QTekLaser™ 1560 nm Fiber Laser

Product Description

The **QTekLaser™ 1560 nm Fiber Laser** is a high-power, single-frequency PM system delivering up to 20 W with ultra-low noise, narrow linewidth (~10 kHz), and excellent beam quality (M^2 < 1.1). Housed in a rugged 19-inch 3U rack-mount chassis, it integrates seed and amplifier in an all-fiber, SBS-free design, offering high polarization extinction (>23 dB), >30 dB output isolation, power stability <1%, and reliable water-cooled operation. Featuring IoT-based remote control, safety interlocks, and IEC 60825-1:2014 compliance, it is ready for both research and industrial use. With its coherence, stability, and compact form, the 1560 nm laser is ideal for quantum computing, sensing, laser cooling and trapping, spectroscopy, atomic interferometry, and precision metrology.

Features

- Wavelength range: 1545-1565 nm
- High output power (20 W)
- High reliability with all-fiber design
- Narrow linewidth (<10 kHz)
- Excellent power stability (<1%)
- User-friendly interface via IoT technology
- 3U 19″ rack-mount chassis + laser head
- Certified to IEC 60825-1:2014 safety standards

Applications

- Quantum computing
- Quantum sensing
- Atomic interferometry
- Laser cooling and trapping
- Frequency doubling or mixing
- Research

Single-Frequency Capability

QTekLaser™ amplifiers can be configured with various seed lasers depending on customer requirements—ranging from economical semiconductor diode lasers (MHz linewidth) to robust fiber lasers (kHz linewidth) or cavity-locked ultra-stable lasers (Hz linewidth). These selections can be integrated into the laser system as illustrated.

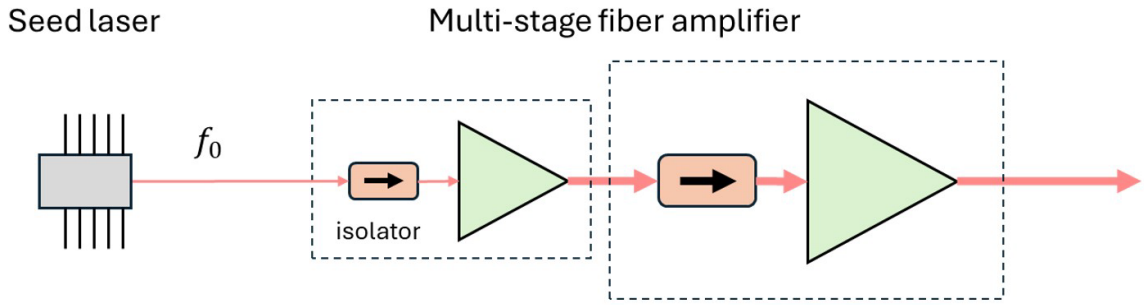

Figure 2 – Diagram showing a typical single-frequency QTekLaser™ fiber laser.

Specifications

Parameter	Unit	Value
Wavelength range	nm	1545-1565
Operation mode	/	CW
Max output power	W/nm	20@1555
Laser linewidth	kHz	~10
Output tpye	/	Fiber to free space collimator
Output beam diameter (1/e2)	mm	2
Beam quality	M^2	<1.1
Beam divergence angle	mRad	1.1
Output isolation	dB	>30
Polarization direction	/	Horizontal
Polarization extinction ratio	dB	>23
Amplifier operation temperature	°C	15 – 32
Cooling	/	Water Cooling
Remote interlock voltage	V	3.3
Max power consumption	W	364
AC power supply voltage	V	110
Fuse	/	6A, 250VAC, 5X20mm
Chassis operation temperature	°C	15 – 40
Room temperature	°C	15 – 23
Room humidity	%	30 – 50
Warm-up time	min	~30
Weight	lbs	39
Dimension	/	3U + laser head
Communication Interface	/	IoT, TCP

Safety & Retro-Reflection Advisory

Complies with 21 CFR Subchapter J, Part 1040 (U.S. FDA) and IEC 60825-1:2014 standards.

End users must ensure that no significant light is retroreflected into the system, as this can degrade performance or damage the laser. The use of an external optical isolator is strongly recommended. Damage due to retroreflected light is not covered under warranty.

Ordering Information

Part Number: QT-SF-LASR-1590-10-2-2-1
Laser Type: seed laser + Er-doped fiber amplifier

Performance Figures

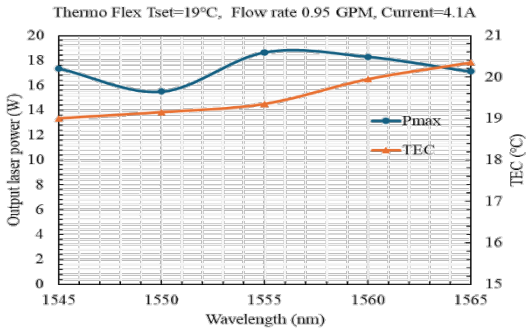

Figure 2. Laser power vs. wavelength with laser current set to 4.1 A. Chiller set point 19 °C.

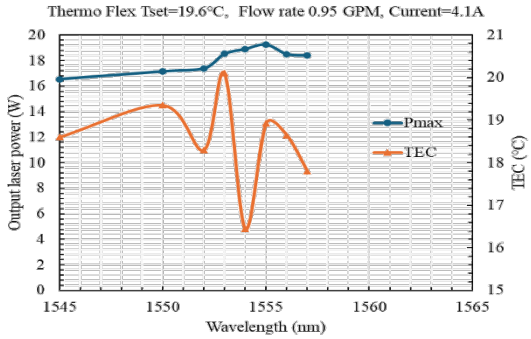

Figure 3. Laser power vs. wavelength with laser current set to 4.1 A. Chiller set point 19.6 °C.

Figure 4. Optical spectrum at different wavelengths.

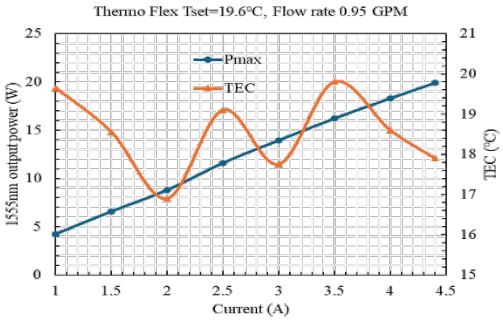

Figure 5. Output power vs current at 1555 nm. Chiller set point at19.6 °C.

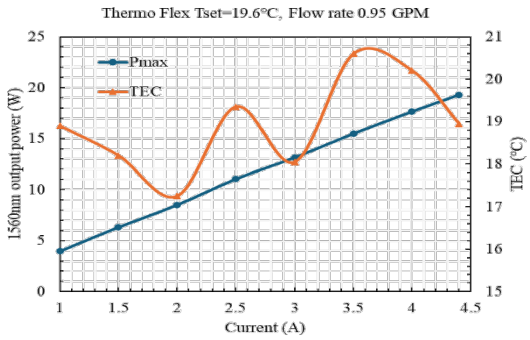

Figure 6. Output power vs. current at 1560 nm with chiller temperature set at19.6 °C.

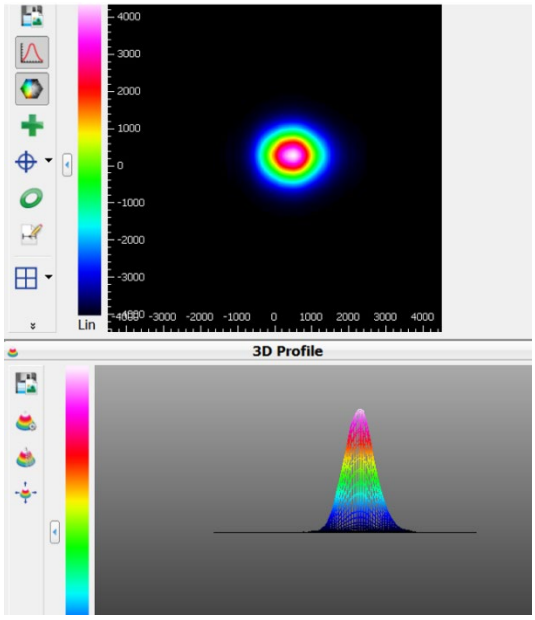

Figure 8. Beam profile.

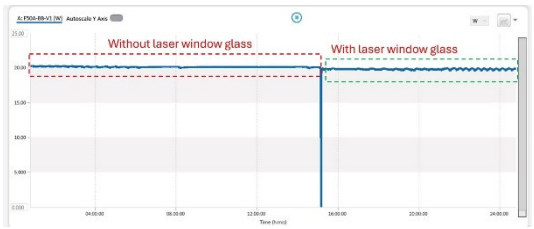

Figure 7. Power stability.

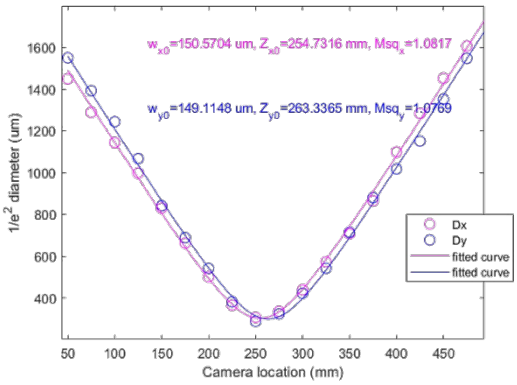

Figure 9. Beam quality: M^2 <1.1.

Mechanical Details

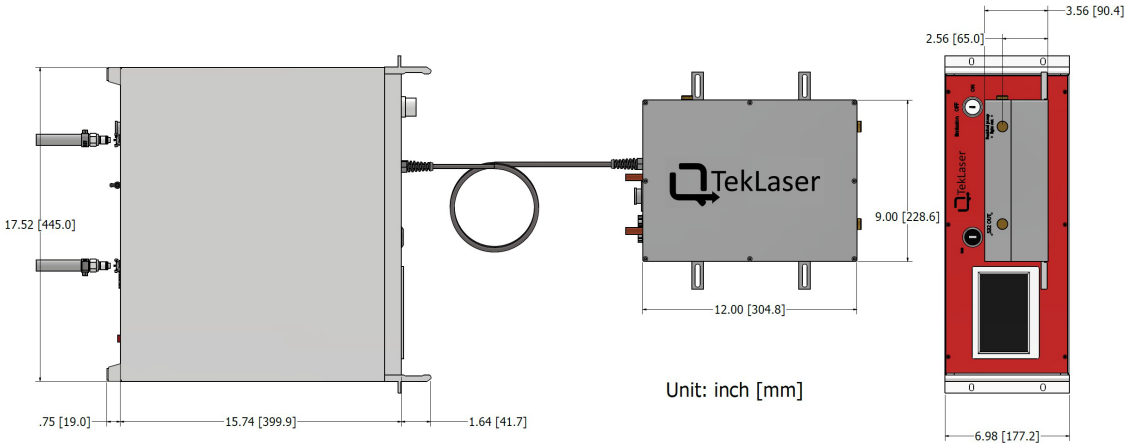

Figure 10 – Mechanical dimensions of the fiber-laser system.