

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
Optical trapping
Brillouin Scattering

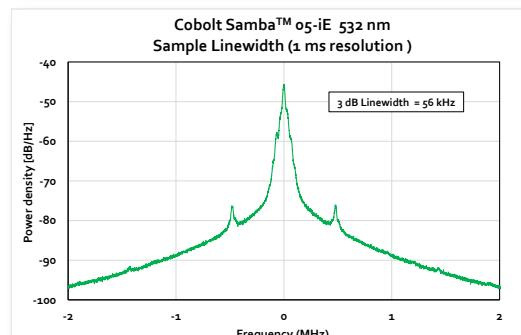
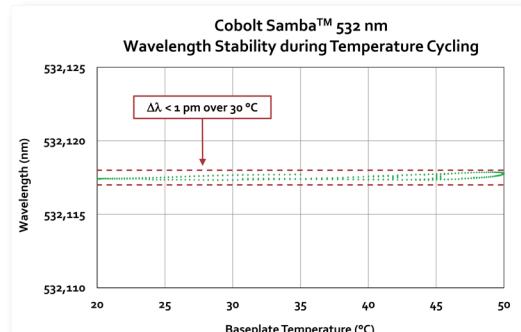
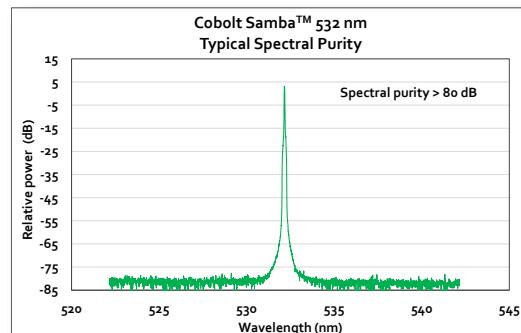
- CW output power up to 3 W in a perfect beam
- Extremely high level of spectral purity and stability
- Stable single frequency operation over wide temperature range
- Ultra-low intensity noise, down to < 0.1 %
- 320 nm, 349 nm, 355 nm, 457 nm, 473 nm, 491 nm, 515 nm, 532 nm, 561 nm, 640 nm, 660 nm, 785 nm, 830 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.



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
Power (mW) without isolator [with integrated isolator] (mW)	20 [n/a]	50 [n/a]	10 20 [n/a]	100 200 300 [n/a]	100 200 300 [n/a]	200 [n/a]	300 [n/a]
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)				M ² < 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	830.0 ± 0.3	1064.2 ± 0.6
Power (mW) without isolator [with integrated isolator] (mW)****	500 1000 1500** 1800*** [n/a]	300 500 750 1000*** [n/a]	300 500 [n/a]	300 500 [n/a]	500 [400]	500 [n/a]	500 **** 1000 **** 2000 **** 3000 [n/a]
Power control (% of nominal power)		[n/a]			1 - 100 %		[n/a]
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 ± 100		1000 ± 50
Beam symmetry at aperture				> 0.95:1			
Beam divergence (full angle, mrad)	< 1.2		< 1.4	< 1.5	< 1.3		< 1.6
Spatial mode (TEM ₀₀)				M ² < 1.1			M ² < 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 and Disco™ lasers available only as 05-01.

** Cobolt Samba™ 1500 mW is available with either a 700 μm or 1000 μm beam diameter. Model configuration -X01.

*** Cobolt Samba™ 1800 mW and Jive™ 1000 mW warranty is limited to 12 months.

**** Fiber pigtailed option available, contact a sales representative for more information.

***** For more information on the Disco with integrated optical isolator contact a sales representative.

Communication Interface

Communication	USB or RS-232
Standard Baudrate	115200

Model Number

WWWW-05-XX-PPPP-CCCC

Wavelength
Version:
01 Free beam, no optical isolator
03 Fiber pigtailed, no optical isolator****
11 Free beam, integrated optical isolator****

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
XX01 = 1 mm beam**
XXXX = OEM customization



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

785 499



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

660 1000

785 2000

830 2000

1064 4000



Cobolt 05-01 Series

Operational Environment

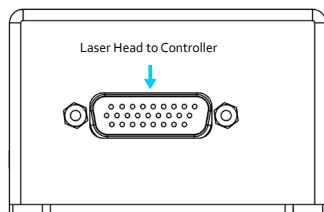
The optical performance specifications are not effected by the choice of electronics configuration. However when choosing between the Cobolt 05-01 and 05-iE the operation environment, power supply requirements and thermal management must be considered.

	05-01	Zydeco, Kizomba Bolero	05-iE
Standard power supply*	15 VDC, 6 A	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 30 W	
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 heatsink 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	

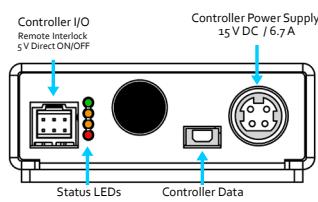
* Cobolt lasers are tested and delivered with the standard power supply.

Electrical Interfaces

Cobolt 05-01 - Laser head



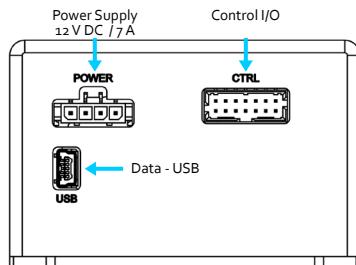
Cobolt 05-01 - Controller



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



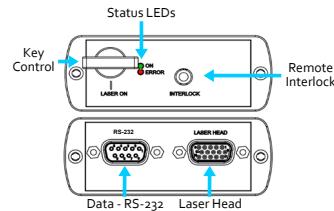
Molex 14 pin- Control I/O

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

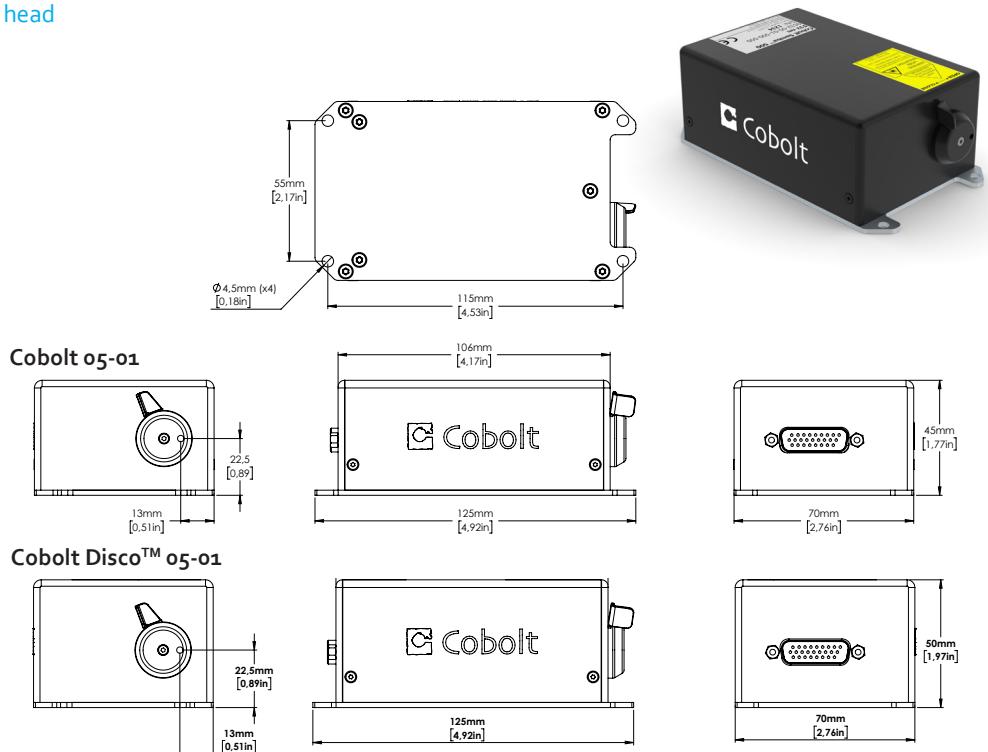
Sub-D pin- RS-232

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

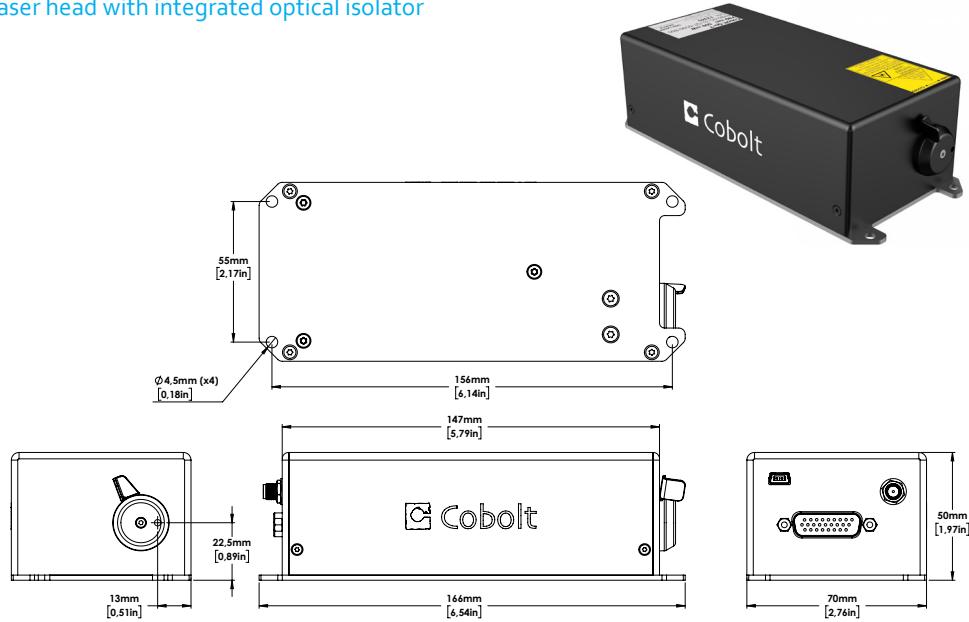
Cobolt 05-01 Series

Mechanical Specifications

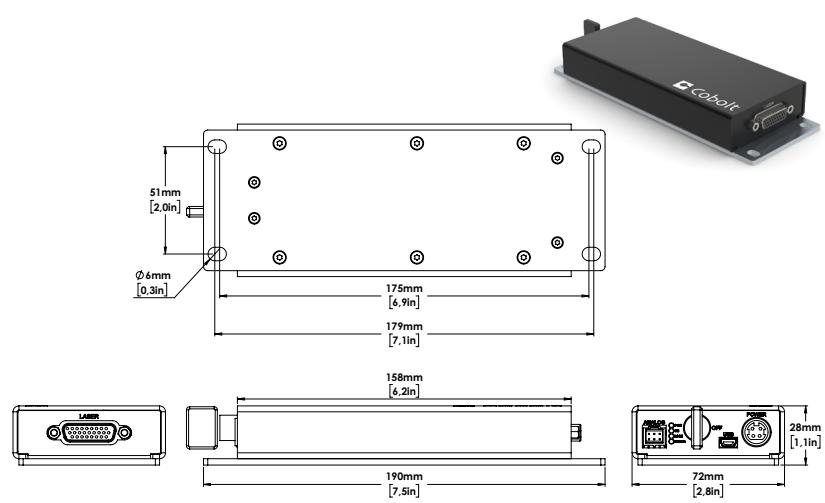
Cobolt 05-01 Laser head



Cobolt 05-11 Disco Laser head with integrated optical isolator



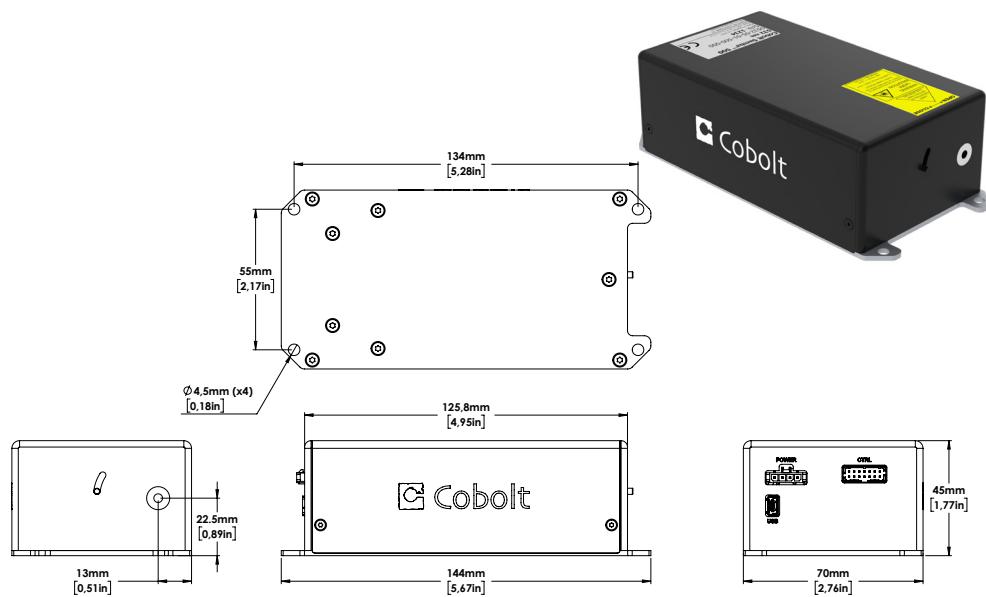
Cobolt 05-01 - Controller



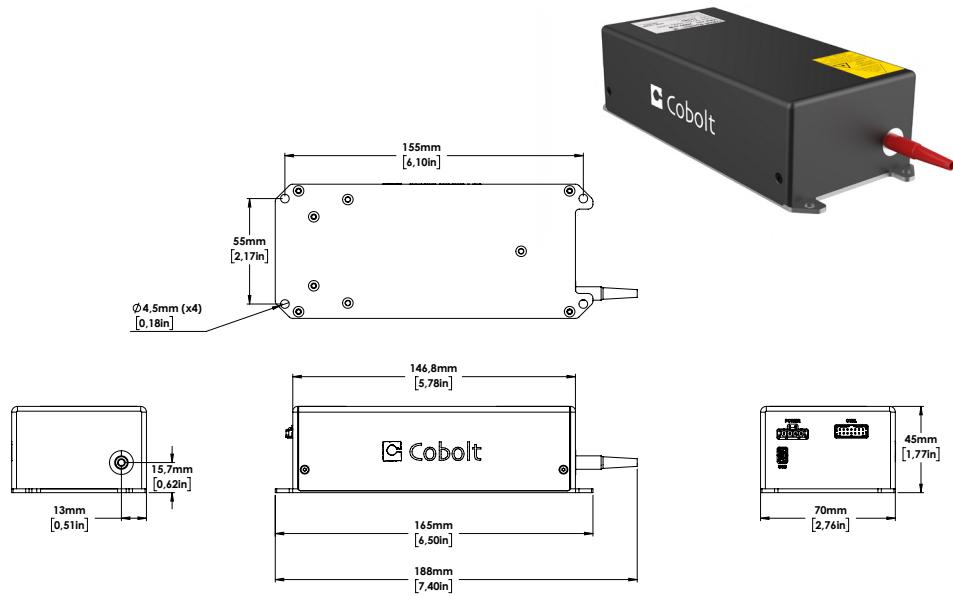
Cobolt 05-01 Series

Mechanical Specifications

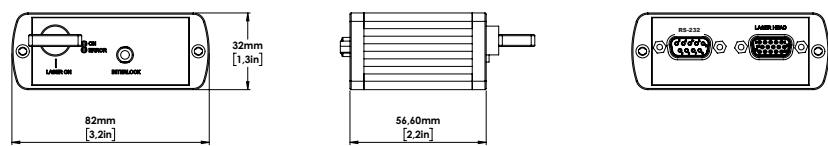
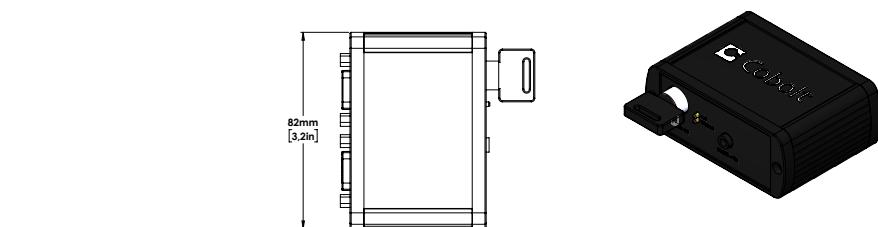
Cobolt 05-iE Free beam laser head



Cobolt 05-iE Fiber pigtailed laser head



Cobolt 05-iE - Key control box



Cobolt 05-01 Series

Options and Accessories

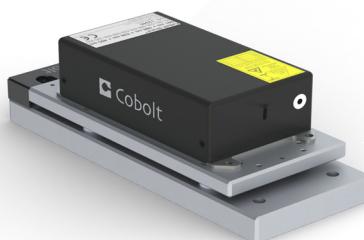
- C-FLEX Laser combiner
- Laser head heatsink with fans for 05-01 lasers : HS-04
- Laser head heatsink with fans for 05-iE lasers : HS-05
- TEC Plate for active baseplate temperature control
- Heatsink with fiber coupling for 05-01 lasers : FIC-04



C-FLEX Laser combiner



Heatsink with fans



TEC-Plate for active baseplate temperature control



Heatsink with fans for fiber coupling FIC-04

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