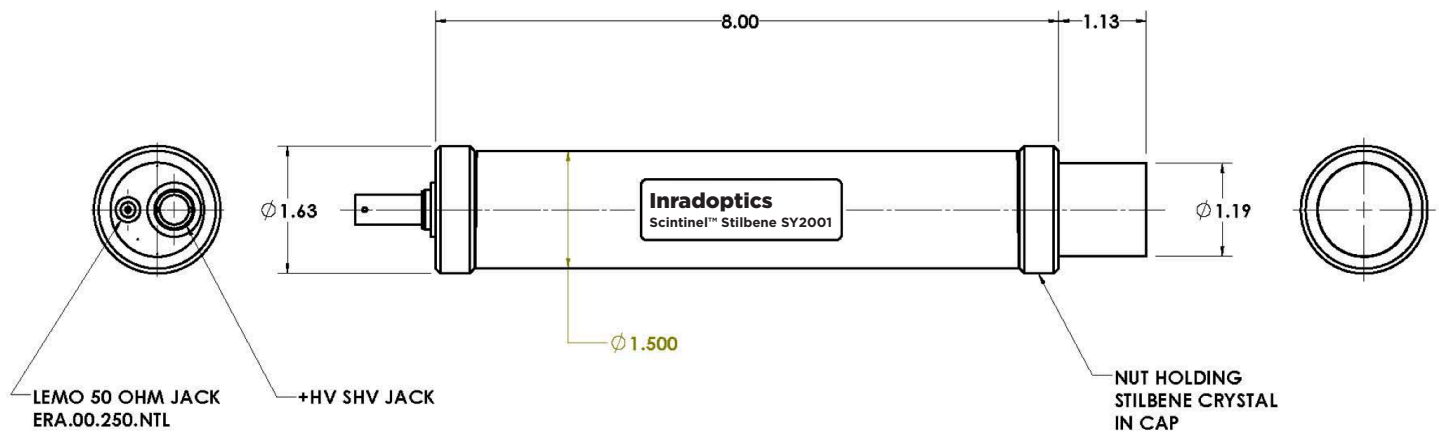




Stilbene Detector

Packaged Fast Neutron Detector



FEATURES

- Scintinel™ Brand Stilbene
- Packaged Unit
- Head-On Bi-alkali Tube
- Thin-Walled End-Cap
- Magnetic Shielding
- Wrapped Scintillator
- Windowed Scintillator
- Packaged Scintillator
- Light-Tight Simple Construction
- Readily Customizable
- Removable Light-Tight Cap
- Dynode Chain Biasing Included
- Capped Scintillator

BENEFITS

- High Efficiency for Fast Neutrons
- Ready to use
- High Efficiency
- Low Loss
- Magnetic Field Resistant
- Efficiency 2X Un-Wrapped
- Good Coupling Efficiency
- Robust Handling
- Minimal Diameter/Length
- Alternate Connections/Crystals Possible
- Replaceable Scintillation Material
- Easy Setup
- Multi-Direction Possible

OVERVIEW

Inrad Optics Stilbene, marketed under the Scintinel™ brand, is an excellent material for detecting fast neutrons in a high gamma background environment.

Characteristics that differentiate Scintinel from other stilbene crystals is the low-stress nature of the material and high purity that enables relatively large volumes to be employed while retaining superior discrimination between fast neutron and gamma particle emissions.

This stilbene detector eases the pathway for experiments involving stilbene as a detector. In this unit, a 1-inch cylinder of Scintinel™ resides under the end-cap of the assembly. The end-cap provides a light-tight enclosure for the crystal. Wall thickness of the aluminum endcap is 0.5 mm.

The scintillator crystal is wrapped and windowed to increase detection efficiency. Wrapping limits the amount of emission that could escape from surfaces of the crystal and redirects it toward the windowed exit surface of the cylinder. This wrapping increases the amount of signal by approximately a factor of two compared to an un-wrapped crystal. By bonding a window to a cylinder face, the crystal can easily be coupled to a head-on photomultiplier tube. Otherwise, the soft, delicate nature of the crystal can be easily damaged and, over time, outcoupling efficiency becomes degraded.

A head-on photomultiplier tube with a bialkali cathode is incorporated into the assembly. This head-on photomultiplier lends itself to magnetic shielding, provided by an electrically-grounded permalloy tube that surrounds the photomultiplier tube.

Connections to the assembly consist of a high voltage input and low voltage coaxial output connector.

The standard configuration is a positive high voltage input that keeps the photocathode and nearby magnetic shield at ground potential. Scintillation pulses are outcoupled through an internal capacitor.

Alternative configurations and connections are easily handled as long as the connectors fit within the limited size of the output plate. And, of course, assemblies with a larger diameter can be designed.

In addition, larger diameter photomultipliers and crystals are available.

Please, consult Inrad Optics with your preferred configuration requirements.

Below is shown an example of an alternate configuration.

