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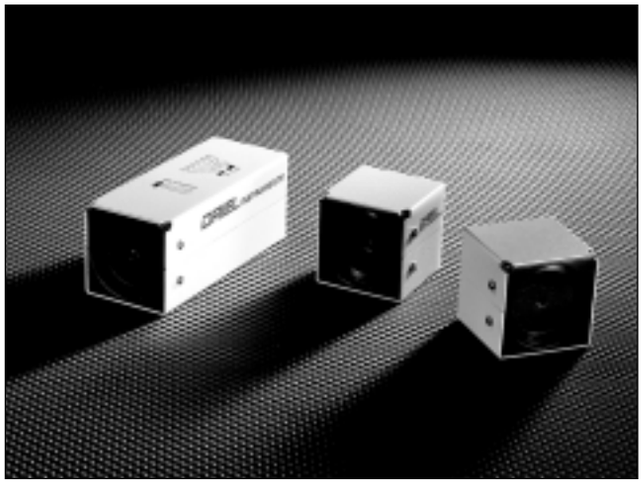
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Selection of Silicon Detectors.

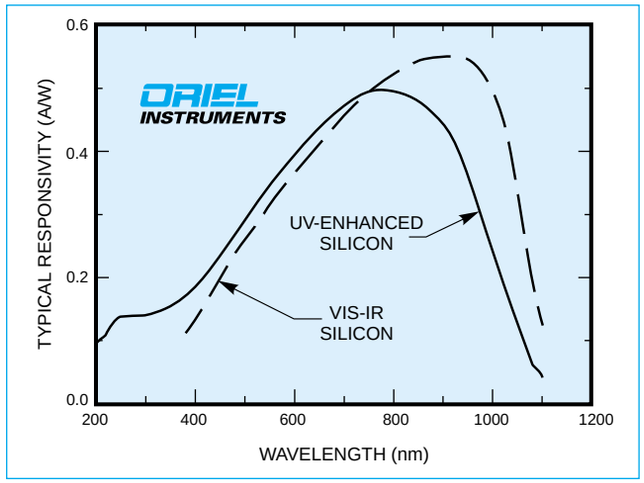


Fig. 1 Typical responsivity of Silicon Detectors.

- **Areas to 10 x 10 mm**
- **Bandwidths DC to 2 GHz**
- **Responsivities to 150 V/W, unamplified**
- **Room temperature and stabilized models**
- **Low cost model**
- **Fiber coupled models**

New models, new capabilities, new physics; old silicon keeps on getting better.

We are proud to present our updated Silicon Detector product line. Besides the easier to use models with standard Oriel 1.5 Inch Series flanges, we are introducing a low cost UV detector without the flange, for open air measurements, as well as fiber pigtailed Si detectors. Some of these are based on new technology allowing high responsivity and wide bandwidth without any external bias.

DETECTORS AND APPLICATIONS

This family of Silicon detectors covers the most frequent measurement areas for silicon detectors, save for those served by array devices, page 6-99.

The **new** low cost model, 71608, allows measurements when light tightness, such as provided by the 1.5 Inch Series flange system or fiberoptic connections, is not necessary.

The **new** devices, with internal field produced gain yielding responsivity of 150 V/W at 100 pW incident power at 788 nm, allow DC to 35 MHz (model 71876), and DC to 2 GHz (model 71875) measurements. These units have incident power dependent impedances, dropping to about 2 kΩ at 1 mW incident power. Use them for power levels ≤1 mW for best performance. Their NEP is typically 0.1 pW $Hz^{-1/2}$, and they exhibit no dark current. Let us know your preferred connector type when ordering these fiber pigtailed devices. The 71876 comes with a 62.5/125 µm fiber and the 71875 with a 9 µm core single mode fiber.

Another **new** product, the 76983, uses a 50/125 µm fiber pigtail for monitoring of fast, fiber delivered events.

A number of units come with standard DC bias arrangements producing 1 ns and less rise times. We offer 1 mm diameter, model 71894, and 0.5 mm diameter, model 71895, devices in Oriel 1.5 Inch series flange housings for easy coupling to Oriel Light Sources, Monochromators, etc.

Classical Oriel Si detectors are now packaged in **new** housings with female 1.5 Inch Series flanges and easy access to gain and filter switches. These VIS-IR and enhanced UV detectors come in a matrix of amplified and un-amplified models, as well as TE cooled and room temperature versions. Their large areas, 10x10 mm for room temperature and 5 mm diameter for cooled units, make signal capture easy. The 1.5 Inch Series flange allows instant connectivity to other Oriel products.

READOUT ELECTRONICS

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.

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TE COOLING

Use the room temperature Si detectors for most of your applications. Use the single stage TE cooled/stabilized models when absolute reproducibility of readings is essential.

50 Ω TERMINATION

Use a 50Ω termination when measuring ≤100 ns pulsewidths or ≥10 MHz modulated signals. This will eliminate reflected electrical signal echoes from spoiling the fidelity of your measurements.

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. You will need the 70703 Power Supply to power the amplifier.

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

ELECTRONIC ACCESSORIES

The 77057/8 Cooler Controller allows full function of the TE stabilized devices. The 70703/9 Power Supply provides the ±15 V for the amplifier (built in amplifier models).

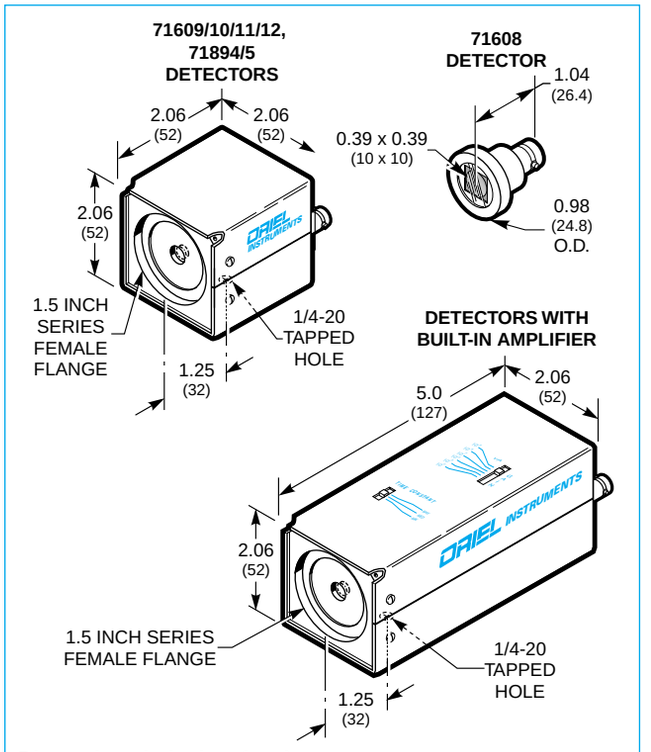


Fig. 2 Dimensional diagram of some Silicon Detectors.

CONNECTORS

All but the 71608 Detectors come with a 6 ft (1.8 m) long BNC cable. The amplified models additionally 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	Internal Gain	Built-in Amplifier	TE Stabilized	Model No.	Price ($)
UV	10 x 10 mm	30 µs						71608	$ 119.00
VIS-IR	10 x 10 mm	30 µs	1.5 Inch Series Female Flange					71609	$ 456.00
UV	10 x 10 mm	30 µs	1.5 Inch Series Female Flange					71610	$ 519.00
VIS-IR	5 mm dia.	10 µs	1.5 Inch Series Female Flange				✔	71611	$ 998.00
UV	5 mm dia.	10 µs	1.5 Inch Series Female Flange				✔	71612	$ 1,053.00
VIS-IR	10 x 10 mm	See Table 1	1.5 Inch Series Female Flange			✔		71882	$ 772.00
UV	10 x 10 mm	See Table 1	1.5 Inch Series Female Flange			✔		71883	$ 893.00
VIS-IR	5 mm dia.	See Table 1	1.5 Inch Series Female Flange			✔	✔	71884	$ 1,390.00
UV	5 mm dia.	See Table 1	1.5 Inch Series Female Flange			✔	✔	71885	$ 1,456.00
VIS-IR		1 ns	50/125 µm FC Fiber*	✔				76983	$ 761.00
VIS-IR		200 ps	9/125 µm FC PC		150 V/W			71875	$ 1,292.00
VIS-IR		10 ns	62.5/125 µm SMA		150 V/W			71876	$ 754.00
VIS-IR	0.5 mm dia.	< 1 ns	1.5 Inch Series Female Flange	✔				71895	$ 371.00
VIS-IR	1 mm dia.	< 1 ns	1.5 Inch Series Female Flange	✔				71894	$ 371.00

*** See page 6-49 for other connector options.**

77057	TE Cooler Controller, 110 V	**$ 1,125.00**
77058	TE Cooler Controller, 220 V	**$ 1,125.00**
70703	±15 V Power Supply, 110 V	**$ 297.00**
70709	±15 V Power Supply, 220 V	**$ 297.00**

Contact us for further information on any of the products in this catalog
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