

FISCHERSCOPE[®] X-RAY 5000 Series

X-Ray Fluorescence Measuring System for Continuous In-line Measurement and Analysis of Thin Coatings, i.e. CIGS, CIS, and CdTe, in Production Processes



Main Features

The instruments of the FISCHERSCOPE X-RAY 5000 series are innovative, energy dispersive x-ray fluorescence measuring systems (EDXRF) for in-line applications in industrial production sites. They are especially designed for continuous non-destructive analysis and measurement of thin layers and layer systems in production lines. Their rugged design specifically meets the tough demands of industrial environments and for continuous operation.

Typical fields of application:

- In the photovoltaic industry, e. g. CIGS, CIS, CdTe
- Measurements on glass panels, foils and belts
- Measurements on very hot surfaces (water cooled version)

The X-RAY 5000 instruments measure in a vacuum or in the atmosphere.

Calibration is carried out quickly and easily with a master standard directly in the production process. Due to large apertures, new semiconductor detectors and a digital pulse processor, the X-RAY 5000 features outstanding repeatability, which reduces the necessity for re-calibration, thereby saving time and effort.

Performance

FISCHERSCOPE X-RAY 5000 units are robust measurement heads and are simple to mount.

For easy integration into production lines, the X-RAY 5000 comes with a standardized mounting flange. Two versions are available:

- 5100 for measurements in the atmosphere
- 5400 for measurements in vacuum and on very hot substrates with surface temperatures of up to 400 °C (752 °F)

For measurements in vacuum, the instrument is equipped with a special sealing flange, which allows for maintaining the instrument without releasing the vacuum.

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. Additionally, the WinFTM® software offers the capability to compensate variations in the distance of up to several millimeters between the measuring head and the specimen for certain measurement applications.

Various data interfaces allow for easy integration of all X-RAY 5000 instruments into industrial process control systems.

All X-RAY 5000 measuring systems fulfill DIN ISO 3497 and ASTM B 568.

General Specification

Intended use	Energy dispersive x-ray fluorescence measuring system (EDXRF) to analyze and measure coatings and layer systems continuously in production processes.
Element range	Sodium Na (11) to Uranium U (92) if measured in vacuum Aluminium Al (13) to Uranium U (92) if measured in the atmosphere

Features

Calibration	Quick and easy with a master standard directly in the production process
Remote control	Via programmed tasks or via various data interfaces
Data Interface	RS232, Command files, OLE automation, TCP/IP, PROFIBUS and PROFINET via OPC mainly with SPS type SIMATIC, others on request

X-Ray Source

X-ray tube	Microfocus tungsten tube with beryllium window, other tubes on request
High voltage	Three steps: 10 kV, 40 kV, 50 kV
Aperture (Collimator)	Fixed, adapted to the particular application

X-Ray Detection

X-ray detector	Peltier-cooled silicon-drift-detector (SDD)
Resolution (fwhm for Mn-K _α)	≤ 140 eV
Signal processor	Digital pulse processor
Distance compensation	± 3 mm (118 mils) for measurements on glass substrates, with specific applications on glass substrates up to ± 5 mm (197 mils)
Measuring distance	60 – 100 mm (2.4 – 3.9 in), other distances on request

Electrical data

Power supply	AC 115 V or AC 230 V 50 / 60 Hz
Power consumption	max. 100 W (without evaluation PC)
Protection class	IP50

Environmental Conditions

	5100	5400
Measuring environment	Atmosphere	Vacuum
Maximum sample surface Temperature	≤ 40 °C (104 °F)	≤ 400 °C (752 °F)
Cooling	–	Water cooling, e. g. with water temperature 20 °C (68 °F), water pressure 5 – 9 bar, flow rate 6 l/min
Operating temperature	0 °C – 40 °C (32 °F – 104 °F) around the housing	
Storage temperature	0 °C – 50 °C (32 °F – 122 °F)	
Admissible air humidity	≤ 95%, non-condensing	

Dimensions

	5100	5400
Weight	37 kg (82 lb)	47 kg (104 lb)
Flange dimensions	ISO 250F	
Outside W x D x H	236 x 350 x 370 mm (9.3 x 13.8 x 14.6 in)	

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Evaluation unit

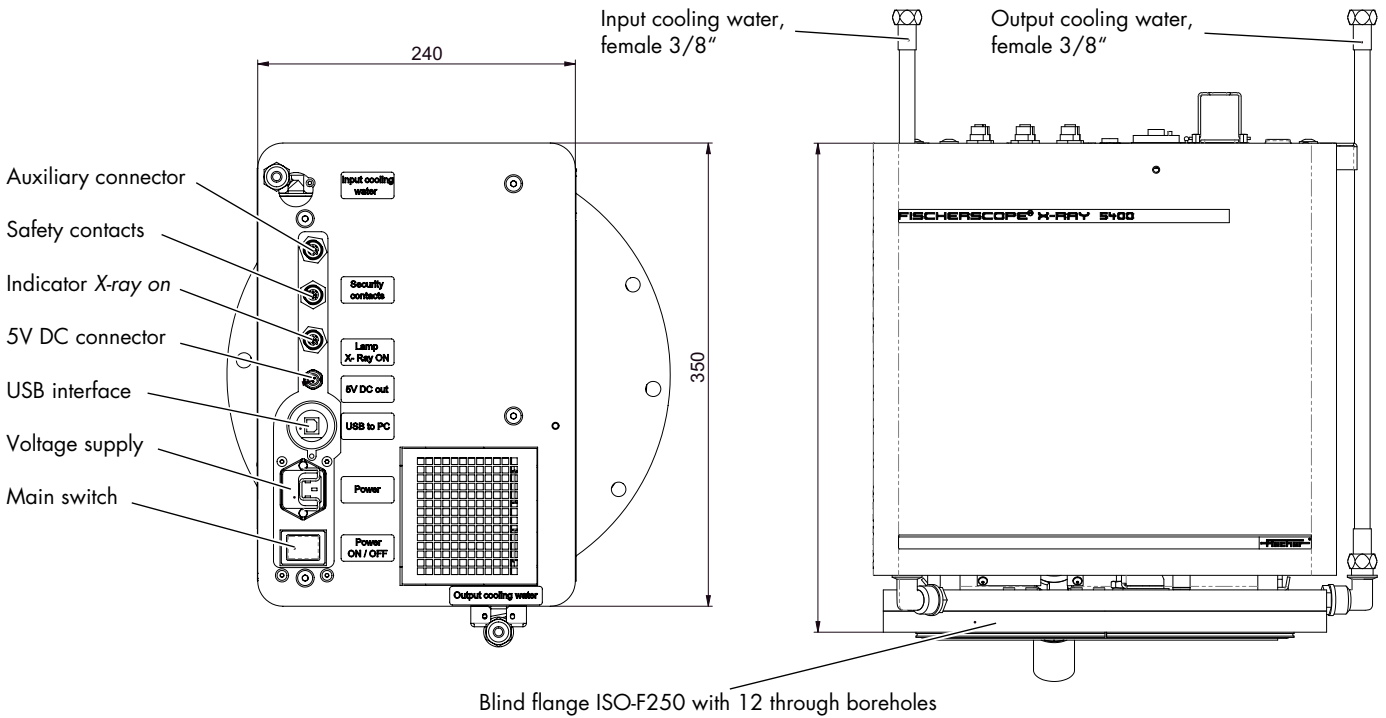
Computer	Windows®-PC
Software	Standard: Fischer WinFTM® BASIC including PDM® Optional: Fischer WinFTM® SUPER

Standards

CE approval	EN 61010
X-Ray standards	DIN ISO 3497 and ASTM B 568
Approval	Individual approval. The provisions of local law have to be observed.

Order

	FISCHERSCOPE X-RAY 5100	FISCHERSCOPE X-RAY 5400
Order number	604-793	604-795
	Special X-RAY 5000 product modification and X-RAY 5000 technical consultation on request	



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