

# 1.1.1 Photodiode Power Sensors

## 1.1.1.1 Standard Photodiode Sensors

### 50pW to 3W

#### Features

- Very large dynamic range
- Swivel mount for hard to measure places
- Comes with filter in / filter out options
- Patented automatic background subtraction
- Fiber optic adapters available

PD300 with filter off



PD300 with filter installed



PD300-TP Mounted on stand



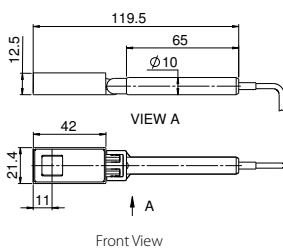
Model	PD300			PD300-1W			PD300-3W			PD300-TP		
Use	General			Powers to 1W			Powers to 3W			Thin profile for tight fit		
Detector Type	silicon			silicon			silicon			silicon		
Aperture	10x10mm			10x10mm			10x10mm			10x10mm		
Filter mode	Filter out	Filter in		Filter out	Filter in		Filter out	Filter in		Filter out	Filter in	
Spectral Range nm	350-1100	430-1100		350-1100	430-1100		350-1100	430-1100		350-1100	400-1100	
Power Range	500pW to 30mW		200µW to 300mW	500pW to 30mW		200µW to 1W	5nW to 100mW		200µW to 3W	50pW to 3mW		20µW to 1W
Power Scales	30mW to 30nW and dBm		300mW to 30mW and dBm	30mW to 30nW and dBm		1W to 30mW and dBm	100mW to 300nW and dBm		3W to 30mW and dBm	3mW to 3nW and dBm		1W to 3mW and dBm
Resolution nW	0.01		NA	0.01		NA	0.1		NA	0.001		1
Maximum Power vs. Wavelength	nm	mW	mW	nm	mW	mW	nm	mW	mW	nm	mW	mW
	<488	30	300	<488	30	1000	<488	100	3000	350-400	3	NA
	633	20	300	633	20	1000	633	100	3000	400-500	3	1000
	670	13	200	670	13	1000	670	100	2000	600	2.5	1000
	790	10	100	790	10	600	790	100	1200	700	2	500
	904	10	100	904	10	700	904	100	1200	800-950	1.5	300
	1064	25	250	1064	25	1000	1064	100	2200	1064	3	500
Accuracy (including errors due to temp. variations)												
% error vs Wavelength nm	±10	360-400	NA	±10	360-400	NA	±10	360-400	NA	±7	350-400	NA
	±3	400-950	±5	430-950	±3	400-950	±5	430-950	±3	400-950	±5	400-950
	±5	950-1100	±7	950-1100	±5	950-1100	±7	950-1100	±5	950-1100	±7	950-1100
Damage Threshold W/cm <sup>2</sup>	10		50	10		10 <sup>(a)</sup>	10		30	10		50
Max Pulse Energy µJ	2		20	2		100	20		500	1		100
Noise Level for filter out pW	20			20			200			±2		
Response Time with Meter s	0.2			0.2			0.2			0.2		
Beam Position Dependence	±2%			±2%			±2%		±3%	±2%		
Background Subtraction	95-98% of background is cancelled automatically under normal room conditions, even when changing continuously						N.A.			N.A.		
Fiber Adapters Available (see page 37)	ST, FC, SMA, SC			ST, FC, SMA, SC			ST, FC, SMA, SC			N.A.		
Version							V1					
Part Number	<b>7Z02410</b>			<b>7Z02411A</b>			<b>7Z02426</b>			<b>7Z02424</b>		

Note: (a) Maximum power density above which sensor may not read correctly. There will be no permanent damage until 50W/cm<sup>2</sup>

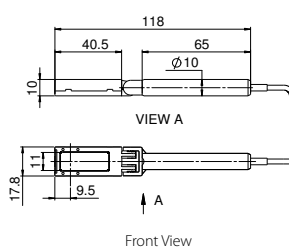
\* For graphs see page 28-29

\* For PD300-3W drawing see PD300-UV/PD300-IR drawing on page 25

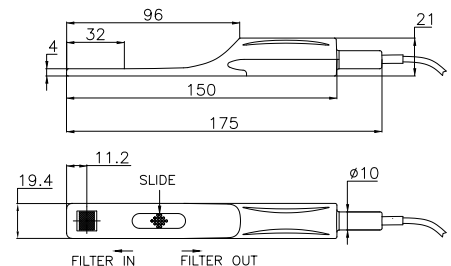
PD300 / PD300-1W filter installed



PD300 / PD300-1W filter off



PD300-TP



### 1.1.1.1 Standard Photodiode Sensors

#### 10pW to 300mW

##### Features

- Spectral range including UV and IR
- Very large dynamic range
- Swivel mount for hard to measure places
- Comes with filter in / filter out options
- Fiber optic adapters available

PD300-UV / PD300-IR with filter off



PD300-UV / PD300-IR with filter installed



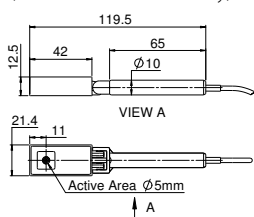
PD300-IRG with fiber input



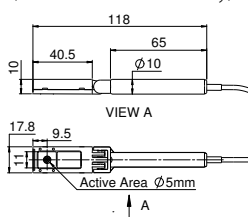
Model	PD300-UV/ PD300-UV-193			PD300-IR			PD300-IRG			
Use	Lowest powers from 200-1100nm			Low powers from 700-1800nm			Telecom wavelength fiber and free space measurements			
Detector Type	silicon			germanium			InGaAs			
Aperture	10x10mm			Ø5mm			Ø5mm for free space beams			
Filter mode	Filter out	Filter in		Filter out	Filter in		Filter out	Filter in		
Spectral Range nm	200 -1100	220 -1100		700-1800	700-1800		800 - 1700	950 - 1700		
Power Range	20pW to 3mW	2µW to 300mW		5nW to 30mW	200µW to 300mW		10pW to 800µW	150µW to 200mW		
Power Scales	3mW to 3nW and dBm	300mW to 300µW and dBm		30mW to 30nW and dBm	300mW to 30mW and dBm		800 µW to 800pW and dBm	300mW to 3mW and dBm		
Resolution nW	0.001	100		0.01	NA		0.0001	1		
Maximum Power vs. Wavelength	nm	mW	mW	nm	mW	mW	nm	mW	mW	
	250 - 350	3	300	800	12	120	<1000	0.8	200	
	400	3	300	1000-1300	30	300	1100	0.8	200	
	600	3	300	1400	30	250	1200	0.8	200	
	800 - 950	2.5	150	1500	25	80	1300	0.8	200	
	1064	3	300	1600	30	100	1550	0.8	200	
				1800	30	300	>1600	0.8	200	
Accuracy (including errors due to temp. variations)										
% error vs Wavelength nm	±6	200-270	±10	220-400	±5	700-900	±7	700-900	±3	1000-1650
	±3	270-950	±5	400-950	±4	900-1700	±6	900-1700	±5	<1000 & >1650
	±5	950-1100	±7	950-1100	±7	1700-1800	±9	1700-1800	±8	<1000 & >1650
Damage Threshold W/cm <sup>2</sup>	10	50		10	50		5	50		
Max Pulse Energy µJ	0.4	15		0.3	3		1	100		
Noise Level for filter out pW	±1			200			±300fW at 1550 nm and 1s average			
Response Time with Meter s	0.2			0.2			0.2			
Beam Position Dependence	±2%			±2%			±1% over 80% of aperture			
Fiber Adapters Available (see page 37)	ST, FC, SMA, SC			ST, FC, SMA, SC			FC, FC/APC, SMA			
Version							V1			
Part Number	PD300-UV: 7Z02413		PD300-UV-193: 7Z02413A		7Z02412		7Z02402			
	(same as above with additionally calibration point at 193nm accuracy ±6%)									

\* For graphs see page 28-29

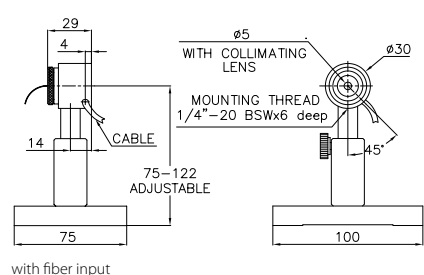
PD300-UV / PD300-IR filter installed (Ø5mm for PD300-IR only)



PD300-UV / PD300-IR filter off (Ø5mm for PD300-IR only)

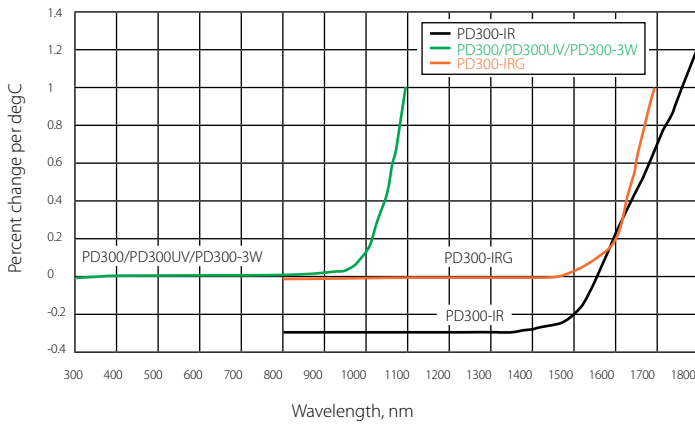


PD300-IRG

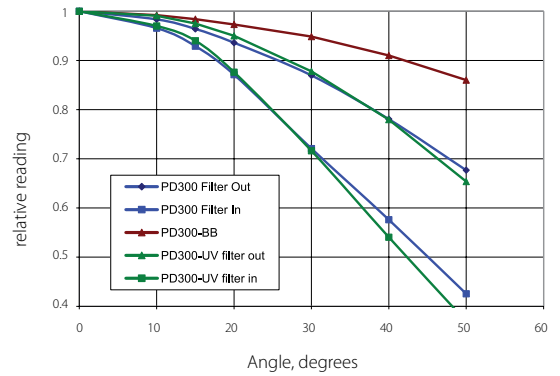


### 1.1.1.4 Graphs

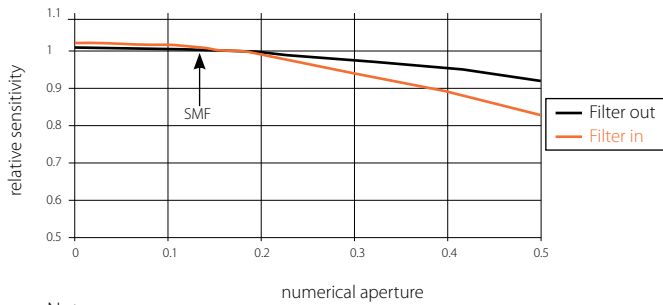
Temperature Coefficient of Sensitivity



PD300 Angle Dependence



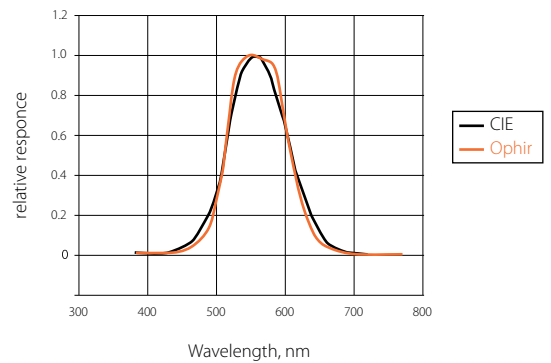
Dependence of Sensitivity on Numerical Aperture (PD300 - IRG)



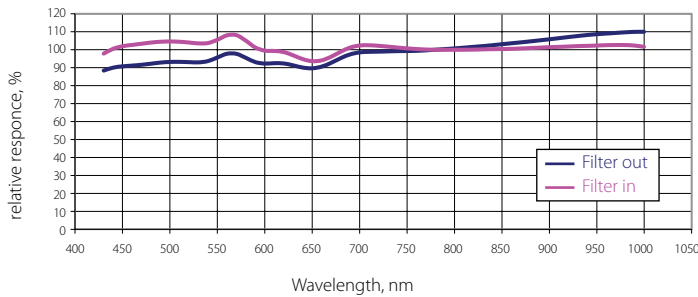
Note:

1. Graph assumes equal intensity into all angles up to maximum N.A.
2. Calibration is done with SMF, N.A. 0.13

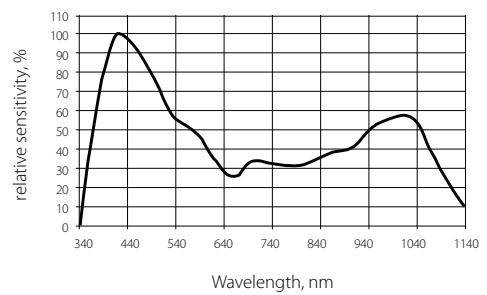
PD300-CIE Spectral Response vs. CIE Curve



Typical Sensitivity Curve of PD300-BB Sensors

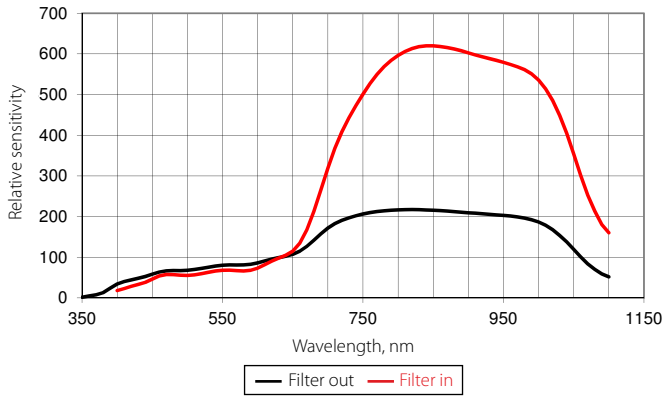


Relative Spectral Response of BC20

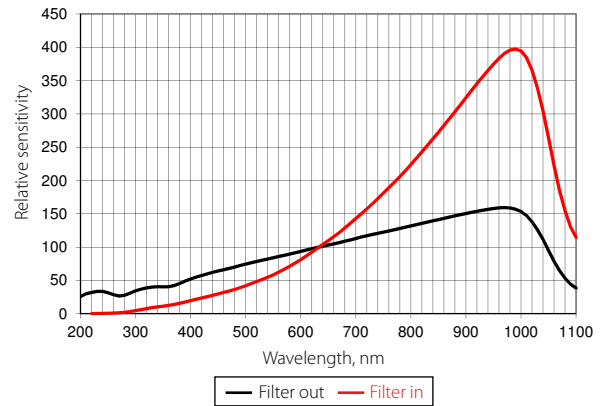


## Approximate Spectral Response Relative to 633nm or 1550nm

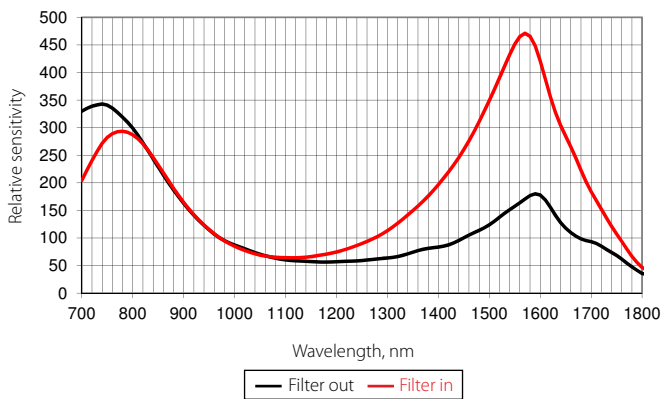
**PD300 / PD300R**



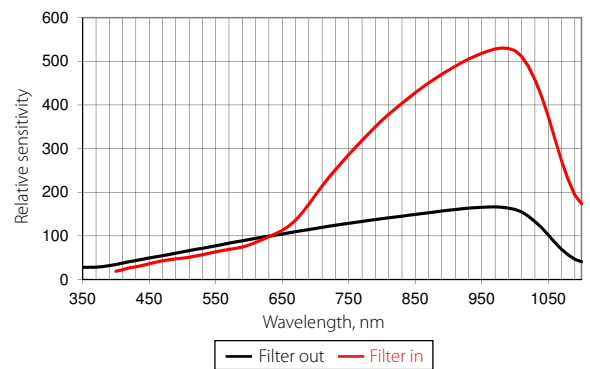
**PD300-UV / PD300R-UV**



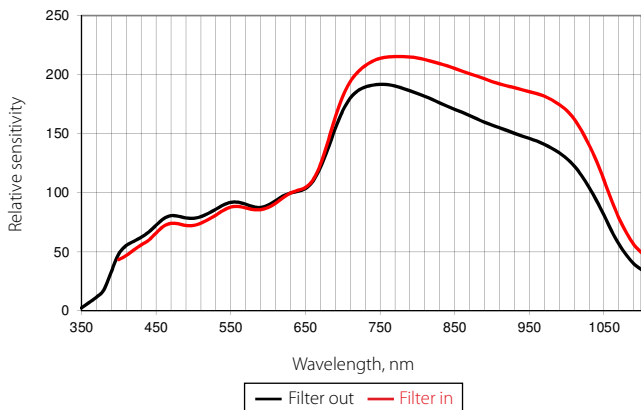
**PD300-IR / PD300R-IR**



**PD300-TP**



**PD300-3W / PD300R-3W**



**PD300-IRG**

