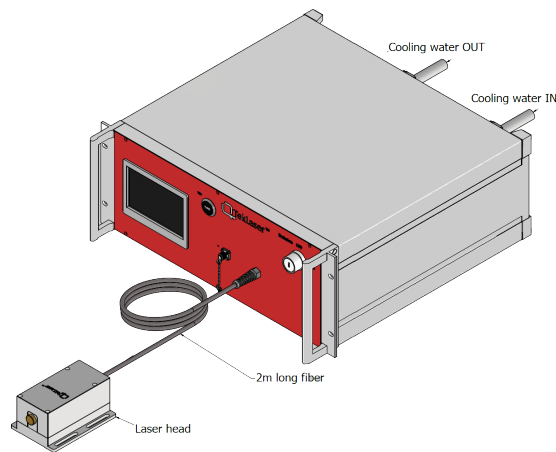


QTekLaser™ 1112 nm Fiber Laser

Single frequency · Frequency doubling and laser cooling · 10 W · <10 kHz linewidth · <-130 dBc/Hz RIN

Product Description

The QTekLaser™ 1112 nm Fiber Laser delivers ultra-stable, narrow-linewidth (<10 kHz) output up to 10 W from a reliable all-fiber, polarization-maintaining design. Integrated with an intuitive IoT-enabled control system and housed in a 4U 19" rack-mount chassis, it is purpose-built for frequency doubling to 556 nm, cooling, trapping, and other cold-atom applications.



Features

- Wavelength: 1112 nm
- High output power (10 W)
- High reliability with all-fiber design
- Narrow linewidth (<10 kHz)
- Excellent power stability (<1%)
- User-friendly interface via IoT technology
- 4U 19" Rack mount
- Certified to IEC 60825-1:2014 safety standards

Applications

- Laser cooling and trapping
- Atomic interferometry
- Quantum sensing
- Quantum computing
- Precision measurement

Single Frequency

QTekLaser™ amplifiers work with various kinds of seed lasers. They can be economical semiconductor diode lasers with MHz laser linewidth, robust fiber lasers with kHz linewidth, or cavity-locked ultra-stable lasers with Hz linewidth. Based on customer requirements, we can recommend the best options and integrate them into the laser system as illustrated in figure 2.

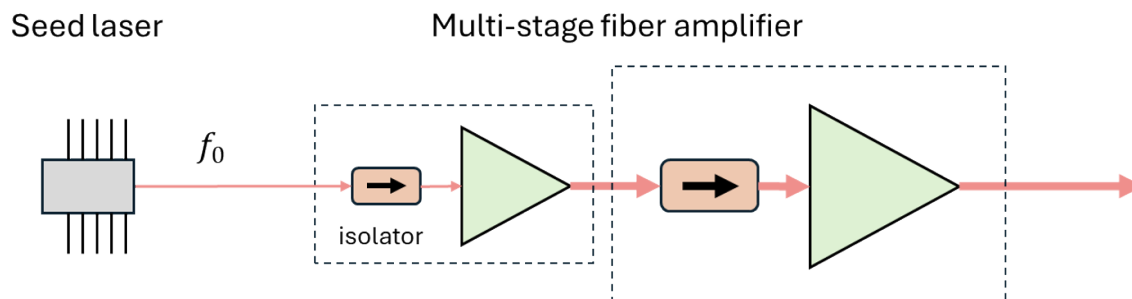


Figure 2 – Typical single-frequency QTekLaser™ fiber laser.

Specifications

	Parameter	Value	Unit
Laser	Wavelength	1111.6	nm
	Laser linewidth	<10	kHz
	Operation mode	CW	/
	PZT SMA port	0 – 10	V
	PZT SMA frequency tuning	0.93	GHz/V
	PZT SMA modulation bandwidth	5	kHz
	Thermal tuning range of seed	0.7	nm
	Max output power	10	W
	Input seed polarization	Slow axis or key direction	/
	Output 1/e ² beam diameter	~2	mm
	Beam quality (M ²)	<1.1	/
	Relative Intensity Noise (RIN) for freq. >10 kHz	<-130	dBc/Hz
	Fiber length to chassis	2	m
	Polarization direction	Vertical	/
	Polarization Extinction Ratio (PER)	>20	dB
	Optical Signal-to-Noise Ratio (OSNR)	55	dB
	Warm-up time	10	min
	Oven operating temperature	15 – 63	°C
Electrical	Max power consumption		W
	AC power supply voltage	110	V
	Fuse	6.3 A, 250 VAC, 5 × 20 mm	/
	Remote interlock voltage	3.3	V
	Cooling	Chilled water	/
	Suggested chiller temperature	20	°C
	Chilled water flow rate	≥0.65	GPM
	Room temperature	17 – 25	°C
	Room humidity	30 – 60	%
General	Chassis	4U 19" Rack mount	/
Weight	Total system weight	25 (55)	kg (lbs)

Ordering Information

Model Number: QT-LASR-Yb-1111.6-10-W-2-2.0-2

Laser Type: Seed laser + Yb-doped fiber amp

See the QTekLaser™ Product Selection Guide at www.qteklaser.com/product-selection-guide

Safety & Retro-Reflection Advisory

QTekLaser™ lasers comply with Federal Regulations (21 CFR Subchapter J, Part 1040) as administered by the Center for Devices and Radiological Health and are certified to IEC 60825-1:2014 standards.



It is the end user's responsibility to ensure that no significant light is retroreflected back into QTekLaser™ systems as this can degrade performance and potentially damage the lasers. To prevent this, the use of an external optical isolator is strongly recommended. Damage due to retroreflected light is not covered under warranty.

Performance Figures

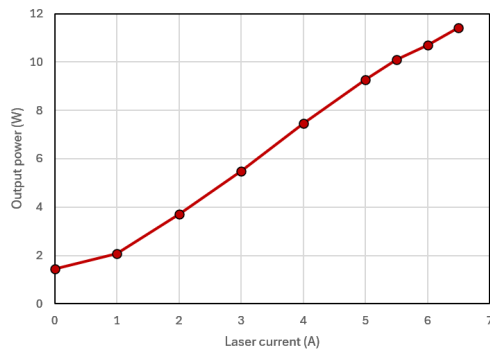


Figure 3 – Laser Power vs. Current: 1112 nm.

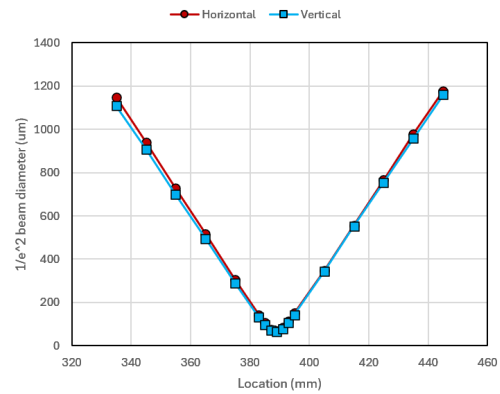


Figure 4 – Beam Quality: 1112 nm M^2 1.08 horizontal, 0.96 vertical.

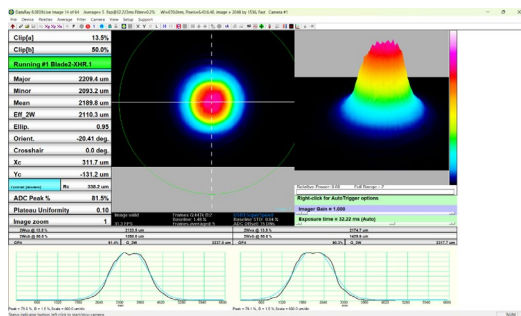


Figure 5 – Beam Profile: 1112 nm $1/e^2$ diameter 2.1 mm horizontal, 2.2 mm vertical.

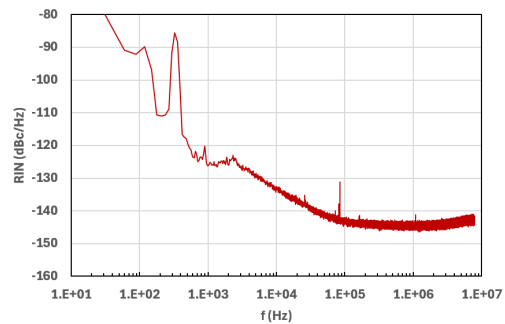


Figure 6 – Relative Intensity Noise (RIN) for freq. >10 kHz: <-130 dBc/Hz.

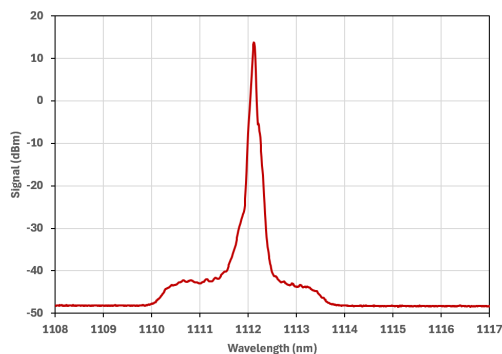


Figure 7 – Optical Spectrum: 1112 nm OSNR 55 dB.

Mechanical Details

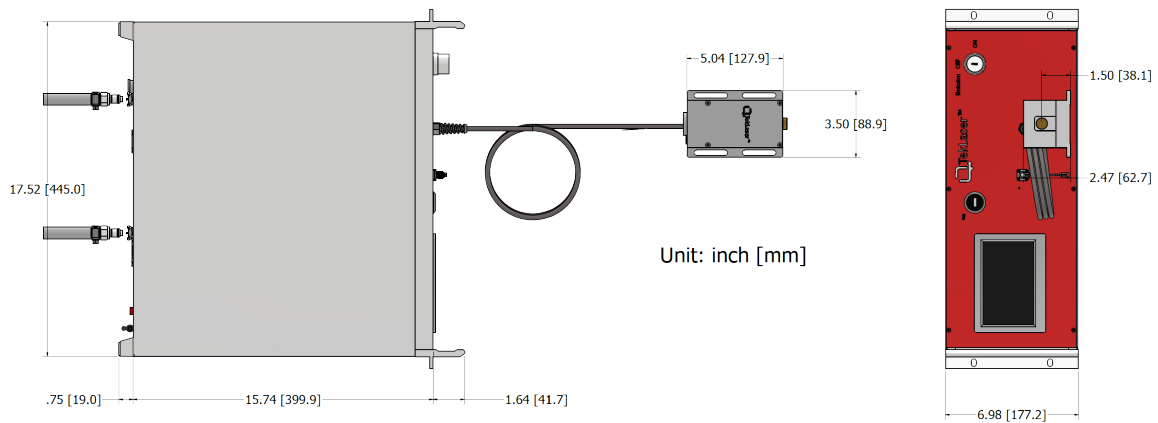


Figure 8 – 1112 nm fiber laser mechanical dimensions.

Product Photographs

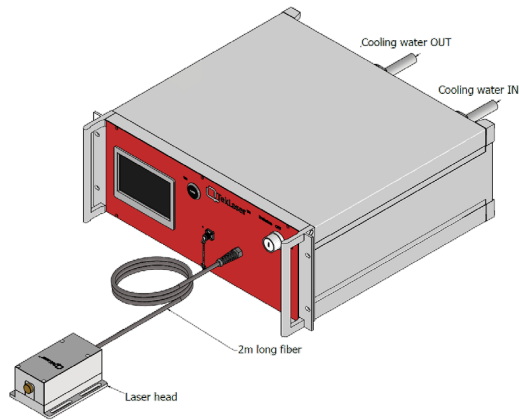


Figure 9 – 1112 nm fiber laser, 4U chassis water cooled.



Figure 10 – 1112 nm fiber laser 4U chassis back panel, water cooled.