

Coating Thickness Measurement Instruments FMP10, FMP20, FMP30 and FMP40. The Flexible Solution for Your Measurement Applications



DELTASCOPE® FMP10
ISOSCOPE® FMP10
DUALSCOPE® FMP20
DELTASCOPE® FMP30
ISOSCOPE® FMP30
DUALSCOPE® FMP40

fischer®

State-of-the-Art Coating Thickness Measurement

The Fischer 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 will meet your requirements.

Select the appropriate instrument from the FMP family and combine it with one of our high-precision measurement probes.

Special features

- Fast and non-destructive measurement on steel or iron (F) and non-ferrous metals (NF)
- Automatic probe and base material recognition
- Large colour display
- Supports measurements according to IMO PSPC, SSPC-PA2, QUALANOD and QUALICOAT
- USB interface, Bluetooth or COM interface as option
- Over 70 various high-precision probes for even the most sophisticated measurement applications



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 FD13H

FMP10, FMP20, FMP30 and FMP40 Instrument Overview

Probes	DELTASCOPE®	DUALSCOPE®	ISOSCOPE®	Storable meas. applications	Statistics, evaluation	Measurement strategies
exchangeable	 DELTASCOPE® FMP10	 DUALSCOPE® FMP20	 ISOSCOPE® FMP10	1	<ul style="list-style-type: none"> • Display of the most significant statistical values (number of measurements, mean value, standard deviation, min, max, range) 	<ul style="list-style-type: none"> • Single reading acquisition • Free-running display
	  DELTASCOPE® FMP30	  DUALSCOPE® FMP40	  ISOSCOPE® FMP30	up to 100	<ul style="list-style-type: none"> • Display of the most significant statistical values (number of measurements, mean value, standard deviation, min, max, range) and specific values • Tolerance monitoring • Graphical evaluation 	<ul style="list-style-type: none"> • Single reading acquisition • Free-running display • Area measurement • Multiple measurements • Automatic measurement • Matrix mode • IMO P5PC • SSPC-PA2 • QUALANOD • QUALICOAT
Measurement method	Magnetic induction method (DIN EN ISO 2178, ASTM D7091)	Eddy current method and magnetic induction method (DIN EN ISO 2360 and 2178)	Eddy current method (DIN EN ISO 2360, ASTM D7091)			

DELTASCOPE® FMP10 and FMP30

For the measurement on ferrous base materials (F), e.g. paint, lacquer, powder coating, chrome, copper, zinc, as well as enamel or plastic coatings on steel and iron.

ISOSCOPE® FMP10 and FMP30

For the measurement of paint, powder coating, lacquer or plastic coatings on non-ferromagnetic metal base materials (NF) or anodic coatings or aluminum and electrically conducting coatings on non-conducting carrier materials.

DUALSCOPE® FMP20 and FMP40

Due to automatic base material recognition and the integration of both measurement methods, these universal instruments are capable of measuring coatings on steel and iron (F) and on non-ferromagnetic metals (NF). Duplex coatings (lacquer/zinc) on steel can be measured simultaneously with the values of the lacquer and zinc coatings displayed individually.



DUALSCOPE® FMP40 using the duplex probe FDX13H

Coating Thickness Measurement Instruments DELTA SCOPE® FMP10, ISOSCOPE® FMP10, DUALSCOPE® FMP20



Features of the FMP10 and FMP20

Instrument features

- For magnetic induction and eddy current probes
- Automatic base material and probe recognition
- Easy-to-use with intuitive menu
- Large contrast-rich colour display
- Memory for up to 1,000 readings
- USB interface
- Instant measurement upon probe placement
- Audible signal with measurement acquisition
- Easy adaptation to the shape of the specimen through a zero-point correction (normalization)
- Easy to perform corrective calibration (verification of accuracy)
- Sliding cover to protect keys against unintentional operation
- Various language settings
- Units of measurement can be switched between μm and mils

Measurement strategies and evaluation

- Single reading acquisition
- Measurements with the "free-running display" mode for continuous scanning of surfaces
- Statistical display of significant values such as mean value, standard deviation, min, max, range



DELTA SCOPE® FMP10
using the probe
FGAB1.3

The portable FMP10 and FMP20 represent precise measurement technology and are ideal for samples and control measurement. These user-friendly and sturdy instruments can be adapted to all requirements of coating thickness measurement using exchangeable measuring probes. The most significant statistical values are displayed and can be stored together with the calibration in the instrument, ensuring quick and reliable operation.



DUALSCOPE® FMP20 using the probe FTD3.3



ISOSCOPE® FMP10 using the probe FTA3.3-Cu

Coating Thickness Measurement Instruments

DELTA SCOPE® FMP30, ISOSCOPE® FMP30, DUALSCOPE® FMP40

Additional features of the FMP30 and FMP40

Instrument features

- External key-triggered measurement acquisition, e.g. in hollow cylinders with small diameters
- Audible and visual warning when tolerance limits are exceeded
- Option Bluetooth or COM additional available to the default USB interface

Measurement application memory

- Application memory for up to 100 measuring applications incl. calibration (adjustment settings)
- Memory for up to 20,000 readings
- Allocation of readings into up to 4,000 blocks
- Date and time stamp for blocks
- Application linking mode: Common normalization/calibration of measuring applications
- Validation of the corrective calibration by test measurements on standards

Measurement strategies and evaluation

- Stored specifications for measurements according to IMO PSPC, SSPC-PA2, QUALANOD and QUALICOAT
- Capability to enable matrix measurement mode for correlated multi-point measurements
- Averaging of measurement data: Only the mean value of several readings will be stored
- Measurement acquisition through area measurement: Single readings are captured until probe lift-off and averaged
- Outlier rejection settings for automatic elimination of erroneous measurements
- Free-running display with additional presentation of the reading as an analog bar between the tolerance limits
- Statistics display of the most significant values in the block and final results. Output of variance-analytical values
- Graphical measurement display as a histogram
- Capability of entering process tolerance limits and computation of the associated process capability indices c_p and c_{pk}

The FMP30 and FMP40 instruments feature additional more memory for numerous customer-specific measuring applications as well as extensive graphical and statistical evaluations. Tolerance limits can be entered into the calibratable measuring applications and the production process can be analyzed statistically.



DUALSCOPE® FMP40 using the probe FGAB1.3 and support stand V12 BASE – measuring parts with position accuracy



ISOSCOPE® FMP30 using probe FTA3.3H



DELTA SCOPE® FMP30 using dual-tip probe V7FKB4



DUALSCOPE® FMP40 using probe FD13H

Versatile Probes Program and Ordering Information

Probe program

The extensive selection of FISCHER probes is as versatile as the measurement applications of our customers. A probe needs specific properties for each field of application for achieving best results with a high accuracy. Over 70 probes can be connected to the instrument family FMP10 to FMP40. Thus, you can solve even the most sophisticated measurement tasks.

Probe selection based on several criteria

- Material combination of coating and base material
- Thickness of coating and base material
- Dimension of the measurement area
- Shape of the specimen
- Surface condition of the measurement area

Call us

We are happy to consult you on the matter of choosing the right probe for your individual application.



Ordering information

DELTA SCOPE® FMP10	605-021
ISO SCOPE® FMP10	605-027
DUAL SCOPE® FMP20	605-023
DELTA SCOPE® FMP30	605-022
ISO SCOPE® FMP30	605-028
DUAL SCOPE® FMP40	605-024

Order no.

Standard content of instrument shipment

- Instrument
- Short form operator's manual, print version
- Support CD with evaluation and archiving software DataCenter, USB drivers and operator's manual
- Carrying strap FMP
- USB interface cable FMP/ PC
- Battery set FMP (Alkaline)
- Carrying case FMP only for FMP30 and FMP40 instruments

Optional accessories

Carrying case FMP	604-148
Adapter E-probe/F-socket	604-214
AC adapter FMP30 and FMP40	604-290
Rechargeable battery set FMP (NiMH)	604-295
Charger AA/Mignon	604-335
Measurement stand V12 BASE	604-420
Measurement stand V12 MOT (motor-driven)	604-374
Bluetooth Module for wireless data transfer	604-480
COM Module FMP30/FMP40, RS232 interface	604-500
Interface connection set for COM Module	602-341
Protective cover for instrument	604-149

Order no.

Service worldwide

FISCHER has established a tightly-linked global network of service partners with highly qualified staff. Offering fast help, repairing and the availability of leasing and rental units, FISCHER supports you in every respect concerning your instruments and their use.

Calibration and certification

On your request Fischer issues a Quality Inspection Certificate for your probe and instrument according to DIN 55350-18. A broad assortment of calibration foils is available from FISCHER. On your request FISCHER issues a Factory Certificate for your calibration foil.



Application laboratories

More and more, demanding applications require highly qualified application advice. FISCHER addresses this need with its application laboratories located around the world (Germany, Switzerland, China, USA, India, Japan and Singapore).



Measuring on a customer's specimen in a FISCHER application laboratory

User on-site training

With our training program we make your employees fit on-site for your measuring task. Our trainer takes account of your individual requirements and wishes.



User training for the DUALSCOPE® FMP100 on-site at the customer's

Seminars

Because we want you to receive maximum benefit from our products, FISCHER's experts are happy to share their application know-how. The seminars not only teach metrological basics but also hand-on experience in small groups to put the theory into practice.



A FISCHER seminar teaches metrological basics and practical knowledge in small groups

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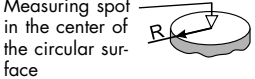

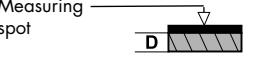
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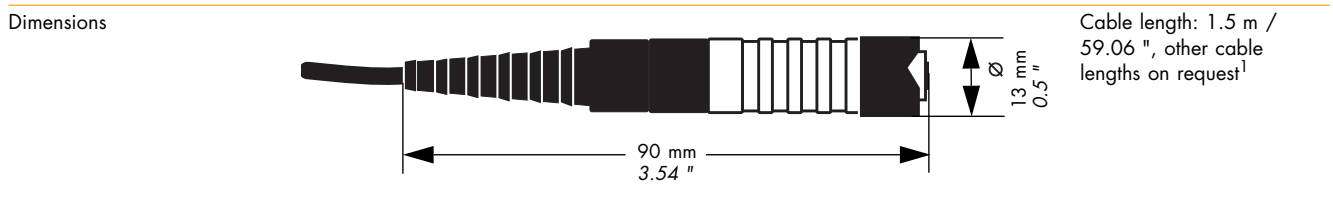


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Probe model	FD13H	
Part no. ¹	604-508	
Applications	Probe for measurements on virtually all metals. The probe works with two test methods and are therefore able to measure coating thicknesses on non-ferrous metals as well as on ferrous metals. Because of the large pole tip the probe is also well suited for measurements on rough (blasted) surfaces.	
Examples	Steel or iron base materials (Fe) <ul style="list-style-type: none"> • Paint, varnish, rubber or plastic coatings on steel, iron or cast iron (Iso/Fe) • Chrome or copper coatings on steel or iron (NF/Fe) • Both electro-galvanized and hot galvanized coatings on steel, iron or cast iron (NF/Fe) 	Non-ferrous metal base materials (NF) <ul style="list-style-type: none"> • Paint, varnish or plastic coatings on aluminium, copper or brass (NC/NF) <p><i>The probes feature a patented conductivity compensation. So that the different electrical conductivities of e.g. various aluminium alloys have no effect of the coating thickness measurement.</i></p>
Probe design	<ul style="list-style-type: none"> • Axial single tip probe with spring-loaded measuring system • Robust probe design with wear-resistant probe tip 	
Applications	Steel or iron base materials (Fe) NC/Fe or NF/Fe	Non-ferrous metal base materials (NF) NC/NF
*	<i>The values for measurement range, trueness, repeatability precision and measurement errors are valid for electrically non-conductive coating materials on steel or iron (NC/Fe). The values may differ for measurements on non-ferrous coating materials (NF).</i>	
Measurement ranges*	Steel or iron base materials (Fe) 0 ... 2000 µm / 0 ... 78.74 mils	Non-ferrous metal base materials (NF) 0 ... 2000 µm / 0 ... 78.74 mils
Trueness*	Steel or iron base materials (Fe) 0 ... 75 µm: ≤ 1.5 µm 75 ... 1000 µm: ≤ 2 % of nominal value 1000 ... 2000 µm: ≤ 3 % of nominal value 0 ... 2.95 mils: ≤ 0.06 mils 2.95 ... 39.37 mils: ≤ 2 % of nominal value 39.37 ... 78.74 mils: ≤ 3 % of nominal value	Non-ferrous metal base materials (NF) 0 ... 50 µm: ≤ 1 µm 50 ... 1000 µm: ≤ 2 % of nominal value 1000 ... 2000 µm: ≤ 3 % of nominal value 0 ... 1.97 mils: ≤ 0.039 mils 1.97 ... 39.37 mils: ≤ 2 % of nominal value 39.37 ... 78.74 mils: ≤ 3 % of nominal value
Repeatability precision*	Steel or iron base materials (Fe) based on factory calibration standards of the Helmut Fischer GmbH, 5 single readings per standard 0 ... 50 µm: ≤ 0.25 µm 50 ... 2000 µm: ≤ 0.5 % of reading 0 ... 1.97 mils: ≤ 0.0098 mils 1.97 ... 78.74 mils: ≤ 0.5 % of reading	Non-ferrous metal base materials (NF) 0 ... 100 µm: ≤ 0.5 µm 100 ... 2000 µm: ≤ 0.5 % of reading 0 ... 3.94 mils: ≤ 0.02 mils 3.94 ... 78.74 mils: ≤ 0.5 % of reading
Influences*	Steel or iron base materials (Fe)	Non-ferrous metal base materials (NF)
<p>The following values are valid for a reference coating thickness of 75 µm / 2.95 mils. The measurement errors are stated with the expanded measurement uncertainty U with the expanded factor of k = 2 (defines an interval with the confidence level of 95.45 %) - according to DIN V ENV 13005 "Leitfaden zur Angabe der Unsicherheit beim Messen" (Guide to the expression of uncertainty in measurement).</p>		
Curvature (R), measurement with reference to master calibration on flat surface		
Measuring spot	<p>Measurement error of 10 % for R = 28 mm ± 1.6 mm / R = 1.10 " ± 0.063 " Probe needs a minimum of R = 25 mm (support stand necessary) / R = 0.98 "</p>	<p>Measurement error of 10 % for R = 110 mm ± 5.6 mm / R = 4.33 " ± 0.22 " Probe needs a minimum of R = 25 mm (support stand necessary) / R = 0.98 "</p>

Influences*	Steel or iron base materials (Fe)	Non-ferrous metal base materials (NF)
<p>The following values are valid for a reference coating thickness of 75 µm / 2.95 mils. The measurement errors are stated with the expanded measurement uncertainty U with the expanded factor of k = 2 (defines an interval with the confidence level of 95.45 %) - according to DIN V ENV 13005 "Leitfaden zur Angabe der Unsicherheit beim Messen" (Guide to the expression of uncertainty in measurement).</p>		
Curvature (R), measurement with reference to master calibration on flat surface		
	Measurement error of 10 % for $R = 16 \text{ mm} \pm 1.2 \text{ mm} / R = 0.63 \text{ " } \pm 0.047 \text{ "}$ Probe needs a minimum of $R = 1.5 \text{ mm}$ (support stand necessary) / $R = 0.06 \text{ "}$	Measurement error of 10 % for $R = 92 \text{ mm} \pm 3.4 \text{ mm} / R = 3.62 \text{ " } \pm 0.13 \text{ "}$ Probe needs a minimum of $R = 1.5 \text{ mm}$ (support stand necessary) / $R = 0.06 \text{ "}$
Edge distance (R), specification from probe pole center		
	No measurement error as of $R = 11.5 \text{ mm} \pm 0.3 \text{ mm} / R = 0.45 \text{ " } \pm 0.012 \text{ "}$ Measurement error of 10 % for $R = 6.4 \text{ mm} \pm 0.3 \text{ mm} / R = 0.25 \text{ " } \pm 0.012 \text{ "}$ Probe needs a minimum of $R = 2.5 \text{ mm}$ (support stand necessary) / $R = 0.098 \text{ "}$	No measurement error as of $R = 3.2 \text{ mm} \pm 0.2 \text{ mm} / R = 0.13 \text{ " } \pm 0.0079 \text{ "}$ Measurement error of 10 % for $R = 2.4 \text{ mm} \pm 0.04 \text{ mm} / R = 0.094 \text{ " } \pm 0.0016 \text{ "}$ Probe needs a minimum of $R = 1.7 \text{ mm}$ (support stand necessary) / $R = 0.067 \text{ "}$
Edge distance (X), specification from probe pole center		
	No measurement error as of $X = 3.6 \text{ mm} \pm 0.3 \text{ mm} / X = 0.14 \text{ " } \pm 0.012 \text{ "}$ Measurement error of 10 % for $X = 1.0 \text{ mm} \pm 0.05 \text{ mm} / X = 0.039 \text{ " } \pm 0.002 \text{ "}$	No measurement error as of $X = 2.2 \text{ mm} \pm 0.05 \text{ mm} / X = 0.087 \text{ " } \pm 0.002 \text{ "}$ Measurement error of 10 % for $X = 1.9 \text{ mm} \pm 0.04 \text{ mm} / X = 0.075 \text{ " } \pm 0.0016 \text{ "}$
Base material thickness (D)		
	No measurement error as of $D = 1.0 \text{ mm} \pm 0.1 \text{ mm} / D = 39.4 \text{ mils} \pm 3.94 \text{ mils}$ Measurement error of 10 % for $D = 0.5 \text{ mm} \pm 0.03 \text{ mm} / D = 19.7 \text{ mils} \pm 1.18 \text{ mils}$	Base material Aluminium No measurement error as of $D = 0.1 \text{ mm} \pm 0.01 \text{ mm} / D = 3.94 \text{ mils} \pm 0.39 \text{ mils}$ Measurement error of 10 % for $D = 0.02 \text{ mm} \pm 0.001 \text{ mm} / D = 0.79 \text{ mils} \pm 0.039 \text{ mils}$
Base material	Steel or iron base materials (Fe)	Non-ferrous metal base materials (NF)
	Influence of the permeability of the base material (Fe) with reference to Fischer calibration standards (master calibration): No measurement error for a ferrite content from 137 FN ± 0.2 FN onwards. Measurement error of 10 % for ferrite content of 123 FN ± 0.8 FN.	Influence of the el. conductivity of the base material (NF) in the range from 30 to 100 % IACS: deviation of the coating thickness is ≤ 2 %, valid for the total measurement range.
Admissible ambient temperature at operation	-10 °C ... +40 °C / +14 °F ... +104 °F	
Admissible specimen temperature	max +40 °C / +104 °F	
Probe tip material	Hard metal	
Probe tip replaceable	No	
Probe tip radius	2 mm / 0.079 "	
Measuring methods	Magnetic induction method according to ISO 2178, ASTM D7091	Amplitude sensitive eddy current method according to ISO 2360, ASTM D7091
Scope of supply	Probe, metal plates ISO/NF and NF/FE for instrument check, calibration foil sets 605-413 and 605-415, prism adapter for measurements on pipes and bars	
Option	Adapter for support stand: 600-173, is supplied by default with the support stand	
Instruments	All DUALSCOPE® hand-held instruments of the series FMP and FISCHERSCOPE® MMS® PC2 with F-Module PERMASCOPE®	



¹ FD13H probes with special cable lengths have own part no. and probe model names. This data sheet is also valid for these probes. FE08 doc07/15