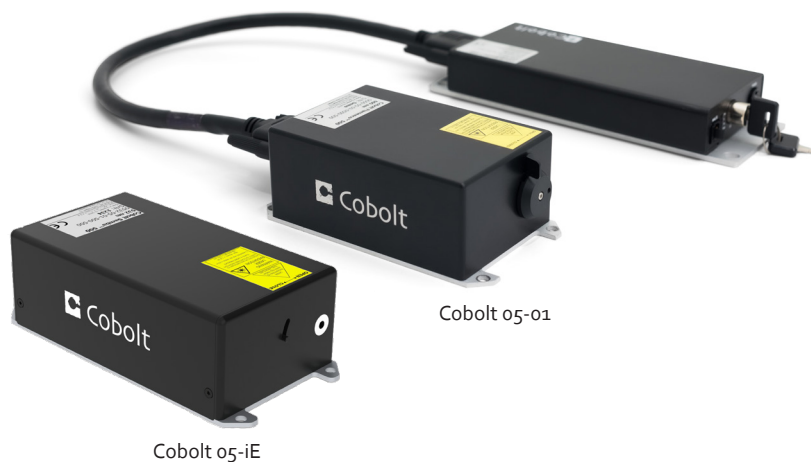


Cobolt 05-01 Series

High Power | Single Frequency | CW Diode pumped lasers



Applications

Raman Spectroscopy
Interferometry
Holography
Particle Analysis
Semiconductor Inspection
Flow Cytometry
Super-resolution Microscopy
Atom and Ion trapping
Brillouin Scattering

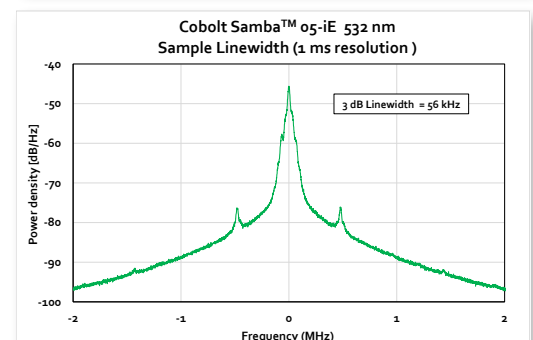
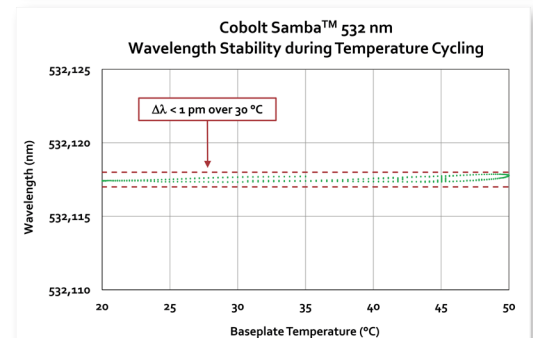
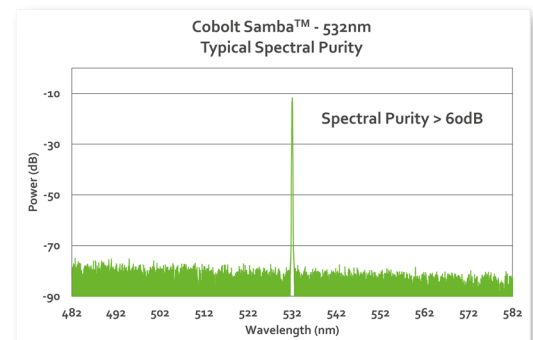
- CW output power up to 3 W in a perfect beam
- Extremely high level of spectral purity and stability
- Stable single frequency operation over wide temperature range
- Ultra-low intensity noise, down to $< 0.1\%$
- 320 nm, 349 nm, 355 nm, 457 nm, 473 nm, 491 nm, 515 nm, 532 nm, 561 nm, 640 nm, 660 nm, 785 nm and 1064 nm
- Fully Integrated electronics option available
- Up to 24 months warranty, unlimited hours

The Cobolt 05-01 Series lasers are continuous-wave diode pumped laser (DPL) devices operating at a fixed wavelength between 320 nm and 1064 nm. The lasers are built using proprietary HTCure™ manufacturing technology for ultra-robustness in a compact hermetically sealed package.

The Cobolt 05-iE is a fully integrated laser device, including all control electronics. The Cobolt 05-iE eliminates the need for an external controller, bringing the trusted laser performance of Cobolt 05-01 Series into a compact, self-contained device.

The lasers emit a very high-quality laser beam with stable characteristics over a wide range of operating conditions. Single frequency operation provides a narrow spectral bandwidth and long coherence length. The lasers are designed and manufactured to ensure a high level of reliability.

The Cobolt 05-01 Series lasers are intended for stand-alone use in laboratory environments or for integration as OEM components in instruments for applications including fluorescence microscopy, flow cytometry, DNA sequencing, semiconductor inspection, Raman spectroscopy, interferometry, holography and particle analysis.



HÜBNER Photonics

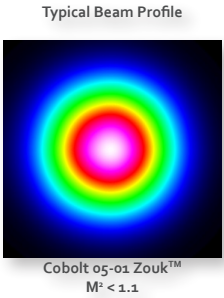


Cobolt 05-01 Series

Performance Specifications

	Zydeco™ *	Kizomba™ *	Zouk™ *	Twist™	Blues™	Calypso™ *	Fandango™
Wavelength in air (nm)	319.8 ± 0.3	348.9 ± 0.3	354.8 ± 0.3	457.0 ± 0.3	473.0 ± 0.3	491.5 ± 0.3	514.8 ± 0.3
Available Power Levels (mW)	20	50	10 20	100 200 300	100 200 300	200	300
Power stability (±2°C and 8hrs)	< 2%						
Noise, 20 Hz - 20 MHz (pk-pk)	< 7 %		< 2 %			< 5 %	< 2 %
Noise, 20 Hz - 20 MHz (rms)	< 0.7 %		< 0.2 %			< 0.5 %	< 0.2 %
Beam diameter at aperture (µm)	700 ± 50						
Beam symmetry at aperture	> 0.90:1						
Beam divergence (full angle, mrad)	< 0.8			< 1.1			< 1.2
Spatial mode (TEM ₀₀)	M² < 1.1						
Spectral linewidth (FWHM)	< 500 kHz						
Wavelength stability (±2°C and 8hrs)	< 1 pm						
Polarization ratio (linear, vertical)	> 100:1						
Warranty (unlimited hours)	12 months					24 months	12 months

	Samba™	Jive™	Bolero™	Flamenco™	Disco™ *	Rumba™
Wavelength in air (nm)	532.1 ± 0.3	561.2 ± 0.3	639.6 ± 0.3	659.6 ± 0.3	785.0 ± 0.3	1064.2 ± 0.6
Available Power Levels (mW)	500 1000 1500** 1800***	300 500 750 1000***	300 500	300 500	500	500 1000 2000 3000
Power stability (±2°C and 8hrs)	< 2%					
Noise, 20 Hz - 20 MHz (pk-pk)	< 1%		< 7 %	< 1%	< 3 %	< 1%
Noise, 20 Hz - 20 MHz (rms)	< 0.1%		< 1 %	< 0.1%	< 0.3 %	< 0.1%
Beam diameter at aperture (µm)	700 ± 50 1000 ± 50**	700 ± 50			1000 ± 50	
Beam symmetry at aperture	> 0.95:1					
Beam divergence (full angle, mrad)	< 1.2		< 1.4	< 1.5	< 1.2	< 1.6
Spatial mode (TEM ₀₀)	M² < 1.1					M² < 1.2
Spectral linewidth (FWHM)	< 500 kHz				< 100 kHz	< 500 kHz
Wavelength stability (±2°C and 8hrs)	< 1 pm					
Polarization ratio (linear, vertical)	> 100:1					
Warranty (unlimited hours)	24 months	24 months**	12 months	24 months	12 months	24 months



* Cobolt Zydeco™ 320 nm, Kizomba™ 349 nm, Zouk™ 355 nm, Calypso™ 491 nm and Disco™ 785 nm lasers are not yet available in the 05-iE package.
** Cobolt Samba™ 1500 mW is available with either a 700 µm or 1000 µm beam diameter, the beam waist position tolerance scales with the beam diameter. Model configuration -Xo1.
*** Cobolt Samba™ 1800 mW and Jive™ 1000 mW warranty is limited to 12 months.

Model Number

WWW-05-01-PPPP-CCCC

Wavelength

Power

Configuration:
500 = Gen 5b Controller, RS-232, CE / CDRH
600 = Gen 5b Controller, RS-232, OEM
700 = Gen 5b Controller, USB, CE / CDRH
800 = Gen 5b Controller, USB, OEM
1100 = Integrated electronics, CE / CDRH
1200 = Integrated electronics, OEM
XXo1 = 1 mm beam**
XXXX = OEM customization

Communication Interface

Communication	USB or RS-232
Standard Baudrate	115200

This device contains components that may be sensitive to Electrostatic Discharge (ESD). ESD protection can be achieved with proper electrical grounding.



WARNING VISIBLE AND INVISIBLE LASER RADIATION!



Avoid exposure to beam.
Class 3B Laser Product
Classified per IEC 60825-1:2014



Wvl (nm)	Max.Pwr (mW)
320	200
349	200
355	60
457	499
473	499
491	499
515	499
561	499
660	499



Avoid eye or skin exposure to direct or scattered radiation.
Class 4 Laser Product
Classified per IEC 60825-1:2014



Wvl (nm)	Max.Pwr (mW)
532	3500
561	3000
640	1500
785	2000
660	1000
1064	4000

Cobolt 05-01 Series

Operational Environment

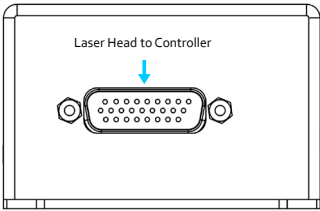
The optical performance specifications are not effected by the choice of electronics configuration. However when choosing between the Cobolt 05-01 and 05-iE the operation environment, power supply requirements and thermal management must be considered.

	05-01	Zydeco, Kizomba Bolero	05-iE
Standard power supply*	15 VDC, 6 A		12 VDC, 6.7 A
Voltage acceptance range	11 - 28 V	15 - 28 V	11.2 - 13.2 V
System power consumption	< 65 W, typical 30W		
Maximum laser head baseplate temperature	50 °C	45 °C	45 °C
Ambient temperature, operation	10 - 40 °C	10 - 35 °C	10 - 35 °C
Laser head heat sink thermal impedance (at max ambient temperature)	< 0.2 K/W	< 0.18 K/W	< 0.15 K/W
Beam pointing stability (over operation temperature range)	< 10 µrad/°C, typical 5 µrad/°C		
Ambient temperature, storage	-10 -> +60 °C		
Humidity	0- 60 % RH non-condensing		
Ambient air pressure	950 - 1050 mbar		

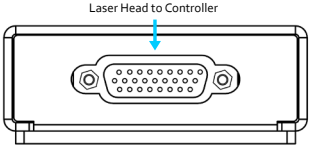
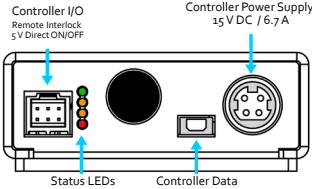
* Cobolt lasers are tested and delivered with the standard power supply.

Electrical Interfaces

Cobolt 05-01 - Laser head



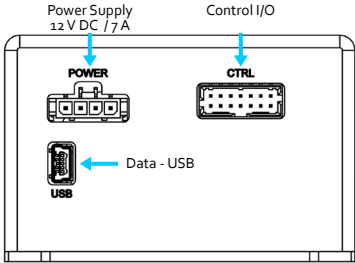
Cobolt 05-01 - Controller



Molex 6 pin - Controller I/O

Pin	Function
1	Remote interlock
2	0 V – Ground
3	Direct Input
4	--
5	LED 1 (LASER ON)
6	LED 2 (ERROR)

Cobolt 05-iE - Laser head



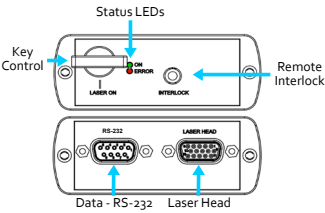
Molex 14 pin- Control I/O

Pin	Function
1	Remote interlock
2	0 V – Ground
3	0 V – Ground
4	RS-232 TX
5	RS-232 RX
6	LED 1A (LASER ON)
7	LED 1B (LASER ON)
8	LED 2 (ERROR)
9	--
10	--
11	Key Switch
12	Direct Input
13	0 V – Ground
14	--

Molex 4 pin - Power Supply

Pin	Function
1	0 V – Ground
2	0 V – Ground
3	+ 12 V - DC
4	+ 12 V - DC

Cobolt 05-iE - Key control box



Sub-D 15 pin- Control I/O

Pin	Function
1	LED 1A (LASER ON)
2	LED 2 (ERROR)
3	--
4	0 V – Ground
5	Key Switch
6	--
7	RS-232 TX
8	RS-232 RX
9	--
10	0 V – Ground
11	Remote interlock
12	--
13	--
14	--
15	0 V – Ground

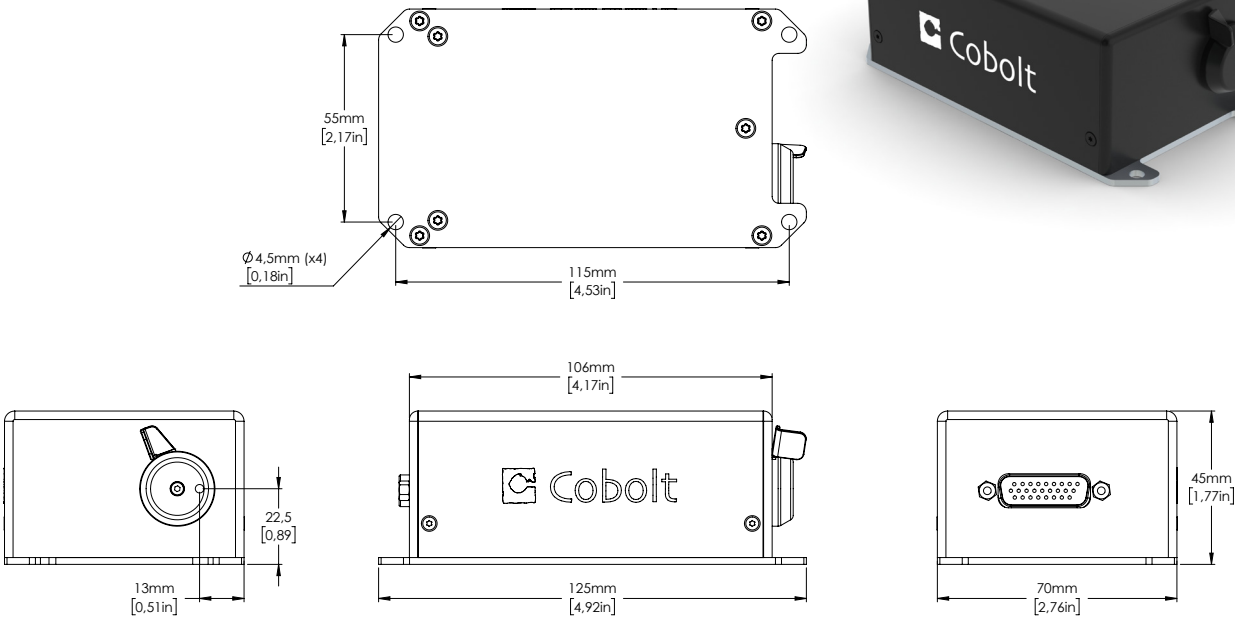
Sub-D pin- RS-232

Pin	Function
1	--
2	RS-232 TX
3	RS-232 RX
4	--
5	0 V – Ground
6	--
7	--
8	--
9	--

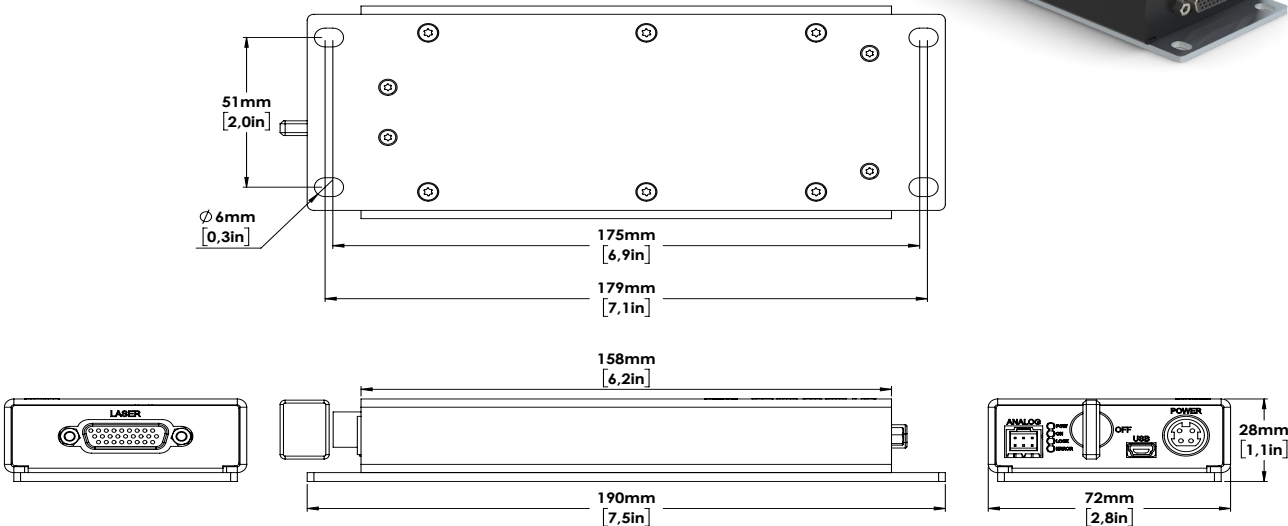
Cobolt 05-01 Series

Mechanical Specifications

Cobolt 05-01 Laser head



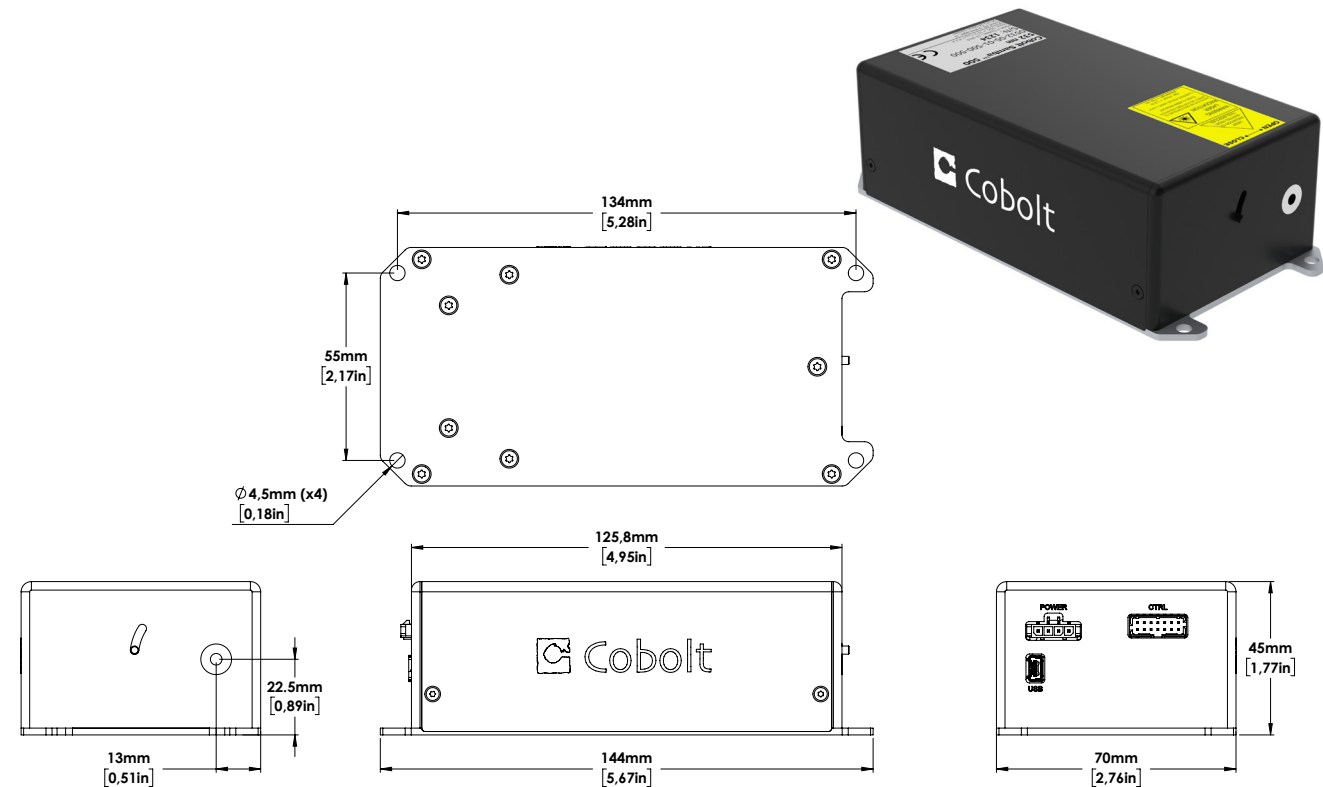
Cobolt 05-01 - Controller



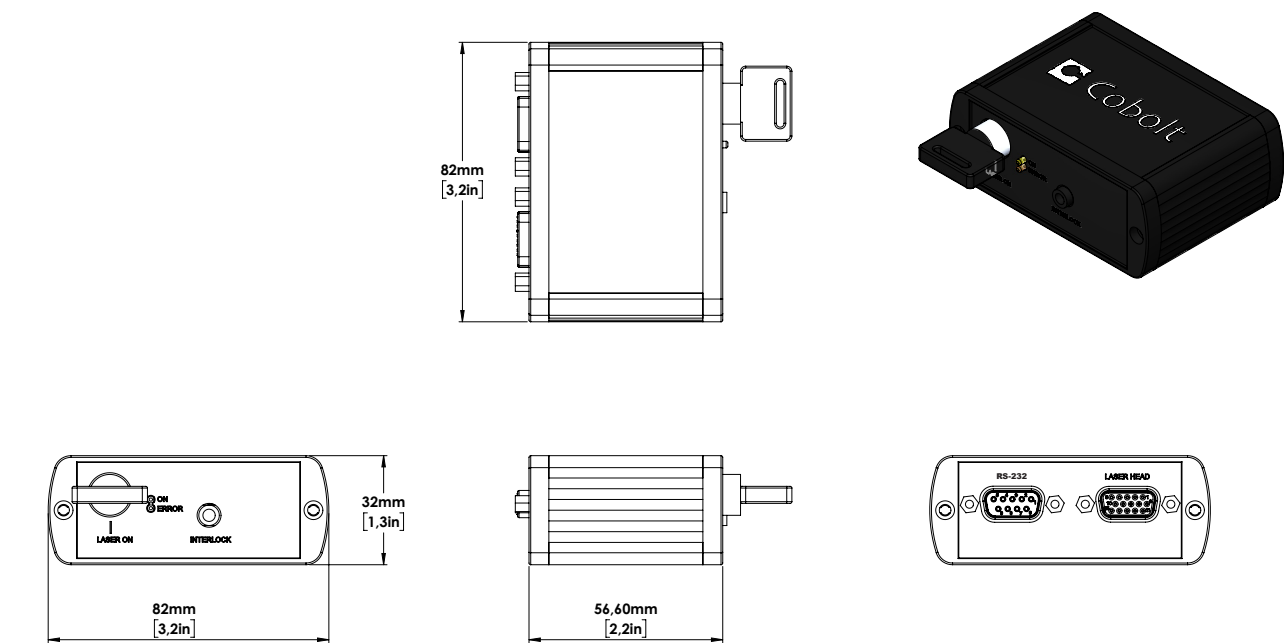
Cobolt 05-01 Series

Mechanical Specifications

Cobolt 05-iE Laser head



Cobolt 05-iE - Key control box



Cobolt 05-01 Series

Options and Accessories

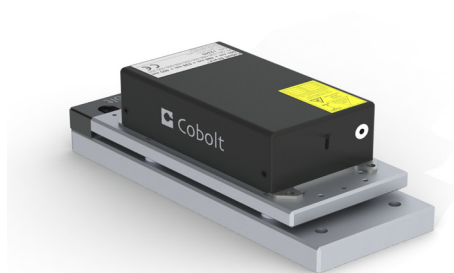
- C-FLEX Laser combiner
- Laser head heatsink with fans for 05-01 lasers : HS-04
- Laser head heatsink with fans for 05-iE lasers : HS-05
- TEC Plate for active baseplate temperature control
- Heatsink with fiber coupling for 05-01 lasers : FIC-04



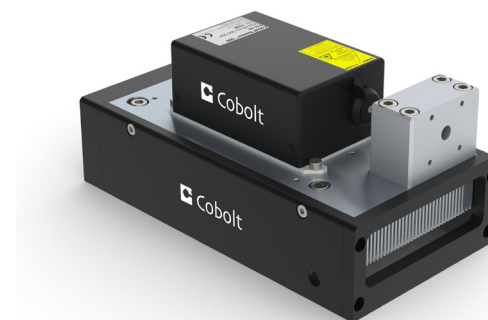
C-FLEX Laser combiner



Heatsink with fans



TEC-Plate for active baseplate temperature control



Heat sink with fans for fiber coupling FIC-04

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