Cobolt 08-01 Series

Compact | Narrow linewidth lasers

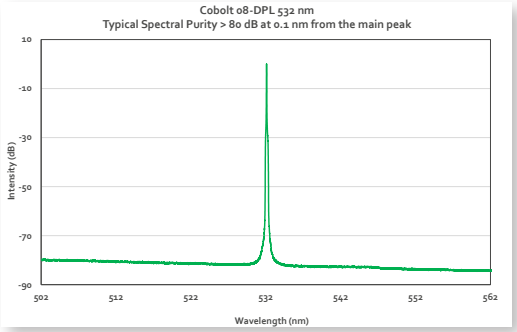
Applications

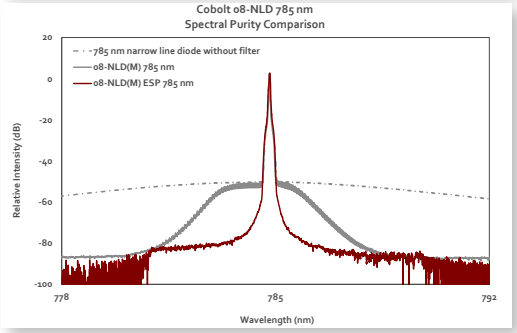
Raman Spectroscopy

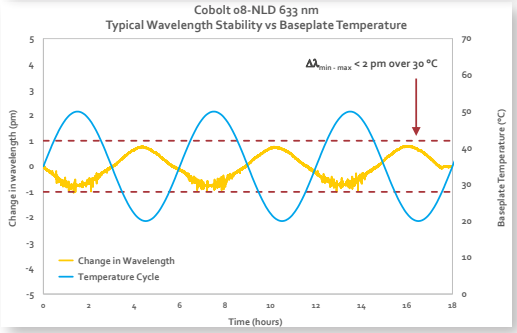
Interferometry

Quantum Research

- Single frequency diode pumped lasers (DPL) and narrow linewidth diode (NLD) lasers with up to 500 mW continuous-wave output power
- Engineered for stable spectral performance and low wavelength drift
- Integrated spectral filter for ensured side mode suppression ratio (SMSR)
- Integrated isolator, immune to optical feedback
- Ultra-robust package and proven field reliability
- 405 nm, 457 nm, 473 nm, 488 nm, 515 nm, 532 nm, 561 nm, 633 nm, 660 nm, 785 nm, 1064 nm







The Cobolt 08-01 Series is a family of narrow linewidth continuous-wave lasers, including diode pumped lasers (DPL) as well as frequency stabilized diode lasers (NLD) operating at fixed wavelengths between 405 nm and 1064 nm with output power up to 500 mW. The lasers are designed and manufactured to ensure the highest level of reliability.

Cobolt lasers are built using proprietary HTCure™ manufacturing technology for ultra-robustness into a compact package. The lasers emit a high quality laser beam with very stable characteristics and reliable spectral performance, making them ideal for advanced analytical applications where stable and narrow spectral linewidth is crucial, such as Raman Spectroscopy and Interferometry.

The Cobolt 08-01 Series are certified for use as stand-alone laboratory devices, but with a compact design and fully integrated drive and control electronics they are also very well suited for integration as OEM components in analytical instrumentation.

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Cobolt 08-01 Series

Performance Specifications

	405 nm	457 nm	473 nm	488 nm	515 nm	532 nm	561 nm
	08-NLD	08-DPL		08-NLD	08-DPL		
Center Wavelength (nm)	405.0 ± 0.5	457.0 ± 0.3	473.0 ± 0.3	488.0 ± 0.5	514.4 ± 0.3	532.1 ± 0.3	561.2 ± 0.3
Power (mW) without isolator [with isolator] (mW)	40 [30]	30 [25]	50 [40]	40 [n/a]	50 [50]	25 [25] 50 [50] 100 [100] 200 [160]	25 [n/a] 50 [n/a] 100 [n/a]
Integrated optical Isolator available	Yes			No	Yes		No
Maximum optical feedback	1 % [100 %]	1 % [100 %]	10 [100%]	1 % [n/a]	10 % [100%]		1 % [n/a]
Spectral bandwidth (FWHM)	< 1 pm	< 1 MHz		< 1 pm	< 1 MHz		
Spectral Purity (SMSR) @ ± > 0.5 nm from the main peak	> 40 dB	> 60 dB		> 40 dB	> 60 dB		
@ ± > 5 nm from the main peak	> 80 dB						
Wavelength Stability (8hrs, ± 3°C)	< 1 pm						
Beam divergence (full angle, mrad)	< 1.2			< 1.3	< 1.2		
Spatial mode	M^2 < 1.3	M^2 < 1.1		M^2 < 1.3	M^2 < 1.1		
Beam symmetry	> 0.90:1	> 0.95:1		> 0.90:1	> 0.95:1		
Beam diameter at aperture	700 ± 100 µm	700 ± 70 µm		700 ± 100 µm	700 ± 70 µm		
Noise, 250 Hz - 2 MHz (rms)	< 0.2 %	< 0.25 %, (typical < 0.15 %)		< 0.2 %	< 0.25 %, (typical < 0.15 %)		
Power stability over 8 hrs (± 3°C)	< 2 %						
Polarization Extinction Ratio (PER)	> 100:1, Vertical						
Total system power consumption	< 12 W	< 20 W		< 12 W	< 20 W		
Power Supply Requirements	5 V / 3 A	5V / 5A		5 V / 3 A	5V / 5A		
Warranty	24 months			12 months	24 months		

	633 nm	660 nm	785 nm			1064 nm
	08-NLD	08-DPL	08-NLD	08-NLD(M)	08-NLD(M) ESP	08-DPL
Center Wavelength (nm)	632.8 ± 0.5	659.6 ± 0.3	784.8 ± 0.5			1064.2 ± 0.6
Power (mW) without isolator [with isolator] (mW)	n/a [30]	50 [50]	n/a [120]	n/a [500]	n/a [400]	400 [n/a]
Integrated optical Isolator available	Yes	Yes	Yes			No
Maximum optical feedback	n/a [100 %]	1 % [100 %]	n/a [100 %]			10 % [n/a]
Spectral bandwidth (FWHM)	< 1 pm	< 1 MHz	< 1 pm	< 70 pm		< 1 MHz
Spectral purity (SMSR) @ ± > 0.5 nm from the main peak	> 40 dB	> 60 dB	> 40 dB		> 60 dB	> 60 dB
@ ± > 5 nm from the main peak	> 80 dB					
Wavelength stability (8hrs, ± 3°C)	< 1 pm			n/a		< 1 pm
Beam divergence (full angle, mrad)	< 1.6	< 1.5	< 2.0	Horizontal : < 15 Vertical : < 3		< 1.8
Spatial mode	M^2 < 1.3	M^2 < 1.1	M^2 < 1.3	Multimode		M^2 < 1.3
Beam symmetry	> 0.90:1	> 0.95:1	> 0.90:1	n/a		> 0.95:1
Beam diameter at aperture	700 ± 100 µm	700 ± 70 µm	700 ± 100 µm	H: 1.4 ± 0.2 mm V: 1.7 ± 0.2 mm	H: 1.6 ± 0.3 mm V: 1.2 ± 0.2 mm	1000 ± 100 µm
Noise, 250 Hz - 2 MHz (rms)	< 0.2 %	< 0.25 %	< 0.2 %	< 0.25 %		< 0.25 %
Power stability over 8 hrs (± 3°C)	< 2 %			< 1 %		< 2 %
Polarization Extinction Ratio (PER)	> 100:1, Vertical					
Total system power consumption	< 12 W	< 20 W	< 12 W	< 15 W		< 20 W
Power Supply Requirements	5V / 3A	5V / 5A	5V / 3A	5V / 3A		5V / 5A
Warranty	12 months	24 months	12 months	24 months		

Model Number

WWWW-08-XX-Y-PPPP-CCC

Wavelength

Power

Version:
01 Free beam, no optical isolator
11 Free beam, integrated optical isolator
51 Free beam (ring laser), no optical isolator
21 Enhanced Spectral Purity (ESP), free beam with isolator
X6 Integrated MM fiber coupling
X7 Integrated SM fiber coupling

M Multimode (beam)

Configuration:
100 = USB, CE / CDRH Compliant
200 = USB, OEM
300 = RS-232, CE / CDRH Compliant
400 = RS-232, OEM
xxx = OEM customization

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Fiber coupled option - Specifications - Multimode fiber

	532	785
Coupling Efficiency	> 60 %	> 70 %
Fiber Connector type	FC / PC, Narrow key	
Nominal Numerical Aperture (NA)	0.22	
Fiber type	Multimode	
Fiber length	2 m	
Warranty	Laser warranty and 12 months on workmanship	

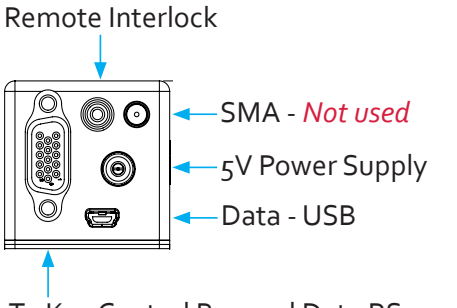
Fiber coupled option - Specifications - Single mode fiber

	405 - 660 nm*	785 nm	1064 nm
Coupling Efficiency	> 50 %		
Fiber Connector type	FC / APC , Narrow key		
Nominal Numerical Aperture (NA)	0.11	0.12	
Fiber type	SM / PM		
Fiber end cap	Yes	No	
Fiber length	2 m		
Warranty	Laser warranty and 12 months on workmanship		

* Not including 488 nm

Electrical Interface

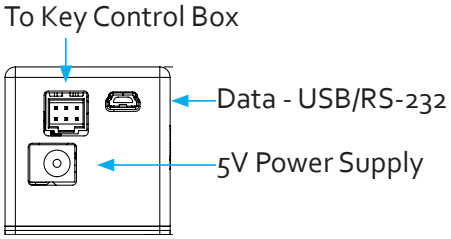
08-NLD Laser head



VGA 15 pin - To Key control box

Pin	Function
1	LED1 (Laser on)
2	LED2 (Error)
3	*Not used*
4	0 V (ref)
5	Key Switch
6	Remote interlock
7	RS-232 TX
8	RS-232 RX
9	Spare
10	0 V GND (ref pin 15)
11	Direct On/off
12	*Not used*
13	*Not used*
14	*Not used*
15	+5V to keybox

08-DPL and 08-NLD(M) Laser head



Molex 6 pin - To Key control box

Pin	Function
1	Remote interlock
2	0 V – Ground
3	Direct On/Off (+5 V Input)
4	Key Switch
5	LED 1 (Laser On)
6	LED 2 (Error)

This device is sensitive to Elecrostatic Discharge (ESD). Always handle diode lasers with extreme care to prevent electrostatic discharge, the primary cause of unexpected diode failure.

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)
405	360
457	400
473	400
488	200
515	400
532	400
561	400
633	200
660	400
785 STM	300
785 ESP	499
1064	499

WARNING INVISIBLE LASER RADIATION
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)
785	2000

CE

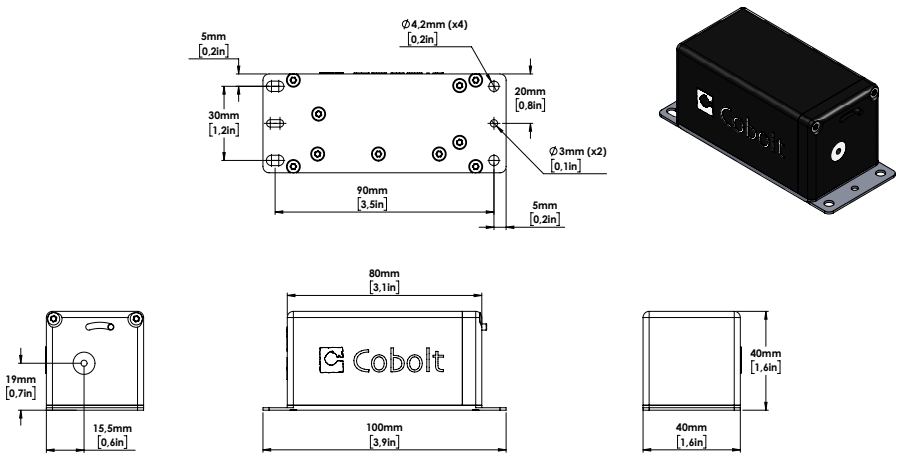
Communication Interface

Communication	USB or RS-232
Standard Baudrate	115200

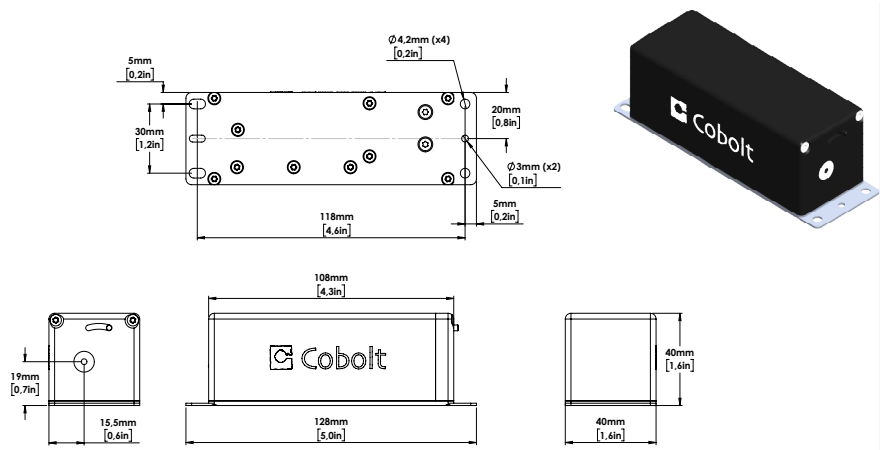
Cobolt 08-01 Series

Mechanical Specifications

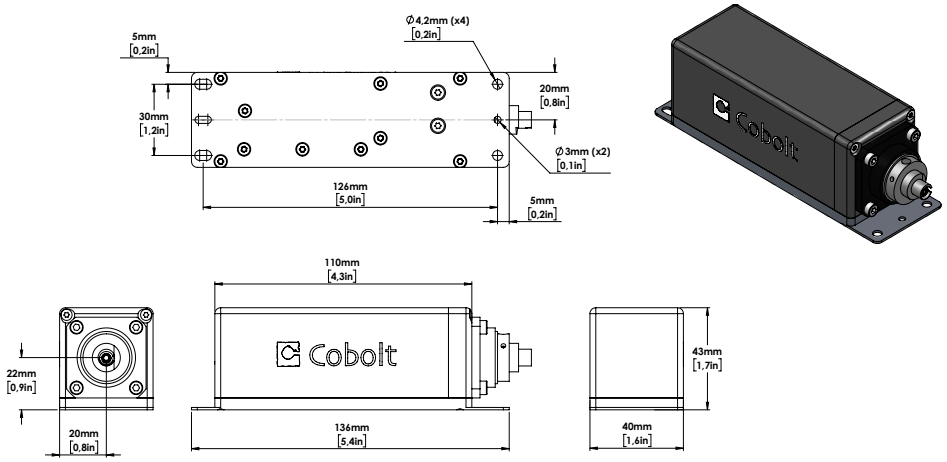
Laser Head without Isolator



Laser Head with Isolator

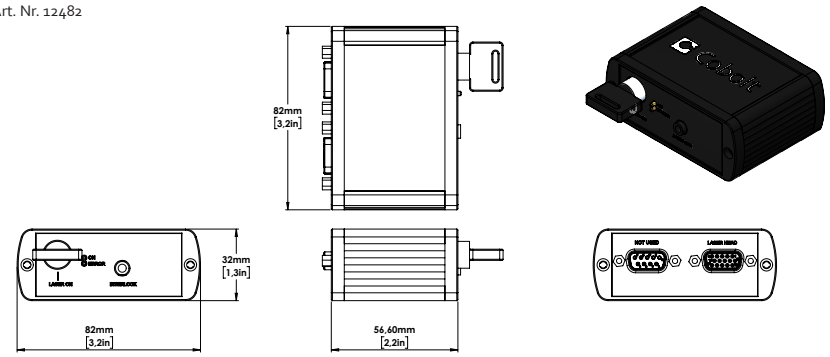


Laser Head with integrated fiber coupler



Key box

Art. Nr. 12482



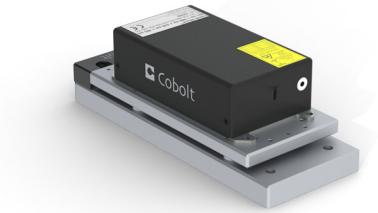
Cobolt 08-01 Series

Options and Accessories

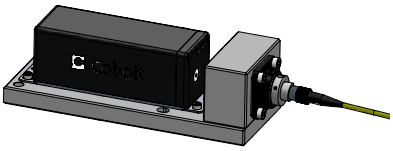
- C-FLEX Laser combiner
- Laser head heatsink HS-03
- TEC Plate for active temperature control
- Mounting plate for fiber coupling (FIC-06)

C-FLEX Laser combiner

Heatsink HS-03



TEC-Plate for active temperature control



Mounting plate for fiber coupling FIC-06

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