

Series 6LB™

Automatic Low Background Alpha/Beta Counting System



KEY FEATURES

- 2.25" Gas Flow Proportional Counter with 50 or 100 sample capacity
- Complete frontal access with no need to lift lead bricks to access the detector – changer slides away from lead castle
- Integrated touch screen interface
- USB Communication protocol
- Compatible with Apex-Alpha/Beta™ software V2.1 or higher
- Coated and bolted lead shield
- "Lock and Load" easily removable and pre-loadable sample stacks
- Gasless Anti-Coincidence cosmic Guard Detector
- Much lower gas consumption than legacy systems
- Integrated self-diagnostics and environmental monitoring for temperature, humidity and barometric pressure
- NFC/RFID Sample tagging
- Available barcode reader and sample camera
- CE and RoHS compliant

DESCRIPTION

The Gas Flow Proportional Counter (GFPC) has been the preferred analysis instrument for alpha/beta measurements for decades. The GFPC's unique combination of low background and high efficiency make it ideal for a variety of sample types including air filters, water samples, swipe/smears, soil samples, and many others.

Mirion's new Series 6LB counter traces its lineage back to the original Canberra™/Tennelec™ LB5100 (Series 1) counter developed in the 1970's and is a direct replacement for the Series 5 XLB™ counter. The heart of the Series 6LB counter is a sample changer that is functionally similar to the one introduced in the 1970's, but has

been updated and improved many times over. In a nod to backward compatibility, the Series 6LB counter can still read the traditional binary coded decimal (BCD) sample carriers. With the addition of the optional barcode reader (S6-BR), the Series 6LB counter will also identify 2D barcodes, newer 3D QR type codes, and even RFID tags through the use of near field communication (NFC) technology. An additional benefit of the barcode reader is that the unit can be configured to automatically snap a picture of the sample to verify that it was inserted correctly.

Touch Screen

One of the most obvious differences between the Series 5 XLB counter and the new Series 6LB system is the addition of a tablet like touch panel on the front of the instrument. This interface provides unparalleled ease of use enabling daily checks and routine counts to be performed directly from the touch panel while still saving data into the SQL Server database on the connected Windows 10 host computer running Apex-Alpha/Beta software.



Guard and Sample detectors easily slide out of shield for maintenance

Series 6LB™

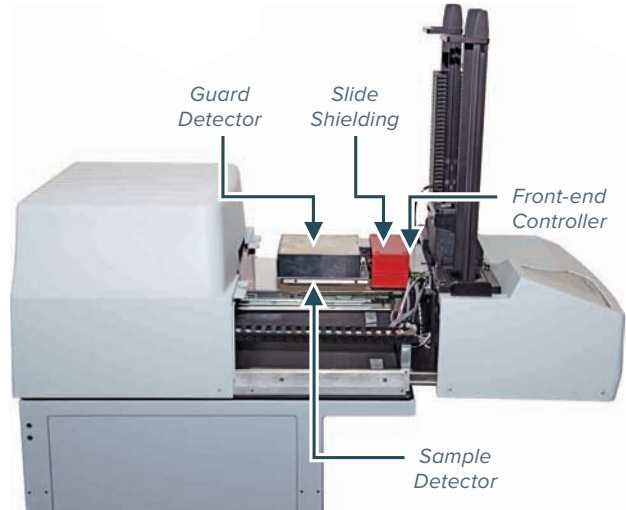
Lock and Load Sample Stacks

Another nice new feature is the addition of the lock and load removable sample stacks. Samples can be loaded onto the stacks and stored independent of the instrument. This could be useful for samples that require a later recount or just to preload the stack without the risk of dropping items into the mechanism.



All older models used a shield that consisted of raw lead with no coating. The Series 6LB counter uses a coated shield to aid in protecting the workforce from accidental lead exposure.

Easy Detector/Electronics Access

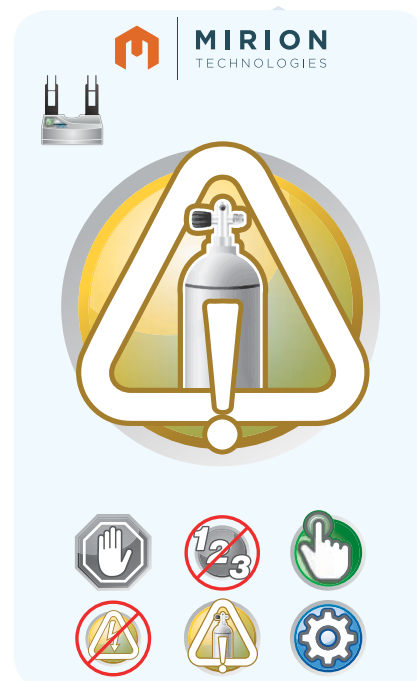


Integrated Self-Diagnostics

The Series 6LB counter includes integrated self-diagnostics to alert users in the event of a problem. This capability has been expanded from previous models to include the monitoring of environmental conditions including ambient temperature, pressure and humidity. The LCD panel provides intuitive, icon based information including system health to be displayed directly on the unit with no need to access the software.

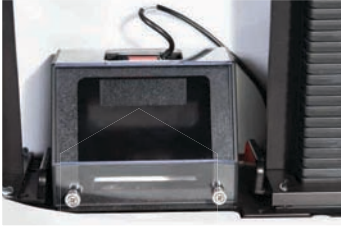
Front Access and Coated Shielding

The Series 6LB counter is smaller and lighter than the original LB5100 counter. Previous models up to and including the Series 5 XLB counter required space behind the unit to access the detector through removal of lead shielding bricks. The Series 6LB counter uses the novel “system on slide” concept where the shield is fixed in place while the entire sample changer and detector smoothly slides out and away from it. The detector chamber can be accessed without lifting any bricks.



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Easy Sample Access



Sample access door closed for counting



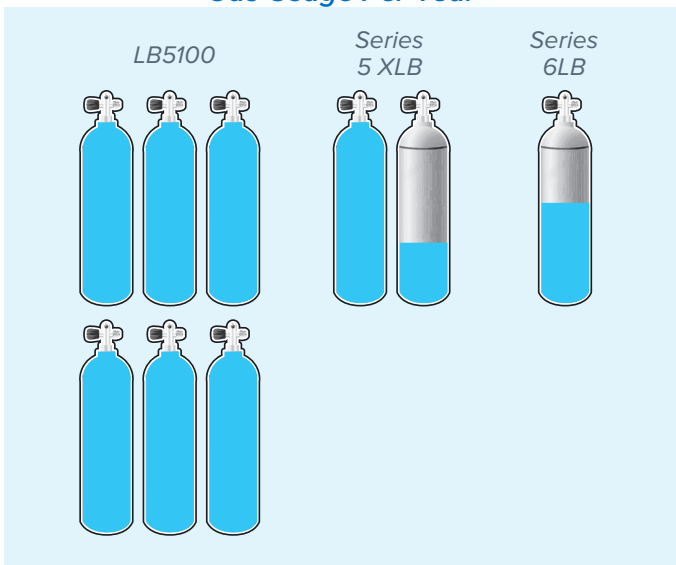
Door open for sample access

Gasless Guard Detector

The Series 6LB counter has improved gas usage compared to the Series 5 XLB counter. It uses a new, innovative guard detector that does not require P-10 gas. A gasless guard detector allows for the gas usage to be optimized for the sample detector only. The life span of a standard sized P-10 bottle may now be measured in years rather than weeks or months!

- Previous generation Series 5 XLB counter used less P-10 gas than earlier LB5100 systems
- Series 6LB counter has better gas management technology, but the newly designed plastic scintillation guard detector saves even more gas
- Without a gas guard detector, the P-10 flow rate can be drastically reduced!

Gas Usage Per Year



SPECIFICATIONS (Preliminary – subject to change)

* All specifications are based on measurements performed at a Mirion manufacturing facility with 5.7 cm (2.25 in.) detector with ultra-thin window, unless noted otherwise.

PERFORMANCE

Background:

- Gross (alpha+beta): ≤ 1.0 cpm
- Alpha: ≤ 0.10 cpm
- Beta: ≤ 0.9 cpm

Efficiency:

- 4π efficiency measured with a NIST traceable standard point source 5.08 x 0.3 cm (2 in. x 1/8 in.) planchet in 0.3 cm (1/8 in.) insert.
- Warranty
 - Alpha (^{210}Po): $\geq 38\%$
 - Beta ($^{90}\text{Sr}/^{90}\text{Y}$): $\geq 45\%$
- Counting efficiency is dependent on operating voltage, source thickness and distance from detector. Backscattering of high energy emitters produces higher than expected efficiency.

Spillover:

- $\leq 1.0\%$ ^{210}Po alpha into beta channel with the system adjusted for a $\leq 0.1\%$ spillover of ^{90}Sr beta into the alpha channel.

Detector Plateau:

- Alpha (^{210}Po) – $\leq 2.5\%$ slope/100 V: ≥ 800 V plateau
- Beta (^{90}Sr) – $\leq 2.5\%$ slope/100 V: ≥ 200 V plateau

Sample Count Rate:

- 500000 cpm with $\leq 1.5\%$ deadtime loss

Counting Time Preset:

- Adjustable between 0.2 and 9999 minutes

PHYSICAL

Sample Changer Capacity:

- 50 or 100 samples - dependent on model

Weight:

- Net weight less cart – standard system 324 kg (716 lb).
- Net weight cart with casters 54 kg (120 lb).

Dimensions: (Height x Width x Depth)

- Table Top Model – 37 x 58 x 76 cm (14.5 x 23 x 30 in.)
- With 50 Sample Capacity – 75 x 58 x 76 cm (29.5 x 23 x 30 in.)
- With 100 Sample Capacity – 124 x 58 x 76 cm (49 x 23 x 30 in.)
- Cart With Casters – 76 x 58 x 76 cm (30 x 23 x 30 in.)

POWER REQUIREMENTS

The Series 6LB counter is equipped with a universal power supply and automatically adapts to voltage and frequency.

- 100–240 V ac at 50/60 Hz.
- 100 W maximum.

Series 6LB™

ENVIRONMENTAL

- Operating Temperature – 0 to 50 °C (32 to 122 °F)
- Operating Humidity – 0 to 80% relative, non-condensing
- Meets the environmental conditions specified by EN 61010, Installation Category I, Pollution Degree 2

ORDERING INFORMATION

The Series 6LB counter uses a simplified model strategy. All models will include the coated lead, Monitor arm and keyboard tray.

The benefits of purchasing the installation (LB-INSTS6) include installation and familiarization training by a qualified Mirion Service Engineer. Systems that are self-installed will still retain the one year warranty period, but this will be a RETURN TO FACTORY warranty. Systems with the LB-INSTS6 will include a one year ONSITE warranty. Also, on a self-installed system the warranty period will begin when the unit is delivered to the customer; if Mirion installs the system the period will begin upon acceptance by the customer.

SYSTEM MODELS

S6LB2050 – Series 6 2.25" DET, 50 SAMPLES

Basic S6LB counter, Including:

- 50 sample capacity masts
- 2.25" gas flow detector.
- 4" Coated shielding
- Gasless guard detector.
- END, CAL, QC, & Blank Carriers
- GROUP PLATES A-J
- Tennelec Style Sample Carriers 1-50
- 50 Each 2" x 1/4" Inserts
- Standard Height Cart (S6-CART)
- Articulating Monitor Arm
- Keyboard Tray

S6LB2100 - Series 6 2.25" DET, 100 SAMPLES

Basic S6LB counter, Including:

- 100 sample capacity masts
- 2.25" gas flow detector.
- 4" Coated shielding
- Gasless guard detector.
- END, CAL, QC, & Blank Carriers
- GROUP PLATES A-J
- Tennelec Style Sample Carriers 1-100
- 100 Each 2" x 1/4" Inserts
- Standard Height Cart (S6-CART)
- Articulating Monitor Arm
- Keyboard Tray

S556 Apex-Alpha/Beta Software is not included and must be purchased separately
One year return to factory warranty unless LB-INSTS6 is purchased
Professional Installation highly recommended (LBINST6-2)
Does not include barcode reader/camera (S6-BR)
Does not include PC (AB-CPU10 or equivalent)
Does not include printer

Compatible with these Sample Carriers:

- Choose one or more: S6-TN150, S6-TN51100, S6-TN101150, S6-TN1150, S6-TNU, S6-SMS, IS-PASU, IS-PASC1, IS-PASC2, IS-PASC3, IS-SASU, IS-SASC1, IS-SASC2, IS-SASC3, IS-LM1, IS-LM2, and IS-LM3

S6 OPTIONS

LBINSTS6-2 – Installation Series 6 Alpha/Beta

- On-site installation and operator familiarization.
- Adds one year on-site warranty.
- Some remote locations may require a surcharge

ACCESSORIES FOR SERIES 6 – with 2" Detector

- S6M2100 interchangeable 100 Sample MASTS
- S6M2050 interchangeable 50 Sample MASTS

S6-BR – Bar Code Reader Option

- Barcode reader
- Integrated camera

AB-GR – Dual Stage Gas Regulator

AB-CPU10 – Multi Core I7 CPU, Windows 10

- Windows 10 64 bit Enterprise
- 500 GB or more disk drive
- 8 GB or more memory
- DVD Drive
- Integrated Network Adaptor
- 19" or larger LCD monitor

