ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *ThorLabs DET410* at our website: *Click HERE*

THORLABS INC
435 Route 206 • P.O. Box 366
Newton, NJ 07860-0366
www.thorlabs.com

PH. 973-579-7227
FAX 973-300-3600
technicalsupport@thorlabs.com

DET410 - HIGH-SPEED InGaAs DETECTOR

DESCRIPTION:

Thorlabs' DET410 is a ready-to-use high-speed photo detector. The unit comes complete with a photodiode and internal 12V bias battery enclosed in a ruggedized aluminum housing. The head includes a removable 1" optical coupler (SM1T1), providing easy mounting of ND filters, spectral filters and other Thorlabs 1" stackable lens mount accessories. Also available are fiber adapters (SMA, FC and ST style). An #8-32 tapped hole is provided on the base of the housing to mount the detector directly to a Thorlabs' positioning device (1/2" post holder, mounting plates, etc.).

SPECIFICATIONS:

Detector:	InGaAs PIN	**Housing:**	Black Anodized Aluminum
Spectral Response:	700-1800nm	**Size:**	ϕ1.43" x 1.67"
Peak Wavelength:	1500nm+/-50nm	**Output:**	BNC, DC-Coupled
Rise/Fall Time[1]:	5ns	**Bias:**	12V Battery (Type A23)
Diode Capacitance:	22pF	**Mounting:**	8-32 (M4) Tapped Hole
NEP:	1 x 10^{-14}W/√HZ	**Diode Socket:**	TO-5, Anode Marked
Dark Current:	25nA	**Damage Threshold:**	100mW CW
Active Area:	ϕ1mm (0.8mm^2)		0.5 J/cm^2 (10ns pulse)
Linearity Limit:	1mW	**Operating Temp:**	0 to 85°C
Max Reverse Current:	10mA	**Storage Temp:**	-40 to 125°C

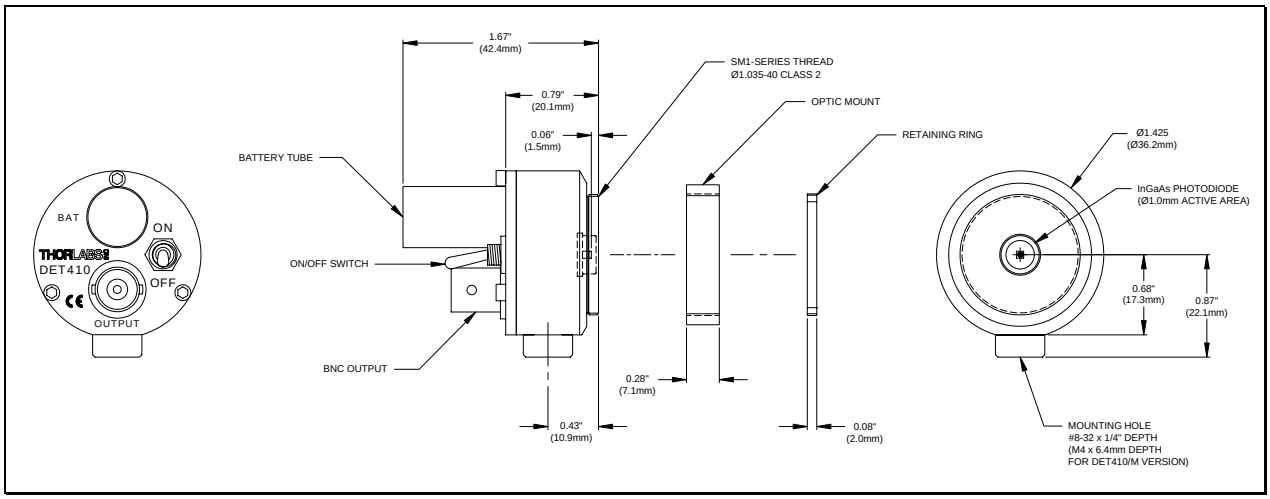


Figure 1. - Mechanical Dimensions

OPERATION:

Thorlabs DET series are ideal for measuring both pulsed and CW light sources. The DET410 includes a reversed-biased PIN photo diode, bias battery, and ON/OFF switch packaged in a ruggedized housing. The BNC output signal is the direct photocurrent out of the photo diode anode and is a function of the incident light power and wavelength. The Spectral Responsivity, $\Re(\lambda)$, can be obtained from Figure 2 to estimate the amount of photocurrent to expect. Most users will wish to convert this photocurrent to a voltage for viewing on an oscilloscope or DVM. This is accomplished by adding an external load resistance, R_{LOAD}. The output voltage is derived as:

$$V_O = P * \Re(\lambda) * R_{LOAD}$$

The bandwidth, f_{BW}, and the rise-time response, t_R, are determined from the diode capacitance, C_J, and the load resistance, R_{LOAD} as shown below:

$$f_{BW} = 1 / (2 * \pi * R_{LOAD} * C_J)$$

$$t_R = 0.35 / f_{BW}$$

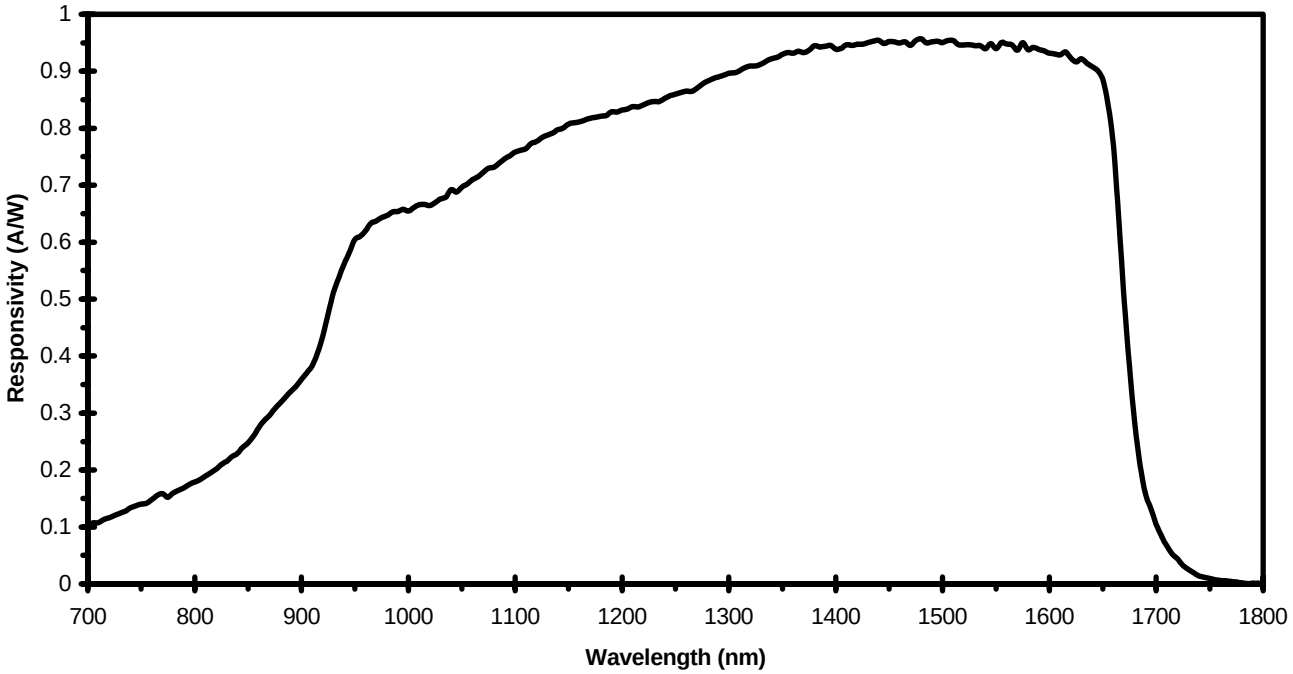
2181-S01 Rev C 8/15/2005

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

For maximum bandwidth, we recommend using a 50Ω coax cable with a 50Ω terminating resistor at the end of the coax. This will also minimize ringing by matching the coax with its characteristic impedance. If bandwidth is not important, you may increase the amount of voltage for a given input light by increasing the R_{LOAD} up to a maximum of 10KΩ.

Note: The detector has an AC path to ground even with the switch in the OFF position. It is normal to see an output response to an AC signal with the switch in this state. However, because the detector is unbiased, operation in this mode is not recommended.

Figure 2 - DET410 Spectral Responsivity Curve



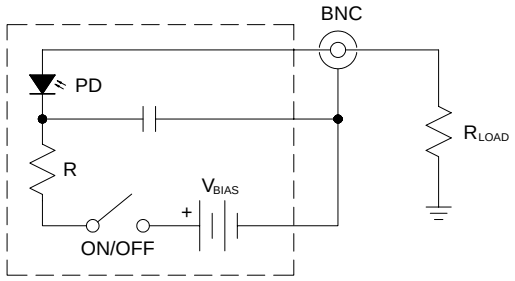


Figure 3 – Circuit Block Diagram

FIBER ADAPTERS AND OTHER ACCESSORIES

Thorlabs sells a number of accessories that are compatible with the 1" thread on the DET housing including FC, SMA, and ST fiber adapters, stackable lens tubes for mounting optics, and cage assemblies that allow the DET to be incorporated into elaborate 3-D optical assemblies.

Caution: The DET410 was designed to allow maximum accessibility to the photo detector by having the front surface of the diode extend outside of the DET housing. When using fiber adapters, make sure that the fiber ferrule does not crash into the detector. Failure to do so may cause damage to the diode and / or the fiber. An easy way to accomplish this is to install a SM1RR retaining ring (included with the DET410) inside the 1" threaded coupler *before* installing the fiber adapter.

Also available are 1ns Si detectors, large area Si detectors, and a complete line of amplified detectors.

MAINTAINING THE DET410

There are no serviceable parts in the DET410 optical head. The housing may be cleaned by wiping with a soft, damp cloth. The window of the detector should only be cleaned using optical grade wipes. If you suspect a problem with your DET410 please call Thorlabs and technical support will be happy to assist you.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

WEEE

As required by the WEEE (Waste Electrical and Electronic Equipment Directive) of the European Community and the corresponding national laws, Thorlabs offers all end users in the EC the possibility to return “end of life” units without incurring disposal charges.

This offer is valid for Thorlabs electrical and electronic equipment

- sold after August 13th 2005
- marked correspondingly with the crossed out “wheelie bin” logo (see fig. 1)
- sold to a company or institute within the EC
- currently owned by a company or institute within the EC
- still complete, not disassembled and not contaminated

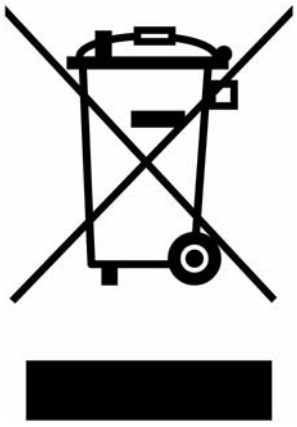
As the WEEE directive applies to self contained operational electrical and electronic products, this “end of life” take back service does not refer to other Thorlabs products, such as

- pure OEM products, that means assemblies to be built into a unit by the user (e. g. OEM laser driver cards)
- components
- mechanics and optics
- left over parts of units disassembled by the user (PCB’s, housings etc.).

If you wish to return a Thorlabs unit for waste recovery, please contact Thorlabs or your nearest dealer for further information.

Waste treatment on your own responsibility
If you do not return an “end of life” unit to Thorlabs, you must hand it to a company specialized in waste recovery. Do not dispose of the unit in a litter bin or at a public waste disposal site.

Ecological background
It is well known that WEEE pollutes the environment by releasing toxic products during decomposition. The aim of the European RoHS directive is to reduce the content of toxic substances in electronic products in the future.
The intent of the WEEE directive is to enforce the recycling of WEEE. A controlled recycling of end of live products will thereby avoid negative impacts on the environment.



Crossed out “wheelie bin” symbol

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP