



Contamination Monitor LB 124 SCINT – 300 for α - and β - γ -Measurement



Contamination Monitor LB 124 SCINT – 300

The LB 124 SCINT – 300 is a new contamination monitor based on innovative scintillation technology for radiation protection. The benefits of the LB 124 SCINT – 300 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
- Extremely large sensitive area



Applications

The contamination monitor LB 124 SCINT – 300 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, 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 – 300 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 a large active measurement area of 345 cm². Its sophisticated reflector geometry ensures that the response is extremely flat over the entire sensitive area. The large area supports faster measurements with lower effort and increase safety.



LB 124 SCINT – 300 in the radionuclide laboratory



Versatile and flexible



Contamination monitoring with large sensitive area

Functions

The LB 124 SCINT – 300 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 a large high-resolution display with background lighting.

A few directly accessible function keys suffice to operate the LB 124 SCINT – 300. The instrument's surfaces can be easily 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.

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 – 300

Instrument	
Display	Monochrome LCD 192 x 64 pixels 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	150 mm x 230 mm
Sensitive area	345 cm ²
Entrance window's material	6 μ m Plastic metallized (0.4 mg/cm ²)
Protective Grid	80 % Transmission
External dimensions	260 mm x 178 mm x 150 mm (L x W x H)
Weight	1750 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 NiMH (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 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	12 %	(β - γ channel)
³⁶ Cl	44 %	(β - γ channel)
⁶⁰ Co	29 %	(β - γ channel)
¹³⁷ Cs	44 %	(β - γ channel)
²³⁹ Pu	18 %	(α channel)
²⁴¹ Am	22 %	(α channel)
Background	approx. 0.1 cps (α channel) approx. 15 cps (β - γ channel)	
Gamma sensitivity at 1 μ Sv/h (¹³⁷ Cs)	not detectable (α channel) < 100 cps (β - γ channel)	
Spillover	< 20 % (α to β - γ channel with ²¹⁰ Po) < 2 x 10 ⁻⁵ (β - γ to α channel with ⁹⁰ Sr)	
Measuring range (Dead time < 10 %)	0 to 5.000 cps (α channel) 0 to 50.000 cps (β - γ channel)	
Overrange indication	at rates > 50.000 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.
LB 124 SCINT – 300	Basic unit	48002
Test source	200 Bq ⁹⁰ Sr	41872
	800 Bq ²⁴¹ Am	46611
Aluminium case	LB 124/300-KB	49700
Power supply	Multirange	41889
Wall bracket	for LB 124 SCINT – 300	51374
Additional protection grid	for LB 124 SCINT – 300	49048
Data cable	D-Sub cable 3 m	26204
Rechargeable batteries	3 x NiMH 1.2 volt/4.5 Ah	40650
Floor trolley	for 1 x LB 124 SCINT – 300	49826
Floor trolley	for 2 x LB 124 SCINT – 300	56356
Floor trolley	for 3 x LB 124 SCINT – 300	56946

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.

