MIRION
TECHNOLOGIES

ALPHA/BETA COUNTING

Series 6LB™

Automatic Low Background Alpha/Beta Counting System

The Series 6LB is an innovative, "system on slide" gas-flow sample charger with a 5.7 cm (2.25 in.) detector.

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.
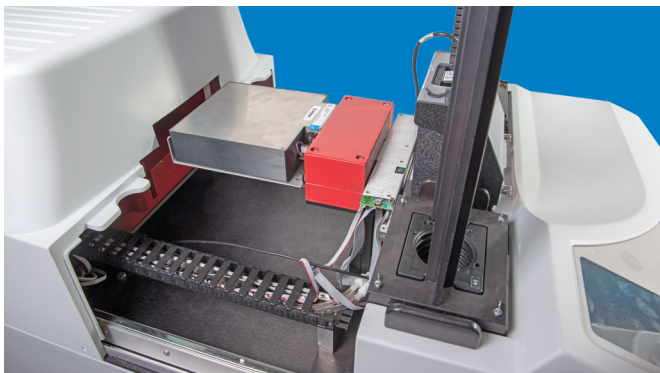
Mirion's Series 6LB counter traces its lineage back to the original Canberra™/Tennelec™ LB5100 (Series 1) counter developed in the 1970s and is a direct replacement for the Series 5 XLB™ counter. The heart of the Series 6LB counter is a sample changer that is functionally similar to the one introduced in the 1970s with updates and improvements throughout the years. 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 can identify multiple barcode symbologies including QR type codes. 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.

FEATURES

- ✔ 2.25 in. 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
- ✔ Available barcode reader and sample camera
- ✔ CE and RoHS compliant

SERIES 6LB AUTOMATIC LOW BACKGROUND ALPHA/BETA COUNTING SYSTEM

When integrated with Apex-Alpha/Beta software, users can enable automation of QA sample scheduling and including QA samples to batches as needed – streamlining operations through pre-programmed run sequences for one-touch start.

Guard and Sample detectors easily slide out of shield for maintenance

Touch Screen

The Series 6LB system includes a touch panel on the front of the instrument, similar to a tablet. 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 host computer running Apex-Alpha/Beta software.

Lock and Load Sample Stacks

Another new feature in the Series 6LB system is the lock and load removable sample stacks. Samples can be loaded onto the stacks and stored independent of the instrument. This feature supports samples that require a later recount, and enables preloading the stack without the risk of dropping items into the mechanism.
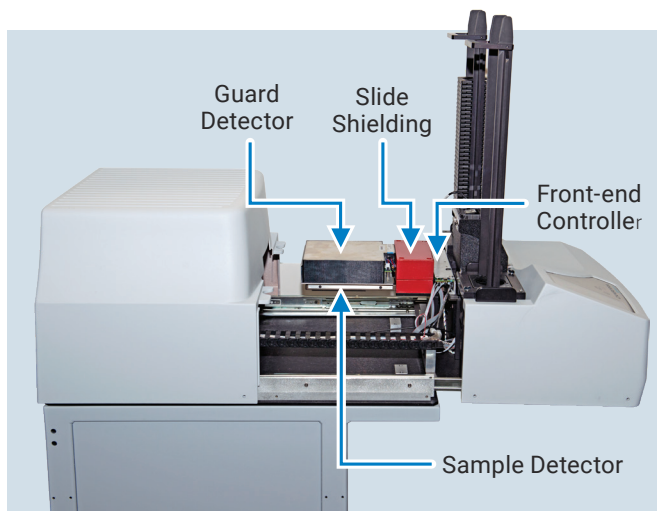

Lock and load removable sample stacks

Front Access and Coated Shielding

The Series 6LB counter is smaller and lighter than the original Series 5 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.
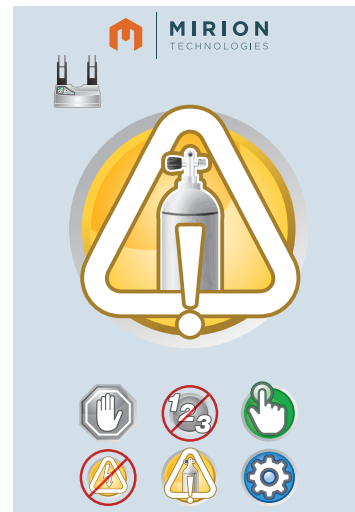
All older models used a shield that consisted of raw lead with no coating. The Series 6LB counter uses a coated shield to aid in protecting personnel from accidental lead exposure.

LOW BACKGROUND MATERIALS

Integrated Self-Diagnostics

The Series 6LB counter includes integrated self-diagnostics to alert users in the event of a problem. This capability includes 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.
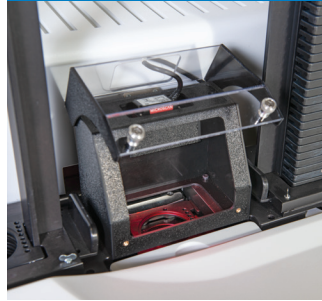
EASY SAMPLE ACCESS
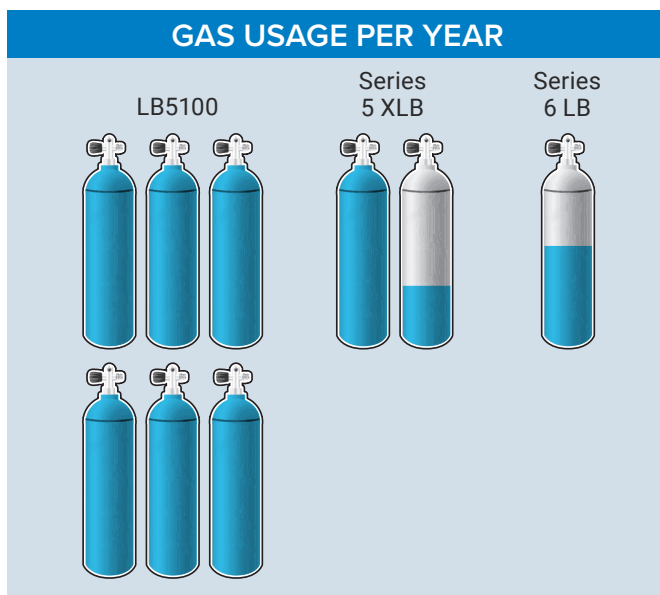

Sample access door closed for counting

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, and 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

LB5100   Series 5 XLB   Series 6 LB

SPECIFICATIONS

* All specifications are based on measurements performed at our 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: ≤ 0.75 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): ≥ 38%
  – Beta (^{90}Sr/^{90}Y): ≥ 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:

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

Detector Plateau:

- Alpha (^{210}Po) – ≤ 2.5% slope/100 V: ≥ 800 V plateau

- Beta (^{90}Sr) – ≤ 2.5% slope/100 V: ≥ 200 V plateau

Sample Count Rate:

- 500000 cpm with ≤ 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; input

- 60 W 5.0 A 12.0 V dc; output

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

SERIES 6LB AUTOMATIC LOW BACKGROUND ALPHA/BETA COUNTING SYSTEM

ORDERING INFORMATION

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

SYSTEM MODELS

S6LB2050: Series 6 2.25 in. DET, 50 SAMPLES

Basic S6LB counter, including:

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

S6LB2100: Series 6 2.25 in. DET, 100 SAMPLES

Basic S6LB counter, including:

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

S556 Apex-Alpha/Beta Software is not included and must be purchased separately

Professional Installation highly recommended (INSTALL-B)

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

INSTALL-B: Installation Series 6 Alpha/Beta

- On-site installation and operator familiarization
- Some remote locations may require a surcharge

ACCESSORIES FOR SERIES 6

With 2 in. 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

MirionSW_DesktopPC:

- Desktop computer with Win 11 Pro
- i7 processor
- 16GB RAM
- 1TB SSD
- 24" monitor