

## Open Face Detectors Data Sheet

### Alpha Spectra, Inc.

#### Grand Junction, Colorado

Open face detectors offer the customer the flexibility of controlling the interface of the crystal package to the photomultiplier tube (PMT). The open face detector is designed to be used in a laboratory environment. However if the user carefully designs an over package to compensate for mechanical and thermal considerations the open face detector can be used in a field application successfully.

The open face detector can be mounted directly onto a PMT with a suitable interface material such as ASI optical coupling grease ASI- OPT-1. This optical coupling grease ensures that there is good transmission of the scintillation light between the crystal and the PMT at the appropriate wavelengths.

Open face applications include:

- Laboratory Facilities
- Educational Institutions
- Government Labs
- Survey Instruments/Hand Held Probes
- Industrial Process Measurements
- Medical Laboratories
- Food Monitoring Labs

The open face design package consists of crystal that is housed in an aluminum metal housing that is 0.020" thick. This wall thickness allows the user to have reasonable detection efficiency to gamma ray energies around 30 KeV. Thus the 32 KeV x-ray from Cs-137 is easily observed.

The standard open face design is a right cylinder. Examples of different sizes are shown in the photo shown here. The sizes shown are:

- 1) 4X4, 1" x 1"
- 2) 12X12, 3" x 3"
- 3) 8X8, 2" x 2"
- 4) 12X4, 3" x 1"
- 5) 2X4, 0.5" x 1"
- 6) 7X8, 1.75" x 2"

In our dimensional description we always refer to the diameter first and the thickness or height second.



From right to left, model numbers shown include: 4X4, 12X12, 8X8, 12X4, 2X4 and 7X8.

Other open face design options include:

- End wells
- Through wells
- Thin crystals with low density energy entrance windows such as aluminum or beryllium
- Multiple optical windows
- Environmental
- Ruggedized

We will be glad to discuss your custom requirements.

## Alpha Spectra, Inc. Open Face Detector Specifications

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<b>Detector Style:</b>	Standard Open Face
<b>Crystal Materials:</b>	NaI(Tl), BGO, CsI(Na), CsI(Tl)
<b>Crystal Housings:</b>	Aluminum, stainless steel
<b>Dimensions:</b>	Standard sizes are available in 1/4" increments from 0.5" to 3" in diameter and 0.5" to 3" in thickness, or as required by customer design.
<b>Energy Resolution at 662 KeV:</b>	7.5% or better (typical) depends on design configuration. 6.8% or better premium material, as tested on and in house ASI 2" PMT at at 25°C.
<b>Temperature Range during use:</b>	5°C to 50°C
<b>Temperature Range during storage:</b>	-20°C to 50°C
<b>Thermal Shock Gradient:</b>	8°C/hour maximum

Please contact Alpha Spectra, Inc. so that our design team may help you design a custom detector configuration for your application.

Alpha Spectra has manufactured over 150,000 detectors in becoming the world's second largest producer of NaI(Tl) scintillation crystals. We are proud of the manner in which our staff has worked together in developing a technology-based company with world class expertise.

Alpha Spectra, Inc. is the only American-owned company in the industry that has its own purification and growth processes. Our manufacturing process begins with exceptionally clean starting material. This material is processed using a growth technique that has been developed in house. Our high-quality detectors are assembled utilizing techniques that have been developed with over 100 years of combined working experience.

Contact Alpha Spectra, Inc. for your scintillation detector requirements and be assured that you will get personal attention.



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