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Acton Research Corporation

SI-440

Silicon Detector

Ver 2.0

I. Description:

The Acton Research Corporation SI-440 Silicon Detector is a Visible-Near IR detector for use in the wavelength range of 400 to 1080 nm. The detector element is blue enhanced silicon and it is operated in the photovoltaic (unbiased) mode for good signal to noise performance. The output of the detector is negative current. The SI-440 can, therefore, be used with readout systems setup for photomultiplier operation but without the need for high voltage. The SI-440 Silicon Detector is directly compatible with the Acton Research Corporation NCL and SC-1 systems. The pre-amplification for the SI-440 is located in the NCL or SC-1 to allow computer selection of gain.

II. Installation:

The Acton Research Corporation SI-440 Silicon Detector attaches directly to the exit slit assembly of all Acton Research Corporation SpectraPro monochromators. Make sure the red dot on the detector housing is located on top and mount the detector with the four cap screws provided. Attach the BNC cable assembly provided from the BNC connector on the detector to the negative current input (labeled "I") of the SC-1 readout card or the Channel 1 or 2 input of the NCL. When used with the SpectraSense software select Silicon Diode (-).

III. Specifications:

(Typical at 22 °C)

Active area:	100mm ²
Active Diameter:	0.444 inches
Responsivity @ 254nm:	0.1 min, 0.14 typ A/W
Junction Capacitance @ 0 volts	4500 pf
Shunt resistance:	10 M
NEP:	2.5×10^{-13} (w/Hz ^{1/2})
Rise time:	5.9 μsec
Saturation current:	0.2 mA

The curve with the solid line in figure 1 on the following page shows the typical spectral response of the SI-440 detector.

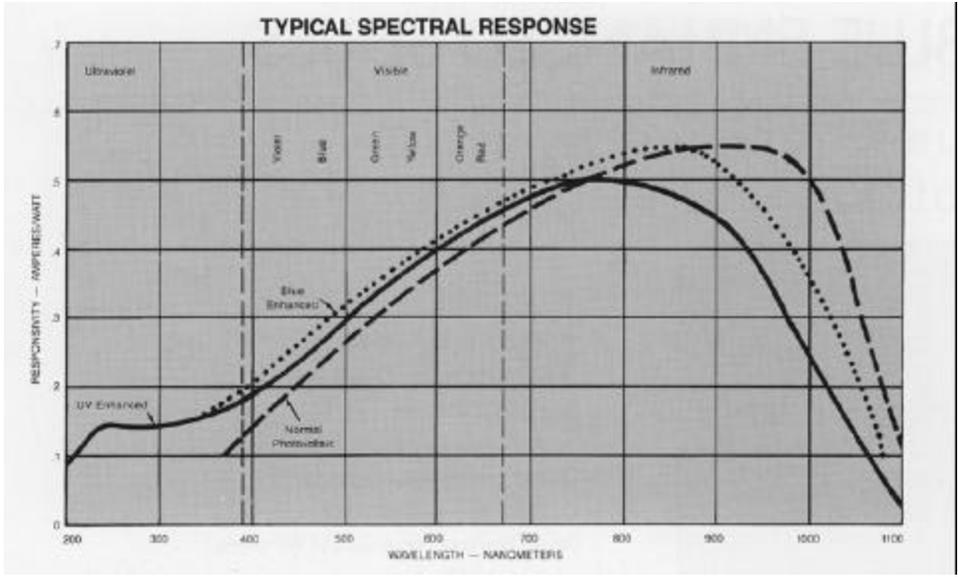


Figure 1. Spectral Response of SI-440
(solid line)