

# Cobolt o6-o1 Series - High Power

Plug & Play | High Power Multimode Diode Lasers | Modulatable



- Easy-to-integrate compact and powerful diode laser modules
- Output power up to 1.2 W
- Wavelengths from 405 nm to 975 nm
- Free space and fiber pigtailed beam delivery
- Ultra-robust design
- Fast and deep intensity modulation to a complete dark state
- Versatile modulation controls with linear response to analog power control signals

The Cobolt o6-o1 Series high power diode laser modules (o6-HPLD) are high power, multimode high performance lasers operating at a fixed wavelengths, between 405 nm and 975 nm. All included in a compact form factor and an industry standard plug and play format.

The lasers are manufactured using Cobolt's unique HTCure™ Technology to ensure world-class quality and reliability, as well as unmatched robustness.

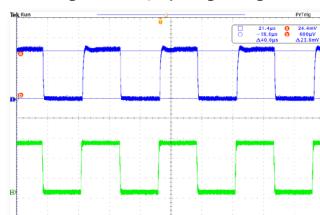
The Cobolt o6-HPLD lasers offers direct intensity modulation capabilities, allowing fast and deep modulation from versatile input signals. The permanently aligned fiber pigtailed beam deliver option ensure a homogenous intensity distribution, ideal for various fluorescence microscopy and bioimaging applications.

## Applications

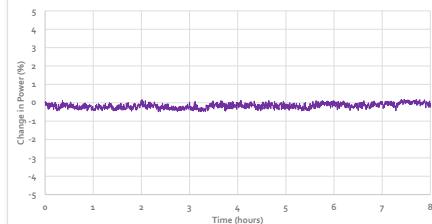
Fluorescence microscopy  
Biomedical Imaging  
Super resolution microscopy  
Quantum research  
Laser pumps  
Lithography

### Typical Analog Modulation at 100 kHz

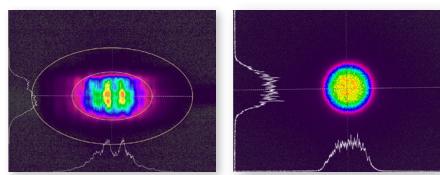
Laser signal in blue, input signal in green.



### Cobolt o6-HPLD Long term power stability



### Typical Beam Profile



Free beam

Fiber Pigtailed

**HÜBNER Photonics**



# Cobolt o6-01 Series - High Power

## High power multimode diode lasers

The fiber pigtailed option for the Cobolt o6-01 Series lasers are delivered as free beam laser or with the fiber permanently aligned and fixed inside the sealed package using Cobolt's proprietary HTCure™ Technology, providing stable output over a large temperature range and insensitive to transport conditions.



### High power multimode laser specifications

	405	425	450	488	520	638	750	830	975				
Platform	o6-HPLD												
Center Wavelength (nm)	405 ± 5	425 ± 5	450 ± 10	488 ± 5	520 ± 10	638 ± 6	750 ± 5	830 ± 10	975 -10/+5				
Power stability over 8 hrs (%)	< 1.0												
Noise, 20 Hz – 2 MHz (RMS, %)	< 0.2												
Free beam power (mW)	900	1200	1200	1200	800	1200	1200	900	900				
Beam dimensions (mm, typ.)	X : 2 ± 1 Y : 2 ± 1												
Fiber pigtailed power (mW)	750	1000	1000	1000	650	1000	1000	750	750				
Fiber Output	FC/PC, Narrow key												
Fiber Type	Multimode												
Fiber core diameter	50 µm, 105 µm, 200 µm or 400 m					105 µm, 200 µm or 400 m							
Standard Fiber Length (m)	1.0												
Jacketing	Stainless steel												
Warranty	12 months, 5000 hrs												

### Operational Environment

Power supply requirements	12 VDC, 3 A
Intended use environment	Laboratory (indoor)
Maximum baseplate temperature	50 °C
Ambient temperature, operation	10 to 40°C
Ambient temperature, storage	-10 to +60°C
Humidity	0-90% RH non-condensing
Ambient Air pressure	800 - 1050 mbar
Laser Head heat sink thermal impedance (at 40°C ambient)	< 0.4 K/W
Maximum heat dissipation of Laser Head	< 25 W



Heatsink HS-07



This device is sensitive to Electrostatic Discharge (ESD).



WARNING VISIBLE AND INVISIBLE LASER RADIATION!



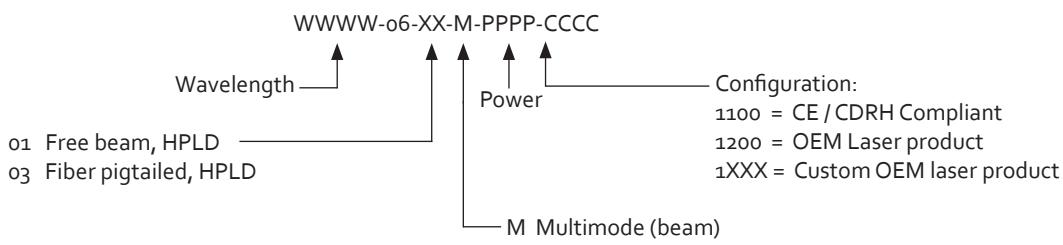
Avoid eye or skin exposure to direct or scattered radiation.

Class 4 Laser Product  
Classified per IEC 60825-1:2014



Wvl (nm)	Max.Pwr (W)
405	2.0
425	2.0
450	2.0
488	2.0
520	2.0
638	2.0
750	2.0
830	2.0
975	2.0

### Model Number



# Cobolt o6-o1 Series - High Power

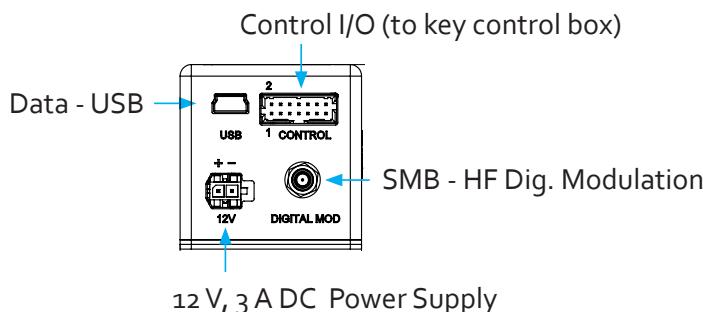
## Modulation Specificaitons

Digital power modulation	
Modulation frequency	> 2 MHz
Rise/fall time	< 50 ns*
Extinction ratio	> 10 000 000 : 1 (> 70dB)
Input signal - Low	0 - 0.8V
Input signal - High	2 - 5V
Input signal - Impedance	2 kΩ
Analog power modulation	
Modulation frequency	DC - 100 Hz
Rise/fall time	< 2 ms
Extinction ratio	> 10 000 000 : 1 (> 70dB)
Input signal	0 - 1V -or- 0 - 5V
Threshold voltage	37 ± 5 mV (0 - 1V) 68 ± 5 mV (0 - 5V)
Input signal - Impedance	2 kΩ -or- 50 Ω
Digital current modulation	
Max. modulation frequency	> 2 MHz
3 dB Bandwidth	> 2 MHz
Rise/fall time	< 50 ns*
Input signal - Low	0 - 0.8V
Input signal - High	2 - 5V
Input signal - Impedance	2 kΩ
Analog current modulation	
Max. modulation frequency	> 2 MHz
Rise/fall time	< 250 ns
Input signal	0 - 1V -or- 0 - 5V
Threshold voltage	37 ± 5 mV (0 - 1V) 68 ± 5 mV (0 - 5V)
Input signal - Impedance	2 kΩ -or- 50 Ω

\* Fall time increased to up to 250 ns for IR wavelengths

## Electrical Interfaces

### Laser Head



### Molex 14 pin - Control I/O (to key control box)

Pin	Function
1	Remote Interlock
2	GND
3	GND
4	RS-232 TX
5	RS-232 RX
6	LED 1B (Laser ON)
7	LED 1A (Laser ON)
8	LED 2 (Error)
9	Digital modulation input (limited to 500 kHz)
10	GND
11	Key switch
12	Remote ON/OFF
13	GND
14	Analog modulation input

### Communication Interface

Communication	USB and RS-232
Standard Baudrate	115200

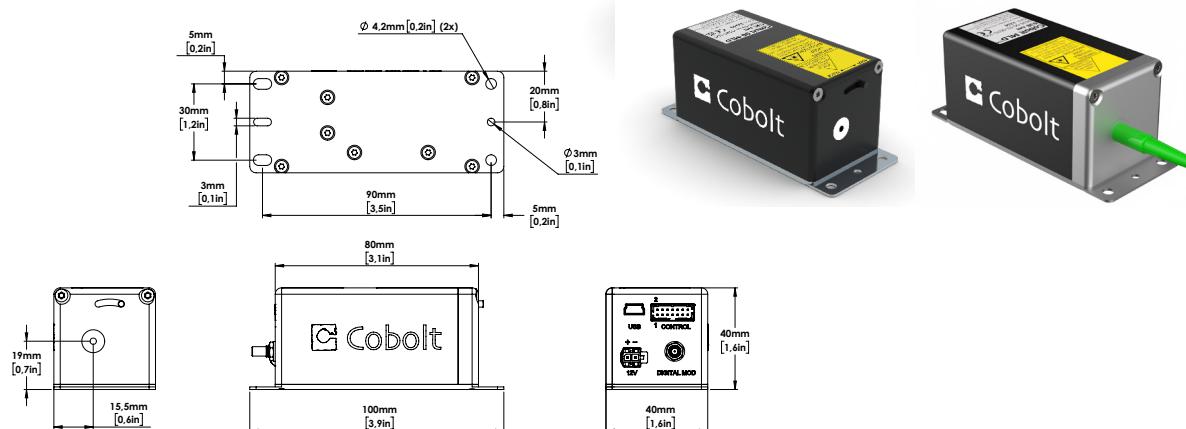
### Molex 2 pin - to power supply

Pin	Function
1	+ 12 V DC, max 3 A
2	GND

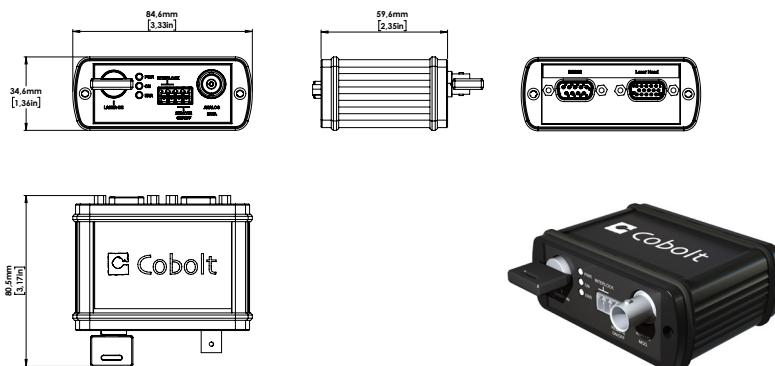
# Cobolt o6-01 Series - High Power

## Mechanical Specifications

### Laser head dimensions



### Key control box dimensions



### Our Locations

**Cobolt AB, a part of HÜBNER Photonics**  
(Sales in Norway, Sweden, Finland and Denmark)  
Solna, Sweden  
Phone: +46 8 545 912 30  
Fax: +46 8 545 912 31  
E-mail: [info.se@hubner-photonics.com](mailto:info.se@hubner-photonics.com)

**HÜBNER Photonics GmbH**  
(Sales in Germany, Switzerland and Austria)  
Kassel, Germany  
Phone: +49 561 994 060-0  
Fax: +49 561 994 060-13  
E-mail: [info.de@hubner-photonics.com](mailto:info.de@hubner-photonics.com)

**HÜBNER Photonics Inc.**  
(Sales in USA, Canada and Mexico)  
San Jose, California, USA  
Phone: +1(408) 708 4351  
Fax: +1(408) 490 2774  
E-mail: [info.usa@hubner-photonics.com](mailto:info.usa@hubner-photonics.com)

**HA Photonics Pty Ltd**  
(Sales in UK and Ireland)  
London  
United Kingdom  
Phone: +44 7359 440 871  
E-mail: [info.uk@hubner-photonics.com](mailto:info.uk@hubner-photonics.com)

**VALO Innovations, a part of HÜBNER Photonics**  
(VALO Sales and Service)  
Hannover, Germany  
Phone: +49 511 260 390 70  
E-mail: [info.valo@hubner-photonics.com](mailto:info.valo@hubner-photonics.com)

[Find local sales representatives at hubner-photonics.com](http://Find local sales representatives at hubner-photonics.com)