

# HighLight DL HPS SERIES

## All-In-One, 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

- 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

## HighLight DL HPS Series

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) Analog Modulation (Hz)	1000 600			
Wavelength (nm)	1020	1020	980, 1020	980, 1020
Wavelength Tolerance (nm)	$\pm 10$			
<b>Electrical Ratings</b>				
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 Typ: Circuit Breaker (A)	16			
<b>Cooling Integrated</b>				
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 ( $^{\circ}$ 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			
<b>Fiber Delivery System</b>				
Interface <sup>2</sup>	QBH, QD			
Diameter ( $\mu$ 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			
<b>Dimensions and Weight</b>				
Laser Dimension; w/o Connectors (L x W x H) (mm)	~652 x ~483 x ~267			
Laser Weight; w/o Cooling Water (kg)	<70			
<b>Environmental Conditions</b>				
Ambient Temperature ( $^{\circ}$ C)	+10 to +40			
Humidity, Dew Point Temperature ( $^{\circ}$ C)	$\leq 19$			
Storage Temperature ( $^{\circ}$ C)	5 to 50			
<b>Customer Interface</b>				
Analog Power Control (V DC)	0 to 10			
Digital Power Control (V DC)	24			
Interface for Control via PC	Ethernet			
<b>Options Laser</b>				
	Bus Interface (CanOpen, EtherCAT) <sup>2</sup>			

Notes:

1. Depending on system configuration.
2. Other options are available upon request.

## HighLight DL HPS Series

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)	$\pm 10$			
<b>Electrical Ratings</b>				
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 Typ: Circuit Breaker (A)	16		32	
<b>Cooling Integrated</b>				
Cooling Water Specification	According to DIN ISO 3696 Quality Level 3			
Recommended Cooling Capacity <sup>1</sup> (kW)	5.2		.5	
Cooling Water Pressure (hPa)	<5000			
Cooling Water Temperature ( $^{\circ}$ 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			
<b>Fiber Delivery System</b>				
Interface <sup>2</sup>	QBH, QD			
Diameter ( $\mu$ 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			
<b>Dimensions and Weight</b>				
Laser Dimension; w/o Connectors (L x W x H) (mm)	~652 x ~483 x ~267			
Laser Weight; w/o Cooling Water (kg)	<70			
<b>Environmental Conditions</b>				
Ambient Temperature ( $^{\circ}$ C)	+10 to +40			
Humidity, Dew Point Temperature ( $^{\circ}$ C)	$\leq 19$			
Storage Temperature ( $^{\circ}$ C)	5 to 50			
<b>Customer Interface</b>				
Analog Power Control (V DC)	0 to 10			
Digital Power Control (V DC)	24			
Interface for Control via PC	Ethernet			
<b>Options Laser</b>				
	Bus Interface (CanOpen, EtherCAT) <sup>2</sup>			

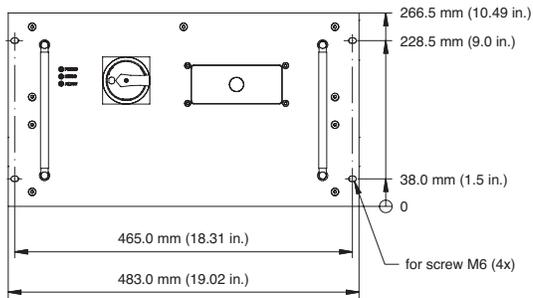
Notes:

1. Depending on system configuration.
2. Other options are available upon request.

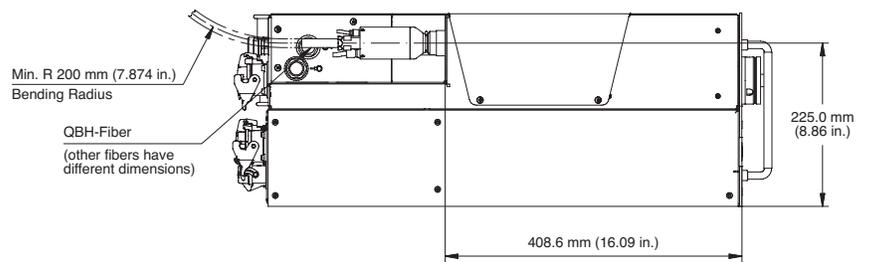
## Mechanical Specifications

HighLight DL HPR Series  
Laser Beam Quality (BPP) 60 mm\*mrad

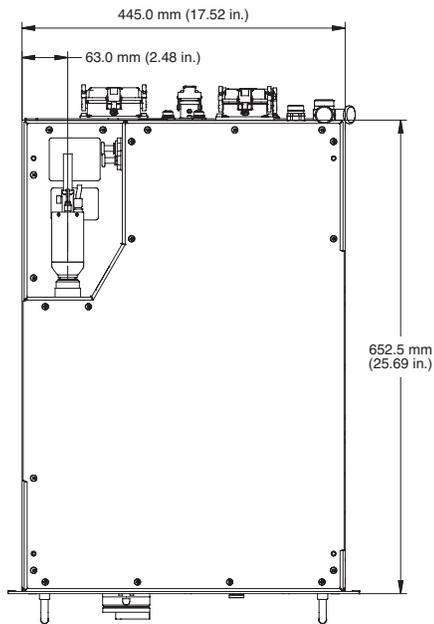
Front View



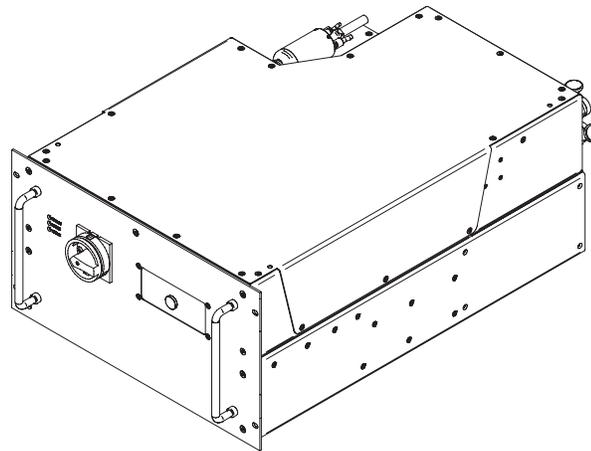
Side View



Top View



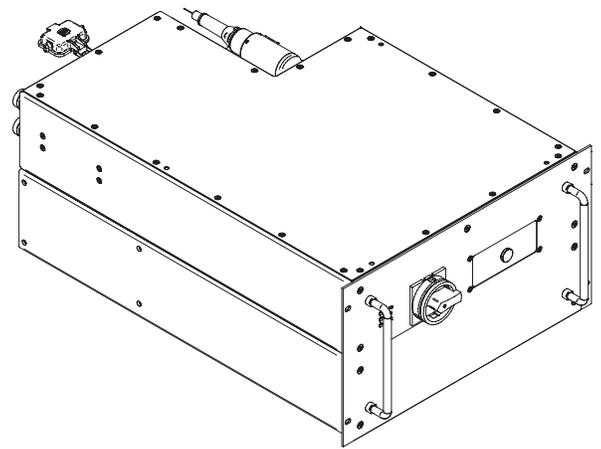
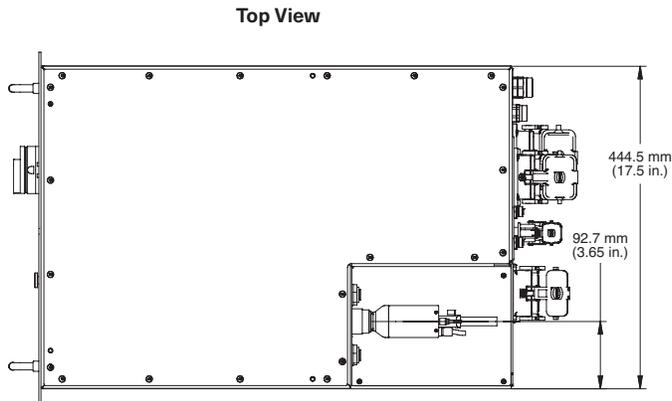
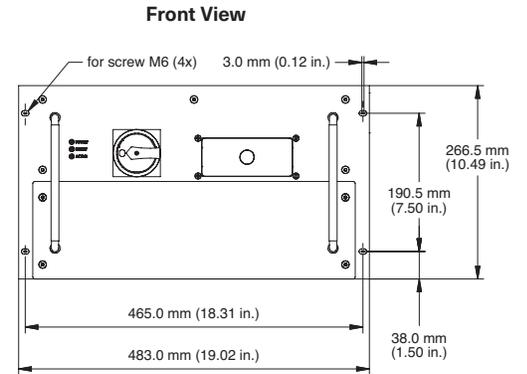
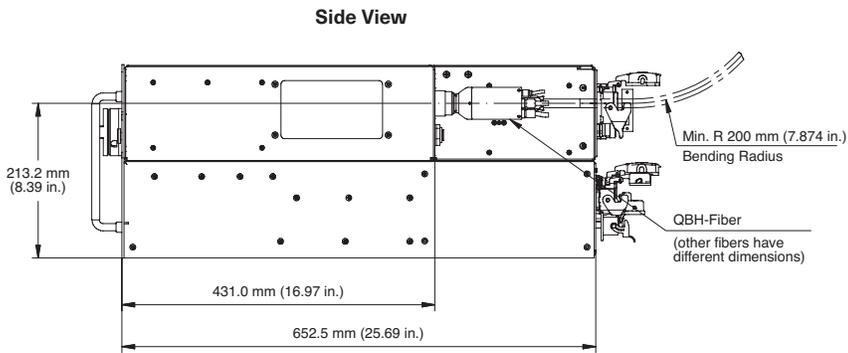
Top View



# HighLight DL HPS Series

## Mechanical Specifications

HighLight DL HPR Series  
Laser Beam Quality (BPP) 100 mm\*mrad



**DANGER**

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

MODEL: HighLight DL4000HPR  
DIODE LASER  
MAXIMUM OUTPUT: 4000 WATTS CW  
at wavelength in the range of 940-1020 nm  
CLASS IV LASER PRODUCT

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

Wave Length: 940-1020 nm  
Continuous Output P<sub>avg</sub>: 4000 W  
Max. Pulse Output P<sub>peak</sub>: 4000 W  
Pulse Duration: <math>1 \mu s - 100 \mu s</math>

Infrared laser radiation  
Avoid eye or skin exposure to direct or scattered radiation  
Class IV Laser product  
IEC 60825-1:2014

Visible laser radiation  
Avoid eye exposure to direct or scattered radiation  
Class III Laser product  
IEC 60825-1:2014