

MPO instrument series

Simple Pocket Instruments for Fast
Coating Thickness Measurement
on Virtually all Metals



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MPO instrument series - Overview

Overview of the various models of the MPO instrument series

Instrument models	Application			Probe integrated in the instrument case	Probe with cable permanently connected at the instrument
	NC/Fe	NF/Fe	NC/NF		
PERMASCOPE® MPO 605-361, see page 3	●	●		●	
PERMASCOPE® MPO-FP 605-362, see page 3	●	●			●
DUALSCOPE® MPO 605-360, see page 7	●	●	●	●	

NC/Fe: Non conductive coating material on ferrous metals

NF/Fe: Non magnetic coating material on ferrous metals

NC/NF: Non conductive coating material on non-ferrous metals

PERMASCOPE® MPO

PERMASCOPE® MPO-FP

Pocket Instruments for Simple and Fast
Coating Thickness Measurement on
Steel and Iron



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PERMASCOPE® MPO Models

Description

	The PERMASCOPE measuring instruments measure coating thicknesses easily, quickly, non-destructively and with the precision that is typical for all Fischer instruments.
Instrument properties	<ul style="list-style-type: none">• Ideal for onsite applications due to the compact size, the light weight and the robust and durable instrument design• Intuitive operation of the menu navigation and graphic display.• Second display for reading the measurement results directly on the top side of the instrument, e.g., for measuring overhead• Different languages are selectable• Manufacturer's certificate, included in the scope of supply
Generating measurements	<ul style="list-style-type: none">• The specimen's shape and permeability have a comparatively low influence on the measurement results

Applications

	Steel or iron substrates (Fe)
Examples	<ul style="list-style-type: none">• Zinc, chromium, copper, paint, varnish and plastic coatings on steel, iron or cast iron (Fe)• Measurements both on smooth and rough surfaces

The instruments are particularly suited for highly precise measurements of thin coating.

Models

- PERMASCOPE MPO: Probe integrated in the measuring instrument for single-handed operation
- PERMASCOPE MPO-FP: Probe with cable (80 cm; 31.5 ") permanently connected to the instrument, for measurements on various specimen shapes

Evaluation

Statistics	Display of mean value, standard deviation, MIN, MAX and number of all measurements stored in the instrument memory
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Measurement Functions

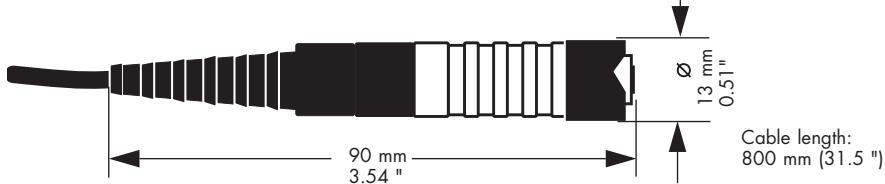
Units of measurement	Selectable µm or mils
Continuous display mode	Measurement in "continuous display mode" for continuous sampling of the surfaces, e.g., in the manufacture of tanks and containers.
Normalization	Adaptation to the substrate material and the shape of the specimen.
Calibration	<i>Factory calibration</i> Each individual instrument is factory calibrated at several reference points with the greatest care to ensure the highest possible degree of trueness. <i>Calibration (Adjustment)</i> Adaptation to the substrate material and the shape of the specimen and to a thickness value using a calibration foil. <i>Simple Calibration</i> Adaption to the coating and substrate material in one step using a coated reference part with a coating thickness higher than 200 µm (7.87 inches). This kind of calibration supplies only a lower accuracy.

General Features

Measuring method	Magnetic induction method (ISO 2178, ASTM D7091, Measurement of non-magnetic coatings on magnetic substrates)
Probe	Probe tip radius: 2 mm (78 mils); Probe tip material: Hard metal
Data memory	Max. 1,000 individual readings; the contents of the memory is retained even without batteries
Measuring frequency	More than 70 measurements per minute
Measurement acquisition	Automatic upon placement of the probe; indication of the measurement with a beep visually with a green lit LED
Display	<ul style="list-style-type: none">Graphic display, in addition to the measurement reading the mean value and the standard deviation or the number of measurement reading can also be displayedLCD display on the top side of the instrument, e.g., for reading the measurement value for measurement overhead
Admissible ambient temperature range during operation	0 +40 °C (+32 ... +104 °F)
Weight (incl. batteries)	MPO: 137 g (4.8 oz) MPO-FP: 184 g (6.5 oz)
Power supply	2 Batteries, LR6, AA, 1.5 V

PERMASCOPE® MPO Models

Dimensions

Instrument	Width: 64 mm (2.5 "); depth: 28 mm (1.1 "); height: 85 mm (3.35 ")
Probe of instrument MPO-FP	

Measurement Range

0 ... 2500 µm (97.5 mils)

Trueness

based on factory calibration standards of the Helmut Fischer GmbH	0 ... 100 µm: ≤ 1.5 µm 100 ... 1000 µm: ≤ 1.5 % of reading 1000 ... 2500 µm: ≤ 3 % of reading	0 ... 3.9 mils: ≤ 0.06 mils 3.9 ... 39 mils: ≤ 1.5 % of reading 39 ... 97.5 mils: ≤ 3 % of reading
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Repeatability Precision

based on factory calibration standards of the Helmut Fischer GmbH, 5 single measurement readings on each standard	0 ... 100 µm: ≤ 0.3 µm 100 ... 2500 µm: ≤ 0.3 % of reading	0 ... 3.9 mils: ≤ 0.0117 mils 3.9 ... 97.5 mils: ≤ 0.3 % of reading
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Ordering Data

605-361	PERMASCOPE MPO, probe integrated in the measuring instrument
605-362	PERMASCOPE MPO-FP, probe with cable (80 cm; 31.5") permanently connected to the instrument

Scope of Supply

Instrument case; protective instrument cover; 2 batteries; metal plate NF/FE for testing purposes; calibration foil (foil thickness about 75 µm (2.95 inches)); operator's manual; manufacturer's certificate

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DUALSCOPE® MPO

Pocket Instrument for Simple and Fast
Coating Thickness Measurement on
Virtually all Metals



DUALSCOPE® MPO

Description

Instrument properties

- Ideal for onsite applications due to the compact size, the light weight and the robust and durable instrument design
- Intuitive operation of the menu navigation and graphic display.
- Second display for reading the measurement results directly on the top side of the instrument, e.g., for measuring overhead
- Different languages are selectable
- Manufacturer's certificate, included in the scope of supply

Generating measurements

- The specimen's shape and permeability have a comparatively low influence on the measurement results
- Patented conductivity compensation for measurements on non-magnetic substrate materials

Applications

Examples

Steel or iron substrates (Fe)

- Zinc, chromium, copper, paint, varnish and plastic coatings on steel, iron or cast iron (Fe)

Nonferrous metal substrates (NF)

- Paint, varnish or plastic coatings on aluminium, copper or brass
- Anodized coatings on aluminium

The instrument is applicable for measurements both on smooth and rough surfaces

Evaluation

Statistics

Display of mean value, standard deviation, MIN, MAX and number of all measurements stored in the instrument memory

Measurement Functions

Units of measurement

Selectable µm or mils

Continuous display mode

Measurement in "continuous display mode" for continuous sampling of the surfaces, e.g., in the manufacture of tanks and containers.

Normalization

Adaptation to the substrate material and the shape of the specimen.

Calibration

Factory calibration

Each individual instrument is factory calibrated at several reference points with the greatest care to ensure the highest possible degree of trueness.

Calibration (Adjustment)

Adaptation to the substrate material and the shape of the specimen and to a thickness value using a calibration foil.

Simple Calibration

Adaption to the coating and substrate material in one step using a coated reference part with a coating thickness higher than 200 µm (7.87 inches). Nevertheless, this kind of calibration supplies only a lower accuracy as specified in the sections Trueness and Repeatability Precision.

General Features

Measuring method	Magnetic induction method (ISO 2178, ASTM D7091, Measurement of non-magnetic coatings on magnetic substrates); Eddy current method (ISO 2360, ASTM D7091, Measurement of non-conductive coatings on non-magnetic substrate metals); Automatic selection of the measuring method corresponding to the substrate material
Probe	Probe tip radius: 2 mm (78 mils); Probe tip material: Hard metal
Data memory	Max. 1000 individual readings; the contents of the memory is retained even without batteries
Measuring frequency	More than 70 measurements per minute
Measurement acquisition	Automatic upon placement of the probe; indication of the measurement with a beep visually with a green lit LED
Display	<ul style="list-style-type: none"> Graphic display, in addition to the measurement reading the mean value and the standard deviation or the number of measurement reading can also be displayed LCD display on the top side of the instrument, e.g., for reading the measurement value for measuring overhead
Languages	Many different display languages are selectable: German, English and several other European and Asian languages
Admissible ambient temperature range during operation	0 ... +40 °C (+32 ... +104 °F)
Weight (incl. batteries)	137 g (4.8 oz)
Power supply	2 Batteries, LR6, AA, 1.5 V

Dimensions

Instrument	Width: 64 mm (2.52 "); Depth: 28 mm (1.10 "); Height: 85 mm (3.35 ")
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Measurement Range

Measurement Range	Steel or iron substrates (Fe)	Nonferrous metal substrates (NF)
	0 ... 2000 µm (78 mils)	0 ... 2000 µm (78 mils)

Trueness

based on factory calibration standards of the Helmut Fischer GmbH

Trueness	Steel or iron substrates (Fe)	Nonferrous metal substrates (NF)
	0 ... 75 µm: ≤ 1.5 µm 75 ... 1000 µm: ≤ 2 % of reading 1000 ... 2000 µm: ≤ 3 % of reading 0 ... 2.9 mils: ≤ 0.06 mils 2.9 ... 39 mils: ≤ 2 % of reading 39 ... 78 mils: ≤ 3 % of reading	0 ... 50 µm: ≤ 1 µm 50 ... 1000 µm: ≤ 2 % of reading 1000 ... 2000 µm: ≤ 3 % of reading 0 ... 2 mils: ≤ 0.039 mils 2 ... 39 mils: ≤ 2 % of reading 39 ... 78 mils: ≤ 3 % of reading

DUALSCOPE® MPO

Repeatability Precision

based on factory calibration standards of the Helmut Fischer GmbH, 5 single measurement readings on each standard

Steel or iron substrates (Fe)

0 ... 50 µm: ≤ 0.25 µm
50 ... 2000 µm: ≤ 0.5 % of reading
0 ... 2 mils: ≤ 0.0098 mils
2 ... 78 mils: ≤ 0.5 % of reading

Nonferrous metal substrates (NF)

0 ... 100 µm: ≤ 0.5 µm
100 ... 2000 µm: ≤ 0.5 % of reading
0 ... 3.9 mils: ≤ 0.0195 mils
3.9 ... 78 mils: ≤ 0.5 % of reading

Ordering Data

605-360

DUALSCOPE MPO, probe integrated in the measuring instrument

Scope of Supply

Instrument case; protective instrument cover; 2 batteries; metal plates NF/FE and ISO/NF for testing purposes; calibration foil (foil thickness about 75 µm (2.95 inches)); operator's manual; manufacturer's certificate

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