

Photodiode Heads and Instruments

The PD-300 series heads offer spectral coverage from 193-1800nm. The power range of the series is from picowatts to 3 Watts.



PD300 Series Smart Heads

CW power 1pW to 30mW (300mW or 3W with supplied filter)

Recommended Use: Low power CW lasers, out of fiber measurement

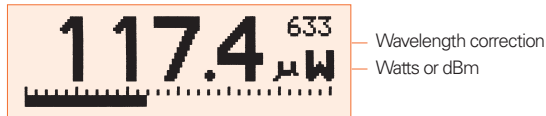
- Fiber adapters available for SMA, ST, FC, LC, SC
- Automatic, dynamic cancellation of up to 98% of background light
- Swivel mount - handheld or stand
- From picoWatts to 300mW or 3W (PD300-3W)
- 200-1800nm with different models
- User-selected wavelength correction
- Resolution to 0.1pW
- Choice of units - Watts, dBm
- Screen graphics: Digital power, analog bar graph, zoom, power vs. time, laser tuning, average, offset (see examples below)



Since many low power lasers have powers of about 5 to 30mW, and most photodiode detectors saturate at about 2mW, the PD300 head series has been constructed with a built-in filter that enables the basic head to measure to 300mW without saturation. The PD300 and associated heads have extensive circuitry to reject both outside electromagnetic and electrostatic interference. They are fully CE qualified.

Examples of Screens with Nova Display (page 75)

Digital Power Screen



- Auto or manual range
- 120 point bargraph display
- Watts or dBm
- Wavelength correction, user-selected and programmable

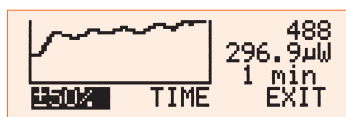
Average Screen



Toggle Go / Stop

- Periodic (1/3 sec to 30 sec) or continuous (10 sec to 1 hour) average for fast changing or slowly changing lasers

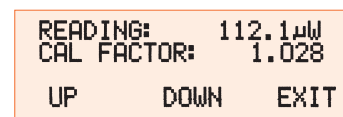
Laser Tuning Screen



Zoom Time scale

- Autoranging
- Cursor for max power adjustment

Calibration Screen



Calibration factor adjustment

- Using known laser source

PD300 / PD300-1W / PD300-3W

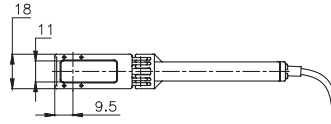
CW power 1nW-30mW (300mW / 1W or 3W with supplied filter)

Recommended Use: Low power CW lasers (HeNe, diode, etc.), out of fiber measurement

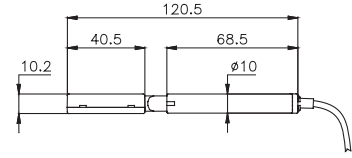
Special Features: Automatic background subtraction, F.O. adapters available



PD300 with filter off



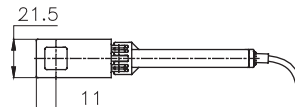
front view



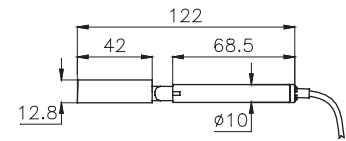
side view



PD300 with filter installed



front view



side view

PD300 / PD300-1W				PD300-3W		
	PD300 / PD300-1W Filter out	PD300 Filter in	PD300-1W Filter in		Filter out	Filter in
Spectral Response:	350 – 1100nm	400 – 1100nm	400 – 1100nm	Spectral Response:	350 – 1100nm	400 – 1100nm
Power Scales:	30.00mW/3.000mW/ 300.0µW/30.00µW/ 3.000µW/300.0nW/ 30.00nW/dBm	300.00mW / 30.0mW / dBm	1.000W/300.00mW/ 30.0mW/dBm	Power Scales:	100.0mW/30.00mW / 3.000mw /300.0µW / 30.00µW /3.000µW / 300.0nW /dBm	3.000W/300.00mW/ 30.0mW/dBm
Maximum Power vs. Wavelength:				Maximum Power vs. Wavelength		
<488nm	30mW	300mW	1W	<488nm	100mW	3W
633nm	20mW	300mW	1W	633nm	100mW	3W
670nm	13mW	200mW	1W	670nm	100mW	2.5W
790nm	10mW	100mW	0.6W	790nm	100mW	2W
904nm	10mW	150mW	0.7W	904nm	100mW	2W
1064nm	25mW	250mW	1W	1064nm	100mW	3W
Damage Threshold:	10W/cm ²	50W/cm ²	50W/cm ²	Damage Threshold:	10W/cm ²	150W/cm ²
Max Pulse Energy:	2µJ	20µJ	100µJ	Max Pulse Energy:	20µJ	500µJ
Accuracy: (including errors due to temp. variations)	±10% 360 – 400nm ±3% 400 – 950nm ±5% 950 - 1100n	±5% 400-950nm ±7% 950-1100nm	±5% 400-950nm ±7% 950 - 1100nm	Accuracy: (including errors due to temp. variations)	±10% 360-400nm ±3% 400-950nm ±5% 950 - 100n	±5% 400-950nm ±7% 950 – 1100nm
Aperture:	10mm x 10mm					
Response Time:	0.2s					
Beam Position Dependence:	±2%			±2%		
Noise:	0.02nW at mid spectrum with filter out					
Background Subtraction:	95 – 98% of background is cancelled automatically under normal room conditions, even when changing continuously			N.A.		

Ordering Information		
Item	Description	Ophir P/N
PD300	350-1100nm, up to 300mW	1202410
PD300-1W	350-1100nm, up to 1W	1202411
PD300-3W-V1	350-1100nm, up to 3W and for high power densities	1202426
Fiber adapters	See page 52 for fiber adapter ordering information	

PD300-IR/PD300-UV

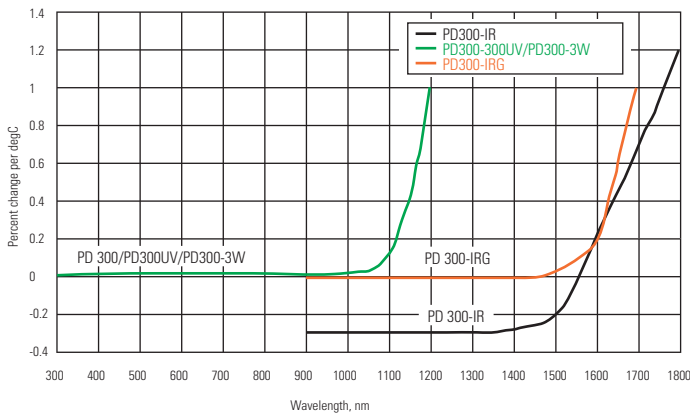
CW power 5nW-300mW (IR), 10pW-300mW (UV)

Recommended Use: Low power CW lasers (HeNe, diode, etc.), out of fiber measurement
Special Features: Infrared, 800-1800nm

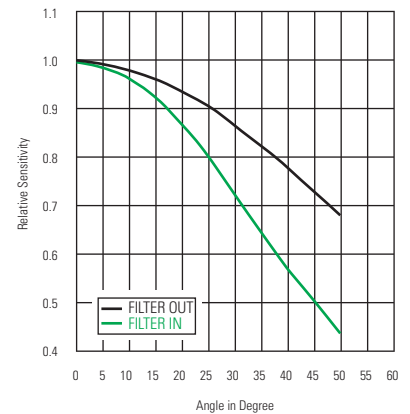
Recommended Use: Low power CW lasers (HeNe, diode, etc.), out of fiber measurement
Special Features: Wide spectral range, 200-1100nm, very low noise

PD300-IR			PD300-UV		
	Filter Out	Filter In		Filter Out	Filter In
Spectral Response:	800-1800nm	800-1800nm	Spectral Response:	200-1100nm ^a	220-1100nm
Power Scales:	30.00mW/3.000mW/ 300.0μW/30.00μW/ 3.000μW/300.0nW/dBm	300.0mW/30.0mW/dBm	Power Scales:	3.000mW/300.0μW/ 30.00μW/3.000μW/ 300.0μW/30.00nW/ 3.000nW/dBm	300.00mW/30.0mW/ 3.000mW/300.0μW/dBm
Maximum Power vs. Wavelength			Maximum Power vs. Wavelength		
800nm	12mW	120mW	250-350nm	3mW	300mW
1000-1300nm	30mW	300mW	400nm	3mW	300mW
1400nm	30mW	250mW	600nm	3mW	300mW
1500nm	25mW	80mW	800-950nm	2.5mW	150mW
1600nm	30mW	100mW	1064nm	3mW	30mW
1800nm	30mW	300mW			
Damage Threshold:	10W/cm ²	50W/cm ²	Damage Threshold:	10W/cm ²	150W/cm ²
Max Pulse Energy:	2μJ	20μJ	Max Pulse Energy:	0.4μJ	15μJ
Accuracy:	±5% 800 - 900nm	±7% 800-900nm	Accuracy:	±6% 200 - 250nm	±10% 220-300nm
(Including errors due to temp. variations)	±4% 900 - 1700nm	±6% 900-1700nm	(Including errors due to temp. variations)	±3% 250 - 950nm	±5% 300-950nm
	±7% 1700 - 1800nm	±9% 900-1700nm		±5% 950 - 1100nm	±7% 950-1100nm
Aperture:	Ø5mm		10mm x 10mm		
Response Time:	0.2s		0.2s		
Beam Position Dependence:	±2%		±2%		
Noise:	0.02nW at mid spectrum with filter out		±1pW at mid spectrum with filter out		
Background Subtraction:	N.A		N.A		
Note: a. Additional Calibration at 193nm available					

Temperature Coefficient of Sensitivity



PD 300 Angle Dependence



Ordering Information

Item	Description	Ophir P/N
PD300-IR	800-1800nm, up to 300mW	1Z02412
PD300-UV	200-1100nm, up to 300mW	1Z02413
PD300-UV-193	200-1100nm with additional calibration at 193 nm	1Z02413A
Fiber adapters	See page 52 for fiber adapter ordering information	

PD300-IRG

CW power 10pW - 150mW

Recommended Use: Fiber optic communications, DWDM from 800 - 1700nm

Special Features: Very low noise - 100 femtoWatts.

Comes with collimating optics for both parallel and fiber input

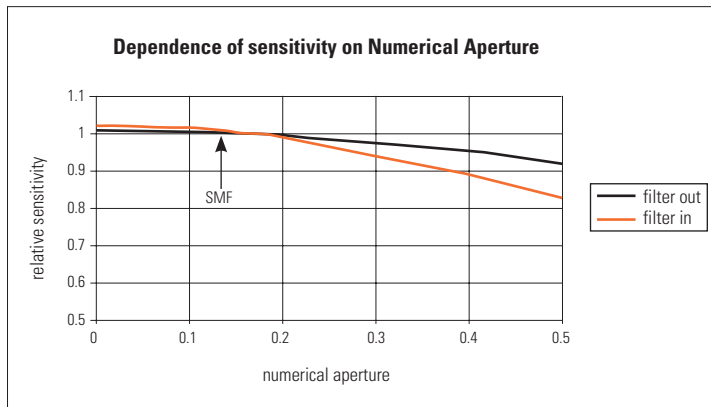
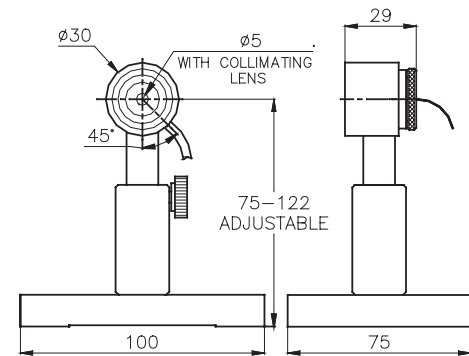
Wide dynamic range: -90dBm to 25dBm

PD300-IRG				
Spectral Response:	Filter Out 800-1700nm	Filter In 950-1700nm		
Power Scales:	800.0μW / 80.00μW/ 8.000μW / 800.0nm/ 80.00nW / 8.000nW/ 800.0pW / dBm	300.0mW / 30.00mW / 3.000mW / dBm		
Maximum Power vs. Wavelength				
<1000nm	800μW	100mW		
1100nm	800μW	30mW		
1200nm	800μW	50mW		
>1300nm	800μW	150mW		
Damage Threshold:	5W/cm ²	50W/cm ²		
Max Pulse Energy:	1μJ	100μJ		
Accuracy at 25°C	±3%	100-1650nm	±6%	100-1600nm
	±5%	<1000 >1650nm	±8%	<1000 >1650nm
Detector Type:	InGaAs			
Noise level:	±300fW at 1550nm and 1s average			
Linearity with power:	±0.5%			
Response time:	0.2s			
Background subtraction:	N.A.			
For parallel beam input				
Maximum aperture:	5mm			
Beam position dependence:	±1% over 80% of aperture			
For fiber input				
Numerical aperture dependence:	See graph			
Fiber adapters available:	FC, FC/APC, LC, SMA			
Note:	See temperature variation graph on page 23			
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-IRG with fiber input



PD300-IRG with no fiber input

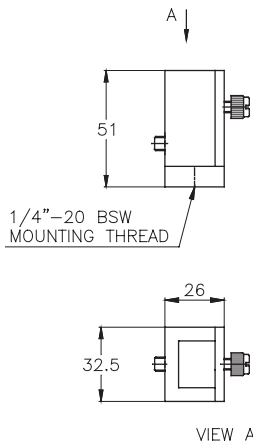


Note: 1. Graph assumes equal intensity into all angles up to maximum N.A.
2. Calibration is done with SMF, N.A. 0.13

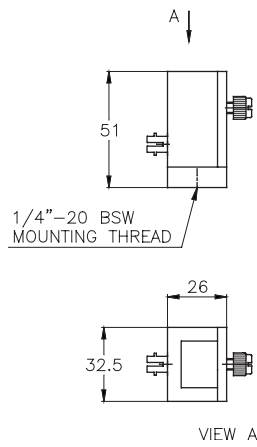
Ordering Information		
Item	Description	Ophir P/N
PD300-IRG-V1	800-1700nm, up to 300mW with IRG detector, built in collimating optics and removable filter	1Z02402
Fiber adapters	See page 52 for fiber adapter ordering information	

Accessories for Standard PD300 Smart Heads

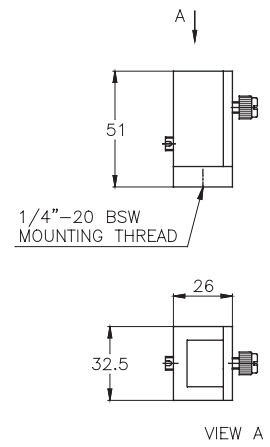
Fiberoptic and CDRH Adapters for PD300 Heads



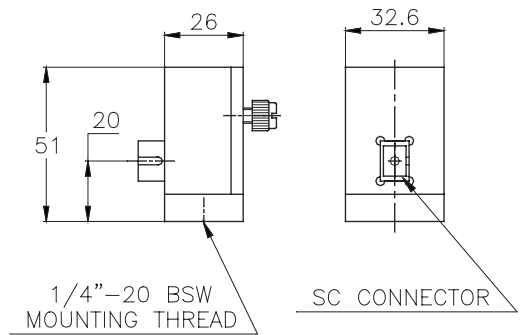
PD300-FO-SMA



PD300-FO-ST



PD300-FO-FC



PD300-FO-SC

Ordering Information		
Item	Description	Ophir P/N
PD300-CDRH	Ø7mm aperture adapter for CDRH measurements	1Z02418
Fiber Adapters	See page 52 for fiber adapter ordering information	

Radiometer and Photometer Heads

In addition to photodiode heads for individual wavelengths, Ophir also supplies heads for measuring the output of broadband light sources. The PD300-BB head has spectrally flat response from 400 to 1000nm and therefore can give the true total power of any broadband light source in that spectral region. The PD300-CIE head has a spectral response similar to that of the human eye and can therefore make measurements in eye response units of Lux. The PD300-CIE is designed with a small detector with the source overfilling the detector. It measures the light intensity per unit area in units of Lux or Foot Candles.

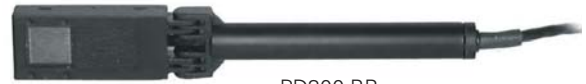
PD300-BB Radiometer Head

CW power 50pW - 6mW

Recommended Use: Power measurement of broadband light sources

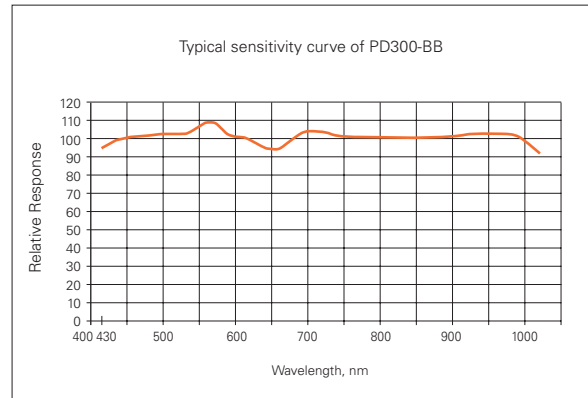
Special Features: Flat spectral response from 400 to 1000nm

NEW



PD300-BB

PD300-BB	
Spectral Response:	400 - 1000nm (see graph)
Power Scales:	8.000mW / 800.0µW / 80.00µW / 8.000µW / 800.0nW / 80.00nW / 8.000nW / dBm
Maximum Power vs. Wavelength, all wavelengths	6mW
Damage Threshold	10W/cm ²
Max Pulse Energy:	1µJ
Accuracy	Worst case deviation from flat spectrum ±10% (see graph)
Aperture:	10x10mm
Response Time	0.2s
Beam Position Dependence	±2%
Noise Level	±2pW
Background Subtraction:	N. A.
Dimensions	See drawings on page 22



PD300-CIE Photometer Head

Photopic Measurements 20m Lux-200K Lux

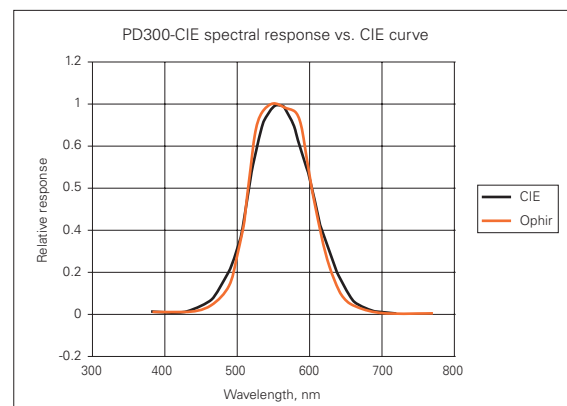
Recommended Use: Measurement of illumination sources

Special Features: Measurements in units of Lux or Foot Candles



PD300-CIE

PD300-CIE	
Spectral Response:	400 - 700nm (see graph)
Measurement Scales (for Lux units):	200.0K Lux / 20.00K Lux / 2.000K Lux / 200.0 Lux / 20.00 Lux / 2.000 Lux
Measurement Units	Lux (Lumen/m ²) or Foot Candles (Lumen/ft ²)
Damage Threshold	10W/cm ²
Max Pulse Energy:	1µJ
Accuracy	(see graph)
Active Area:	2.4x2.8mm
Response Time	0.2s
Noise Level	±1m Lux
Background Subtraction:	N. A.
Dimensions	See drawings on page 22



Ordering Information		
Item	Description	Ophir P/N
PD300-BB	Radiometric head with flat spectral response from 400 to 1000nm	1Z02405
PD300-CIE	Photometric head with CIE eye response. Measurement in Lux or FC	1Z02406

PD300-TP Thin Profile Power Meter

CW power 50pW - 1W

Recommended Use: Low power CW lasers in tight locations

Special Features: Very thin profile - 4mm only

PD300-TP			
	Filter Out		Filter In
Spectral response:	350 - 1100nm		400 - 1100nm
Power Scales:	3.000mW / 300.0µW / 30.00µW / 3.000µW / 300.0nW / 30.00nW / 3.000nW / dBm		1W / 300.0mW / 30.00mW / 3.000mW / dBm
Maximum Power vs. Wavelength			
350 - 400nm	3mW		
400 - 500nm	3mW		1W
600nm	2.5mW		1W
700nm	2mW		500mW
800 - 950nm	1.5mW		300mW
1064nm	3mW		500mW
Damage Threshold	10W/cm ²		50W/cm ²
Additional Error with	N.A.		5W/cm ² - 2%,
Power Density			15W/cm ² - 4%
Max Pulse Energy:	1µJ		100µJ
Accuracy:	±7%	350 - 400nm	±10% 350 - 400nm
(Including errors due to	±3%	400 - 950nm	±5% 400 - 950nm
temp. variations)	±5%	950 - 1100nm	±7% 950 - 1100nm
Aperture:	10 x 10mm		
Response Time:	0.2s		
Beam Position Dependence:	±2%		
Noise:	±2pW at mid spectrum with filter out		
Background Subtraction:	N.A.		

Accuracy:
(Including errors due to
temp. variations)

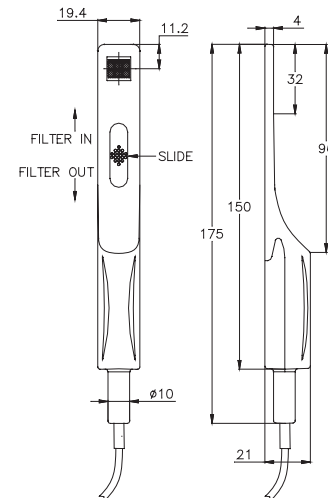
NEW



PD300-TP
handheld use



PD300-TP
Mounted on stand



Ordering Information		
Item	Description	Ophir P/N
PD300-TP	350 - 1100nm, up to 1W, thin profile 4mm thick	1Z02424