Cobolt Qu-T™ Series

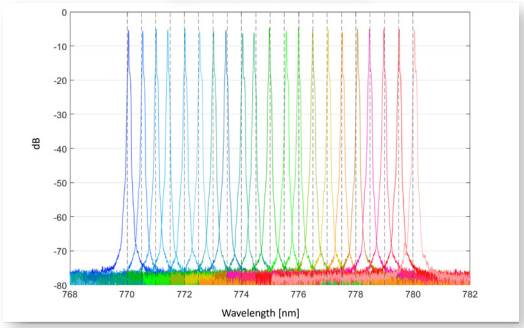
Compact tunable laser | Single Frequency | High Power

Applications

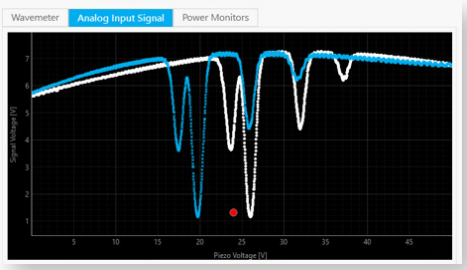
Laser Cooling
Quantum computing
Atomic clocks
Atom interferometry
Entangled Photon Generation
Brillouin microscopy
High Resolution Spectroscopy

- Large wavelength flexibility and high output power
- Narrow linewidth, < 50 kHz (1 ms integration time)
- High spectral purity (SMSR > 80 dB)
- Gap-free coarse tuning up to > 4 nm
- Fast fine tuning, mode-hop free > 10 GHz
- Easy to use wavelength locking to various external references
- Compact format with proven reliability

Wavlength Tuning
Typical SMSR Performance



Wavlength Locking
Analog input - Rubidium transition lines

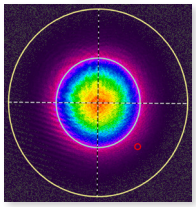


The Cobolt Qu-T™ Series offers tunable and lockable single-frequency CW emission in the visible to near infrared range with an inherently high level of flexibility in the center wavelength and a perfect TEMoo beam. Each emission wavelength can be coarsely tuned gap-free over several nm and actively locked 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 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
$M^2 < 1.1$



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Cobolt Qu-T™ Series

Performance Specifications

Center Wavelength	532 nm	619 nm*	707 nm	780 nm	813 nm	1238 nm
Available Power Levels	1500 mW	50 mW	> 500 mW			
Coarse Tuning Range	n/a	> 4 nm				
Fine Tuning Range	> 10 GHz, (typical > 20 GHz)					
Wavelength locking speed (analog)	< 10 kHz					
Spectral linewidth (FWHM, 1 ms, free running)	< 100 kHz		< 50 kHz			
Spectral purity (SMSR, @ ± > 5 nm from the main peak)	> 80 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 ± 100 µm	(FC)	1000 ± 100 µm			
Beam symmetry at aperture	> 0.95:1	--	> 0.95:1			
Beam divergence (full angle, mrad)	< 1.2	--	< 1.2	< 1.3		< 1.9
Spatial mode (TEM_{00})	M2 < 1.1	--	M2 < 1.1			
Polarization ratio (linear, vertical)	> 100:1					
Warranty	12 months, unlimited hours					

* Wavelength avaiable as QuT-02 with external SHG module

Model Number

WWWW-QT-0X-PPPP-CCCC

Wavelength

Version:
01 Free beam
02 External SHG module

Power

Configuration:
800 = Gen 5b Controller, USB, OEM
XXXX = OEM customization

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

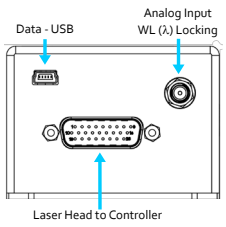
Wvl (nm)	Max.Pwr (W)
532	3000
619	200
707	2000
780	2000
813	2000
1238	2000

Operational Environment and interfaces

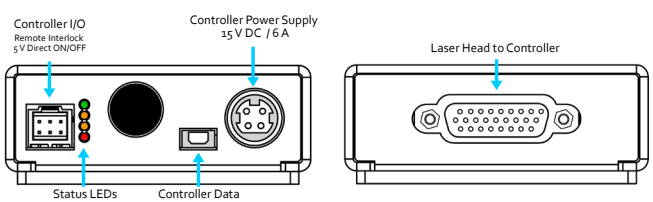
Power supply requirements	15 VDC, 6 A
System power consumption	< 65 W, typical 30W
Maximum laser head baseplate temperature	45 °C
Ambient temperature, operation	10 - 35 °C
Laser head heat sink thermal impedance (at max ambient temperature)	< 0.2 K/W
Beam pointing stability (over operation temperature 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)

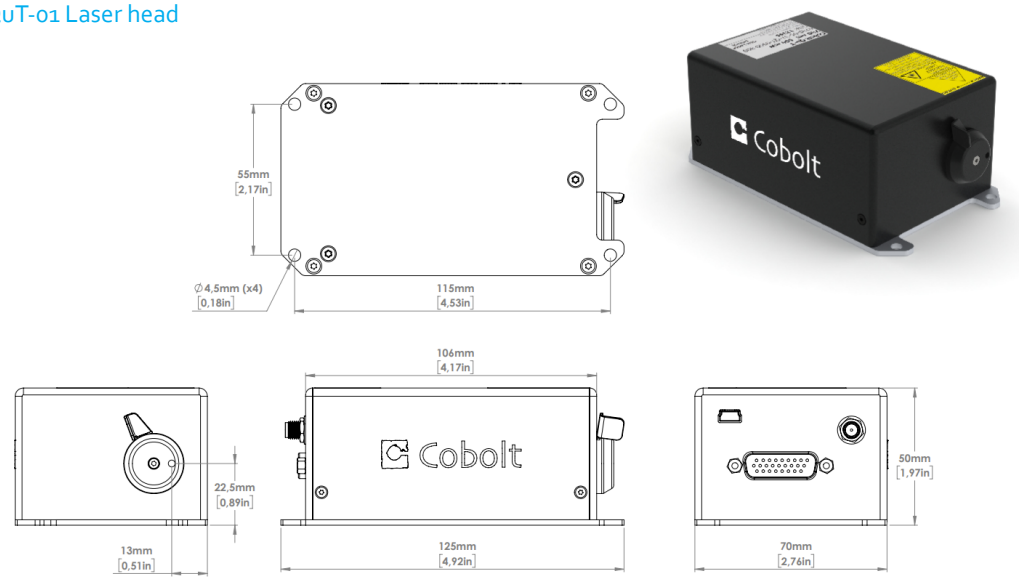
Communication Interface

Communication	USB
Standard Baudrate	115200

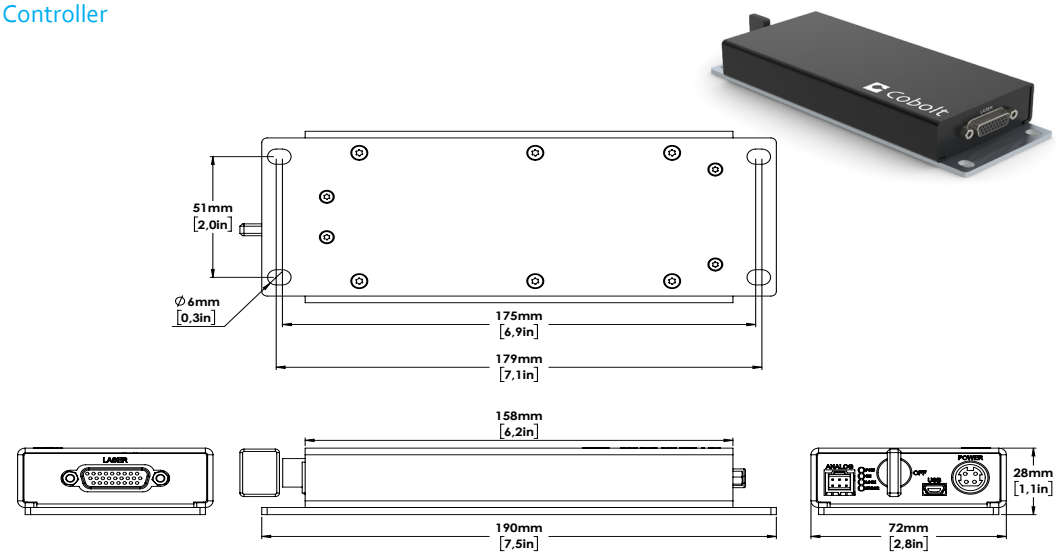
Cobolt Qu-T™ Series

Mechanical Specifications

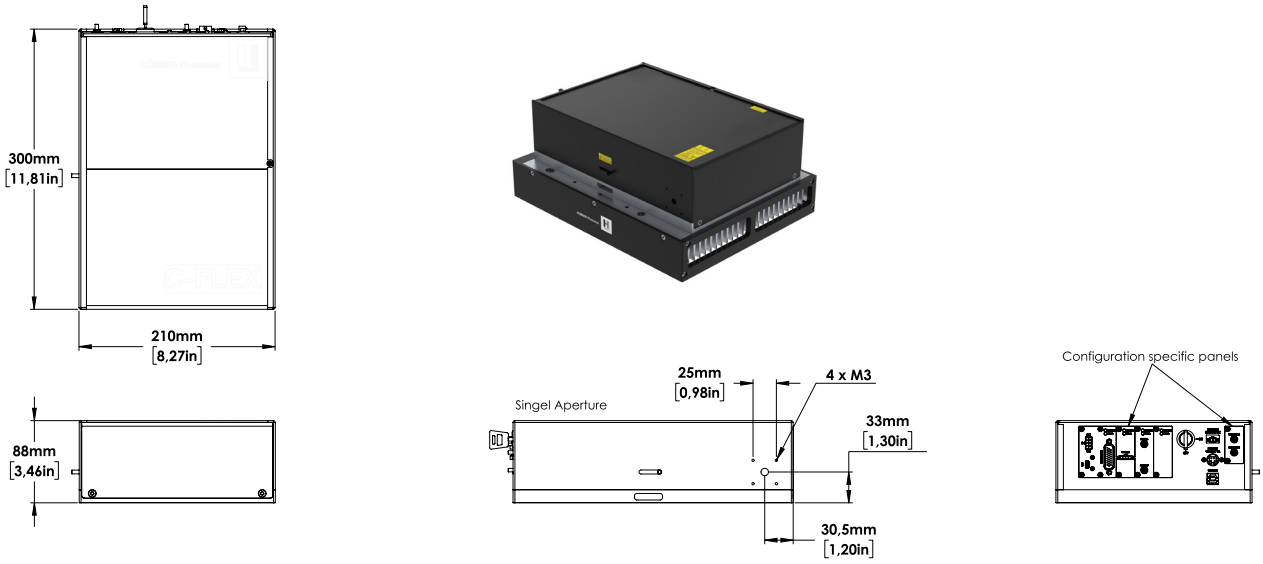
Cobolt Qu-T™ - QuT-01 Laser head



Cobolt Qu-T™ - Controller



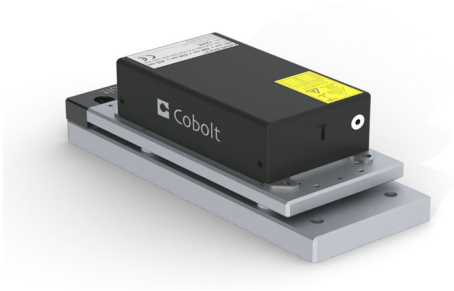
Cobolt Qu-T™ - QuT-02 with external SHG module



Cobolt Qu-T™ Series

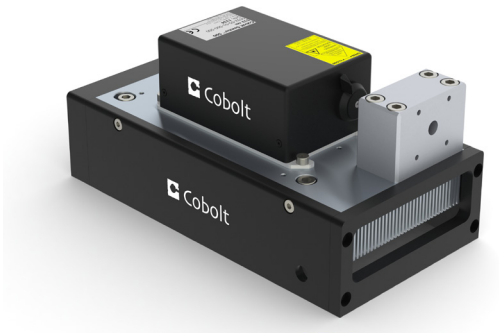
Options and Accessories

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

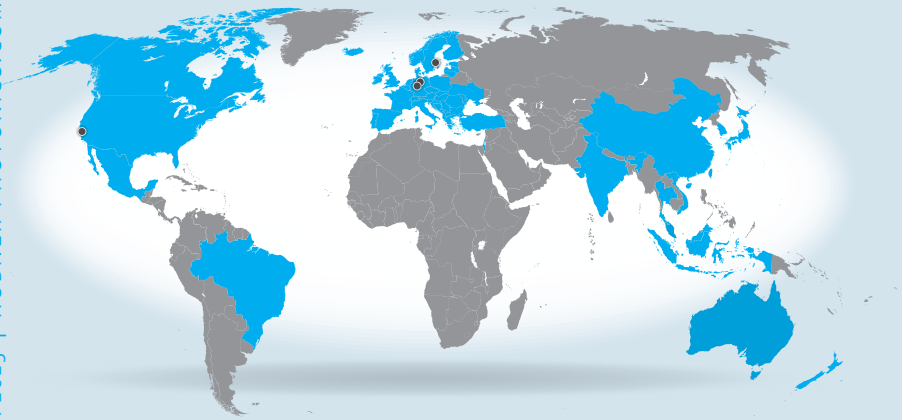


TEC-Plate for active baseplate temperature control

Heatsink with fans



Heat sink with fans for fiber coupling FIC-04



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