Coating Thickness Measurement Instruments FMP10, FMP20, FMP30 and FMP40

The Flexible solution for Your Measurement Applications.
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
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).

### FMP10, FMP20, FMP30 and FMP40 instrument overview

<table>
<thead>
<tr>
<th>Probes</th>
<th>DELTASCOPE® FMP30</th>
<th>DUALSCOPE® FMP40</th>
<th>ISOSCOPE® FMP30</th>
<th>Storable meas. applications</th>
<th>Statistics, evaluation</th>
<th>Measurement strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELTASCOPE® FMP30</td>
<td>DUALSCOPE® FMP40</td>
<td>ISOSCOPE® FMP30</td>
<td>up to 100</td>
<td>• Display of the most significant statistical values (number of measurements, mean value, standard deviation, min, max, range) and specific values</td>
<td>• Single reading acquisition • Free-running display • Area measurement • Multiple measurements • Automatic measurement • Matrix mode</td>
<td></td>
</tr>
<tr>
<td>DELTASCOPE® FMP10</td>
<td>DUALSCOPE® FMP20</td>
<td>ISOSCOPE® FMP10</td>
<td>1</td>
<td>• Display of the most significant statistical values (number of measurements, mean value, standard deviation, min, max, range)</td>
<td>• Single reading acquisition • Free-running display</td>
<td></td>
</tr>
</tbody>
</table>

- 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.

**DELTASCOPE® 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.

**ISOSCOPE® 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.
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 μm and mils

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
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.

**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.
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.

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.
### Magnetic induction measurement probes

<table>
<thead>
<tr>
<th>Design</th>
<th>Areas of application</th>
<th>Measurement Range</th>
<th>Designation Part number</th>
<th>Measurement method</th>
</tr>
</thead>
<tbody>
<tr>
<td>FTD3.3</td>
<td>For electroplated coatings or paint and lacquer coatings.</td>
<td>0 - 2000 µm</td>
<td>604-189</td>
<td></td>
</tr>
<tr>
<td>FTA3.3H</td>
<td>Ideal for measurements in boreholes, pipes or grooves application diameter ≥ 9 mm.</td>
<td>0 - 1600 µm</td>
<td>604-142</td>
<td></td>
</tr>
<tr>
<td>V7FKB4</td>
<td>For electroplated coatings, paint or lacquer coatings.</td>
<td>0 - 1500 µm</td>
<td>604-174</td>
<td></td>
</tr>
<tr>
<td>FGA1B1.3</td>
<td>Two-tip probe for greater repeatability precision on rough surfaces.</td>
<td>0 - 2000 µm</td>
<td>604-189</td>
<td></td>
</tr>
<tr>
<td>FGA1B1.3-150</td>
<td>Two-tip angle probe, particularly well suited for thick coatings.</td>
<td>0 - 8 mm</td>
<td>604-177</td>
<td></td>
</tr>
<tr>
<td>FGA2H</td>
<td>Best suited for paint, lacquer or plastic coatings on non-ferromagnetic metal substrate materials.</td>
<td>0 - 1200 µm</td>
<td>604-142</td>
<td></td>
</tr>
<tr>
<td>FAW3.3</td>
<td>Angle probe for measurements on flat specimens or in pipes, boreholes and interim spaces.</td>
<td>0 - 1200 µm</td>
<td>604-193</td>
<td></td>
</tr>
<tr>
<td>FTD3.3</td>
<td>Because of the excellent (patented) curvature compensation ideallly suited for measurements on paint, lacquer, anodic and plastic coatings on curved NF surfaces.</td>
<td>0 - 800 µm</td>
<td>604-189</td>
<td></td>
</tr>
<tr>
<td>FD10</td>
<td>Dual probe for magnetic induction and eddy current methods. The instrument switches automatically to the appropriate method.</td>
<td>NF/Fe 0.1300 µm Isol/NF 0-800 µm</td>
<td>604-143</td>
<td></td>
</tr>
<tr>
<td>FDK10</td>
<td>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.</td>
<td>0.800 µm</td>
<td>604-246</td>
<td></td>
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### Eddy current measurement probes

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<th>Designation Part number</th>
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</tr>
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<tr>
<td>FMP10</td>
<td>For electroplated coatings, paint or lacquer coatings.</td>
<td>0 - 800 µm</td>
<td>604-298</td>
<td></td>
</tr>
<tr>
<td>FMP10</td>
<td>Because of the large probe tip also suitable for rough surfaces.</td>
<td>0 - 1500 µm</td>
<td>604-141</td>
<td></td>
</tr>
<tr>
<td>FMP10</td>
<td>Ideal for measurements in boreholes, pipes or grooves.</td>
<td>0.1600 µm</td>
<td>604-142</td>
<td></td>
</tr>
<tr>
<td>FMP10</td>
<td>Two-tip probe for greater repeatability precision on rough surfaces.</td>
<td>0.1200 µm</td>
<td>604-143</td>
<td></td>
</tr>
<tr>
<td>FMP10</td>
<td>Two-tip angle probe, particularly well suited for thick coatings.</td>
<td>0 - 8 mm</td>
<td>604-177</td>
<td></td>
</tr>
<tr>
<td>FMP10</td>
<td>Best suited for paint, lacquer or plastic coatings on non-ferromagnetic metal substrate materials.</td>
<td>0 - 1200 µm</td>
<td>604-142</td>
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<tr>
<td>FMP10</td>
<td>Angle probe for measurements on flat specimens or in pipes, boreholes and interim spaces.</td>
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<td>604-246</td>
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### Standard content of shipment

- **Instrument**
  - DELTASCOPE® FMP10: 604-301
  - ISOSCOPE® FMP10: 604-298
  - DUALSCOPE® FMP20: 604-285
  - DELTASCOPE® FMP30: 604-297
  - ISOSCOPE® FMP30: 604-299
  - DUALSCOPE® FMP40: 604-286
- **Optional Accessories**
  - FMP Carrying case: 604-148
  - Adapter E-probe/F-socket: 604-214
  - AC adapter FMP30 and FMP40: 604-290
  - FMP Rechargeable battery set (NiMH): 604-295
  - Charger AA/Mignon: 604-335
  - Printer cable DK-FMP: 604-145
  - Printer F6100: 604-291
  - Software PC-DATEX: 602-465
  - Software PC-DATACC: 603-028
  - Measurement stand V12: 602-260
  - Measurement stand V12 MOT (motor-driven): 604-374
- **Operator’s manual and USB drivers on CD**
- **Operator’s manual and short form operator’s manuals available on CD and in printed form (various languages).**

*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.*
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.

FISCHERSCOPE® XRAY XDAL® for coating thickness measurements and materials analyses according 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

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.

Top quality available worldwide