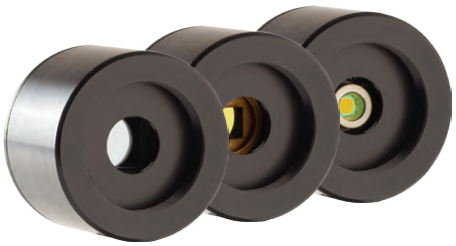
PRESENTATION

OVERVIEW OF THE DIFFERENT MODELS

Our photo detectors are offered for both power or energy measurements. Measure as low as a few femtojoules in energy or a few picowatts in power. Our photo detectors are also offered in standalone formats, where the electronics are integrated in the device, or as standard sensors that you hook up to a meter.

FOR POWER MEASUREMENTS

The section below lists all the photo detectors used for power measurements. The corresponding comparison table and power range chart are given at the next page.



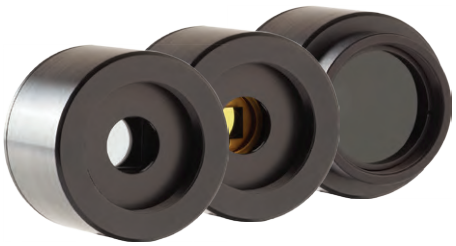
See page 96

PH-B

- 3, 5 and 10 mm Ø Apertures
- Silicon, Germanium or InGaAs Sensors
- Very Low Powers, down to the pW level

pW

NOISE DOWN TO THE pW LEVEL



See page 98

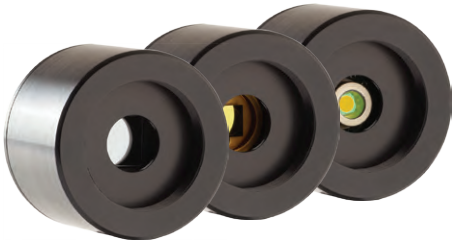
PH

- High Power Photo Detectors for measurements up to 750 mW
- Available from UV to IR
- Silicon, UV-Silicon or Germanium Sensors
- OD1/OD2 Attenuators Available

HIGH POWER Si OR Ge SENSORS

FOR ENERGY MEASUREMENTS

The section below lists all the photo detectors used for energy measurements. The corresponding comparison table and energy range chart are given at page 104.



See page 100

PE-B

- 3, 5 and 10 mm Ø Apertures
- Germanium or InGaAs Sensors
- Lowest Noise Level of ALL Energy Detectors (2 fJ with PE3B-Si)

fJ

2 fJ NOISE LEVEL

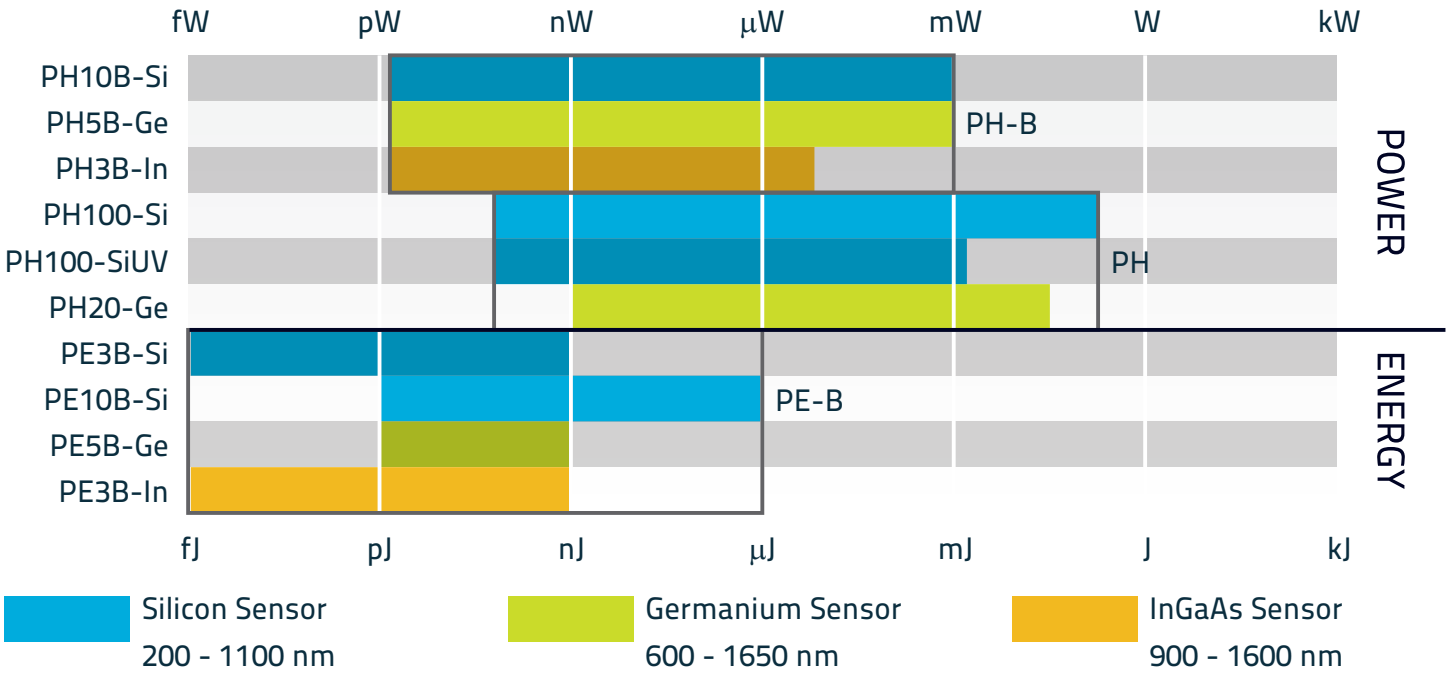
COMPARISON TABLE

FOR POWER MEASUREMENTS

MODEL	Pmax	Pmin	λmin	λmax	SENSOR TYPE	APERTURE	SEE PAGE
PH3B-In	200 µW	10 pW	900 nm	1.6 µm	InGaAs	3 mm Ø	96
PH10B-Si	2 mW	20 pW	190 nm	1.1 µm	Silicon	10 mm Ø	96
PH5B-Ge	2 mW	10 pW	1000 nm	1.7 µm	Germanium	5 mm Ø	96
PH100-SiUV	4 mW	600 pW	210 nm	900 nm	UV-Silicon	10 mm Ø	98
PH100-SiUV-OD1	25 mW	6 nW	400 nm	900 nm	UV-Silicon	10 mm Ø	98
PH100-Si	36 mW	600 pW	300 nm	1.1 µm	Silicon	10 mm Ø	98
PH20-Ge	30 mW	2 nW	800 nm	1.65 µm	Germanium	5 mm Ø	98
PH100-SiUV-OD2	30 mW	60 nW	630 nm	900 nm	UV-Silicon	10 mm Ø	98
PH100-Si-OD1	300 mW	6 nW	400 nm	1.1 µm	Silicon	10 mm Ø	98
PH20-Ge-OD1	300 mW	20 nW	900 nm	1.65 µm	Germanium	5 mm Ø	98
PH20-Ge-OD2	500 mW	200 nW	950 nm	1.65 µm	Germanium	5 mm Ø	98
PH100-Si-OD2	750 mW	60 nW	630 nm	1.1 µm	Silicon	10 mm Ø	98

FOR ENERGY MEASUREMENTS

MODEL	Emax	Emin	λmin	λmax	SENSOR TYPE	APERTURE	SEE PAGE
PE3B-Si	2 nJ	2 fJ	190 nm	1.1 µm	Silicon	3 mm Ø	100
PE3B-In	2 nJ	5 fJ	900 nm	1.6 µm	InGaAs	3 mm Ø	100
PE5B-Si	20 nJ	500 fJ	190 nm	1.1 µm	Silicon	5 mm Ø	100
PE5B-Ge	20 nJ	500 fJ	1000 nm	1.7 µm	Germanium	5 mm Ø	100
PE10B-Si	2 µJ	2 pJ	190 nm	1.1 µm	Silicon	10 mm Ø	100



T 418.651.8003 1888 5GENTEC F 418.651.1174 www.gentec-eo.com info@gentec-eo.com

PH-B

10 pW - 2 mW, Our Lowest Power Measurements

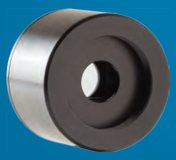
KEY FEATURES

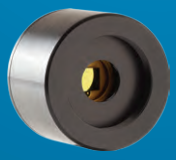
1 Very Sensitive Photo Detector
Measure down to 10 pW level

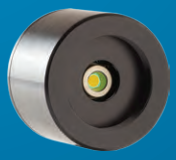
2 3 Sensors Available
- PH10B-Si: 10 mm Ø, Silicon sensor for 0.21 to 1.08 µm
- PH5B-Ge: 5 mm Ø, Germanium sensor for 0.8 to 1.65 µm
- PH3B-In: 3 mm Ø, InGaAs sensor for 0.9 to 1.6 µm

3 Smart Interface
Containing all the calibration data

AVAILABLE MODELS

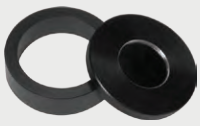

PH10B-Si
(10 mm - Silicon)


PH5B-Ge
(5 mm - Germanium)


PH3B-In
(3 mm - InGaAs)

ACCESSORIES


Stand with Delrin Post
(Model Number: 200428)


Removable IR Windows
(Various types available)


Fiber Adaptors & Connectors
(FC, SC, ST and SMA)


APM Analog Power Supply
(Model Number: 201495)


Pelican Carrying Case

SEE ALSO

PH-B

SPECIFICATIONS

Approved or in the process of being approved*

MODELS	PH10B-Si	PH5B-Ge	PH3B-In
MAX AVERAGE POWER	2 mW	2 mW	200 µW
EFFECTIVE APERTURE	10 mm Ø	5 mm Ø	3 mm Ø

MEASUREMENT CAPABILITY			
Spectral Range	0.21 - 1.08 µm	0.8 - 1.65 µm	0.9 - 1.6 µm
Maximum Measurable Power [a]	2 mW	2 mW	200 µW
Noise equivalent power [b]	20 pW	10 pW	10 pW
Rise Time (0-100%)	≤ 0.2 s	≤ 0.2 s	≤ 0.2 s
Peak Sensitivity	15 kV/W	100 kV/W	96 kV/W
Calibration Uncertainty [c]	±8 % 210 - 219 nm	± 3.5% 800 - 1650 nm	± 4% 900 - 1600 nm
	±6.5 % 220 - 399 nm		
	±2.5 % 400 - 899 nm		
	±3.5 % 900 - 999 nm		
	±5 % 1000 - 1049 nm		
	±7 % 1050 - 1080 nm		
DAMAGE THRESHOLDS			
Max Average Power Density (@ 1.064 µm)	1 mW/cm²	1 mW/cm²	1 mW/cm²
PHYSICAL CHARACTERISTICS			
Effective Aperture	10 mm Ø	5 mm Ø	3 mm Ø
Sensor	Silicon	Germanium	InGaAs
Connector	DB-15	DB-15	DB-15
Dimensions	38.1 Ø x 27.4D mm	38.1 Ø x 27.4D mm	38.1 Ø x 27.4D mm
Weight	91 g	91 g	91 g
ORDERING INFORMATION			
Full Product Name	PH10B-Si	PH5B-Ge	PH3B-In
Product Number	202022	202023	202142

a. Maximum value depends on the monitor.
b. Nominal value, depends on environmental electromagnetic interference.
c. With a Gentec-EO monitor.

Specifications are subject to change without notice

* For details, contact your Gentec-EO representative

T 418.651.8003 1888 5GENTEC F 418.651.1174 www.gentec-eo.com info@gentec-eo.com

PH

600 pW to 750 mW, Si and Ge Sensors

KEY FEATURES

1 Large Apertures
10 mm Ø for the Silicon sensors

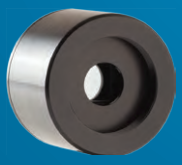
2 3 Versions
- Silicon: 320 - 1100 nm, up to 750 mW
- Silicon-UV: 210 - 1080 nm, up to 30 mW
- Germanium: 800 - 1650 nm, up to 500 mW

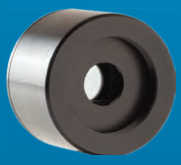
3 Choice of Attenuators
- OD1: 10 % Transmission
- OD2: 1 % Transmission

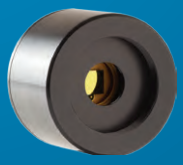
4 Precise Calibration
Wavelength selection in 1 nm steps

5 Smart Interface
Containing all the calibration data

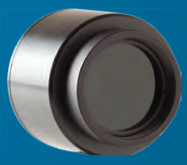
AVAILABLE MODELS


PH100-Si
(10 mm - Silicon)


PH100-Si^{UV}
(10 mm - UV-Silicon)


PH20-Ge
(5 mm - Germanium)

OD1 / OD2 ATTENUATORS


PH Series Detector
With OD1/OD2 Attenuator

OD1/OD2 Attenuators sold in option. When bought together, the detector is calibrated with and without the attenuator.

ACCESSORIES


Stand with Delrin Post
(Model Number: 200428)


Fiber Adaptors & Connectors
(FC, SC, ST and SMA)


Pelican Carrying Case

SEE ALSO

PH
SPECIFICATIONS

CE NIST* Traceable WEEE/RoHS COMPLIANT

*Also traceable to NRC-CNRC

MODELS	PH100-Si	PH-100Si^{UV}	PH20-Ge
MAX AVERAGE POWER (ALONE / WITH OD2)	36 mW / 750 mW	2.8 mW / 30 mW	30 mW / 500 mW
EFFECTIVE APERTURE	10 mm Ø	10 mm Ø	5 mm Ø
MEASUREMENT CAPABILITY			
Spectral Range	320 – 1100 nm	210 – 1080 nm	800 – 1650 nm
With OD1	400 – 1100 nm	400 – 1080 nm	900 – 1650 nm
With OD2	630 – 1100 nm	630 – 1080 nm	950 – 1650 nm
Maximum Measurable Power [a]	36 mW @ 1064 nm	4 mW @ 532 nm	30 mW @ 1064 nm
With OD1	300 mW @ 1064 nm	25 mW @ 532 nm	300 mW @ 1064 nm
With OD2	750 mW @ 1064 nm	30 mW @ 850 nm	500 mW @ 1064 nm
Noise Equivalent Power [b]	10 pW @ 980 nm	10 pW @ 850 nm	60 pW @ 1550 nm
Rise Time (nominal)	0.2 sec	0.2 sec	0.2 sec
Peak Sensitivity	0.58 A/W @ 980 nm	6.5 A/W @ 980 nm	0.98 A/W @ 1550 nm
Calibration Uncertainty	±6.5 % 320 - 399 nm	±8 % 200 - 219 nm	±3.5 % 800 - 1650 nm
	±2.5 % 400 - 899 nm	±6.5 % 220 - 399 nm	–
	±3.5 % 900 - 999 nm	±2.5 % 400 - 899 nm	–
	±5 % 1000 - 1049 nm	±3.5 % 900 - 999 nm	–
	±7 % 1050 - 1100 nm	±5 % 1000 - 1049 nm	–
	–	±7 % 1050 - 1080 nm	–
Accuracy (with OD filters)	±5 % 400 - 1049 nm ±7 % 1050 - 1100 nm	±5 % 400 - 1049 nm ±7 % 1050 - 1080 nm	±5 %
DAMAGE THRESHOLDS			
Maximum Average Power Density	100 W/cm^2	100 W/cm^2	100 W/cm^2
Saturation Level	30 mW/cm^2 @ 1064 nm	65 mW/cm^2 @ 532 nm	320 mW/cm^2 @ 1064 nm
PHYSICAL CHARACTERISTICS			
Effective Aperture	10 mm Ø	10 mm Ø	5 mm Ø
Dimensions	38.1Ø x 27.4D mm	38.1Ø x 27.4D mm	38.1Ø x 27.4D mm
Weight (head only)	130 g	130 g	130 g
ORDERING INFORMATION			
Full Product Name	PH100-Si	PH100-Si^{UV}	PH20-Ge
Product Number	200878	200879	200866
Full Product Name	PH100-Si-OD1	PD100-Si^{UV}-OD1	PH20-Ge-OD1
Product Number	200880	200881	200874
Full Product Name	PH100-Si-OD2	PH100-Si^{UV}-OD2	PH20-Ge-OD2
Product Number	200882	200883	200875

a. Maximum value depends on the monitor.
b. Nominal value. Depends on environmental electromagnetic interference.

Specifications are subject to change without notice

T 418.651.8003 1888 5GENTEC F 418.651.1174 www.gentec-eo.com info@gentec-eo.com

PE-B

2 fJ - 2 µJ, Our Lowest Energy Measurements

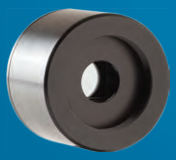
KEY FEATURES

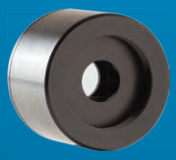
1 Very Low Noise Level
Take measurements down to 2 fJ with the M-LINK and the MAESTRO

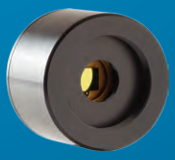
2 3 Sensors Available
- PE-B-Si family: 3 and 10 mm Ø Silicon sensors for 0.21 to 1.08 µm
- PE5B-Ge: 5 mm Ø, Germanium sensor for 0.8 to 1.65 µm
- PE3B-In: 3 mm Ø, InGaAs sensor for 0.9 to 1.6 µm

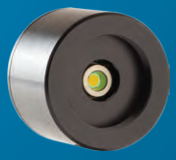
3 Smart Interface
Containing all the calibration data

AVAILABLE MODELS


PE3B-Si
(3 mm - Silicon)

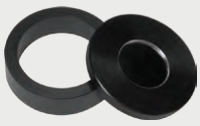

PE10B-Si
(10 mm - Silicon)


PE5B-Ge
(5 mm - Germanium)

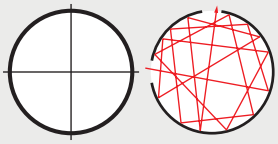

PE3B-In
(3 mm - InGaAs)

ACCESSORIES


Stand with Delrin Post
(Model Number: 200428)


Removable IR Windows
(Various types available)


Fiber Adaptors & Connectors
(FC, SC, ST and SMA)


IR Alignement Aide, Cross-hairs and Integrating Sphere


APM Analog Power Supply
(Model Number: 201495)


Pelican Carrying Case

SEE ALSO

PE-B

SPECIFICATIONS

Approved or in the process of being approved*

MODELS	PE3B-Si	PE10B-Si	PE5B-Ge	PE3B-In
MAX MEASURABLE ENERGY	2 nJ	2 µJ	20 nJ	2 nJ
EFFECTIVE APERTURE	3 mm Ø	10 mm Ø	5 mm Ø	3 mm Ø

MEASUREMENT CAPABILITY	With Monitor	With APM	With Monitor	With APM	With Monitor	With APM	With Monitor
Spectral Range	0.21 - 1.08 µm	0.21 - 1.08 µm		0.8 - 1.65 µm		0.9 - 1.6 µm	
Max Measurable Energy [a]	2 nJ	2 µJ		20 nJ		2 nJ	
Noise Equivalent Energy [b]	2 fJ	20 pJ	2 pJ	1 pJ	0.5 pJ	100 fJ	5 fJ
Rise Time (0-100%)	15 µs	15 µs		15 µs		15 µs	
Max Repetition Rate	1000 Hz	2000 Hz	1000 Hz	2000 Hz	1000 Hz	2000 Hz	1000 Hz
Max Pulse Width	10 µs	10 µs		10 µs		10 µs	
Sensitivity	N/A	20 MV/J		1 GV/J		10 GV/J	
Calibration Uncertainty [c]	± 5%	±8 % 210 - 219 nm ±6.5 % 220 - 399 nm ±2.5 % 400 - 899 nm ±3.5 % 900 - 999 nm ±5 % 1000 - 1049 nm ±7 % 1050 - 1080 nm		± 5%		± 5%	

DAMAGE THRESHOLDS				
Max Energy Density	5 µJ/cm²	5 µJ/cm²	5 µJ/cm²	5 µJ/cm²
Max Average Power Density (@ 1064nm)	1 mW/cm²	1 mW/cm²	1 mW/cm²	1 mW/cm²

PHYSICAL CHARACTERISTICS				
Effective Aperture	3 mm Ø	10 mm Ø	5 mm Ø	3 mm Ø
Sensor	Silicon	Silicon	Germanium	InGaAs
Connector	DB-15	DB-15	DB-15	DB-15
Dimensions	38.1Ø x 27.4D mm	38.1Ø x 27.4D mm	38.1Ø x 27.4D mm	38.1Ø x 27.4D mm
Weight	91 g	91 g	91 g	91 g

ORDERING INFORMATION				
Full Product Name	PE3B-Si	PE10B-Si	PE5B-Ge	PE3B-In
Product Number	202021	202019	202020	202143

a. Maximum value depends on the monitor.
b. Nominal value. Depends on environmental electromagnetic interference.
c. With Gentec-EO monitor.

Specifications are subject to change without notice

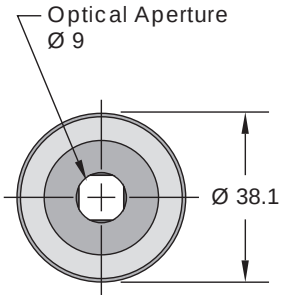
* For details, contact your Gentec-EO representative

T 418.651.8003 1888 5GENTEC F 418.651.1174 www.gentec-eo.com info@gentec-eo.com

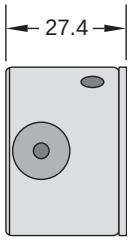
TECHNICAL DRAWINGS

PH10B-Si
PH100-Si/Si^{UV}
PE10B-Si

FRONT

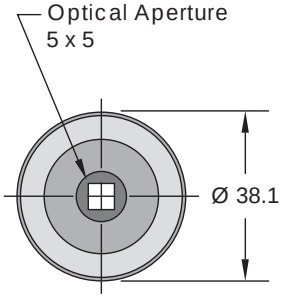


SIDE

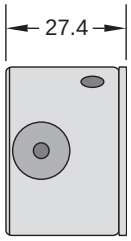


PH5B-Ge
PH20-Ge
PE5B-Ge

FRONT

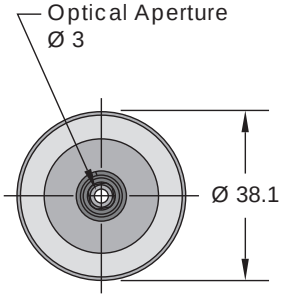


SIDE

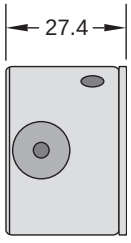


PH3B-In
PE3B-In

FRONT



SIDE

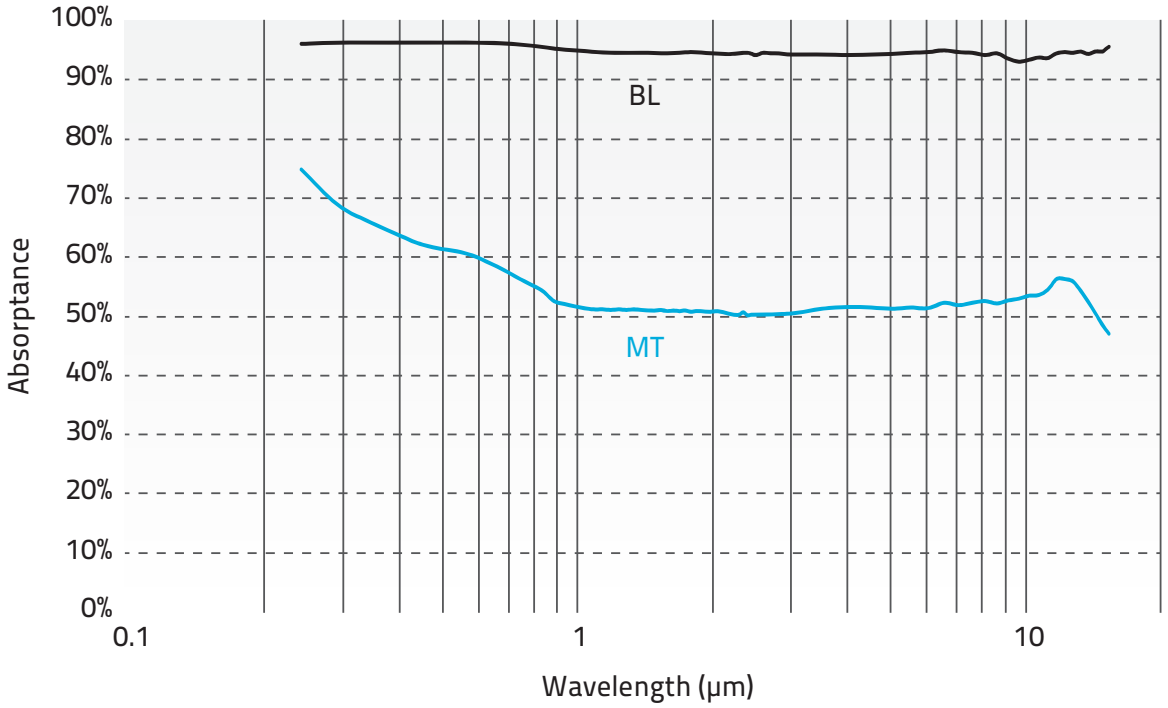


All dimensions in mm

ABSORPTION CURVES

PH-B / PE-B

ABSORPTANCE



RELATIVE RESPONSE