



# LABR-1.5x1.5

## LaBr<sub>3</sub>(Ce) Scintillation Detector



### KEY FEATURES

- Approximately half the FWHM of comparable sized NaI(Tl) detectors above 350 keV
- Higher efficiency than similarly sized NaI(Tl) detectors – 1.2-1.65 times above 350 keV
- Room temperature operation and same form factor as NaI(Tl) detectors
- Directly compatible with traditional scintillation detector electronics and multi-channel analyzers
- All-metal housing with a magnetic/light shield
- Generic ISOCS™ Efficiency Characterization available



### DESCRIPTION

Model LABR-1.5x1.5 Lanthanum Bromide Scintillation Detector is a medium-resolution scintillation detector featuring a 1.5 x 1.5 in. LaBr<sub>3</sub>(Ce) crystal in a hermetically sealed aluminum housing, including a photomultiplier tube, an internal magnetic/light shield, and a 14-pin connector.

The LABR-1.5x1.5 LaBr<sub>3</sub>(Ce) detector is completely compatible with the signal processing electronics normally used with NaI(Tl) scintillation detectors. However, the performance of the LABR-1.5x1.5 unit is superior to that of NaI(Tl) detectors. No adapters are required for direct connection of tube base preamplifiers or MCAs to the 14-pin PMT base. The better resolution, efficiency and relatively short decay time (16 ns) allow these detectors to be used with more complex spectra than scintillation detectors based on NaI(Tl) as well as in other applications previously thought to be too demanding for any scintillation detector. On the other hand, the LaBr<sub>3</sub>(Ce) detectors are not well-suited for low-level application due to their relatively high intrinsic background from the decay of <sup>138</sup>La.

Model LABR-1.5x1.5 detector plugs directly into the Model 2007 Tube Base as well as into Model 2007P combination tube base and preamplifier. Model 2007/2007P preamplifiers connect to an MCA or other standard signal processing electronics.

However, the most powerful combination is to use the LABR-1.5x1.5 detector with the Osprey® MCA – the Mirion all-in-one HVPS, preamplifier, and digital MCA.

An optional generic mathematical efficiency characterization is available – similar to those provided with the Mirion line of high-resolution HPGe detectors. This allows quantitative measurements to be performed without the need for calibration sources, using the Mirion mathematical efficiency calibration ISOCS/LabSOCS™ software.

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## SPECIFICATIONS

### PERFORMANCE

- RESOLUTION – 3% at 662 keV (<sup>137</sup>Cs).
- TYPICAL OPERATING VOLTAGE – 600 V dc.

### PHYSICAL

- SIZE – See outline drawing.
- WEIGHT – 0.43 kg (0.94 lb).

### ENVIRONMENTAL

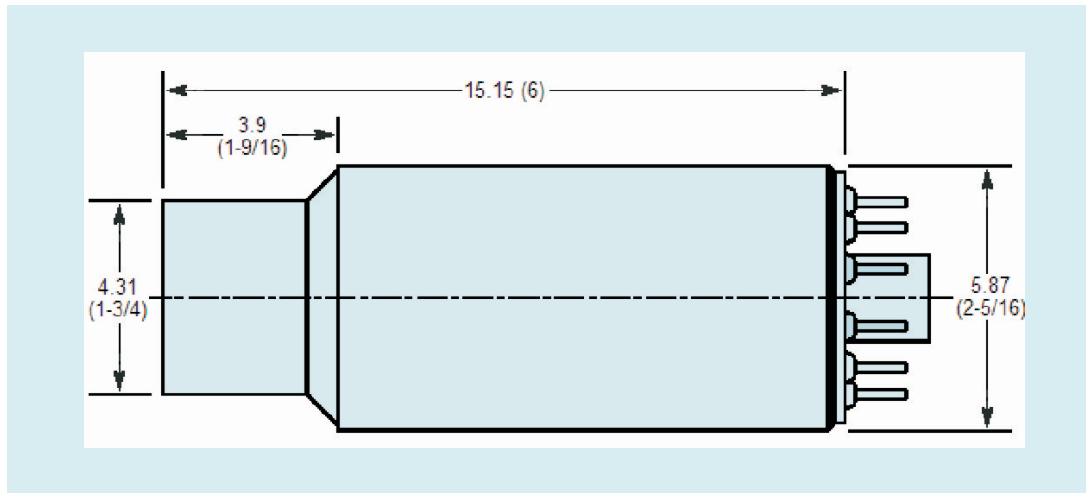
- OPERATING TEMPERATURE – +4 to +43 °C (39.2 to 109.4 °F).
- OPERATING HUMIDITY – 85% non-condensing.
- Meets the environmental conditions specified by EN 61010, Installation Category I, Pollution Degree 2.

### ORDERING INFORMATION

- LABR-1.5X1.5 LaBr<sub>3</sub>(Ce) Scintillation Detector.

### OPTIONS

- OSPREY-DTB – Digital tube-base MCA with 3 m (10 ft) USB cable, 3 m (10 ft) crossover Ethernet cable, 3 m (10 ft) Ethernet cable, PoE input injector (110/220), 1.2 m (4 ft) MCX-BNC cables, 3 pcs.
- OSPREY-PKG – Digital Tube Base MCA, S504C Genie™ 2000 InSpector™ Basic Spectroscopy Software.
- OSPREY-PKG+ – Digital Tube Base MCA, S504C Genie 2000 InSpector Basic Spectroscopy Software, S501C Gamma Analysis option.
- OSPREY-SDK – OS independent Software Development Kit.
- OSPREY-STABLE – Osprey digital MCA with NAIS-2x2 stabilized NaI and S504C Genie 2000 InSpector Basic Spectroscopy Software.
- OSPREY-E03L – 3 m (10 ft) Ethernet cable with a right angle plug for use with Model 727 laboratory lead shield.
- ISXCLLA1.5 – Generic ISOCS Efficiency Characterization.
- MODEL 727 – Laboratory Lead Shield.
- Model 2007(P) – Photomultiplier Tube Base (Preamplifier).



Dimensions in the Outline Drawing are in cm (in.) and are subject to change at the discretion of Mirion.



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