



## Fiber-Coupled Laser

### *Monocrom @FLEX Direct Diode*

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#### Features:

- Clamping™ Patented Technology (Solder free mounting of laser bars)
- Long lifetime
- High reliability
- Low thermal resistances
- Wide storage temperature - 40° C to + 85° C
- No SMILE effect

#### Suitable for:

- Marking
- Plastic welding
- Brazing
- Cladding
- Additive manufacturing
- Heat treatment

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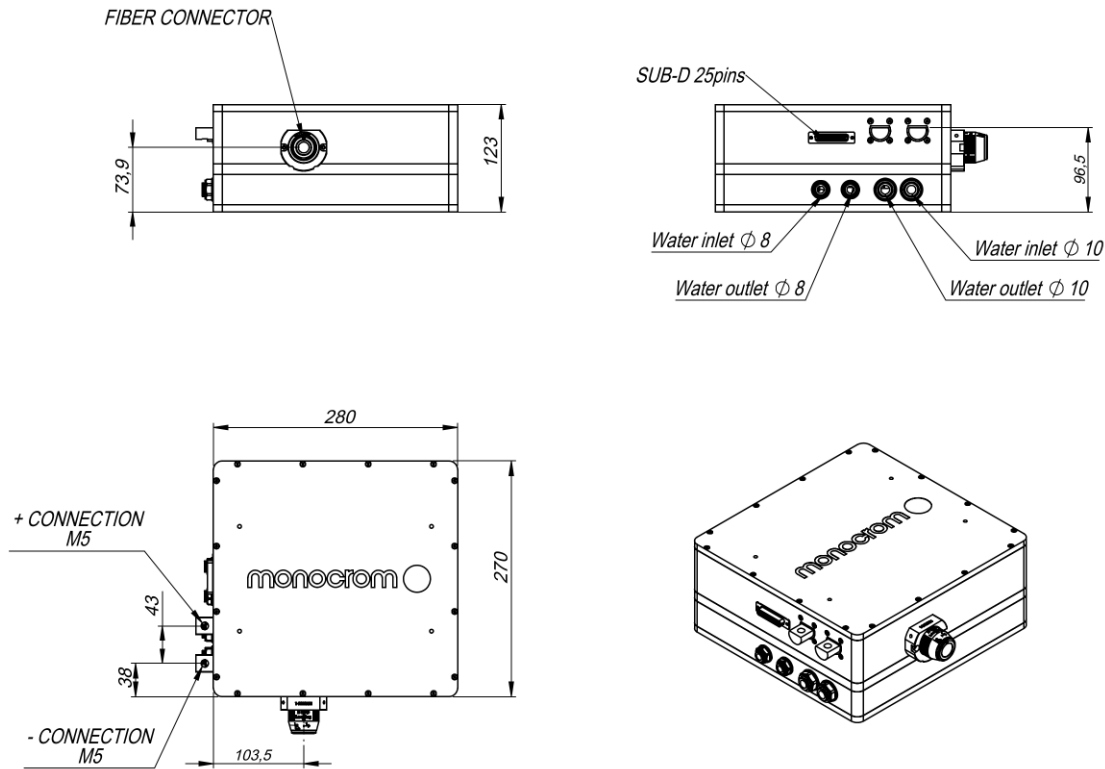
Product specification are subject to change without notice.  
For complete details, please contact your local MONOCROM Representative.

UNE EN ISO 9001:2015

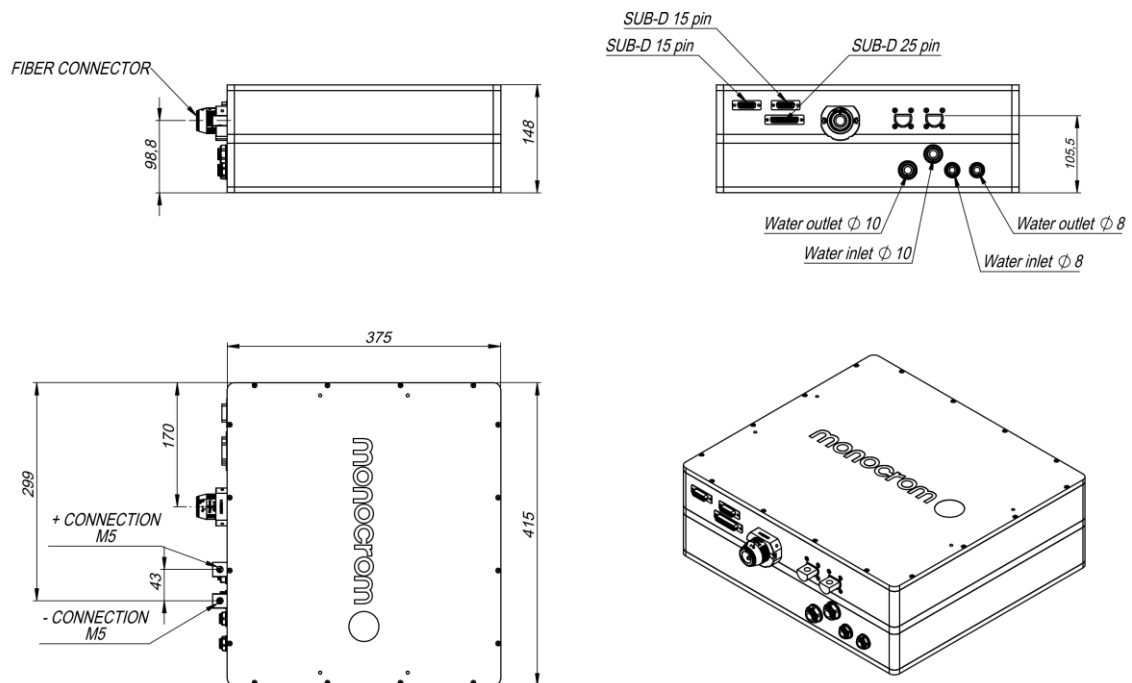
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## Monocrom @FLEX Direct Diode - @FLEX-6



## Monocrom @FLEX Direct Diode - @FLEX-10



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## Monocrom @FLEX Direct Diode | TECH Specifications

Laser Parameters <sup>(1,2,3,4)</sup>	@FLEX-2	@FLEX-4	@FLEX-6	@FLEX-10
Wavelength <sup>(5)</sup> [nm]			976	
Linewidth <sup>(6)</sup> [nm]	< 5			5-7
Optical power (unpolarized) [W]		400	600	1000
Optical power (linearly polarized) [W]	200	320	500	800
Coupling efficiency of unpol. light to 600 / 400 µm fiber		> 90% / > 85%		
Repetition rate <sup>(7)</sup>		CW – 10 kHz		
Pulse width <sup>(7)</sup>		< 50 µs - CW		
Power stability		< 1% @ 8 h		
Pulse to pulse stability		< 1% rms		
<b>Optics</b>				
Operating voltage <sup>(8)</sup> [V]	< 2	< 4	< 8	< 16
Threshold current [A]		< 25		
Operating current [A]		< 270		
Divergence without fiber <sup>(9)</sup> [mrad]		10 (FA) / 15 (SA)		
Beam size without fiber [mm × mm]		12 × 6		
Fiber connector type <sup>(10)</sup>		HP-SMA-905 / D80 / QBH		
Beam quality BPP <sup>(11)</sup> @ 400 µm [mm mrad]		44		
Beam quality BPP <sup>(11)</sup> @ 600 µm [mm mrad]		68		
Pointing stability @ fixed power [µrad]		± 50		
<b>Operating Parameters<sup>(12)</sup></b>				
Coolant flow [l/min]	< 1.2	< 2.5	< 5	< 10
Coolant pressure [bar]		< 3.5 bar		
Coolant temperature [°C]		20 – 25		
Recommended coolant		90% DI water + 10% ethylene glycol		
Warm up time [min]		< 2		
Operating temperature [°C]		non-condensing – 55		
<b>Body</b>				
Electrical connections	Series 702 Binder		SUB-D-25	2x SUB-D-15
Driver electronics		external 19-inch rack mount		
Weight [kg]	< 0.5	< 5	< 15	< 25
Laser head dimensions (L × W × H) [mm <sup>3</sup> ]	125× 52× 52	140× 250× 123	280× 270× 123	415× 375× 148
Laser class product (EN-60825)		4		
Expected lifetime [h]		> 2× 10 <sup>4</sup>		

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1. This is a preliminary specification sheet, validation of specification is in process.
2. If any other requirements are needed, please contact us.
3. Specifications at 20 °C, at the beginning of the lifetime.
4. Specifications are subjected to chips availability.
5. Other centre wavelengths on request. Everything between 780 nm and 1060 nm will have very similar properties.
6. Measured at FWHM.
7. Values depend on power supply and driver electronics chosen.
8. Voltage from the power supply must be higher, as due to high current there will be a voltage drop in the cables.
9. Measured at FW95% energy.
10. Other fiber connectors available on request.
11. Determined by taking  $1\sigma$  values and under assumption of a NA = 0.22 fiber.
12. Values related to coolant properties are recommendations. External chiller is needed.

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