

PHASCOPE® PMP10

Hand-held instrument for measuring coating thickness
on PC Boards and electroplated surfaces



PHASCOPE® PMP10 coating thickness measuring instrument for general use

The hand-held PHASCOPE® PMP10 is ideally suited for quality control in the electroplating and printed circuit board (PCB) industries. Because the instrument employs the phase-sensitive eddy current method (ISO 21 968), it allows the measurement of metal coatings on any substrate. A specially designed probe even enables measurements in PCB through-holes.

Applications

The phase-sensitive eddy current method offers great advantages in measuring small objects such as screws, nuts and bolts, since the geometry of the part being measured exerts very little influence on the measurement itself: Even rough surfaces can be measured precisely with the PHASCOPE® PMP10. This method also enables non-contact measuring; for example, the thickness of copper plating on a circuit board can be measured irrespective of protective lacquer coatings.

Using specialised probes optimised for specific measurement tasks, the PHASCOPE® PMP10 is particularly suitable for the following:

- Measuring coating thickness of nickel on steel
- Measuring zinc or copper on steel – despite rough surfaces and complex surface geometries
- Measuring the thickness of non-ferrous metals on non-ferrous metals, given sufficient difference in conductivity, e.g. copper on brass or bronze
- Measuring the thickness of non-ferrous metals on insulating substrates, such as copper layers on circuit boards.



The ESD2.4 probe is particularly well-suited for small parts, because re-calibration for the specific measuring spot geometry is typically not required



Measuring copper thickness in through-holes using the ESL080B probe









Measuring on rough surfaces, Zn/Fe with the ESD20Zn probe

Software FISCHER DataCenter

Indispensable for the quick and easy transfer of data from the PHASCOPE® PMP10 to a computer, FISCHER DataCenter software is a powerful tool that also offers extensive graphic display and statistical analysis functions for quality control: statistical process control charts, cumulative frequency diagrams and Fischer's own FDD® (factory diagnosis diagram). The built-in report editor enables measurement data to be conveniently processed, archived and printed out as individual inspection reports.

Instrument features

- Extensive evaluation and statistics functions
- Outlier control and tolerance monitoring options
- Various languages to choose from
- Battery and/or continuous operation via plug-in charger (included)
- Storage of up to 20 000 readings
- Data transfer via RS232 interface

Probe style	Model number	Measurement range	Applications
	ESL080B	5-100 µm	Measuring copper thickness in PCB through-holes with diameter range 0.8–2mm.
	ESL080V	5-80 µm	Measuring copper thickness in PCB through-holes, especially on thick PC Boards.
	ESD20Cu	1-270 µm	Measuring copper thickness on PC Boards.
	ESD20Zn	1-200 µm (Cu/Fe) 2-200 µm (Zn/Fe)	Measuring NF coatings on magnetic substrates, e.g. zinc/iron or copper/iron. Irrespective of rough surfaces or protective lacquers. NF coatings with high electrical conductivity on NF substrates with low conductivity, e.g. copper/brass.
	ESD20Ni	2-100 µm Ni/Fe (60 kHz) or 1-50 µm Ni/Fe (240 kHz)	Measuring nickel layers on iron or ferromagnetic steel. Irrespective of rough surfaces or protective lacquers.
	ESD2.4	1-150 µm	Measuring NF coatings on magnetic substrates, zinc/iron or copper/iron. Irrespective of rough surfaces or protective lacquers. Particularly well suited for small parts due to small sensor.

Standard Content of shipment

- PHASCOPE® PMP10 with accessories
- Software FISCHER DataCenter

Order no.

603-322
604-575

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PHASCOPE® PMP10 DUPLEX

Hand-held instrument for measuring the thickness of duplex coatings



Hand-held instrument for measuring tasks specific to the automotive industry

The PHASCOPE® PMP10 DUPLEX – along with the ESG20 probe – was specially developed for the automotive industry to measure duplex coatings (paint/zinc on steel or iron). The thicknesses of the paint and zinc layers are recorded in a single measurement process and displayed separately on the display. Due to the automatic substrate material recognition, paint layers can also be measured on aluminium without requiring an additional probe.

Applications

- Sheet metal processing
 - Paint/ zinc on iron, e.g. thin EPD coatings
 - Paint on aluminium
 - Paint on steel
- Brake line tubing
- Wire (mesh and lattice), e.g. shopping trolleys



Car body after the painting process



EPD painting process

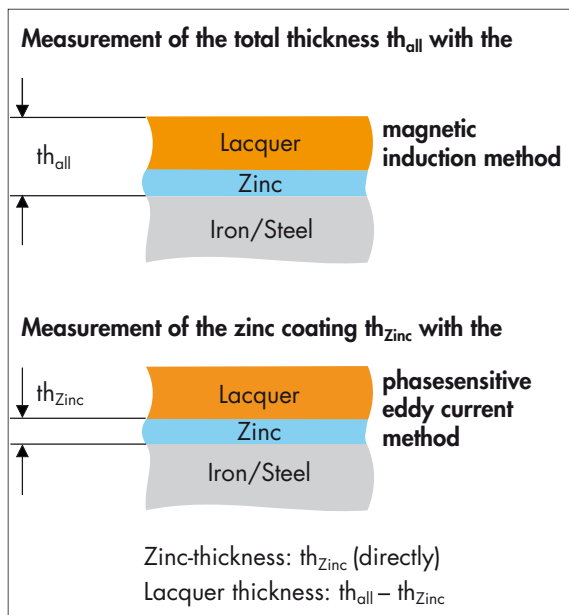
Software FISCHER DataCenter

Indispensable for the quick and easy transfer of data from the PHASCOPE® PMP10 DUPLEX to a computer, FISCHER DataCenter software is a powerful tool that also offers extensive graphic display and statistical analysis functions ideal for quality control: statistical process control charts, cumulative frequency diagrams and FISCHER's own FDD® (factory diagnosis diagram). The built-in report editor enables measurement data to be conveniently processed, archived and printed out as individual inspection reports.

The PHASCOPE® PMP10 DUPLEX combines three measurement methods

- **Magnetic induction method DIN EN ISO 2178**
For measuring the overall thickness of paint and zinc coatings on iron
- **Amplitude-sensitive eddy current method DIN EN ISO 2360**
For measuring a single paint layer on aluminium
- **Phase-sensitive eddy current method ISO 21968**
For measuring zinc coatings on iron, irrespective of overlying paint layers

For the measurement of zinc and paint coatings, the magnetic induction method and the phase-sensitive eddy current method are used in parallel (duplex), so that the individual layers of paint and zinc can be calculated separately.



With aluminium as substrate material an automatic switch to the amplitude-sensitive eddy current method occurs and the thickness of the paint layer is displayed.

Instrument features

- DUPLEX measuring mode: display of paint on zinc on iron or paint on aluminium
- DUAL measuring mode: display of total thickness (paint and zinc) on iron or paint on aluminium
- Extensive evaluation and statistics functions
- Outlier control and tolerance monitoring options
- Various languages to choose from
- Battery and/or continuous operation via plug-in charger (included)
- Storage of up to 20 000 readings
- Data transfer via RS232 interface

Standard Content of Shipment

- PHASCOPE® PMP10 DUPLEX with accessories
- PC-DATEX software for data transfer to Excel
- FISCHER DataCenter software for data analysis

Order no.

603-689

Probe and Accessories

- ESG20 probe
- V12 BASE support stand

Order no.

603-690
604-420



The ESG20 probe



Typical applications: shopping trolley and brake line tubing

Technical data

Measurement method	Magnetic induction	Magnetic induction and phase-sensitive	Amplitude-sensitive
Measuring mode	DUAL	DUPLEX	DUPLEX or DUAL
Measuring application	NE / Fe	Iso / Zn / Fe	Iso / NE
Measurement range	0-700 µm	Iso 0-550 µm Zn 0-150 µm	0-2000 µm
Trueness based on FISCHER standards	0-100 µm ≤ 1 µm 100-400 µm ≤ 1 % 400-700 µm ≤ 2 %	Zn 2-30 µm ≤ 0.5 µm Iso 2-100 µm ≤ 1 µm Iso 100-500 µm ≤ 1 %	5-100 µm ≤ 2 µm 100-2000 µm ≤ 2 %
Repeatability precision based on FISCHER standards	0-100 µm ≤ 0.5 µm 100-700 µm ≤ 0.5 %	Iso 2-100 µm ≤ 0.5 µm Iso 100-500 µm ≤ 0.5 %	5-100 µm ≤ 0.5 µm 100-2000 µm ≤ 0.5 %

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