

## Instruction Manual TC

### Digital coating thickness gauge

(another range may be specified)



**Model: TC 1250-0.1 F**  
**TC 1250-0.1 N**  
**TC 1250-0.1 FN**

#### Table of contents

Features  
 Specifications  
 Front panel description  
 Measuring procedure  
 Calibration  
 Battery replacement  
 Trouble shooting  
 Restore factory settings  
 Notes  
 Declaration of conformity

**Annotation: It is strongly recommended to calibrate the new instrument before the first use, as described in paragraph 5. By doing this it will be achieved 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 in 'harsh field' conditions.
- \* The N- mode measures the thickness of nonmagnetic coatings, e.g. anodizing, varnish, paint, enamel, plastic coatings, powder etc. These layers are located on non-magnetic metals e.g. aluminium, brass, nonmagnetic stainless steel etc.
- \* Automatic substrate recognition
- \* Manual or automatically "auto power off" to conserve batteries.
- \* Two measurement modes: - single and continuous
- \* Wide measuring range and high resolution
- \* Date transfer to PC possible

#### 2. Specifications

Display: 4 digits  
 Range: 0 to 1250 µm/ 0 to 50 mil

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

Accuracy:

- Standard: 3% of the measured value or min. ± 2.5 µm  
 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 Mode: 1% of the measured value  
 or min. ± 1.0 µm

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)

Operating conditions:

Temperature: 0 to 50°C  
 Humidity: < 80%

Size: 126 x 65 x 27 mm (5.0 x 2.6 x 1.1 inch)

Weight: about 81g (not including batteries)

Accessories: carrying case

- Operation manual

According to Models:

1. incorporate F sensor at model TC1250-0.1F with button F/N

2. incorporate N-sensor at model TC1250-0.1N with button F/N

3. incorporate FN-sensor at model TC1250-0.1 FN, Without button F/N and S/C

- Calibration foils (at each model)

- Base plate (aluminium) at model N

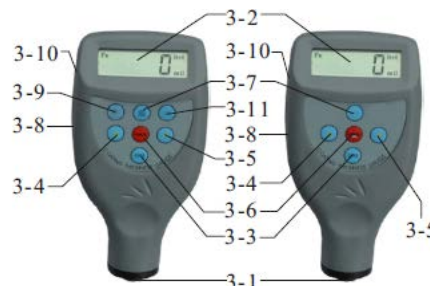
- Base plate (iron) at model F

- 2 Base plates (iron and aluminium) for Model FN, the combination model

Optional accessories: Cable & software for RS-232C

#### 3. Front panel description

Model TC F and TC N      Model TC FN



3-1 Sensor: F, N or FN

3-2 Display

3-3 Zero- key

3-4 Plus- key

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## Instruction Manual TC

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- 3-5 Minus- key
- 3-6 Power on/ Power off- key (multi functional)
- 3-7  $\mu\text{m}/\text{mil}$  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

- 4.1 Press the Power- key 3-6 to switch on the instrument.  
The instrument recognizes the sensor itself by the symbol `Fe` (=F) or `NFe` (=N) which is indicated on the display.
- 4.2 The sensor 3-1 is 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 away from the measured object or the base plate.
- 4.3 For the next measurement just lift the sensor 3-1 for more than 1cm and step 4.2 is to be repeated.
- 4.4 If suspected the accuracy of measurement it is recommended to calibrate the instrument before measuring, as described in part 5.
- 4.5 The instrument can be switched off by pressing the Power- key 3-6. The power will switch itself off 50 seconds after the last operation.
- 4.6 The measurement unit can be indicated with ` $\mu\text{m}$ ` or ` $\text{mil}$ `. To convert:  
by pressing the conversion key 3-7 **or**  
by pressing the Power- key 3-6 and  
without releasing it till `UNIT` appears on the display.  
Then the Zero- key 3-3 is to be pressed. All in all this operation lasts about 7 seconds.
- 4.7 To change the measuring mode from `single` to `continuous` or the other way round,  
the Power- key 3-6 is to be pressed and not released until `SC` appears on the display.  
Then the Zero- key 3-3 is to be pressed. The symbol **(●)** indicates the continuous mode and `S` indicates the single mode. This operation lasts 9 seconds (from starting pressing the Power- key 3-6.

### 5. Calibration

- 5.1 Zero adjustment:  
The sensor 3-1 is to be placed carefully onto the appropriate base plate or another uncoated base material.  
The Zero- key 3-3 is to be pressed without lifting the sensor. `0` appears on the display.

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

- 5.2 An appropriate calibration foil is to be selected according to the measurement range.
- 5.3 The selected standard foil is to be placed onto the base plate or the uncoated material.
- 5.4 The sensor is to be pressed carefully onto the calibration foil and then lifted. The reading on the display is the 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 object.
- 5.5 Repeat step 5.4 until the accuracy is achieved.

### 6. Battery replacement

- 6.1 If the battery symbol ` $\pm$ ` appears on the display, the batteries should be replaced.
- 6.2 The battery cover 3-8 is to be removed and the batteries are to be taken off.
- 6.3 The batteries (4x1.5V AAA/UM-4) are to be installed correctly into the case.
- 6.4 If the instrument is not to be used for an extended period, batteries are to be extracted.

### 7. Trouble shooting

- 7.1 The instrument should always be calibrated on the uncoated base material to be measured instead of the base plate included in the delivery.  
Then the accuracy is more precise.
- 7.2 Sensors will eventually wear off. Life of the sensor will depend on the number of measurements taken and how abrasive the coating is.

### 8. Restore factory settings

- 8.1 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.
- 8.2 How to restore:  
Factory settings are easily to be restored.  
The procedure is as follows:

## Instruction Manual TC

8.2.1 The Power- on/ Power- off key 3-6 has to be pressed until `CAL` appears on the display. This lasts about 5 seconds.

8.2.2 If now F:H or NF:H is shown on the display, the sensor has to be lifted for more than 5 cm. Then the Zero- key 3-3 is to be pressed and the instrument returns into measuring mode. With this, factory setting is restored.

Comment: This procedure should always be done within 6 seconds. Otherwise it will be automatically cancelled and the restoration is invalid.

### 9. Notes

9.1 The linearization of the instrument, which is given by the calibration, can be changed with the **Ln- function**.

**Any adjustment of the 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 on the value of Ln causes a big change in the reading of the upper measurement range (at 500µm/ 20 mil).

The value of Ln is to adjust as follows:

The Power on/ Power off key has to be pressed. It lasts about 11seconds from starting depressing this key.

This value can be changed by pressing the Plus- / Minus- key after `Ln` appears on the display and the Power- on / Power- off key is released. This value is stored and afterwards the Zero- key is to be pressed.

A. The reading at low end is to be adjusted by pressing the Plus-/ or the Minus- key.

B. The value of Ln is enlarged if reading at low end (e.g. 51µm) is o.k., but reading at high end (e.g.432µm) is too large. In contrast with this the value of Ln is to be decreased if the reading 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 are to be repeated until the reading for every calibration foil is satisfactory in its accuracy.

### 10. Declaration of conformity



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#### Konformitätserklärung

Declaration of conformity for apparatus with CE mark  
 Konformitätserklärung für Geräte mit CE-Zeichen  
 Déclaration de conformité pour appareils portant la marque CE  
 Declaración de conformidad para aparatos con marca CE  
 Dichiarazione di conformità per apparecchi contrassegnati con la marcatura CE

**English** We hereby declare that the product to which this declaration refers conforms with the following standards.  
**Deutsch** Wir erklären hiermit, dass das Produkt, auf das sich diese Erklärung bezieht, mit den nachstehenden Normen übereinstimmt.  
**Français** Nous déclarons avec oela responsabilité que le produit, auquel se rapporte la présente déclaration, est conforme aux normes citées ci-après.  
**Español** Manifestamos en la presente que el producto al que se refiere esta declaración es: 'a de acuerdo con las normas siguientes  
**Italiano** Dichiariamo con ciò che il prodotto al quale la presente dichiarazione si riferisce è conforme alle norme di seguito citate.

#### Coating Thickness Gauge: SAUTER TC

Mark applied	EU Directives	Standards
CE	93/32/EEC EMC	EN 61326 : 1997+A1 : 1998+A2 : 2001
		EN 55022
		EN 61000-4-2 I-3

Date: 07.01.2009

Signature:



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