



## MPOR Coating Thickness Test Instruments.

Precise Measurements – Displayed Twice.

简测实业  
JIANCE SHIYE



**fischer**

Coating Thickness | Material Analysis | Microhardness | Material Testing



## Small Size, Great Performance.

Measure coating thickness easily, quickly and non-destructively. A unit from the MPOR series is optimal for the demands of many measurement requirements. These 'smart' instruments automatically recognize the type of the coated substrate material, e.g., aluminum or steel, and selects the appropriate measurement method – Magnetic Induction or Eddy Current. This provides the assurance for precise measurements! Depending on the measurement task and user preference, two model groups are available.

- MPOR models with with the probe integrated in the unit for one-hand measurements.
- MPOR-FP models with with a connected cable probe is ideal for measurements on various specimen shapes.



Measurement of the paint thickness on steel sheet using the magnetic induction method



Problem-free measurements even on cylindrical parts

All models of the MPOR(-FP) series offer the following technical properties and advantages:

### Perfect for all applications

- DUALSCOPE® MPOR models measure on all metallic materials (ferrous and nonferrous metals)
- ISOSCOPE® MPOR models measure on all insulating coatings on nonferrous metals (e.g., paint or anodic coatings on Aluminum)
- Automatically recognizes the substrate material under the coating. The instrument selects the appropriate measurement method (applies to DUALSCOPE® models)
- Reliable measurements. Low influence from permeability, electrical conductivity and shape of the substrate material
- Miniature size for measurements even in areas with limited accessibility
- Robust and long-lasting design
- Low weight of approx. 85 g / 3 oz. (without batteries)

### Made with the user in mind

- Simple one-hand operation: Place instrument on object and read the measurement (MPOR models)
- Ergonomic design
- Fast, menu-driven parameter setting
- Automatic On and Off function, time-variable
- Warning message for low battery voltage

### Optimal measurement display

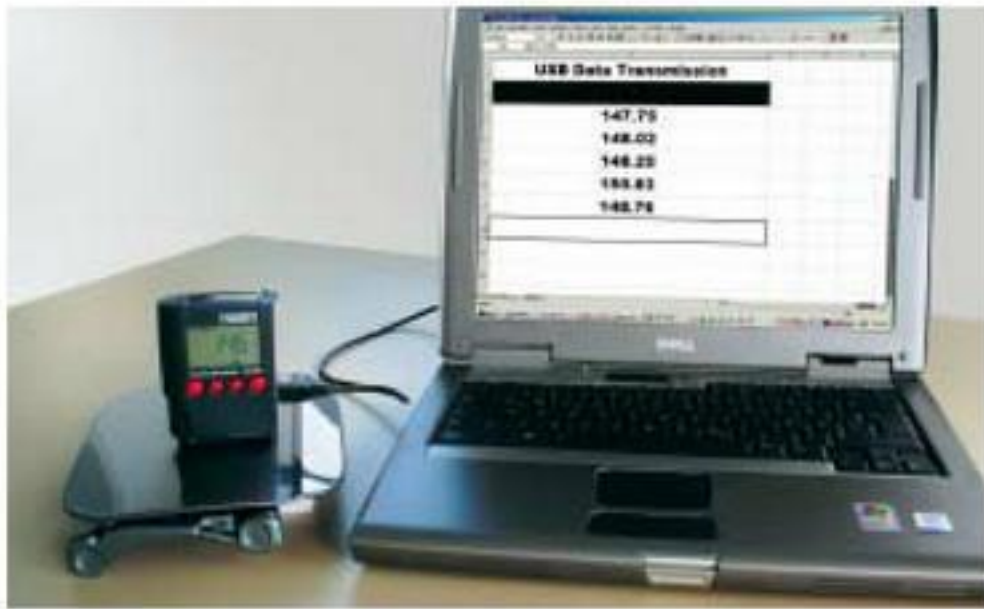
- Two LCD displays allow view of readings from all instrument positions
- Backlit LCD displays: To extend the battery life, display light can be turned off manually or automatically
- Acoustic and optical signal at measurement acceptance
- Acoustic and optical signal when pre-set upper or lower specification limits are violated





### Data transfer of the measurement data via radio or USB port

The obtained measurement data can be transmitted to a computer and, for example, evaluated and documented using Excel spreadsheets (PC-DATEX). Every MPOR instrument includes a radio module and a USB port.



Data transfer via USB port (bidirectional)



Data transfer via radio (unidirectional)



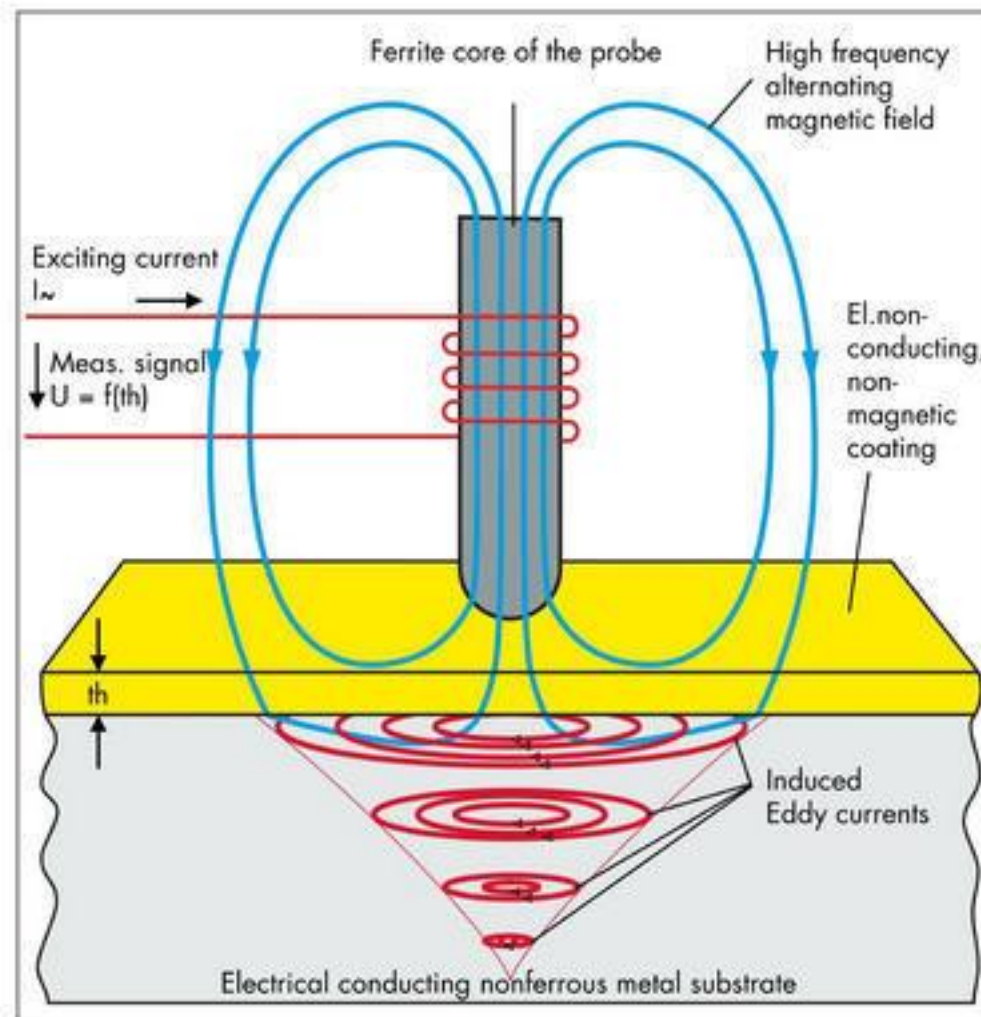
The V-groove of the placement support allows for easy and reliable measurements on cylindrical parts

### Eddy current method

The excitation current of the measurement probe generates a high-frequency primary magnetic field that induces Eddy currents in the substrate material. The resultant secondary magnetic field weakens the primary field. This effect is a measure for the distance (= coating thickness) between the probe and the substrate material, and is converted to a coating thickness value using a probe characteristic that is stored in the instrument.

### Applications

- Paint varnish or plastic coatings on non-ferrous metals, e.g., aluminum or stainless steel
- Anodized coatings on aluminum



Eddy current method according to EN ISO 2360



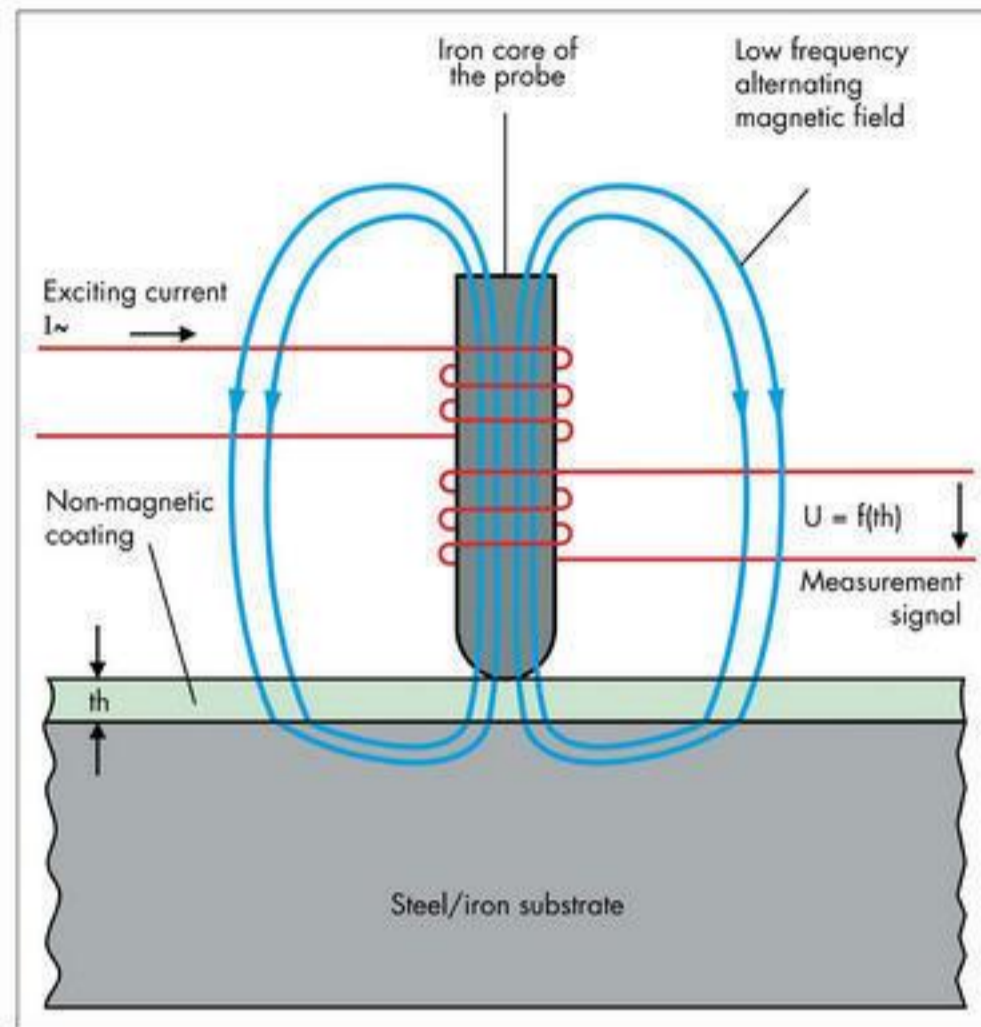


### Magnetic induction method

The excitation current in the measurement probe generates a low-frequency magnetic field that is amplified by the magnetic substrate material corresponding to the coating thickness to be measured. The signal of a measuring coil that registers this amplification is converted to a coating thickness value using a probe characteristic that is stored in the instrument.

### Applications

- Electroplated coatings of zinc, chromium, copper, etc. or
- Plated or sputtered nonmagnetic coatings, or
- Paint, varnish, plastic coatings, etc. on steel or iron



Magnetic induction method according to EN ISO 2178

### Technical Data

Instrument model	DUALSCOPE® MPOR USB	DUALSCOPE® MPOR-FP USB	ISOSCOPE® MPOR USB	DUALSCOPE® MPORH USB	DUALSCOPE® MPORH-FP USB
Standard version p/n	604-048	604-049	604-063	604-052	604-053
US version p/n	604-051	-	604-066	604-055	-
Measuring applications and measuring range	NF, Iso/Fe 0–2000 µm (0–80 mils) Iso/NF 0–2000 µm (0–80 mils)		Iso/NF 0–1200 µm (0–47 mils) -	NF, Iso/Fe 0–7000 µm (0–275 mils) Iso/NF 0–2500 µm (0–100 mils)	
Trueness based on Fischer standards	<b>NF, Iso/Fe</b> up to 75 µm ± 1.5 µm 75 – 1000 µm ≅ 2 % 1000 – 2000 µm ≅ 3 %  <b>Iso/NF</b> up to 50 µm ± 1 µm 50 – 1000 µm ≅ 2 % 1000 – 2000 µm ≅ 3 %		<b>Iso/NF</b> up to 70 µm ± 1 µm 70 – 250 µm ≅ 1.5 % 250 – 1200 µm ≅ 3 %	<b>NF, Iso/Fe</b> up to 150 µm ± 5 µm 150 – 3000 µm ≅ 3 % 3000 – 7000 µm ≅ 5 %  <b>Iso/NF</b> up to 50 µm ± 1 µm 50 – 1000 µm ≅ 2 % 1000 – 2500 µm ≅ 3 %	
Repeatability precision based on Fischer standards	<b>NF, Iso/Fe</b> up to 50 µm ≅ 0.25 µm 50 – 2000 µm ≅ 0.5 %  <b>Iso/NF</b> up to 100 µm ≅ 0.5 µm 1000 – 2000 µm ≅ 0.5 %		<b>Iso/NF</b> up to 50 µm ≅ 0.25 µm 50 – 1200 µm ≅ 0.5 %	<b>NF, Iso/Fe</b> up to 200 µm ≅ 2 µm 200 – 7000 µm ≅ 1 %  <b>Iso/NF</b> up to 50 µm ≅ 0.5 µm 50 – 1000 µm ≅ 1 % 1000 – 2500 µm ≅ 1.5 %	
Available test methods	Magnetic induction; Eddy current		Eddy current	Magnetic method; Eddy current	
Probe integrated in the instrument	✓	-	✓	✓	-
Probe connected by a cable	-	✓	-	-	✓
Radio data communication	✓	✓	✓	✓	✓
USB data communication	✓	✓	✓	✓	✓





### Additional instrument functions

- Ready to measure immediately without calibration. Calibration required only for significant changes in shape or substrate material.
- ZERO button for quick normalization to the respective shape of the measurement location (Eddy current method)
- Conductivity compensation of the reading (Eddy current method)
- Calibration with only one coating standard allows for a precise adjustment to different shapes or substrate materials
- Outlier monitoring to eliminate readings of erroneous measurements
- Display units selectable between  $\mu\text{m}$  and mil
- Measurements with continuous display mode for continuous scanning of surfaces (e.g., in boiler-fabrication)
- Freely selectable offset value for an automatic subtraction of constants (e.g., for a known pre-coating)



Parts with a complex shape are measured best with an MPOR-FP

### Evaluation and measurement data management

- Statistical evaluation at the push of a button: Arithmetic mean value; standard deviation, number of readings, smallest and largest value of a test series
- Upper and lower specification limits
- Storage space for max. 1,000 readings
- Measurement, normalization and calibration data are stored in the memory at all times even without battery

### Standard content of shipment

Instrument  
 Carrying case, protective sleeve, carrying strap  
 2 batteries LR6.AA 1.5 V  
 KAL-N Fe-Base MPOR  
 KAL-N Al-Base MPOR  
 Calibration foil 75  $\mu\text{m}$   
 Operator's manual

### Optional accessories with part number

Radio receiver USB 868 MHz	604-044
Radio receiver USB 915 MHz	604-045
Optional software PC-DATEX	602-465
Interface set MPOR-USB	604-087
Protective cover MPOR	603-582

### Top quality

For more than 50 years, instruments of Helmut Fischer GmbH Institut für Elektronik und Messtechnik offer solutions with top quality standards. All instruments are developed at the parent plant in Sindelfingen, Germany. Of course we are certified according to ISO 9001:2000. Our calibration lab is DKD accredited according to EN ISO/IEC 17025.

### Additional services

- Certified calibration standards are available
- Calibration service
- Repair service
- Product training
- Application lab

### Conforms to these and other standards

ISO 2178	D7091
ISO 2360	E376
ISO 2808	G12
EN ISO 19840	SSPC-PA2
ASTM B499	BS3900-C5
D1186	BS EN ISO 1461
D1400	

### Abbreviations used

- **NF** Nonferrous metals (non-ferromagnetic properties)
- **Fe** Iron or steel (with ferromagnetic properties)
- **Iso** Material with insulating properties, i.e., electrically non-conducting, e.g., paint

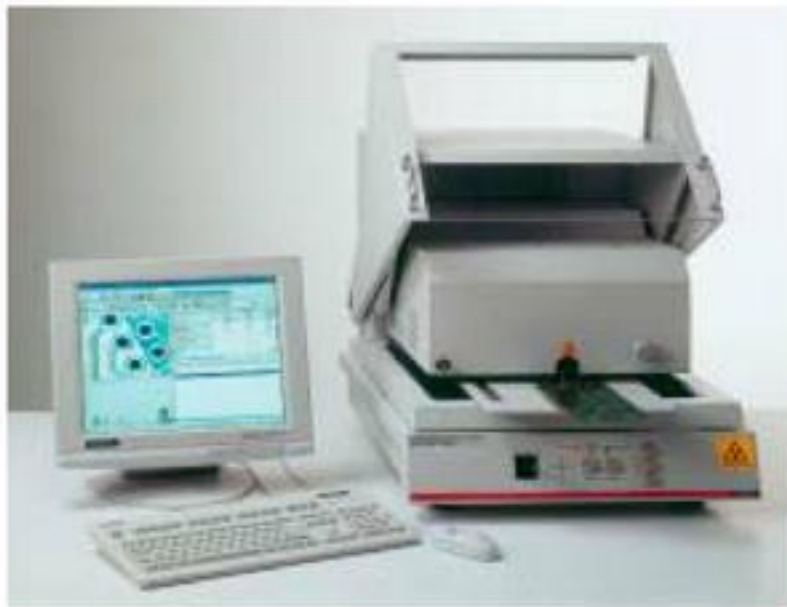


## Active Around the World.

Helmut Fischer GmbH Institut für Elektronik und Messtechnik in Sindelfingen/Germany is an innovative leader in the field of coating thickness measurement, material analysis, microhardness testing, electrical conductivity- and ferrite content measurement as well as for density and porosity testing. The company is able to recommend the best solution for any application. A comprehensive range of products is offered using X-ray fluorescence; Beta-backscatter; Magnetic; Magnetic induction; Electric resistance; Eddy current and Coulometric techniques.

Helmut Fischer has 13 subsidiary companies and 32 marketing agencies strategically located around the globe.

The high quality standard of Fischer instruments is the result of our efforts to provide the very best instrumentation to our customers. Fischer is a reliable and competent partner, offering expert advice, extensive service, and training seminars. Today, Fischer instruments are used successfully in all technological fields of industry and research.



*FISCHERSCOPE® X-RAY XDAL® for coating thickness measurement and quantitative material analysis*



*FISCHERSCOPE® MMS® PC, universal measuring system for magnetic, magnetic inductive, Eddy current and Beta backscatter method coating thickness measurement and general test procedures of materials*

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