

# Cobolt Qu-T™ Series

Compact tunable laser | Single Frequency | High Power

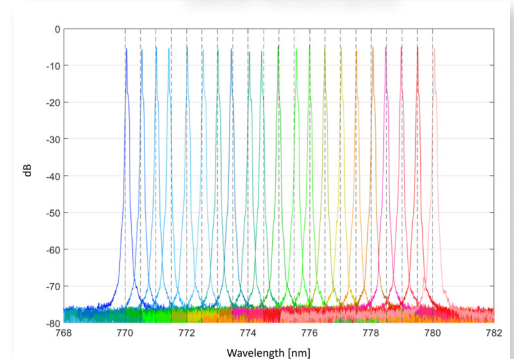
## Applications

Laser Cooling  
Entangled Photon Generation  
Atomic Clock Research  
High Resolution Spectroscopy  
Interferometry



- Large wavelength flexibility and high output power
- Narrow linewidth ( $< 50$  kHz, 1 ms integration time)
- High spectral purity (SMSR  $> 60$  dB)
- Multi-nm gap-free coarse tuning ( $> 4$  nm)
- Fast fine tuning (mode-hop free  $> 10$  GHz, typ.)
- Wavelength locking to various external references
- Compact format with proven 24/7 reliability

SMSR Performance

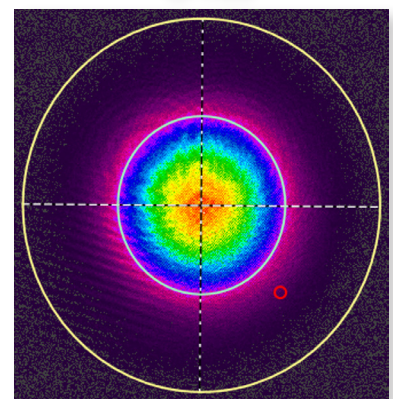


The Cobolt Qu-T™ Series offers tunable and lockable single-frequency CW emission in the 700 - 850 nm range with an inherently high level of flexibility in the center wavelength and a perfect TEM<sub>00</sub> beam. Each emission wavelength can be coarsely tuned gap-free over several nm and actively locked to an external reference using a fast piezo control. Fast fine tuneability, combined with low intensity noise and narrow linewidth emission, makes these lasers perfectly suited for quantum experiments based on atomic transitions and generation of entangled photon pairs through spontaneous parametric down-conversion.

Built into compact hermetically sealed packages using Cobolt HTCure™ manufacturing technology with proven 24/7 reliability, the Cobolt Qu-T™ lasers provide robust performance over a wide range of operating conditions from a small and easy-to-use platform, and can therefore also contribute to bringing the most advanced quantum research set-ups into real world applications.

Contact Cobolt today and find out more about how the Cobolt Qu-T:ies can make innovaitons in Quantum Technologies easier and more affordable!

Typical Beam Profile  
 $M^2 < 1.1$



HÜBNER Photonics

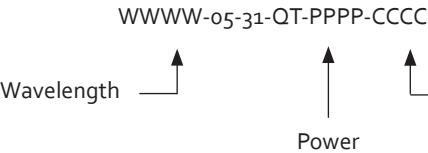


# Cobolt Qu-T™ Series

## Performance Specifications

Wavelength in air	707 nm	780 nm	813 nm
Available Power Levels	500 mW		
Coarse Tuning Range	> 4 nm		
Fine Tuning (Piezo)	> 10 GHz, typical		
Wavelength locking	up to 1 kHz (-10 V to +10 V, SMA)		
Spectral linewidth (FWHM, 1 ms)	< 50 kHz		
Spectral purity (SMSR)	> 60 dB		
Wavelength stability (±2°C and 8hrs, free running)	< 1 pm		
Power stability (±2°C and 8hrs)	±2 %		
Noise, 20 Hz - 20 MHz (pk-pk)	< 3 %		
Noise, 20 Hz - 20 MHz (rms)	< 0.3 %		
Beam diameter at aperture	1000 ± 50 µm		
Beam symmetry at aperture	> 0.95:1		
Beam divergence (full angle, mrad)	< 1.2		
Spatial mode (TEM <sub>00</sub> )	M <sub>2</sub> < 1.1		
Polarization ratio (linear, vertical)	> 100:1		

### Model Number



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  
XXXX = OEM customization

### Communication Interface

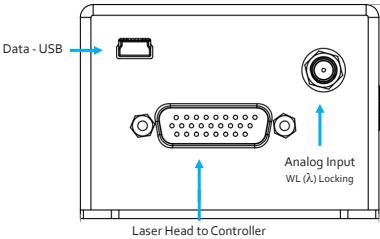
Communication	USB or RS-232
Standard Baudrate	115200

## Operational Environment and interfaces

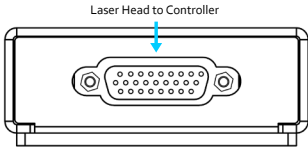
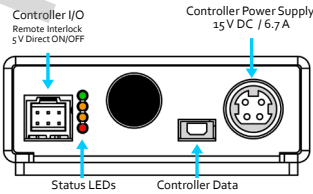
Power supply requirements	15VDC, 6 A
System power consumption	< 65 W, typical 30W
Maximum laser head baseplate temperature	50 °C
Ambient temperature, operation	10 - 40 °C
Laser head heat sink thermal impedance (at max ambient temperature)	< 0.2 K/W
Beam pointing stability (over operation temperature 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

## Electrical Interfaces

### Cobolt Qu-T™ - Laser head



### Cobolt Qu-T™ - Controller



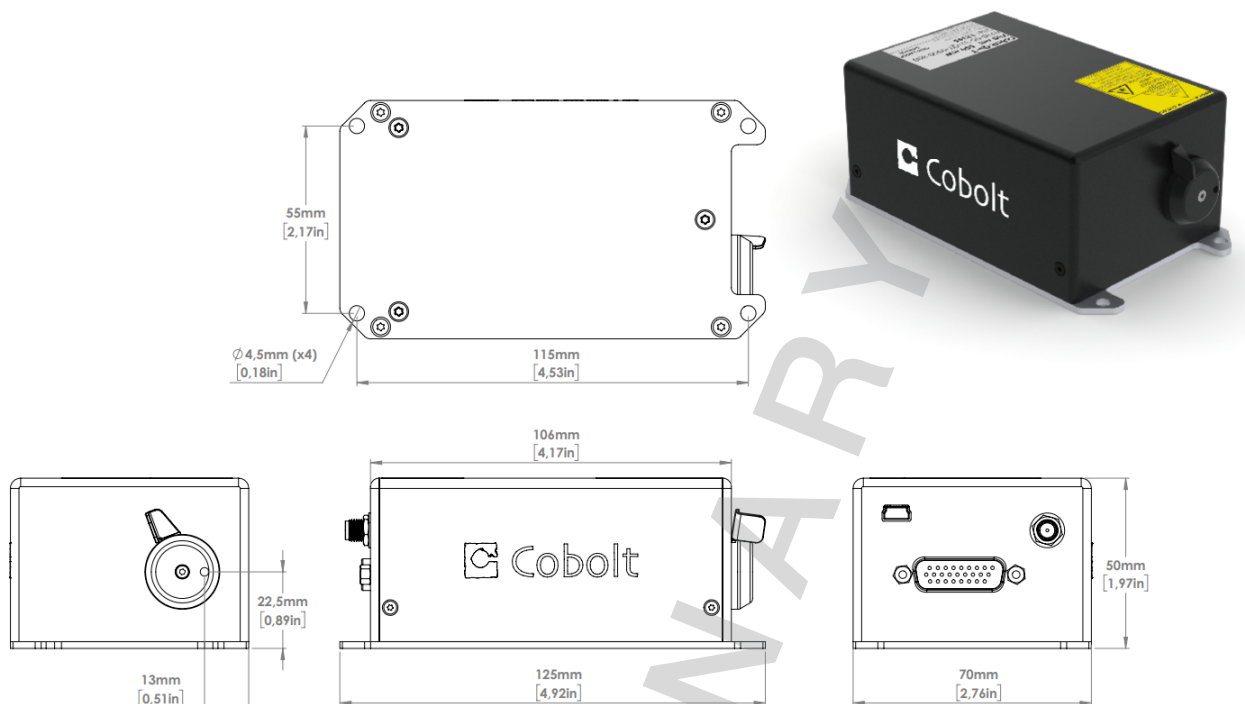
### Molex 6 pin - Controller I/O

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

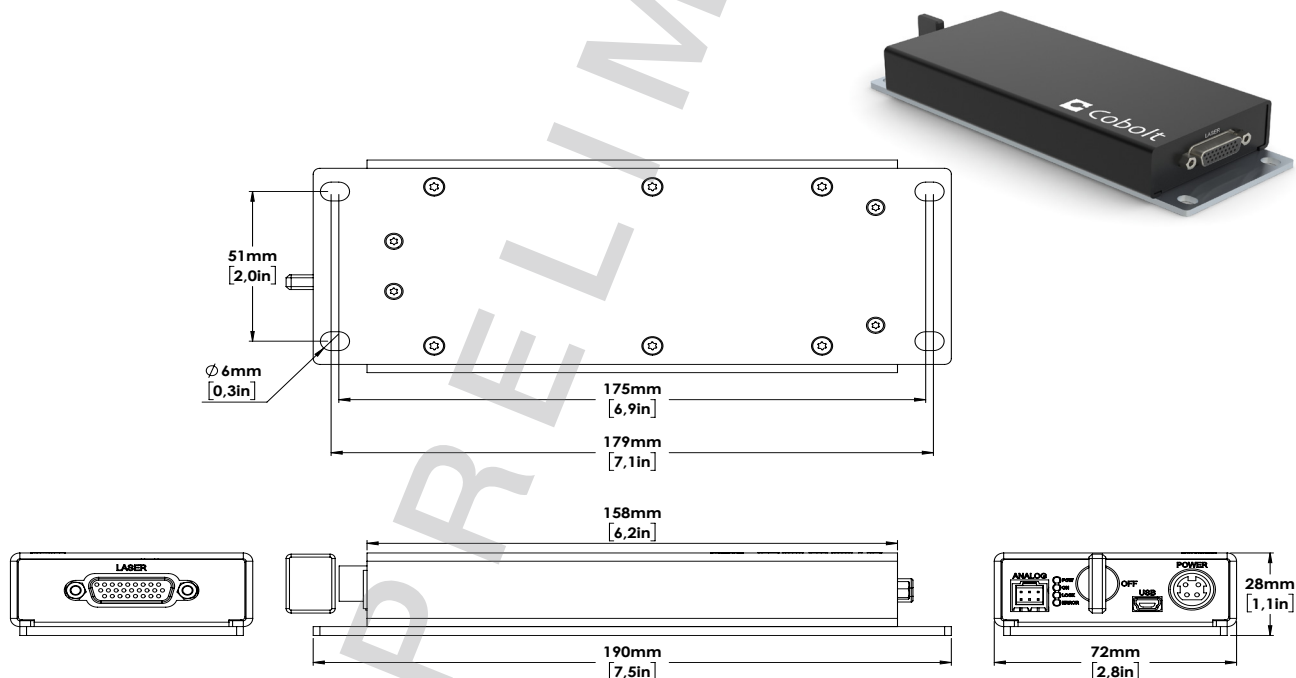
# Cobolt Qu-T™ Series

## Mechanical Specifications

### Cobolt Qu-T™ Laser head



### Cobolt Qu-T™ - Controller



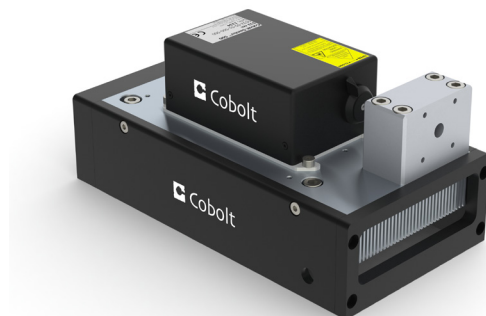
# Cobolt Qu-T™ Series

## Options and Accessories

- Laser head heatsink with fans for 05-01 lasers : HS-04
- Heatsink with fiber coupling for 05-01 lasers : FIC-04



*Heatsink with fans*



*Heat sink with fans for fiber coupling FIC-04*

## 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@coboltlasers.com](mailto:info@coboltlasers.com)

**HÜBNER Photonics GmbH**  
(Sales in Germany, Switzerland and Austria)  
Kassel, Germany  
Phone: +49 561 994 060-0  
Fax: +49 6561 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://hubner-photonics.com)