

HighLight FL Compact

High Power Multi Mode Fiber Laser

HighLight™ FL Compact products are a series of high power lasers offering output of 1 to 6 kW from a single, multi-mode, collimated fiber (output BPP $\leq 4 \text{ mm} \times \text{mrad}$). Internally, these lasers are constructed using from one to three 2.5 kW modules (depending upon total output power). This configuration produces the most compact design available in this power class, making HighLight™ FL Compact lasers particularly easy to integrate within a system. The use of field proven, reliable components, including our flexible industrial control unit (RCU), further facilitates integration, enhances reliability, and enables quick customization to the specific needs of a particular application.

Modular and robust HighLight™ FL Multi Mode series lasers are specifically intended to deliver optimum efficiency, maximum flexibility and unmatched reliability in industrial applications including cutting, welding and surface treatment. The wide range of available output power levels and fiber core diameters allow their output to be precisely matched to a specific processing task.

FEATURES & BENEFITS

- Output power: 1,000 - 6,000 Watts, 2.5kW out of one fiber laser module
- Field-proven "all fiber" technology
- Inherently back reflection safe
- Industry leading power control for high process consistency
- Utmost compactness in this power class
- HighLight SQD option for smart process monitoring
- CleanWeld™ technology for perfect welding results



APPLICATIONS

- Cutting
- Welding
- Surface Treatment
- Remote and Scanner-based Applications



SPECIFICATIONS	HighLight FL1000C	HighLight FL1600C	HighLight FL2000C	HighLight FL2500C
Nominal Power (W)	1000	1600	2000	2500
Power Range (%)	10 to 100			
Laser Beam Quality (BPP) at Collimator	3 mm x mrad ≤ BPP ≤ 4 mm x mrad for 100 μm fiber			
Power Stability (%)	± 2			
Pulse Frequency Range	CW to 5 kHz			
Wavelength (nm)	1070 ± 10			
ELECTRICAL RATINGS				
Voltage	3 x 230/400 V ±10% or 3 x 277/480 V ±10%; 50/60 Hz; PE			
Connected Load (kVA)	3.6	5	6.6	7.2
Effective Power at Nominal Power (kW)	3.3	4.7	6.1	6.8
Max. Current Consumption at 400 V (A)	6.2; CCU: 6.7	8.7; CCU: 9.2	11.4; CCU: 11.9	12.5; CCU: 13
Fuses Type NH (A)	16		32	
COOLING				
Recommended Cooling Capacity* (kW)	≥ 4	≥ 5.6	≥ 7.3	≥ 8.1
Flow Rate (l/h)	≥ 1000; CCU Laser: 850; Optic: 150			
Temperature (°C)	25; CCU Laser: 25; Optic: 34			
Temperature Tolerance Range (°C)	± 1			
Max. Pressure (hPa)	6000			
Pressure Drop (hPa)	4000; CCU Laser: 4000; Optic: 3500			
FIBER DELIVERY SYSTEM				
Interface	QBH, QD			
Diameter (μm)	50, 100, 200			50, 100
Type	Step index fiber incl. RSY safety system			
Length (m)	15, 20			15 (50 μm); 15, 20 (100 μm)
Accessories (options)	Collimators, Focusing optics, Cross-Jet			
DIMENSIONS & WEIGHTS				
Laser Dimension (L x W x H) (mm)	751 x 953 x 584; CCU: 751 x 983 x 584			
Laser Weight (kg)	< 150; CCU: 165			
ENVIRONMENTAL CONDITIONS				
Ambient Temperature (°C)	5 to 40			
Humidity (°C)	Dewpoint < 24; (CCU: Dew point ≤ 34, other on request)			
CUSTOMER INTERFACE				
Digital Signals (V DC)	24			
Power Control (V DC)	0 to 10 (50 μs to 70 μs [Level] resp. a pulse period)			
Trigger Control (V)	Gate 24, 15, or 5; Frequency 15/5			
Laser Operating Elements	Pilot laser / PC-control			
OPTIONS LASER				
	Fieldbus-Interface, Scanner processing solution, Customer specific color, Casters, Climate Control Unit (CCU), Handheld (Touch screen), Process monitoring HighLight SQD			

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

** An additional flow rate of 500l/h is recommended for the use of an external power meter.

SPECIFICATIONS	HighLight FL3000C	HighLight FL4000C	HighLight FL5000C
Nominal Power (W)	3000	4000	5000
Power Range (%)	10 to 100		
Laser Beam Quality (BPP) at Collimator	3 mm x mrad ≤ BPP ≤ 4 mm x mrad for 100 μm fiber (optional 1.5 mm x mrad ≤ BPP ≤ 2.5 mm x mrad for 50 μm fiber)	3 mm x mrad ≤ BPP ≤ 4 mm x mrad for 100 μm fiber (optional 1.8 mm x mrad ≤ BPP ≤ 2.5 mm x mrad for 50 μm fiber)	3 mm x mrad ≤ BPP ≤ 4 mm x mrad for 100 μm fiber
Power Stability (%)	± 2		
Pulse Frequency Range	CW to 5 kHz		
Wavelength (nm)	1070 ± 10		
ELECTRICAL RATINGS			
Voltage	3 x 230/400 V ±10% or 3 x 277/480 V ±10%; 50/60 Hz; PE		
Connected Load (kVA)	9.9	12.8	14.5
Effective Power at Nominal Power (kW)	9.2	11.9	13.5
Max. Current Consumption at 400 V (A)	17.1; CCU: 17.6	22.1; CCU: 22.6	25.1; CCU: 25.6
Fuses Type NH (A)	32	40	50
COOLING			
Recommended Cooling Capacity* (kW)	≥ 11	≥ 14.3	≥ 16.2
Flow Rate (l/h)	≥ 2400; CCU Laser: 2200; Optic: 150		
Temperature (°C)	25; CCU Laser: 25; Optic: 34		
Temperature Tolerance Range (°C)	± 1		
Max. Pressure (hPa)	6000		
Pressure Drop (hPa)	4000; CCU Laser: 4000; Optic: 3500		
FIBER DELIVERY SYSTEM			
Interface	QBH, QD		
Diameter (μm)	50, 100		100
Type	Step index fiber incl. RSY safety system		
Length (m)	15, 20	50μm (10); 100μm (15, 20)	15, 20
Accessories (options)	Collimators, Focusing optics, Cross-Jet		
DIMENSIONS & WEIGHTS			
Laser Dimension (L x W x H) (mm)	813 x 1056 x 945; CCU: 813 x 1069 x 945		
Laser Weight (kg)	< 285; CCU: 315		
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 to 40		
Humidity (°C)	Dewpoint < 24; (CCU: Dew point ≤ 34, other on request)		
CUSTOMER INTERFACE			
Digital Signals (V DC)	24		
Power Control (V DC)	0 to 10 (50 μs to 70 μs [Level] resp. a pulse period)		
Trigger Control (V)	Gate 24, 15, or 5; Frequency 15/5		
Laser Operating Elements	Pilot laser / PC-control		
OPTIONS LASER			
	Fieldbus-Interface, Scanner processing solution, Customer specific color, Casters, Climate Control Unit (CCU), Handheld (Touch screen), Process monitoring HighLight SQD		

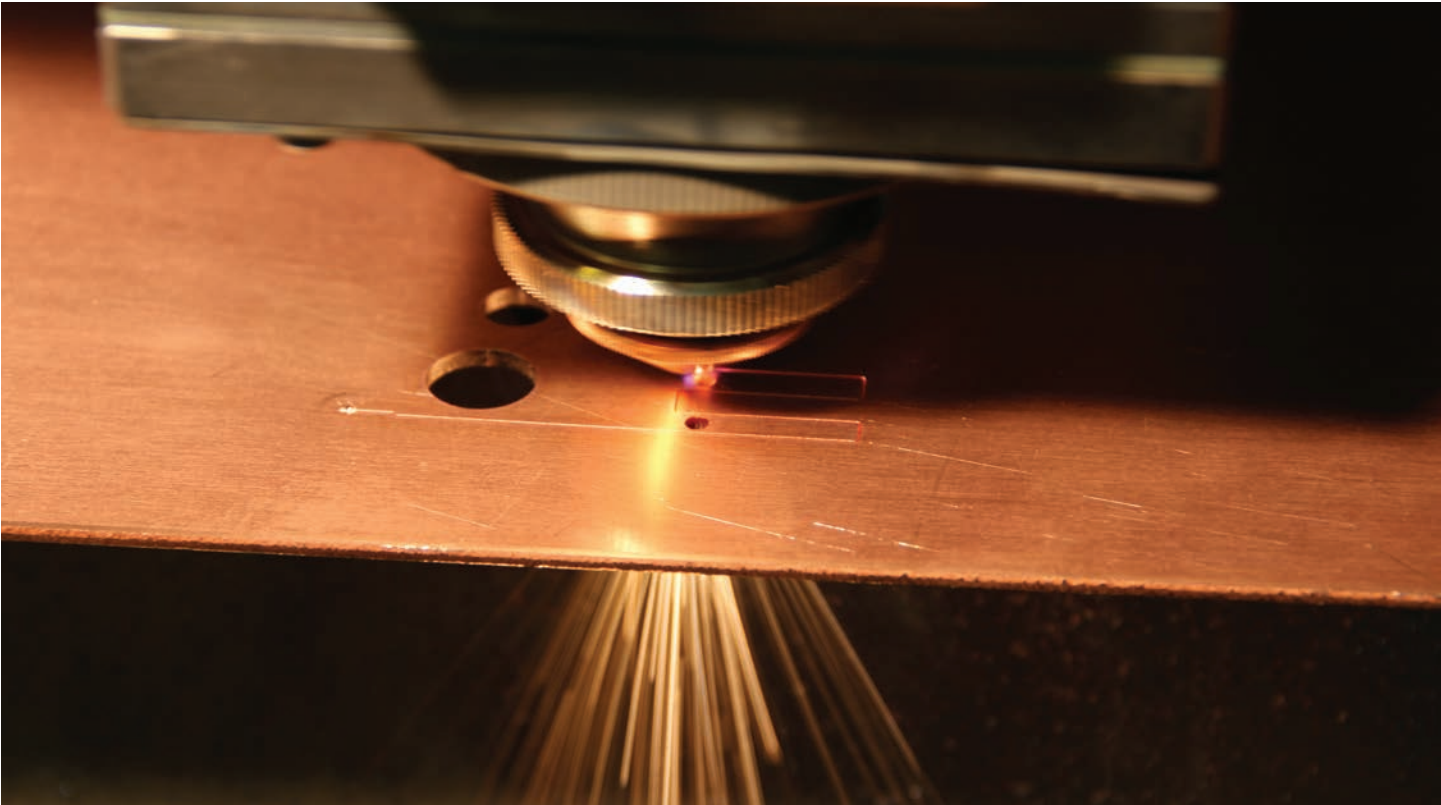
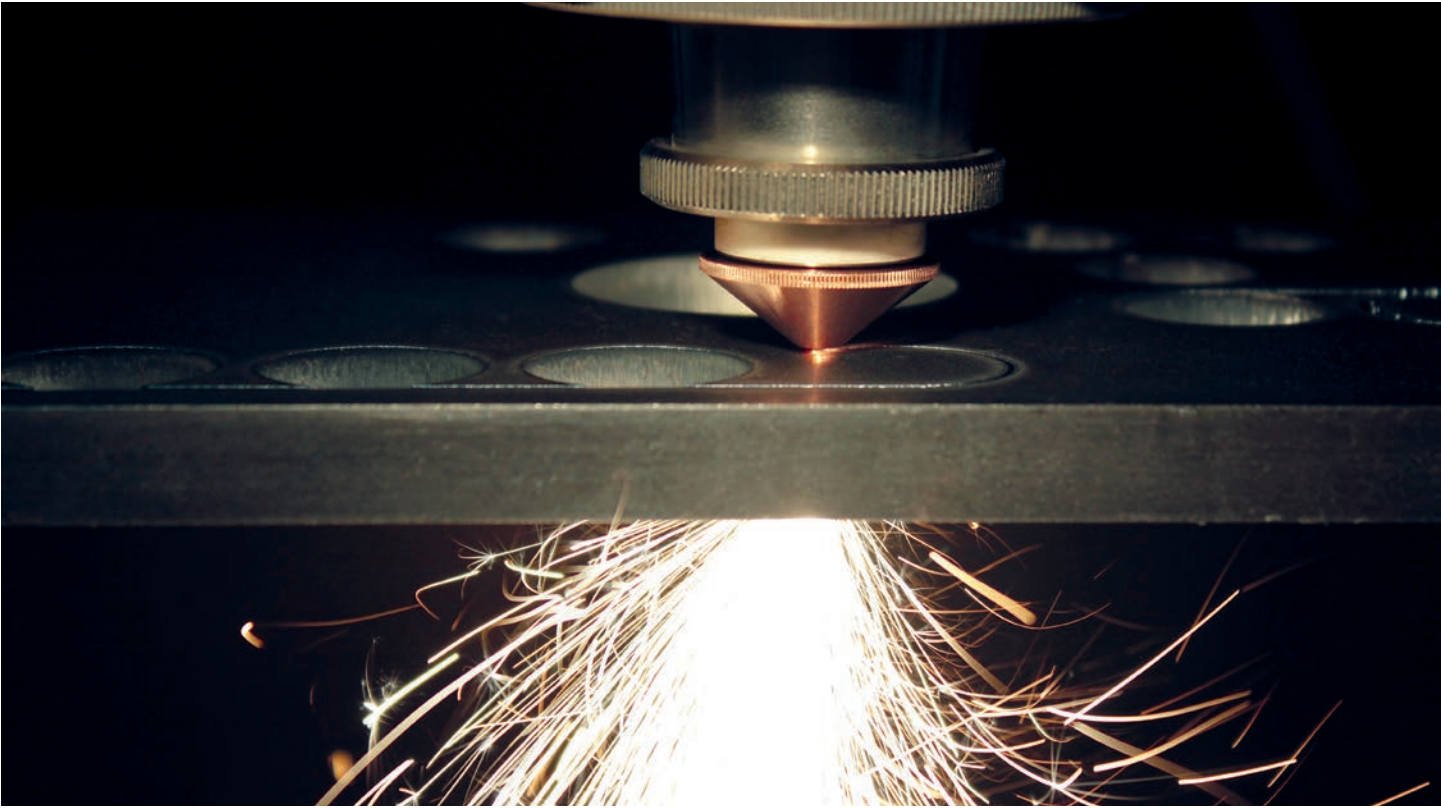
* The recommended cooling capacity covers maximum power dissipation due to diode degradation and 100% laser power absorbed at an internal or external beam dump.

** An additional flow rate of 500l/h is recommended for the use of an external power meter.

SPECIFICATIONS	
Nominal Power (W)	6000
Power Range (%)	10 to 100
Laser Beam Quality (BPP) at Collimator	3 mm x mrad ≤ BPP ≤ 4 mm x mrad for 100 μm fiber
Power Stability (%)	± 2
Pulse Frequency Range	CW to 5 kHz
Wavelength (nm)	1070 ± 10
ELECTRICAL RATINGS	
Voltage	3 x 230/400 V ±10% or 3 x 277/480 V ±10%; 50/60 Hz; PE
Connected Load (kVA)	19.2
Effective Power at Nominal Power (kW)	17.9
Max. Current Consumption at 400 V (A)	33.3; CCU: 33.8
Fuses Type NH (A)	50
COOLING	
Recommended Cooling Capacity* (kW)	≥ 21.5
Flow Rate** (l/h)	≥ 3400; CCU Laser: 3200; Optic: 150
Temperature (°C)	25; CCU Laser: 25; Optic: 34
Temperature Tolerance Range (°C)	± 1
Max. Pressure (hPa)	6000
Pressure Drop (hPa)	4000; CCU Laser: 4000; Optic: 3500
FIBER DELIVERY SYSTEM	
Interface	QBH, QD
Diameter (μm)	100
Type	Step index fiber incl. RSY safety system
Length (m)	15, 20
Accessories (options)	Collimators, Focusing optics, Cross-Jet
DIMENSIONS & WEIGHTS	
Laser Dimension (L x W x H) (mm)	813 x 1056 x 1155; CCU: 813 x 1069 x 1155
Laser Weight (kg)	< 365; CCU: 395
ENVIRONMENTAL CONDITIONS	
Ambient Temperature (°C)	5 to 40
Humidity (°C)	Dewpoint < 24; (CCU: Dew point ≤ 34, other on request)
CUSTOMER INTERFACE	
Digital Signals (V DC)	24
Power Control (V DC)	0 to 10 (50 μs to 70 μs [Level] resp. a pulse period)
Trigger Control (V)	Gate 24, 15, or 5; Frequency 15/5
Laser Operating Elements	Pilot laser / PC-control
OPTIONS LASER	
	Fieldbus-Interface, Scanner processing solution, Customer specific color, Casters, Climate Control Unit (CCU), Handheld (Touch screen), Process monitoring HighLight SQD

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

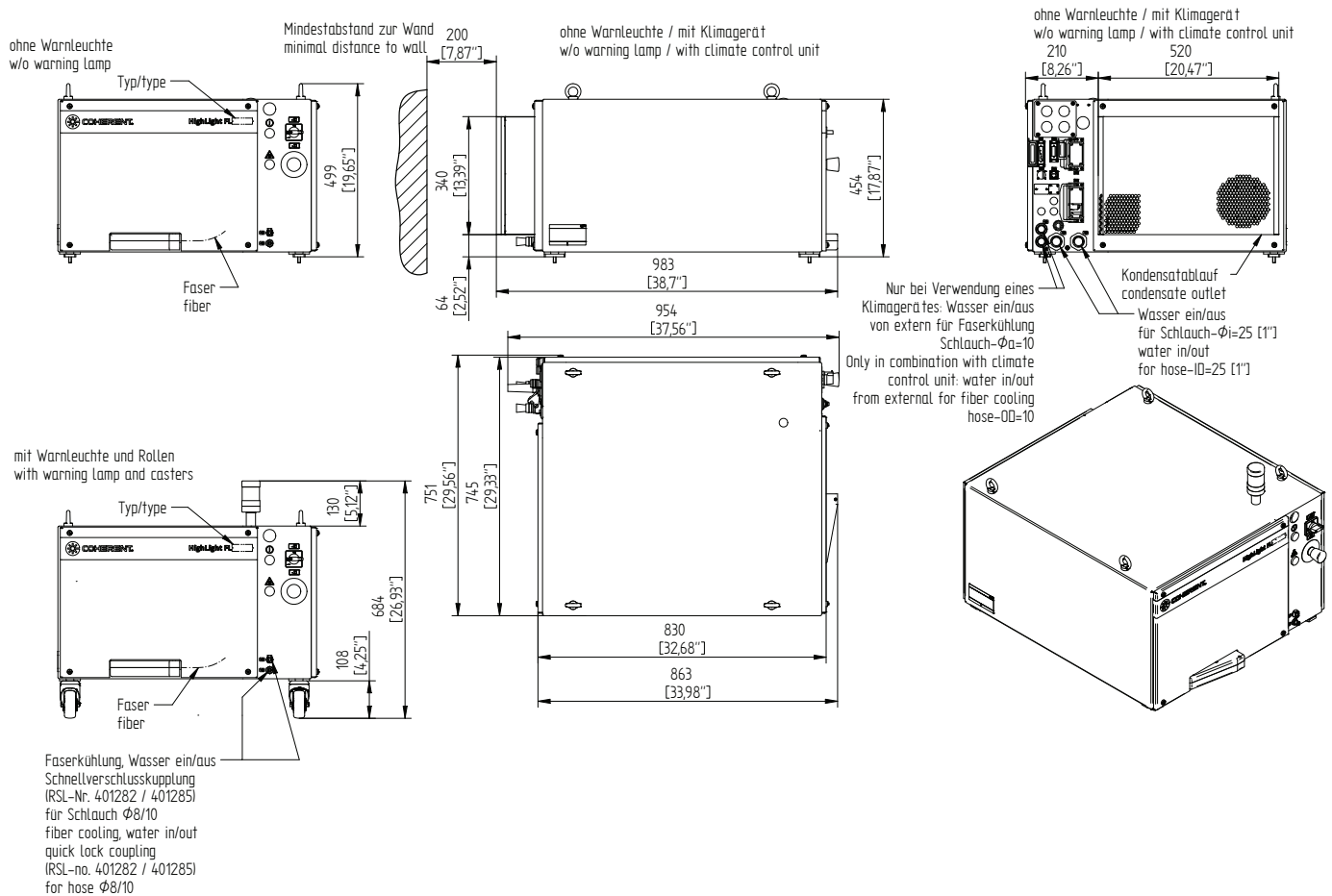
** An additional flow rate of 500l/h is recommended for the use of an external power meter.



MECHANICAL SPECIFICATIONS

HighLight FL1000C - HighLight FL2500C

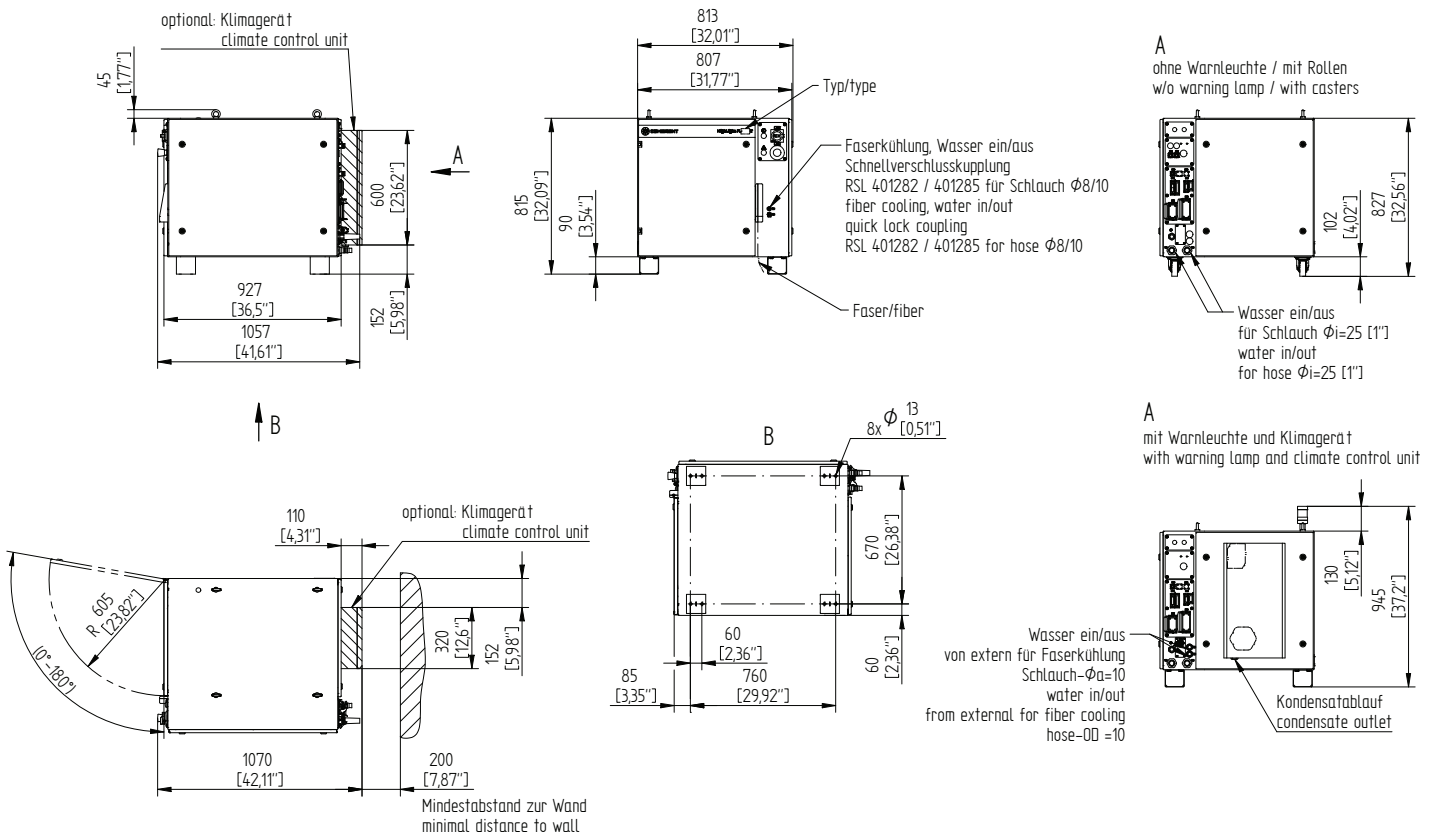
Design with Mounting Points (Standard)
 Design with Climate Control Unit (Optional)
 Design with Casters (Optional)



MECHANICAL SPECIFICATIONS

HighLight FL3000C - HighLight FL5000C

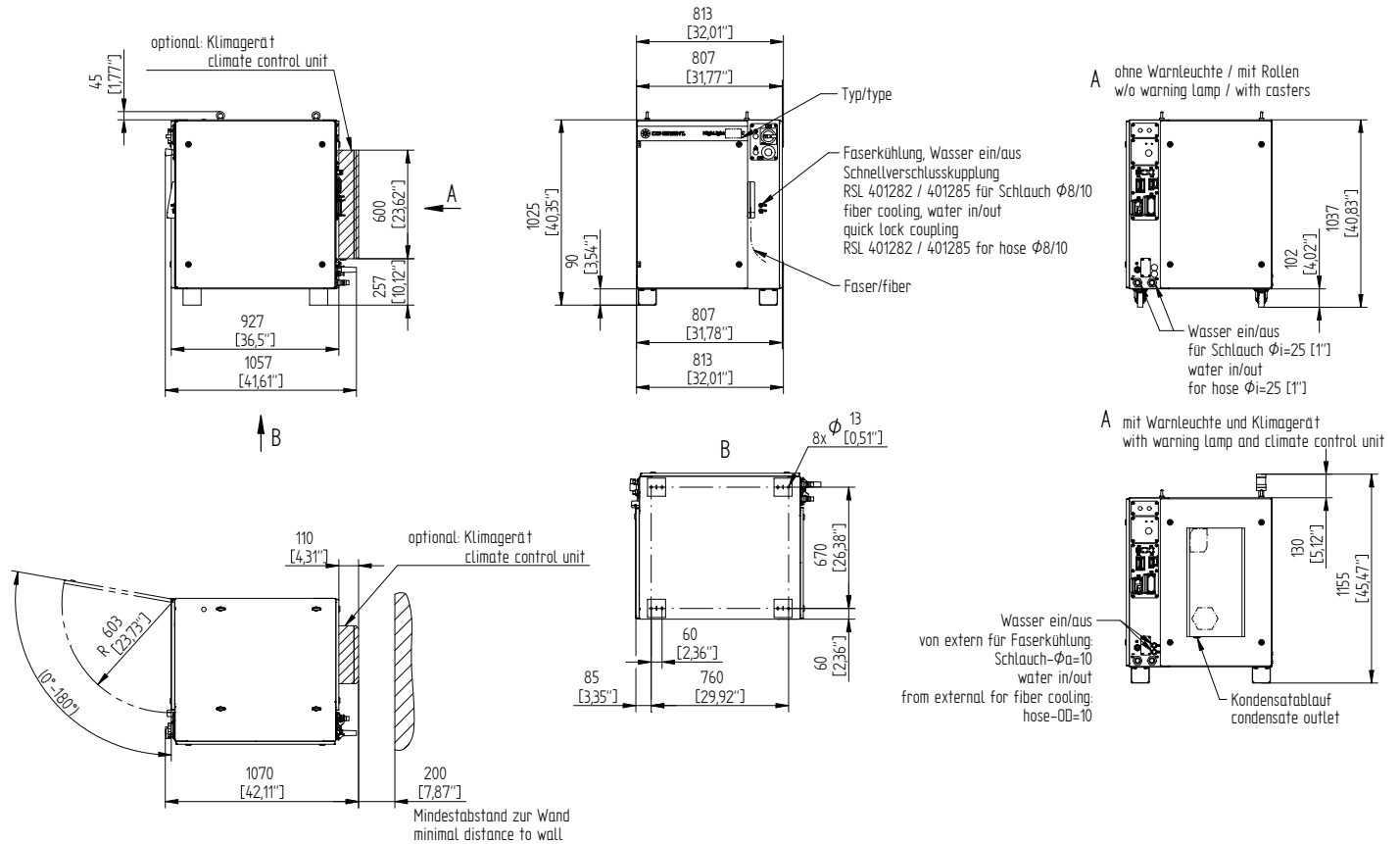
- Design with Feet (Standard)
- Design with Climate Control Unit (Optional)
- Design with Casters (Optional)



MECHANICAL SPECIFICATIONS

HighLight FL6000C

- Design with Feet (Standard)
- Design with Climate Control Unit (Optional)
- Design with Casters (Optional)



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

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 or contact your local Sales or Service Representative. Printed in the U.S.A. MC-021-18-0M0818 Copyright ©2019 Coherent, Inc.



Coherent-Rofin 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.