



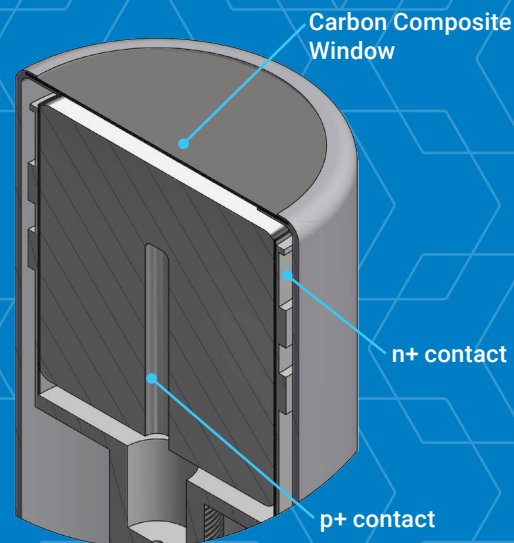
DETECTORS

# XtRa™

## Extended Range Coaxial Germanium Detectors

The Mirion XtRa unit is a coaxial germanium detector having a unique thin-window contact on the front surface which extends the useful energy range down to 3 keV. Conventional coaxial detectors have a lithium-diffused contact typically between 0.5 and 1.5 mm thick. This dead layer stops most photons below 40 keV or so rendering the detector virtually worthless at low energies. The XtRa detector, with its exclusive thin entrance window and with a Carbon Composite cryostat window, offers all the advantages of conventional standard coaxial detectors such as high efficiency, good resolution, and moderate cost along with the energy response of the more expensive Reverse Electrode Ge (REGe™) detector.

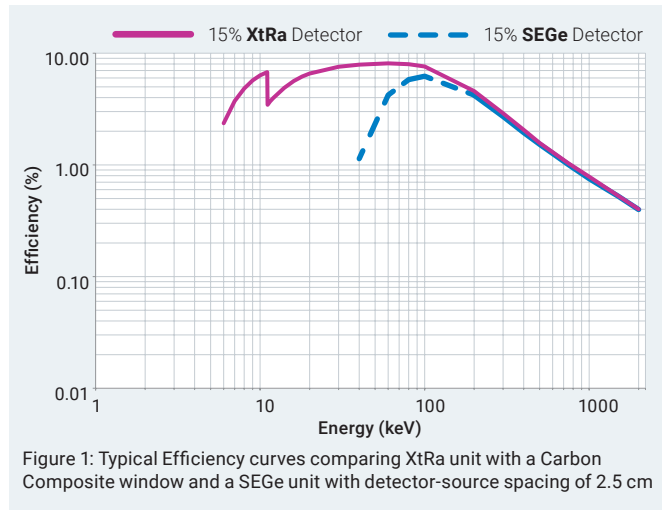
Figure 1 illustrates the efficiency of the XtRa detector compared to a conventional Ge detector. The effective window thickness can be determined experimentally by comparing the intensities of the 22 keV and 88 keV peaks from <sup>109</sup>Cd. With the standard Carbon Composite window, the XtRa detector is guaranteed to give a 22 to 88 keV intensity ratio of greater than 18:1. Aluminum windows are also available when there is no interest in energies below 30 keV and improved ruggedness is desired. If full advantage of the low energy capability (down to 3 keV) needs to be taken, non-ULB Beryllium windows may be chosen on special request after consulting the factory.



### FEATURES

- ✓ Spectroscopy from 3 keV to >10 MeV
- ✓ Wide range of efficiencies
- ✓ High resolution – good peak shape
- ✓ Excellent timing resolution
- ✓ High energy rate capability
- ✓ Equipped with Intelligent Preamplifier
- ✓ Diode FET protection
- ✓ Warm-up/HV shutdown
- ✓ USB 2.0 Serial Interface

## XtRa EXTENDED RANGE COAXIAL GE DETECTORS



### SPECIFICATIONS

#### XtRa Germanium Detector:

- General Specifications and Information

#### Standard Configuration Includes:

- Vertical Slimline™ dipstick cryostat with Carbon Composite window and 30 liter Dewar.
- Model iPA™ Intelligent Preamplifier with 3 meter bias, high voltage inhibit, signal and power cables.

See the “Cryostats, coolers & options” section on mirion.com for all information on available options and configurations.

The iPA Intelligent Preamplifier included with this style of HPGe detector has an improved, low power analog front stage providing excellent resolution and count rate performance. An integrated digital back-end makes use of the detector sensors to continuously monitor and store all relevant parameters and status information. This data, which may be trended over time, allows the user to take preventative measures if a key parameter starts to shift and ultimately improves equipment availability and productivity.

It also enables setup and tuning of the preamplifier through digital controls rather than potentiometers.

The preamplifier status information, on board log file and digital controls are accessible through a USB 2.0 serial connection and software application which is provided with the iPA unit.

See the “Intelligent Preamplifier” specification sheet for more details.

| Model Number | Typical Rel. Eff. (%) $\geq$ | Full Width Half Max (FWHM) Resolution (keV) |                   | Peak to Compton Ratio (P/C) | Peak Shape FWTM/FWHM | Endcap diameter mm (in.) |
|--------------|------------------------------|---|-------------------|-----------------------------|----------------------|--------------------------|
|              |                              | At 122 keV energy                           | At 1.3 MeV energy |                             |                      |                          |
| GX1018       | 10                           | 0.825                                       | 1.75              | 40                          | 1.90                 | 76 (3.0)                 |
| GX1020       | 10                           | 1.00  | 2.00              | 36                          | 2.00                 | 76 (3.0)                 |
| GX1518       | 15                           | 0.825                                       | 1.80              | 46                          | 1.90                 | 76 (3.0)                 |
| GX1520       | 15                           | 1.00  | 2.00              | 42                          | 2.00                 | 76 (3.0)                 |
| GX2018       | 20                           | 0.850                                       | 1.80              | 50                          | 1.90                 | 76 (3.0)                 |
| GX2020       | 20                           | 1.10  | 2.00              | 46                          | 2.00                 | 76 (3.0)                 |
| GX2518       | 25                           | 0.850                                       | 1.80              | 54                          | 1.90                 | 76 (3.0)                 |
| GX2520       | 25                           | 1.10  | 2.00              | 50                          | 2.00                 | 76 (3.0)                 |
| GX3018       | 30                           | 0.875                                       | 1.80              | 58                          | 1.90                 | 76 (3.0)                 |
| GX3020       | 30                           | 1.20  | 2.00              | 54                          | 2.00                 | 76 (3.0)                 |
| GX3518       | 35                           | 0.875                                       | 1.80              | 60                          | 1.90                 | 76 (3.0)                 |
| GX3520       | 35                           | 1.20  | 2.00              | 54                          | 2.00                 | 76 (3.0)                 |
| GX4018       | 40                           | 0.875                                       | 1.80              | 62                          | 1.90                 | 76 (3.0)*                |
| GX4020       | 40                           | 1.20  | 2.00              | 56                          | 2.00                 | 76 (3.0)*                |
| GX4518       | 45                           | 0.900                                       | 1.80              | 63                          | 1.90                 | 83 (3.25)                |
| GX4520       | 45                           | 1.20  | 2.00              | 58                          | 2.00                 | 83 (3.25)                |
| GX5019       | 50                           | 0.950                                       | 1.90              | 64                          | 1.90                 | 83 (3.25)*               |
| GX5021       | 50                           | 1.20  | 2.10              | 58                          | 2.00                 | 83 (3.25)*               |
| GX5519       | 55                           | 1.00  | 1.90              | 64                          | 1.90                 | 89 (3.5)                 |
| GX5521       | 55                           | 1.20  | 2.10              | 60                          | 2.00                 | 89 (3.5)                 |
| GX6019       | 60                           | 1.00  | 1.90              | 66                          | 1.90                 | 89 (3.5)                 |
| GX6022       | 60                           | 1.25  | 2.20              | 60                          | 2.00                 | 89 (3.5)                 |
| GX6520       | 65                           | 1.00  | 1.95              | 68                          | 1.90                 | 89 (3.5)                 |
| GX6522       | 65                           | 1.25  | 2.20              | 62                          | 2.00                 | 89 (3.5)                 |
| GX7020       | 70                           | 1.00  | 2.00              | 70                          | 1.90                 | 89 (3.5)*                |
| GX7022       | 70                           | 1.25  | 2.20              | 64                          | 2.00                 | 89 (3.5)*                |
| GX8020       | 80                           | 1.10  | 2.00              | 72                          | 1.90                 | 95 (3.75)                |
| GX8023       | 80                           | 1.30  | 2.30              | 66                          | 2.00                 | 95 (3.75)                |
| GX9020       | 90                           | 1.10  | 2.00              | 78                          | 1.90                 | 95 (3.75)                |
| GX9023       | 90                           | 1.30  | 2.30              | 70                          | 2.00                 | 95 (3.75)                |
| GX10020      | 100                          | 1.20  | 2.00              | 78                          | 1.90                 | 95 (3.75)*               |
| GX10023      | 100                          | 1.40  | 2.30              | 70                          | 2.00                 | 95 (3.75)*               |
| GX11021      | 110                          | 1.20  | 2.10              | 78                          | 1.90                 | 102 (4.0)                |
| GX11023      | 110                          | 1.40  | 2.30              | 70                          | 2.00                 | 102 (4.0)                |
| GX12021      | 120                          | 1.30  | 2.10              | 78                          | 1.90                 | 102 (4.0)                |
| GX12023      | 120                          | 1.50  | 2.30              | 70                          | 2.00                 | 102 (4.0)                |

For availability of detectors above 100% relative efficiency consult factory.

\* Note: Due to variations in crystal size endcap diameter may be larger. For guaranteed endcap diameter or custom specifications and hardware customization consult factory.

Above specifications are in accordance with IEEE Std 325- 1996. Resolution performance is tested with Lynx® digital MCA. For resolution performance guarantee using other Mirion digital MCAs consult factory.



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