150 nm to 4.8 µm Amplified Photodetectors (Page 1 of 2)

PDA36A
Power Supply Included

The PDA series of amplified photodetectors have a thin profile to allow access to light paths where there is minimal space. All connections and controls are located perpendicular to the light path. In addition, the PDA series includes a low-noise transimpedance or voltage amplifier capable of driving 50 Ω loads.

The housing features both external SM1 (1.035"-40) threads and internal SM05 (0.535"-40) threads, each of which are compatible with a large array of our threaded accessories, allowing convenient mounting of external optics, fibers, and apertures. Each housing provides two 8-32 tapped mounting holes (M4 x 0.7 for -EC versions). An internally SM1-threaded adapter ring is also included, as is a switchable power supply (120 VAC, 230 VAC).

Thorlabs' line of switchable gain detectors provide gain adjustment over a 70 dB range to take full advantage of the photodiode response range. Gains are adjustable from 1.5 kV/A to 4.7 MV/A in eight 10 dB steps. Our selection of wideband detectors increase the bandwidth range from DC to 150 MHz, while still maintaining low noise.

All Detectors Come Complete with a Power Supply

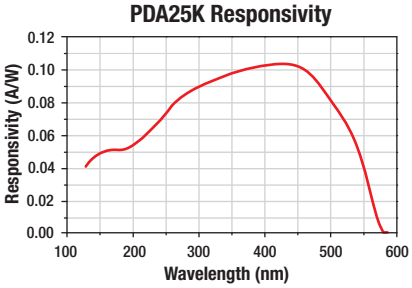
SM1FC
SM1-Threaded Fiber Adapters

PDA Series General Specifications

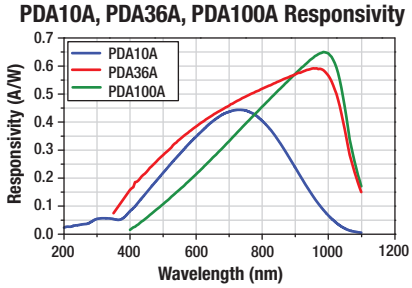
ITEM #[a]	SENSOR	BANDWIDTH[b]	WAVELENGTH RANGE	ACTIVE AREA	GAIN
PDA25K	GaP	7.5 MHz	150 – 550 nm	6.5 mm² (2.54 mm x 2.54 mm)	1.5 x 10^3 to 4.75 x 10^6 V/A[c]
PDA10A	Si	150 MHz	200 – 1100 nm	0.8 mm² (Ø1 mm)	1 x 10^4 V/A
PDA8A	Si	50 MHz	320 – 1000 nm	0.5 mm² (Ø0.8 mm)	1 x 10^5 V/A
PDA36A	Si	17 MHz	350 – 1100 nm	13 mm² (3.6 mm x 3.6 mm)	1.5 x 10^3 to 4.75 x 10^6 V/A[c]
PDA100A	Si	1.5 MHz	400 – 1100 nm	75.4 mm² (Ø9.8 mm)	1.5 x 10^3 to 4.75 x 10^6 V/A[c]
PDA10CF	InGaAs	150 MHz	700 – 1800 nm	0.2 mm² (0.5 mm)	1 x 10^4 V/A
PDA10CS	InGaAs	17 MHz	700 – 1800 nm	0.8 mm² (Ø1 mm)	1.5 x 10^3 to 4.75 x 10^6 V/A[c]
PDA50B	Ge	400 kHz	800 – 1800 nm	19.6 mm² (Ø5 mm)	1.5 x 10^3 to 4.75 x 10^6 V/A[c]
PDA10D	InGaAs	15 MHz	1200 – 2600 nm	0.8 mm² (Ø1 mm)	1 x 10^4 V/A
PDA30G	PbS	0.2 kHz to 1 kHz[d]	1000 – 2900 nm	9 mm² (3.0 mm x 3.0 mm)	100X
PDA20H	PbSe	0.2 kHz to 10 kHz[d]	1500 – 4800 nm	4 mm² (2.0 mm x 2.0 mm)	100X

[a] Same specs apply to the -EC versions
[b] Applies to lowest gain setting on switchable gain versions
[c] Switchable gain, 8 steps, 70 dB total adjustment
[d] AC-coupled output only

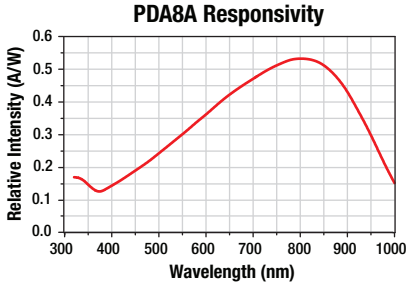
PDA25K Responsivity



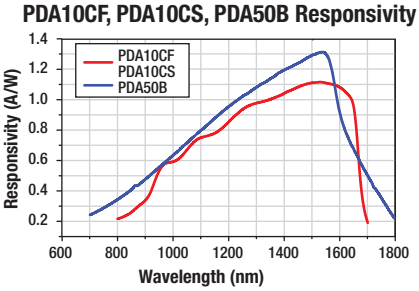
PDA10A, PDA36A, PDA100A Responsivity



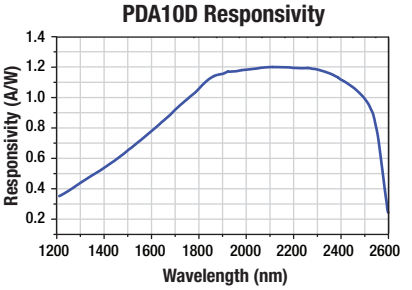
PDA8A Responsivity



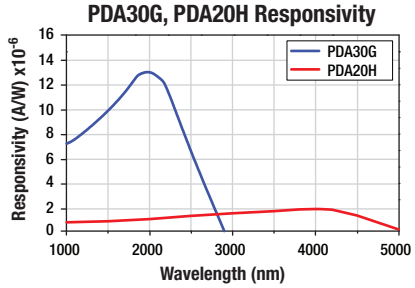
PDA10CF, PDA10CS, PDA50B Responsivity



PDA10D Responsivity



PDA30G, PDA20H Responsivity



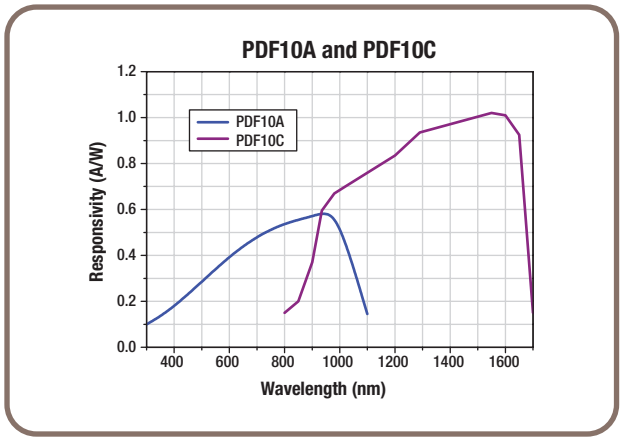
150 nm to 4.8 µm Amplified Photodetectors (Page 2 of 2)

ITEM #	METRIC ITEM #	$	£	€	RMB	DESCRIPTION
PDA25K	PDA25K-EC	$ 389.00	£ 280.08	€ 338,43	¥ 3,100.33	150 – 550 nm Switchable Gain, GaP Detector
PDA10A	PDA10A-EC	$ 283.00	£ 203.76	€ 246,21	¥ 2,255.51	200 – 1100 nm Fixed Gain, Si Detector
PDA8A	PDA8A/M	$ 600.00	£ 432.00	€ 522,00	¥ 4,782.00	320 – 1000 nm Fixed Gain, Si Detector
PDA36A	PDA36A-EC	$ 299.00	£ 215.28	€ 260,13	¥ 2,383.03	350 – 1100 nm Switchable Gain, Si Detector
PDA100A	PDA100A-EC	$ 329.00	£ 236.88	€ 286,23	¥ 2,622.13	400 – 1100 nm Switchable Gain, Si Detector
PDA10CF	PDA10CF-EC	$ 374.00	£ 269.28	€ 325,38	¥ 2,980.78	700 – 1800 nm Fixed Gain, InGaAs Detector
PDA10CS	PDA10CS-EC	$ 374.00	£ 269.28	€ 325,38	¥ 2,980.78	700 – 1800 nm Switchable Gain, InGaAs Detector
PDA50B	PDA50B-EC	$ 489.00	£ 352.08	€ 425,43	¥ 3,897.33	800 – 1800 nm Switchable Gain, Ge Detector
PDA10D	PDA10D-EC	$ 489.00	£ 352.08	€ 425,43	¥ 3,897.33	1.2 – 2.6 µm Fixed Gain, InGaAs Detector
PDA30G	PDA30G-EC	$ 399.00	£ 287.28	€ 347,13	¥ 3,180.03	1.0 – 2.9 µm Fixed Gain, PbS Detector
PDA20H	PDA20H-EC	$ 425.00	£ 306.00	€ 369,75	¥ 3,387.25	1.5 – 4.8 µm Fixed Gain, PbSe Detector
PDA-C-72	—	$ 18.50	£ 13.32	€ 16,10	¥ 147.45	72" PDA Power Supply Cable, 3-Pin to Unterminated End
SM1FC	—	$ 27.00	£ 19.44	€ 23,49	¥ 215.19	Externally SM1-Threaded FC/PC Fiber Adapter

Femtowatt Amplified Photodetectors

Features

- Femtowatt Sensitivity
- High-Gain, Low-Noise Detectors
- Two Detectors for the 320 to 1700 nm Range



The PDF series of femtowatt amplified phtodetectors combine an ultra-low noise Si or InGaAs photodiode with a transimpedance amplifier, offering extremely high gain up to 10^{12} V/A; together these features provide a unique photodetector with femtowatt sensitivity and an exceptionally low minimum NEP of 1.4 fW/√Hz. The PDF series is designed for direct detection of optical powers of ~10 fW; sub-femtowatt detection is possible when the detector is used with a lock-in amplifier.

The thin-profile housing of these photodetectors has a removable SM1-threaded (1.035"-40) cap, which can be used to cover the sensor for zero input calibration. In addition, it features external SM1 threads, internal SM05 (0.535"-40) threads, and an internally SM1-threaded adapter ring; these features are ideal for incorporating the detector into lens tube or cage system setups. These threadings are also compatible with our fiber coupling adapters (see next page). The PDF series includes a power supply (Imperial: 120 VAC, Metric: 230 VAC) and is post mountable in several orientations via 8-32 (M4 x 0.7) taps.

ITEM #	PDF10A	PDF10C
Detector Type	Si	InGaAs/PIN
Wavelength Range	320 - 1100 nm	800 - 1700 nm
Responsivity (Max)	0.6 A/W @ 960 nm	1.0 A/W @ 1550 nm
Active Area	1.1 mm x 1.1 mm	Ø0.5 mm
Transimpedance Gain	1 x 10^{12} V/A ± 10%	1 x 10^{11} V/A ± 10%
Conversion Gain (Max)	0.6 x 10^{12} V/W ± 10%	1 x 10^{11} V/W ± 10%
Output Bandwidth (3 dB)	DC – 20 Hz	DC – 25 Hz
Rise/Fall Time (10 - 90%)	22 ms	19 ms
CW Saturation Power	16 pW	100 pW
Damage Threshold	10 mW	10 mW
Min NEP (DC - 20 Hz)	1.4 fW/√Hz	7.5 fW/√Hz
Electrical Output, Impedance	BNC, 200 Ω	
Maximum Output Voltage	10 V	
DC Offset Electrical Output	<±150 mV	
Dimensions (W x H x D)	65.3 mm x 43.2 mm x 28.0 mm (26" x 1.7" x 1.1")	

ITEM #	METRIC ITEM #	$	£	€	RMB	DESCRIPTION
PDF10A	PDF10A/M	$ 750.00	£ 540.00	€ 652,50	¥ 5,977.50	Femtowatt Photodetector, Si Detector, 320 – 1100 nm
PDF10C	PDF10C/M	$ 790.00	£ 568.80	€ 687,30	¥ 6,296.30	Femtowatt Photodetector, InGaAs Detector, 800 – 1700 nm