



# HighLight DL HQ Series

## High Quality Diode Laser

Coherent HighLight™ DL HQ series products offer a unique combination of high output power and high beam quality from a small diameter fiber (400 μm to 800 μm), making them an ideal solution for keyhole welding and other tasks that require the precision application of heat, including surface treatment, cladding, 3D additive manufacturing and brazing.

Furthermore, HighLight™ DL HP lasers offer enhanced ease of use because their highly reliable, conduction-cooled diodes do not require deionized cooling water. Additionally, these lasers support plug-and-play fiber exchange by the user, and their web interface enables simplified access and control through any device with a web browser.

A wide range of options and accessories are available for HighLight DL HP Series products to provide flexibility for integration and to facilitate their use in a variety of settings. For example, climate control of the laser enclosure allows operation in high humidity environments.

### FEATURES & BENEFITS

- Output power: 2,000 - 4,000 Watts
- Fiber-coupled system
- Small fiber diameters
- Cost and energy efficient
- Modular concept

### APPLICATIONS

- Keyhole welding
- Surface treatment
- Cladding
- 3D additive manufacturing
- Brazing



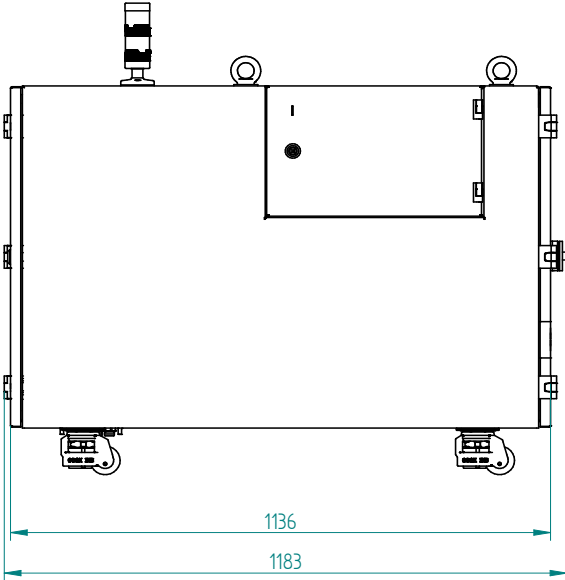
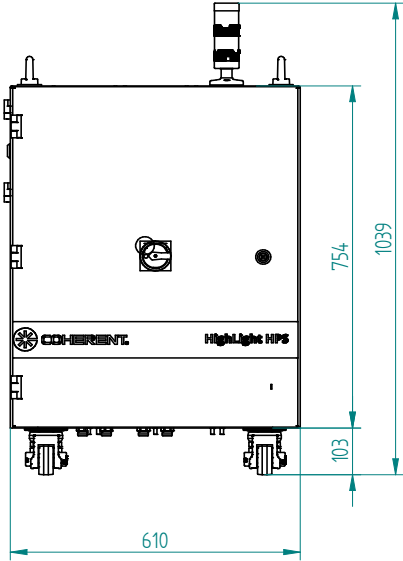
SPECIFICATIONS	HighLight DL2000HQ	HighLight DL3000HQ	HighLight DL4000HQ
Nominal Power (Wcw)	2000	3000	4000
Power Range (%)	10 to 100		
Laser Beam Quality (BPP)	44mm x mrad	<30mm x mrad	
Power Stability	±2% over 24 h (cooling water ≤ ±1K)		
Pulse Frequency Range	Laser ON signal: 1kHz Analog modulation: 600Hz		
Wavelength (nm)	980	900 - 1100	
ELECTRICAL RATINGS			
Voltage	3x AC 230/400V ±10%; 50/60 Hz; PE or 3x AC 277/480V ±10%; 50/60 Hz; PE		
Connected Load (kVA)	approx. 7	approx. 11	approx. 14
Effective Power at Nominal Power (kW)	approx. 6	approx. 10	approx. 13
Max. Current Consumption at 400 V (A)	<10	<16	<20
Fuses Type NH (A)	16	20	25
COOLING			
Recommended Cooling Capacity* (kW)	4.5	8	10
Temperature (°C)	Laser: 22; Optic: 22 or above dewpoint temperature		
Temperature Tolerance Range (°C)	± 1		
Flow Rate (l/min)	Laser: 16; Optics: 2 (fiber) + process head	55; CCU** Laser: 30; Optics: 20	55; CCU** Laser: 35; Optics: 35
Max. Pressure (bar)	<6		
Pressure Drop (bar)	<3.5		
Connectors laser cooling circuit	2x ¾" thread	2x 1" thread	
Connectors optics cooling circuit	2x ½" thread	2x ¾" thread	
FIBER DELIVERY SYSTEM			
Interface	QBH, LLK-HP or QD		
Diameter (µm)	400, 600, 800		
Numerical Aperture	NA 0.22 (@400µm), NA 0.11 / 0.22 (@600 and 800µm)	NA 0.13 (@400µm), NA 0.1 (@600 and 800µm)	
Length (m)	<35		
Accessories (options)	Processing heads for cladding / welding / heat treatment		
DIMENSIONS & WEIGHTS			
Laser Dimension (L x W x H) (mm)	~1190 x ~610 x ~760	~1040 x ~860 x ~1570	
Laser Weight (kg) without cooling water	130	<370; CCU: <400	
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	+5 to +40		
Humidity / Condensation	If dewpoint ≥19°C purging necessary		
CUSTOMER INTERFACE			
Digital Signals (V DC)	24		
Power Control (V DC)	0 to 10, 600Hz max. modulation frequency		
Ethernet	For control via PC		
OPTIONS LASER			
	Bus-Interface (CAN, ProfiNet, ...)	Bus-Interface (CAN, ProfiNet, ...) 2-port fiber switch	

\* The recommended cooling capacity covers maximum power dissipation due to diode degradation and 100% laser power absorbed at an internal or external beam dump.

\*\* CCU = Climate Control Unit

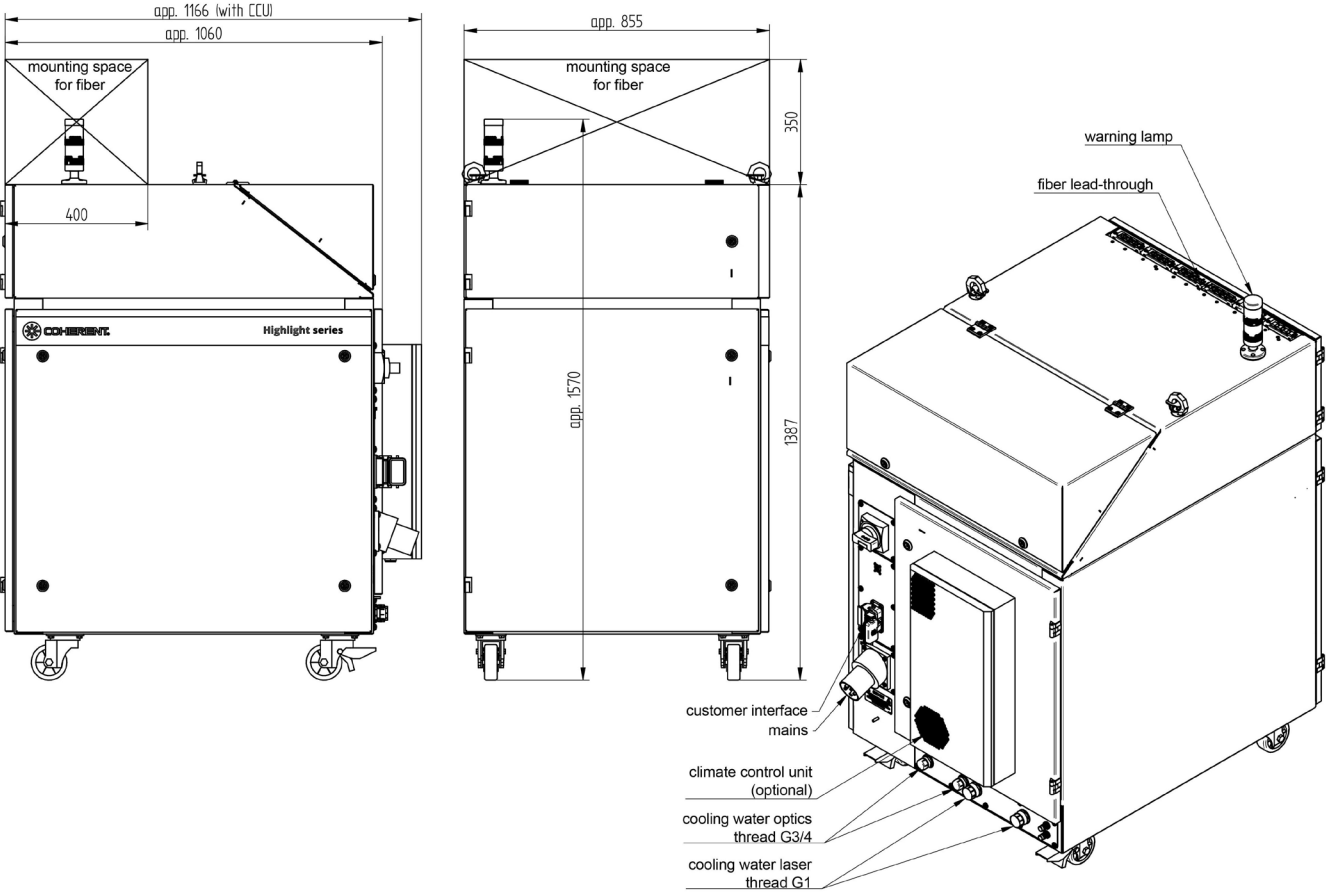
**MECHANICAL SPECIFICATIONS**

HighLight DL2000HQ



**MECHANICAL SPECIFICATIONS**

**HighLight DL3000HQ - HighLight DL4000HQ**



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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. Printed in the U.S.A. MC-026-18-0M0818 Copyright ©2018 Coherent, Inc.

DANGER

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

MODEL: HighLight DL8000HP  
 DIODE LASER  
 MAXIMUM OUTPUT: <math>\leq 8000\text{ WATTS CW}</math>  
 at wavelength in the range of 640-980 nm  
 CLASS IV LASER PRODUCT

ALIGNMENT LASER DIODE INSTALLED  
 CLASS IIIb LASER RADIATION ALSO EMITTED  
 AVOID DIRECT EYE EXPOSURE  
 MAXIMUM OUTPUT: 5mW CW / WAVELENGTH: 630 - 670 nm

Laser radiation  
 Avoid eye exposure to direct radiation!  
 Class IIIb Laser product  
 IEC 60825-1:2015

Wave Length 3 900-1100 nm  
 Confocal Output Po 4000 W  
 Slow Pulse Output Po 4000 W  
 Pulse Duration 1 -1 ms -10 ns

Invisible laser radiation:  
 Avoid eye or skin exposure to direct or scattered radiation  
 Class 4 Laser product  
 IEC 60825-1:2015

Coherent-Dilas 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-Rofin laser to indicate the respective classification.