

# HPGe Radiation Detector Options and Accessoires

## Detector Add-on Options

### Integrated Cryocooling System Option (-ICS, -ICS-E)

The Integrated Cryocooling System (ICS) cryostat is sealed with a cryocooler and is immune to thermal short cycling. Unlike the typical three day loss of use of the detector with a standard type cryostat, the ICS can be re-cooled immediately, minimizing any time lost for temporary warm up. The ICS is available with an internal preamplifier (-ICS) or an external preamplifier (-ICS-E).

Compatible Detector Types for -ICS: GEM

Compatible Detector Types for -ICS-E: GEM, PROFILE, GMX

### Integrated Cryocooling Low-Background System (-ICS-LB)

Low-background detector with internal preamplifier, high purity aluminum endcap, high purity aluminum window, high purity aluminum internal cup, and low-background Cu mount for the ICS Integrated Cryocooling System. The lower background material allows for lower Minimum Detectable Activity (MDA) for a specific counting time, which provides another step in increasing sample throughput in low-background applications.

Compatible Detector Types: GEM

### SMART-1 Option (-SMP, -SMN)

The SMART-1 option monitors and reports on vital system functions, and can save authentication codes and report the code at a later time. It has the high voltage included, so none of the instruments require an external high-voltage power supply. The SMART-1 is housed in a rugged ABS molded plastic enclosure and is permanently attached to the detector endcap via a molded-strain-relieved sealed cable. This eliminates the possibility that the detector will suffer severe damage from moisture leaking into high-voltage connectors. The SMART-1 can be positioned in any convenient place and does not interfere with shielding or other mounting hardware.

Compatible Detector Types for -SMP: GEM, PROFILE, Safeguards GEM, Actinide-85

Compatible Detector Types for -SMN: GMX, GLP, Safeguards GLP

### Ultra-High Count-Rate Preamplifier Option (-PL)

The Ultra-High Count-Rate Preamplifier (transistor-reset preamplifier), can handle input count rates up to 1,000,000 counts/s at 1 MeV and offers the added benefit of having no feedback resistor.

Compatible Detector Types: GEM, PROFILE, GMX

### Harsh Environment Option (-HE)

The Harsh Environment option is a rugged carbon fiber endcap with a sealed electronics housing featuring a replaceable desiccant pack which ensures that the electronics stay 100% dry and indicates when it needs to be replaced. GEM series detectors in PopTop capsules of 76 mm diameter or larger can be supplied with this option.

Compatible Detector Types: GEM, PROFILE, GMX

### Remote Preamplifier Option (-HJ)

This option allows all the preamplifier and high voltage connections to be outside a shield and removes the preamplifier and high voltage filter from the “line-of-sight” to the Ge crystal. For low background applications, this option eliminates any possible preamplifier or high voltage filter components that may add to the background inside a shield.

Compatible Detector Types: GEM, PROFILE, GMX, GWL

### Low-Background Carbon Fiber Endcap Options (-RB, -LB-C, and -XLB-C)

The Low-Background Carbon Fiber Endcap is as strong as Al, Mg, and Cu, creates less background, does not corrode, and can detect energies less than 10 keV. This lower background material allows for lower Minimum Detectable Activity (MDA) for a specific counting time, which provides another step in increasing sample throughput in low-background counting applications. The lower Z of Carbon Fiber provides a low-energy window without the additional background found in most alloys.

Compatible Detector Types: GEM, PROFILE, GMX

### Beryllium Window Options (-B)

Provides improved performance between 3 and 5 keV.

Compatible Detector Types: PROFILE

### Aluminum Window Option (-A)

An all aluminum endcap can be chosen if the energies of interest exceed 20 keV.

Compatible Detector Types: GMX

### Carbon Fiber Window Option (-CW)

A carbon fiber window is available for energies greater than about 8 keV. While this window does not pass all the lower energies, carbon fiber has lower Z than Al and does not have any of the hazards associated with Be.

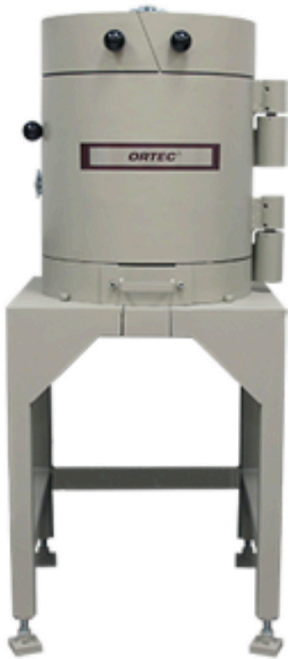
Compatible Detector Types: GMX

## Low-Background Well (-LB-AWT, and -XLB-AWT)

Low-background Well detectors are supplied with oxygen-free high conductivity (OFHC) copper endcaps with low-background high purity aluminum well tubes of 0.02 inch wall thickness.

Compatible Detector Types: GWL

## Lead Shields



**HPLBS**  
High Performance Low Back-  
ground shields



**HPULBS**  
High Performance Ultra Low  
Background Lead Shields

## Other Accessoires

- HT-1: Heater Tape
- DIM: Detector Interface Modules
- 469: For use with ORTEC Detectors
- SENSADAPTR: Needed to connect a vent line to the multi-orientation dewars
- PTPA: is one of two items needed to adapt the model VVO-2 to access the vacuum in PopTop capsules
- PTVSO: is one of two items needed to adapt the model VVO-2 to access the vacuum in PopTop capsules
- TL- 3, 6, 9, 12, 15, 18, 21 and 24 liquid nitrogen transfer lines supplied in respective lengths
- VL- 6, 9, 12, 15, 18, 21, 24 and 30 vent lines for liquid nitrogen filling supplied in respective lengths
- 496D: used to control the temperature of heater tapes
- 596-A: temperature controller for internal heating elements inside special cryostats
- 729A: liquid nitrogen level monitor
- DWR-30: 30 liter dewar
- SDT01: 220V/110V step down transformer
- 810292: or "Sieve Pill" pumping agent for the PopTop vacuum interface
- VVO-1: adapts the VVO-2 to access the vacuum in Non-PopTop cryostats
- VVO-2: vacuum valve operator and the ORTEC tooling for any ORTEC vacuum connection
- Cryosecure: compressor power controller
- B/PFA-1.2, 3.0 or 5.0 used to pressure fill portable dewars with respective volumes
- CRE-1: 4-1 cooling rod extension; used on dipstick detectors. Includes indium foil gasket
- Fill Funnel: for filling portable dewars are provided with portable detector systems with different length fill tubes according to the dewar size
- WD-30 and WD-50: withdrawal device supplied in respective dewar size. Dewar not included
- LNP-7D: probe for use with 729A
- LNP-30D-2 Probe with LN2 transfer collar for use with 729A. Fits 1.5-inch diameter cryostat (e.g., CFG-PH4, CFG-PV4). Requires DWR-30 or DWR-30-OP.
- NTC/30 (pictured) used for pressure filling the 30L bucket style dewar.
- PFB-MOD3L and PFB-MOD7L pressure fill adapters for the respective sized multi-orientation dewars.
- LNTC1.5R 1.5" Liquid Nitrogen Transfer Collar with mounting hardware.
- CFG-ADAPTOR Adaptor to increase cryostat diameter from 1.25 inch to 1.5 inch