

Cobolt Qu-T™ Series

Compact tunable laser | Single Frequency | High Power

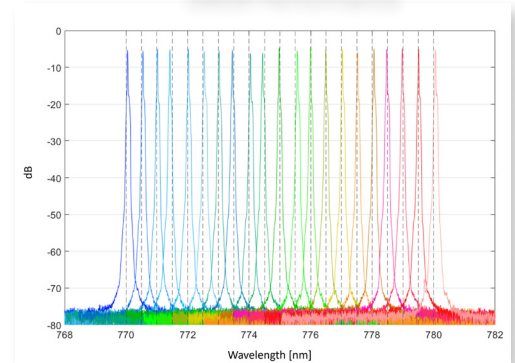
Applications

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



- Large wavelength flexibility and high output power
- Narrow linewidth (< 100 kHz, free running)
- High spectral purity (SMSR > 60 dB)
- Multi-nm gap-free coarse tuning (> 4 nm)
- Fast fine tuning (mode-hop free > 5 GHz, typ.)
- Frequency locking to various external references
- Compact format with proven 24/7 reliability

SMSR Performance



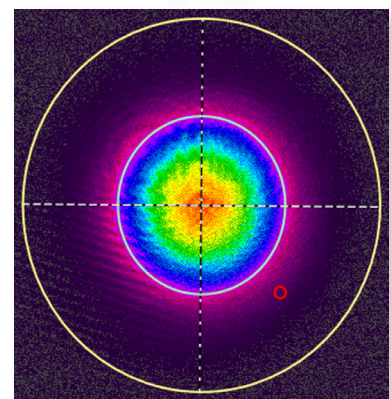
The Cobolt Qu-T™ Series offers tunable and lockable single-frequency CW emission in the 650-950 nm range with an inherently high level of flexibility in the center wavelength and a perfect TEM₀₀ beam. Each emission wavelength can be coarsely tuned gap-free over several nm and actively locked to an external reference using a fast piezo control. Combined with low intensity noise and narrow linewidth emission make 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 us today and find out more about how the Cobolt Qu-T:ies can make your work in Quantum Technologies easier and more affordable!

Typical Beam Profile

$M^2 < 1.1$



HÜBNER Photonics

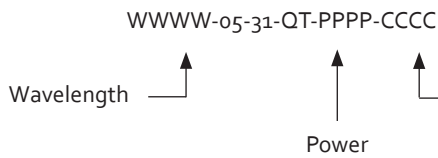


Cobolt Qu-T™ Series

Performance Specifications

| Wavelength in air | 707 nm | 780 nm | 813 nm |
|--|----------------------------|--------|--------|
| Available Power Levels | 500 mW | | |
| Power stability ($\pm 2^\circ\text{C}$ and 8hrs) | $\pm 2\%$ | | |
| Coarse Tuning Range | $> 4\text{ nm}$ | | |
| Fine Tuning (Piezo) | $> 5\text{ GHz, typ.}$ | | |
| Noise, 20 Hz - 20 MHz (pk-pk) | $< 1\%$ | | |
| Noise, 20 Hz - 20 MHz (rms) | $< 0.1\%$ | | |
| Beam diameter at aperture | $1000 \pm 50\ \mu\text{m}$ | | |
| Beam symmetry at aperture | $> 0.95:1$ | | |
| Beam divergence (full angle, mrad) | < 1.2 | | |
| Spatial mode (TEM ₀₀) | $M_2 < 1.1$ | | |
| Spectral purity | $> 60\text{ dB}$ | | |
| Spectral linewidth (FWHM, 1 ms) | $< 100\text{ kHz}$ | | |
| Wavelength stability ($\pm 2^\circ\text{C}$ and 8hrs) | $< 1\text{ pm}$ | | |
| Polarization ratio (linear, vertical) | $> 100:1$ | | |
| Warranty (unlimited hours) | 12 months | | |

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

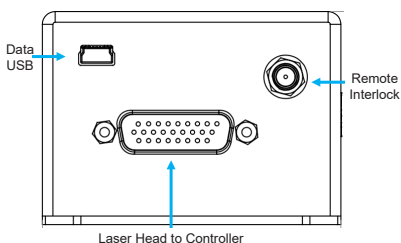
| | |
|-------------------|---------------|
| Communication | USB or RS-232 |
| Standard Baudrate | 115200 |

Operational Environment

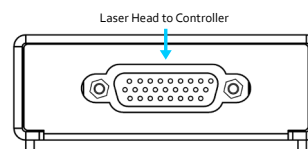
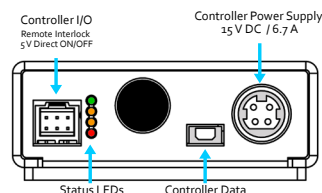
| | Cobolt Qu-T™ |
|---|--|
| Power supply requirements | 15 VDC, 6 A |
| System power consumption | $< 65\text{ W}$, typical 30W |
| Maximum laser head baseplate temperature | $50\text{ }^\circ\text{C}$ |
| Ambient temperature, operation | $10 - 40\text{ }^\circ\text{C}$ |
| Laser head heat sink thermal impedance (at max ambient temperature) | $< 0.2\text{ K/W}$ |
| Beam pointing stability (over operation temperature range) | $< 10\ \mu\text{rad}/^\circ\text{C}$, typical $5\ \mu\text{rad}/^\circ\text{C}$ |
| Ambient temperature, storage | $-10 -> +60\text{ }^\circ\text{C}$ |
| Humidity | 0- 60 % RH non-condensing |
| Ambient air pressure | 950 - 1050 mbar |

Electrical Interfaces

Cobolt Qu-T™ - Laser head



Cobolt Qu-T™ - Controller



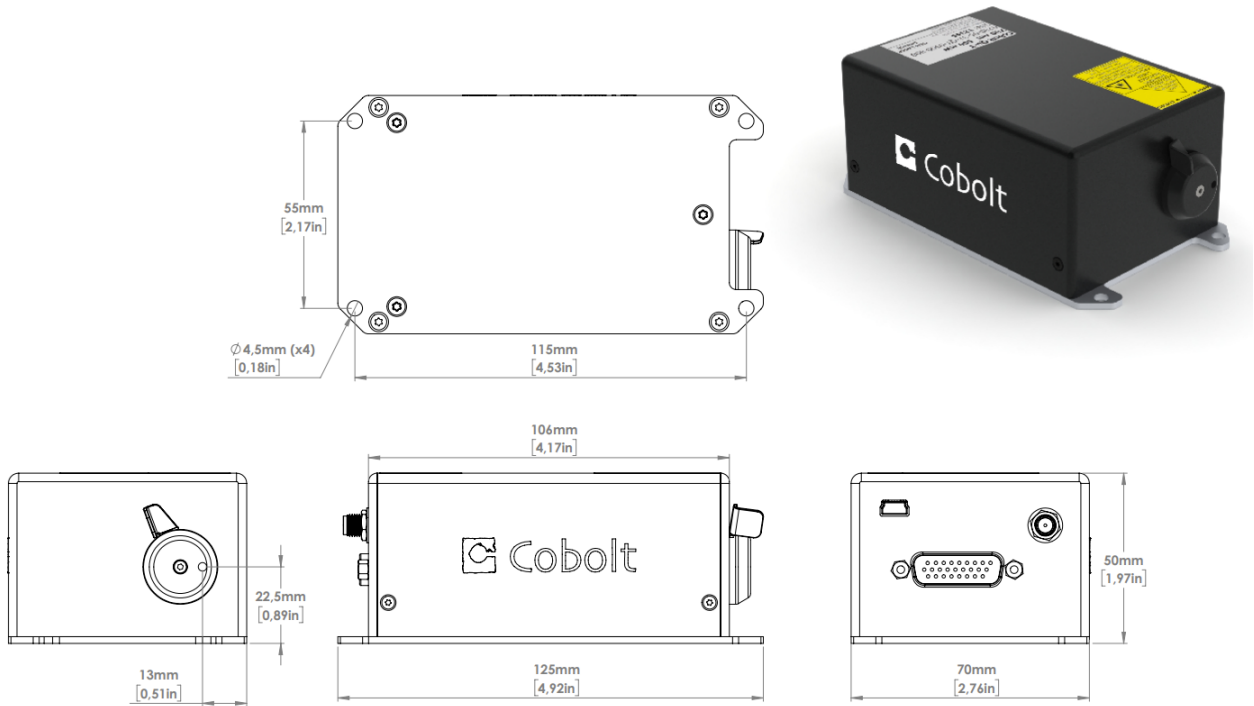
Molex 6 pin - Controller I/O

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

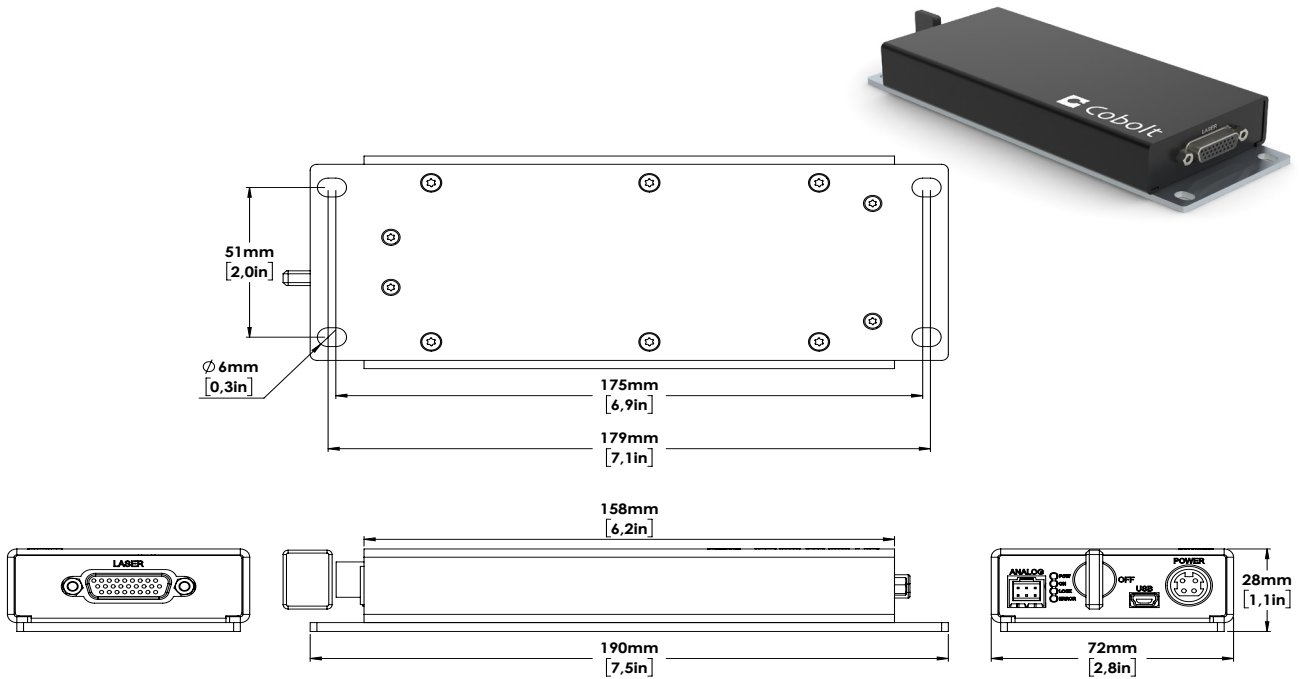
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Mechanical Specifications

Cobolt Qu-T™ Laser head



Cobolt Qu-T™ - Controller



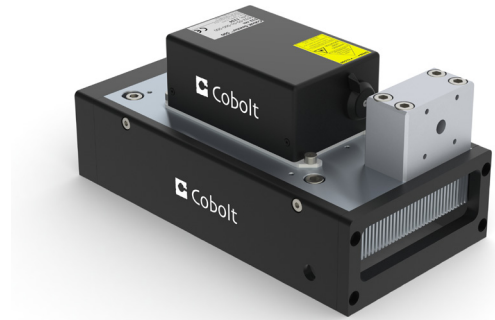
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Options and Accessories

- 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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