

Cobolt Skyra™

Compact | Plug and play | Multi-line Laser



- Combine up to 4 laser lines, permanently aligned in a single device
- 405 nm, 445 nm, 457 nm, 473 nm, 488 nm, 515 nm, 532 nm, 553 nm, 561 nm, 633 nm, 638 nm, 647 nm and 660 nm
- Direct intensity modulation of each line individually, fast and deep modulation from versatile input signals with complete dark state capability
- Up to 100 mW of optical power per laser line
- Compact, robust package with integrated electronics
- Integrated fiber coupled option
- User friendly graphical software interface

Cobolt Skyra™ is an extremely compact, permanently aligned, plug & play, multi-line laser with up to 4 laser lines and control electronics integrated into one single, temperature-controlled package, small enough to fit in the palm of your hand!

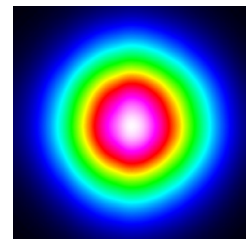
The laser is built using Cobolt's proprietary HTCure™ manufacturing technology for robustness in a compact, hermetically sealed package. HTCure™ results in an ultra-stable, permanent alignment of optical elements, with very precise and stable overlap of the combined output beams.

The Cobolt Skyra™ is available in a free beam or fiber coupled configuration. It is intended for stand-alone use in laboratory environments or for integration as OEM components in instruments for applications including biomedical research, fluorescence microscopy, flow cytometry, as an Argon ion replacement in microscopy instrumentation and optogenetics.

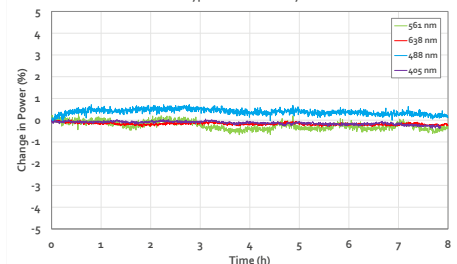
Applications

Fluorescence microscopy
Optogenetics
Flow Cytometry
Biomedical research
Ar⁺ Ion Replacement

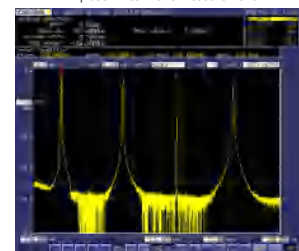
Cobolt Skyra™ - Combined Beam Profile
All 4 laser lines in one measurement



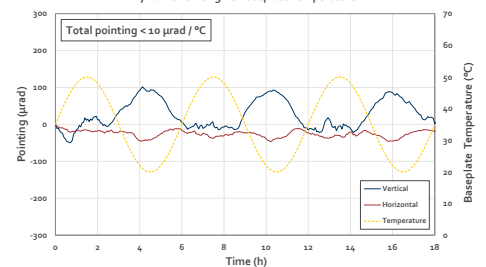
Cobolt Skyra™
Typical Power Stability



Cobolt Skyra™ - Combined Spectral Performance
All 4 laser lines in one measurement



Cobolt Skyra™
Dynamic Pointing vs Baseplate Temperature



HÜBNER Photonics | Coherence Matters.



	532 nm	553 nm	561 nm	405 nm	445 nm	457 nm	473 nm	488 nm	515 nm	633 nm	638 nm	647 nm	660 nm
	Cobolt DPL			Cobolt MLD									
Center Wavelength (nm)*	532.1	552.8	561.2	405	445	457	473	488	515	633	638	647	660
Wavelength accuracy (nm)	± 0.3			± 5		+3/-7	± 5						
Power (mW)	50 100	50	50	50 100	50	50	50 100	50 100	50	50	50	50	50

* One DPL laser line at 532nm, 553nm or 561nm can be combined with any 3 of the MLD wavelengths. The wavelength difference between each line must be at least 15 nm.

Optical Specifications

Beam diameter at aperture	700 ± 100 µm
Beam symmetry	> 0.85 : 1
Beam divergence, full angle	< 1.8 mrad
Spatial mode (TEM ₀₀)	M ² < 1.25
Polarization extinction ratio	> 100:1, vertical
Noise 250 Hz - 2 MHz (rms) *	< 0.3 %
Long-term stability (8 hrs ± 3°C)	< 3 %
Beam position accuracy	< 0.5 mm
Beam angle accuracy	< 5 mrad
Ambient temperature & pointing (20-50 °C)	< 10 µrad / °C
Beam position overlap at exit	< 50 µm
Beam-to-beam angle deviation	< 250 µrad

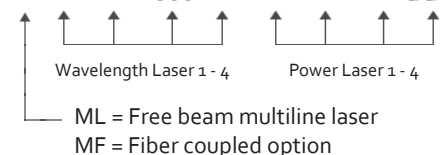
* Noise typically increases after fiber coupling.

Modulation Specifications

	MLD	DPL (532, 553 and 561nm)
Digital modulation		
Bandwidth	DC - 5 MHz	DC-5 kHz
Extinction ratio	> 10 000 000 : 1 (> 70 dB)	> 50 dB
Rise/fall time	< 60 ns	< 60 µs
Analog modulation		
Bandwidth	DC - 500 kHz	DC-5 kHz
Extinction ratio	> 10 000 000 : 1 (> 70 dB)	> 50 dB
Rise/fall time	< 1 µs	< 100 µs
Internal modulation		
Bandwidth	500 Hz	500 Hz

Model Number

ML-AAA-BBB-CCC-DDD-XXX-YYY-ZZZ-QQQ-WWW



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

Options and Accessories

- Control box with key-switch (CDRH)
- Laser head heat sink with fans - HS-05
- Integrated fiber coupling option



Key control box



Heat sink with fans



Fiber coupled option



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



WARNING LASER RADIATION
Avoid Exposure to beam
Class 3B Laser Product
Classified per IEC 60825-1:2014



Wvl (nm)	Max.Pwr (mW)
405	120
445	120
457	150
473	120, 350
488	80, 250
515	100
532	200
553	100
561	150
633	100
638	120
647	120
660	120



Coupling Efficiency	> 50 % per laser line into one fiber
Long-term stability (8 hrs ± 3°C) - out of the fiber	< 3 %
Fiber Output	FC / APC, 8°, non-collimated
Fiber Type	SM / PM
Polarization	PER > 30:1, ± 3° with respect to the key
Standard Fiber Length	2 m
Jacketing	Ø 3mm, PVC

Fiber options

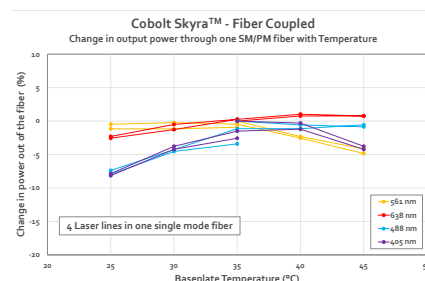
Art. Nr. 80100	Fiber and coupler : 405-640 nm, SM/PM, FC/APC, end-cap, Wide Key
Art. Nr. 80110	Fiber and coupler : 405-640 nm, SM/PM, FC/APC, end-cap, Narrow Key



Operation Environment Specifications

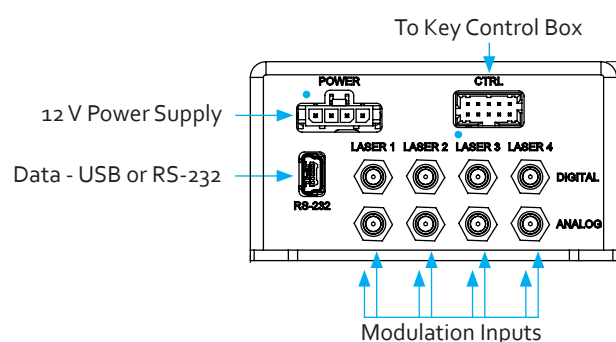
Power supply requirements	12 VDC, 6.67 A
Power consumption, total system	60 W
Maximum baseplate temperature	50 °C
Ambient temperature, operation	10 - 40 °C
Storage temperature	- 10 °C to +60 °C
Laser Head heat sink thermal impedance at 40 °C	< 0.17 K/W
Warm-up time from complete "off"	< 3 min
Communication protocol	USB or RS 232
Warranty**	12 months

** Not including fiber or coupler



Electrical Interface

Skyra Laser Head



Molex 10 pin - To Key control box

Pin	Function
1	Remote interlock
2	0 V – Ground
3	Direct On/Off (+5 V Input) – OEM Only
4	Key Switch
5	LED 1A (Laser On)
6	LED 2 (Error)
7	LED 1B (Laser On - Redundant)
8	Not used (test)
9	Not used (Ground)
10	Not used (Ground)

Molex 4 pin - To Power Supply

Pin	Function
1	0 V
2	0 V (connected to pin 1)
3	+12 VDC (connected to pin 4)
4	+12 VDC

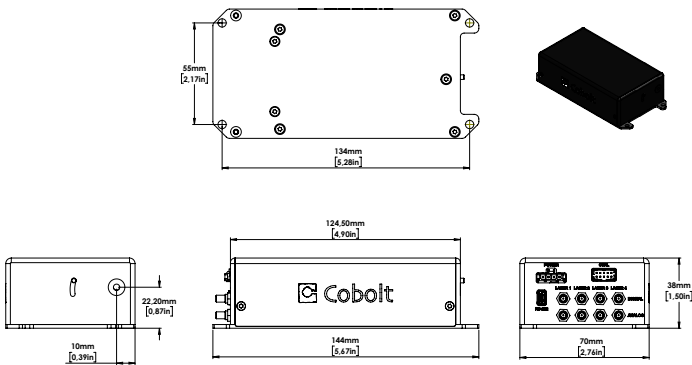
Communication Interface

Communication	USB or RS-232
Standard Baudrate	115200

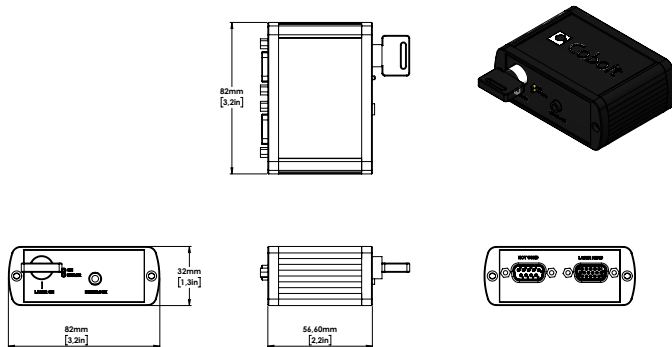
Cobolt Skyra™

Mechanical Specifications

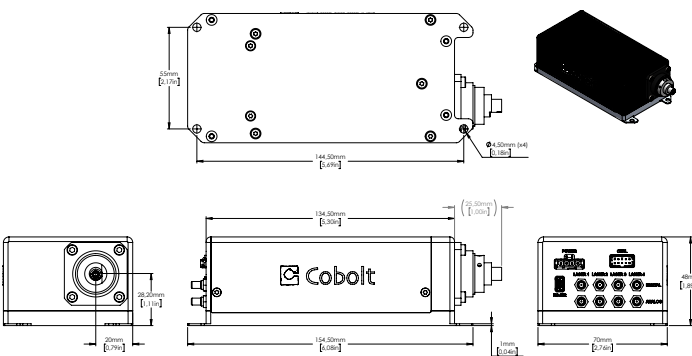
Free beam laser head dimensions



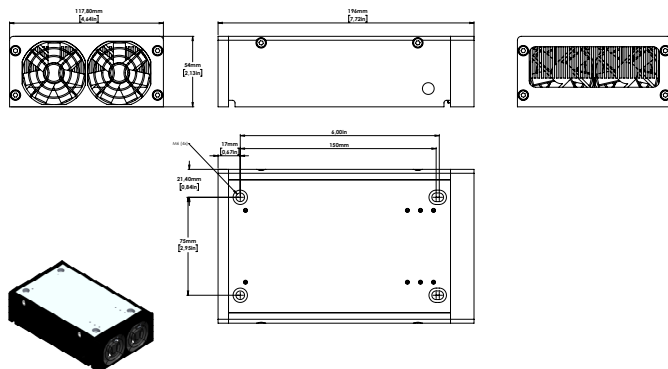
Key control box dimensions



Fiber coupled laser head dimensions



HS-05 - Heat sink with fans



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