



HighLight FL Series

High Power Fiber Laser with Fiber-Fiber-Switch

The HighLight™ FL lasers are a high brightness, high power fiber laser offering 500 up to 10,000 Watts with Fiber-Fiber-Switch (FFS) for easy energy management and flexible applications on different workstations.

With their modular and robust design the lasers have been set-up for optimum efficiency, flexibility and reliability in industrial applications such as cutting, welding and surface treatment. HighLight™ FL lasers incorporate field proven reliable components including the flexible industrial control (RCU) which allows the easy integration into system concepts and the adaptation to the application needs. The combination of different power levels and range of fiber core diameters allow for precise adaptation in a broad range of processing tasks.

FEATURES & BENEFITS

- Output power: 500 - 10,000 Watts
- Fiber-Fiber-Switch (FFS)
- Field-proven "all fiber" technology
- High wall plug efficiency
- Long life diode pumping modules on T-bars
- Inherently back reflection safe
- Versatile production tool due to wide range of beam qualities
- Industry leading power control for high process consistency
- Equipped with control unit for internet-accessible diagnostics and e-service

APPLICATIONS

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



HighLight FL Series FFS Datasheet

SPECIFICATIONS	HighLight FL500	HighLight FL750	HighLight FL1000	HighLight FL1500	HighLight FL2000	HighLight FL2500
Nominal Power (W)	500	750	1000	1500	2000	2500
Power Range (%)	10 to 100					
Laser Beam Quality (BPP) at Collimator	1.5 mm ≤ BPP ≤ 2.5mm x mrad for 50µm 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)	2.2	2.9	3.6	5.5	6.9	7.2
Effective Power at Nominal Power (kW)	2	2.7	3.4	5.1	6.4	6.8
Max. Current Consumption at 400 V (A)	3.2; CCU: 3.7	5; CCU: 5.5	6.3; CCU: 6.8	9.4; CCU: 9.9	11.9; CCU: 12.4	12.5; CCU: 13
Fuses Type NH (A)	16			25		
COOLING						
Recommended Cooling Capacity* (kW)	≥ 2.4	≥ 3.2	≥ 4	≥ 6.1	≥ 7.7	≥ 8.1
Flow Rate 2 fibers** (l/h)	2200 ; CCU: Laser: 950; Optic: 1150					
Flow Rate 4 fibers** (l/h)	2600 ; CCU: Laser: 950; Optic: 1600					
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 to 1000				100 to 1000 (50 on request)	
Type	Step index fiber incl. RSY safety system					
Length (m)	10, 15, 20, 30, 35 (other length on request)					
Accessories (options)	Collimators, Focusing optics, Cross-Jet					
DIMENSIONS & WEIGHTS						
Laser Dimension (L x W x H) (mm)	861 x 1119 x 1516; CCU: 861 x 1179 x 1516					
Laser Weight (kg)	< 380; CCU: < 400			< 400; CCU: < 420		
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, Handheld (Touch Screen)					

* 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 FL3000	HighLight FL4000	HighLight FL5000
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		
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)	9.8	12.7	14.5
Effective Power at Nominal Power (kW)	9.1	11.8	13.5
Max. Current Consumption at 400 V (A)	17; CCU:17.5	22; CCU: 22.5	25.1; CCU: 25.6
Fuses Type NH (A)	25	40	50
COOLING			
Recommended Cooling Capacity* (kW)	≥ 10.9	≥ 14.2	≥ 16.2
Flow Rate 2 fibers** (l/h)	3400 ; CCU: Laser: 2150 ; Optic: 1150		
Flow Rate 4 fibers** (l/h)	4000 ; CCU: Laser: 2150; Optic: 1600		
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 to 1000		
Type	Step index fiber incl. RSY safety system		
Length (m)	10, 15, 20, 30, 35 (other length on request)		
Accessories (options)	Collimators, Focusing optics, Cross-Jet, Galvo Scanner		
DIMENSIONS & WEIGHTS			
Laser Dimension (L x W x H) (mm)	861 x 1119 x 1516; CCU: 861 x 1179 x 1516		
Laser Weight (kg)	< 470; CCU: < 490		
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)		

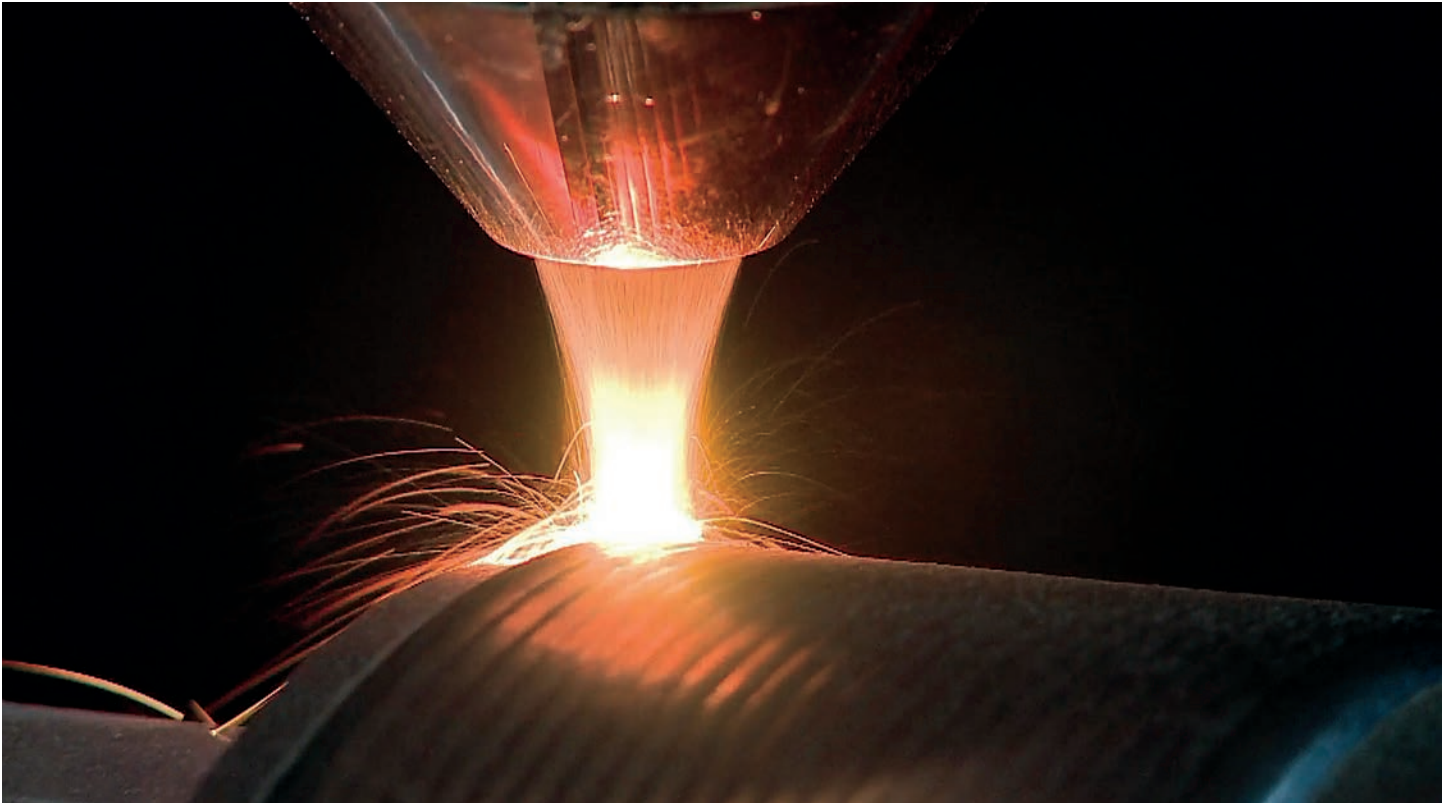
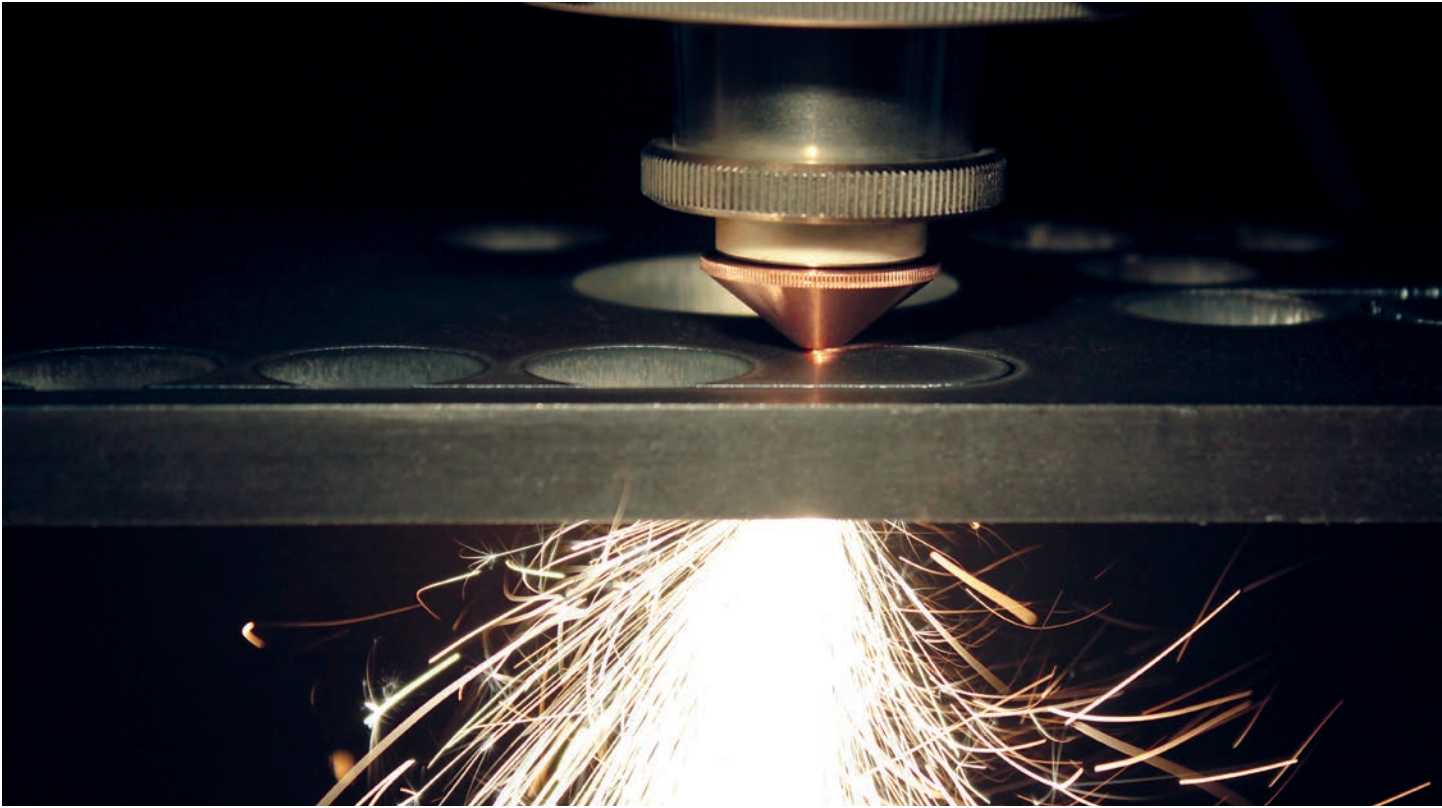
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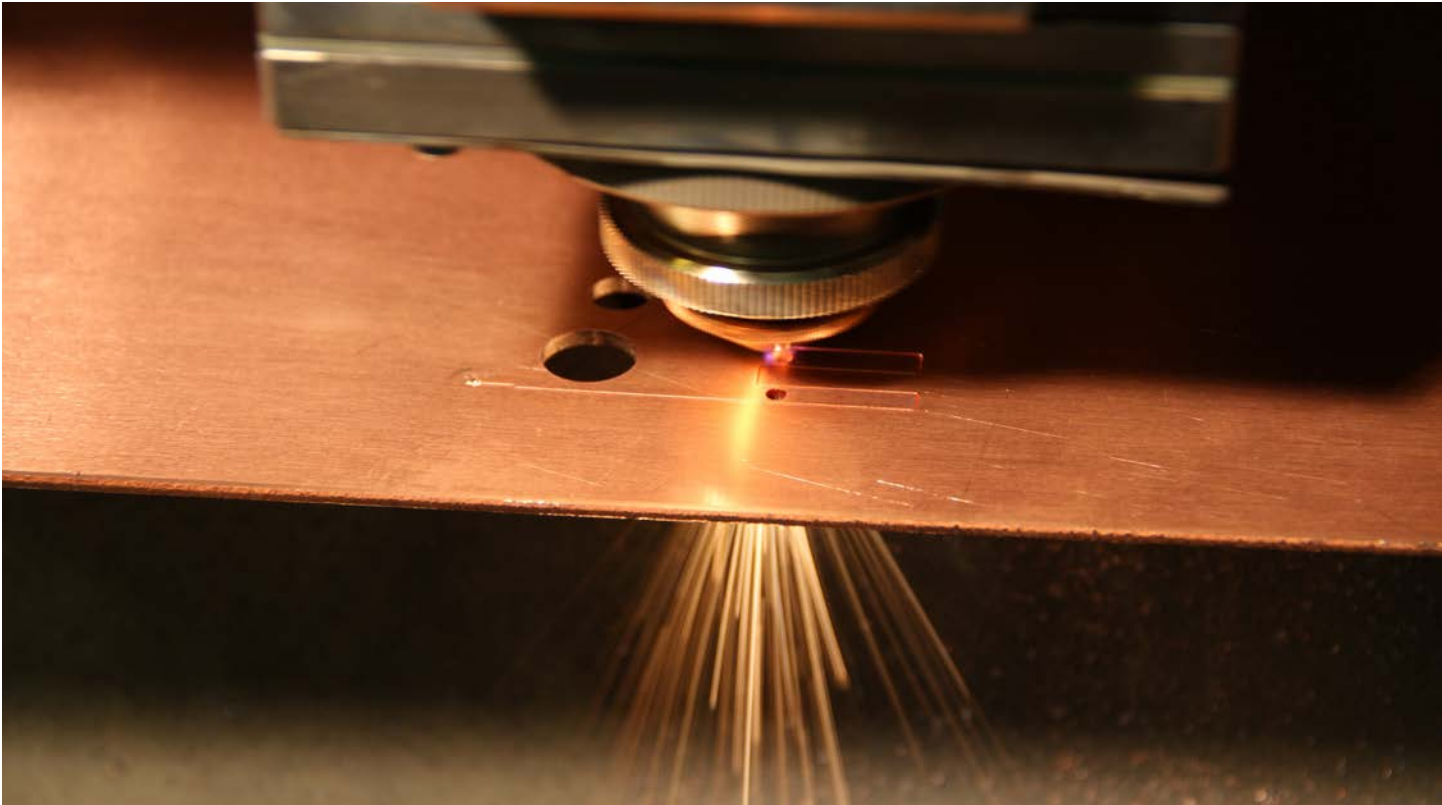
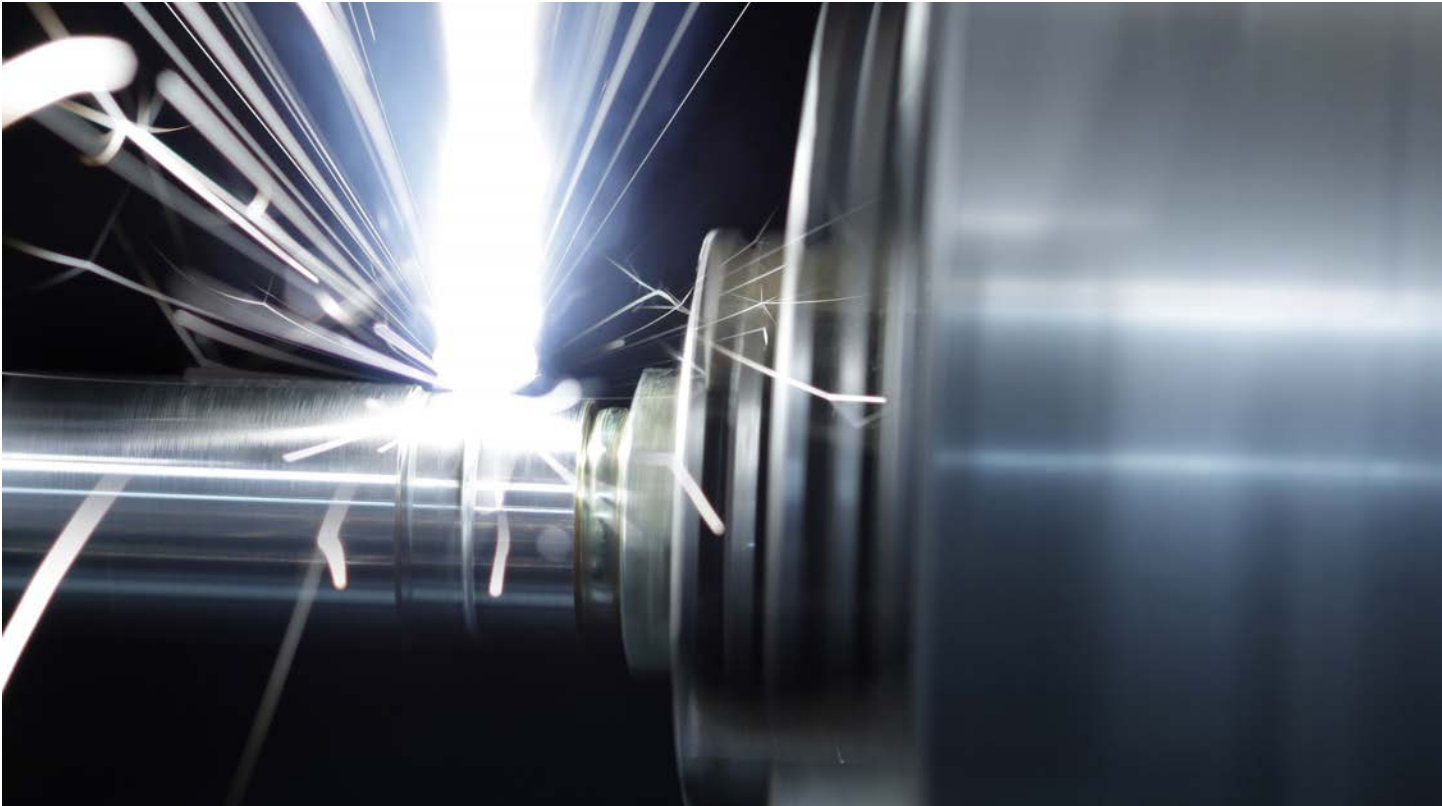
** An additional flow rate of 500l/h is recommended for the use of an external power meter.

SPECIFICATIONS	HighLight FL6000	HighLight FL8000	HighLight FL10000
Nominal Power (W)	6000	8000	10000
Power Range (%)	10 to 100		
Laser Beam Quality (BPP) at Collimator	3 mm x mrad ≤ BPP ≤ 4 mm x mrad for 100 μm fiber		> 4.5 mm x mrad ≤ BPP ≤ 6 mm x mrad for 150 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	25.6	27.7
Effective Power at Nominal Power (kW)	17.9	23.8	25.8
Max. Current Consumption at 400 V (A)	33.3; CCU: 33.8	44.3; CCU: 44.8	45; CCU: 45.5
Fuses Type NH (A)	50		
COOLING			
Recommended Cooling Capacity* (kW)	≥ 21.5	≥ 28.5	≥ 29
Flow Rate 2 fibers** (l/h)	4500 ; CCU: Laser: 2900; Optic: 1150	5300 ; CCU: Laser: 3600 ; Optic: 1150	
Flow Rate 4 fibers** (l/h)	4800 ; CCU: Laser: 2900; Optic: 1600	5600 ; CCU: Laser: 3600; Optic: 1600	
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 to 1000		150 to 1000
Type	Step index fiber incl. RSY safety system		
Length (m)	10, 15, 20, 30, 35 (other length on request)		
Accessories (options)	Collimators, Focusing optics, Cross-Jet, Galvo Scanner		
DIMENSIONS & WEIGHTS			
Laser Dimension (L x W x H) (mm)	861 x 1119 x 1881; CCU: 861 x 1179 x 1881		
Laser Weight (kg)	< 530; CCU: < 550		
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 to 40		
Humidity (°C)	Dewpoint < 24; (CCU: Dewpoint ≤ 34, other on request)		
CUSTOMER INTERFACE			
Digital Signals (V DC)	24		
Power Control (V DC)	0 to 10 (50 μs - 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)		

* 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.

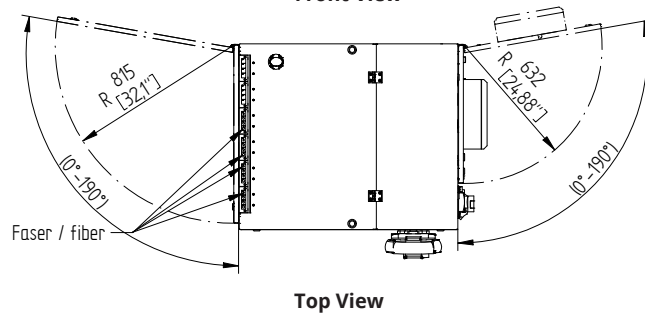
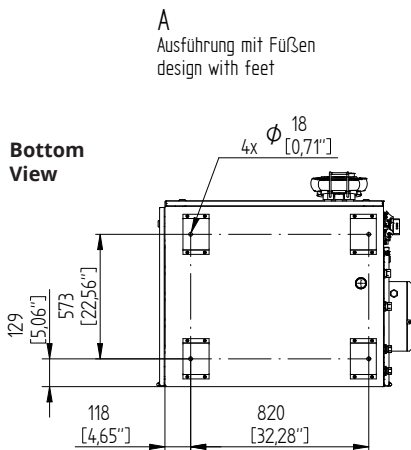
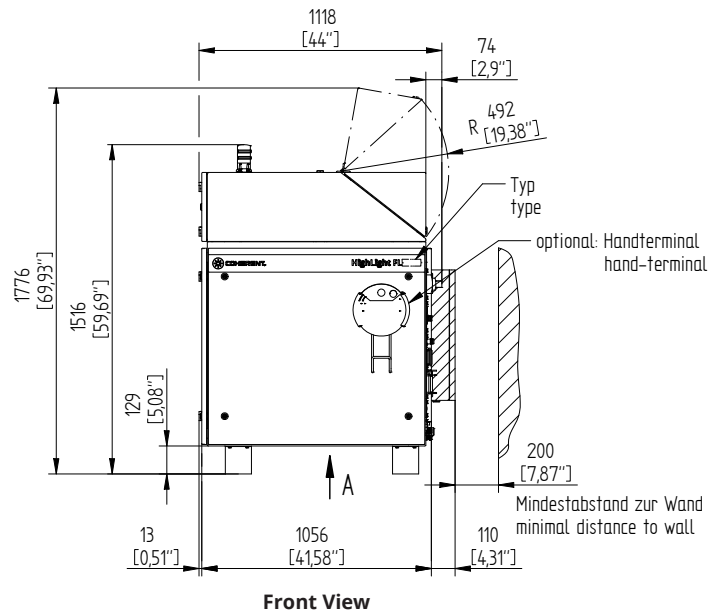
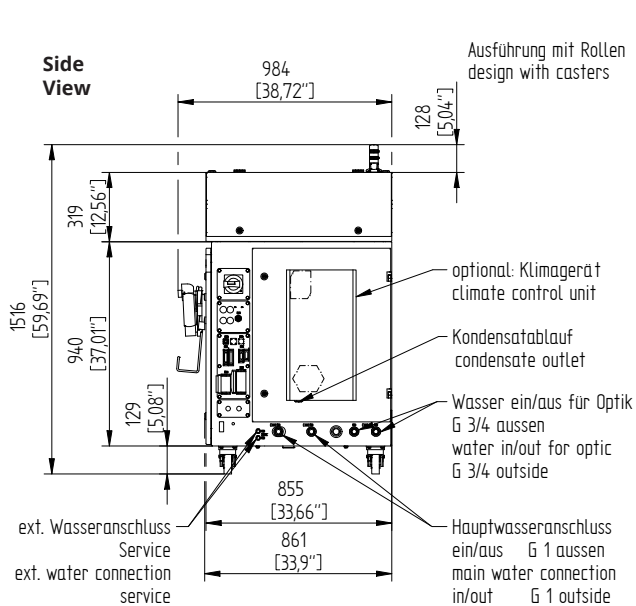




MECHANICAL SPECIFICATIONS

HighLight FL500 - HighLight FL5000

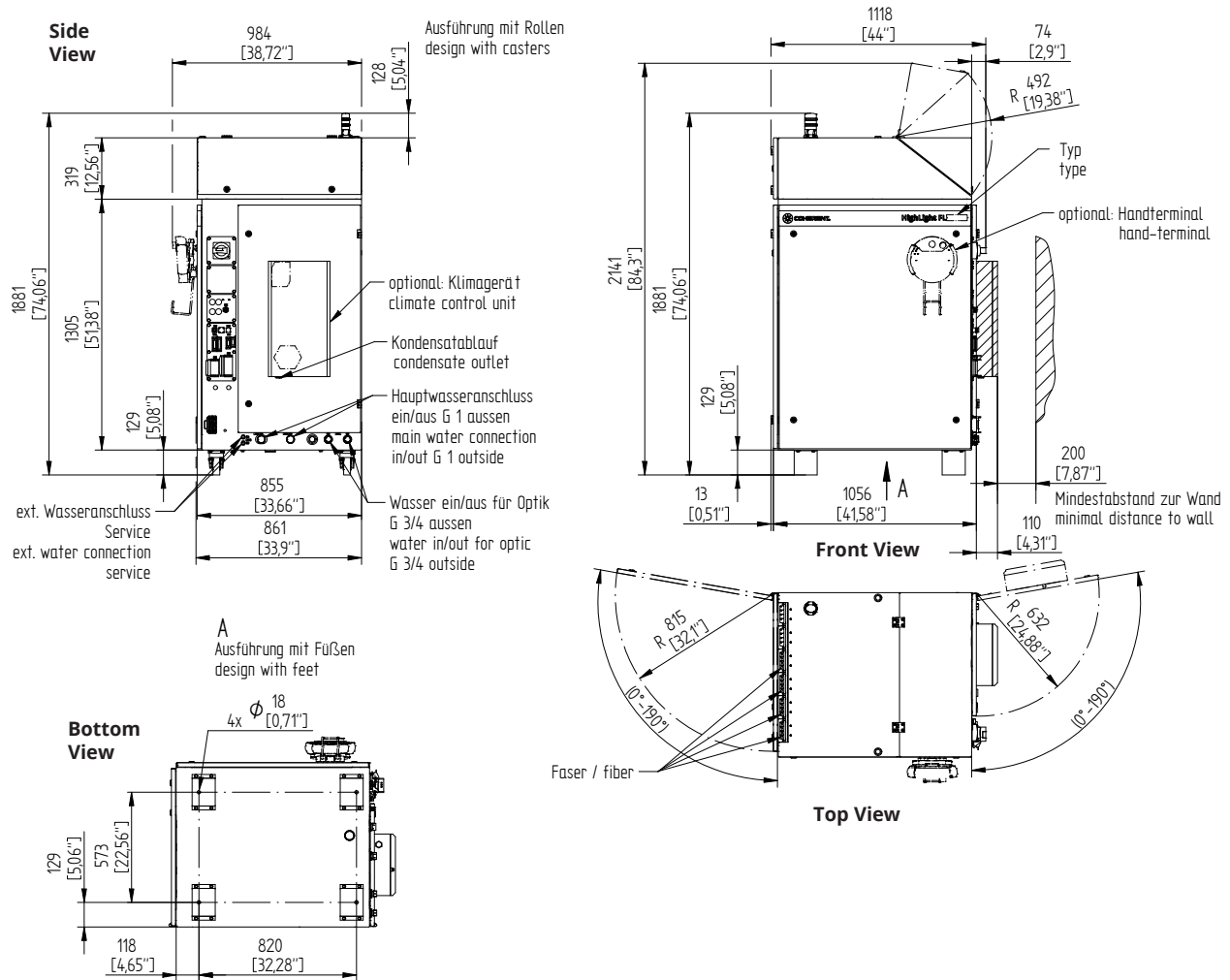
- Design with Feet (Standard)
- Design with Climate Control Unit (Optional)
- Design with Casters (Optional)



MECHANICAL SPECIFICATIONS

HighLight FL6000 - HighLight FL10000

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



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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 or contact your local Sales or Service Representative. Printed in the U.S.A. MC-000-18-0M0518 Copyright ©2018 Coherent, Inc. dat-HighLight-FL-FFS-05/2018

DANGER

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

MODEL: HighLight FL Yb: 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

CAUTION
 INVISIBLE LASER RADIATION (CLASS II,
 IIIa, IIIb, IV) MAY BE EMISSIONS
 AVOID EYE OR SKIN EXPOSURE TO
 DIRECT OR SCATTERED RADIATION

CAUTION
 VISIBLE LASER RADIATION
 CLASS III
 AVOID DIRECT EYE EXPOSURE

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.