



# Extended Range Coaxial Ge Detectors

(XtRa)



Nuclear



Healthcare



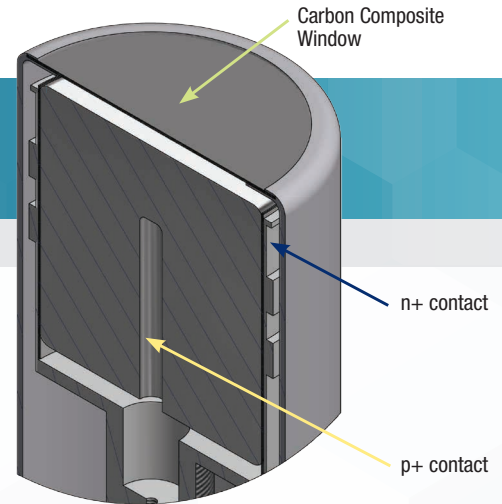
Homeland Security & Defense



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XtRa Coaxial Ge Detector

## KEY FEATURES

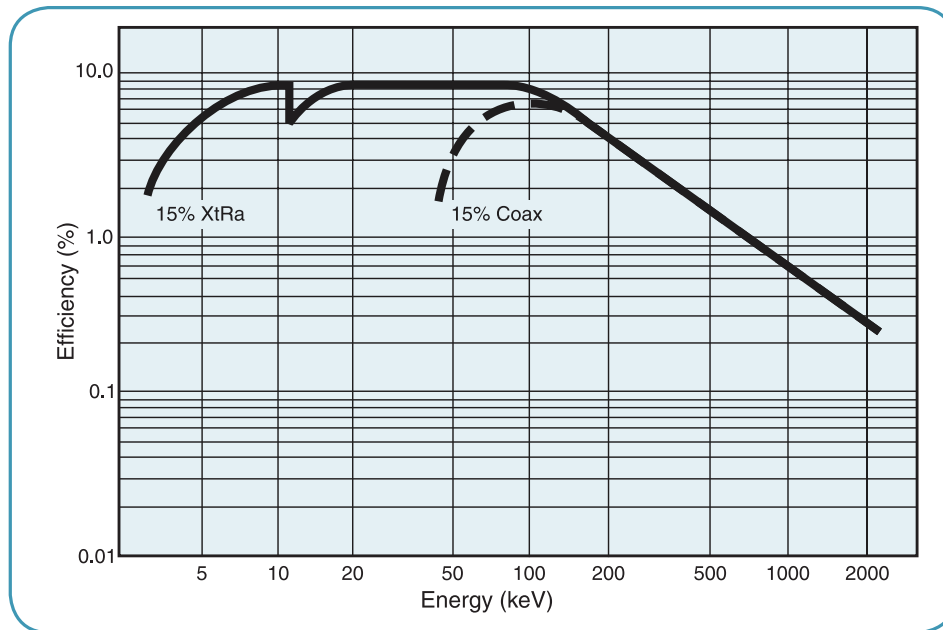
- Spectroscopy from 3 keV to >10 MeV
- Wide range of efficiencies
- High resolution – good peak shape
- Excellent timing resolution
- High energy rate capability
- Equipped with Intelligent Preamplifier
- Diode FET protection
- Warm-up/HV shutdown
- USB 2.0 Serial Interface

## DESCRIPTION

The CANBERRA XtRa 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.

The response curves below illustrate 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 0.6 mm Carbon Composite window, the XtRa detector is guaranteed to give a 22 to 88 keV intensity ratio of greater than 18:1. Beryllium and aluminum windows are also available.

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Typical Efficiency curves comparing XtRa with Be window and Coax Detectors with detector-source spacing of 2.5 cm

## 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 for all information on available options and configurations.

The Intelligent Preamplifier (iPA) 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.

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

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Model Number	Relative Efficiency (%) ≥	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	1.8	40	1.90	76 (3.0)
GX1020	10	1.00	2.0	36	2.00	76 (3.0)
GX1518	15	0.825	1.8	46	1.90	76 (3.0)
GX1520	15	1.00	2.0	42	2.00	76 (3.0)
GX2018	20	0.850	1.8	50	1.90	76 (3.0)
GX2020	20	1.10	2.0	46	2.00	76 (3.0)
GX2518	25	0.850	1.8	54	1.90	76 (3.0)
GX2520	25	1.10	2.0	50	2.00	76 (3.0)
GX3018	30	0.875	1.8	58	1.90	76 (3.0)
GX3020	30	1.20	2.0	54	2.00	76 (3.0)
GX3518	35	0.925	1.8	60	1.90	76 (3.0)
GX3520	35	1.20	2.0	54	2.00	76 (3.0)
GX4018	40	0.925	1.8	62	1.90	76 (3.0)*
GX4020	40	1.20	2.0	56	2.00	76 (3.0)*
GX4518	45	0.950	1.8	63	1.90	83 (3.25)
GX4520	45	1.20	2.0	58	2.00	83 (3.25)
GX5519	55	1.00	1.9	64	1.90	89 (3.5)
GX5521	55	1.20	2.1	60	2.00	89 (3.5)
GX6020	60	1.05	2.0	66	1.90	89 (3.5)
GX6022	60	1.25	2.2	60	2.00	89 (3.5)
GX6520	65	1.05	2.0	68	1.90	89 (3.5)
GX6522	65	1.25	2.2	62	2.00	89 (3.5)
GX7020	70	1.05	2.0	70	1.90	89 (3.5)*
GX7022	70	1.25	2.2	64	2.00	89 (3.5)*
GX8021	80	1.10	2.1	72	1.90	95 (3.75)
GX8023	80	1.30	2.3	66	2.00	95 (3.75)
GX9021	90	1.10	2.1	78	1.90	95 (3.75)
GX9023	90	1.30	2.3	70	2.00	95 (3.75)
GX10021	100	1.20	2.1	78	1.90	95 (3.75)*
GX10023	100	1.40	2.3	70	2.00	95 (3.75)*

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

Model Number	Relative Efficiency (%) ≥	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			
GX11021	110	1.20	2.1	78	1.90	102 (4.0)
GX11023	110	1.40	2.3	70	2.00	102 (4.0)
GX12021	120	1.30	2.1	78	1.90	102 (4.0)
GX12023	120	1.50	2.3	70	2.00	102 (4.0)

\* 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 CANBERRA digital MCAs consult factory.

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