



# TACTILE MEASURING DEVICES

Coating thickness measurement and material testing

**fischer**®



“ Fischer impresses with their high-precision measuring instruments, application consulting and comprehensive service. For us, they are a permanent partner for measuring coating thickness. ”

*Beate Brand, Head of Quality Lab at KNEISSLER Brünertechnik GmbH, Germany*



## Trust in Number 1: World's best in measuring technology and service performance

Sometimes the smallest detail determines success. As structures shrink but the demands on them grow, rigorous quality control takes on a whole new level of importance. Whether for coating thickness measurement or material testing, Helmut Fischer has been your partner of choice for precise and reliable measurement technology for 70 years. With our versatile devices, we offer measurement solutions to make your onsite work immensely easier.

According to our motto, "Measuring Made Easy", a measuring challenge is easy to solve if you, as a customer, have the right tool. As part of our all-round carefree package, we are there for our customers from the first joint consultation to your first self measurement – and well beyond. And, in order to offer you the highest quality, the majority of our devices – from individual parts to software – are developed and produced in Germany.

Focus on what really matters – your work – we take care of the rest.

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#### FISCHER TRUSTED BRANDS

BETASCOPE®  
COULOSCOPE®  
FERITSCOPE®  
FISCHERSCOPE®  
MMS®  
NICKELSCOPE®  
PERMASCOPE®  
PHASCOPE®  
POROSCOPE®  
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Company headquarters in Sindelfingen, Germany

## Helmut Fischer – Measuring Made Easy

The knowledge and will of our founder, Helmut Fischer – his inventive genius and his irreplaceable will to implement – are the driving force behind an exemplary company development. In 1953, this success story began with the founding of a two-man company in Stuttgart. Today, Helmut Fischer is a global player at the forefront of industrial measurement technology.

### Innovation and expertise

When it comes to surface measurements, we are state-of-the-art worldwide. Our vow is to continuously develop and produce technology-leading products that make our customers measurably more efficient. Our high-tech devices measure coating thicknesses down to the nanometer range and are used wherever precision, reliability and ease of use are required.

### Customized product solutions

Our portfolio is diverse, with each solution perfectly matched to your requirements and wishes. Your big advantage: Fischer offers everything you need from one single source, whether simple handheld devices for quick measurements on the go, to XRF analysis, or fully integrated high-end systems for automated production monitoring.

### Excellent customer service

With 21 subsidiaries worldwide and a large dealer network, we are there for our customers in almost every country. From the first joint consultation to your first self measurement, our experts from sales, application laboratory and service will ensure individual, fast and uncomplicated onsite support.

### Quality and safety

If you assure quality, then you should work with quality. For many decades, Helmut Fischer has stood for outstanding products at the highest level. Absolutely reliable measurement values – that is our promise to our customers. That is why we develop our measuring instruments in-house and produce most of them at our company headquarters in Germany. And we are certified according to ISO 9001.

### Environment and sustainability

We stand for responsible and resource-saving actions while developing sustainable measurement solutions. With optimized processes and technologies, we reduce environmental impacts to a minimum. Whether recycling or upcycling, corresponding material and energy savings are not only to the benefit of the environment, but also of our customers.

## HOW IT ALL BEGAN ...



### The ambitious start

Helmut Fischer proudly looks back on a long and successful company history that began in 1953. At the age of only 22, Helmut Fischer founded the company "Schuhmann and Fischer" in a small workshop in Stuttgart, Germany, together with his mentor and former physics teacher Schuhmann. The PERMASKOP® CM/250 is the first tactile handheld device.

### The expansion

A few years later, Helmut Fischer founded the company of the same name with headquarters in Sindelfingen. Bolstered by the German economic miracle of the 50s and 60s, the small Swabian business became an international company.

### The innovations

The product range of tactile instruments and probes continued to develop. In 1982, the first XRF X-ray fluorescence measuring instrument was launched to the market. Further measuring and test instruments from the field of micro hardness, as well as automated measuring solutions, followed. Thanks to many patented innovations, which still exist today, the instruments quickly established themselves in the industry.

### The technical progress

We continue to succeed in developing new measuring instruments by significantly improving the components used in order to support and encourage the technical progress of our customers. The extensive range of components ensures a high degree of customization.



### The life's work

It has always been important to Helmut Fischer to build instruments that will last for many years. The company itself should be just as durable. Our declared goal is to develop measuring instruments that offer our customers added value and support them efficiently in the performance of their work. This focus shapes our work day after day.

### The foundation

After five decades at its helm, Helmut Fischer transferred his company shares to the Helmut Fischer Foundation, which has ensured the continuity of the company and supported artists and young scientists since 2003.

# The Fischer Advantage

**Customized:** Choose the right device for your application and budget

**BUILT TO LAST: ROBUST CONSTRUCTION FOR PARTICULARLY HIGH DEMANDS**

**Easy to use:** Fast and simple operation thanks to intuitive user guidance

**THE RIGHT DEVICE SOLUTION FOR EVERY REQUIREMENT**

**BROADEST PROBE PORTFOLIO ON THE MARKET WITH OVER 100 STANDARD PROBES**

**Easiest calibration on the market:** Achieve maximum accuracy

**Maximum flexibility:** Only manufacturer for simultaneous measurement and evaluation with up to eight probes

**Reliable measuring results:** Outstanding accuracy and precision

**HIGHEST QUALITY – MADE IN GERMANY**

**Meeting all challenges:** Precise measurement on many surfaces in a wide coating thickness range

**QUICK-MEASURE DESIGN: PRECISE MEASURING RESULTS IN JUST A FEW STEPS**

**Customized:** Customized special solutions for tactile measuring tasks on request



## Many applications, a solution for everyone

**Automotive:** Quality assurance of functional and decorative coatings in automotive engineering requires precise testing of coating thickness and material properties. Our devices are proven companions for this.

**Applications:** Paint and zinc coatings, cathodic dip coating, sound insulation foam

**Electroplating:** Tight tolerance limits and the highest demands for uniform coating of all parts require precise and repeatable measurement of the coating thickness.

**Applications:** Electroplated layers, anodic layers

**Anodizing:** Ensures greater durability and corrosion resistance for aluminum components. During quality control, our devices reliably detect the coating thickness and inspect the aluminum raw material before anodizing.

**Applications:** Aluminum alloys, aluminum profiles, decorative anodized layers

**Paints and varnishes:** When it comes to quality assurance of paint and varnish surfaces, you can achieve the most accurate results with the compact Fischer devices, even with very thin coatings.

**Applications:** Varnish, paint and powder coatings

**Electronics:** Ensure the functionality of printed circuit boards by measuring layer thickness precisely and non-destructively or testing material properties.

**Applications:** Copper coatings, solder resist

**Aerospace:** Rely on solutions for accurate and non-destructive coating thickness measurement and material testing in the aerospace industry.

**Applications:** Paint coatings, material testing (heat damage), material sorting

**Oil, gas and petrochemicals:** Fischer offers the right devices for non-destructive testing of surfaces and anti-corrosion coatings in demanding environments such as refineries, chemical plants, in vessels, pipelines and tanks.

**Applications:** Ferrite and alpha martensite content, polypropylene coatings, thermally sprayed aluminum

**Mechanical engineering:** Whether small parts, large machines or parts, subjected to high mechanical stress – to protect them from wear and corrosion, coatings must be continuously measured and monitored.

**Applications:** Powder coatings, hot dip galvanizing

**Construction and infrastructure:** Our robust devices for coating thickness measurement, dew point determination and surface profile measurement are tailor-made for the highest demands in the construction sector. Zinc fasteners or stainless alloys such as nails, screws or bolts can be tested non-destructively and reliably.

**Applications:** Paint and powder coatings according to SSPC-PA2, paint on zinc on steel, zinc coatings

**Energy:** Reliably monitor coating thicknesses in cladding processes in production, battery cells for electromobility, protective coatings on heat recovery systems or check surface protection by high-alloy steel directly on site.

**Applications:** Cladding layers, Inconel® alloys

**Precious metals:** Wherever precious metals need to be checked for authenticity quickly and easily, Fischer devices have proven their worth thanks to non-destructive and high-precision measurement.

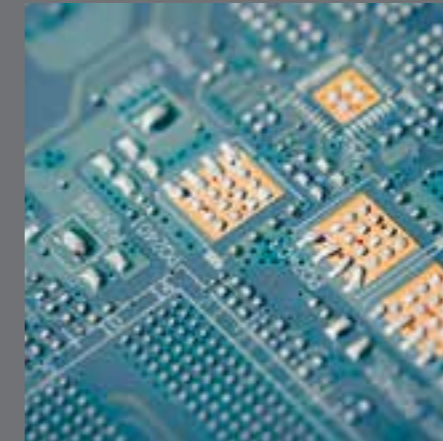
**Applications:** Gold and gold alloys, base metal alloys such as tungsten

**Marine and traffic engineering:** Wherever metal is permanently exposed to aggressive weathering, it must be reliably protected against corrosion. Handy measuring instruments from Fischer are the right solution for determining the thickness of protective coatings precisely and easily.

**Applications:** Antifouling coatings, iron glimmer coatings

**Packaging:** Protective coatings on packaging must be regularly monitored during the running process to ensure full functionality. Check release coatings, sealers or protective coatings for pores or cracks quickly and accurately.

**Applications:** Aluminum and polyethylene coatings





# ENVIRONMENT

## UNIVERSAL MEASURING ENVIRONMENTS

- Production: Can be integrated in various production environments
- Quality assurance: Incoming goods inspection and process control
- Laboratory: Research, development, medical laboratories and pharma
- Rough environment: Under the most adverse conditions in free environment
- On site: Mobile use with portable measuring devices indoors and outdoors



# AREAS OF OPERATION

## THE RIGHT PRODUCT FOR EVERY APPLICATION

### Coating thickness measurement

- Galvanic or metallic coatings
- Precious metal coatings
- Organic coatings (paints, varnishes)
- Anodized coatings
- Anti-corrosion coatings
- Multiple layers (duplex)

### Material testing

- Surface profile
- Ferrite and martensite content
- Electrical conductivity
- Porosity testing
- Climatic environmental conditions



- Portable tactile measuring devices with integrated probe
- Compact handheld devices with changeable probes
- Small benchtop instruments for tactile and destructive test methods
- Automated systems – individually tailored to your requirements

**TAILOR-MADE: THE OPTIMAL DEVICE SOLUTION FOR YOUR APPLICATION**

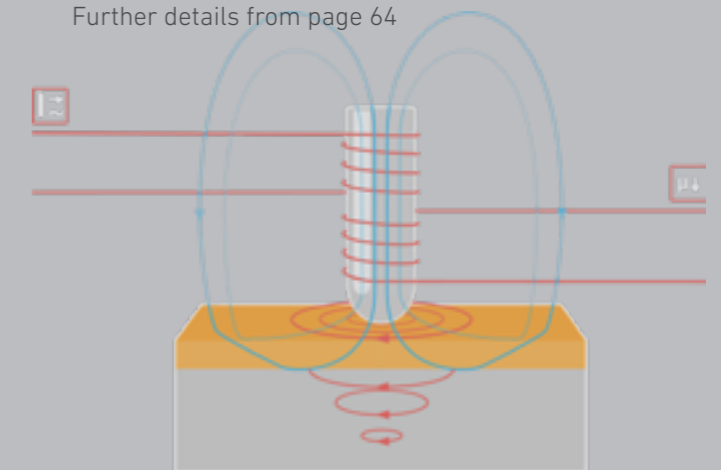


# DIMENSIONS

- Magnetic induction method (MI)
- Amplitude-sensitive eddy current method (AE)
- Phase-sensitive eddy current method (PE)
- Magnetic method (M)
- Microresistivity method (MR)
- Duplex method (D)
- Coulometric method (CO)
- Beta-backscattering method (BB)

- Ferrite content (FC)
- Electrical conductivity (EC)
- Dew point (DP)
- Porosity testing (PT)
- Surface profile (SP)

Further details from page 64



**SUITABLE METHODS FOR YOUR MEASUREMENT**



# TEST METHODS



# PROBES

## ALWAYS THE RIGHT PROBE AT HAND

- Broadest probe portfolio on the market with over 100 standard probes
- Numerous special probes for the most demanding measurement tasks
- Different housing shapes and properties depending on the application
- Robust and wear-protected probes for best measurement results
- Developed and produced in-house for the highest quality

Further details from page 56



### Manual

- Manually placing the measuring probe
- Setting up the probe with help of a manual stand



### Semi-automatic

- Setting up the probe with help of a motorized stand
- Placement of the probe by partially automated robotic arms



### Fully automatic

- Integration of the measuring probe into fully automated production line
- Placement of the probe by fully automated robotic arms

## WAYS TO THE PERFECT MEASURED VALUE



# MEASUREMENT



# SOFTWARE

## MANAGE AND EVALUATE MEASUREMENT DATA

- Universal software for coating thickness measurement and material testing
- Convenient transferring, evaluation and printing of measured values
- Fast and easy data transfer via USB and Bluetooth
- Versatile evaluation and statistics functions for your data analysis
- Convenient calibration functions
- Fully customizable reports and creation of individual measurement protocols
- Creation and transfer of individual test plans for selected devices
- Tactile Suite: Versatile, modern and user-friendly software solution of the latest generation
- Fischer DataCenter: Proven software with extensive evaluation and statistical functions



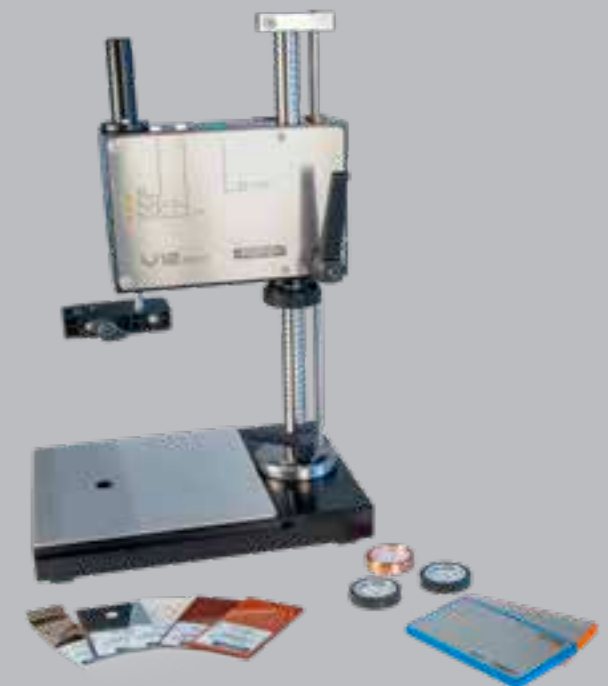
- Calibration sets incl. factory certificate for over 500 standards
- Stands with manual and motorized probe lowering, ideal for measuring small parts or parts with complex geometry
- Probe holders for exact positioning of probes
- Devices for precise positioning of specimens
- Device stand for convenient one-hand operation

Further details from page 60

## FOR PRECISE AND REPRODUCIBLE RESULTS



# STANDARDS & ACCESSORIES





# Our products at a glance

Measurement	Product family	Headline
Coating thickness measurement	MP0 AND MP0R SERIES	The small all-rounders for mobile coating thickness measurement
	MMS® INSPECTION DFT	Heavy corrosion protection – Simple measurement
	DMP10-40 SERIES	The all-around capabilities of coating thickness measurement
	DUALSCOPE® FMP100 AND H FMP150	Coating thickness measurement at the highest level
	SR-SCOPE® DMP30	First choice for copper thickness measurement
	PHASCOPE® PMP10	The classic for the most complex applications
	PHASCOPE® PMP10 DUPLEX	Professional devices for duplex measurements
	COULOSCOPE® CMS2 AND CMS2 STEP	Our coulometry specialist
	BETASCOPE®	Extra power for special applications
	FISCHERSCOPE® MMS® PC2	Multi-talent for coating thickness measurement and material testing
FISCHERSCOPE® MMS® AUTOMATION	The inline all-rounder: Multi-measuring system	
Material testing	SIGMASCOPE® SMP350	The electrical conductivity measuring expert
	SIGMASCOPE® GOLD B AND GOLD C	Play it safe with gold
	FERITSCOPE® DMP30	Specialized for ferrite content measurement
	MMS® INSPECTION DPM	Dew point determination made easy
	MMS® INSPECTION SPG	Best choice for measuring the surface profile
	POROSCOPE®	Detect pores and cracks quickly

Short characteristics	Application	Page
Leading industrial instrument series for fast and easy coating thickness measurement in corrosion protection and industrial applications		20–23
Robust universal device for quick and easy dry film thickness measurement in corrosion protection		24–25
Universal device series for tactile coating thickness measurement thanks to enormously wide probe portfolio		26–29
Instrument series for highest flexibility and control in coating thickness measurement; ideal for the use of test plans		30–31
Robust and powerful handheld device for measuring copper thickness on printed circuit boards		32–33
The most experienced device in our tactile portfolio – reliably solves all special applications		34–35
The specialist for thickness measurement of duplex coatings from automotive to roof panels		
Benchtop instrument for measuring coating thicknesses and electrochemical potentials according to the coulometric method		36–37
The specialist for many coating-base material combinations		40–41
Universal multi-measuring system for parallel coating thickness measurement and material testing with up to eight measuring points		38–39
Universal measuring system for automated coating thickness measurement and material testing	Automation	42–43
Compact handheld instrument for measuring the electrical conductivity of non-ferrous metals	Electrical conductivity	46–47
Special device for mobile and non-destructive authenticity testing of gold, precious metals and coins		48–49
Robust and powerful handheld device for accurate ferrite content and martensite content measurement onsite	Ferrite content	50–51
Robust measuring device for determining the relevant climatic parameters in coating processes in heavy corrosion protection	Dew point	52–53
Reliable surface profile measuring device for optimum paint application at coating processes in heavy corrosion protection	Surface profile	
The specialist for fast and reliable detection of pores and cracks in coatings	Porosity testing	54–55

# COATING THICKNESS MEASUREMENT

<b>MPO AND MPOR SERIES</b>	<b>20</b>
The small all-rounders for mobile coating thickness measurement	
<b>MMS® INSPECTION DFT</b>	<b>24</b>
Heavy corrosion protection – Simple measurement	
<b>DMP10-40 SERIES</b>	<b>26</b>
The all-around capabilities of coating thickness measurement	
<b>DUALSCOPE® FMP100 AND H FMP150</b>	<b>30</b>
Coating thickness measurement at the highest level	
<b>SR-SCOPE® DMP30</b>	<b>32</b>
First choice for copper thickness measurement	
<b>PHASCOPE® PMP10 AND PMP10 DUPLEX</b>	<b>34</b>
The professional devices for most complex and duplex applications	
<b>COULOSCOPE® CMS2 AND CMS2 STEP</b>	<b>36</b>
Our coulometry specialist	
<b>FISCHERSCOPE® MMS® PC2</b>	<b>38</b>
Multifaceted for coating thickness measurement and material testing	
<b>BETASCOPE®</b>	<b>40</b>
Extra power for special applications	
<b>FISCHERSCOPE® MMS® AUTOMATION</b>	<b>42</b>
The inline all-rounder: Multi-measuring system	



# MPO AND MPOR SERIES

Robust, handy and lightweight – with the devices of the MPO and MPOR series you measure coating thicknesses easily, quickly and non-destructively. With two illuminated displays, a sturdy housing and the intuitive user interface, they are your ideal companion for onsite use.

## FEATURES

### MPO



Basic model, probe integrated in the device  
Measured value memory: 1,000 in one batch  
Without USB interface

### MPOR



Comfort model, probe integrated in the device  
Measured value memory: 10,000 in one batch  
Rotatable display  
Easy data transfer via USB interface  
Preinstalled measurement modes

### MPO-FP AND MPOR-FP(W)



Comfort model, fixed probe with cable or fixed angled probe for challenging geometries  
Measured value memory: 10,000 in one batch (MPOR-FP(W)), 1,000 in one batch (MPO-FP)  
Rotatable display (not MPO-FP)  
Easy data transfer via USB interface (not MPO-FP)  
Preinstalled measurement modes

## DUALSCOPE®



Measurement of non-magnetizable or electrically non-conductive coatings on magnetizable or non-magnetizable, electrically conductive base materials

### Application examples

Layer	ISO	Anod. coatings	Paint	Varnish	Plastic		
Base Material	NF	Al	Al	Cu	CuZn		
Layer	ISO	NF	Paint	Varnish	Zn	Cr	Cu
Base Material	FE	FE	Steel	Fe			

### Test method

Amplitude-sensitive eddy current test method and magnetic induction test method

## ISOSCOPE®



Measurement of electrically insulating layers on non-magnetizable, electrically conductive metals

### Application examples

Layer	ISO	Anod. coatings	Paint	Varnish	Plastic
Base Material	NF	Al	Al	Cu	CuZn

### Test method

Amplitude-sensitive eddy current test method

## PERMASCOPE®



Measurement of non-magnetizable layers on magnetizable base materials

### Application examples

Layer	ISO	NF	Paint	Varnish	Zn	Cr	Cu
Base Material	FE	FE	Steel	Fe			

### Test method

Magnetic induction test method

ISO Electrically non-conductive (isolating) Example: Varnish

NF Non-magnetic (not ferritic, electrically conductive) Example: Zinc

FE Magnetic metal (ferritic) Example: Iron

# MPO AND MPOR SERIES

**Built to last:** Suitable for thousands of measurements thanks to low wear probe pole

**Ideal for onsite use:** Compact design and 2-display solution

**Perfect fit:** The devices of the DUALSCOPE® family automatically select the right test method for your measuring task

**Up to all challenges:** Precise measurement on many surfaces in a wide range of coating thicknesses

**Flexible:** Available in many different configurations depending on requirements

**Compact:** Fits in any pocket



Corrosion protection in crane

## The small all-rounders for mobile coating thickness measurement

The measuring devices of the MPO and MPOR series are the compact solution for simple, onsite coating thickness measurement. Practical to use, robust to handle: Use these small handheld devices to measure the thickness of coatings on virtually all metals. Thicknesses for paint or hot-dip galvanized coatings can be determined easily, quickly, and non-destructively for quality control or corrosion protection.

Due to the differently equipped measuring devices, the MPO and MPOR device series always offers the optimal solution for your application. Both smooth and rough surfaces, and even very thin coatings, can be measured with high precision. Thanks to their three-point support, the instruments can also be placed securely so as to more reliably determine the coating thickness. The integrated conductivity compensation can also equalize differences in the conductivity of non-ferrous metals.

### Features

- Leading industrial instrument series for fast and easy coating thickness measurement in corrosion protection and industrial applications
- Test method: Magnetic induction and amplitude-sensitive eddy current
- Measured value memory: 10,000 (MPOR) or 1,000 (MPO) in one batch
- Measurement range MPOR:
  - DUALSCOPE®: 0 - 2.000 µm
  - ISOSCOPE®: 0 - 1.200 µm
  - PERMASCOPE®: 0 - 2.500 µm
- Limit monitoring via light
- Probe integrated in the device, FP(W) models with attached closed probe for a wide range of applications



Measurement of anodizing on aluminum frames for building cladding



Measurement at axis connection



### VIDEO:

Scan QR code to experience unboxing, calibration and getting started of the MPO/MPOR family.

# MMS® INSPECTION DFT

**Built to last:** Extremely robust thanks to dust- and splash-proof housing

**Easy calibration:** Achieve the highest level of accuracy

**Perfect fit:** Easy one-hand operation through compact design

**Your security:** Reliable measurement results thanks to resistant probe pole

**Full measuring control:** Feedback via light, sound and vibration whether measured values are within tolerance

**Modern and intuitive user interface:** Rotating display for any viewing angle and in poor lighting conditions



For full corrosion protection with the MMS® Inspection series, see also page 52



## Heavy corrosion protection – Simple measurement

The MMS® Inspection DFT is part of the triple set MMS® Inspection Corrosion Kit, Fischer's handheld instruments for full corrosion protection.

As an all-rounder, the MMS® Inspection DFT is the perfect choice for coating thickness measurement on steel and non-ferrous metals. The IP65-compliant device delivers absolutely reliable measurement results – even under very harsh maritime conditions. Thanks to the precise dual probe, the instrument automatically detects the base material and impresses with very low measurement uncertainty even when measuring thin layers.

The MMS® Inspection DFT is ideally suited for dry film thickness measurements on both rough and smooth surfaces, for example in the construction of ships, offshore wind turbines, bridges or petrochemical plants.



Corrosion protection coatings in harsh environments



Limit monitoring via light

### Features

- Universal device for quick and easy dry film thickness measurement in corrosion protection
- Test method: Magnetic induction and amplitude-sensitive eddy current method
- Measured value memory: 250,000 in 2,500 batches
- Measurement range: 0 - 2,500 µm (FE), 0 - 2,000 µm (NF)
- Robust housing with protection class IP65
- Easy data transfer via USB
- Limit monitoring via light, sound and vibration
- Battery for > 8 h operating time
- Dual probe with high-precision conductivity compensation integrated in the device



### VIDEO:

Scan the QR code and experience the unboxing, calibration and getting started of the MMS® Inspection DFT.

# DMP10-40 SERIES

The new DMP series sets the standard for tactile and non-destructive coating thickness measurement of magnetized and non-magnetized base materials. The robust and modern design, optimized functionalities, digital probes, and intuitive Tactile Suite software make these compact handheld devices your perfect companions for any measuring requirement.

## FEATURES

### DMP10 and 20



- Basic model
- Measured value memory: 10,000 in one batch
- Easy data transfer via USB-C
- Limit monitoring via light and sound

### DMP30 and 40



- Comfort model
- Measured value memory: 250,000 in 2,500 batches
- Easy data transfer via USB-C and Bluetooth
- Limit monitoring via light, sound and vibration

## DUALSCOPE®



Measuring non-magnetized or electrically non-conductive coatings on magnetized or non-magnetized, electrically conductive base materials

### Application examples

Layer	ISO	Anod. coatings	Paint	Varnish	Plastic		
Base Material	NF	Al	Al	Cu	CuZn		
Layer	ISO	NF	Paint	Varnish	Zn	Cr	Cu
Base Material	FE	FE	Steel	Fe			

### Test method

Amplitude-sensitive eddy current test method and magnetic induction test method

“ The new DUALSCOPE® DMP40 from Fischer sets new standards in terms of robustness, ease of operation, and data export, thus making daily quality control in our production easier. ”

*Beate Brand, Head of Quality Lab at KNEISSLER Brünieretechnik GmbH, Germany*

## ISOSCOPE®



Measuring electrically insulated coatings on non-magnetized, electrically conductive metals

### Application examples

Layer	ISO	Anod. coatings	Paint	Varnish	Plastic
Base Material	NF	Al	Al	Cu	CuZn

### Test method

Amplitude-sensitive eddy current test method

## DELTASCOPE®



Measuring non-magnetized coatings on magnetized base materials

### Application examples

Layer	ISO	NF	Paint	Varnish	Zn	Cr	Cu
Base Material	FE	FE	Steel	Fe			

### Test method

Magnetic induction test method

ISO Electrically non-conductive (isolating) Example: Varnish

NF Non-magnetic (not ferritic, electrically conductive) Example: Zinc

FE Magnetic metal (ferritic) Example: Iron

# DMP10-40 SERIES

**Built to last:** Next level quality and durability thanks to all-aluminum housing

**Full measuring control:** Feedback via light, sound and vibration whether measured values are within tolerance

**Perfect fit:** Measure 24/7 due to quick and easy battery change

**Digital probes:** Fully digitized probes for the most demanding measurement tasks

**Backward compatible:** Use all of your existing Fischer probes thanks to exchangeable adapter

**Powerful software:** Automatic device recognition, easy data export and comprehensive reporting



Burnished rails

## The all-around capabilities of coating thickness measurement

The measuring devices of the DMP10-40 series are the perfect solution for fast and non-destructive coating thickness measurement on magnetized and non-magnetized base materials. Used primarily in quality assurance, these compact devices are impressive with their robust and ergonomic design and extensive functions.

Depending on the application, you will find the right device in the DMP family. The DMP10 and 20 models offer an optimal entry level with extensive functionalities, while the DMP30 and 40 models also meet higher demands. In addition to the various measuring instruments, a wide range of high-precision digital and analog probes are available.



Quick change battery



F-adaptor for analog probes

With the intuitive Tactile Suite, transferring, evaluating and exporting your measurement data is more comfortable than ever before.

### Features

- Universal device series for tactile coating thickness measurement thanks to enormously wide probe portfolio
- Test method: Magnetic induction and amplitude-sensitive eddy current method
- Measured value memory: DMP10/20: 10,000 in one batch, DMP30/40: 250,000 in 2,500 batches
- Measurement range: Depending on the combination of coating and base material and the used probe
- Robust aluminum housing with protection class IP64
- Replaceable Li-Ion battery for > 24 h operating time
- Easy data transfer via USB-C and Bluetooth
- Limit monitoring via light, sound and vibration
- Digital and analog probes available for various applications



### VIDEO:

Scan QR code to experience the DMP10-40 series.

# DUALSCOPE® FMP100

# DUALSCOPE® H FMP150

**Two in one:** Magnetic induction and eddy current method for highest flexibility (FMP100)

**Three in one:** Magnetic Induction, magnetic and eddy current method for highest flexibility (FMP150)

**Inspection plans:** Step-by-step measurement guide to reduce user errors

**Meeting all challenges:** Reliable and fast results for ambitious measurement tasks

**Maximum flexibility:** Choose the right probe for your application

**Easy to use:** Fast and simple operation thanks to intuitive menu



Hot galvanized fence

## Coating thickness measurement at the highest level

The DUALSCOPE® FMP100 and DUALSCOPE® H FMP150 are powerful instruments used for a variety of coating thickness measurements. With a large selection of high-precision probes to choose from, these devices are a prerequisite for the demanding and frequently changing measuring tasks in automotive work, electroplating or anodizing, heavy corrosion protection, or in measuring the finest coatings.

The DUALSCOPE® FMP100 combines the magnetic induction and eddy current test methods. Coatings on steel and on non-ferrous metals can be measured precisely without changing the settings on the instrument. The DUALSCOPE® H FMP150 is further equipped with the magnetic method for measuring thick non-magnetic but conductive coatings on iron and steel, as well as nickel coatings on non-ferrous metals.



Measurement of anodizing coating on aluminum on a facade



Measurement of a paint coating on steel

With the inspection plan software Fischer DataCenter IP, which is optionally available exclusively for this instrument series, individual test plans can be created on

a PC and transferred to the measuring instrument. The operator is then guided step-by-step through the measurement sequence of the inspection plan.

### Features

- Instrument series for highest flexibility and control in coating thickness measurement
- Test method:
  - FMP100: Magnetic induction and eddy current method
  - H FMP150: Magnetic induction, magnetic and eddy current method
- Measured value memory: For a large number of measurements
- Measurement range: Depending on the combination of coating and base material and the used probe
- Easy data transfer via USB
- Limit monitoring via sound
- High-resolution touchscreen display with a displayable keypad, operable with pen or finger
- Probes available for various applications
- Optionally available: Create test plans individually with supplementary, chargeable software license



# SR-SCOPE® DMP30

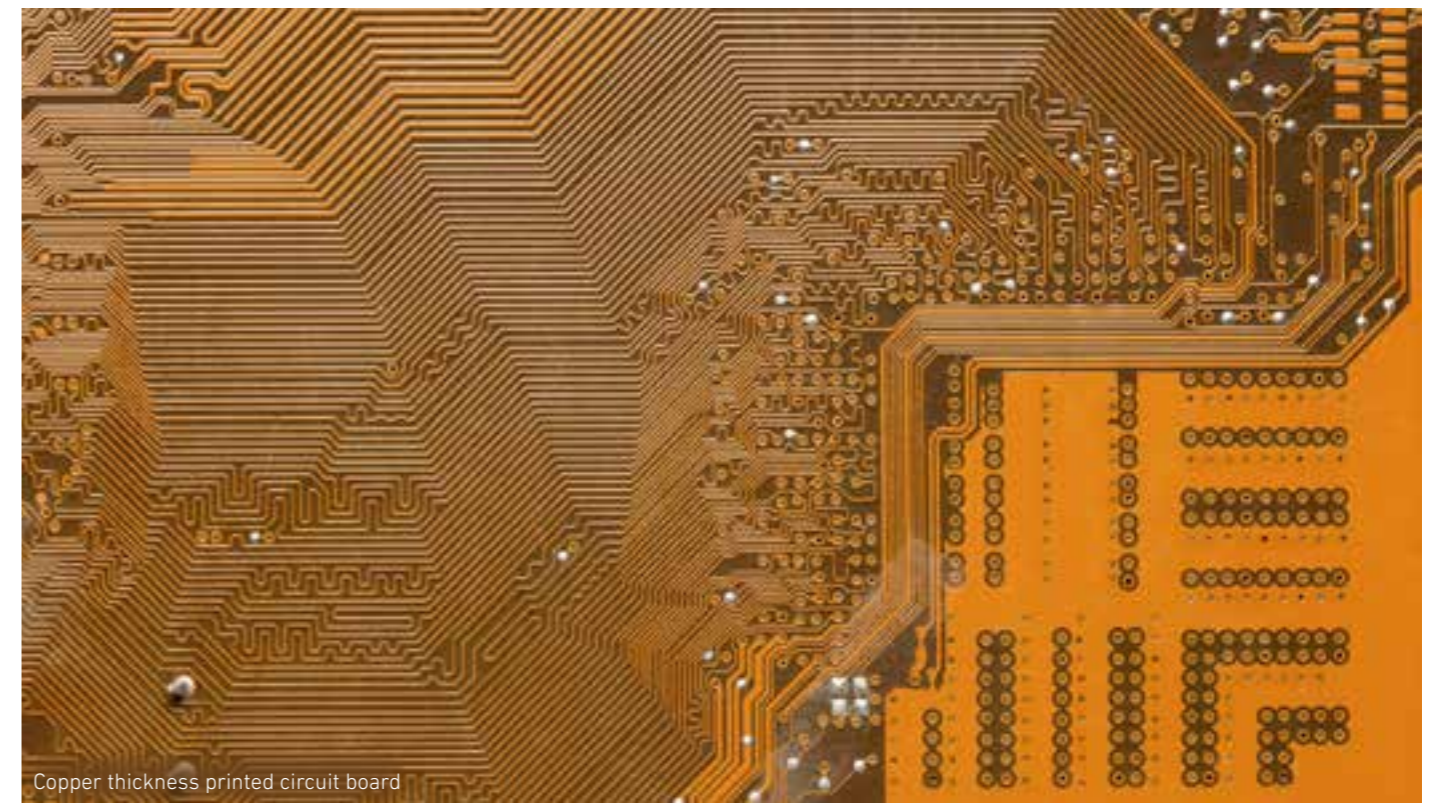
**Built to last:** Next level quality and durability thanks to all-aluminum housing

**Full measuring control:** Feedback via light, sound and vibration whether measured values are within tolerance within tolerance

**Perfect fit:** Measure 24/7 due to quick and easy battery change

**Digital probe:** Fully digitized probe for the most demanding measurement tasks

**Powerful software:** Automatic device recognition, easy data export and comprehensive reporting



Copper thickness printed circuit board

## First choice for copper thickness measurement

The SR-SCOPE® DMP30 from the DMP instrument family has been specially developed for measuring the copper thickness on the top side of printed circuit boards. It is ideal for spot-checking the copper thickness reliably in the production process, incoming or outgoing goods.

This robust handheld device uses the electrical 4-point resistance method in accordance with DIN EN 14571, making it well suited for measuring the thickness of thin copper layers on multi-layer boards or laminates. The other layers of the board or intermediate layers in the PCB, such as deeper insulating copper layers lying, have no influence on the measurement, so that the copper layer thickness can be determined precisely even with thin laminates. The SR-SCOPE® allows measurement in different coating thickness measurement ranges between 0.5 - 10  $\mu\text{m}$  or 5 - 120  $\mu\text{m}$ .

With the intuitive Tactile Suite, transferring, evaluating and exporting your measurement data is more comfortable than ever before.

### Features

- Robust and powerful handheld device for measuring copper thickness on printed circuit boards
- Test method: Microresistivity
- Measured value memory: 250,000 in 2,500 batches
- Measurement range: 0.5 - 10  $\mu\text{m}$  or 5 - 120  $\mu\text{m}$
- Robust aluminum housing with protection class IP64
- Replaceable Li-ion battery for > 24 h operating time
- Easy data transfer via USB-C and Bluetooth
- Limit monitoring via light, sound and vibration
- Digital probe available



Quick change battery



Special probes for different measurement ranges

# PHASCOPE® PMP10 PHASCOPE® PMP10 DUPLEX

**Predestined for small parts:** Thanks to measurement with the phase-sensitive eddy current test method

**Your security:** Reliable measurement results on curved measuring surfaces and rough surfaces

**Measurement in just one pass:** Optimize quality processes and save time when measuring paint and zinc coatings

**Three in one:** Combines three different test methods (PMP10 DUPLEX)

**Quick-measure design:** Automatic base material recognition simplifies measurement on steel or aluminum, as probe does not need to be changed



## Professional devices for the most complex applications and duplex measurements

### PHASCOPE® PMP10

The PHASCOPE® PMP10 coating thickness device is our classic for the most complex applications. The portable instrument is mainly used in the electroplating and printed circuit board industry for quality control of metal coatings. It is well suited for measuring the coating thickness of nickel, zinc or copper on steel, especially for small parts or rough surface structures. With a special probe design, measurements can also be carried out in printed circuit board holes.

#### Features

- Universal coating thickness device for complex special applications
- Test method: Phase-sensitive eddy current method
- Measured value memory: 20,000
- Measurement range: Depending on the combination of coating and base material and the used probe 1 - 200  $\mu\text{m}$
- Data transfer via RS232 interface, optional USB
- Probes available for various applications

### PHASCOPE® PMP10 DUPLEX

The PHASCOPE® PMP10 DUPLEX was specially developed for the automotive industry for measuring duplex coatings (paint/zinc on steel or iron) or paint layers on aluminum. The automatic base material recognition simplifies the measurement on steel or aluminum, as the probe does not have to be changed.

#### Features

- Special device for thickness measurement of duplex coatings from automotive to roof panels
- Test method: Magnetic induction, amplitude-sensitive and phase-sensitive eddy current method
- Measuring mode DUPLEX: Display of paint on zinc on iron or paint on aluminum
- Measuring mode DUAL: Display of total coating thickness (paint and zinc) on iron or paint on aluminum
- Measured value memory: 20,000
- Measurement range: Depending on the combination of coating and base material and the used probe 0 - 2,000  $\mu\text{m}$
- Data transfer via RS232 interface, optional USB

# COULOSCOPE® CMS2 COULOSCOPE® CMS2 STEP

**Optimal measurement concept:** Predefined measurement tasks for different coating systems

**Easy calibration:** Achieve the highest level of accuracy

**Intuitive operation:** Color display and graphically supported user guidance

**Maximum flexibility:** Exact coating thickness measurement of almost any coating-substrate-combination

**Individually expandable:** Extensive accessories enable practical work and safe storage



Chromed surfaces

## Our coulometry specialist

Our COULOSCOPE® CMS2 instruments precisely and quickly measure the thickness of virtually any metallic coating, including multi-layer, on almost any base material. It works destructively according to the coulometric method by high-precision electrolytic layer dissolution.

Thanks to their simple handling and menu-supported operator guidance, they are ideally suited for both production monitoring in electroplating industry and incoming inspection of finished parts. Almost 100 predefined measuring applications for different coating systems as well as various de-plating speeds are available as standard.

The sister model COULOSCOPE® CMS2 STEP is additionally equipped with the STEP test function and enables, in addition to the coulometric coating thickness measurement, also the measurement of single coating thicknesses and potential differences of multiple nickel coatings.

### Features

- Benchtop instrument for measuring coating thicknesses and electrochemical potentials using the coulometric method
- Test method: Coulometry by anodic dissolution
- Deplating speed: 0.1 - 50  $\mu\text{m}/\text{min}$  selectable
- Deplating area: 0.6 - 3.2 mm  $\emptyset$
- Measured value memory: 3,000 in 50 batches
- Measurement range: Depending on the combination of coating and base material and the deplating speed 0.02 - 50  $\mu\text{m}$
- Graphical representation of the voltage curve at the measuring cell
- Easy data transfer via USB interface



Measurement of residual tin thickness on printed circuit board



COULOSCOPE® CMS2 STEP workstation with stand and accessories

# FISCHERSCOPE® MMS® PC2

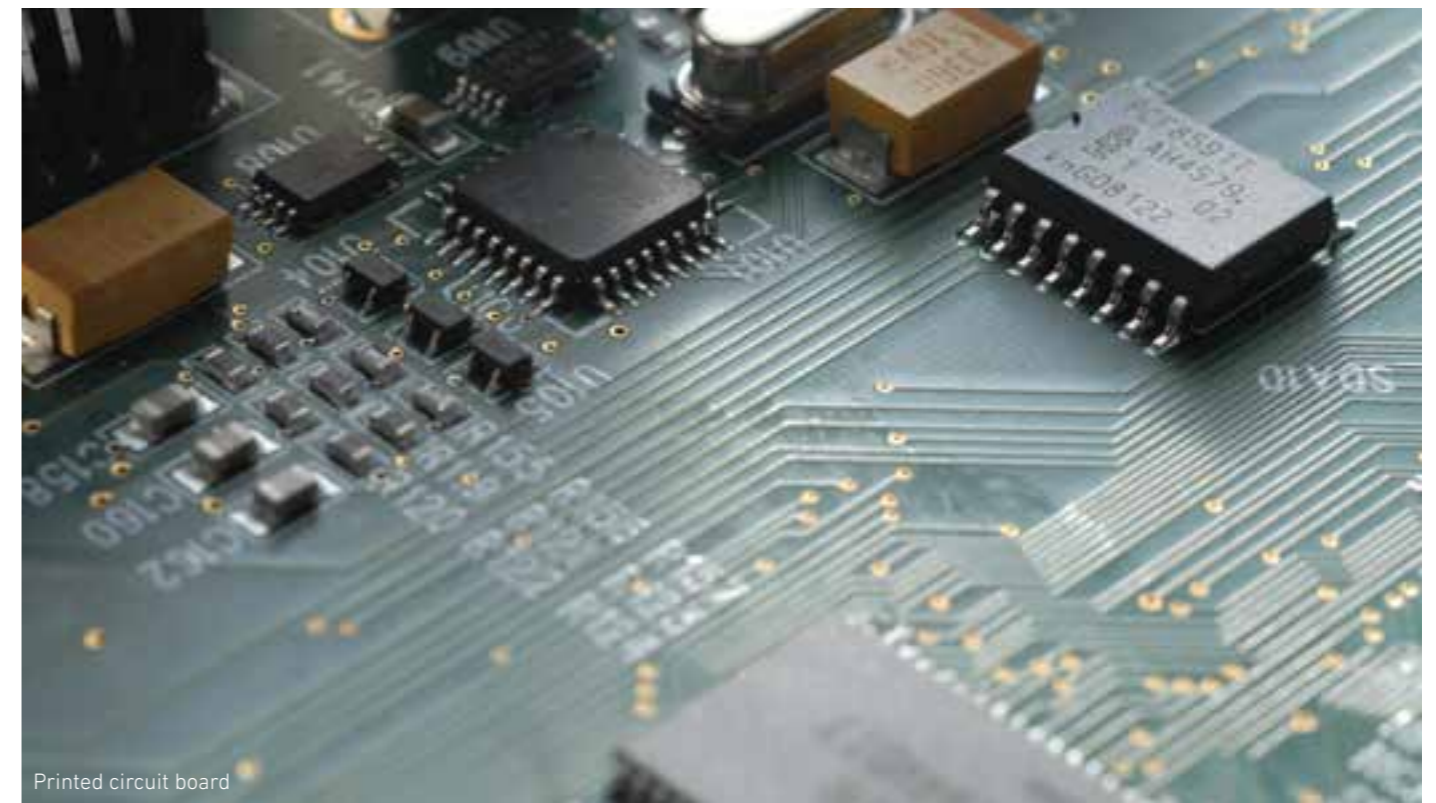
**One instrument, many possibilities:** Enables different test methods for coating thickness, conductivity and ferrite content

**Easy to use:** Simple device operation and graphically supported user guidance

**Perfect fit:** Measure manually or semi-automatically; system adapts to your measuring and testing requirements

**Unique in the market:** Simultaneous evaluation with up to eight probes for maximum flexibility

**Individually configurable:** Adaptable to the applications of your industry

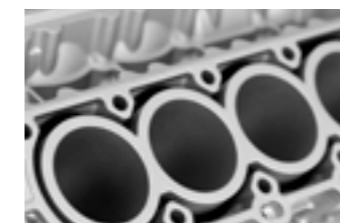


Printed circuit board

## Multifaceted for coating thickness measurement and material testing

The FISCHERSCOPE® MMS® PC2 is a universal all-in-one measuring system for non-destructive and high-precision coating thickness measurement and material testing. Due to its modular design, the MMS® PC2 can be specially adapted to your measuring task and expanded at any time.

The flexible benchtop instrument permits to measure a wide range of physical quantities without having to change. You can choose from up to eight measuring modules with different test methods for coating thickness, electrical conductivity and ferrite content. With up to eight probes measuring in parallel, more than 100 applications can be measured. If required, the measuring system can be integrated into automated production processes.



Nikasil® layers in aluminum cylinders



Eight plug-in modules for > 100 applications

### Features

- Universal multi-measuring system for parallel coating thickness measurement and material testing with up to eight measuring modules
- Test method: Amplitude- and phase-sensitive eddy current method, magnetic, magnetic induction, microresistivity and beta-backscattering method
- Measured variables: Coating thickness, electrical conductivity, ferrite content, temperature
- Modules: PERMASCOPE®, SIGMASCOPE®/PHASCOPE®1, PHASCOPE® ESL, SR-SCOPE®, PHASCOPE® DUPLEX, NICKELSCOPE®, BETASCOPE®, Temperature
- Measured value memory: For a large number of measurements
- Measurement range: Depending on the combination of coating and base material and the used probe
- Measurement manually or semi-automatically with motorized stand
- USB and RS232 interfaces
- Probes available for various applications

# BETASCOPE®

## For special measuring tasks:

Thick gold coatings, thin insulating varnishes on electrical steel sheets or oil films on metals

## Easy to use:

Simple device operation and graphically supported user guidance

## Perfect fit:

Device fits specifically to your measurement and testing requirements

## Unique in the market:

Fischer is one of a few measuring instrument manufacturers with beta sources

**Automatable:** Measure manually or semi-automatically



## Extra power for special applications

The BETASCOPE® is a module for upgrading a FISCHERSCOPE® MMS® PC2 basic instrument for the non-destructive measurement of coating thicknesses according to the beta-backscattering method. The BETASCOPE® is designed to determine the thickness of organic and metallic coatings on a wide variety of substrates, provided that there is a sufficiently large difference between the atomic numbers of the coating and the base material.

Typical applications could be the measuring of thin organic coatings such as nano paint coatings on stainless steel (anti-fingerprint), thick gold coatings down to 35 µm in the aerospace industry, or thin insulating coatings on electrical steel sheets. With the appropriate probe, even soft coatings or liquid oil or lubricating films on metals can be measured.

A temperature sensor integrated in the probe is used to automatically compensate for beta scattering in the air at different temperatures.

### Features

- The specialist for many coating-base material combinations
- BETASCOPE® module for upgrading the basic instrument FISCHERSCOPE® MMS® PC2
- Test method: Beta-backscattering, radiometric
- Measured value memory: For a large number of measurements
- Measurement range: Depending on the combination of coating and base material and the used beta emitters
- Measurement manually or semi-automatically with motorized stand
- USB and RS232 interfaces
- Probes and apertures available for various applications



Hand probe with beta emitter



Cylinder head gaskets

# FISCHERSCOPE® MMS® AUTOMATION

## Easy integration:

Proven Fischer measurement technology in automation solutions

## Multi-channel measurement:

Four probes of the same type can be used parallel in one application

## Well connected:

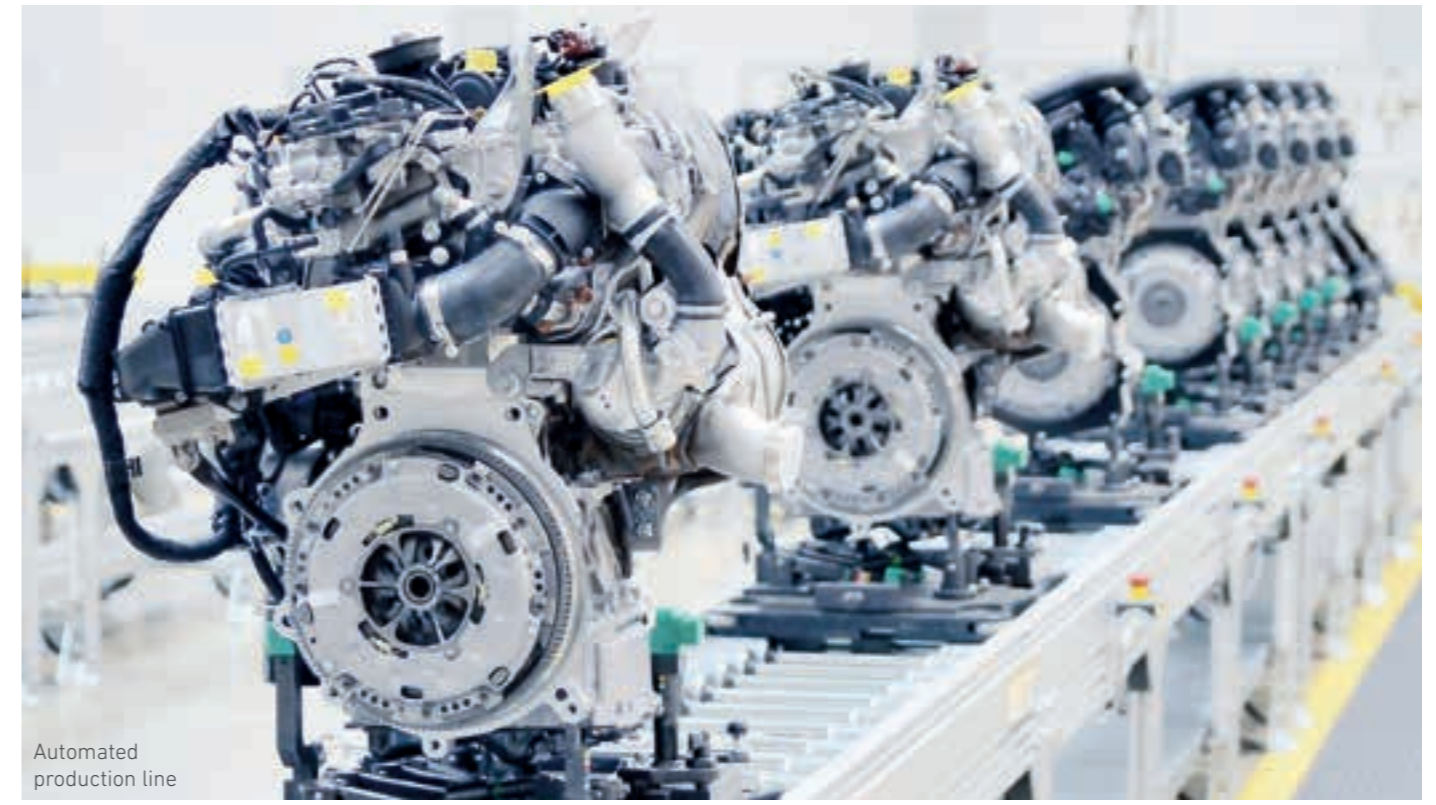
Standardized connection to PLC control

## Measurement over long distances:

Drag chain capable cables up to 30 m length

## Quickly ready for use:

Thanks to simple top-hat rail mounting

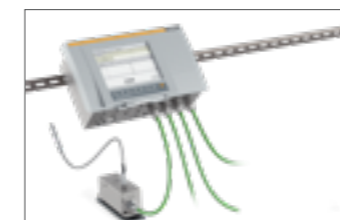


Automated production line

## The inline all-rounder: Multi-measuring system

The FISCHERSCOPE® MMS® Automation is specially designed for automated coating thickness measuring and material testing. The modular measuring system consists of three parts: The measured values are taken by probes mounted on a robot arm; the signals are transmitted to the basic unit via a digitizing unit – the MMS® module; the basic unit is mounted in the control cabinet and is responsible for monitoring. The entire system communicates with higher-level units via an RS232 interface.

Due to its modular design, the MMS® Automation provides maximum flexibility: You can equip the system with up to four different modules and probes to solve a variety of measurement tasks. Alternatively, up to four of the same probes can be used simultaneously in one application to cover a particularly large number of measuring points. The system is fully remote controllable and designed for industrial use. With long cables suitable for drag chains, the device can be placed far away from the measuring station.



Measuring module and probe are mounted directly on inline measuring station or robot

### Features

- Universal measuring system for automated coating thickness measurement and material testing
- Test method: Magnetic induction, amplitude- and phase-sensitive eddy current method, microresistivity
- Modules: PERMASCOPE®, PHASCOPE® DUPLEX, SIGMASCOPE®, SR-SCOPE®, NICKELSCOPE®
- Measured value memory: 1,000,000 in 1,000 batches
- Measurement range: Depending on the combination of coating and base material and the used probe
- Multi-channel measurement of up to four identical probes in one application
- Various interfaces for process control
- Remotely controllable by PLC control system
- Probes for various applications available



### VIDEO:

Scan QR code and learn more about the FISCHERSCOPE® MMS® Automation.

# MATERIAL TESTING



## **SIGMASCOPE® SMP350**

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The electrical conductivity measuring expert

## **SIGMASCOPE® GOLD B AND GOLD C**

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Play it safe with gold

## **FERITSCOPE® DMP30**

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Specialized for ferrite content measurement

## **MMS® INSPECTION DPM AND SPG**

52

Dew point determination and surface profile measurement made easy

## **POROSCOPE® HV5, HV20, HV40**

54

Detect pores and cracks quickly

# SIGMASCOPE® SMP350

**Perfect fit:** Different measuring frequencies for different penetration depths and measuring tasks

**Always in view:** Clear management of measurement tasks through user-definable file and folder structure

**Predestined for the aerospace industry:**

Meets Boeing specification BAC 5651 with matching probe

**Easy to use:** Operation via high-contrast touch-screen with intuitive user interface



Conductivity aluminum raw material

## The electrical conductivity measuring expert

With the SIGMASCOPE® SMP350 you can quickly and accurately determine the electrical conductivity of all non-magnetizable metals such as aluminum, copper and austenitic steels.

The conductivity determined allows conclusions to be drawn about the composition, microstructure or mechanical properties of materials. This results in an extremely wide range of measurement tasks and applications, for example in the quality assurance of raw materials, the evaluation of hardness and strength of heat-treated materials or the control of heat damage, material fatigue and cracks.

The measurement is based on the phase-sensitive eddy current method. This type of signal evaluation enables non-contact measurement, even under paint or plastic coatings up to 500 µm thick.

### Features

- Compact handheld instrument for measuring the electrical conductivity of non-ferrous metals
- Test method: Phase-sensitive eddy current method
- Measured value memory: For a large number of measurements
- Measurement range: 0.3-63 MS/m or 0.5-108 % IACS
- Individual consideration of the temperature coefficient valid for each material
- Easy data transfer via USB interface
- Limit monitoring via sound
- Probes available for a wide range of applications, with and without integrated temperature sensor
- Additional external temperature sensor optional available



Decorative anodized layers



Quality assurance in the aviation



# SIGMASCOPE® GOLD B SIGMASCOPE® GOLD C

**Suitable for the gold industry:** Prevents purchase of fake coins and gold bars

**Your safety:** Distinguish between counterfeit and original in seconds

**Well equipped:** Perfect complement to your Fischer XRF instrument

**See what's behind:** Measure even through non-conductive cover layers like foil packaging

**Easy to use:** Operation via high-contrast touch-screen display with user-friendly user interface



Authenticity testing gold bar

## Play it safe with gold

With the SIGMASCOPE® GOLD B and SIGMASCOPE® GOLD C handheld devices, you can test the authenticity of gold coins, gold bars and precious metals quickly, easily and non-destructively using electrical conductivity.

Using the SIGMASCOPE® GOLD B, you can reliably test the authenticity of gold bars up to a thickness of 17 mm and a weight of up to about one kilogram. Due to its variable penetration depth, gold testing of thinner bars is also possible.

Using the SIGMASCOPE® GOLD C, you are able to check the authenticity of coins and thin bars weighing up to about 100 gram. Whether Krugerrand, ducat, coin gold or fine gold – with the easy-to-use gold tester detect counterfeit goods in seconds.



Gold alloys of coins



Detection of base inclusions like tungsten

With large, color touch screens, these measuring devices are tailor-made for examinations in the laboratory and in the store and can be operated intuitively. Non-contact measurement through plastic packaging up to 0.5 mm thickness is also possible.

### Features

- Special device for mobile and non-destructive authenticity testing of gold, precious metals and coins
- Test method: Phase-sensitive eddy current method
- Measured value memory: For a large number of measurements
- Measurement range:
  - GOLD B: Gold bars of approx. 1 oz (31.1 g) - 1 kg
  - GOLD C: Gold coins and bars up to approx. 100 g
- Variable penetration depths to match the thickness of the measured object
- Measuring frequency:
  - GOLD B: 100, 500 and 1.000 Hz
  - GOLD C: 15, 30, 60 and 120kHz
- Easy data transfer via USB interface
- Limit monitoring via sound
- Probes available for various applications



### VIDEO:

Scan QR code and learn more about the SIGMASCOPE® GOLD C.

# FERITSCOPE® DMP30

**Built to last:** Next level quality and durability thanks to all-aluminum housing

**Full measuring control:** Feedback via light, sound and vibration whether measured values are within tolerance

**Perfect fit:** Measure 24/7 due to quick and easy battery change

**Digital probe:** Fully digitized probe for the most demanding measurement tasks

**Backward compatible:** Use your existing Fischer probes thanks to exchangeable adapter

**Powerful software:** Automatic device recognition, easy data export and comprehensive reporting



Ferrite content weld

## Specialized for ferrite content measurement

The FERITSCOPE® DMP30 from the DMP instrument family is tailor-made for the measurement of ferrite content or martensite content in austenitic and duplex steels.

The advantages of these robust handheld devices are particularly notable in chemical plants, power plants, and process engineering plants. They are ideally suited for onsite measurements of austenitic claddings as well as weld seams in stainless steel pipes, containers, boilers or other products made of austenitic or duplex steel. From a plating thickness of 3 mm, ferrite content determination can be carried out reliably and precisely, regardless of the properties of the base material.



Quick change battery



Ferrite content measurement in the weld seam area

Even in hard-to-reach places, our digital and analog probes deliver maximum flexibility. With the intuitive Tactile Suite, transferring, evaluating and exporting your measurement data has never been so convenient.

### Features

- Robust and powerful handheld device for the measurement of ferrite and martensite content in steels with austenitic microstructures
- Test method: Magnetic induction
- Measured value memory: 250,000 in 2,500 batches
- Measurement range: 0.1 - 80 % Fe or 0.1 - 110 FN
- Robust aluminum housing with protection class IP64
- Replaceable Li-ion battery for > 24 h operating time
- Easy data transfer via USB-C and Bluetooth
- Limit monitoring via light, sound and vibration
- Digital and analog probes available

# MMS® INSPECTION DPM

# MMS® INSPECTION SPG

**Built to last:** Extremely robust thanks to dust- and splash-proof housing

**Easy calibration:** Achieve the highest level of accuracy

**Perfect fit:** Easy one-hand operation through compact design

**Full measuring control:** Feedback during measurement by light (DPM), light, sound and vibration (SPG)

**Modern and intuitive user interface:** Rotating display for any viewing angle and in poor lighting conditions

**Designed for coating processes:** Optimum preparation for the application of anti-corrosion coatings

**For full corrosion protection with the MMS® Inspection series, see also page 24**



## Dew point determination and surface profile measurement made easy

### MMS® Inspection DPM

With the MMS® Inspection DPM dew point meter, you can monitor the climatic parameters relevant for coating processes directly before applying the anti-corrosion coating. The handheld device reliably measures relative humidity, air and surface temperature. The measuring probes are integrated for optimum one-hand operation.

#### Features

- Robust measuring device for determining the relevant climatic parameters in coating processes in heavy corrosion protection
- Measured value memory: 10,000 in one batch or 250,000 in 2,500 batches
- Measurement range: Air temp. -20 to + 60 °C (-4 to 140 °F), Surface temp. -20 to + 80 °C (- 4 to 176 °F), Relative humidity 0 - 100 % RH
- Robust housing with protection class IP65
- Battery for > 8 h operating time
- Easy data transfer via USB and Bluetooth
- Limit monitoring via light
- Resistant temperature sensors integrated in the device, additional sensor can be connected

### MMS® Inspection SPG

With the MMS® Inspection SPG, you can measure the surface profile in no time at all. The peak-to-valley height differences are measured in accordance with ASTM D4417, Method B. This makes the device suitable for depth measurements of surface profiles meeting regulations and guidelines such as SSPC-PA17. This configuration permits optimal preparation for the application of anti-corrosion coatings.

#### Features

- Reliable surface profile measuring device for optimum paint application in coating processes in heavy corrosion protection
- Measured value memory: 250,000 in 2,500 batches
- Measurement range: 0 - 500 µm
- Robust housing with protection class IP65
- Battery for > 8 h operating time
- Easy data transfer via USB and Bluetooth
- Limit monitoring via light, sound and vibration
- Probe integrated in the device

# POROSCOPE® HV5, HV20, HV40

**Built to last:** Robust and handy for use on construction sites or in production

**Customized:** Different test voltages for almost any coating thickness and material

**Perfect fit:** Extensive selection of electrodes for every application

**Intuitive operation:** Quick and easy thanks to user-friendly menu

**Full protection:** Highest safety through high voltage generation in the test head



Pipelines and pipes

## Detect pores and cracks quickly

The measuring instruments of the POROSCOPE® series are ideal, to quickly and easily inspect protective coatings made of non-conductive materials for the finest pores and cracks. Even defects that are invisible to the eye and embedded foreign bodies are reliably detected.

The mobile measuring device is designed for use on construction sites or in production, e.g. for testing enamel or plastic-coated tanks, boilers and pipelines, plastic-coated food packaging or corrosion protection coatings in the offshore sector. It is also suitable for testing electrostatically chargeable objects.

We offer three models with different test voltages: POROSCOPE® HV5, POROSCOPE® HV20 and POROSCOPE® HV40. This means that you have the right measuring device for almost every coating thickness and every kind of coating material.

### Features

- Portable pore tester for fast and reliable detection of pores and cracks in coatings
- Test method: Porosity testing with high voltage
- Test voltage ranges:
  - POROSCOPE® HV5: 0,8 - 5 kV
  - POROSCOPE® HV20: 4 - 20 kV
  - POROSCOPE® HV40: 8 - 40 kV
- Continuously adjustable test voltage, electronic test voltage monitoring and adjustable sensitivity
- Optical and acoustic pore display on the test head
- Li-ion battery with 8 - 20h operating time
- Electrodes available for various applications



Testing the enamel coating of a boiler



Electrodes for various applications

# THE OPTIMAL PROBE FOR ANY MEASURING TASK

## Wide variety of probes:

Broadest portfolio on the market

**Customized:** Probes with different housing shapes and properties

**Reliable measurement results:** Probes with outstanding measurement accuracy and linearity

**Robust and wear-resistant:** Best quality for maximum service life

**Individual factory calibration:** Ensures you the highest level of accuracy

## Quality and safety:

Developed and produced in-house for the highest demands

## Smart connectivity:

Convenient data transfer via DMP device via USB-C or Bluetooth

## Flexible F-adapter:

Continue to use the full power of analog probes with the DMP device



Probe measures on sample

## The probe – The heart of our measuring devices

The heart of any electromagnetic measuring system is the probe. It generates the actual signal that is subsequently evaluated. For this reason, it must meet certain requirements depending on the area of application and must not damage soft coatings, for example.

We offer you a comprehensive range of high-precision probes for coating thickness measurement and material testing. From over 100 standard probes, numerous special probes as well as digital probes for selected devices, we will find the right probe for your measuring task together with you. All Fischer probes are extremely robust, wear-resistant and developed, produced and tested in-house to the highest quality standards. Simply connect the pre-calibrated probe to your measuring instrument and get started: Instruments with exchangeable probes recognize them automatically.

Due to a spring-loaded system, our probes are placed on the surface with an optimal pressure. This reduces measuring errors and leads to high repeatability, which guarantees your measurement results. Probes with integrated curvature compensation allow reliable measurement on curved surfaces. Probes with conductivity compensation, on the other hand, can compensate for different electrical conductivities of the base material and thus avoid time-consuming calibration procedures.

Our experts will be happy to advise you on the selection of the right probe for your application. If required, we also develop individual special designs.

[sales@helmut-fischer.com](mailto:sales@helmut-fischer.com)

### Features and criteria for probe selection

Depending on the application, our probes have specific properties and meet certain criteria to provide you with a result of highest accuracy. Examples of measurement conditions for selecting the optimal probe:

- Dimension of measurement area
- Geometry of specimen or the measuring site
- Surface condition of specimen
- Combination of coating and base material
- Thickness of coating and base material
- Coating hardness
- Manual or automated measurement
- Ambient conditions, e.g. wetness



# POWERFUL SOFTWARE FOR YOUR APPLICATION



## Tactile Suite

Tactile Suite is an efficient software solution with a modern design, innovative user guidance and versatile functions for your evaluations and reporting. Tailored to your needs, Tactile Suite is the most intuitive software in tactile coating thickness measurement. The Tactile Suite is available for all devices of the DMP series.



### Instantly recognized and synchronized

With the automatic and reliable device recognition, your probes and devices are recognized directly. Your measurement data is transferred and stored easily and immediately.



### Direct export to Excel

Transfer your measurement data in real time or after measuring directly to Excel or other file formats – easily and conveniently via USB-C or Bluetooth.



### Create data reports easily

Easily create customized reports and measurement logs. Use our templates or adapt them according to your needs.

## Measuring easier than ever

Transferring, evaluating and exporting your data has never been so convenient. Get 100 % confidence in just a few steps.



Calibrate



Transfer data



Guarantee quality

Measure



Create data report



## Fischer DataCenter

With the Fischer DataCenter you get a proven software solution with extensive evaluation and statistical functions as well as supporting graphical display options. Measured values can be transferred to the PC with just a few clicks via USB or Bluetooth (device-dependent) and managed, evaluated, archived and printed there.



### Creation of individual test plans

Create individual test plans to guide the operator understandably through the measurement sequence of the test plan. The data transfer and evaluation takes place conveniently on the PC (DUALSCOPE® FMP100 only).



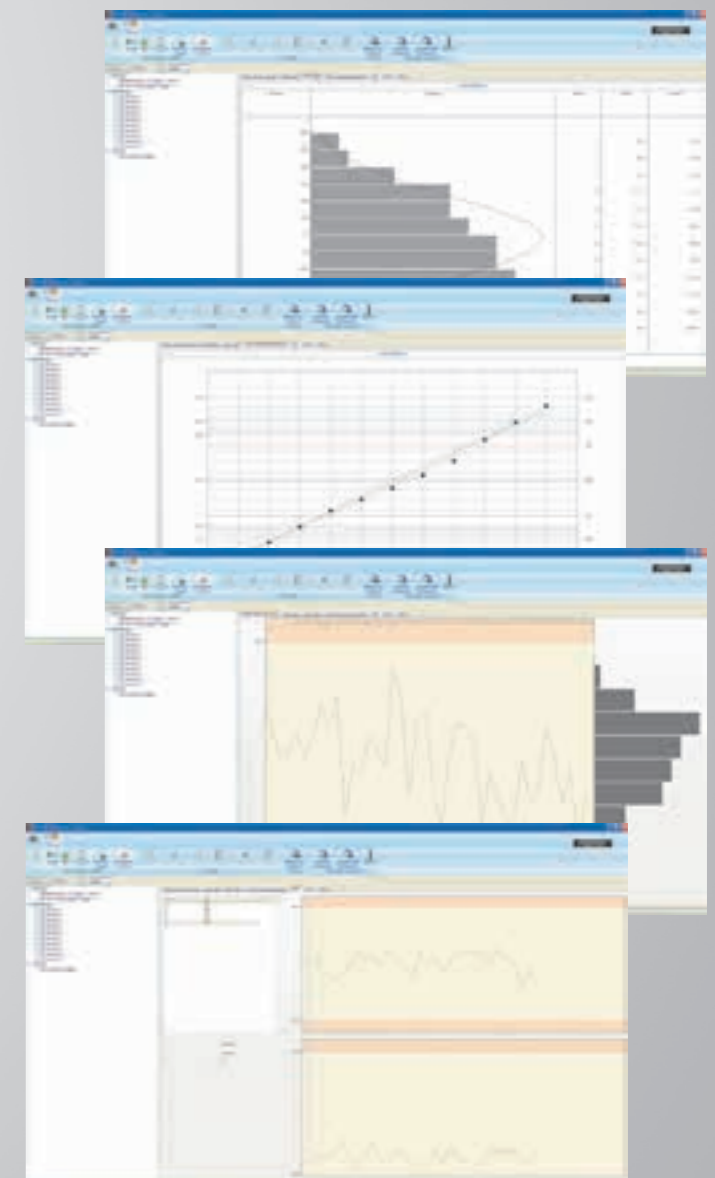
### Evaluation and statistics functions

Visualize your data such as histograms and cumulative frequencies graphically or in tabular form using drag-and-drop.



### Create data reports easily

Generate custom reports with your own logos, images, and graphics, or based on scanned forms.





## Always well supplied with our accessories

### Extensive accessories for your Fischer device

You will find a large selection of add-ons to match our product portfolio. In this way, you can always ensure that you can measure absolutely reliably. We offer you a very large range of probes, manually and motor-driven stands, specimen holders in a wide variety of designs, protective covers for devices, adapters, consumables and much more. Accessories that make your daily use easier.

### Our accessories

- Selection from hundreds of standard and special probes; for further details see page 56
- Calibration sets incl. factory certificate for well over 500 standards
- Measuring stands with manual or motorized probe lowering for highest repeatability precision
- Various holders for exact positioning of probes and samples
- Device holder for convenient one-hand operation
- Adapters, batteries, power supplies and USB cable
- Consumables such as electrolytes, cannulas or calibration solutions
- Manufacturer test certificates
- And much more

Our experts will be happy to advise you on finding the right accessories for your application:

[sales@helmut-fischer.com](mailto:sales@helmut-fischer.com)



Repeatable measurement with specimen holder and probe clamped in a stand



Stand for clamping internal probes



Holder for comfortable use of a DMP device



Selection of calibration standards

## Standards you can rely on

### The right measurement is what counts

Only a well-calibrated measuring instrument delivers correct results. For this reason, Fischer relies on the highest accuracy for its calibration standards. Our in-house calibration laboratories produce traceable calibration standards, also known as reference or comparison standards, which are recognized all over the world.

Calibration standards are foils or coated base material. Foil standards can be combined with other materials for further adherence to your measuring task.

Whether measuring coating thickness or conducting material testing, with well over 500 different calibration standards, Fischer has the right standards for every application in its range. And, with ready-made sets for special measuring tasks such as corrosion protection, for example, you are well prepared for any application. On request, as well, we can issue a manufacturer's test certificate for the probe and measuring instrument in accordance with DIN 55350-18.

### Safety through our accredited calibration laboratory

Fischer runs several accredited calibration laboratories worldwide. Our speciality: We are the first and only company with its own calibration laboratory in Germany that is accredited according to DIN EN ISO/IEC 17025

for the mechanical measurand "mass per unit area". By tracing the measurements back to national standards and thus to national metrology institutes such as the Physikalisch-Technische Bundesanstalt (PTB), National Institute of Standards and Technology (NIST) or National Institute of Metrology (NIM), the highest quality standards are achieved. Our internationally recognized calibration certificates and certificates of analysis give you and your products the necessary security and strengthen the confidence of your customers.

### Unique service: your product as an individual calibration standard

Benefit from customized calibration standards by having your sample certified as a calibration standard by our measurement experts. In addition to in-house manufactured and certified standards, Helmut Fischer's calibration laboratory also offers ISO/IEC 17025 certification for specific customer material. So now you can use your workpieces for process control, quality control or development – all thanks to the calibration certificate!

Please feel free to contact us! We can advise you on suitable calibration standards and what calibration strategy to follow: [sales@helmut-fischer.com](mailto:sales@helmut-fischer.com)

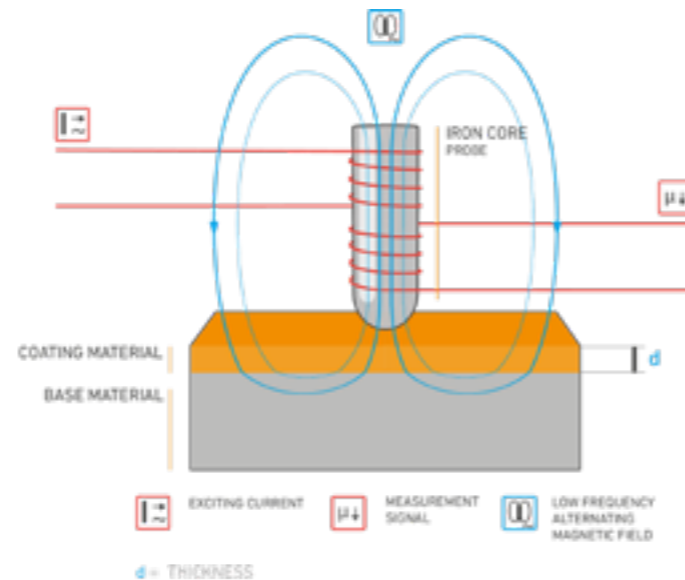


## How exactly does it work? Test methods at a glance

### MI Magnetic induction method

Probes for magnetic induction measurements consist of an iron core around which an excitation coil is wound. A low-frequency alternating current flows through this coil, creating an alternating magnetic field around the poles of the iron core. If now the probe approaches a magnetizable object – the iron base material of a sample, for example – it amplifies the alternating magnetic field. A measuring coil registers this amplification as a voltage. How high the voltage difference is depends on the distance between the pole(s) and the iron part. For coated parts, this distance corresponds exactly to the coating thickness. The base material must be magnetized, or ferrous, the coating not. This test method is in accordance with DIN EN ISO 2178 and is suitable for coating thickness measurements of galvanic coatings such as zinc and chromium as well as for coatings and plastics.

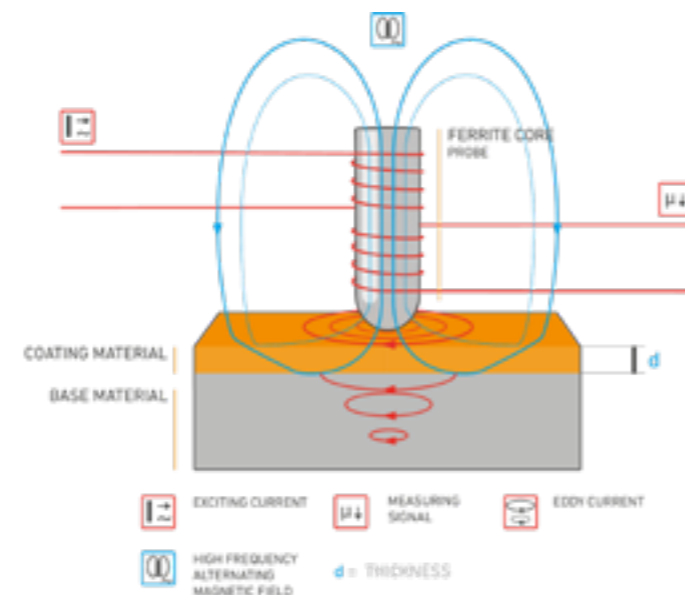
[MMS® INSPECTION DFT, MP0/MP0R, DMP10-40, DUALSCOPE® FMP100/H FMP150, PHASCOPE® PMP10 DUPLEX, FISCHERSCOPE® MMS® PC2, FISCHERSCOPE® MMS® AUTOMATION]



### PE Phase-sensitive eddy current method

The method in accordance with ISO 21968 is based on the fact that the coating material and the base material differ sufficiently in electrical conductivity and/or magnetism. The probes have measuring systems consisting of several electrical coils that are placed on a common ferrite core. An excitation current generates a high-frequency magnetic field that induces eddy currents in the material. These, in turn, generate an opposing electromagnetic field that is superimposed on the first field. The resulting field leads to a change in impedance in the measuring coil (= phase shift). The different formation of eddy currents at different coating thicknesses is used for coating thickness measurement. The method is not very sensitive to external influences such as curvature or roughness. Metal layers under an electrically insulating layer, e.g. paint, can also be measured.

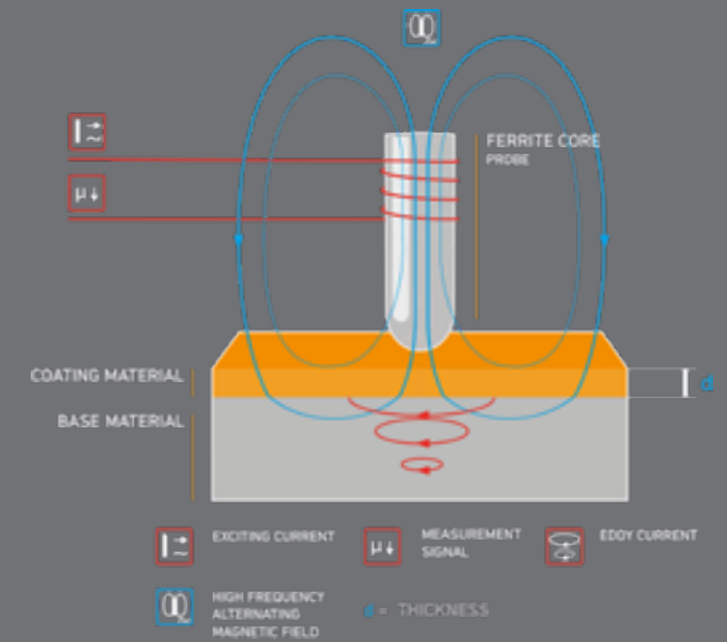
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### AE Amplitude-sensitive eddy current method

This test method in accordance with DIN EN ISO 2360 uses probes without and with ferrite core. A coil is wound around the core and a high-frequency alternating current flows through it. This produces a high-frequency alternating magnetic field around the coil. If the probe pole comes close to a metal, a so-called eddy current is induced in this metal. This also generates an alternating magnetic field. Since this second magnetic field is opposite to the first, the original magnetic field is weakened. The extent of this weakening depends on the distance between the pole and the metal base material of the object to be measured. For coated parts, this distance corresponds exactly to the value of the coating thickness. Factors that can strongly influence the measurement using the eddy current method include the shape and size of the test part or the roughness of the surface.

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### FC Ferrite content

With the magnetic induction method, the ferrite content can be determined quickly and non-destructively in accordance with the Basler standard and DIN EN ISO 17655. For example, weld seams on austenitic steel can be inspected directly onsite and, if necessary, reworked.

[FERITSCOPE® DMP30]

### EC Electrical conductivity

Conductivity measurement not only provides information on how well a metal conducts electricity, i.e. whether it has a high or low conductivity, but also indirectly provides information on its composition, microstructure or mechanical properties. Thus, in many applications, conductivity is an important component of process control or product monitoring. The method used for non-destructive conductivity measurement is the phase-sensitive eddy current method in accordance with DIN EN 50994 standard.

[SIGMASCOPE® GOLD B/GOLD C, SIGMASCOPE® SMP350, FISCHERSCOPE® MMS® AUTOMATION]

### PT Porosity testing with high voltage

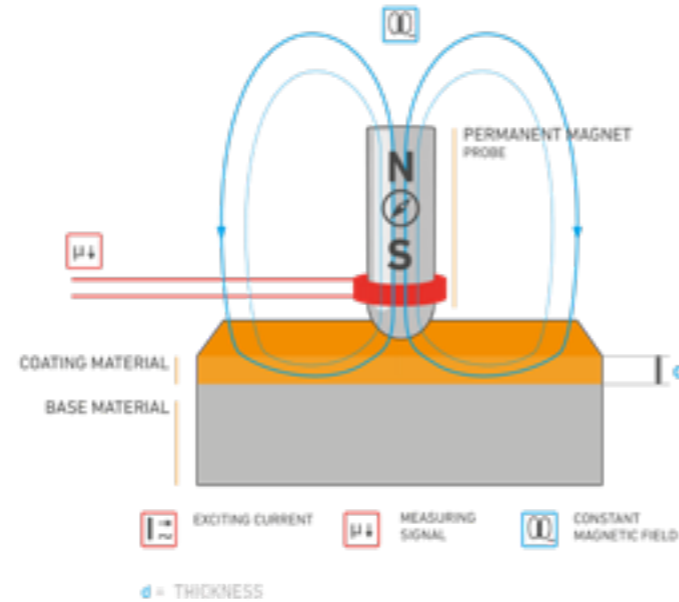
This method can be used to detect defects in insulating coatings. It is often used to test pipelines, tanks and other large structures. A test voltage is set on the POROSCOPE® for testing. The electrode is slowly moved over the surface. If the electrode reaches a defect in the coating, a sparkover occurs and a capacitor discharges in the device. The voltage drop is registered and an alarm indicates that the coating contains a pore.

[POROSCOPE®]

## M Magnetic method

The test method is based on the different magnetic properties between a coating and its base material and is used to measure magnetic coatings on non-magnetic metals or plastics or to test non-magnetic coatings on steel or iron. The measurement is based on the Hall effect, which occurs when a current-carrying conductor is in a constant magnetic field. Magnetic materials, for example a nickel coating, amplify the static magnetic field, which also increases the Hall voltage. This voltage is measured and converted into a coating thickness value in the measuring instrument. The magnetic procedure is carried out in accordance with DIN EN ISO 2178.

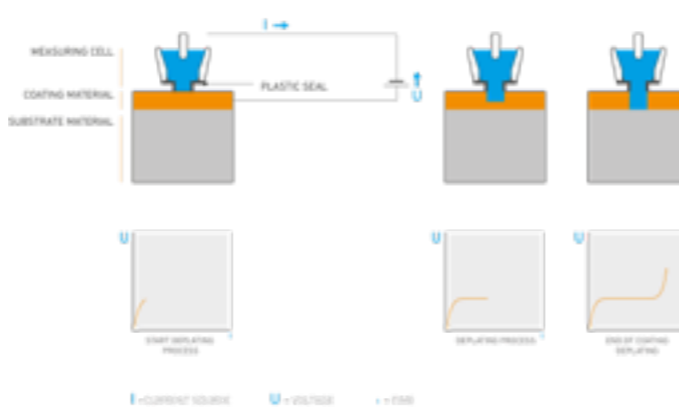
[DUALSCOPE® H FMP150, FISCHERSCOPE® MMS® PC2, FISCHERSCOPE® MMS® AUTOMATION]



## CO Coulometric method

The electrochemical analysis method uses Faraday's law to determine the coating thickness. In accordance with DIN EN ISO 2177, it is suitable for many metallic coatings on any base materials and is a reversal of the electroplating process. In this process, a metal layer is dissolved by a constant electric current. A measuring cell is used for the measurement, which is filled with an electrolyte and placed on the coating. Through the action of electrolyte and direct current, the metal atoms from the coating enter the solution as cations and migrate to the cathode of the measuring cell. Once the coating is depleted and the electrolyte reaches the underlying material, there is an increase in electrical resistance and thus a measurable voltage jump, which leads to an automatic shutdown of the measuring device. The coating thickness can be calculated from the time taken for the dissolution process.

[COULOSCOPE® CMS2/CMS2 STEP]



## DP Dew point

The dew point is the temperature below which the water vapor condenses as dew. If the surface is not completely dry during coating, this can severely impair the adhesion properties of the coating. The dew point is determined on the basis of the object temperature and the relative humidity. In accordance with DIN EN ISO 12944, the object temperature must be at least 3 °C (37,4 °F) higher than the dew point during the entire coating process. With the dew point meter from Fischer, the climate parameters relevant for coating processes, such as relative humidity, air temperature and surface temperature, are easily recorded.

[MMS® INSPECTION DPM]

## SP Surface profile

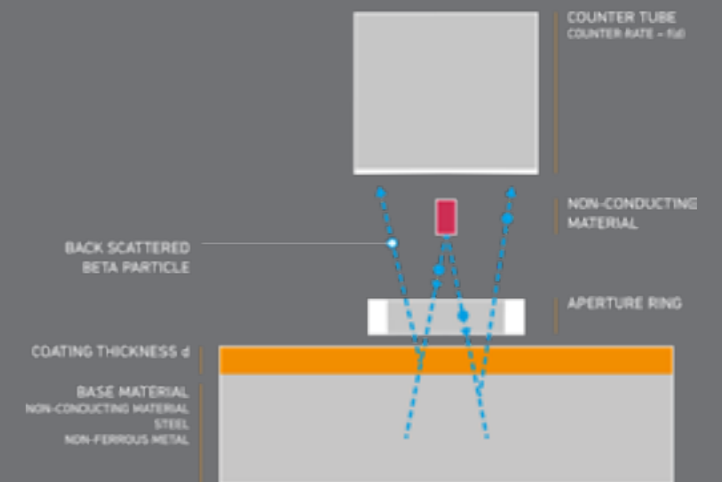
The surface profile influences the performance of a coating. It affects the adhesion, hiding power and material consumption. Very smooth surfaces with low profiles are difficult to paint because the coating adheres poorly. Surfaces with high profiles, on the other hand, require very thick coatings. Fischer's tactile devices and probes record a one-dimensional contact section profile. They measure peak-to-valley height differences in accordance with ASTM 4417, Method B.

[MMS® INSPECTION SPG]

## BB Beta-backscattering method

In this method, an isotope source emits beta rays (electrons). These penetrate the coating and the base material of the workpiece and are scattered by the atoms of both materials. The number of backscattered electrons is counted to measure the thickness of the coating. This makes it possible to measure the thickness of layers of any material on any base material, provided that the atomic numbers of the layer and base material differ sufficiently. Possible applications include the measurement of very thick gold layers on nickel, bronze or ceramics, silver in copper tubes for high-current contacts in the printed circuit board industry and the electrical/electronics industry, or the thickness measurement of thin paint, oil and lubricant films on steel parts in steel processing. In general, the beta-backscattering method is a quite universally applicable coating thickness test method. The beta-backscattering method is performed in accordance with DIN EN ISO 3543, ASTM B567 and BS 5411.

[BETASCOPE®]



## D Duplex method

Duplex coatings are often used in corrosion protection and automotive construction because they are characterized by a very long service life. Duplex coatings consist of a zinc coating in combination with one or more colored coatings. The overall system of zinc and paint can protect the steel from corrosion for many years. For the measurement of duplex systems, magnetic induction and phase-sensitive eddy current test methods are used together in one probe. For zinc coatings from about 150 µm, however, the penetration depth of the phase-sensitive eddy current method is no longer sufficient to reliably determine the coating thickness. For this reason, the combination of the magnetic induction and the amplitude-sensitive eddy current method is used in such cases. According to the DIN EN ISO 12944 standard, the measurements are performed in accordance with DIN EN ISO 2178, DIN EN ISO 2360 and DIN EN ISO 21968.

[DMP10-40, DUALSCOPE® FMP100/H FMP150, PHASCOPE® PMP10 DUPLEX, FISCHERSCOPE® MMS® PC2, FISCHERSCOPE® MMS® AUTOMATION]

## MR Microresistivity method

This method is suitable for measuring the thickness of electrically conductive layers on insulating substrates in accordance with ISO 14571. Copper coatings on printed circuit boards and multi-layer PCBs are frequently checked using this method. The advantage of this method is that other layers or intermediate layers in the PCB have no influence on the measurement, so that the thickness can be determined precisely even with thin layers. This method uses probes with four needles arranged in a row on the underside of the probe. When the probe is placed, current flows between the two outer needles. The coating acts as an electrical resistance to which a voltage drop is measured with the two inner needles. The resistance and thus the voltage drop increase as the coating thickness decreases, and vice versa. Probe-specific specifications (minimum specimen size, minimum distance to the specimen edge) prevent systematic error with particularly specimens.

[SR-SCOPE® DMP30, FISCHERSCOPE® MMS® PC2, FISCHERSCOPE® MMS® AUTOMATION]



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