

nLIGHT

Corona Industrial Fiber Lasers

Programmable beam quality for industrial processing

The all-new nLIGHT® Corona™ CFX-3000, CFX-4000, and CFX-5000 are the first fiber lasers on the market that give users the ability to tune the beam settings based on their application.

With a single Corona fiber laser, users can rapidly select from high-intensity, small-spot-size beams to large, donut-shaped beams, and everything in between. This dramatic advance allows optimal thick and thin metal cutting, higher cutting speed, superior quality, and improved piercing and small-feature processing with a single tool.

End users get the best of all worlds—the speed of high-power fiber lasers for thin metal processing, the quality of CO₂ lasers for thick metal processing, and the high uptime and lower operating costs of a fiber laser solution.



Key Features & Benefits

- **3, 4, and 5kW**
Delivers excellent productivity for advanced cutting and welding applications
- **Optimized Tuning of Beam Size and Shape**
Maintains fiber laser performance, stability, efficiency, and reliability with spot sizes from 100um to 300um and beam shapes from top-hat to donut mode
- **Rapid Beam Switching**
Beam adjustments in less than 30 ms allows for real-time optimization of each process step while maintaining full power operation to maximize productivity
- **Back-Reflection Protection**
Hardware-based back-reflection protection allows processing of even the most reflective metals with no interruptions or damage to the laser
- **Breakthrough Integrated Beam Shaping**
Removal of free-space optics, zoom process heads, and external fiber-to-fiber couplers avoids complex performance-limiting hardware
- **Unparalleled Serviceability**
Modular design simplifies repairs maximizing uptime

nLIGHT Corona 3, 4 and 5kW Industrial Fiber Laser Specifications

Models	Corona CFX-3000	Corona CFX-4000	Corona CFX-5000
Optical Specifications			
Mode of Operation	CW / Modulated		
Polarization	Random		
Maximum Average Power, CW	3kW	4kW	5kW
Power Tunability	5 – 100%		
Power Variation, 8-Hour	≤ 1%		
Modulation Frequency	≤ 50kHz		
Rise and Fall Times	≤ 10μs		
Beam Quality	Programmable (see next page for details)		
Wavelength	1070 ± 10nm		
Electrical Specifications			
Supply Voltage	380 – 480VAC 3P+PE, 50/60Hz		
Control Interfaces, Standard	External hardware control, analog power control, analog monitors, Ethernet control, GUI, and API		
Control Interfaces, Optional	EtherCAT, EtherNet/IP, DeviceNet, Profinet, Profibus		
Mechanical Specifications			
Dimensions, W × D × H	685 × 800 × 560mm		
Optical Fiber	20m, QBH connector standard		
Cooling Method	Water		
Environmental Specifications			
Operating Temperature ¹	+10 to +40°C		
Storage Temperature	-10 to +60°C		
Relative Humidity	10 to 80%		

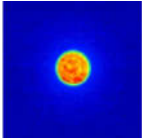
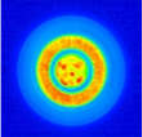
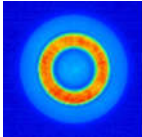
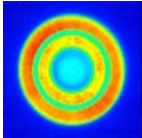
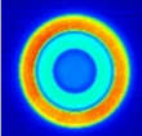
¹ Non-condensing or with use of CDA.

nLIGHT Corona Beam Control Example

Tuning the Corona fiber laser can be accomplished through several interfaces. nLIGHT offers a Graphical User Interface (GUI), Command Line Interface (CLI), Application Program Interface (API), Industrial Fieldbus Network Interface (INET), and a Hardware (HW) Interface to communicate the desired beam output.

As an example, Table 1 shows the typical Corona beam output. Note that beams with similar diameters or BPP values can have significantly different shapes or power distributions. Corona's wide range of beam characteristics provides the versatility necessary to optimize each application or process step.

Table 1 – Corona Beam Characteristics

Setting	Corona Beam	Beam Description	Beam Diameter (Typical) ¹	BPP (Typical) ¹	Optimized Cutting Example
0		Small Flat-Top	100 μm	3.1 mm-mrad	Any Metal Piercing, Thin Metal
1		Large Flat-Top	245 μm	13 mm-mrad	Piercing Optimization
2		Small Donut	260 μm	13 mm-mrad	Kerf Optimization
3		Thick Donut	325 μm	18 mm-mrad	Oxygen Medium Mild Steel
4		Thin Donut	350 μm	18 mm-mrad	Oxygen Thick Mild Steel

¹ Measurement is using Second-Moment method.



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