

## Narrow Linewidth Thulium-Doped Fiber DFB Seed Laser

The narrow linewidth thulium-doped fiber DFB laser of the frequency-accurate laser is realized by writing fiber gratings on thulium-doped fiber, which can achieve the entire range of 1730–2100nm. It is widely used in quantum computing, for example, 1762nm can be used in quantum computing systems based on barium ions.

### Features

- Narrow linewidth
- Tunable
- Never mode-hop
- Linear polarization
- Continuous laser

### Applications

- Ba<sup>+</sup> Quantum computing
- Quantum computing
- Quantum precision measurement



Optical parameters		
Part Number	FL-SF-XXXX-S <sup>(1)</sup>	
Wavelength optional range	1700–2100nm	
Frequently used wavelength	1762nm	
Output power	>10mW	>100mW
Tuning range (temperature)	>1nm, Continuous without mode-hop	
Output mode	Single-mode polarization-maintaining fiber	
Linewidth <sup>(2)</sup> (100us integration time)	<5kHz <sup>(3)</sup>	<10kHz
Polarization extinction ratio	>20dB	
Power stability (3 hour RMS)	<0.75%	
Beam quality	$M^2 < 1.1$	
Intensity noise (10hz–10mhz integral)	<0.05%	
Intensity noise (10mhz)	<-140dBc/Hz	
Intensity noise (peak)	<-130dBc/Hz	
Relaxation oscillation peak frequency <sup>(4)</sup>	<1MHz	
PZT tuning range	>3GHz	
PZT tuning bandwidth	>5kHz	
Cooling method	Air cooling	Water cooling

(1)XXXX represents the integer part of the central wavelength, for example, a seed laser of 1762.00 nm is model FL-SF-1762-S.

(2)Fiber Delay Self-Heterodyne Beat Frequency Measurement.

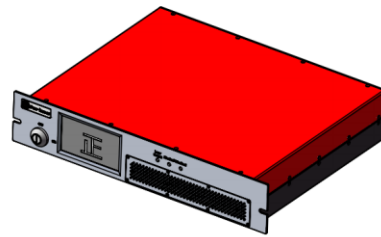
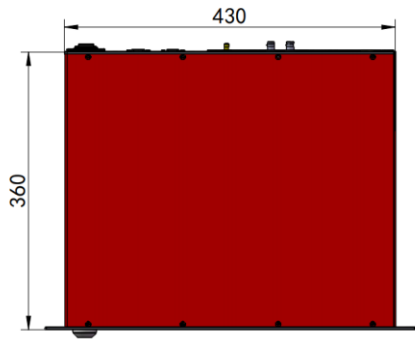
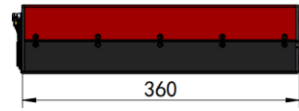
(3) Narrow linewidth option, available for 1700–2100nm.

(4)No relaxation oscillation peak can be selected, and the relaxation oscillation peak frequency is less than -140dBc/Hz

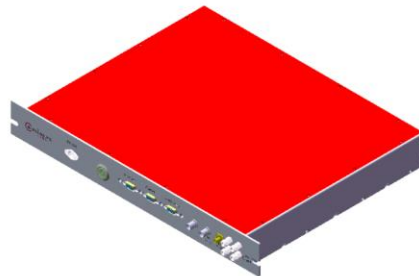
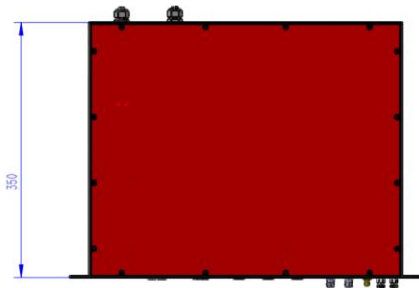
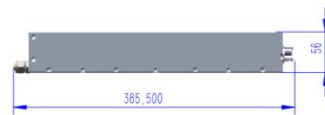
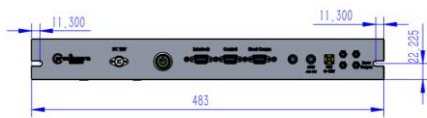
Options	
AOM Options	Adding AOM and VCO driver between seed and amplifier enables 500kHz tuning bandwidth and $>\pm 5$ MHz tuning range

Other parameters		
Cooling method	Air cooling	Water cooling
Weight	<9kg	<15kg
Operating temperature	15–25°C	
Power consumption	<70W	
Power supply	100V–220V, AC, 50Hz	

❖ Product Dimensions

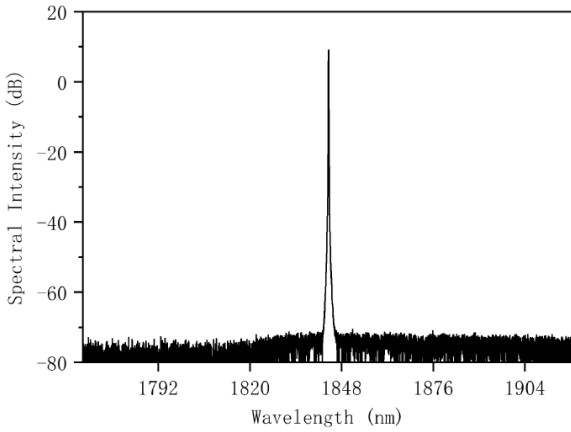


Cooling Controller Size

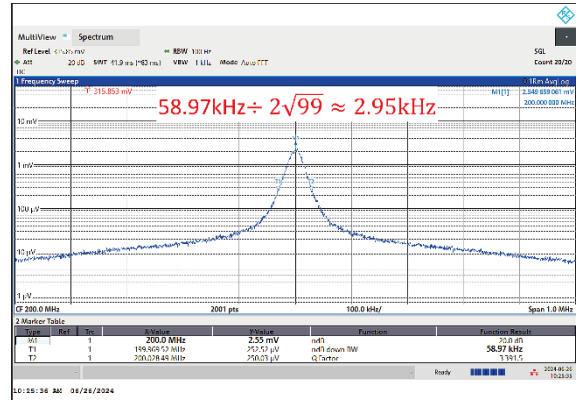


Cooling Controller Size

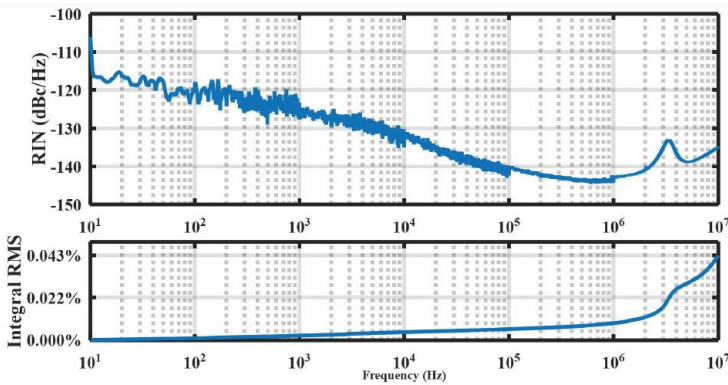
❖ Performance index test (typical value)



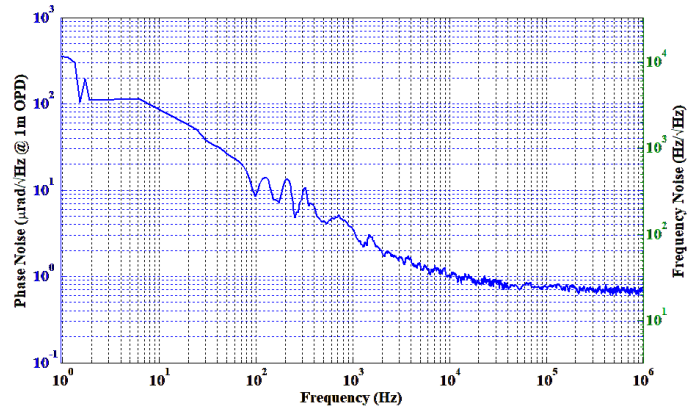
Output spectrum: signal-to-noise ratio 80dB



Linewidth test: :2.95kHz



Relative intensity noise test (RIN) : 0.043%[10Hz-10MHz]




Phase noise, frequency noise test chart



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⚠ Laser Hazard

Visible or invisible laser radiation, avoid eye or skin exposure to direct, reflected or filtered radiation.

**CLASS 4 Laser Products**