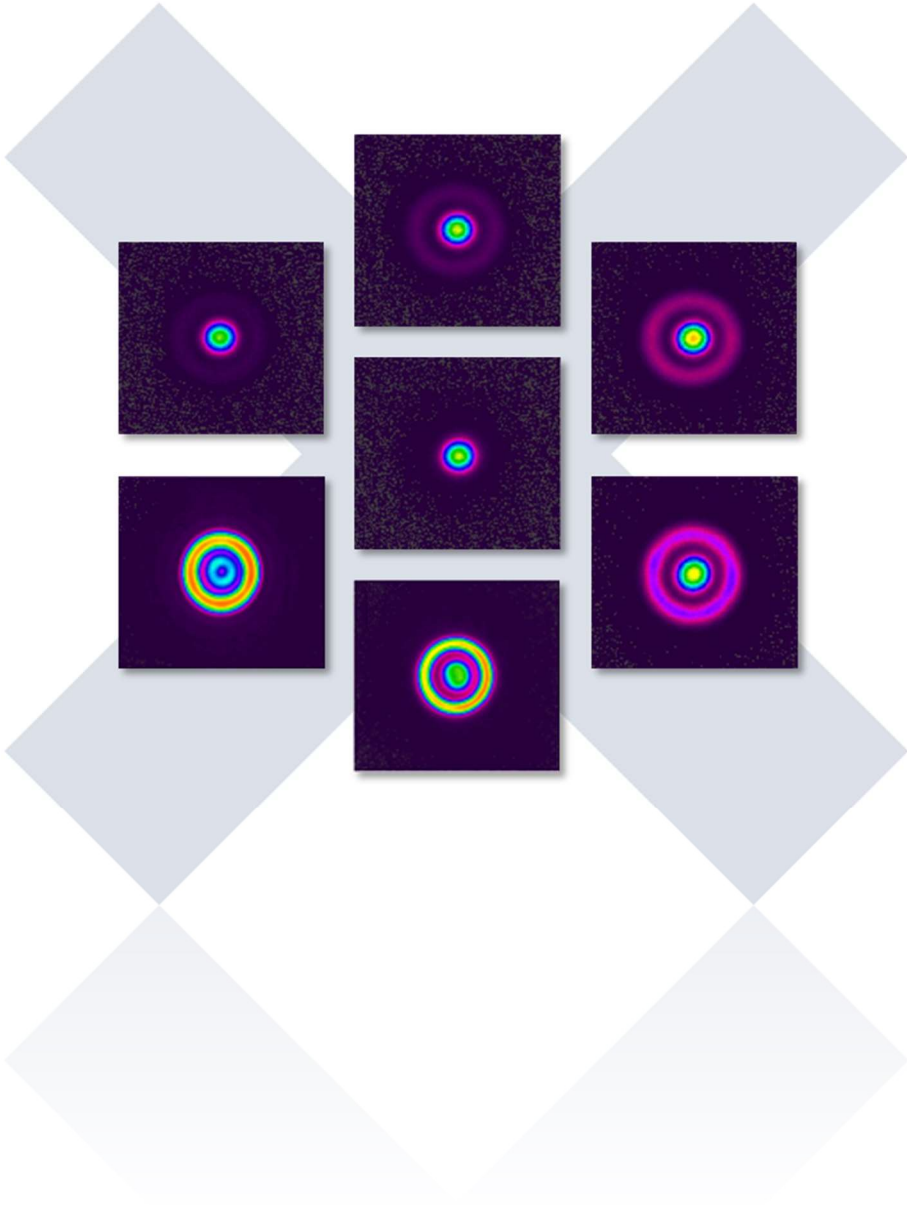




AFX-1000

Programmable fiber lasers for Additive Manufacturing



nLIGHT AFX | Product specification

Model	AFX-1000 w/o collimator	AFX-1000 w/ collimator
Optical Specifications		
Mode of Operation	CW / Modulated	
Polarization	Random	
Max Power, SM setting	600 W	550 W
Max Power, MM settings	1200 W	1050 W
Max Numerical Aperture ⁵	0.1 NA	
Power Tunability ¹	5 – 100%	
Power Variation, 8-Hour	≤ 1%	
Power Modulation Frequency	≤ 100 kHz	
Modulation Rise and Fall Times	≤ 5 μs	
Beam Profile Switching Time	< 30 ms	
SM Beam Parameter Product ²	≤ 0.5 mm-mrad	
MM Beam Parameter Product	≤ 2.5 mm-mrad	≤ 2.0 mm-mrad
Wavelength	1070 ± 10 nm	
Electrical Specifications		
Operating Voltage, Single-Phase	200 – 240 VAC	
Operating Voltage Frequency	50 / 60 Hz	
Control Interface	External hardware control / RS-232 / Ethernet	
Mechanical Specifications		
Dimensions, W x D x H	480 x 677 x 177 mm	
Optical Fiber Length, Termination ³	5 m fiber with QBH connector standard	
Cooling Method	Water	
Environmental Specifications		
Operating Temperature ⁴	+10 to +40°C	
Storage Temperature	-10 to +60°C	
Relative Humidity	10 to 80%	

¹Percent relative to max power available at index setting

²Based on second-moment (ISO std) measurement method.

³Custom lengths available upon request.

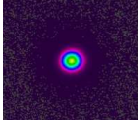
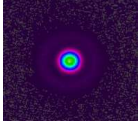
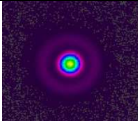
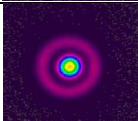
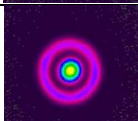
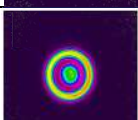
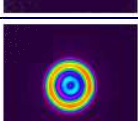
⁴Non-condensing or with use of CDA.

⁵90% power enclosed

nLIGHT AFX | Programmable beam control

Controlling the AFX fiber laser beam profile can be accomplished through several interfaces. nLIGHT offers a Graphical User Interface (GUI), Command Line Interface (CLI), Application Program Interface (API) and a Hardware (HW) Interface.

Table 1 shows seven typical beam profiles that are selectable through the interfaces described above. This range of beam characteristics provides the versatility to optimize selective laser melting processes for different materials, hatch spacings, and consolidation rates.

Setting	Beam Profile (typical)	Power Ratio (donut / single-mode)	Near-field Beam Dia. (typical) ¹	BPP (typical) ¹
0		0/100 (single-mode)	16 μm	0.46 mm-mrad
1		30/70	25 μm	0.78 mm-mrad
2		40/60	30 μm	1.01 mm-mrad
3		50/50	35 μm	1.31 mm-mrad
4		60/40	40 μm	1.65 mm-mrad
5		80/20	42 μm	1.89 mm-mrad
6		90/10 (max donut)	47 μm	1.97 mm-mrad

¹Measured using second-moment method.

Laser Safety

This laser product does NOT comply with IEC 60825-1 or 21CFR1040.10/21CFR1040.11 and is solely intended to be integrated into a laser product certified by the Purchaser. The Purchaser acknowledges their product must comply with application regulations before it can be sold to an end user.



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