FISCHERSCOPE® X-RAY XDLM®-PCB 200
FISCHERSCOPE® X-RAY XDLM®-PCB 210
FISCHERSCOPE® X-RAY XDLM®-PCB 220

Specific X-Ray Fluorescence Measuring Instruments for Measurements and Analyses of Coating Thicknesses and Compositions on Printed Circuit Boards

XDLM®-PCB 200

XDLM®-PCB 210
XDLM®-PCB 220

Description

The FISCHERSCOPE X-RAY XDLM-PCB instruments are specific robust entry-level instruments for measurements and analyses of coating thicknesses and compositions on printed circuit boards.

Typical fields of application:

- Measurements on small components and structures on printed circuit boards in sizes up to 610 x 610 mm (24 x 24 in)
- Measurements of functional coatings in the electronics and semiconductor industries
- XDLM-PCB 210 and 220: Automated measurements, e.g., in quality control
- Determining the composition of electroplating baths

A high count rate is achieved by using a micro-focus X-ray source and 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 dramatically 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.

For measurements on large printed circuit boards and multi-panels, the XDLM-PCB 200 can be equipped with a sample stage extension to enlarge the usable sample placement area.

The XDLM-PCB 220 features electrically changeable apertures and primary filters to create ideal excitation conditions for every measurement. This makes the instrument extremely versatile.

Design

The FISCHERSCOPE X-RAY XDLM-PCB Series is designed as a user-friendly bench-top instrument. The housing features a slot in the side allowing for the measurement of large pc-boards.

Both instruments feature an easy sample positioning:

- XDLM-PCB 200: The PCB will be roughly positioned with the help of the integrated laser pointer. Then the sample support will be pushed into the instrument similar to a drawer.
- XDLM-PCB 210 and 220: The instrument is equipped with a high-precision, programmable XY-stage with a pop out function. A laser pointer serves as a positioning aid and supports the quick alignment of the sample to be measured.

A high-resolution color video camera simplifies the precise determination of the measurement spot.

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 X-RAY XDLM-PCB Series fulfills DIN ISO 3497 and ASTM B 568.

General Specification

Intended use	Energy dispersive x-ray fluorescence measuring instrument (EDXRF) to determine thin coatings, small structures and alloys
Element range	Potassium (19) to Uranium U (92) – up to 24 elements simultaneously
Design	Bench-top unit with housing with a slot on the side
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)	• XDLM-PCB 200/210: Ø 0.1 mm (3.9 mils), optional Ø 0.2 mm (7.9 mils), slot 0.3 x 0.05 mm (11.8 x 2 mils) • XDLM-PCB 220: Standard (523-440): Ø 0.1 mm (3.9 mils); Ø 0.2 mm (7.9 mils); 0.05 x 0,05 mm (2 x 2 mils); 0.2 x 0.03 mm (7.9 x 1.2 mils) Optional (523-366): Ø 0.1 mm (3.9 mils); Ø 0.2 mm (7.9 mils); Ø 0.3 mm (11.8 mils); 0.3 x 0.05 mm (11.8 x 2 mils)
Primary filter	• XDLM-PCB 200/210: fixed • XDLM-PCB 220: 3x changeable:. (Standard: Nickel, Aluminum, free)
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 0.2 mm (7.9 mils)
Measuring distance	0 … 10 mm (0 … 0.4 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.

X-Ray Detection

X-ray detector	Proportional counter tube

Video Microscope

	High-resolution CCD color 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 specimen placement
Zoom factor	Digital: 1x, 2x, 3x, 4x

Dimensions	XDLM-PCB 200	XDLM-PCB 210
External dimensions Width x depth x height	610 x 750 x 450 mm (24 x 29.5 x 17.7 in) With extension: 1200 x 1050 x 450 mm (47.2 x 41.3 x 17.7 in)	With maximum XY travel range: 1000 x 1265 x 470 mm (39.4 x 49.8 x 18.5 in) XY table retracted in home position: 650 x 810 x 470 mm (25.6 x 31.9 x 18.5 in)
Weight	Approx. 86 kg (190 lb)	

FISCHERSCOPE® X-RAY XDLM®-PCB

Sample Stage	XDLM-PCB 200	XDLM-PCB 210/220
	Fixed sample support with manual pop out function	Programmable XY-stage with pop out function
Usable sample placement area Width x depth	600 x 600 mm (23.6 x 23.6 in) With extension: 1200 x 900 mm (47.2 x 35.4 in)	600 x 600 mm (23.6 x 23.6 in)
Maximum travel XY-axis		450 x 300 mm (17.7 x 11.8 in)
Max. travel speed XY		60 mm/s (2.4 in/s)
Repeatability precision XY		≤ 0.01 mm (0.4 mils), direction-independent
Max. sample weight	5 kg (11 lb)	5 kg (11 lb)
Max. sample height	5 mm	

Electrical data

Power supply	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	Max. 120 W
Protection class	IP40

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
Software	Standard: Fischer WinFTM® BASIC Optional: Fischer WinFTM® PDM®, SUPER

Standards

CE approval	EN 61010
X-Ray standards	DIN ISO 3497 and ASTM B 568
Approval	Individual acceptance inspection as a fully protected instrument according to the German regulations „Deutsche Röntgenverordnung-RöV“.

Order

FISCHERSCOPE X-RAY XDLM-PCB 200	605-011	Measuring cell for solution analysis	605-032
FISCHERSCOPE X-RAY XDLM-PCB 210	605-012	Sample stage extension for XDLM-PCB 200	605-033
FISCHERSCOPE X-RAY XDLM-PCB 220	605-110		

Special XDLM-PCB product modification and XDLM-PCB technical consultation on request

FISCHERSCOPE®, XDLM®, WinFTM®, PDM® are registered trademarks of Helmut Fischer GmbH Institut für Elektronik und Messtechnik, Sindelfingen - Germany. Windows® is a registered trademark of Microsoft Corporation in the United States and other countries.

www.helmut-fischer.com

952094 June 14, 2016