

# LB 790

## 10-fold Low Level Alpha-Beta Counter

### Highlights

Simultaneous alpha and beta measurement for 10 samples with 60 mm diameter

Unique Radon suppression method with O-ring sealed sample holder.

Large Guard Detector covering all Sample Detectors

100 mm lead shielding in all directions for optimal low background performance.

Modular Sample Detector construction (2 detectors per module).

Enhanced availability and ease of maintenance:

- Window replacement per module
- Minimal lead shield removal to replace modules
- Broken module does not impair the rest of the system
- Easier decontamination
- Improved EMC ruggedness



### Applications

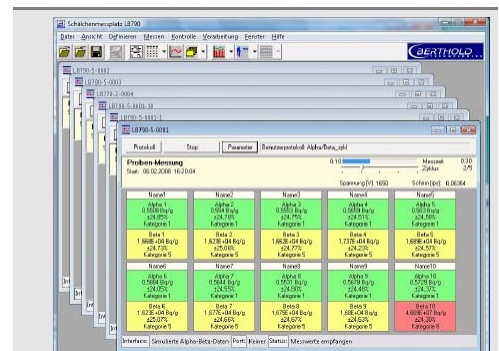
- Environmental monitoring
- Water treatment plants
- Nuclear Facilities
- Nuclear Power plant Labs

### Revised PC Software package

Permanent data storage .NET .XML

Service functions:

- Plateau, Radionuclide library,
- Background, Calibration, System test



## Equipment concept

The alpha/beta measuring system allows for the simultaneous determination of alpha and beta activities in different samples for various applications such as: nuclear facilities or nuclear reprocessing plants, wipe tests or as planchet sample residues. Environmental samples or filters from air sampling units can easily be measured. The detection limit depends mainly on the size of the detector, the measuring geometry, the system background and the sample measurement time.

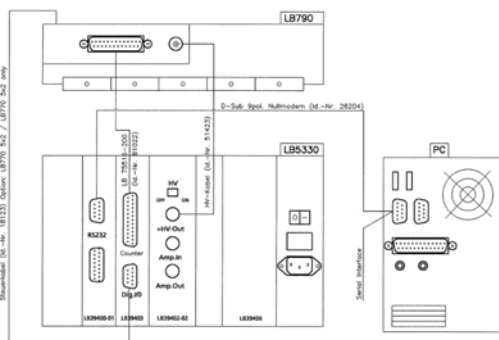
The LB790 has 5 Dual Detector modules with two 60mm diameter proportional counter detectors each with a 100 mm lead shielding in all directions.

A large guard detector is located directly on top of the Sample detector modules and is using an Anti-coincidence stage to eliminate hard gamma radiation influence (cosmic) from the (Beta) Sample counts.

The sample is placed in the counter on a sliding drawer which allows maximum planchet heights of 8mm and 60 mm diameter. The detector provides simultaneous and separate determination of the alpha and beta activity with a detection limit of approx. 0,01 Bq for alpha and/or 0,02 Bq for beta (CI-36), based on a 1hr counting time.

A Micro-switch array verifies if the sample drawer is properly inserted in the measuring position and issues a warning signal if not.

The Detector unit is connected to a front-end Electronics LB5330 which handles the High Voltage settings of the unit and pre-processes the detector signals. The LB5330 is connected to the PC with an RS232/USB connection.



*The measuring system offers a flexible, high performance Low Background measurement solution for applications, where Alpha / Beta gross counting to the lowest achievable levels is required.*

## Revised AMS Software (32bit)

Future oriented programming technology with .NET and .XML storage format

LIMS connectivity

Input parameters import, Data export via Excel sheet for reporting or LIMS input.

Storage of Backgrounds, Calibrations, QA checks in historical files with trend graphs

Configurable software for single or multiple probe detectors (LB770/LB790/LB761 detector series)

Retraceable unit calculations & Algorithms

Extended User protocols with up to 8 Categories for Alpha & Beta measurements per individual Detector

Nuclide list with nuclide properties

Separated list for Check & Calibration sources

Management of print-out data inside User protocol.

Editable spreadsheet view in Set-up dialog (add rows & columns)

Automatic fill down for repetitive measurements in measurement profile.

Interface to the LB5330, downward compatible with the LB530-PC front end electronics (SW upgrades)

## Technical Data

### LB790 Detector Modules:

Typical Background:

Alpha-Rate: 0.045cpm

Beta-Rate: 0.7cpm

Typ. Efficiency Alpha-Radiation:

<sup>241</sup>Am: 34%

<sup>210</sup>Po : 37%

Typ. Efficiency Beta-Radiation:

<sup>14</sup>C: 26%

<sup>36</sup>Cl: 50%

Counting Gas: P10 or Ar/CO2

### Dimensions

850x620x520 mm<sup>3</sup> (LxHxD) incl. cover

**Weight** : appr. 1150 kg

### Power Requirements

90 – 260 V AC 50/60 Hz

### Operating Temperature

5– 40 °C



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