

# HighLight FL

## High-Power Multi-Mode Fiber Lasers with Beam Management

The HighLight™ FL series of industrial, multi-kilowatt fiber lasers provides a cost-effective solution for many common welding tasks. These lasers feature Coherent's unique multi-stage back reflection immunity system which enhances reliability and lifetime, and enables safe processing of highly reflective materials, including brass, copper, and aluminum.

To maximize operational flexibility, HighLight FL products are equipped with either a Fiber-Fiber-Switch (FFS) or Fiber-Fiber-Coupler (FFC). The FFS enables rapid switching of laser output between up to four separate process fibers, thus allowing time or energy sharing amongst four workstations with a single laser. The FFC allows easy exchange of process fibers on site.

### FEATURES & BENEFITS

- Output power: 1,000 - 10,000 Watts
- Fiber-Fiber-Switch (FFS) or Fiber-Fiber-Coupler (FFC)
- Excellent stability over the entire power range (1% to 100%)
- Inherently back reflection safe
- Versatile production tool due to wide range of beam qualities
- Industry-leading closed loop power control for high process consistency
- Optimized power profile programming tool for welding processes
- CleanWeld™ technology to optimize welding results



### BENEFITS

- Reliable and fast welding process
- High welding seam and welded part quality
- Minimized operating costs

### APPLICATIONS

- Welding
- Cutting



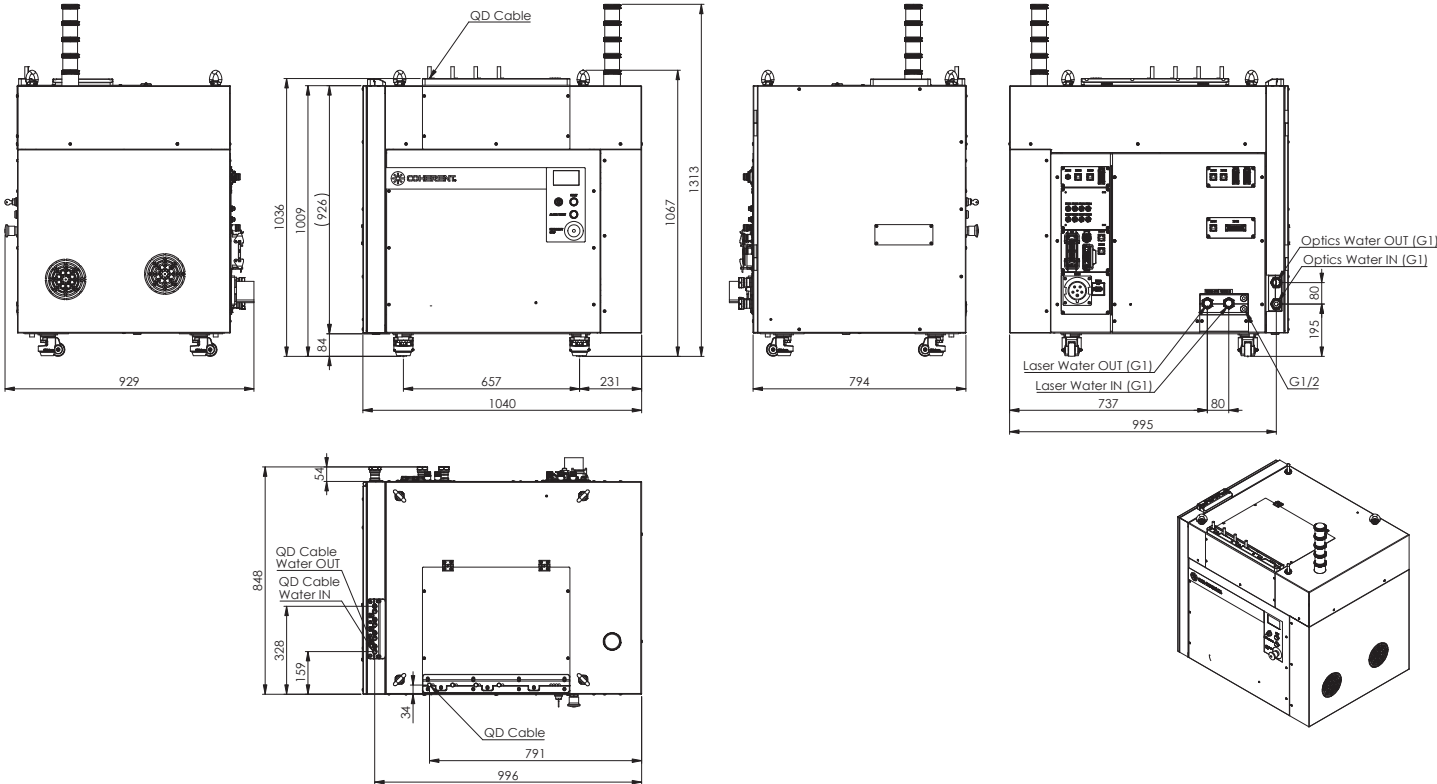
SPECIFICATIONS	HighLight FL1000	HighLight FL2000
Nominal Power (W)	1,000	2,000
Power Range (%)	1 - 100	
Laser Beam Quality (BPP) at Collimator (mm x mrad)	50 $\mu\text{m}$ : $\leq 2.5$ ; 100 $\mu\text{m}$ : $\leq 4$ ; 150 $\mu\text{m}$ : $\leq 6$ 200 $\mu\text{m}$ : $\leq 8$ ; 300 $\mu\text{m}$ : $\leq 12$ ; 400 $\mu\text{m}$ : $\leq 16$	
Power Stability (%)	$\pm 1$	
Pulse Frequency Range (kHz)	CW - 10	
Wavelength (nm)	1070 $\pm$ 10	
ELECTRICAL RATINGS		
Voltage (VAC)	400/440/480 $\pm$ 10%	
Max. Connected Load (kVA)	4.4	7.1
Max. Effective Power at Nominal Laser Power at 400 V (kW)	4.2	6.9
Max. Current Consumption at 400 V (A)	6.1	9.9
Fuses Type NH (A)	16	32
COOLING		
Recommended Cooling Capacity Laser (kW)	2.2	4.4
Recommended Cooling Capacity FFS/FFC and QHB/QD (kW)	FFS2: 1.0; FFS4: 1.5; FFC: 1.0	
Flow Rate Laser (l/min)	21	
Flow Rate for FFS/FFC and QBH/QD (l/min)	FFS2: 8.0; FFS4: 12.0; FFC: 6.0	
Temperature Laser ( $^{\circ}\text{C}$ )	25 $\pm$ 1	
Temperature for FFS/FFC and QBH/QD ( $^{\circ}\text{C}$ )	24 - 40	
Max. Pressure Laser (MPa)	0.5	
Max. Pressure for FFS/FFC and QBH/QD (MPa)	0.4	
Typical Pressure Drop Laser (MPa)	0.25	
FIBER DELIVERY SYSTEM		
Interface	QBH/QD	
Diameter ( $\mu\text{m}$ )	50 - 400	
Length (m)	10, 15, 20, 30, 35 (other lengths on request)	
DIMENSIONS & WEIGHTS		
Laser Dimension L x W x H (mm) without signal tower	Midi: 794 x 1040 x 1067	
Laser Weight (kg)	FFC: < 400, FFS: < 450	
ENVIRONMENTAL CONDITIONS		
Ambient Temperature ( $^{\circ}\text{C}$ )	5 - 40	
Humidity ( $^{\circ}\text{C}$ )	Environmental conditions always below the dew point. Condensation to laser, QHB/QD and optics must be avoided during the operation, storage and transport.	
CUSTOMER INTERFACE		
Digital Signals (V DC)	24	
Power Control (V DC)	0 - 10 V	
Gate Control (V DC)	24, rise/fall time < 30 $\mu\text{s}$	
OPTIONS LASER		
	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet, Ethercat), Scanner control interface, Multi station interface	

SPECIFICATIONS	HighLight FL4000	HighLight FL5000	HighLight FL6000
Nominal Power (W)	4,000	5,000	6,000
Power Range (%)	1 - 100		
Laser Beam Quality (BPP) at Collimator (mm x mrad)	100 μm: ≤ 4; 150 μm: ≤ 6; 200 μm: ≤ 8 300 μm: ≤ 12; 400 μm: ≤ 16		
Power Stability (%)	± 1		
Pulse Frequency Range (kHz)	CW - 10		
Wavelength (nm)	1070 ± 10		
ELECTRICAL RATINGS			
Voltage (VAC)	400/440/480 ± 10%		
Max. Connected Load (kVA)	13.9	19.3	20.8
Max. Effective Power at Nominal Laser Power at 400 V (kW)	13.7	19.1	20.6
Max. Current Consumption at 400 V (A)	19.8	27.5	29.7
Fuses Type NH (A)	32		63
COOLING			
Recommended Cooling Capacity Laser (kW)	8.9	11.1	13.3
Recommended Cooling Capacity FFS/FFC and QHB/QD (kW)	FFS2: 1.0; FFS4: 1.5; FFC: 1.0		
Flow Rate Laser (l/min)	43	65	
Flow Rate for FFS/FFC and QBH/QD (l/min)	FFS2: 8.0; FFS4: 12.0; FFC: 6.0		
Temperature Laser (°C)	25 ± 1		
Temperature for FFS/FFC and QBH/QD (°C)	24 - 40		
Max. Pressure Laser (MPa)	0.5		
Max. Pressure for FFS/FFC and QBH/QD (MPa)	0.4		
Typical Pressure Drop Laser (MPa)	0.25		
FIBER DELIVERY SYSTEM			
Interface	QBH/QD		
Diameter (μm)	100 - 400		
Length (m)	10, 15, 20, 30, 35 (other lengths on request)		
DIMENSIONS & WEIGHTS			
Laser Dimension L x W x H (mm) without signal tower	Midi: 794 x 1040 x 1067		
Laser Weight (kg)	FFC: <460, FFS: < 520		
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 - 40		
Humidity (°C)	Environmental conditions always below the dew point. Condensation to laser, QBH/QD and optics must be avoided during the operation, storage and transport.		
CUSTOMER INTERFACE			
Digital Signals (V DC)	24		
Power Control (V DC)	0 - 10 V		
Gate Control (V DC)	24, rise/fall time < 30 μs		
OPTIONS LASER			
	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet, Ethercat), Scanner control interface, Multi station interface		

SPECIFICATIONS	HighLight FL7500	HighLight FL8000	HighLight FL10000
Nominal Power (W)	7,500	8,000	10,000
Power Range (%)	1 - 100		
Laser Beam Quality (BPP) at Collimator (mm x mrad)	100 μm: ≤ 4; 150 μm: ≤ 6; 200 μm: ≤ 8 300 μm: ≤ 12; 400 μm: ≤ 16		
Power Stability (%)	± 1		
Pulse Frequency Range (kHz)	CW - 10		
Wavelength (nm)	1070 ± 10		
ELECTRICAL RATINGS			
Voltage (VAC)	400/440/480 ± 10%		
Max. Connected Load (kVA)	24.4	27.6	36.2
Max. Effective Power at Nominal Laser Power at 400 V (kW)	24.2	27.4	36
Max. Current Consumption at 400 V (A)	35	39.6	52
Fuses Type NH (A)	63		
COOLING			
Recommended Cooling Capacity Laser (kW)	16.7	17.8	22.2
Recommended Cooling Capacity FFS/FFC and QHB/QD (kW)	FFS2: 1.0; FFS4: 1.5; FFC: 1.0		
Flow Rate Laser (l/min)	65	84	
Flow Rate for FFS/FFC and QBH/QD (l/min)	FFS2: 8.0; FFS4: 12.0; FFC: 6.0		
Temperature Laser (°C)	25 ± 1		
Temperature for FFS/FFC and QBH/QD (°C)	24 - 40		
Max. Pressure Laser (MPa)	0.5		
Max. Pressure for FFS/FFC and QBH/QD (MPa)	0.4		
Typical Pressure Drop Laser (MPa)	0.25		
FIBER DELIVERY SYSTEM			
Interface	QBH/QD		
Diameter (μm)	100 - 400		
Length (m)	10, 15, 20, 30, 35 (other lengths on request)		
DIMENSIONS & WEIGHTS			
Laser Dimension L x W x H (mm) without signal tower	Maxi: 794 x 1040 x 1565		
Laser Weight (kg)	FFC: <530, FFS: < 590		
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 - 40		
Humidity (°C)	Environmental conditions always below the dew point. Condensation to laser, QBH/QD and optics must be avoided during the operation, storage and transport.		
CUSTOMER INTERFACE			
Digital Signals (V DC)	24		
Power Control (V DC)	0 - 10 V		
Gate Control (V DC)	24, rise/fall time < 30 μs		
OPTIONS LASER			
	Field bus (Ethernet/IP, Profinet, Profibus, Devicenet, Ethercat), Scanner control interface, Multi station interface		

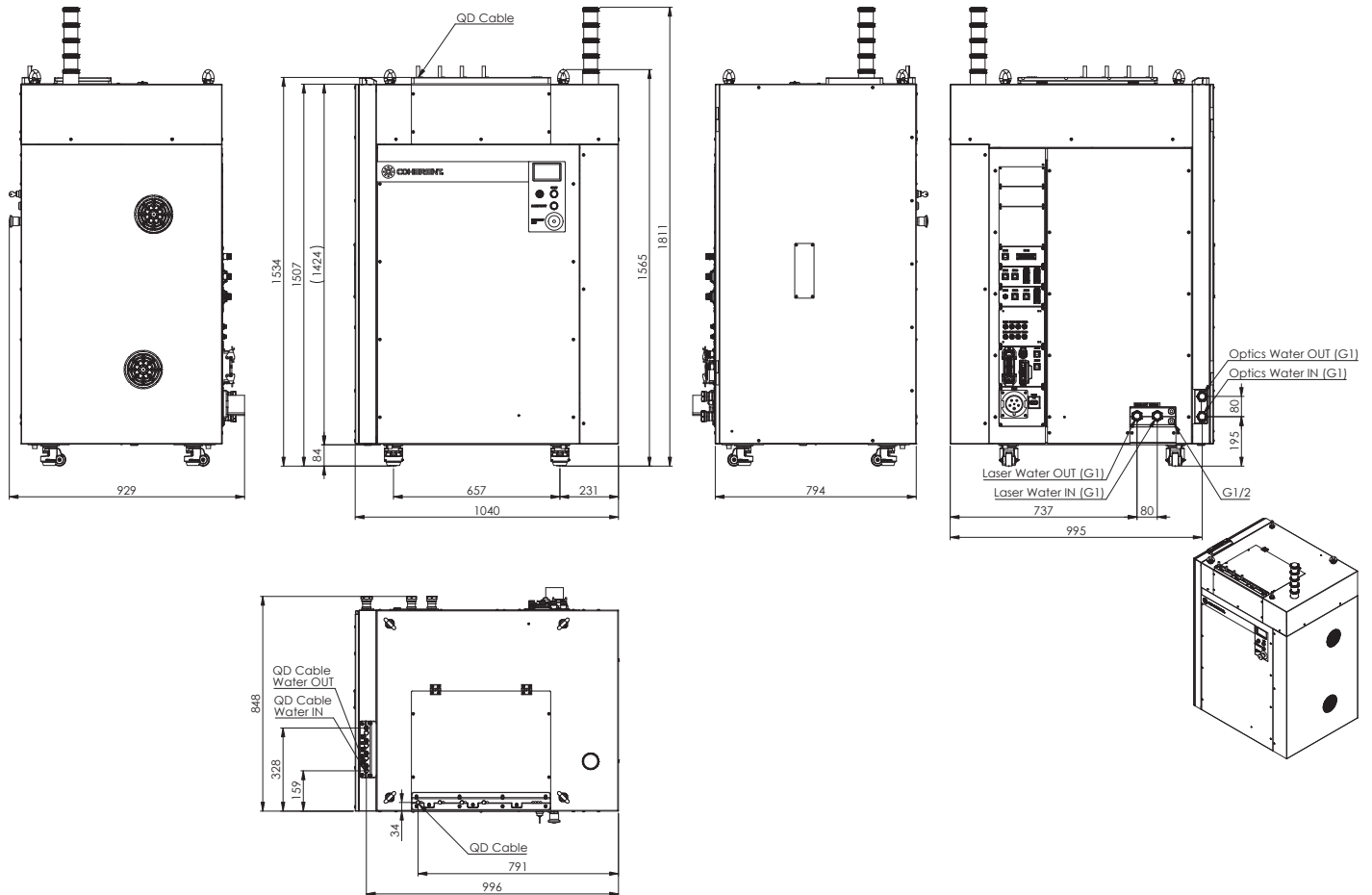
MECHANICAL SPECIFICATIONS

Midi:  
HighLight FL1000 - HighLight FL6000



**MECHANICAL SPECIFICATIONS**

**Maxi:  
HighLight FL75000 - HighLight FL10000**



Coherent, Inc.,  
5100 Patrick Henry Drive Santa Clara, CA 95054  
p. (800) 527-3786 | (408) 764-4983  
f. (408) 764-4646

tech.sales@Coherent.com [www.Coherent.com](http://www.Coherent.com)

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent offers a limited warranty for all HighLight Lasers. For full details of this warranty coverage, please refer to the Service section at [www.Coherent.com](http://www.Coherent.com) or contact your local Sales or Service Representative.  
MC-054-19-0M1119 Copyright ©2019 Coherent, Inc.

DANGER

VISIBLE AND/OR INVISIBLE LASER RADIATION  
AVOID EYE OR SKIN EXPOSURE TO  
DIRECT OR SCATTERED RADIATION

MODEL: HighLight FL V2: FIBER LASER  
MAXIMUM OUTPUT: 10000 WATTS CW  
100 µSEC PULSE ∞  
at wavelength in the range of 950 - 1150 nm  
CLASS IV LASER PRODUCT

ALIGNMENT LASER DIODE INSTALLED  
CLASS IIIa LASER RADIATION ALSO EMITTED  
AVOID DIRECT EYE EXPOSURE  
MAXIMUM OUTPUT: 5mW CW WAVELENGTH: 633-670nm

Coherent industrial lasers are designed in strict accordance with the respective safety regulations. We certify that each laser manufactured by our company complies with FDA Radiation Performance Standards, 21 CFR Subchapter J and with IEC 60825. Warning labels as shown in the figure appear on each Coherent laser to indicate the respective classification.