Cobolt Qu-T™ Series

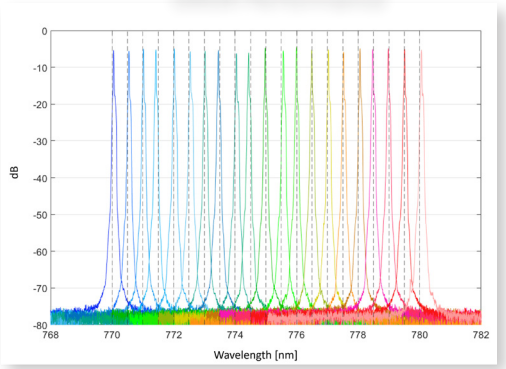
Compact tunable laser | Single Frequency | High Power

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

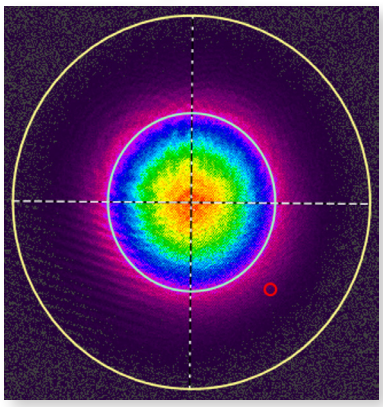


The Cobolt Qu-T™ Series offers tunable and lockable single-frequency CW emission in the 650-950 nm range with an inherently high level of flexibility in the center wavelength and a perfect TEMoo beam. Each emission wavelength can be coarsely tuned gap-free over several nm and actively locked to an external 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 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_{00})	M2 < 1.1		
Polarization ratio (linear, vertical)	> 100:1		

Model Number

WWWW-05-31-QT-PPPP-CCCC

Wavelength

Power

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

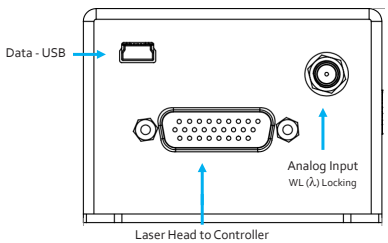
Communication	USB or RS-232
Standard Baudrate	115200

Operational Environment and interfaces

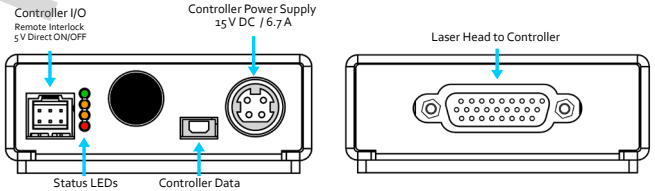
Power supply requirements	15 VDC, 6 A
System power consumption	< 65 W, typical 30W
Maximum laser head baseplate temperature	50 °C
Ambient temperature, operation	10 - 40 °C
Laser head heat sink thermal impedance (at max ambient temperature)	< 0.2 K/W
Beam pointing stability (over operation temperature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

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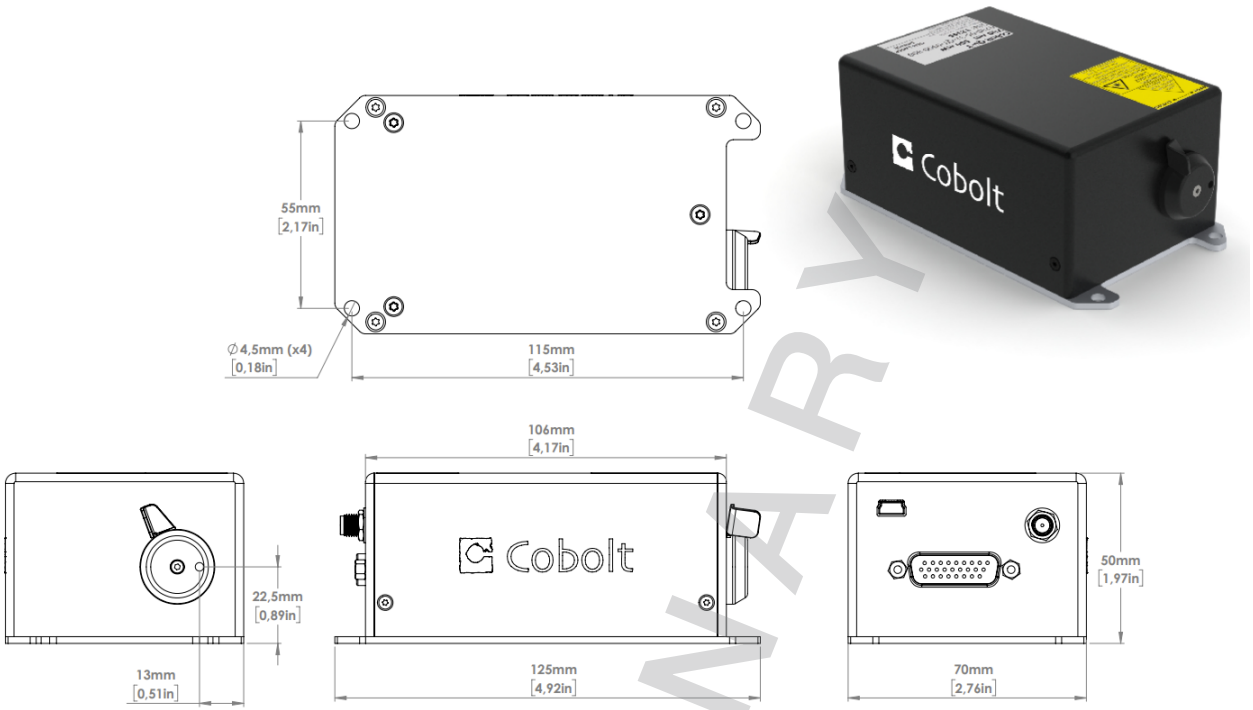
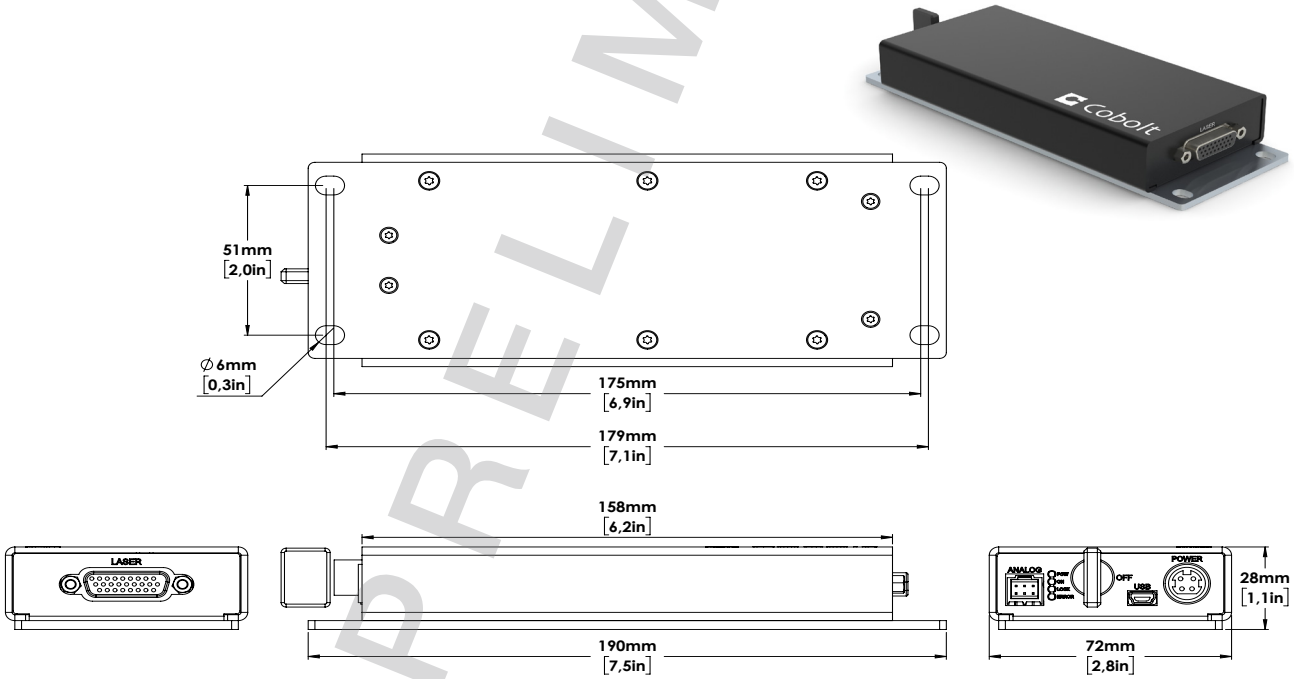
Mechanical Specifications

Cobolt Qu-T™ Laser head



Cobolt Qu-T™ - Controller



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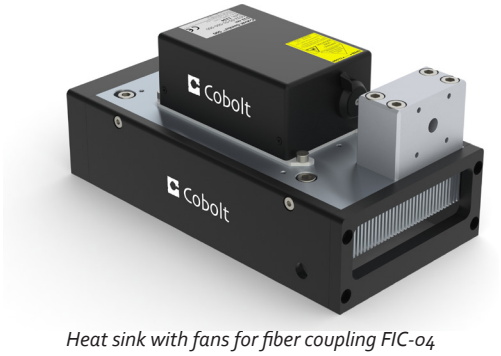
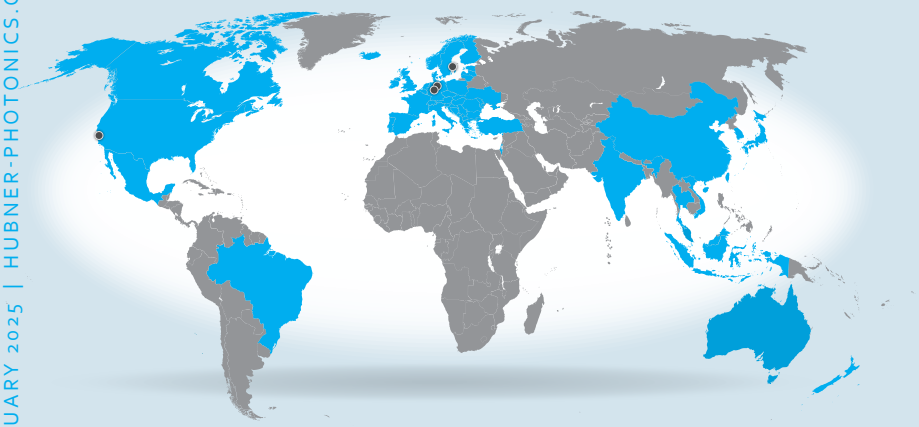
Options and Accessories

- 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



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