



# MikroTest<sup>®</sup> 7 digital

Technical Reference and Operating Manual

Advancing with Technology **ElektroPhysik**

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## Application, Taking Readings

### 1. Application

The MikroTest® 7 digital is designed for non-destructive coating thickness measurements for all non-magnetic coatings such as paint, chrome, copper, rubber etc (except Nickel) on steel.

### 2. Taking Readings

Always check the probe tip and measuring surface to make sure they are clean before taking a measurement.

**Do not use compressed air** on the gauge for cleaning purposes!

- a. Press the black button on the bottom of the gauge shortly to switch the gauge on. The display shows "on".
- b. Place the gauge on the surface to be measured (figure 1).
- c. Press the black button again shortly to initiate measurement.



figure 1



figure 2

## Taking readings

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- d. The reading is displayed within 2 or 3 seconds (figure 2).
- e. Measurement is confirmed by a visual and an accoustical signal.

Two short bleeps indicate an erroneous measurement (see section 8.1).

- Measurement can be carried out regardless of the position of the gauge.
- The gauge switches off automatically 30 seconds after the last measurement has been taken.
- MikroTest® 7 digital can display readings in metric or imperial measuring units. To change the measuring unit, press the black button until the requested measuring unit appears on display.

### **Important note:**

Dust and dirt are attracted by the magnet. Make sure no dirt particles, bore particles or metal filings penetrate into the gauge!

## **2.1 Measuring on small and curved surfaces**

For measuring on small and curved surfaces, please consider minimum diameter and curvature radius as specified in section 11 of this manual.

The V-groove around the probe tip serves as positioning aid when measuring on cylindrical parts.

## 2.2 Measuring on rough surfaces

Coating thickness readings on rough surfaces tend to be higher than the actual coating thickness and may vary considerably. This is due to the physical nature of rough surfaces. The mean coating thickness can be determined as follows: Take several readings (at least 5) on the coated sample to calculate the mean value (A). Then take another 5 readings on the uncoated sample and again calculate the mean value (B). If you calculate the difference between A and B, you'll get the mean of coating thickness.

## 3. Checking Measuring Accuracy

As wear and tear, dirt particles or improper use may impair the measuring accuracy it is recommended to check the measuring accuracy from time to time. Please use only MikroTest® 7 digital control standards for checking procedure (see accessories).

## 4. Power Supply

MikroTest® 7 digital is powered by a 6 V battery. A low battery indicator on the display appears if the battery is low. At this point, measurement is still possible. However, as soon as the E06 error message appears, the battery should be changed immediately.

## 5. Delivery Schedule

- MikroTest® 7 digital, magnetic coating thickness gauge, conforming to DIN EN ISO 2178, DIN EN ISO 2808, DIN 50 982, ASTM B499, E376, D1186, G12.
- carrying case
- 6V battery, 4LR44
- operating manual
- works certificate

## Measuring Principle, Care and Maintenance, Troubelshooting

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### 6. Measuring Principle

The MikroTest® 7 digital gauge works according to the improved magnetic attraction principle with electromagnetic measuring of the attraction (German patent no. 199 53 061; US Patent no. 6,538,434; patent pending in other countries). The measuring system of the gauge consists of a perfectly balanced "beam system" at the one end of which a permanent magnet is located and at the other end an electromagnet. The attraction of the magnet to the ferromagnetic substrate is measured by means of this system, converted in coating thickness and displayed digitally.

### 7. Care and Maintenance

- Keep the gauge away from strong magnetic fields and electromagnets.
- Contamination of the gauge with dust, dirt, chips, filings, solder particles, food, brush bristles, sweat, grease, etc. must be prevented.

- Remove battery if the gauge is not in use for a longer period of time.
- If the gauge is not in use for prolonged periods, it is recommended to store it in the carrying case supplied with the gauge to protect it against dust, dirt or strong direct sunlight.

### 8. Troubleshooting

In case of errors, please refer to the instructions as specified in section 8.1. If you are not able to solve the problem on your own, please contact ElektroPhysik or your local dealer for repair. Please provide a short description of the problem. Please note that the gauge should only be repaired by authorized, skilled and trained personnel. Service attempts by untrained personnel could cause extensive damage to the gauge and possibly void any and all warranties.

### 8.1 Error Messages

Display	Error and Cause	Remedy
E01	Operating error: <ul style="list-style-type: none"> <li>• Coating thickness is below measuring range (model S5 and S15).</li> <li>• Gauge positioning error</li> <li>• Substrate is permanent magnetic</li> </ul>	<ul style="list-style-type: none"> <li>• Use suitable gauge (see section 11.)</li> <li>• Place the gauge correctly on the surface to be measured.</li> <li>• Demagnetize the substrate material.</li> </ul>
E04 E05	Operating error: <ul style="list-style-type: none"> <li>• Coating thickness is above measuring range.</li> <li>• Gauge is incorrectly placed on the surface to be measured.</li> <li>• Substrate is not magnetic.</li> </ul>	<ul style="list-style-type: none"> <li>• Choose an appropriate gauge model (see chapter 7).</li> <li>• Place gauge correctly on the surface to be measured.</li> <li>• Gauge not suitable for your application.</li> </ul>
E02	Erroneous measurement.	Repeat measurement.
E06	Low battery	Change battery.
E00 E10	Defective gauge	Please contact your local dealer.

## Accessories, Safety Notes

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### 9. Accessories

- Sets of thickness standards including two or four different standards for checking MikroTest® 7 digital measuring accuracy
- MikroTest® 7 digital belt case for when working on ladders or on scaffolding
- SurfaTest wet film gauge (measuring comb) for measuring freshly applied wet coatings; MikroTest® 7 digital and SurfaTest are an ideal inspection kit particularly for the paint inspector.

### 10. Safety Notes

The constant magnetic field generated by the measuring system may impair or even destroy electronic devices or measuring gauges. Keep the gauge away from the magnetic strip on credit cards, audio tapes, video tapes, computer disks and all kinds of encoded magnetic media.



## 11. Technical Data

	MikroTest® 7G	MikroTest® 7F	MikroTest® 7S5	MikroTest® 7S15
<b>Measuring range metric</b>	0 ... 300 µm	0 ... 1.5 mm	0.5 ... 5.0 mm	3.5 ... 15.0 mm
<b>Measuring range mils</b>	0 ... 12 mils	0 ... 60 mils	20 ... 200 mils	140 ... 600 mils
<b>Tolerance*</b> (* the higher value applies)	± 3 µm / 0.12 mils or ± 3 % of reading	± 5 µm / 0.2 mils or ± 3 % of reading	± 4 % of reading	± 4 % of reading
<b>Low range sensitivity</b>	0.5 µm / 0.02 mils	1 µm / 0.05 mils	5 µm / 0.2 mils	10 µm / 0.5 mils
<b>Minimum measuring area</b>	20 mm Ø / 0.8 inch Ø	30 mm Ø / 1.2 inch Ø	50 mm Ø / 2.0 inch Ø	100 mm Ø / 4.0 inch Ø
<b>Minimum curvature (convex/concave)</b>	5 mm / 25 mm 0.2 inch / 1.0 inch	8 mm / 25 mm 0.35 inch / 1.0 inch	15 mm / 25 mm 0.6 inch / 1.0 inch	100 mm / 100 mm 4.0 inch / 4.0 inch
<b>Minimum substrate thickness</b>	0.5 mm / 20 mils	0.5 mm / 20 mils	1 mm / 40 mils	3 mm / 120 mils
<b>Power supply</b>	6 V, 4LR44			
<b>Ambient temperature</b>	-10° ... 50° C, 14° F ... 122° F			
<b>Dimensions</b>	210 mm x 58 mm x 32 mm / 8.3 inch x 2.3 inch x 1.3 inch			
<b>Weight</b>	310 g (11 ozs)			

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