

FISCHERSCOPE® X-RAY XDLM® 231
FISCHERSCOPE® X-RAY XDLM® 232
FISCHERSCOPE® X-RAY XDLM® 237

X-Ray Fluorescence Measuring Instrument for
Manual or Automated Coating Thickness
Measurements and Analyses on PC-Boards,
Electronics Components and Mass-Produced
Parts, even on small Structures



FISCHERSCOPE® X-RAY XDLM®

Description

The FISCHERSCOPE X-RAY XDLM are universally applicable energy dispersive x-ray fluorescence measuring instruments. The instruments are well suited for measuring and analysing thin coatings, even at small concentrations, in quality assurance, incoming inspection and process control.

Typical fields of application:

- Measurement of electroplated mass-produced parts
- Inspection of thin coatings with small measurement spots
- Analysis of functional coatings in the electronics and semiconductor industries
- Automated measurements, e.g., on printed circuit boards

To create ideal excitation conditions for every measurement, the instrument features electrically changeable apertures and primary filters. A high count rate is achieved by using a proportional counter tube, which allows for precise measurements.

Outstanding accuracy and long-term stability are characteristics of all FISCHERSCOPE X-RAY systems. The necessity of recalibration is considerably reduced, saving time and effort.

The fundamental parameter method by FISCHER allows for the analysis of solid and liquid specimens as well as coating systems without calibration.

Design

The FISCHERSCOPE X-RAY XDLM instruments are modularly designed as user-friendly bench-top instruments. According to the intended use, different versions are available:

XDLM 231: Plane support stage, motor-driven Z-axis

XDLM 232: Manually operable XY-stage, motor-driven Z-axis

XDLM 237: Motor-driven XY-stage that moves into the loading position automatically, when the protective hood is opened. Motor-driven programmable Z-axis

A high-resolution colour video camera simplifies the precise determination of the measurement spot. A laser pointer serves in all models as a positioning aid and supports the quick alignment of the sample to be measured.

A gap in the housing allows for measurements on large flat specimens, which do not fit in the measuring chamber, e.g. large printed circuit boards.

The integrated video-microscope with zoom and crosshairs simplifies sample placement and allows for a precise measuring spot adjustment.

The entire operation and evaluation of measurements as well as the clear presentation of measurement data is performed on a PC, using the powerful and user-friendly WinFTM® software.

The FISCHERSCOPE XDLM fulfills DIN ISO 3497 and ASTM B 568. It is a fully protected instrument with type approval according to the German regulations „Deutsche Röntgenverordnung-RöV“.

General Specification

Intended use	Energy dispersive x-ray fluorescence measuring instrument (EDXRF) to determine thin coatings, small structures and alloys
Element range	Chlorine (17) to Uranium (92) – up to 24 elements simultaneously with option WinFTM® BASIC
Design	Bench top unit with upwards opening hood
Measuring direction	Top down

X-Ray Source

X-ray tube	Micro-focus tungsten tube with beryllium window
High voltage	Three steps: 30 kV, 40 kV, 50 kV
Apertures (Collimators)	4x changeable
Standard (523-440)	[mm]: Ø 0.1, Ø 0.2, 0.05 x 0.05, 0.2 x 0.03; [mils]: Ø 3.9, Ø 7.9, 2 x 2, 7.9 x 1.2
Optional (523-366)	[mm]: Ø 0.1, Ø 0.2, Ø 0.3, 0.3 x 0.05; [mils]: Ø 3.9, Ø 7.9, Ø 11.8, 11.8 x 2
Optional (524-061)	[mm]: Ø 0.1, Ø 0.2, 0.3 x 0.05, 0.05 x 0.05; [mils]: Ø 3.9, Ø 7.9, 11.8 x 2, 2 x 2 others on request
Primary filter	3x changeable (Standard configuration: Nickel, Aluminum, no filter)
Measurement spot	Depending on the measuring distance and on the aperture, the actual measurement spot size is shown in the video image. Smallest measurement spot: approx. Ø 0.1 mm (3.9 mils) with aperture 0.05 x 0.05 mm (2 x 2 mils)

X-Ray Detection

X-ray detector	Proportional counter tube
Measuring distance	0 ... 80 mm (0 ... 3.2 in) Distance compensation with patented DCM method for simplified measurements at varying distances. For particular applications or for higher demands on accuracy an additional calibration might be necessary.

Sample Alignment

Video microscope	High-resolution CCD colour camera for optical monitoring of the measurement location along the primary beam axis, manual focusing and auto-focus, crosshairs with a calibrated scale (ruler) and spot-indicator, adjustable LED illumination, laser pointer (class 1) to support accurate sample placement
Zoom factor	Digital 1x, 2x, 3x, 4x

Electrical Data

Power source	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	max. 120 W, without evaluation PC
Protection class	IP40

Dimensions

External dimensions	Width x depth x height [mm]: 570 x 760 x 650, [in]: 22 x 30 x 26
Interior dimensions measurement chamber	Width x depth x height [mm]: 460 x 495 x 146, [in]: 18 x 19.5 x 5.7
Weight	XDLM 231: 100 kg/220 lbs; XDLM 232: 108 kg/238 lbs; XDLM 237: 120 kg/265 lbs

FISCHERSCOPE® X-RAY XDLM®

Sample Stage	XDLM 231	XDLM 232	XDLM 237
Design	Fixed sample support	Manual XY-stage	Programmable, motor-driven XY-stage
Maximum travel XY	—	95 x 150 mm (3.7 x 5.9 in)	255 x 235 mm (10 x 9.2 in)
Travel speed XY	—	—	≤ 80 mm/s (3.1 in/s)
Repeatability precision XY	—	—	≤ 0.01 mm (0.4 mils), unidirectional
Usable sample placement area	463 x 500 mm (18.2 x 19.7 in)	420 x 450 mm (16.5 x 17.7 in)	300 x 350 mm (11.8 x 13.8 in)
Z-axis	Electrically adjustable	Electrically adjustable	Programmable
Travel Z-axis	140 mm (5.5 in)	140 mm (5.5 in)	140 mm (5.5 in)
Max. sample weight	20 kg (44 lbs)	20 kg (44 lbs)	5 kg (11 lbs), with reduced approach travel precision 20 kg (44 lbs)
Max. sample height	140 mm (5.5 in)	140 mm (5.5 in)	140 mm (5.5 in)

Environmental Conditions

Operating temperature	10 °C – 40 °C / 50 °F – 104 °F
Storage/Transport temperature	0 °C – 50 °C / 32 °F – 122 °F
Admissible air humidity	≤ 95 %, non-condensing

Evaluation Unit

Computer	Windows® PC with extension cards
Software	Standard: Fischer WinFTM® LIGHT Optional: Fischer WinFTM® BASIC, PDM®, SUPER

Standards

CE approval	EN 61010
X-Ray standards	DIN ISO 3497 and ASTM B 568
Approval	Fully protected instrument with type approval according to the German regulations „Deutsche Röntgenverordnung-RöV“.

Order

FISCHERSCOPE X-RAY XDLM 231	604-345
FISCHERSCOPE X-RAY XDLM 232	604-346
FISCHERSCOPE X-RAY XDLM 237	604-347
	Special XDLM product modification and XDLM technical consultation on request

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