



InGaAs Detectors with 77057 TE Cooler Controller.

- Large area models
- Ultrafast models
- Room temperature and cooled models
- Extended IR range models
- Pigtailed models

New models, new capabilities. Our expanded InGaAs and Ge detector line offers both the standard 1.5 Inch Series flange system models and fiber pigtailed units. Below, we detail the offerings.

DETECTORS AND APPLICATIONS

This family of InGaAs and Ge detectors covers the most frequent 0.7 - 2.5 μm NIR measurement areas for these detectors, save for those served by array devices, page 6-99.

A number of units come with a DC bias arrangement producing 1 ns to 175 ps rise times. We offer a 0.3 mm diameter device (model 71898) in an Oriel 1.5 Inch Series flange housing for easy coupling to Oriel Light Sources, Monochromators, etc. This detector exhibits a 1 ns rise time.

A set of **new** products use 50/125 μm fiber pigtailed for monitoring of fast, fiber delivered events. One of them, the 76984, is based on standard InGaAs (850-1700 nm) with a 175 ps rise time, and the other, model 76987, is an extended response IR InGaAs, with 350 ps rise time, for the 1.2-2.5 μm spectral region.

Classical Oriel InGaAs and Ge detectors are now packaged in new housings with female 1.5 Inch Series flanges and easy access to gain and filter switches. These detectors come in a matrix of amplified and un-amplified, calibrated and non-calibrated models, as well as TE cooled and room temperature versions. Their large areas make signal capture easy. The 1.5 Inch Series flange allows instant connectivity to other Oriel products. Use the Ge detectors to get beyond the 1.6 μm limit of standard InGaAs.

You will find many of these detectors on other pages of this catalog where they are matched with readout electronics like the OPM™, Merlin™, DSO/Boxcar board, or GHz board. Use these matched electronic interfaces or use your own for data acquisition. Contact an Oriel Applications Engineer if in doubt about compatibility.

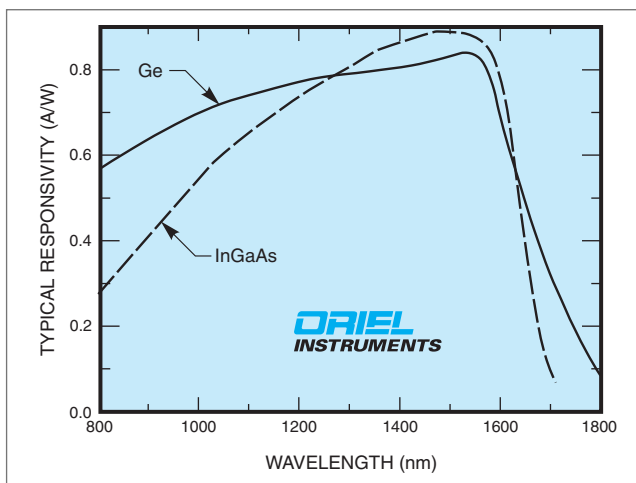


Fig. 1 Typical responsivity of InGaAs and Ge Detectors.

AMPLIFICATION

We offer detectors with a built-in transimpedance amplifier and without it. Table 1 gives the gain/bandwidth information for the built-in transimpedance amplifier. The amplifier provides transimpedance gains from 10^4 V/A to 10^9 V/A. It also offers three selectable time constant settings to allow you to match the upper limit on bandwidth with your experimental needs. Operating at the lowest bandwidth setting allows you to operate at the lowest noise levels. The amplified models require ± 15 V DC; the 70703/9 Power Supply provides the required power.

Table 1 Bandwidth Values

Time Const.	10^4 V/A	10^5 V/A	10^6 V/A	10^7 V/A	10^8 V/A	10^9 V/A
"Min"	100 kHz	100 kHz	80 kHz	8 kHz	800 Hz	80 Hz
"Med"	100 kHz	10 kHz	1 kHz	100 Hz	10 Hz	1 Hz
"Max"	1 kHz	100 Hz	10 Hz	1 Hz	0.1 Hz	0.01 Hz

CALIBRATION

We offer calibrated and standard InGaAs GE detectors. The standard models are shipped with single point calibration at 1550 nm. The calibrated InGaAs detectors come with NIST traceable calibrated responsivity factors for the 0.8 to 1.7 μm range. The Ge detectors come with NIST traceable calibrated responsivity factors for the 0.7 to 1.8 μm range.

COOLED OR ROOM TEMPERATURE?

You will do well with room temperature InGaAs and Ge devices under most measurement conditions. Both are quite stable. However, the responsivity of the diodes is sensitive to temperature changes. It can go up or down with temperature, depending on which part of the spectral range you are operating in. Therefore, whenever you are looking for measurement reproducibility of better than ~2%, temperature stabilization becomes a necessity. Our TE cooled devices, combined with the 77057/8 Temperature Controller, give you excellent stability of readings. The added benefit of TE cooling is the reduction of noise levels which allows you to reach the limits of device performance.

50 Ω TERMINATION

Use a 50 Ω termination when measuring ≤ 100 ns pulse widths or ≥ 10 MHz modulated signals to avoid electronic echoes generated by signal reflections at impedance mismatch locations.

ELECTRONIC ACCESSORIES

The 77057/8 Cooler Controller allows full function of the TE cooled devices. The 70703/9 Power Supply provides the required ± 15 V for the amplifiers.

CONNECTORS

We ship these detectors with a 6 ft (1.8 m) long BNC cable; the amplified models also include a 6 ft (1.8 m) long cable with 3 pin banana plug, for connection to the 70703/9 Power Supply.

SPECIFICATIONS AND ORDERING INFORMATION

Detector Type	Detector Size	Rise Time	Fiber/Flange	Bias	Amplified	TE Cooled	Calibrated Versions		Non - Calibrated Versions	
							Model No.	Price	Model No.	Price
InGaAs	3 mm dia.	100 ns	1.5 Inch Series Female Flange				71655		71615	
InGaAs	3 mm dia.	See Table 1	1.5 Inch Series Female Flange		✓		71892		71886	
InGaAs	3 mm dia.	100 ns	1.5 Inch Series Female Flange			✓	71656		71616	
InGaAs	3 mm dia.	See Table 1	1.5 Inch Series Female Flange		✓	✓	71893		71887	
InGaAs	0.3 mm dia.	1 ns	1.5 Inch Series Female Flange	✓			N / A		71898	
InGaAs		175 ps	50/125 μ m/SMA*	✓			N / A		76984	
IR InGaAs		350 ps	50/125 μ m/SMA*	✓			N / A		76987	
Ge	5 mm dia.	0.5 μ s	1.5 Inch Series Female Flange				71653		71613	
Ge	5 mm dia.	See Table 1	1.5 Inch Series Female Flange		✓		71627		71617	
Ge	5 mm dia.	0.5 μ s	1.5 Inch Series Female Flange			✓	71654		71614	
Ge	5 mm dia.	See Table 1	1.5 Inch Series Female Flange		✓	✓	71628		71618	

* See page 6-49 for other connector options.

77057 TE Cooler Controller, 110 V
77058 TE Cooler Controller, 220 V
70703 ± 15 V Power Supply, 110 V
70709 ± 15 V Power Supply, 220 V

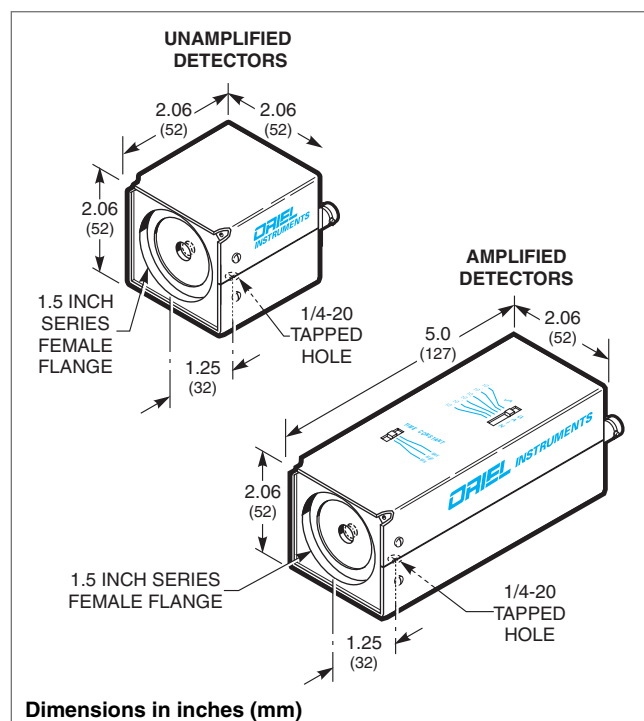


Fig. 2 Dimensional drawing of some InGaAs and Ge Detectors.