

PE

8 fJ - 150 nJ, our lowest energy measurements



KEY FEATURES

- > **VERY LOW NOISE LEVEL**
Take measurements with a noise level as low as 8 fJ (model PE3B-Si only) with the M-LINK, MAESTRO and S-LINK
- > **3 SENSORS AVAILABLE**
 - PE-B-SI family: 3 and 10 mm Ø silicon sensors for 0.21 to 1.08 µm
 - PE5B-GE: 5 mm Ø, germanium sensor for 0.8 to 1.65 µm
 - PE3B-IN: 3 mm Ø, InGaAs sensor for 0.9 to 1.7 µm

OUTPUT OPTIONS

- > **SMART INTERFACE**
Containing all the calibration data
- > **ANALOG OUTPUT**
When used with APM (D) analog power supply
- > **integra ALL-IN-ONE-METER**
Connects directly to a PC
Three models available:
 - USB output (-INT)
 - RS-232 output (-IDR)
 - USB with external trigger (-INE)

COMPATIBLE DISPLAYS & PC INTERFACES



MAESTRO



U-LINK



M-LINK



S-LINK

ACCESSORIES



Stand with delrin post



Fiber adaptors & connectors (FC, ST or SMA)



APM (D) analog power supply







Pelican carrying case



Isolation tube

This product cannot be used with DB15 extension cables



	PE3B-SI-DO	PE10B-SI-DO	PE5B-GE-DO	PE3B-IN-DO
MAX MEASURABLE ENERGY*	24 pJ	81 nJ	2.4 nJ	245 pJ
EFFECTIVE APERTURE	3 mm ϕ	10 mm ϕ	5 mm ϕ	3 mm ϕ
MEASUREMENT CAPABILITY				
Calibrated spectral range	210 - 1080 nm	210 - 1080 nm	800 - 1650 nm	900 - 1700 nm
Maximum measurable energy*				
With M-LINK	22 pJ at 634 nm	75 nJ at 634 nm	2.2 nJ at 1310 nm	223 pJ at 1310 nm
With S-LINK	24 pJ at 634 nm	81 nJ at 634 nm	2.4 nJ at 1310 nm	245 pJ at 1310 nm
With MAESTRO	20 pJ at 634 nm	69 nJ at 634 nm	2.0 nJ at 1310 nm	200 pJ at 1310 nm
With INTEGRA	24 pJ at 634 nm	81 nJ at 634 nm	2.4 nJ at 1310 nm	245 pJ at 1310 nm
Noise equivalent energy^a	8 fJ at 634 nm	1.5 pJ at 634 nm	1 pJ at 1310 nm	30 fJ at 1310 nm
Rise time (0-100%)	15 μ s	30 μ s	25 μ s	12 μ s
Max repetition rate	1000 Hz	1000 Hz	1000 Hz	1000 Hz
Max pulse width	10 μ s	10 μ s	10 μ s	10 μ s
Calibration uncertainty^b	$\pm 4\%$ ^c	$\pm 18\%$ (210 - 229 nm) $\pm 8.0\%$ (230 - 254 nm) $\pm 6.5\%$ (255 - 399 nm) $\pm 2.5\%$ (400 - 899 nm) $\pm 4.0\%$ (900 - 1009 nm) $\pm 7.5\%$ (1010 - 1080 nm)	$\pm 5\%$ (800 - 1049 nm) $\pm 3.5\%$ (1050 - 1559 nm) $\pm 7\%$ (1560 - 1629 nm) $\pm 10\%$ (1630 - 1650 nm)	$\pm 4\%$ ^d
DAMAGE THRESHOLDS				
Max energy density	N/A	5 μ J/cm ²	5 μ J/cm ²	N/A
Max average power density	N/A	65 mW/cm ² at 532 nm	320 mW/cm ² at 1064 nm	N/A
PHYSICAL CHARACTERISTICS				
Effective aperture	3 mm ϕ	10 mm ϕ	5 mm ϕ	3 mm ϕ
Distance to sensor face	13.7 mm	13.7 mm	10.5 mm	N/A
Sensor	UV-silicon	UV-silicon	Germanium	InGaAs
Dimensions	38.1 ϕ x 27.4D mm	38.1 ϕ x 27.4D mm	38.1 ϕ x 27.4D mm	38.1 ϕ x 27.4D mm
Weight	91 g	91 g	91 g	91 g
ORDERING INFORMATION				
Available output options	DB15, USB or RS-232	DB15, USB or RS-232	DB15, USB or RS-232	DB15, USB or RS-232
Compatible stand	STAND-D-233 or STAND-D-233-M	STAND-D-233 or STAND-D-233-M	STAND-D-233 or STAND-D-233-M	STAND-D-233 or STAND-D-233-M
Product page				

* See curves (p. 102-103) for maximum energy at other wavelengths

- a. Nominal value. Depends on environmental electromagnetic interference and wavelength.
- b. With Gentec-EO display or PC interface.
- c. This detector is NIST Traceable at the calibration wavelength of 634 nm. Typical values are used at other wavelengths.
- d. This detector is NIST Traceable at the calibration wavelength of 1310 nm. Typical values are used at other wavelengths.

POWER DETECTORS

ENERGY DETECTORS

BEAM PROFILING

TERAHERTZ DETECTORS

DISPLAYS & PC INTERFACES

CUSTOM / OEM PRODUCTS

PH

10 pW to 750 mW, Si and Ge sensors



KEY FEATURES

- > **LARGE APERTURES**
10 mm Ø for the silicon sensors
- > **3 VERSIONS**
 - Silicon: 350 - 1080 nm, up to 750 mW
 - Silicon-UV: 210 - 1080 nm, up to 38 mW
 - Germanium: 800 - 1650 nm, up to 500 mW
- > **CHOICE OF ATTENUATORS**
Models with attenuators include a calibration both with and without the removable filter
- > **HIGH ACCURACY**
The PH100-SI-HA presents the lowest calibration uncertainty to date
- > **PRECISE CALIBRATION**
Wavelength selection in 1 nm steps

OD ATTENUATORS

ND filters sold in option.
When bought together, the detector is calibrated with and without the attenuator.



PH series detector with OD attenuator

OUTPUT OPTIONS

- > **SMART DB15 CONNECTOR**
Contains all the calibration data
- > **integra ALL-IN-ONE-METER**
Connects directly to a PC
Two models available:
 - USB output (-INT)
 - RS-232 output (-IDR)

COMPATIBLE DISPLAYS & PC INTERFACES



MIRO ALTITUDE



MAESTRO



TUNER



UNO



U-LINK and P-LINK



M-LINK

ACCESSORIES



Stand with delrin post



Extension cables
(4, 15, 20 or 25 m)



Fiber adaptors & connectors
(FC, SC, ST and SMA)



ND filters (attenuators)







Pelican carrying case



Isolation tube



	PH100-SI-HA-DO	PH100-SIUV-DO	PH20-GE-DO	IS12L-9S-RSI
MAX AVERAGE POWER* (ALONE / WITH MAX ATTENUATION)	36 mW / 750 mW	4 mW / 38 mW	30 mW / 500 mW	9 W
EFFECTIVE APERTURE	10 mm ϕ	10 mm ϕ	5 mm ϕ	12 mm ϕ
MEASUREMENT CAPABILITY				
Calibrated spectral range	350 - 1080 nm	210 - 1080 nm	800 - 1650 nm	400 - 1070 nm
With OD0.3	---	210 - 1080 nm	---	
With OD1	400 - 1080 nm	400 - 1080 nm	900 - 1650 nm	
With OD2	630 - 1080 nm	---	950 - 1650 nm	
Maximum measurable power*	36 mW at 1064 nm	4 mW at 532 nm	30 mW at 1064 nm	9 W
With OD0.3	---	16 mW at 300 nm	---	
With OD1	300 mW at 1064 nm	38 mW at 532 nm	300 mW at 1064 nm	
With OD2	750 mW at 1064 nm	---	500 mW at 1064 nm	
Noise equivalent power^a	10 pW at 980 nm	10 pW at 850 nm	60 pW at 1550 nm	1 μ W at 1070 nm
Rise time (nominal)	0.2 s	0.2 s	0.2 s	0.2 s
Calibration uncertainty	\pm 5.0 % (350 - 399 nm) \pm 2.0 % (400 - 449 nm) \pm 1.5 % (450 - 809 nm) \pm 2.0 % (810 - 899 nm) \pm 4.0 % (900 - 1009 nm) \pm 7.5 % (1010 - 1080 nm)	\pm 18 % (210 - 229 nm) \pm 8.0 % (230 - 254 nm) \pm 6.5 % (255 - 399 nm) \pm 2.5 % (400 - 899 nm) \pm 4.0 % (900 - 1009 nm) \pm 7.5 % (1010 - 1080 nm)	\pm 5.0 % (800 - 1049 nm) \pm 3.5 % (1050 - 1559 nm) \pm 7.0 % (1560 - 1629 nm) \pm 10 % (1630 - 1650 nm) ---	\pm 5.0 % (400 - 499 nm) \pm 3.5 % (500 - 1069 nm) \pm 2.5 % (1070 nm)
Calibration uncertainty (with OD filters)	\pm 5.0 % (400 - 419 nm) \pm 4.0 % (420 - 899 nm) \pm 5.0 % (900 - 1009 nm) \pm 7.5 % (1010 - 1080 nm)	Same as without attenuator --- --- ---	\pm 5.0 % (900 - 1559 nm) \pm 7.0 % (1560 - 1629 nm) \pm 10 % (1630 - 1650 nm) ---	N/A
Minimum repetition rate	155 kHz	155 kHz	155 kHz	N/A
DAMAGE THRESHOLDS				
Maximum average power density	100 W/cm ²	100 W/cm ²	100 W/cm ²	2 kW/cm ²
PHYSICAL CHARACTERISTICS				
Effective aperture	10 mm ϕ	10 mm ϕ	5 mm ϕ	12 mm ϕ
Distance to sensor face	13.7 mm	13.7 mm	10.5 mm	N/A
Sensor	Silicon	UV-Silicon	Germanium	Silicon
Dimensions	38.1 ϕ x 27.4D mm	38.1 ϕ x 27.4D mm	38.1 ϕ x 27.4D mm	66H x 78W x 66D mm
Weight (head only)	130 g	130 g	130 g	0.75 kg
ORDERING INFORMATION				
Available output options	DB15, USB or RS-232	DB15, USB or RS-232	DB15, USB or RS-232	USB or RS-232
Compatible stand	STAND-D-233 or STAND-D-233-M	STAND-D-233 or STAND-D-233-M	STAND-D-233 or STAND-D-233-M	STAND-S-443
Product page				

* See curves (p. 60-61) for maximum power at other wavelengths

a. Nominal value. Depends on environmental electromagnetic interference and wavelength.