



LB 124 SCINT Series

Contamination Monitors

Equipment Concept

LB 124 SCINT Series

The Contamination Monitors of the LB 124 SCINT Series are versatile and flexible instruments for practical radiation protection applications. They can be employed wherever contamination caused by radiation substances is encountered and has to be monitored: in nuclear medicine, research, nuclear power plants, in decommissioning of nuclear facilities and disposal of nuclear waste as well as in environmental monitoring. The instruments are used to measure radioactive alpha and beta-gamma contaminations on surfaces such as floors, walls, desks, objects, clothing or skin.

The instruments of the LB 124 SCINT Series are contamination monitors based on scintillation technology. Their benefits are:

- Simultaneous and separate measurement of alpha and beta-gamma contaminations
- Measurement of gamma dose rate (only for LB 124 SCINT-D)
- High sensitivity and uniform response
- No counting gas required
- Lightweight, easy to handle and rugged instrument
- Wide temperature range

The Contamination Monitor LB 124 SCINT is a portable battery-powered instrument. It is comprised of a display unit with microprocessor electronics, a signal processing electronics and a ZnS-scintillator with photomultiplier. The LB 124 SCINT and LB 124 SCINT-D has an active measurement area of 170 cm² and the version LB 124 SCINT-300 of 345 cm². The sophisticated reflector geometry ensures an extremely flat response over the entire sensitive area.



LB 124 SCINT Portable Contamination Monitor



Bottom side of LB 124 SCINT



Sample holder with drawer for LB 124 SCINT/-D



Transport case for the LB 124 SCINT Series



LB 124 SCINT-300 and LB 124 SCINT-D

Functions and accessories

The LB 124 SCINT has an attractive and ergonomic design and due to its low weight it is easy to handle. Even under adverse conditions, the measured results can be read easily on large high-resolution display with background lighting. A few directly accessible function keys suffice to operate the instrument. The instrument's surfaces can easily be decontaminated.

Different user profiles with different levels of complexity and access rights can be selected: Less experienced users may use the instrument as a simple, clearly structured system. For experienced users the software offers numerous functions and utilities, measurement modes and access to all parameters. Profiles can be configured password-protected and are pre-defined as EASY, STANDARD and EXPERT. The instrument has a large data memory and supports bi-directional communication via RS232. Program download and data transfer to a PC or printer are possible.

On the bottom side of the LB 124 SCINT /-D there are guides to insert an additional grating for better detector protection or to use a sample holder with drawer for activity measurement of small samples.

Versions

The LB 124 SCINT Series consists of LB 124 SCINT, LB 124 SCINT-D and LB 124 SCINT-300.

Through the integration of an additional Geiger-Müller tube it is possible to measure gamma dose rate in ambient dose equivalent $H^*(10)$ simultaneously besides regular contamination measurement.

The LB 124 SCINT-300 has an active measurement area of 345 cm². This large area supports faster measurements with lower effort and increase safety.

Technical Data

LB 124 SCINT Series Contamination Monitors

Contamination Detectors

Radiation detector	ZnS(Ag) scintillator	
Measurement modes	α- and β-γ measurement simultaneous and separate, only SCINT-D: gamma dose rate; ratemeter, scaler-timer-mode, clearance measurement, survey mode	
Dimensions	118 mm x 145 mm / entrance window 150 mm x 230 mm	
Sensitive area	170 cm ² / 345 cm ²	
Material entrance window	2 x 3 μm metallized plastic (0.4 mg/cm ²)	
Protective grid	80 % transmission	
Typ. background	α-channel	approx. 0.1 cps
	β-γ-channel	approx. 10 cps / 15 cps
Typ. efficiencies (according to ISO 7503-1)	²³⁹ Pu	approx. 41 %
	²⁴¹ Am	approx. 44 %
	¹⁴ C	approx. 29 %
	³⁶ Cl	approx. 69 %
	⁶⁰ Co	approx. 58 %
	¹³⁷ Cs	approx. 71 %
Gamma sensitivity at 1 μSv/h ¹³⁷ Cs	α-channel	Not detectable
	β-γ-channel	< 100 cps
Spillover	α- in β-γ-channel	< 20 %
	β-γ- in α-channel	< 2x10 ⁻⁵
Measuring range	α-channel	0 to 5000 cps
	β-γ-channel	0 to 50000 cps

Dose Rate Detector (only LB 124 SCINT-D)

Radiation detector	Geiger-Müller tube
Dose rate range	0.1 μSv/h to 20 mSv/h
Energy range	50 keV to 1.3 MeV
Calibration factor	0.625 μSv/h per cps ¹³⁷ Cs
Intr. background	about 0.07 cps

Ambient Conditions

Temperature range	- 20 °C to + 40 °C (operation)
Rel. humidity	0 % to 80 %, no condensation
External pressure	500 hPa to 1300 hPa (operation)
Protection class	IP 53 (according to IEC 60529)

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Electronics

Display	Monochrome LCD 192x64 pixels Electro-luminescence-illumination
Interfaces	RS 232, headphone connection
Power supply	3x batteries type "C", Baby or NiMH batteries, Rechargeable by plug type power supply or alternatively in the wall mounting bracket
Max. operating time (without illumination)	>50 h with alkali batteries 7.8 Ah >25 h with NiMH rechargeable batteries 4.5 Ah
Data memory	1000 measured values with date and time
Alarm	Acoustic with adjustable alarm thresholds

Mechanical Data

Dimensions	(L x W x H in mm)
LB 124 SCINT/ -D	240 x 140 x 110
LB 124 SCINT-300	260 x 178 x 150
Weight (with batteries)	
LB 124 SCINT	approx. 1300 g
LB 124 SCINT-D	approx. 1400 g
LB 124 SCINT-300	approx. 1750 g

Accessories (optional) Ident. No.

LB 124 SCINT	43727-10
LB 124 SCINT-D	60026
LB 124 SCINT-300	48002
Aluminium case	38164 / 49700
Power supply	58067
Wall bracket	38789 / 51374
Add. protection grid	45355 / 49048
Data cable (3 m)	26204
Rechargeable batteries	40650
Test source ⁹⁰ Sr	41872
Test source ²⁴¹ Am	46611

This instrument is not intended to be used for diagnostic and/or therapeutic purpose for human beings and is not a medical device - according to the definitions of the European Council Directive 93/42/ECC concerning medical devices.