



Contamination Monitor LB 124 SCINT for α - and β - γ -Measurement



RADIATION PROTECTION



Contamination Monitor LB 124 SCINT

The LB 124 SCINT is a new contamination monitor based on innovative scintillation technology for radiation protection. The benefits of the LB 124 SCINT are:

- Simultaneous and separate measurement of alpha and beta-gamma radiation
- High sensitivity and uniform response
- No counting gas required
- Lightweight, easy to handle and rugged instrument
- Wide temperature range



Applications

The Contamination Monitor LB 124 SCINT is a versatile and flexible instrument for practical radiation protection. It can be employed wherever contamination caused by radioactive 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 and also in environmental monitoring.

The instrument is used to measure radioactive alpha and beta-gamma contaminations on surfaces such as floors, walls, desks, objects, clothing or skin.

Description

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 new type of ZnS-scintillator with photomultiplier and an active measurement area of 170 cm². Its sophisticated reflector geometry ensures that the response is extremely flat over the entire sensitive area. There are

guides to mount an additional grating for better detector protection or to use a sample holder with drawer for activity measurement of small samples.





LB 124 SCINT in the radionuclide laboratory

Functions

The LB 124 SCINT has an attractive and ergonomic design and due to its low weight it is easy to handle. Even under averse 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 LB 124 SCINT. 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.



Calibration factors according to ISO 7503-1



Activity measurement of samples

Technical Features

- Simultaneous α - and β - γ measurement
- Calibration factors for more than 50 nuclides
- Calibration selectable according to ISO 7503-1 or related to activity on 100 cm² area
- Protective grid with high transmission
- Adjustable alarm thresholds
- Acoustic alarm
- RS232 interface

Technical Data LB 124 SCINT

Instrument	
Display	Monochrome LCD 192 x 64 pixel Electro-luminescence illumination
Radiation detector	ZnS: Ag scintillator
Detection of light	PMT
Measurement modes	α and β - γ measurement simultaneous and separate, ratemeter, scaler-timer-mode, clearance measurement, half-life measurement, survey mode
Entrance window's dimensions	118 mm x 145 mm
Sensitive area	170 cm ²
Entrance window's material	6 μ m Plastic metallized (0.4 mg/cm ²)
Protective grid	80 % Transmission
External Dimensions	240 mm x 140 mm x 110 mm (L x W x H)
Weight	1300 g (with batteries)
Alarm	acoustic with adjustable alarm thresholds
Data memory	1000 measured values with date & time
Serial interface	RS232
Power supply	3 x C size batteries LR14 alkaline 1.5 Volt or Ni-MH (HR-14) batteries 1.2 Volt, rechargeable by plug type power supply or alternatively in the wall mounting bracket
Max. operating time (without illumination)	> 50 h with alkaline batteries 7.8 Ah > 25 h with NiMH rechargeable batteries 4.5 Ah
Patents	DPMA Gebrauchsmuster 20 2006 003 818.3 May 4, 2006 US Patent No. 7,368,722 May 6, 2008

Ambient Conditions

Temperature range	-20 °C to +40 °C (operation) -40 °C to +60 °C (storage)
Relative humidity	0 % to 80 % (no condensation)
External pressure	500 to 1300 hPa (operation) 100 to 1300 hPa (storage/transport)
Protection class	IP 53 (according to IEC 60529)



Sensitivity

Efficiency (related to the activity of a source with an area of 100 cm ²)		
¹⁴ C	11 %	(β - γ -channel)
³⁶ Cl	44 %	(β - γ -channel)
⁶⁰ Co	29 %	(β - γ -channel)
¹³⁷ Cs	43 %	(β - γ -channel)
²³⁹ Pu	18 %	(α -channel)
²⁴¹ Am	21 %	(α -channel)
Background	approx. 0.1 cps	(α -channel)
	approx. 10 cps	(β - γ -channel)
Gamma sensitivity at 1 μ Sv/h (¹³⁷ Cs)	not detectable	(α -channel)
Spillover	< 100 cps	(β - γ -channel)
	< 20 %	(α in β - γ channel with ²¹⁰ Po)
	< 2 x 10 ⁻⁵	(β - γ in α channel with ⁹⁰ Sr)
Measuring range	0 to 5.000 cps	(α -channel)
(Dead time < 10 %)	0 to 50.000 cps	(β - γ -channel)
Overrange indication	at rates > 50000 cps	
Surface response uniformity	max. \pm 20 % (α channel with ²⁴¹ Am β - γ channel with ¹⁴ C point sources)	

Order Information & Accessories

		Ident. No.
Contamination-monitor	incl. 1 set alkaline batteries	43727-10
LB 124 SCINT	incl. Wall Bracket, NiMH and Power Supply	43727-20
Test source	200 Bq ⁹⁰ Sr	41872
	800 Bq ²⁴¹ Am	46611
Aluminium case	LB 124-KB	38164
Power supply	Multirange	41889
Wall bracket	for LB 124 SCINT	38789
additional protection grid	for LB 124 SCINT	45355
Data cable	D-Sub cable 3 m	26204
Rechargeable batteries	3 x NiMH 1.2 V/4.5 Ah	40650
Floor trolley	for LB 124 SCINT	41028
Sample holder with drawer	for LB 124 SCINT	40927

This instrument is not intended to be used for diagnostic and/or therapeutic purposes for human beings and is not a medical device according to the definitions of the European Council Directive 93/42/EEC concerning medical devices.
Subject to changes without prior notice

