-6 respectively Zero-key 3-3 has to be pressed and not released until `SC` appears on the display. Then the Zero- key 3-3 has to be pressed. Symbol **((•))** indicates the continuous mode and `S` indicates the single mode. This operation lasts 9 seconds (from starting to press the Power- key 3-6).

5 Zero- Adjustment (Calibration)

a) Zero- adjustment for `Fe` (=F) and `NFe` should be carried out separately.
The Zero-plate of iron has to be chosen, if `Fe` is displayed and zero-plate of aluminum has to be chosen if `NFe` is displayed.
Sensor 3-1 has to be placed carefully onto the appropriate base plate or another uncoated base material. The Zero- key 3-3 has to be pressed without lifting the sensor. `0` appears on the display.

Attention: The adjustment is invalid, if the sensor is not placed directly on the base plate or another uncoated material.

b) An appropriate standard foil has to be selected, according to the measurement range of the coating to be measured.

c) The selected standard foil has to be placed onto the base plate (zeroing –plate included in delivery) or an uncoated material for all outstanding tests.

d) The sensor 3-1 has to be pressed carefully onto the middle of the adjustment foil and then lifted. The reading on the display is the coating thickness value measured.
This can be corrected by pressing the Plus- key 3-4 or the Minus- key 3-5 while the sensor is removed from the base plate or the measured base material.

e) Step d) has to be repeated until the required accuracy is achieved and the result is correct.

6 Battery replacement

a) If the battery symbol ``+/-`` appears on the display, the batteries should be replaced.

b) Battery cover 3-8 has to be removed and batteries have to be taken out.

c) Batteries (4x1.5V AAA/UM-4) have to be installed correctly into the case. Please pay attention to polarity!

d) If the instrument is not going to be used for an extended period, batteries have to be removed.

7 Adjustment foils

This instrument includes in its scope of delivery a kit of adjustment foils with several foils of different measurement ranges. But there is always covered a measurement range between 20 and 2000µm. They are also optional available as a spare part, article number ATB-US07.

8 General advise

a) The instrument should always be calibrated on the uncoated base material to be measured instead of the base plate included in the delivery. Then accuracy is more precise right from the start.

b) Sensors will eventually wear off. Life of the sensor will depend on the number of measurements taken and how abrasive the coating is. The change of a sensor should only be performed by qualified persons.

9 How to restore Factory Settings

a) In the following cases it is recommended to restore factory settings:
- The instrument does not measure any more.
- Measurement accuracy is degraded caused by the abraded sensor or affected by environmental conditions.
- After the replacement of a new sensor.

b) Procedure:
Factory setting is including both, the settings for “Fe” (F) and for “NFe” (N).
Please observe which symbol is shown on the display.
It can be only performed one setting after another. The procedure is as follows:

The Power- on/ Power- off key 3-6 has to be pressed and not released until `CAL` appears on the display. It lasts about 5 seconds from the last key operation until CAL will appear.
The sensor 3-1 has to be placed carefully onto the respective base material. Then the Zero key 3-3 has to be pressed, accompanied by a “beep” sound
If now NF:H (or F:H) is shown on the display, the sensor has to be lifted for more than 5 cm. Then the Zero- key 3-3 has to be pressed and the instrument returns into measurement mode. Now factory settings have been finished.
Comment: This procedure should always be done within 6 seconds. Otherwise it will be automatically cancelled and restoration is invalid.

10 Notes

The linearization of the instrument, which is given by the calibration, can be changed with the **Ln- function.**
It is strictly recommended not to perform any changes of the **value of LN,** as these changes can lead to deviant measurement results.

Any adjustment or changed value of LN will seriously affect the accuracy. This value should only be adjusted by professional persons.

Generally said:
The bigger the value of Ln, the smaller the reading on the display for the same coating thickness. Only a small change of the value of LN causes a big change in the reading of the upper measurement range (at 500µm/20 mil).

The **value of LN** has to be adjusted as follows:
By pressing the Power-key: It lasts about 11 seconds from starting to press this key. This value can be changed by pressing the Plus- / Minus- key after `LN` appears on the display and the Power- key is released. This value is stored and afterwards the Zero- key has to be pressed.
A: The reading value at low end has to be adjusted by pressing the Plus-/ or the Minus- key.
B: The value of **LN** is enlarged if the reading value at low end (e.g. 51µm) is o.k., but the reading value at high end (e.g.432µm) is too big.
In contrast with this, the value of LN has to be decreased, if the reading value at low end (e.g. 51µm) is o.k. but at high end (e.g. 432µm) it is too small.
C: Procedures from A to B have to be repeated until the reading value for every calibration foil is satisfactory in its accuracy.

Annotation:
To have a look at the CE Declaration of Conformity, please click onto the following link: https://www.kern-sohn.com/shop/de/DOWNLOADS/