

Civan Lasers Dynamic Beam Laser (DBL) Data Sheet



The Dynamic Beam Laser (DBL) is based on Civan's Coherent Beam Combining (CBC) technology

The DBL offers a High Power Single Mode Continuous Wave Dynamic Beam Laser. By combining multiple single-mode fiber lasers in an optical phased array (OPA), we achieve a true dynamic beam laser, enabling tailored control of the laser output.

Configurable parameters include Beam shapes, Shape frequency, shape sequence and focus steering, all at MHz speed and without any additional optical elements or moving parts.



Capabilities

- Single pass weld of thick sections metals
- Weld dissimilar materials
- Weld dissimilar thicknesses
- Welding of crack sensitive materials
- Unique capabilities to stabilize keyhole

Applications

- Welding
- Metal Additive Manufacturing
- Cutting
- Surface treatment

Dynamic Beam Laser Features

Beam shaping

Ability to design a wide range of arbitrary shapes

Shape sequence

Switch between beam shapes at microsecond speeds

Shape frequency

Wide range of beam wobble from Hz to MHz

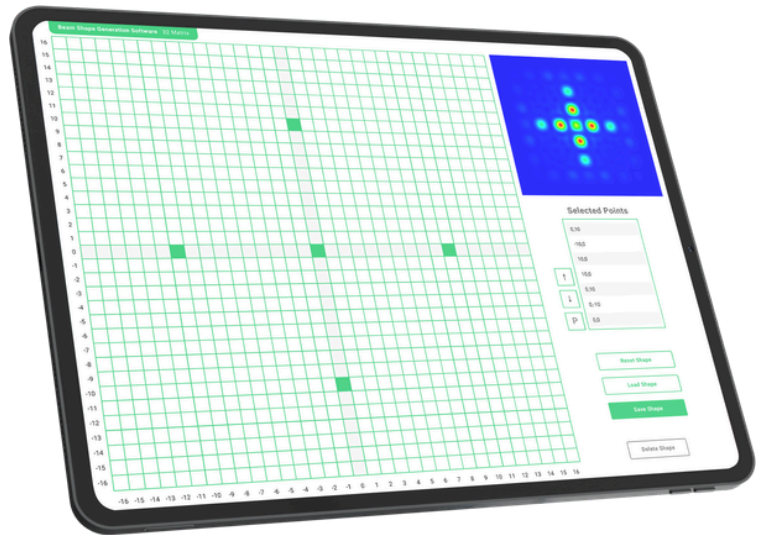
Focus steering

Change of focal point at MHz frequencies

Multiple Beam Shapes

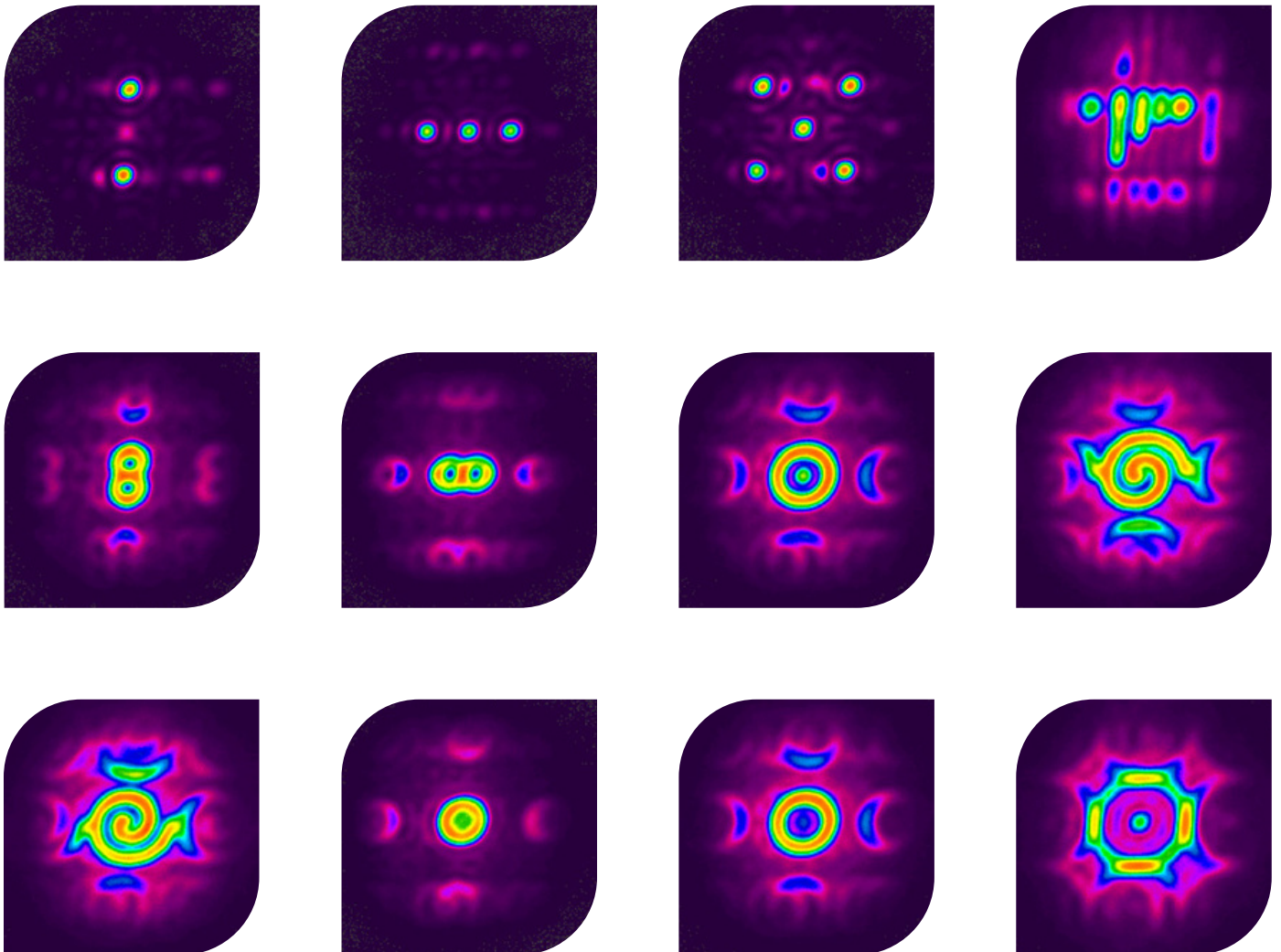
Civan's DBL arrives with shape generation software, which allows the user to generate beam shapes according to their needs. Each beam shape has the ability to control the following:

- Beam shape geometry
- Power density within the beam shape
- Beam shape order



Civan's Beam Shaping Software

Beam Shapes Examples



Technical Specifications

Parameter/ Power	DBL 32 kW	DBL 40 kW
Optical characteristics		
Operation Mode	CW	CW
Optical output power [kW]	32	40
Power tunability	10 – 100%	10 – 100%
Wavelength [nm]	1064 ± 1	1064 ± 1
Optical output		
Beam polarization	Circular	Circular
Aperture diameter [mm]	Ø22	Ø22
Fiber length [m]	5	3
General characteristics		
Environmental conditions for operation	+5°C to +45°C humidity < 60% non- condensing	
Environmental conditions for transportation and storage	-5°C to +45°C humidity < 60% non- condensing	
Cooling		
Method	Reverse osmosis water with inhibitors	
Cooling capacity [kW]	92	113
Nominal water flow rate [l/min @ bar]	321 @ 6	332 @ 6
Cooling water temperature [°C]	22±1	22±1
Safety		
Class 4 Laser Device	Conform to standard IEC60825-1:2014	
Interlock system	Dual channel interlock	
User interface	Safety key switch, emergency off button, visual emission indicator light	
Laser control interface		
Laser gate	Digital 0-24 V	
Laser power	Analog 0-10 V	
Beam shaping control	UART-RS422 offset x,y,z,ID sequence, angle	

Technical Specifications

Parameter	DBL 32 kW	DBL 40 kW
Electrical Characteristics		
Supply voltage AC [V]	380 - 420 V 3P, PE	380 - 420 V 3P, PE
Power consumption [kW] (w/o chiller)	127	158
Power Supply	AC 50/60 Hz	AC 50/60 Hz
Optical Cabinet		
Weight [kg]	2000	2000
Dimensions W x D x H [m]	2.4 x 0.9 x 1.4	2.4 x 0.9 x 1.4
Laser Head		
Weight [kg]	50	50
Dimensions [m]	0.596 x 0.445 x 0.247	0.596 x 0.445 x 0.247
Coaxial camera	Yes	Yes
Optical ports for sensors	1	1
Protection window diameter [mm]	50	50

