

# DC Series

## High-Power CO<sub>2</sub> Slab Laser

Coherent DC Series high-power CO<sub>2</sub> lasers offer an unmatched combination of economy and reliability for a variety of materials processing tasks, including cutting, welding, and surface treatment. Plus, their far infrared output wavelength makes them compatible with a wide range of materials, including metals, wood, plastics, textiles, paper and carbon fiber reinforced polymers (CFRPs).

These lasers employ a slab discharge design, which is simpler and produces better output characteristics than the fast flow construction traditionally utilized in multi-kilowatt CO<sub>2</sub> lasers. The sealed, slab discharge configuration avoids optics contamination, and eliminates the complexity, cost and reliability issues of blowers for gas recirculation. All this means substantially lower operating costs, greater reliability, longer lifetimes and extended intervals between maintenance.

### FEATURES & BENEFITS

- Output power: 1,000 - 8,000 Watts
- Wavelength 10.6 μm
- Minimal gas consumption due to diffusion cooling
- Low service requirements thanks to the robust, low-maintenance design
- Available configurations:
  - Compact Version: laser head and control cabinet in one unit
  - Head/cabinet combination
  - Integration modules

### APPLICATIONS

- Cutting
- Welding
- Surface Treatment



SPECIFICATIONS	DC 010	DC 015	DC 020	DC 025
Nominal Power (W)	1000 W	1500 W	2000 W	2500 W
Power Range (%)	10 - 100			
Laser Beam Quality <i>ISO 11146, deviation <math>\pm 5\%</math></i>	K (M <sup>2</sup> ) = 0.95 (1.05)			
Power Stability (%) <i>Cooling water <math>\Delta T \leq \pm 1\text{ K}</math></i>	$\pm 2$			
Pointing Stability (mrad) <i>ISO 11145</i>	$\leq 0.15$			
Pulse Frequency Range	CW, 2 - 5000 Hz			
Beam Diameter (mm)	18 $\pm$ 3*		20 $\pm$ 3*	
Polarization	linear, 45° to horizontal level			
Wavelength	10.6 $\mu\text{m}$			
Excitation	RF			
ELECTRICAL RATINGS				
Voltage	3 x 230 / 400 V $\pm 10\%$ , 3 x 255/440 V $\pm 10\%$ or 3 x 277 / 480 V $\pm 10\%$ ; 50/60 Hz; 3 Phases; PE			
Connected Load (kVA)	16	22	35	41
Effective Power at Nominal Power (kW)	15	21	34	39
Max. Current Consumption at 400 V (A)	< 25	< 35	< 51	< 59
Fuses Type NH (A)	50		80	
COOLING				
Recommended Cooling Capacity (kW)	$\geq 15$	$\geq 21$	$\geq 34$	$\geq 39$
Flow Rate Laser Head (l/h)	$\geq 3000$	$\geq 4000$	$\geq 4000$	$\geq 5000$
Flow Rate Laser Cabinet (l/h)	$\geq 500$			
Flow Rate Laser Compact (l/h)	$\geq 3500$	$\geq 4500$	$\geq 4500$	$\geq 5500$
Temperature $\Theta$ (°C)**	20 or 27 (above dew point)			
Temperature Tolerance Range (°C)	$\pm 1$			
Supply Pressure (hPa)	$\leq 6000$ (6 bar)			
Back Pressure (hPa)	$\leq 1500$ (1.5 bar)			
LASER GAS				
Type	Premix-Laser Gas			
Consumption (NI/h)	< 0.06			
Change Interval (h)	168			
DIMENSIONS & WEIGHTS				
Standard Laser Head (L x W x H) (mm)	1685 x 800 x 850			
Weight (kg)	520		565	
Control Cabinet (W x D x H) (mm)	1200 x 689 x 2062			
Weight (kg)	575		670	
Compact Laser (L x W x H) (mm)	1880 x 881 x 1863			
Weight (kg)	1310		1380	
ENVIRONMENTAL CONDITIONS				
Ambient Temperature (°C)	5 - 40			
Humidity	dew point below the cooling water temperature			
CUSTOMER INTERFACE				
	Commands from external controller / control panel, status signals to external controller, external pulse interface, external analog and digital power control, Ethernet Interface			

\* Measured in a distance &lt; 10m; please contact COHERENT for detailed data of the beam propagation

\*\*  $\frac{\Delta\theta}{\Delta t} \leq 3^\circ/\text{min}$ ;  $t > 1.5\text{ min}$

SPECIFICATIONS	DC 030	DC 035	DC 040
Nominal Power (W)	3000	3500	4000
Power Range (%)	10 - 100		
Laser Beam Quality <i>ISO 11146, deviation <math>\pm 5\%</math></i>	K (M <sup>2</sup> ) = 0.95 (1.05)		
Power Stability (%) <i>Cooling water <math>\Delta T \leq \pm 1\text{ K}</math></i>	$\pm 2$		
Pointing Stability (mrad) <i>ISO 11145</i>	$\leq 0.15$		
Pulse Frequency Range	CW, 2 - 5000 Hz		
Beam Diameter (mm)	25 mm $\pm 3^*$		
Polarization	linear, 45° to horizontal level		
Wavelength	10.6 $\mu\text{m}$		
Excitation	RF		
ELECTRICAL RATINGS			
Voltage	3 x 230 /400 V $\pm 10\%$ , 3 x 255/440 V $\pm 10\%$ or 3 x 277 / 480 V $\pm 10\%$ ; 50/60 Hz; 3 Phases; PE		
Connected Load (kVA)	48	56	60
Effective Power at Nominal Power (kW)	46	52	57
Max. Current Consumption at 400 V (A)	< 70	< 81	< 87
Fuses Type NH (A)	100		125
COOLING			
Recommended Cooling Capacity (kW)	$\geq 46$	$\geq 52$	$\geq 57$
Flow Rate Laser Head (l/h)	$\geq 5000$		
Flow Rate Laser Cabinet (l/h)	$\geq 500$		
Flow Rate Laser Compact (l/h)	$\geq 5500$		
Temperature $\Theta$ (°C)**	20 or 27 (above dew point)		
Temperature Tolerance Range (°C)	$\pm 1$		
Supply Pressure (hPa)	$\leq 6000$ (6 bar)		
Back Pressure (hPa)	$\leq 1500$ (1.5 bar)		
LASER GAS			
Type	Premix-Laser Gas		
Consumption (NI/h)	< 0.08		
Change Interval (h)	168		
DIMENSIONS & WEIGHTS			
Standard Laser Head (L x W x H) (mm)	2085 x 850 x 850		
Weight (kg)	approx. 675	approx. 685	
Control Cabinet (W x D x H) (mm)	1200 x 689 x 2062		
Weight (kg)	approx. 670	approx. 750	
Compact Laser (L x W x H) (mm)	2280 x 976 x 1863		
Weight (kg)	approx. 1610	approx. 1670	
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 - 40		
Humidity	dew point below the cooling water temperature		
CUSTOMER INTERFACE			
Commands from external controller / control panel, status signals to external controller, external pulse interface, external analog and digital power control, Ethernet Interface			

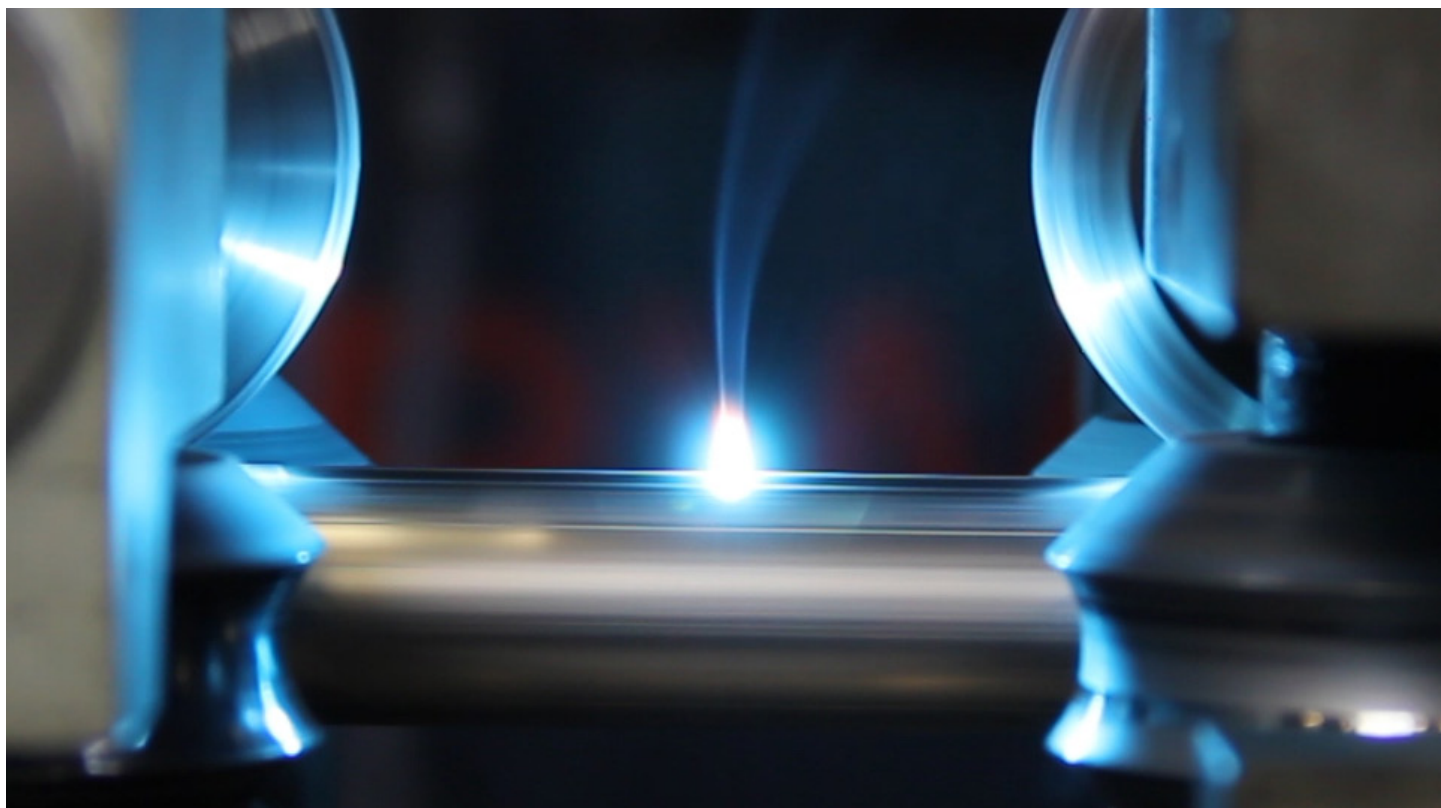
\* Measured in a distance &lt; 10m; please contact COHERENT for detailed data of the beam propagation

\*\*  $\frac{\Delta\theta}{\Delta t} \leq 3^\circ/\text{min}$ ;  $t > 1.5\text{ min}$

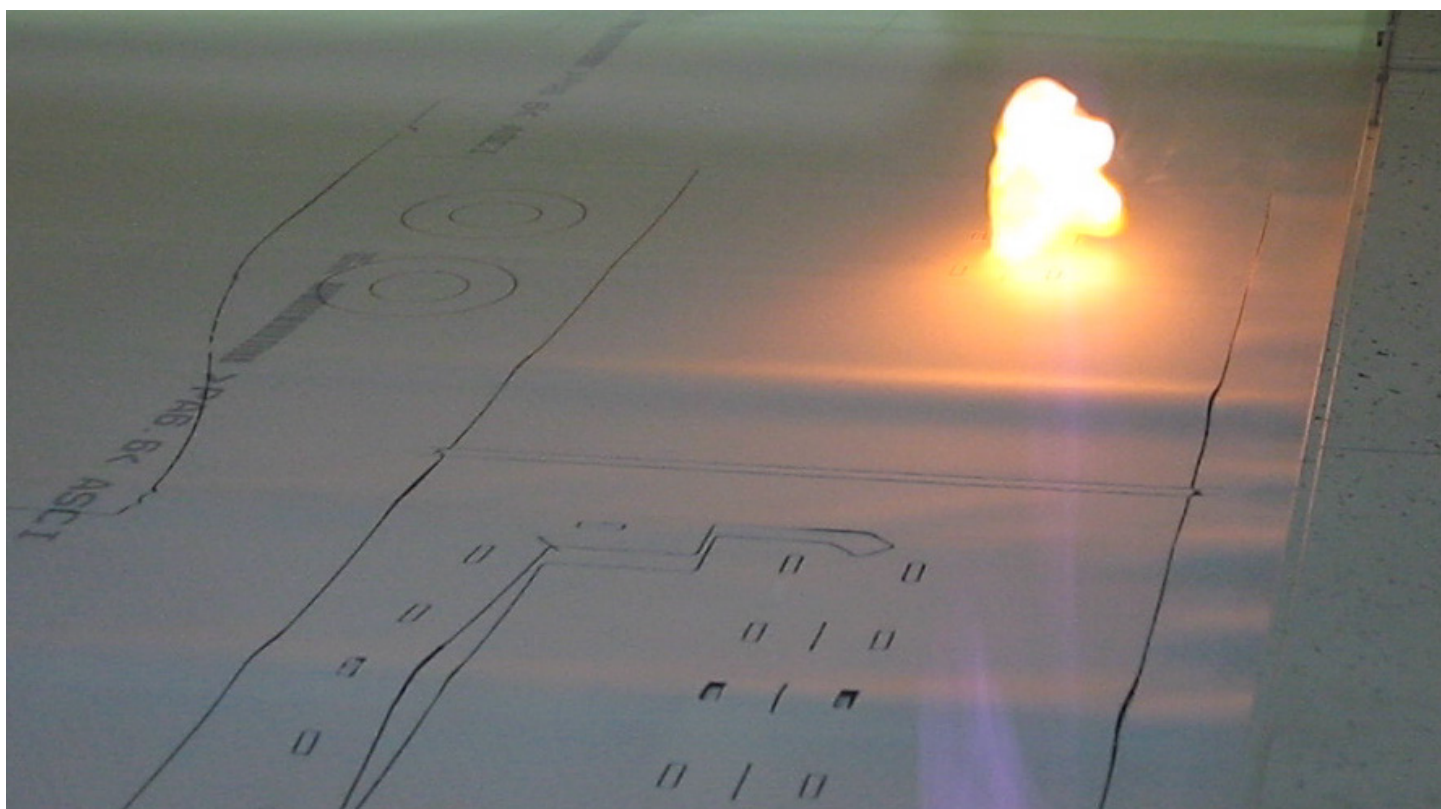
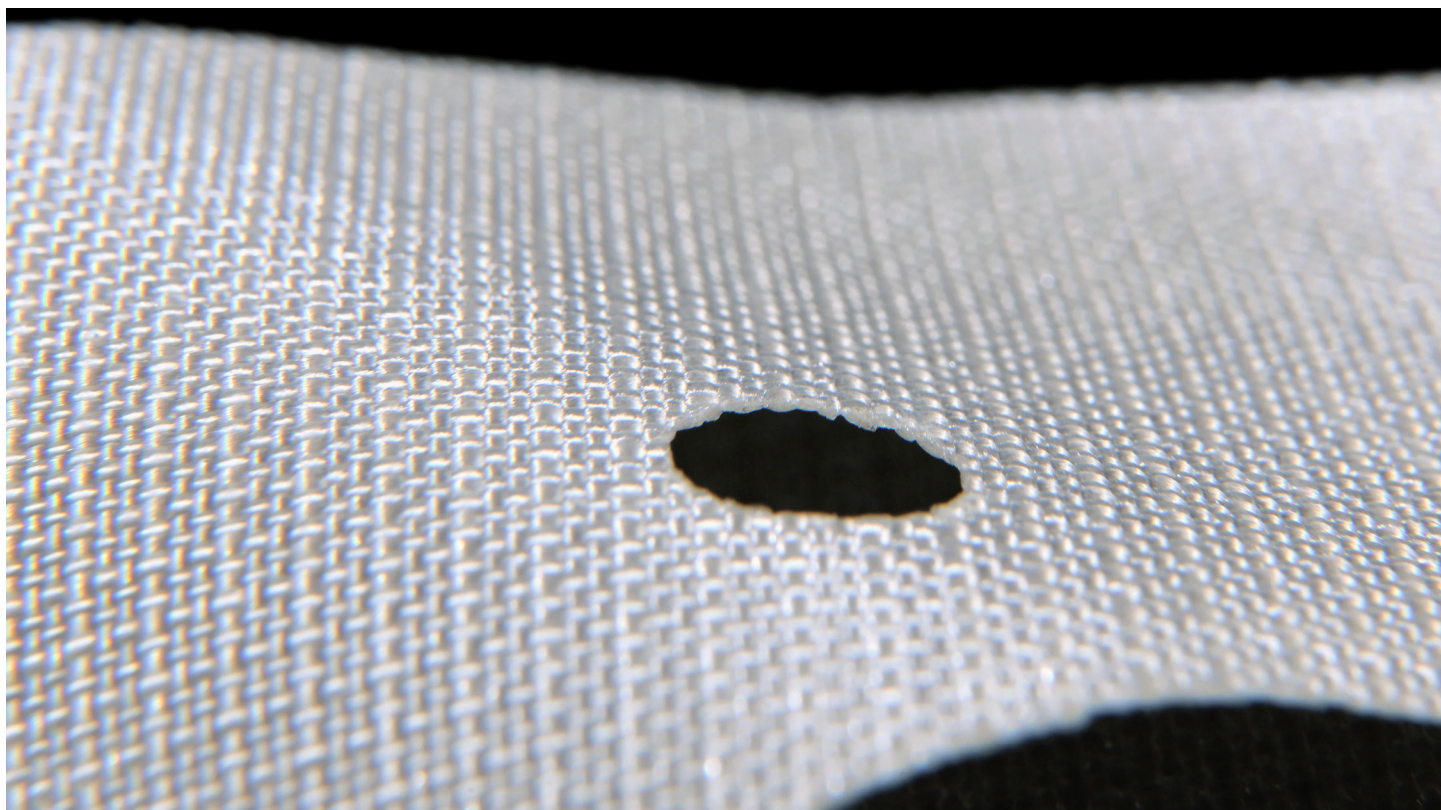
SPECIFICATIONS	DC 050	DC 060	DC 080
Nominal Power (W)	5000	6000	8000
Power Range (%)	20 - 100		15 - 100
Laser Beam Quality <i>ISO 11146, deviation ± 5 %</i>	K (M <sup>2</sup> ) = 0.95 (1.05)		
Power Stability (%) <i>Cooling water ΔT ≤ ± 1 K</i>	± 2		
Pointing Stability (mrad) <i>ISO 11145</i>	≤ 0.15		
Pulse Frequency Range	CW, 2 - 100 Hz		
Beam Diameter (mm)	25 mm ± 3*		
Polarization	linear, 45° to horizontal level		
Wavelength	10.6 μm		
Excitation	RF		
ELECTRICAL RATINGS			
Voltage	3 x 230 / 400 V ± 10% or 3 x 277 / 480 V ± 10%; 50/60 Hz; 3 Phases; PE;		
Connected Load (kVA)	76	90	107
Effective Power at Nominal Power (kW)	71	85	102
Max. Current Consumption at 400 V (A)	< 110	< 130	< 154
Fuses Type NH (A)	160		200
COOLING			
Recommended Cooling Capacity (kW)	≥ 71	≥ 85	≥ 102
Flow Rate Laser Head (l/h)	≥ 6000	≥ 7500	≥ 9000
Flow Rate Laser Cabinet (l/h)	≥ 800	≥ 800	≥ 1000
Flow Rate Laser Compact (l/h)	≥ 6800	≥ 8300	≥ 10000
Temperature Θ (°C)**	20 or 27 (above dew point)		
Temperature Tolerance Range (°C)	±1		
Supply Pressure (hPa)	≤ 6000 (6 bar)		
Back Pressure (hPa)	≤ 1500 (1.5 bar)		
LASER GAS			
Type	Premix-Laser Gas		
Consumption (Nl/h)	< 0.15	< 0.17	
Change interval (h)	168		
DIMENSIONS & WEIGHTS			
Standard Laser head (L x W x H) (mm)	2350 x 950 x 950	2600 x 950 x 945	
Weight (kg)	approx. 1000	approx. 1100	
Control Cabinet (W x D x H) (mm)	1200 x 689 x 2062		1500 x 814 x 2062
Weight (kg)	approx. 800		approx. 1160
Compact Laser (L x W x H) (mm)	2520 x 1031 x 1963	2770 x 1031 x 1963	
Weight (kg)	approx. 2250	approx. 2300	approx. 2500
ENVIRONMENTAL CONDITIONS			
Ambient Temperature (°C)	5 - 40		
Humidity	dew point below the cooling water temperature		
CUSTOMER INTERFACE			
	Commands from external controller / control panel, status signals to external controller, external pulse interface, external analog and digital power control, Ethernet Interface		

\* Measured in a distance &lt; 10m; please contact COHERENT for detailed data of the beam propagation

\*\*  $\frac{\Delta\theta}{\Delta t} \leq 3^\circ/\text{min}$ ;  $t > 1.5 \text{ min}$



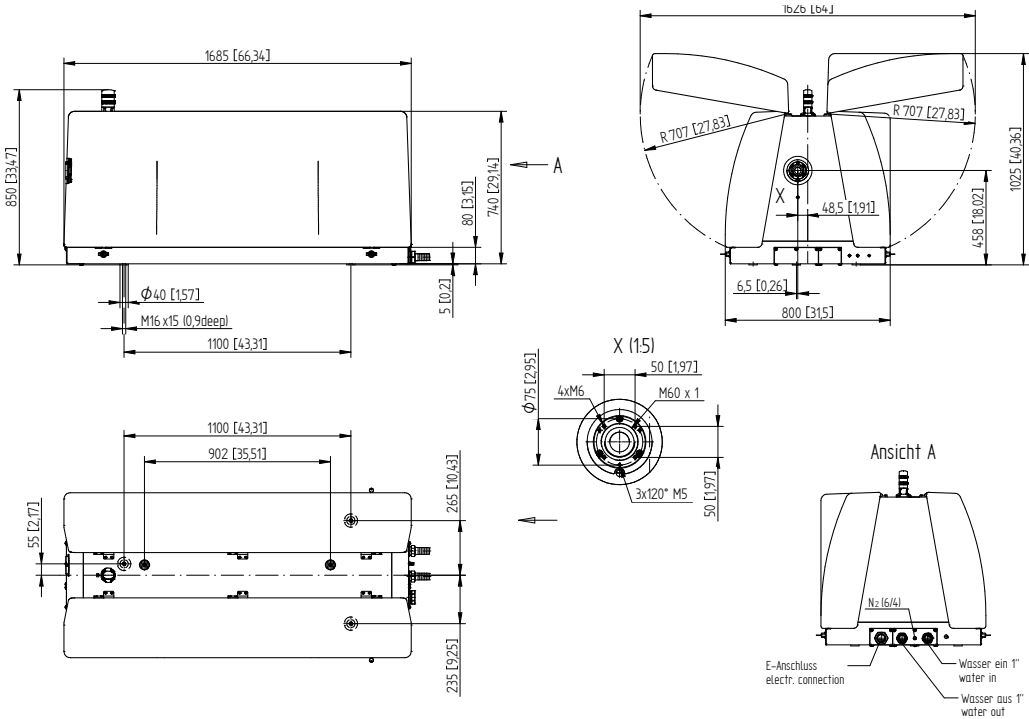




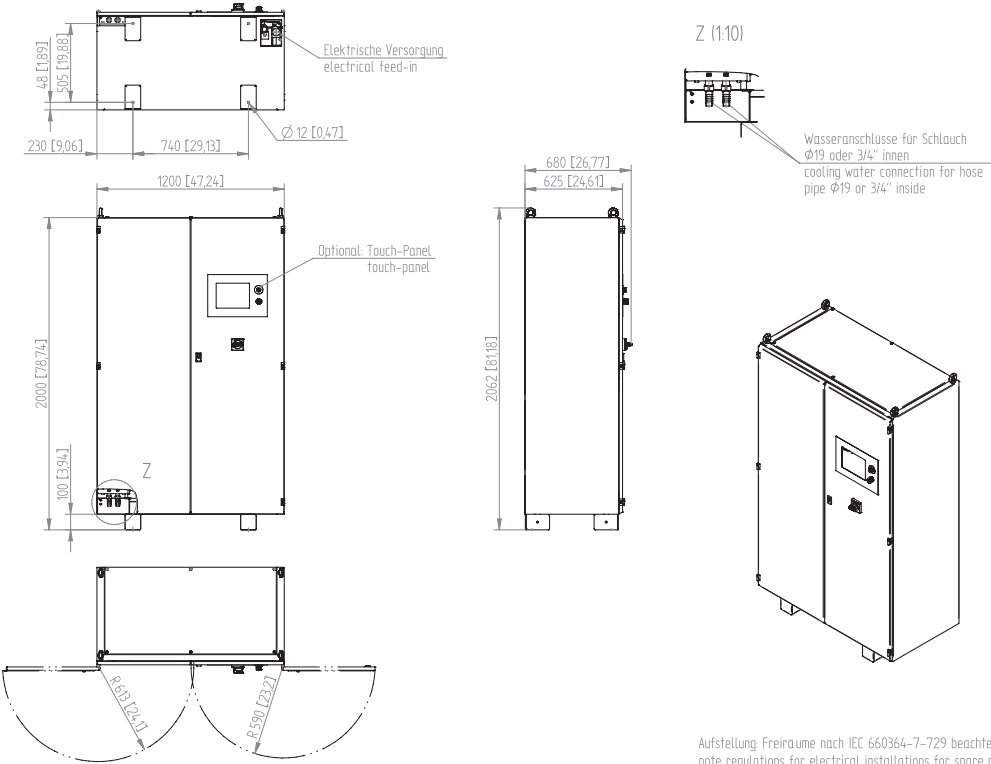
**MECHANICAL SPECIFICATIONS**

**DC 010 - DC 025 Standard**

**Laser Head**



**Cabinet**

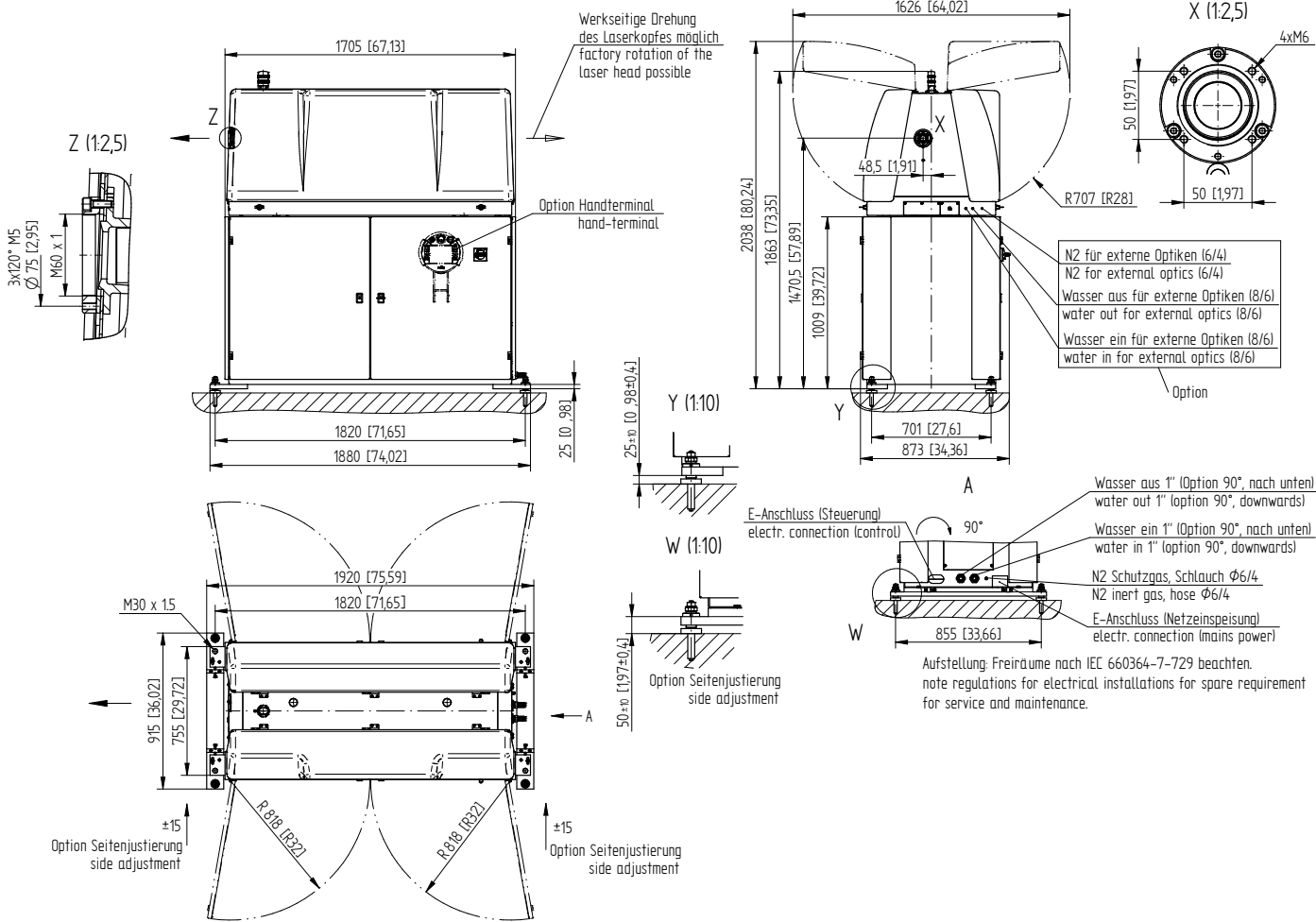


Aufstellung Freiräume nach IEC 660364-7-729 beachten.  
note regulations for electrical installations for soare requirement



MECHANICAL SPECIFICATIONS

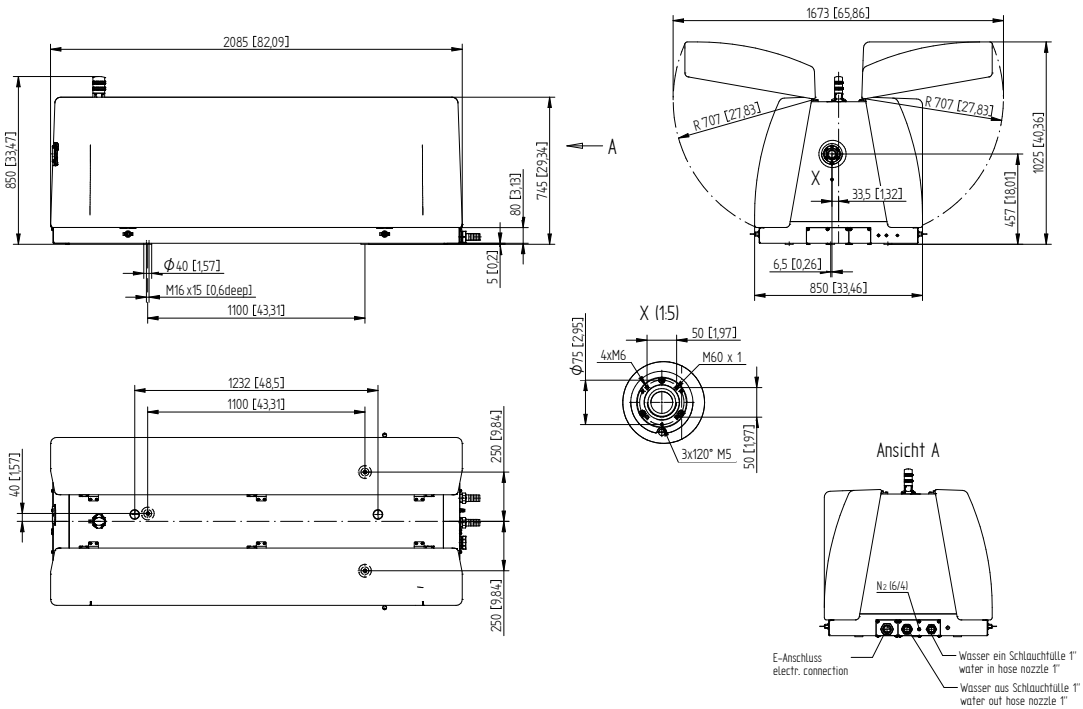
DC 010 - DC 025 Compact



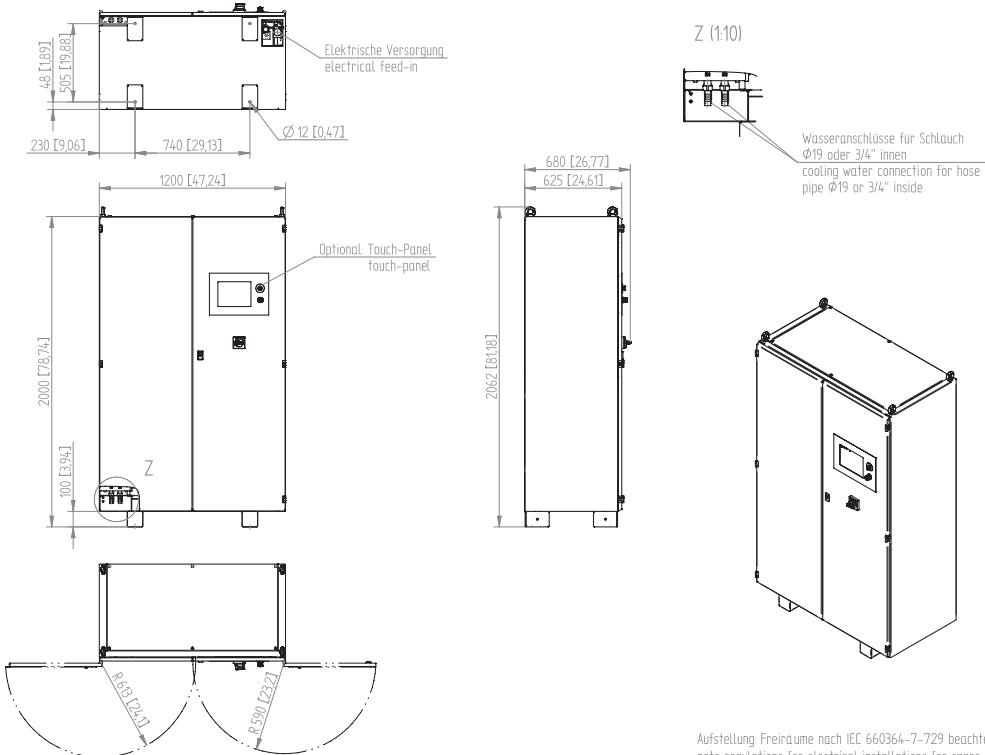
**MECHANICAL SPECIFICATIONS**

**DC 030 - DC 040 Standard**

**Laser Head**



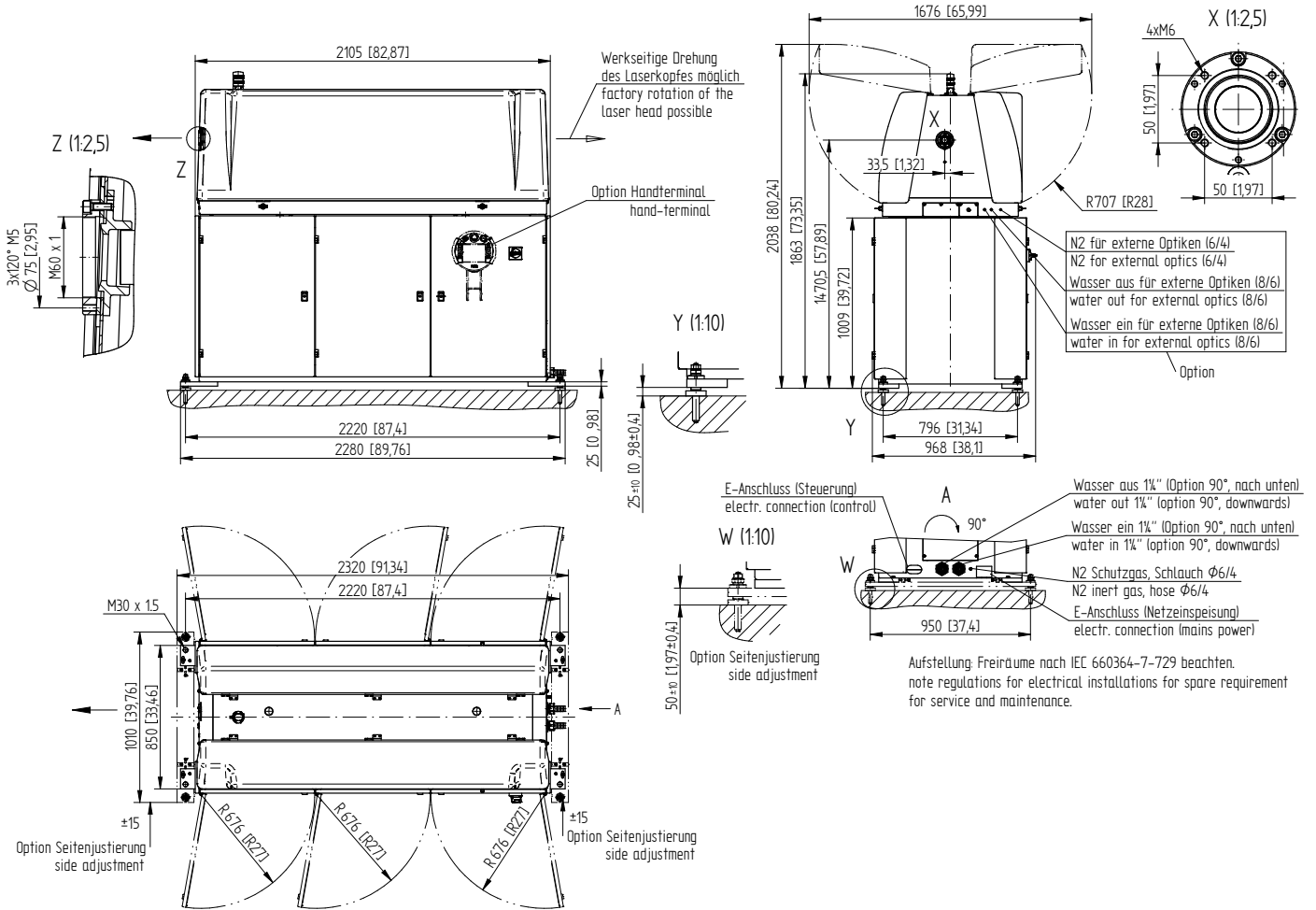
**Cabinet**



Aufstellung: Freiräume nach IEC 660364-7-729 beachten, note regulations for electrical installations for spare requirement for service and maintenance.

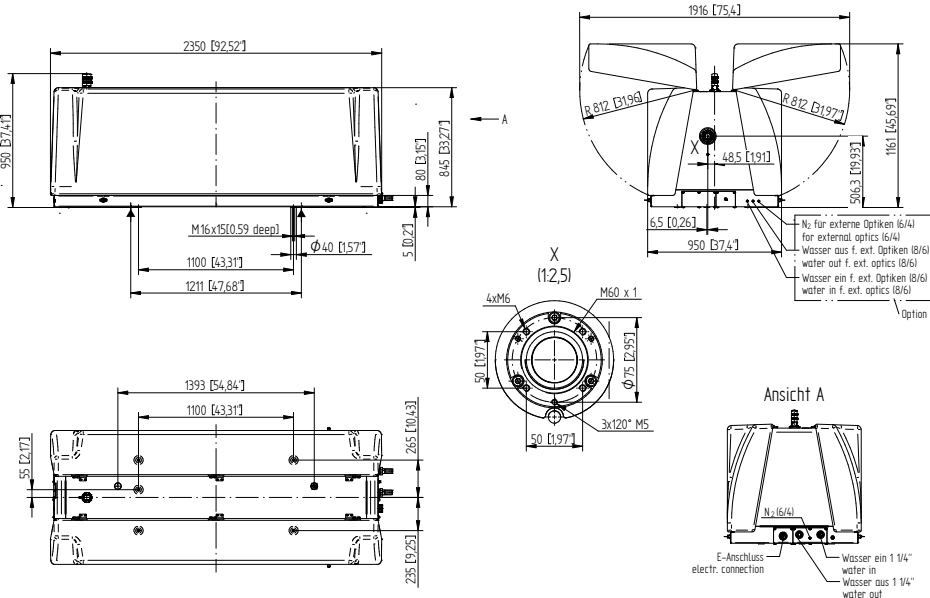
MECHANICAL SPECIFICATIONS

DC 030 - DC 040 Compact

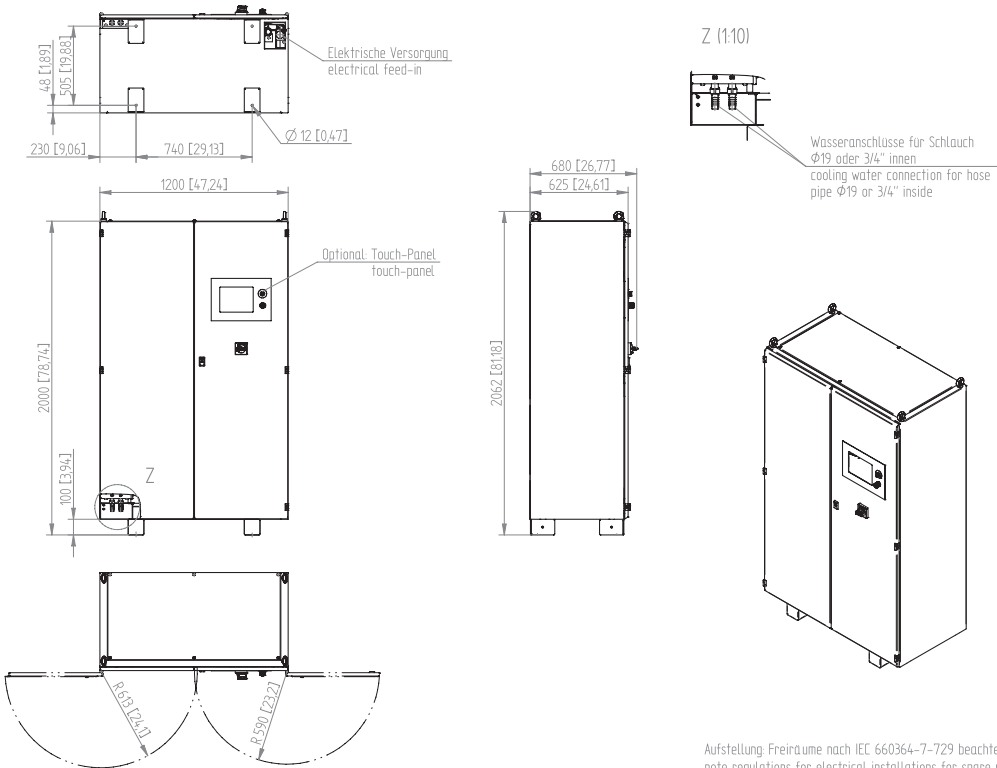


**MECHANICAL SPECIFICATIONS**

**DC 050 Standard  
Laser Head**



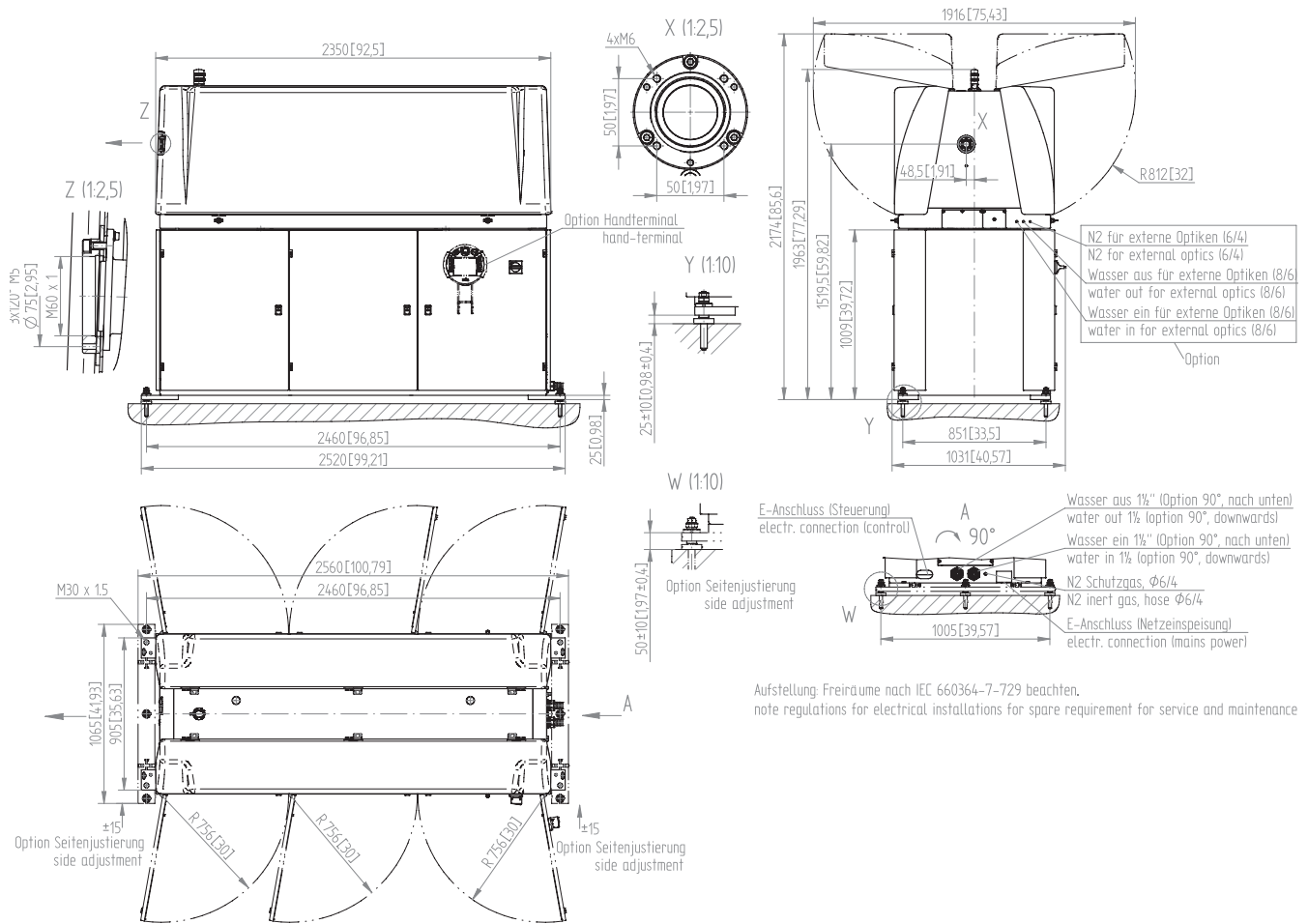
**Cabinet**



Aufstellung Freiräume nach IEC 660364-7-729 beachten, note regulations for electrical installations for spare requirement for service and maintenance.

MECHANICAL SPECIFICATIONS

DC 050 Compact

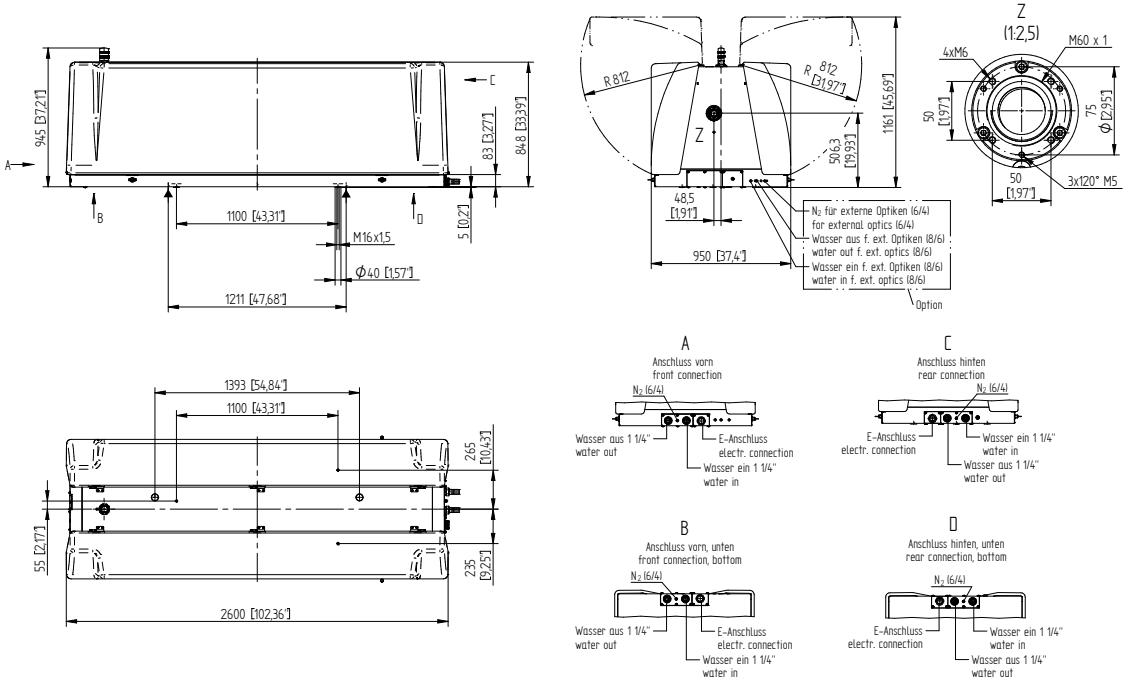


Aufstellung: Freiräume nach IEC 660364-7-729 beachten.  
 note regulations for electrical installations for spare requirement for service and maintenance

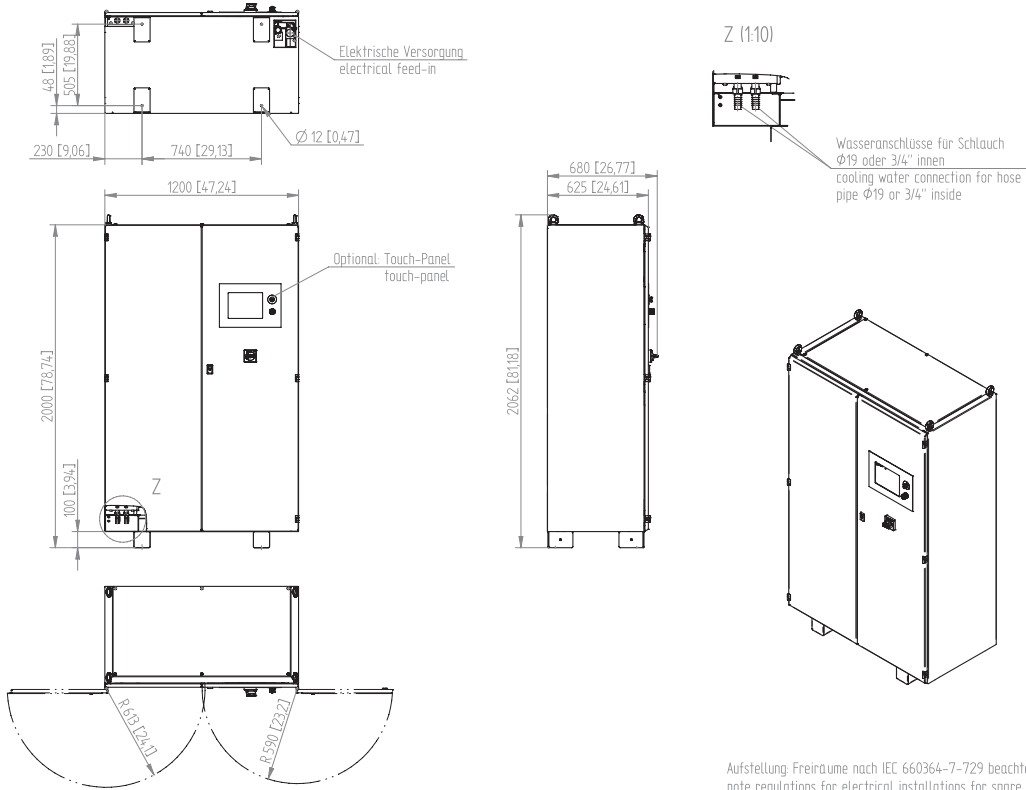
MECHANICAL SPECIFICATIONS

DC 060 Standard

Laser Head



Cabinet

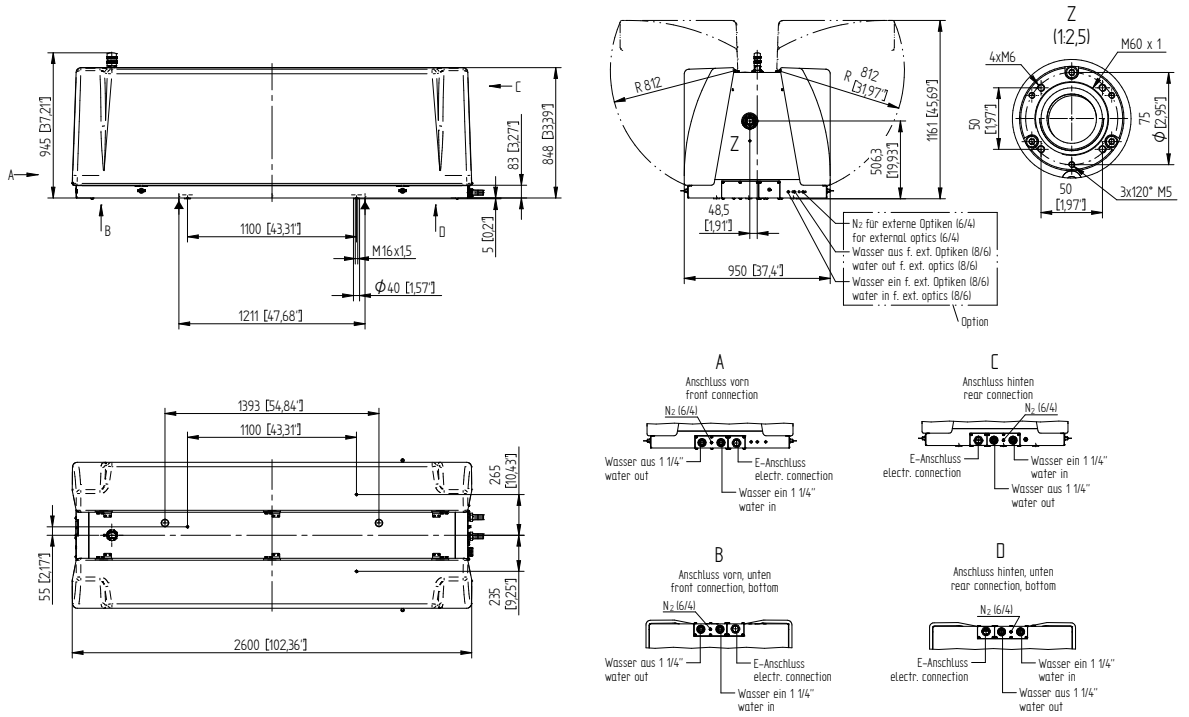


Aufstellung: Freiräume nach IEC 660364-7-729 beachten, note regulations for electrical installations for spare requirement for service and maintenance.

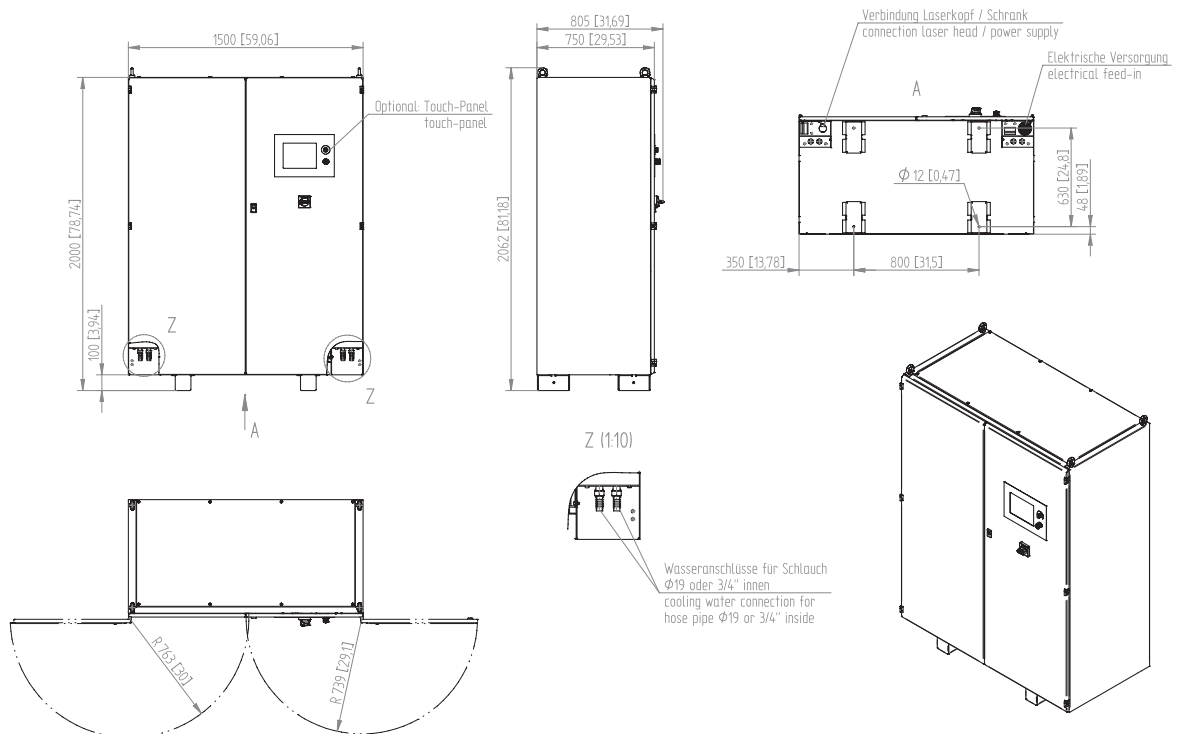
## MECHANICAL SPECIFICATIONS

### DC 080 Standard

#### Laser Head



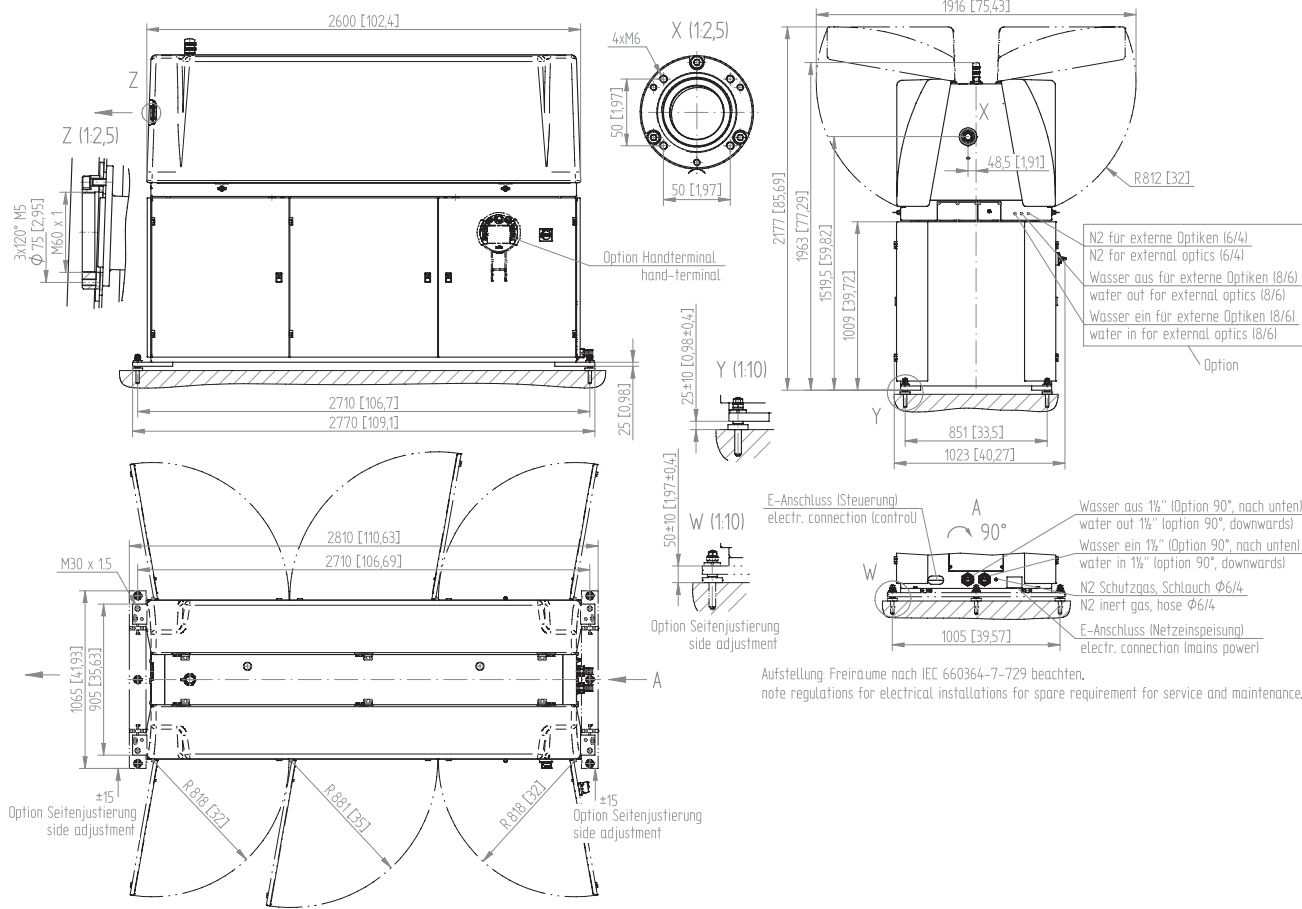
#### Cabinet



Austellung Freiräume nach IEC 660364-7-729 beachten, note regulations for electrical installations for spare requirement for service and maintenance.

MECHANICAL SPECIFICATIONS

DC 060 - DC 080 Compact



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	<b>DANGER</b> LASER 4			
<b>VISIBLE AND INVISIBLE LASER RADIATION.                  AVOID EYE OR SKIN EXPOSURE TO                  DIRECT OR SCATTERED RADIATION.</b>				
WAVELENGTH: 10600nm MAX. OUTPUT POWER: 8500W MAX. PEAK POWER: 17000W MIN. PULSE LENGTH: 100µs				
ALSO INSTALLED: ALIGNMENT LASER CLASS 2 DO NOT STARE INTO RED BEAM MAXIMUM OUTPUT: 10mW WAVELENGTH: 639nm				
IEC60825-1:2014				
CAUTION INVISIBLE LASER RADIATION CLASS 4 WHEN COVER OPEN AND INTERNALS ARE OPERATING AVOID EYE OR SKIN EXPOSURE TO DIRECT OR SCATTERED RADIATION				
CAUTION VISIBLE LASER RADIATION CLASS 4 AVOID DIRECT EYE EXPOSURE				

Coherent follows a policy of continuous product improvement. Specifications are subject to change without notice.

Coherent offers a limited warranty for all DC 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-013-19-0M0619 Copyright ©2019 Coherent, Inc. 07/2021

Coherent 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 laser to indicate the respective classification.