OPIPHOTONICS

High-Power Laser Diodes

BrighteX Line

Fiber coupled laser diodes

BrightboX Line

Laser diode systems

High-Power Laser Switch and Coupler

High-Power Laser Collimator and Optics

High-Power Laser Beam Delivery Systems

POWERBOX

SENSORIZED POWER METER

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1 General overview

Application

- Laser beam measurement
- Industrial field

Input sources

- Fiber laser
- Direct diode laser

Features

- Up to 10 kW
- In-field power measurement
- Optional photodiode reading feedback
- Optional spectral measurement adapter

Functionality

- OPI PowerBox is a laser beam measurement equipment to protect the operator during in-field high-power laser beam measurement.

2 Specifications:

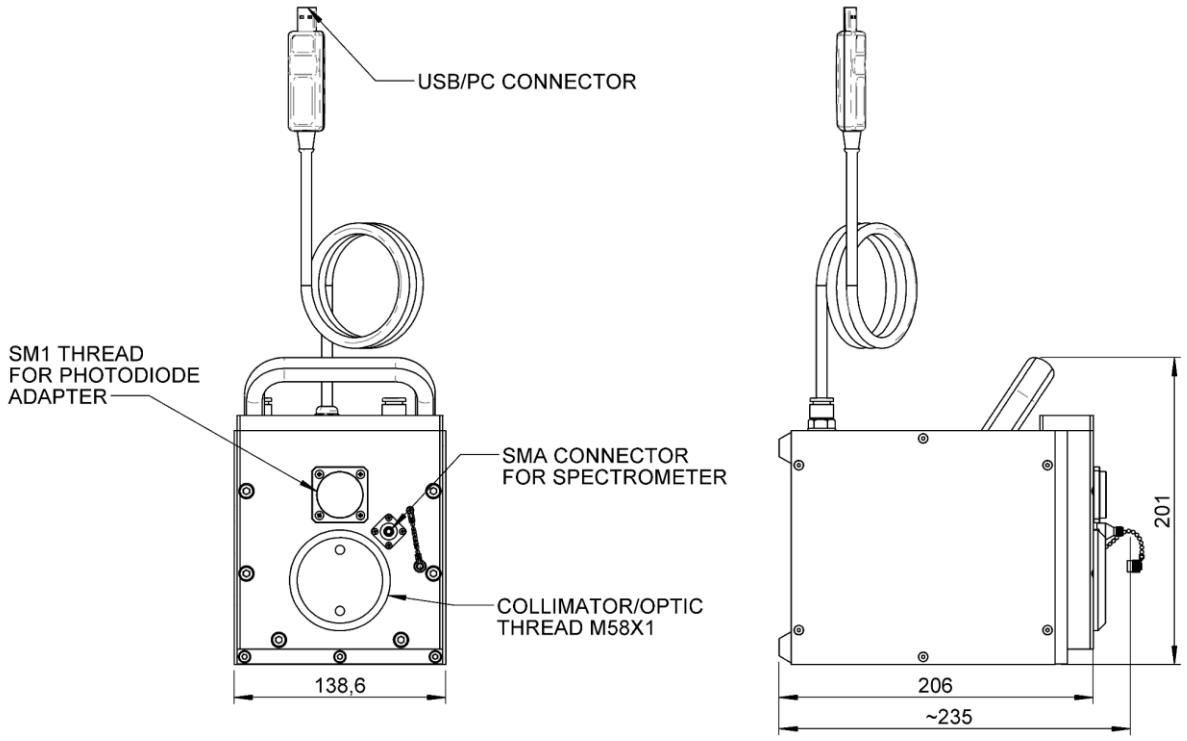
2.1 *General specifications*

	Parameter	Unit	Minimum	Typical	Maximum
Electro-optical characteristics	CW average power	kW	0.1		12
	Power resolution	W		10	
	Noise equivalent power	W		5	
	Response time (0-90%)	s		7	
	Power calibration uncertainty	%	-5		5
	Power linearity (1)	%	-2		+2
Absorber characteristics	Aperture	mm		55	
	Type	-		SHC	
	Absorber spectral range	µm	0.19		11
	Calibration spectral range	µm		1.06 and 10.6	
	Power density @ 5 kW (2)	kW/cm^2		5	
Cooling requirements	Cooling method	-		Liquid	
	Water connections ID/OD	Mm		8/10	
	Input water temperature	°C	21	22	23
	Water flow-rate	l/min	3	8	10
	Cooling capacity	kW		12	
Interface	Control protocol	-		USB	
	Cable length	m		5	
	Software interface	-		“PCPlug calorimetro”	
Ratings	Operating temperature	°C	15		45
	Relative humidity	%	35		60
	Storage temperature	°C	-20		85

Notes

(1) 50% of useful detector surface centrally irradiated
(2) Damage thresholds is power level depending

3 Technical drawings



All dimensions are in millimetres.

4 Optional and ancillaries

When measuring a fiber output beam, the OPI PowerBox can be mounted directly with an OPI Laser Beam Collimator to measure the output power of a laser source or an optical system. As an alternative to a collimator, the OPI Laser Beam Spacer can be used to measure a diverging beam with NA<0.1: OPI Laser Beam Spacer is a unit specifically designed to guarantee that the full beam enters the power meter aperture while limiting the power density on the absorber surface. The Laser Beam Spacer is optionally water cooled.

The OPI PowerBox can additionally be equipped with the following optional:

- SM1 thread adapter to connect a photodiode sensor, in such way is possible to have a power feedback or a fast failure power monitor
- SMA connector receptacle to connect an SMA fiber patchcord, a spectral measurement can be performed using this fiber connected to a spectral analyser.

5 Customization

The laser PowerBox for fiber and direct diode lasers is conceived as a standard product with some possible customizations.

Minor customizations are available on the standard part numbers and are tracked by the “OO” suffix in the extended part number.

The customizations will change the components used inside the device:

- Laser power sensor (“X” field of the extended part number)
- Photodiode adapter (“Y” field of the extended part number)
- Spectral measurement fiber adapter (“Z” field of the extended part number)

Major customization is possible only on specific request and after feasibility evaluation.

6 Ordering information

Extended part number: PB-X-Y-Z-OO

Part number data:

- Laser power sensor – X:
  - LP – LaserPoint
  - OR – Ophir (newer version under development)
- Photodiode adapter – Y:
  - SM05 (under development)
  - SM1
- Spectral measurement fiber adapter – Z:
  - SMA – SMA fiber receptacle
  - FC – FC/PC fiber receptacle

7 Summary