

OPIPHOTONICS

HIGH-POWER LASER DIODES



BrighteX Line
Fiber coupled
laser diodes



BrightboX Line
Laser diode
systems

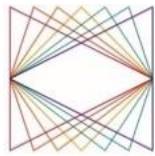


High-Power
Laser Switch
and Coupler



High-Power
Laser Collimator
and Optics

HIGH-POWER LASER BEAM DELIVERY SYSTEMS



LASER BEAM OPTICS

LENSES AND PROTECTIVE WINDOWS



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1 General overview

Application

- Material processing
- Industrial field

Features

- Up to 10 kW
- Pre-aligned and ready to use
- High-quality fused silica lenses

Input sources

- Fiber laser
- Direct diode laser

Functionality

- OPI laser beam optics are divided in two main categories: focusing lenses to focalize the collimated beam, and protective windows to protect the optical element from dust particles.
- The sliding protective window can be quickly removed and cleaned or replaced without disassembling the optical chain.

2 Focusing lens specifications:

2.1 Fiber laser sources

	Parameter	Unit	Typical
Optical characteristics	Maximum power	kW	8
	Wavelength range	nm	1030÷1090
	Lens diameter	m	25 or 50
	Lens material	-	High-Quality Fused Silica
	Typical power loss	%	<5

2.2 Direct diode laser sources

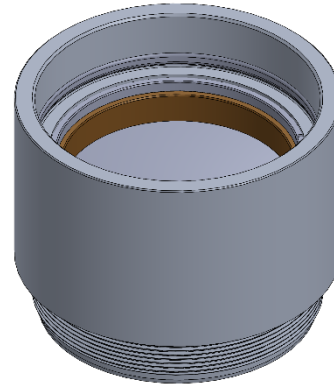
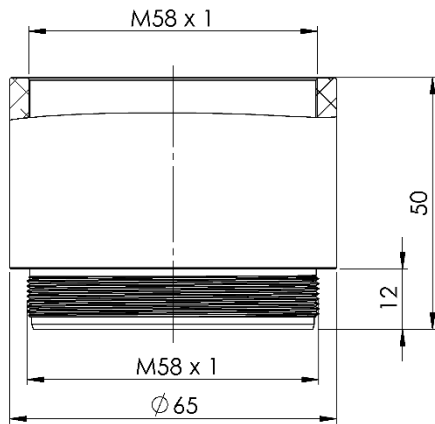
	Parameter	Unit	Typical
Optical characteristics	Maximum power	kW	10
	Wavelength range	nm	800÷1100
	Lens diameter	mm	25 or 50
	Lens material	-	High-Quality Fused Silica
	Typical power loss	%	<5

2.3 General specifications

	Parameter	Unit	Typical
Maximum ratings	Operating temperature	°C	10÷50
	Relative humidity	%	<80
	Storage temperature	°C	-20÷70
	Maximum ambient variation	°C	±10

3 Technical drawings

3.1 Focusing lens



All dimensions are in millimetres.

4 Optical configurations

	Design focal length (mm)	Lens diameter (mm)	EFL at 1064nm (mm)
Fiber Laser	50	25	50 (±0.5%)
	60	25	60 (±0.5%)
	75	25	75 (±0.5%)
	80	25	80 (±0.5%)
	120	50	120 (±0.5%)
	150	50	153 (±0.5%)
	200	50	200 (±0.5%)
	250	50	250 (±0.5%)

	Design focal length (mm)	Lens diameter (mm)	EFL at 920nm (mm)
Direct Diode Laser	40	25	38.5 (±0.5%)
	50	50	49.6 (±0.5%)
	60	50	59 (±0.5%)
	80	50	87,3 (±0.5%)
	100	50	99,5 (±0.5%)

5 Input and output interface

All the focusing lenses are designed to have a complete compatibility the threaded interface of both the collimators and the protective windows.



6 Customization

The laser beam focusing lens 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:

- Design focal length (“X” field of the extended part number)
- Lens diameter (“Y” field of the extended part number)
- Wavelength range (“Z” field of the extended part number)

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

7 Ordering information

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

Part number data:

- Design focal length – X:
 - 40
 - 50
 - 60
 - 75
 - 80
 - 100
 - 120
 - 150
 - 200
 - 250
- Lens diameter – Y:
 - 25
 - 50
- Wavelength range – Z:
 - FL – Fiber Laser
 - DL – Direct Diode Laser

8 Fixed and sliding protective windows specifications:

8.1 Fiber laser sources

	Parameter	Unit	Typical
Optical characteristics	Maximum power	kW	8
	Wavelength range	nm	1030÷1090
	Lens diameter	m	25 or 50
	Lens material	-	High-Quality Fused Silica
	Typical power loss	%	<5

8.2 Direct diode laser sources

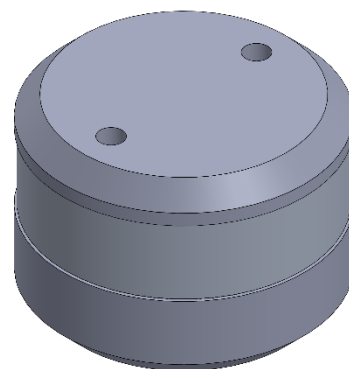
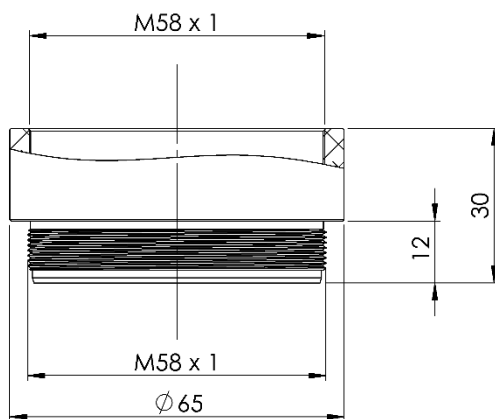
	Parameter	Unit	Typical
Optical characteristics	Maximum power	kW	10
	Wavelength range	nm	800÷1100
	Lens diameter	mm	25 or 50
	Lens material	-	High-Quality Fused Silica
	Typical power loss	%	<5

8.3 General specifications

	Parameter	Unit	Typical
Maximum ratings	Operating temperature	°C	10÷50
	Relative humidity	%	<80
	Storage temperature	°C	-20÷70
	Maximum ambient variation	°C	±10

9 Technical drawings

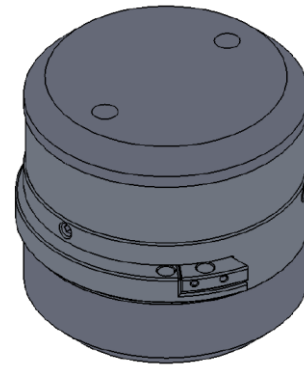
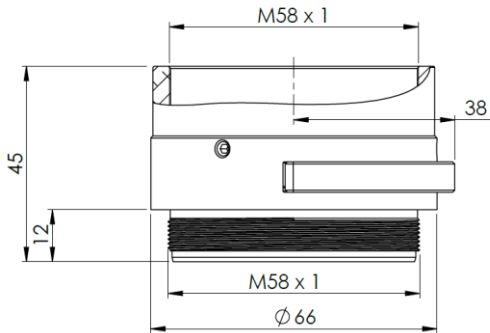
9.1 Fixed protective window



All dimensions are in millimetres.



9.2 Sliding protective window



All dimensions are in millimetres.

10 Optical configurations

	Window thickness (mm)	Lens diameter (mm)
Fiber Laser	2	25
	3	25
	2	50
	3	50
Direct Diode Laser	2	25
	3	25
	2	50
	3	50

11 Input and output interface

All the focusing lenses are designed to have a complete compatibility the threaded interface of both the collimators and the protective windows.

12 Customization

The laser beam protective window 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:

- Window thickness (“X” field of the extended part number)
- Window diameter (“Y” field of the extended part number)
- Wavelength range (“Z” field of the extended part number)
- Model (“A” field of the extended part number)

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

13 Ordering information

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

Part number data:

- Window thickness – X:
 - 2
 - 3
- Window diameter – Y:
 - 25
 - 50
- Wavelength range – Z:
 - FL – Fiber Laser
 - DL – Direct Diode Laser
- Model – A:
 - F – Fixed window
 - S – Sliding window

14 Summary

1	General overview.....	3
2	Focusing lens specifications:	3
2.1	Fiber laser sources.....	3
2.2	Direct diode laser sources	3
2.3	General specifications	3
3	Technical drawings	4
3.1	Focusing lens	4
4	Optical configurations	4
5	Input and output interface	4
6	Customization.....	5
7	Ordering information.....	5
8	Fixed and sliding protective windows specifications:	6
8.1	Fiber laser sources.....	6
8.2	Direct diode laser sources	6
8.3	General specifications	6
9	Technical drawings	6
9.1	Fixed protective window	6
9.2	Sliding protective window	7
10	Optical configurations	7
11	Input and output interface	7
12	Customization.....	8
13	Ordering information.....	8
14	Summary.....	9