Ultra High-Power Corona Fiber Laser

Programmable beam technology to maximize factory productivity and capability

The all-new nLIGHT® Corona™ CFX-20000 is the first high-power fiber laser that gives users the ability to tune the beam profile in the fiber 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, all while maintaining full laser power. This dramatic advance enables optimal thick and thin metal cutting, higher cutting speed, superior edge quality, and improved piercing time with a single tool. End users get the best of all worlds—the speed of high-power fiber lasers for thin sheet, the quality of CO_2 lasers for thick mild steel, and the high uptime and lower operating costs of a fiber laser solution.

Features

- **20kW**
  Delivers excellent productivity for more parts per day and increased profits.
- **Optimized Tuning of Beam Size and Shape**
  Maintains fiber laser performance, stability, efficiency, and reliability with spot sizes and beam shapes from small top-hat to large 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.
- **Back-Reflection Protection**
  Hardware-based back-reflection protection allows processing of even the most reflective metals with no interruptions or damage to the laser.
- **Innovative All-Fiber Beam Shaping**
  All-fiber technology does not use complex, performance-limiting hardware such as free-space optics, zoom process heads, and external fiber-to-fiber couplers
- **Unparalleled Serviceability**
  Modular design simplifies repairs and maximizes uptime.

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nLIGHT 20kW High Power Fiber Laser Specifications

Models	Corona CFX-20000
Optical Specifications	
Mode of Operation	CW/Modulated
Polarization	Random
Maximum Average Power, CW	20kW
Power Tunability	5 – 100%
Power Variation, 8-Hour	≤ 1%
Modulation Frequency	≤ 100kHz
Rise and Fall Times	≤ 5µs
Beam Quality	Programmable (see below for details)
Wavelength	1070 ± 10nm
Electrical Specifications	
Supply Voltage	400 – 480VAC 3P+PE, 50/60Hz
Control Interface, Standard	External hardware control, analog power control, analog monitors, Ethernet control, GUI, and API
Control Interface, Optional	EtherCAT, EtherNet/IP, DeviceNet, Profinet, Profibus
Mechanical Specifications	
Dimensions (W x D x H)	1059 × 805 × 1181mm
Optical Fiber	20 m QD 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

As an example, the below table 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.

Corona Beam Characteristics

Corona Beam	Beam Description	Beam Diameter (typical)[1]	BPP (typical)[1]	Optimized Cutting Example
	Small flat-top	100µm	5 mm-mrad	Piercing Any Metal, Thin Sheet
	Thick donut	350µm	18 mm-mrad	Oxygen Thick Mild Steel

[1] Measurement is using D4σS method

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