

DUALSCOPE® FMP100 and DUALSCOPE® FMP150

The most powerful and user-friendly solution
for measuring coating thickness



fischer®

Portable instruments for measuring coating thickness DUALSCOPE® FMP100 and FMP150

The portable DUALSCOPE FMP100 and FMP150 instruments are the perfect solution for professional quality assurance. Unique on the market, these powerful hand-held devices for measuring coating thickness are equipped with the following outstanding features:

- Windows™ CE operating system with graphical user interface and a user-definable file and folder structure
- High-resolution touchscreen with virtual keypad that can be operated using a stylus or finger
- Large memory for several thousand measuring applications with different calibrations
- Extensive evaluation and statistics functions with supporting graphical presentation options
- FMP150: Three measurement methods in one instrument (eddy current, magnetic induction and magnetic methods)
- Wide selection of high-precision probes including many specialised probes for even the most sophisticated measurement applications

With the optionally available inspection plan management software, FISCHER DataCenter IP, these professional measurement instruments turn into multi-functional data terminals, opening up a whole new dimension in metrology. With the help of visually-aided operator guidance, individual inspection plans created on a PC can be executed step-by-step on the instrument – and the results evaluated conveniently at the PC.



Measurement of auto body paint thickness using the Dual Probe FD10



Graphic display screen with menu-driven interface and touchscreen operation here with a stylus

The FMP100 and FMP150 instruments rise to the challenge of sophisticated and ever-changing measurement applications. They can be used for quality control, in continuous production, for incoming inspections or in the lab, on random samples or entire series. Extensive software functions also make them very well suited for statistical monitoring of processes. Regardless of purpose – whether used in automotive, for electroplating or anodising, measuring heavy duty anticorrosive layers or the finest of coatings – these flexible instruments always meet the highest standards for precision and trueness.

Instrument features

- Windows™ CE operating system with large touchscreen display
- Individually customisable user interface
- Very simple calibration via operator guidance
- Clear management of measuring applications through user-definable file and folder structure
- Memory adequate for thousands of measuring applications and several thousand readings
- USB communication and printer port
- Can be set to various European and Asian languages
- Various display screens for measurement acquisition, e.g. with concurrent "original value chart"



for immediate process visualisation

Measurement acquisition

- Automatic probe and substrate material recognition
- Individual measurement acquisition
- Averaging of measurement data: Only the mean value of multiple readings is stored
- Measurement acquisition via surface area measurement: Individual readings are captured continually until the probe is lifted, at which point a mean value is generated
- Measurement with "tracking display" for continuous surface sampling
- Outlier rejection function for the automatic elimination of erroneous measurements
- Matrix measurement mode for interrelated multi-point measurements



Measurements of anodised aluminium on a façade



Measurement of paint coating thickness

The **DUALSCOPE FMP100** uses both the magnetic induction method (DIN EN ISO 2178) and the eddy current method (DIN EN ISO 2360). It can measure the following coating/substrate systems:

- Non-magnetisable coatings on iron and steel (F)
- Insulation coatings on nonferrous metals (NF)
- Duplex coatings (paint/hot-dip galvanised coatings) on steel (heavy duty corrosion protection), whereby paint and zinc coatings are measured simultaneously and displayed separately.

In addition to the above, the **DUALSCOPE FMP150** is also able to employ the magnetic method (DIN EN ISO 2178), which offers further measurement options:

- Thick, non-magnetic but conductive coatings on iron and steel
- Nickel coatings on nonferrous heavy metals

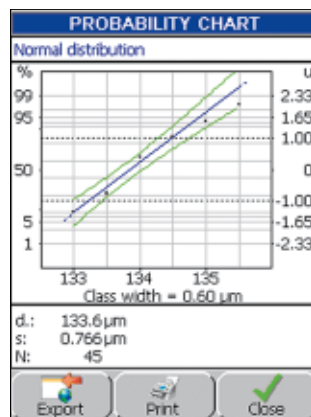
Therefore, the FMP150 is especially well suited for measurements on print drums, where the chrome and copper coatings are measured in one step but displayed separately.

Evaluation and Statistics

Evaluation options available for the DUALSCOPE FMP100 and FMP150 instruments include block and final results, histogram, sum frequency, FDD (Factory Diagnosis Diagram) and matrix evaluation. This allows the measured values to be evaluated according to the user's requirements. The various graphical representations provide a clear overview of the measured test series, facilitating the comparison of individual measurement data or groups thereof. Production processes can be evaluated in one glance and differences between shipments can be pinpointed quickly during incoming inspection.



Typical examples of evaluation options, as viewed on the high-resolution LCD colour displays of the DUALSCOPE FMP100 and FMP150 instruments

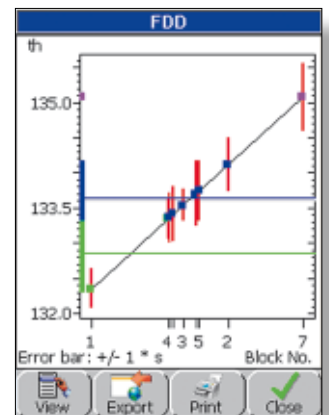


Evaluation and statistical functions

- Display of important statistical characteristics such as mean value, standard deviation, min, max, and range
- Statistics of the most important characteristics displayed in block and final results, analysis of variance (ANOVA) values
- Graphical representation as histogram or sum frequency chart
- Input option for process tolerance limits and calculation of the associated process capability indices c_p and c_{pk}

Factory Diagnosis Diagram (FDD®) for visualising process quality

FISCHER's patented Factory Diagnosis Diagram (FDD®) offers the user a means of visual evaluation by providing a compact overview of the process. An easy-to-interpret diagram provides a distribution graph of production parameters, such as coating thickness. The use of colour enables the user to quickly identify areas for optimising production processes without having to run separate statistical calculations.



Print form generation

The FMP100 and FMP150 instruments allow the generation of simple print forms using drag and drop. Via USB, these print forms can then be printed directly from the instrument or transferred to a PC as pdf files. In addition, the FISCHER DataCenter provides a convenient software solution for creating individual test reports on a PC.

FISCHER DataCenter Software

Each FMP100 and FMP150 includes FISCHER Data Center software that can be used to transfer measurement data via USB to a PC, where they can be managed and archived. In addition, the measurement data can be analysed on the PC using versatile evaluation and statistical functions such as histogram, sum frequency, etc. Various chart and table presentation options are available for this purpose.

The DataCenter software allows for the design and creation of individual reports using one's own logos, images and graphics. Using the drag and drop function, it is possible to integrate measurement data, statistical data and graphs, as well as to create report templates based on scanned forms.



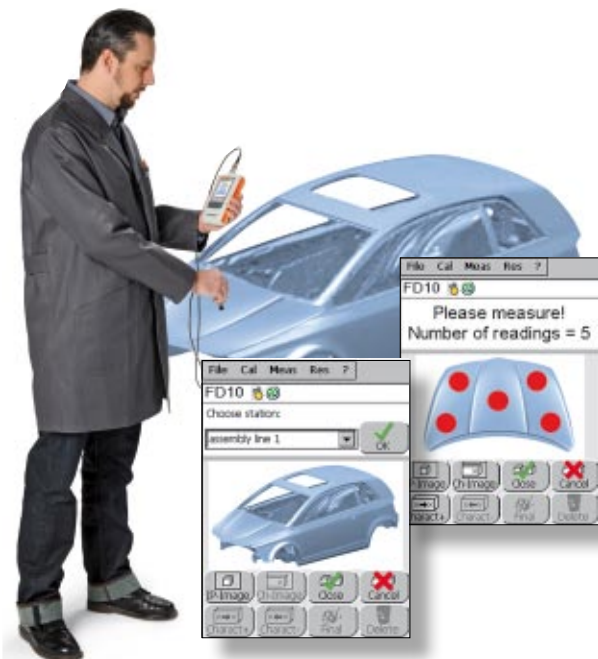
FISCHER DataCenter IP and IP-Multi

With the optionally available FISCHER DataCenter IP and IP-Multi software, inspection plans can be created on a PC and loaded onto one (IP) or many (IP-Multi) instruments. The operator is then guided step-by-step through the measurement sequence of the inspection plan, assisted by stored images,

sketches and technical drawings. For instance, the measurement spots can be shown directly on the specimens. Freely definable selection and entry fields are available for querying, for example, serial or order numbers during inspection plan processing.

Attribute lists can also be stored to facilitate the user's entries. Once data acquisition is complete, the data are returned to the PC where they can be evaluated thoroughly and easily, thereby readying the instrument for new measurements.

When directly connected to the PC software, the classic measurement device is thus transformed into a mobile data terminal that ensures reliable and convenient user guidance as well as correct and dependable acquisition of complex data.



High-Precision Probes

Highest quality from FISCHER

The heart of any measurement system is the probe; the quality of its signal ultimately determines the overall quality of the metrological solution. After years of continuous development and innovation, the FISCHER probe programme now encompasses some 100 probes designed to ensure optimal results for the widest variety of measurement applications.

The most important criterion for selecting the correct probe is the combination of coating and substrate materials. Further aspects to consider include the thicknesses of the coating and substrate materials, the size of the measurement area, and the shape and surface conditions of the specimen. Of course FISCHER also offers comprehensive, expert advice to assist you in choosing the appropriate probe for any given measurement application.

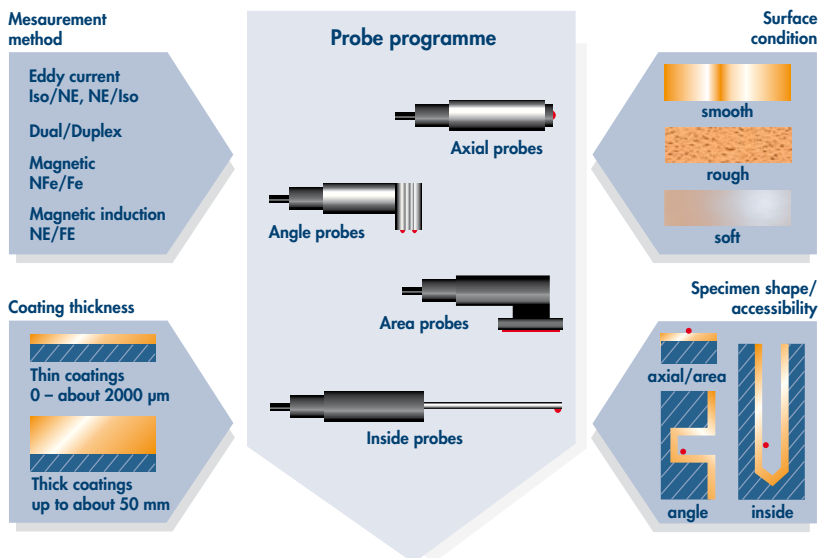
FISCHER probes are extremely robust and wear-resistant – they deliver precise measurements over a long period of time even on hard surfaces and after millions of uses. All probes are developed and manufactured in-house to strict quality standards. Each probe undergoes an individual factory calibration to ensure the highest possible degree of trueness.

Special probes have been developed for the eddy current method that compensate for the influence of curvature on rounded specimens. Furthermore, FISCHER's patented conductivity compensation – used in all probes – makes it possible to adjust for different conductivities of the substrate material, e.g. aluminium, eliminating time-consuming on-site calibration on the actual substrate material while simultaneously achieving very high levels of trueness.

Probes for special applications

When particularly challenging measuring applications – for which only a customised solution can provide precise measurement results – come up again and again, FISCHER experts can develop (upon request) individual probe designs that offer maximal repeatability precision and trueness.

Criteria for probe selection



Cavity probe V3FGA06H for non-destructive measurements of EPD coatings in hard-to-reach cavities

appropriate probe for the measuring task



Duplex probe FN5D for the measurement of chrome and copper coatings on print rollers, featuring curvature compensation and conductivity correction

The following table shows an assortment of the most popular probes. FISCHER's expert consultation can help you select the most suitable probe for your particular measurement application.

Design	Areas of application	Measurement Range	Type	Measurement method
	For electroplated coatings or paint and lacquer coatings.	0 - 2000 μm (0 - 80 mils)	FGAB1.3	Magnetic induction measurement probes (F)
	Ideal for measurements in boreholes, pipes or grooves application diameter $\geq 9\text{mm}$.	0 - 1600 μm (0 - 65 mils)	FGAB11.3-150	
	For electroplated coatings, paint or lacquer coatings. Because of the large probe tip also suitable for rough surfaces.	0 - 1500 μm (0 - 60 mils)	FGA2H	
	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 (0 - 80 mils)	V7FKB4	
	Two-tip angle probe, particularly well suited for thick coatings. Greater repeatability precision on rough surfaces than single-tip probes.	0 - 8 mm (0 - 320 mils)	FKB10	
	Best suited for paint, lacquer or plastic coatings on non-ferromagnetic metal substrate materials.	0 - 1200 μm (0 - 50 mils)	FTA3.3H	Eddy current measurement probes (NF)
	Right angle probe for measurements on flat specimens or in pipes, boreholes and interim spaces.	0 - 1200 μm (0 - 50 mils)	FAW3.3	
	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 (0 - 32 mils)	FTD3.3	
	Dual probe for magnetic induction and eddy current methods. The instrument switches automatically to the appropriate method.	NE/Fe 0 - 2000 μm (0 - 52 mils) Iso/NF 0 - 2000 μm (0 - 32 mils)	FD13	Dual-/Duplex- measurement probes (F/NF)
	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 ($\text{Zn} \geq 70 \mu\text{m}$) with diffusion zones.	0-800 μm (0 - 32 mils)	FDX10	



Precise measurement on curved anodised parts using the V12 BASE support stand and the curvature-compensated probe FTD3.3

Standard content of shipment

- Measurement instrument with accessories
DUALSCOPE® FMP100 604-140
DUALSCOPE® FMP150 604-518
- Software FISCHER DataCenter 604-575

Optional Accessories

- Rechargeable battery set FMP100 604-144
- Interface cable FMP/USB Flash Drive 604-147
- Protective Cover FMP100 604-149
- Printer FPT100 604-412
- Set paper FMP printer 600-410
- Software DataCenter IP 604-576
- Software DataCenter IP-Multi 604-577
- Measurement stand V12 602-260
- Measurement stand V12 MOT (motor-driven) 604-374

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