

# Coating Thickness Measurement Instruments FMP10, FMP20, FMP30 and FMP40

The Flexible solution for Your Measurement Applications.



DELTA SCOPE® FMP10  
ISO SCOPE® FMP10  
DUAL SCOPE® FMP20  
DELTA SCOPE® FMP30  
ISO SCOPE® FMP30  
DUAL SCOPE® FMP40



## State-of-the-Art Coating Thickness Measurement

The new generation of proven portable instruments with exchangeable probes allows for non-destructive and highly precise measurements of coatings. Whether for quality control in a manufacturing process or incoming inspection of random samples or complete batches, these user-friendly and flexible instruments best meet your requirements.

Using the modular design, an instrument and a probe is available for your specific requirements. Select the appropriate instrument from the new FMP family (see table) based on the measuring application and combine it with an extensive selection of high-precision measurement probes.

### Special Features

- Non-destructive coating thickness measurement according to the magnetic induction method and/or the eddy current method
- Automatic probe and base material recognition
- Large contrast-rich graphic display in a new sturdy housing
- Simple instrument operation and extensive evaluation capabilities with versatile measurement options
- USB communication with a PC and printer for the FMP30 and FMP40
- Innovative probe technology with a large selection for high accuracy, an expanded measurement range and complex shapes



Quality monitoring on engine pistons immediately after the manufacturing process using the FTA3.3H probe









Measurements using the internal probe FAI 3.3-150



Paint coating thickness measurement using the dual probe FD10

# FMP10, FMP20, FMP30 and FMP40 instrument overview

Probes	DELTA SCOPE®	DUAL SCOPE®	ISO SCOPE®	Storable meas. applications	Statistics, evaluation	Measurement strategies
exchangeable	 <b>DELTA SCOPE® FMP30</b>	 <b>DUAL SCOPE® FMP40</b>	 <b>ISO SCOPE® FMP30</b>	up to 100	<ul style="list-style-type: none"> <li>• Display of the most significant statistical values (number of measurements, mean value, standard deviation, min, max, range) and specific values</li> <li>• Tolerance monitoring</li> <li>• Graphical evaluation</li> </ul>	<ul style="list-style-type: none"> <li>• Single reading acquisition</li> <li>• Free-running display</li> <li>• Area measurement</li> <li>• Multiple measurements</li> <li>• Automatic measurement</li> <li>• Matrix mode</li> </ul>
	 <b>DELTA SCOPE® FMP10</b>	 <b>DUAL SCOPE® FMP20</b>	 <b>ISO SCOPE® FMP10</b>			
	Magnetic induction method (DIN EN ISO 2178)	Eddy current method and magnetic induction methods	Eddy current method (DIN EN ISO 2360)			
	e.g., zinc on iron	e.g., zinc on iron, paint on aluminum	e.g., paint on aluminum			

The measurement range varies depending on the probe in use. Coating thickness measurements possible in a range from 0-30 mm.

You will find the appropriate instrument in the new FMP family to fit your measuring application. Determine the required instrument type based on the coatings to be measured and the respective substrate materials. Then decide, whether you would like a traditional instrument (FMP10/FMP20) or the convenience of an expanded measurement application memory, extensive, graphical and statistical evaluation capabilities as well as versatile measurement options (FMP30/FMP40).



DUALSCOPE® FMP40 using the duplex probe FDX10 in outdoor applications

## DELTA SCOPE® FMP10 or FMP30

For the measurement of non-ferromagnetic metal coatings, e.g., chrome, copper, zinc, as well as paint, lacquer, enamel or plastic coatings on steel and iron.

## ISO SCOPE® FMP10 and FMP30

For the measurement of paint, lacquer or plastic coatings as well as anodic coatings applied to non-ferromagnetic metal substrates.

## DUALSCOPE® FMP20 and FMP40

Due to automatic substrate material recognition and the integration of both measurement methods, these universal instruments are capable of measuring numerous coatings both on steel and iron and on non-ferromagnetic metals. Through the use of both measurement methods, duplex coatings (lacquer/zinc) on steel can be measured in one measuring procedure and the lacquer and zinc coatings can be displayed separately.

# Coating Thickness Measuring Instruments DELTASCOPE® FMP10, ISOSCOPE® FMP10, DUALSCOPE® FMP20



## Features of the FMP10 and FMP20 Instrument features

- All magnetic induction or eddy current probes can be used
- Automatic measurement probe recognition
- Automatic base material recognition (FMP20)
- User-friendly instrument operation
- USB port for data transfer to a PC
- Large, contrast-rich display with 240x160 pixels
- Ready to make measurements right after switching-on
- Instant measurement upon probe placement
- Audible signal at measurement acquisition
- Easy adaptation to the shape of the specimen through a zero-point correction (normalization)
- Easy to perform corrective calibration (using one or two calibration foils)
- Master calibration for exact settings in case of extreme material and geometric properties (master calibration standard set optional)
- Adjustable instrument switch-off or continuous operation
- Various status displays (e.g., warning message when battery voltage drops)
- Lockable keyboard/restricted operating mode
- Sliding cover to protect keys not required for the measurement operation
- Various language settings
- Units of measurement can be switched between  $\mu\text{m}$  and mils

The new FMP family of portable instruments represent precise measurement technology with the base models FMP10 and FMP20. These user-friendly and sturdy instruments can be adapted to all requirements of coating thickness measurement using exchangeable measurement probes. The most significant statistical values for your measuring applications are displayed. Your measurement task can be stored together with the calibration as an Application in the instrument, ensuring quick and reliable operation in everyday applications.



DELTASCOPE® FMP10  
–zinc on iron using the  
probe FGAB1.3



DUALSCOPE® FMP20 with anodized parts. Measured using the patented curvature-compensated probe FTD3.3

## Measurement application memory

- Storage capability for a measurement application incl. calibration

## Statistics and evaluation

- Statistical display of significant values such as mean value, standard deviation, min, max, range

## Measurement strategies

- Single reading acquisition
- Measurements with the "free-running display" mode for continuous scanning of surfaces



ISOSCOPE® FMP10 using the probe FTA3.3-Cu – printed circuit boards, copper boards

# Coating Thickness Measuring Instruments DELTASCOPE® FMP30, ISOSCOPE® FMP30, DUALSCOPE® FMP40



The new FMP30 and FMP40 instruments are even more versatile than the base models FMP10 and FMP20. Additional features such as more memory for numerous customer-specific measuring applications as well as extensive graphical and statistical evaluations make these instruments ideal even for the highest demands and complex measuring applications. Tolerance limits can be entered into the calibratable applications and the production process can be analyzed statistically. Your measurement process can be solved optimally by using appropriate measurement strategies.



DUALSCOPE® FMP40 using the probe FGA2H and a support stand – measuring cylindrical parts with position accuracy

## Features of the FMP30 and FMP40

(in addition to FMP10 and FMP20)

### Instrument features

- Automatic base material recognition (FMP40).
- External key-triggered measurement acquisition, e.g., in hollow cylinders with small diameters
- Option to calibrate through an unknown coating (with magnetic induction method only)
- USB port to a PC and a printer
- Battery or line power (optional) operation

### Measurement application memory

- Application memory for up to 100 measuring applications incl. calibration
- Memory for up to 20,000 readings
- Allocation of readings into up to 4,000 blocks
- Date and time stamp for blocks
- Correction of any stored reading
- Application linking mode: Common normalization/calibration of measuring applications
- Text designations for measuring applications through the optional PC program MP-Name

### Statistics and evaluation

- Statistics display of the most significant values in the block and final results. Output of variance-analytical values
- Graphical measurement display as a histogram with a Gaussian plot
- Capability of entering process tolerance limits and computation of the associated process capability indices  $c_p$  and  $c_{pk}$
- Audible and visual warning when tolerance limits are exceeded

### Measurement strategies

- Free-running display with additional presentation of the reading as an analog bar between the tolerance limits
- Capability to enable matrix measurement mode for correlated multi-point measurements
- Averaging of measurement data: The mean value of several readings will be stored
- Measurement acquisition through area measurement: Single readings are taken until probe is lifted and values are averaged
- Automatic measurement without lifting probe
- Outlier rejection settings for automatic elimination of erroneous measurements



ISOSCOPE® FMP30 using probe FTA3.3 – light alloy rim



DELTASCOPE® FMP30 using dual-tip probe V7FKB4 – Truck brake disc



DUALSCOPE® FMP40 using probe FD13 – various small parts

# High-precision probes

The quality of a metrological problem solution depends on several key factors. These include the proper probe selection and the quality of the probe itself. Helmut Fischer GmbH offers an unmatched variety of high-precision probes, all developed and manufactured in-house under the most stringent quality demands.



Probe manufacturing at the microscope work place

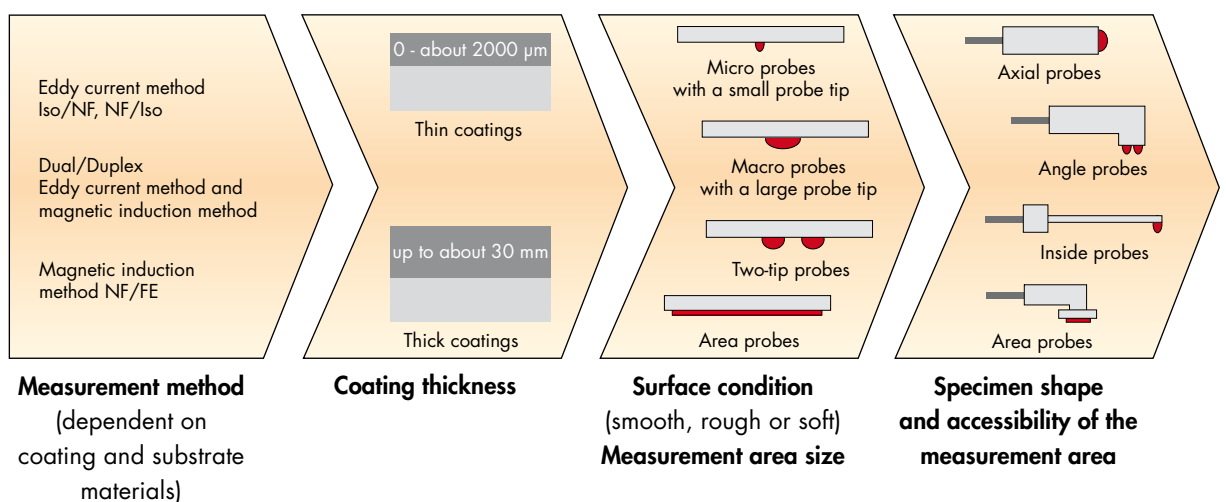


Probe parts manufacturing at Helmut Fischer GmbH



First, the coating/substrate material combination is decisive for selecting the appropriate probe. Additionally, important aspects for probe selection are the thicknesses of the coating and the substrate material, the measurement area dimensions as well as the shape and the surface condition of the specimen. A curvature-compensated probe (eddy current method) is available for specimens with different curvatures; two-tip probes offer more accurate results on rough surfaces. Every instrument of the family FMP10, FMP20, FMP30 and FMP40 can be individually adapted to your requirements simply by changing the probe and is, therefore, suited for solving the most diverse measuring applications.

The following diagram shows the criteria for selecting the appropriate probe. The probe assortment includes over 100 measurement probes for the most diverse areas of applications. Experts of Helmut Fischer GmbH develop individual probe designs for special measuring applications.



## Selected probes and ordering information

Design	Areas of application	Measurement Range	Designation Part number	Measurement method
	For electroplated coatings or paint and lacquer coatings.	0 - 2000 µm	FGAB1.3 604-141	Magnetic induction measurement probes
	Ideal for measurements in boreholes, pipes or grooves application diameter ≥ 9 mm.	0 - 1600 µm	FGAB1.3-150 604-175	
	For electroplated coatings, paint or lacquer coatings. Because of the large probe tip also suitable for rough surfaces.	0 - 1500 µm	FGA2H 604-174	
	Two-tip probe for greater repeatability precision on rough surfaces. Allows for reliable positioning and constant pressure force, even on soft coatings.	0 - 2000 µm	V7FKB4 604-180	
	Two-tip angle probe, particularly well suited for thick coatings. Greater repeatability precision on rough surfaces than single-tip probes.	0 - 8 mm	FKB10 604-177	
	Best suited for paint, lacquer or plastic coatings on non-ferromagnetic metal substrate materials.	0 - 1200 µm	FTA3.3H 604-142	Eddy current measurement probes
	Angle probe for measurements on flat specimens or in pipes, boreholes and interim spaces.	0 - 1200 µm	FAW3.3 604-193	
	Because of the excellent (patented) curvature compensation ideally suited for measurements on paint, lacquer, anodic and plastic coatings on curved NF surfaces.	0 - 800 µm	FTD3.3 604-189	
	Dual probe for magnetic induction and eddy current methods. The instrument switches automatically to the appropriate method.	NF/Fe 0-1300 µm Iso/NF 0-800 µm	FD10 604-143	Dual-/Duplex measurement probes
	Duplex probe for the measurement of single coating thicknesses of duplex coatings (paint, zinc) on steel sheet or on steel structures. It is also possible to measure hot-dip galvanized coatings (Zn ≥ 70 µm) with diffusion zones.	0-800 µm	FDX10 604-246	

Selection of the most frequently used probes. Let us advise you concerning the probes that are most suitable for your measuring applications and request the catalog "Measurement Probes and Measurement Aids" for a complete overview of our probe assortment.

### Standard content of shipment

- Instrument
  - Short form operator's manual, print version
  - Operator's manual and USB drivers on CD
  - FMP Carrying strap
  - Interface cable FMP/PC
  - FMP Battery set (Alkaline)
  - Additionally for FMP30 and FMP40:  
FMP Carrying case
- \*available as a replacement part

Order no.

- 604-301
- 604-298
- 604-285
- 604-297
- 604-299
- 604-286
- 604-150\*
- 604-146\*
- 604-296\*

### Optional Accessories

- FMP Carrying case
- Adapter E-probe/F-socket
- AC adapter FMP30 and FMP40
- FMP Rechargeable battery set (NiMH)
- Charger AA/Mignon
- Printer cable DK-FMP
- Printer F6100
- Software PC-DATEX
- Software PC-DATACC
- Measurement stand V12
- Measurement stand V12 MOT (motor-driven)

Order no.

- 604-148
- 604-214
- 604-290
- 604-295
- 604-335
- 604-145
- 604-291
- 602-465
- 603-028
- 602-260
- 604-374

Operator's manuals and short form operator's manuals are available on CD and in printed form (various languages).

# Top quality available worldwide

For more than 55 years, the Helmut Fischer GmbH Institut für Elektronik und Messtechnik of Sindelfingen, Germany has been a leading specialist in the fields of:

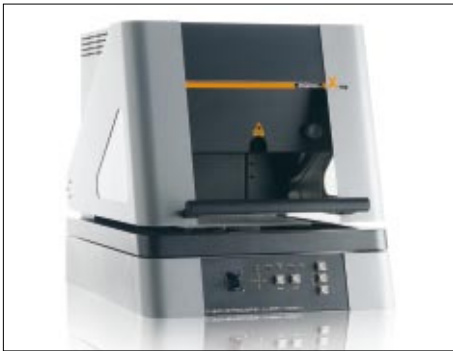
- Coating Thickness Measurement
- Materials Analysis
- Microhardness Testing
- Material Testing

The large and innovative assortment of instrumentation is developed at the headquarters facility in Sindelfingen and manufactured with the highest quality in Germany and the United States. Based on our extensive experience and close cooperation with research and industry, practical solutions for your specific projects are developed.

Helmut Fischer Group provides expert consultation and extensive services including:

- Qualified consulting by technical sales managers
- Application labs in Germany and the U.S. for solutions to customer-specific measuring requirements
- Practical training courses and individual user training
- Calibration lab in Sindelfingen, Germany with DKD accreditation for certified calibration standards

Helmut Fischer Group is represented around the globe in all industrialized countries. As a state of the art company with high quality and customer satisfaction standards, all members of the Helmut Fischer Group are certified according to EN ISO 9001:2000.



FISCHERSCOPE® X-RAY XDAL® for coating thickness measurements and materials analyses according to the X-ray fluorescence method



FISCHERSCOPE® MMS® PC, universal measurement system for the magnetic, magnetic induction, eddy current and beta backscatter methods for coating thickness measurements and general materials testing



ISOSCOPE®, DELTASCOPE® and DUALSCOPE® handheld instruments for fast and simple coating thickness measurements on site with integrated or interchangeable probes

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