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)

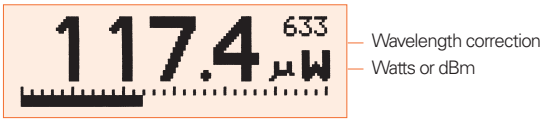
Recommended Use: Low power CW lasers, out of fiber measurement

- 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

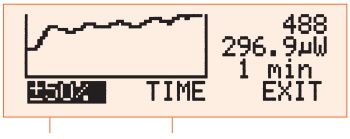


- Auto or manual range
- 120 point bargraph display
- Watts or dBm
- Wavelength correction, user-selected and programmable

Average Screen

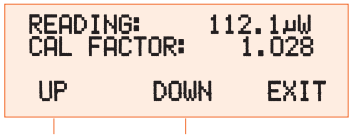
- Periodic (1/3 sec to 30 sec) or continuous (10 sec to 1 hour) average for fast changing or slowly changing lasers

Laser Tuning Screen



- Autoranging
- Cursor for max power adjustment

Calibration Screen



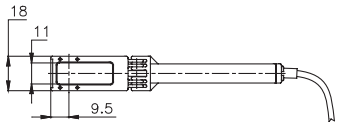
- Using known laser source

PD300 / PD300-1W / PD300-3W

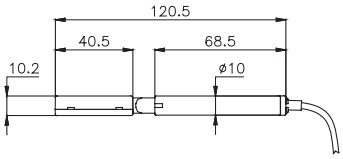
CW power 1nW-30mW (300mW / 1W or 3W with supplied filter)

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

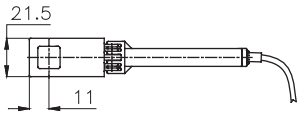


front view

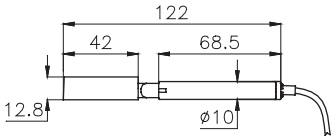


side view

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/cm²	50W/cm²	50W/cm²	Damage Threshold:	10W/cm²	150W/cm²
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%	±3% over 70% of area
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	1Z02410
PD300-1W	350-1100nm, up to 1W	1Z02411
PD300-3W-V1	350-1100nm, up to 3W and for high power densities	1Z02426
Fiber adapters	See page 52 for fiber adapter ordering information	

PD300-IR/PD300-UV

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

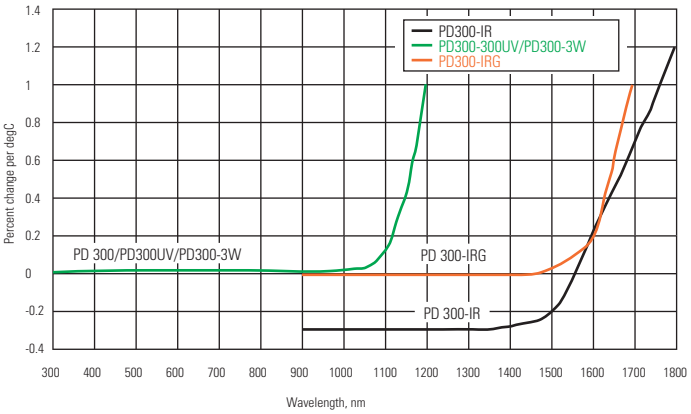
Recommended Use: Low power CW lasers (HeNe, diode, etc.), out of fiber measurement
Special Features: Infrared, 800-1800nm

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

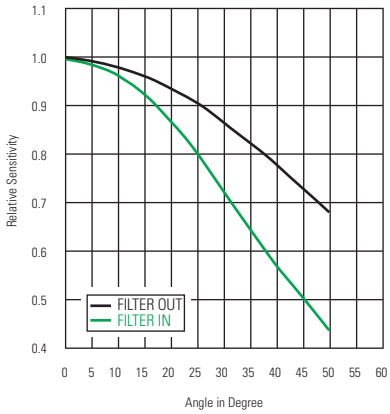
PD300-IR				PD300-UV			
	Filter Out		**Filter In**		**Filter Out**		**Filter In**
Spectral Response:	800-1800nm		800-1800nm	Spectral Response:	200-1100nm [a]		220-1100nm
Power Scales:	30.00mW/3.000mW/ 300.0µW/30.00µW/ 3.000µW/300.0nW/dBm		300.0mW/30.0mW/dBm	Power Scales:	3.000mW/300.0µW/ 30.00µW/3.000µW/ 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/cm²		50W/cm²	Damage Threshold:	10W/cm²		150W/cm²
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	±4%	900 - 1700nm	±6% 900-1700nm	(Including errors due	±3%	250 - 950nm	±5% 300-950nm
to temp. variations)	±7%	1700 - 1800nm	±9% 900-1700nm	to temp. variations)	±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 Sentivity



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
with fiber input

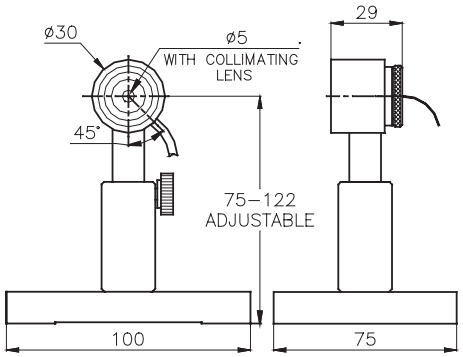
PD300-IRG
with no fiber input

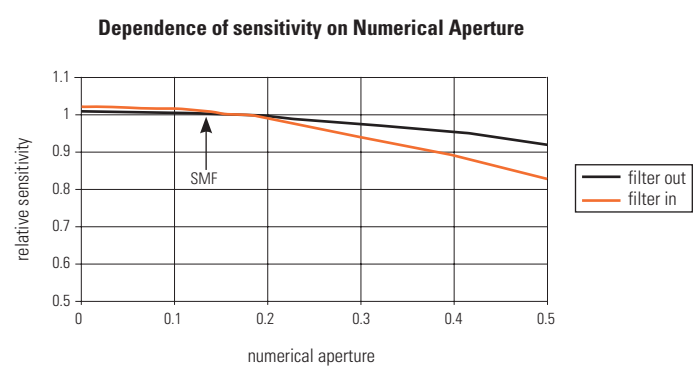
PD300-IRG

	Filter Out	Filter In
Spectral Response:	800-1700nm	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/cm²	50W/cm²
Max Pulse Energy:	1µJ	100µJ
Accuracy at 25°C	±3% 100-1650nm ±5% <1000 >1650nm	±6% 100-1600nm ±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



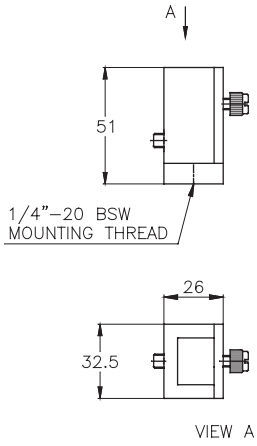


Note: 1. Graph assumes equal intensity into all angles up to maximum N.A.
2. Calibration is done with SMF, N.A. 0.13

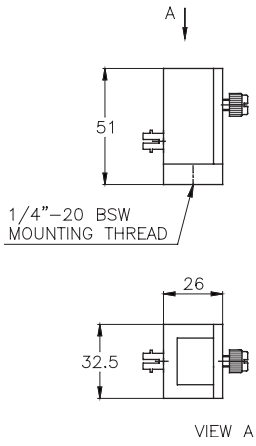
Ordering Information		
Item	**Description**	**Ophir P/N**
PD300-IRG-V1	800-1700nm, up to 300mW with IRG detector, built in collimating optics and removable filter	1Z02402
Fiber adapters	See page 52 for fiber adapter ordering information	

Accessories for Standard PD300 Smart Heads

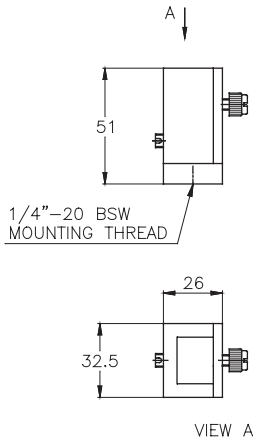
Fiberoptic and CDRH Adapters for PD3300 Heads



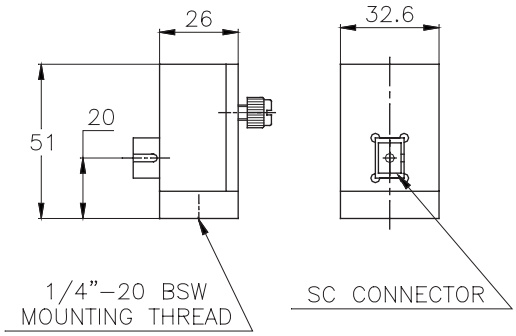
PD300-FO-SMA



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	

OPHIR Laser Measurement Group

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

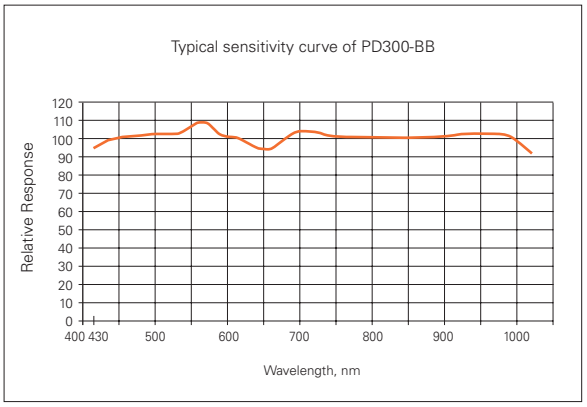
CW power 50pW - 6mW

NEW

PD300-BB

Recommended Use: Power measurement of broodbard light sources
Special Features: Flat spectral response from 400 to 1000nm

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/cm²
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



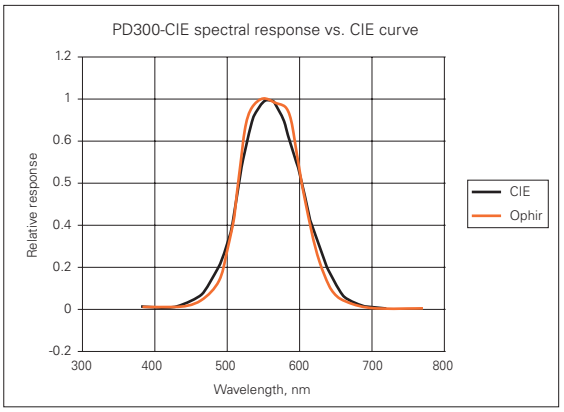
PD300-CIE Photometer Head

Photopic Measurements 20m Lux-200K Lux

PD300-CIE

Recommended Use: Measurement of illumination sources
Special Features: Measurements in units of Lux or Foot Candles

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/m²) or Foot Candles (Lumen/ft²)
Damage Threshold	10W/cm²
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

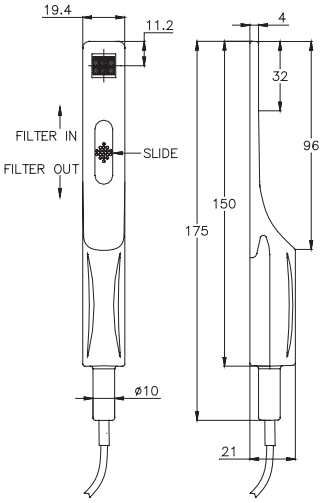
PD300-TP		
	Filter Out	**Filter In**
Spectral response:	350 - 1100nm	400 - 1100nm
Power Scales:	3.000mW / 300.0µW / 30.00µW / 3.000µW / 300.0nW / 30.00nW / 3.000nW / dBm	1W / 300.0mW / 30.00mW / 3.000mW / dBm
Maximum Power vs. Wavelength		
350 - 400nm	3mW	
400 - 500nm	3mW	1W
600nm	2.5mW	1W
700nm	2mW	500mW
800 - 950nm	1.5mW	300mW
1064nm	3mW	500mW
Damage Threshold	10W/cm²	50W/cm²
Additional Error with Power Density	N.A.	5W/cm² - 2%, 15W/cm² - 4%
Max Pulse Energy:	1µJ	100µJ
Accuracy: (Including errors due to temp. variations)	±7% 350 - 400nm ±3% 400 - 950nm ±5% 950 -1100nm	±10% 350 - 400nm ±5% 400 - 950nm ±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