

# HighLight DL HPR Series

Rack-Mount, Industrial  
Diode Laser

The Coherent HighLight™ DL HPR lasers are compact, high power, fiber delivered industrial diode laser systems that offers unmatched convenience and economy for metal processing applications such as cladding, heat treating and brazing. With its standard, 19" rack mount form factor and integrated electronics, the laser is easy to incorporate into existing systems, and is well-suited for the spaceconstrained environments often found in automotive manufacturing and semiconductor fabrication. Also, the HighLight DL HPR series uses conduction-cooled diodes which do not require deionized cooling water. Finally, its 45% wall plug efficiency minimizes energy consumption and cost of ownership.

The HighLight DL HPR series is available in both turn-key and customized OEM configurations, along with an extensive range of options which provide the flexibility for integration into a wide variety of laser-based manufacturing systems.

## Features and Benefits

- Output power: 1000 to 4000 Watts
- Laser Beam Quality: 60 and 100 mm\*mrad
- 19" Rack for integration
- Fiber coupled
- Homogenous beam profile
- Comprehensive accessories available

## Applications

- Heat Treatment
- Cladding
- Brazing



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## SPECIFICATIONS

	HighLight DL1000HPR		HighLight DL2000HPR	
Nominal Power, CW (W)	1000		2000	
Power Range (%)	10 to 100			
Laser Beam Quality (BPP) (mm*mrad)	60	100	60	100
Power Stability Over 24-hour; Cooling Water $\Delta T = \pm 1$ K (%)	$\pm 2$			
Pulse Frequency Range				
Laser On-Signal (Hz)	1000			
Analog Modulation (Hz)	600			
Wavelength (nm)	1020	1020	980, 1020	980, 1020
Wavelength Tolerance (nm)	$\pm 10$			

## ELECTRICAL RATINGS

Operating Voltage	3x AC 230/400 V $\pm 10$ %; 50/60 Hz; PE or 3x AC 277/480 V $\pm 10$ %; 50/60 Hz; PE			
Connected Load (kVA)	<2.4		<4.5	
Max. Current Consumption at 400 V (A)	3.5		5.7	
Fuses Type: Circuit Breaker (A)	16			

## COOLING

Cooling Water Specification	According to DIN ISO 3696 Quality Level 3			
Recommended Cooling Capacity <sup>1</sup> (kW)	2.8		4	
Cooling Water Pressure (hPa)	<5000			
Cooling Water Temperature (°C)	22			
Cooling Water Temperature Tolerance Range (K)	Laser: $\pm 1$ ; Fiber: $\pm 2.5$			
Nominal Cooling Water Flow Rate <sup>1</sup> (l/min)	Laser: 5; Fiber: 2	Laser: 8; Fiber: 2	Laser: 10; Fiber: 2	Laser: 8; Fiber: 2
Pressure Drop (hPa)	Laser: <4500; Fiber: <2500			
Water Connection	Laser: 2x $\varnothing 16$ mm hose; Fiber: 2x $\varnothing 12$ mm hose			

## FIBER DELIVERY SYSTEM

Interface	QBH, QD			
Diameter ( $\mu\text{m}$ )	600 or 800	1000	600 or 800	1000
Numerical Aperture (NA)	0.22 or 0.15	0.22	0.22 or 0.15	0.22
Length (m)	<35			

## DIMENSIONS & WEIGHTS

Laser Dimension; w/o Connectors (L x W x H) (mm)	~652 x ~483 x ~267			
Laser Weight; w/o Cooling Water (kg)	<70			

## ENVIRONMENTAL CONDITIONS

Ambient Temperature (°C)	+10 to +40			
Humidity, Dew Point Temperature (°C)	$\leq 19$			
Storage Temperature	+5 to +50			

## CUSTOMER INTERFACE

Analogue Power Control (V DC)	0 to 10			
Digital Power Control (V DC)	24			
Interface for Control via PC	Ethernet			

## CUSTOMER INTERFACE

Bus Interface (CanOpen, EtherCAT)<sup>2</sup>

<sup>1</sup> Depending on system configuration.  
<sup>2</sup> Other options are available upon request.

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## SPECIFICATIONS

	HighLight DL3000HPR		HighLight DL4000HPR	
Nominal Power, CW (W)	3000		4000	
Power Range (%)	10 to 100			
Laser Beam Quality (BPP) (mm*mrad)	60	100	60	100
Power Stability Over 24-hour; Cooling Water $\Delta T = \pm 1$ K (%)	$\pm 2$			
Pulse Frequency Range				
Laser On-Signal (Hz)	1000			
Analog Modulation (Hz)	600			
Wavelength (nm)	940, 980, 1020			
Wavelength Tolerance (nm)	$\pm 10$			

## ELECTRICAL RATINGS

Operating Voltage	3x AC 230/400 V $\pm 10$ %; 50/60 Hz; PE or 3x AC 277/480 V $\pm 10$ %; 50/60 Hz; PE			
Connected Load (kVA)	<6.8		<9	
Max. Current Consumption at 400 V (A)	10		13.5	
Fuses Type: Circuit Breaker (A)	16		32	

## COOLING

Cooling Water Specification	According to DIN ISO 3696 Quality Level 3			
Recommended Cooling Capacity <sup>1</sup> (kW)	5.2		6.5	
Cooling Water Pressure (hPa)	<5000			
Cooling Water Temperature (°C)	22			
Cooling Water Temperature Tolerance Range (K)	Laser: $\pm 1$ ; Fiber: $\pm 2.5$			
Nominal Cooling Water Flow Rate <sup>1</sup> (l/min)	Laser: 15; Fiber: 2	Laser: 10; Fiber: 2	Laser: 15; Fiber: 2	Laser: 12; Fiber: 2
Pressure Drop (hPa)	Laser: <4500; Fiber: <2500			
Water Connection	Laser: 2x $\varnothing 16$ mm hose; Fiber: 2x $\varnothing 12$ mm hose			

## FIBER DELIVERY SYSTEM

Interface	QBH, QD			
Diameter ( $\mu\text{m}$ )	600 or 800	1000	600 or 800	1000
Numerical Aperture (NA)	0.22 or 0.15	0.22	0.22 or 0.15	0.22
Length (m)	<35			

## DIMENSIONS & WEIGHTS

Laser Dimension; w/o Connectors (L x W x H) (mm)	~652 x ~483 x ~267			
Laser Weight; w/o Cooling Water (kg)	<70			

## ENVIRONMENTAL CONDITIONS

Ambient Temperature (°C)	+10 to +40			
Humidity, Dew Point Temperature (°C)	$\leq 19$			
Storage Temperature	+5 to +50			

## CUSTOMER INTERFACE

Analogue Power Control (V DC)	0 to 10			
Digital Power Control (V DC)	24			
Interface for Control via PC	Ethernet			

## CUSTOMER INTERFACE

Bus Interface (CanOpen, EtherCAT)<sup>2</sup>

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# HighLight DL HPR Series

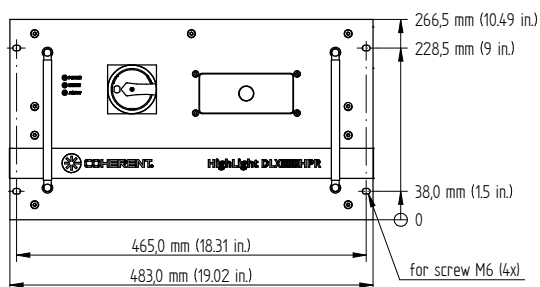
Rack-Mount, Industrial Diode Laser

## MECHANICAL SPECIFICATIONS

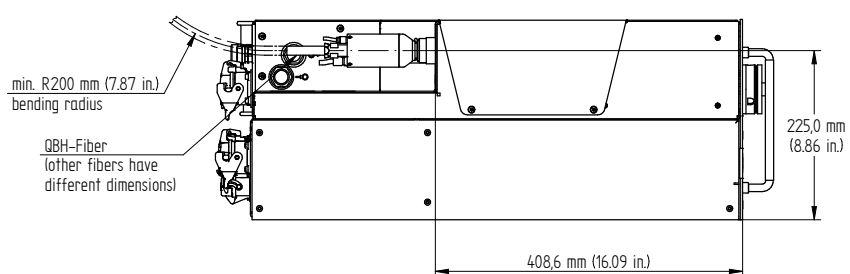
### HighLight DL HPR Series

Laser Beam Quality (BPP) 60 mm\*mrad

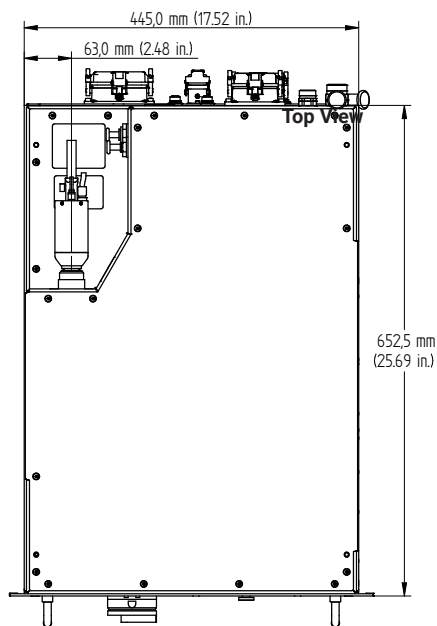
Front View



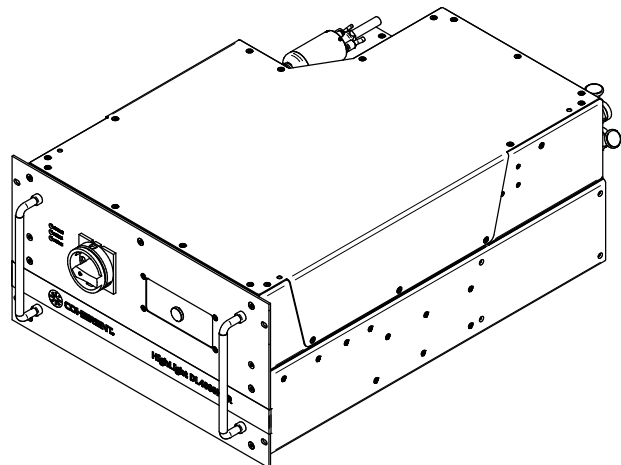
Side View



Top View



Top View



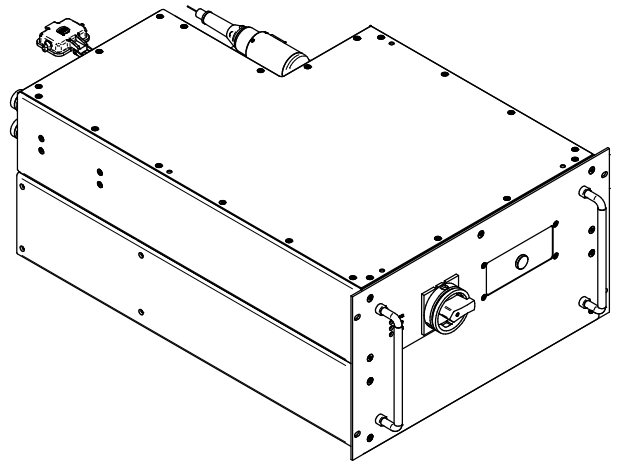
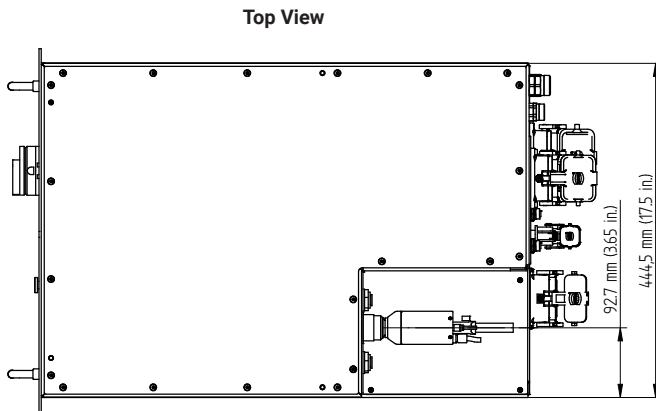
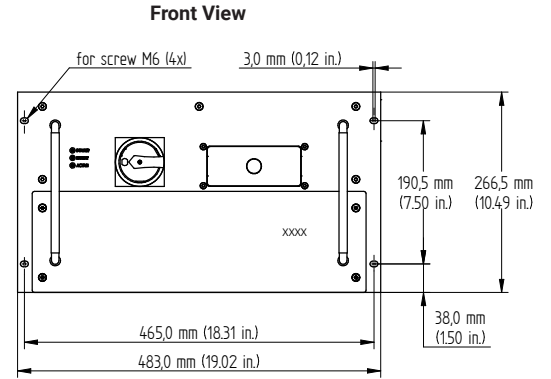
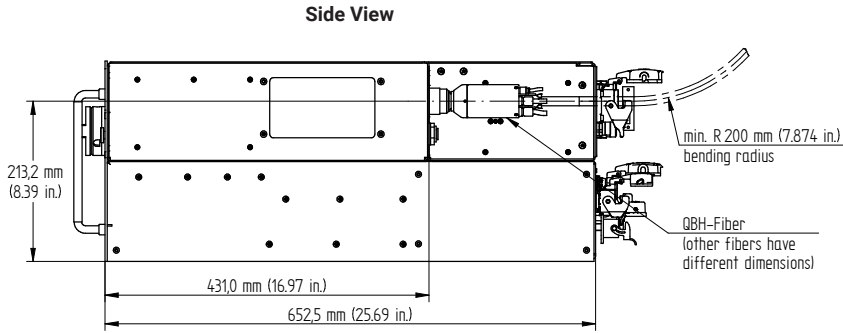
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## MECHANICAL SPECIFICATIONS

### HighLight DL HPR Series

Laser Beam Quality (BPP) 100 mm\*mrad



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.

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.

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