RADIATION PROTECTION

Contamination Monitor LB 124 B (Xenon) for β-γ-Measurement

BERTHOLD TECHNOLOGIES

Contamination Monitor LB 124 B (Xenon)

The beta-gamma contamination monitor LB 124 B for the measurement of radioactive contamination on surfaces is based on the well proven Xenon filled proportional counter technology. This detection technique provides extremely high sensitivity for beta-particle and also for gamma radiation. The instrument is therefore ideally suited for the measurement of photon emitting radionuclides as widely used in nuclear medicine as well as in other laboratories and environments.

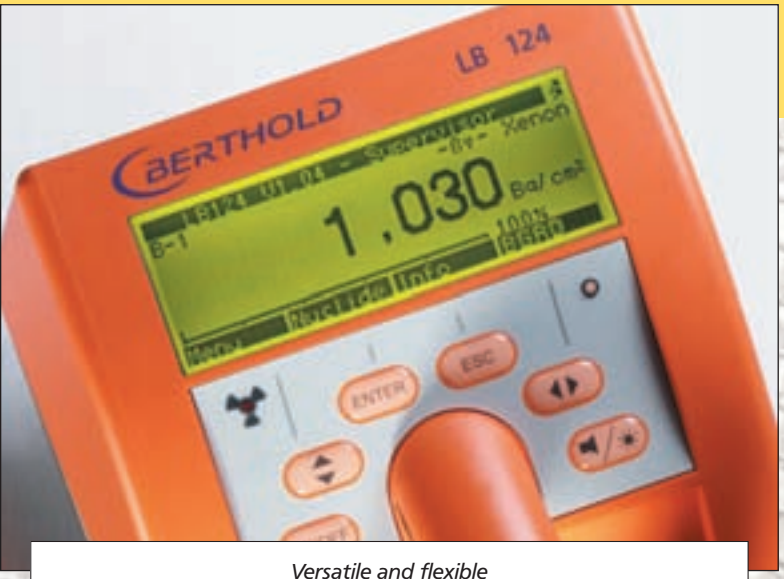
Applications

The contamination monitor LB 124 B 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 radio-active beta-gamma contaminations on surfaces such as floors, walls, desks, objects, clothing or skin.

Description

The contamination monitor LB 124 B is a portable battery operated instrument with a sensitive area of 150 cm^2. It comprises a sealed Xenon filled proportional counter tube, a microprocessor board with display unit, as well as an amplifier and discriminator module with high voltage supply for signal processing. 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 B in the radionuclide laboratory



Versatile and flexible

Activity measurement of samples

Functions

The LB 124 B 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 B. 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

- **Calibration factors for more than 50 nuclides**
- **Calibration selectable according to ISO 7503-1 or related to activity on 100 cm² area**
- **Protection grid with high transmission**
- **Adjustable alarm thresholds**
- **Acoustic alarm**
- **RS232 Interface**

Technical Data LB 124 B (Xenon)

Instrument	
Display	Monochrome LCD 192 x 64 pixel Electro-luminescent-illumination
Radiation detector	sealed proportional counter tube with Xenon filling
Measurement modes	Ratemeter, scaler-timer-mode, clearance measurement, half-life measurement, survey mode
Entrance window's dimensions	100 mm × 150 mm
Sensitive area	150 cm^2
Entrance window's material	10 µm Titanium (approx. 5 mg/cm^2)
Protective grid	80 % Transmission
External dimensions	240 mm x 140 mm x 110 mm (L x W x H)
Weight	1620 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)	> 100 h with alkaline batteries 7.8 Ah > 50 h with NiMH rechargeable batteries 4.5 Ah
Patents	DPMA Gebrauchsmuster 20200600381 8.3 May 4, 2006 US Patent No. 7,368,722 May 6, 2008

Ambient Conditions	
Temperature range	-15 °C to +50 °C (operation) -20 °C to +70 °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 64 (according to IEC 60529)

Sensitivity	
Efficiency (related to the activity of a source with an area of 100 cm^2)	
^{14}C	2 %
^{18}F	17 %
^{36}Cl	24 %
^{60}Co	26 %
^{99m}Tc	2.6 %
^{131}I	17 %
^{137}Cs	20 %
^{241}Am	11 %
Background	approx. 10 cps

Order Information & Accessories		Ident. No.
Contamination Monitor	incl. 1 set alkaline batteries	36516-10
LB 124 B	incl. Wall Bracket, NiMH and Power Supply	36516-20
Test source	200 Bq ^{90}Sr	41872
Aluminium case	LB 124-KB	38164
Power supply	Multirange	41889
Wall bracket	for LB 124 B	38789
additional protection grid	for LB 124 B	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 B	41028
Sample holder with drawer	for LB 124 B	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.

ISO 9001 BERTHOLD Quality you can trust

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