



CT6000 - High Power Twin Laser

CT6000 CONVERGENT PHOTONICS laser is an innovative concept laser based on patented technology.

It is equipped with two different process fibers, one with high power low brightness for welding/brazing (BPP = 66 mm*mrad), one at lower power higher brightness (BPP = 4 mm*mrad) for cutting/remote welding .

At the push of a button the laser can switch between one fiber and the other, allowing:

- **maximum flexibility**, as the same laser suits all possible applications
- wider application spectrum (cutting, laser welding, brazing, cladding)
- **lower ownership cost**
- optimal for low to medium production capacity, switching over different jobs

Switching from a configuration to the other does not require recalibration or adjustment, and require just a few seconds. The laser will supervise the fiber safety of both cables independently, and allows to use one process fiber while the other is disconnect or its working cell is accessed to change part.

Even with high power QBH or QD delivery cables designed to handle kW-level back-reflection stripping from the fiber cladding, back-reflected light couples into the core of the delivery cable which then couples back into the fiber laser.

Even with fiber lasers from leading suppliers, through numerous painful lessons, system integrators have learned that laser combiners, and/or modules can be damaged if back-reflection protection is not robust.



CT6000 with integrated chiller


CONVERGENT PHOTONICS laser CT6000 is equipped with n. 2 exit fibers a 100 µm core feeding fiber on the fiber side, a 600 µm core feeding fiber on diode side:

	CT6000 - Diode	CT6000 - Fiber
Feeding fiber length	20 m	
Minimum bend radius	200 mm	
Feeding fiber core diameter	600 µm	100 µm
Output connector	QD	QBH
Beam Parameter Product (1/e ²)	66 mm*mrad	4 mm*mrad
Safety functions Performance Level(*)	PL c	

(*) as per EN ISO 13849:2008

Compared to third parties typical performances, and depending on material and set-up, Convergent Photonics laser is 3 to 30 times more resistant to back reflection due to focal errors, according to the optical configuration. Building upon Convergent Photonics' years of experience in high power industrial lasers, the new CT series lasers have incorporated **cutting-edge back-reflection prevention techniques**, suitably distributed through-out the laser. The coupled back-reflection is stripped through proprietary mode-stripping techniques, and safe dissipation of unwanted light, at critical points in the laser.

General Specifications

			
Electrical power input (Total)	27,6 kW		
Electrical power input Laser w/o chiller	20 kW		
Voltage 3P + PE	400 V(min.) - 460V (max) ± 10%		
Frequency	50/60 Hz		
Operating conditions			
Ambient temperature	10°C (min) - 42°C (max)		
Relative humidity	95% non-condensing		
Nominal optical power output (Fiber)	4000-4200 W		
Nominal optical power output (Diode)	6000-6200 W		
Power stability	± 2% max		
Polarization	Random		
Fiber exit wavelength (nm)	1070 (min) - 1080 (max)		
Diode exit wavelength (nm)	910 (min) - 960 (max)		
Line width (FWHM)	5 nm (max)		
Pulse			
ON/OFF time	80 µs		
Repetition rate	5 kHz (max)		
Electronic shutter			
ON/OFF time	200 ms (max)		
Safety (*)	PL e		
Aiming diode			
Wavelength	635 nm		
Power output	< 1mW		
Laser class (**)	4 (IV)		
Cabinet protection	IP54		
Cooling (Integrated Water-Water Chiller)			
Required capacity	15kW		
Inlet temperature	15°-27°C		
Nominal inlet pressure	3 bar		
Max inlet pressure	6 bar		
Minimum flow rate	30 l/min		
Max flow rate	35 l/min		
Fluid	Tap Water		
Filter requirement	100 µm		
Cooling (Without Integrated Water-Water Chiller)			
	<i>Laser Circuit</i>	<i>Optics Circuit</i>	
Required capacity	14kW	1kW	
Inlet temperature	20°C ± 1°C	25°C ± 3°C	
Nominal inlet pressure	3 bar	1.5 bar	
Max inlet pressure	6 bar	3 bar	
Minimum flow rate	60 l/min	30l/min	
Fluid	Distilled water with 35% DOWFROST™ HD	DI Water	
Filter requirement	100 µm		
Dimensions (mm)			
Width	1050		
Height	2100/1300 (w/o chiller)		
Length	1050		
Weight (Kg)	950/650 (w/o chiller)		

(*) as per EN ISO 13849:2008

(**) as per IEC 60825-1:2007, EN 60825-1:2007, FDA Regulation 21 CFR Chapter J 1040.10.