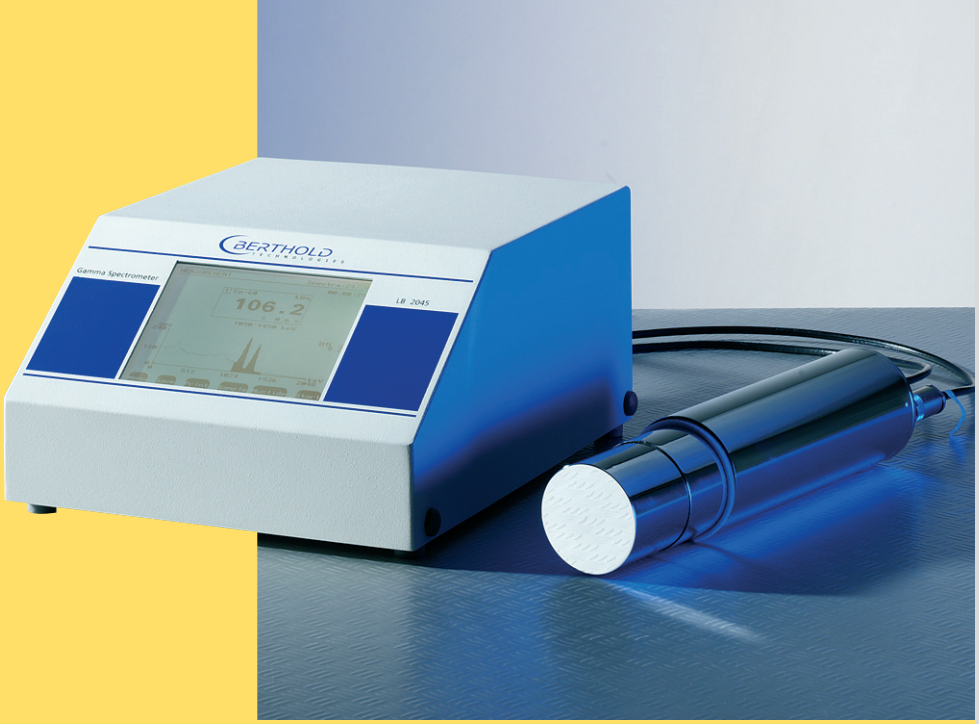

Gamma Spectrometer
LB 2045

RADIATION PROTECTION

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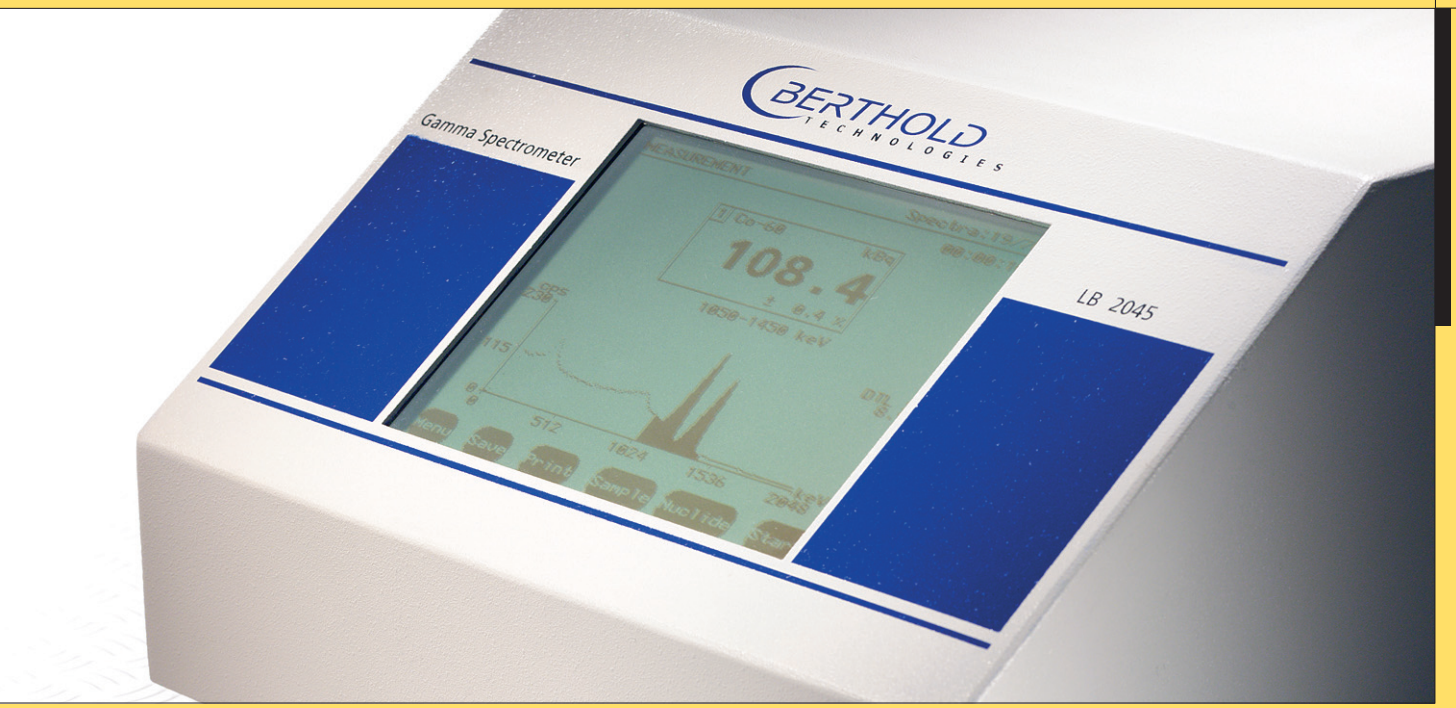
TECHNOLOGIES

Gamma Spectrometer LB 2045



The LB 2045 is a modern gamma spectroscopy system for activity measurements in laboratories.
It is easy to operate and provides quick and reliable measurement results which are presented clearly arranged on a large graphical display with touch panel.
The instrument is ideally suited for nuclide-specific activity measurements in the radionuclide laboratory.

Application

The gamma spectrometer LB 2045 has been designed for use in nuclear medicine, e.g. for in-vitro tests, radio-immunoassays or for the analysis of environmental samples, e.g. waste water, or for the detection of extremely low activities in food samples.
Various scintillation probes are available, e.g. for Marinelli beakers, or as 2" well-type crystals.

System Description

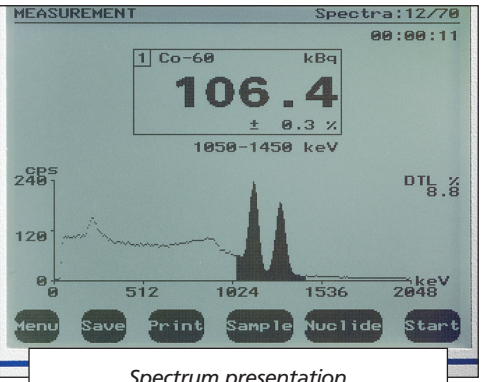
The measurement electronics LB 2045 is a modular designed 1/2 19" system accommodated in a desktop housing comprising computer unit, graphical display with touch panel and power supply unit.
For data acquisition the measurement electronics includes two additional plug-in cards, a high voltage unit with preamplifier and an ADC for the acquisition of spectra.
The power supply unit is designed for all typical voltages from 90 – 260 VAC and 50 – 60 Hz; switch-over is not required.

LB 2045 with LB 6628-1 U

A 2" well-type detector as integral line is used as standard scintillation probe.
The lead shielding of the 2" well-type crystal for the lab table has a thickness of approx. 35 mm on all sides. Moreover, a mobile lead chamber is available for 2" probes for Marinelli beakers (0.5 l) or well-type samples with a wall thickness of 50 mm lead.
Thus, a large range of application options is available.

Function Description

The measurement electronics LB 2045 is operated via softkeys (graphical buttons on the display) which are queried via a pressure-sensitive foil (touch panel). This allows very intuitive user guidance.
Pulse height spectra can be depicted graphically and evaluated, for example, via "regions of interest". Several service functions are available: background measurement, energy calibration and spectrum recording.
For single sample measurements there is an interactive start and stop mode with corresponding protocol printouts. To facilitate measurement operation, a comprehensive nuclide library with one parameter set for each nuclide is available to the user.
The LB 2045 supports communication with an external PC via RS232 interface.
Thus, it is possible to query and set parameters on the PC. Also, stored measurement data can be queried from the PC and processed on the PC.
New program versions can easily be downloaded from PC to the flash eprom using a terminal program.



Spectrum presentation

Parameters and service functions are contained in a hierarchically structured, very clearly arranged and user-friendly menu.

Technical Features

- Connection for scintillator probes (NaI, CsI, BGO)
- 3 different energy ranges
- Spectrum presentation (1024 channels)
- Graphical display (320 x 240) with touch panel
- One or two energy windows
- Nuclide library
- Storage of spectra or ROI data
- Half-life correction
- Weight entry and spillover correction
- Real-time clock
- RS232 interface for printer/PC

Technical Data LB 2045

Measurement/Spectrum

ADC	1024 channels
	7 µs max. conversion time
Energy ranges	0 – 256 keV
	0 – 1024 keV
	0 – 2048 keV
Energy calibration	non-linear empirical function
	(polynomial fit)
Region of interest	max. 2 ROIs
Nuclide library	max. 50 nuclides

Data Acquisition/Computer

Processor	Motorola MC68340 32 bit 16 MHz
Real-time clock	Integrated crystal
	Frequency tolerance: 50 ppm
	Ageing: 5 ppm/year
Display/Touch panel	Graphical LC display
	320 x 240 pixels
Memory	max. 70 spectra or
	800 ROI values
Acoustic signal	Piezo signal generator,
	83 dB in 10 cm distance
Serial interface	Asynchronous serial interface RS 232,
	Cable length max. 30 m, transfer rate
	2400 to 38400 baud selectable
	Parameter: 8 data bits, 1 start bit, 1 stop
	bit, no parity, RTS/CTS handshake
Program	can be downloaded via serial interface
Languages	German, English
Access protection	Password

General Specifications

High voltage supply	0 – 1300 Volt
	Polarity positive
	Resolution 12 bit
Power supply	Wide-range input
	85 – 264 VAC, 47 – 65 Hz
Fuse	2 A, slow-blow for 250 VAC supply
	3 A, slow-blow for 110 VAC supply
External dimensions	245 mm x 145 mm x 325 mm (WxHxD)
Protection type	IP54
Temperature range	-5 °C to +40 °C
Relative humidity	0 % – 90 %, no condensation
Weight	3.3 kg

Accessories

Probes

Sz 50 U 8S8/2E-X scintillation probe

NaI crystal 2" x 2" , with photomultiplier and voltage divider
Resolution 7.5 % (FWHM) for ^{137}Cs 661 keV
External diameter 65 mm, with complete cable set 2 m

Sz 50 U 8SF8/2E-X scintillation probe

NaI crystal 2" x 2", well-type Ø 19 mm x 39 mm)
with photomultiplier and voltage divider
Resolution 8.5 % (FWHM) for ^{137}Cs 661 keV
External diameter 65 mm, with complete cable set 2 m

LB 6628-1 U scintillation probe with lab table shielding

NaI crystal 2" x 2", well-type (Ø 19 mm x 39 mm)
with photomultiplier and voltage divider
Resolution 8.5 % (FWHM) for ^{137}Cs 661 keV
All-sides approx. 35 mm Pb, with complete cable set
Weight approx. 20 kg

Shielding

LB 7428 A lead chamber for 2" probes
50 mm lead shielding for 0.4 l Marinelli beakers or samples for well-type detectors
Weight approx. 75 kg

Test source

Cs-137 test source, 37 kBq – a license may be required with shielding and storage container

Printer

with serial interface

Subject to changes without notice.

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