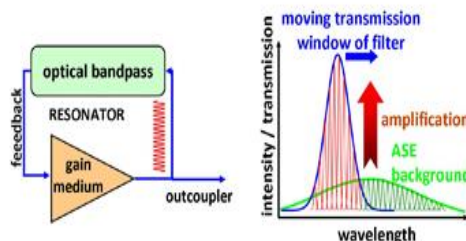# Tunable Fiber Lasers

Tunable Fiber Laser of WLTL-series is built on proprietary design. The laser is consisting mainly of a gain block and frequency selection engine. Each of the elements is configurable to specific requirements, which leaves abundant options to implement variations of tuning range and optical output power. Wavelength tuning is achieved by either adjusting manually a micrometer or a micro motor controlled with a PC through a USB interface. Fast setup, small foot print, fast sweep, wide tuning range and availability over X-, O-, S-, C-, and L-bands enable the lasers being cost-effective sources for R&D and lab purposes of various tests related to wavelength measurements such as DWDM component, fiber Bragg gratings and FGB sensor interrogation.
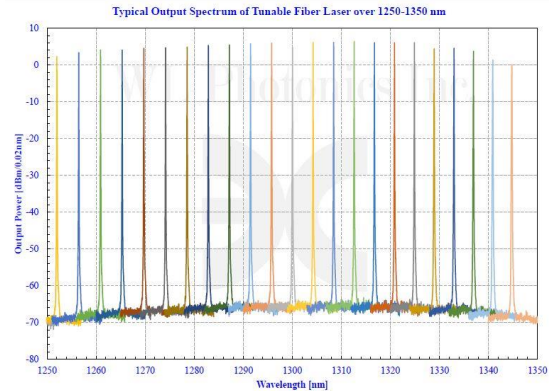
Key Features

- ➢ Continuous wavelength tuning
- ➢ Available over X, O, S, C & L bands
- ➢ Low ASE-noise level
- ➢ Rapid tuning speed
- ➢ Cost effective OEM solution
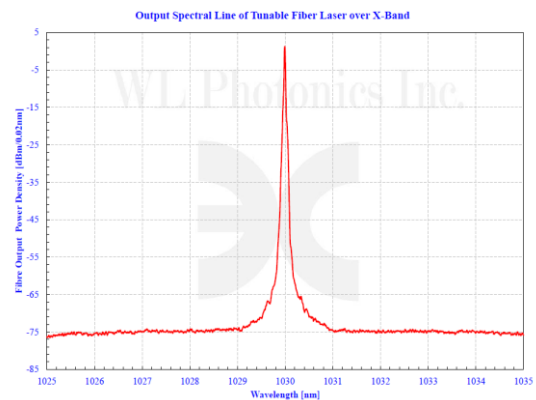
Applications

- ➢ Fiber optic components test
- ➢ FBG fiber sensor interrogation system
- ➢ Fiber sensor/sensor array development
- ➢ PMD and PDL measurement
- ➢ General R&D test and system integration.

Output Lines of O-Band Tunable Laser

Output Line of X-Band Tunable Laser

Operation of Tunable Fiber Laser

Tunable Fiber Laser with USB Interface

Typical Specifications of Tunable Fiber Laser (WLTF-100- and WLTF-200- Electric Versions)

Parameter	X-Band	O-Band	S/C/L-Band
Center Wavelength	1060±10nm	1310±20nm	1550±20nm
Tuning Range	85nm	90nm	100nm
Fiber Output Power	>5mW typical		
Power Stability	<±0.10dB within 1 hr under room temperature		
Wavelength Resolution	0.01nm		
Wavelength Repeatability	±0.02nm (from Home to Target)		
Max. Tuning Speed	40nm/Sec.		
Spectral Linewidth	<0.05nm		
ASE Suppression	<-70dB		
Output Polarization State	Polarized		
Extinction Ratio	>20dB (PM fiber output only)		
Optical Interface	Receptacle or fiber pigtail for specified connector type		
Fiber Type	HI1060	SMF-28 (or 28e)	
Fiber Type	PM980	PM1300	PM1550
Electric Control Interface	USB standard (I^{2}C or SPI option on request)		
Power Supply	5V/3A DC		
Operating Temperature	10 to 50°C		
Storage Temperature	-10 to 65°C		
Weight	<0.75kg		
Dimension	See drawings below		

Dimensions of Electric Tunable Fiber Laser (WLTL-200-Version with USB Interface)

WL Photonics Inc. reserves the right to change dimensions without notice.

WL Photonics Inc.	TITLE: Dimensions of WLTL-200-USB Tunable Fiber Laser

The Projection | Date Jan. 08/2018 | SIZE **A** | DWG. NO. DS-009 | REV 1 | SCALE: 1:1 | WEIGHT: | SHEET 1 OF 1

Electric interface of WLTL-200-version is USB for Laser Wavelength Tuning (LWT) through a PC. It is equipped with USB-RS232 virtual serial port interface (USB B-type connector). The power supply is provided from either USB directly or an extra 5V DC (on request). It is easy to use any Serial COM Port Software in PC to control FWT, such as HyperTerminal and Tera Term. The command set is very simple and easy to drive the filter to find the home position, go to desirable output line or any indicated positions within actuation range.

Example: LWT control interface of

C201307011-3/Jan. 08, 2019   Contact: sales@wlphotonics.com

300 Terry Fox Drive, Suite 600, Kanata, Ontario, K2K 0E3, Canada.   Phone: +1 613 801-1825

Ordering Information

Part Number: **WLTL-A -B-C-D/E-F-G**

- A. Version type: A=100 for manual version and A=200 for electric version
- B. Center wavelength in nanometer: 1060 is for 1060nm (X-band) and 1490 is for 1550nm (S-band).
- C. Fiber type of output: SM is for single mode fiber and PM is for polarization maintaining fiber.
- D. Pigtail cable diameter in millimeter: 0.25 is for 250µm OD buffer fiber, 0.9 is for 900µm OD loose tube and 3.0 is for 3.0mm OD cable (only existing for pigtail output).
- E. Pigtail length in meter: 0.5 is for 0.5m long and 1.0 is for 1M long (only existing for pigtail output).
- F. Connector type of either pigtail termination or receptacle adapter, such as FC/APC, FC/UPC SC/APC or LU/UPC and 00 is for no connector.
- G. Electric interface (electric version only): such as USB, I^{2}C or SPI.

Example 1: **WLTL-100-1060-SM-3.0/1.0-FC/APC**
Description: Manually tunable fiber laser of 5mW (CW) typical output power over 1000-1100nm tuning range with 1M long, 3.0mm OD loose cabled HI0106 fiber pigtail terminated with and FC/APC connector on pigtail end.

Example 2: **WLTL-200-1310-PM-3.0/1.0-FC/APC-USB**
Description: Electrically tunable fiber laser of 5mW (CW) typical output power over 1260-1350nm tuning range with 1M long, 3.0mm OD loose cabled Panda PM1300 fiber pigtail terminated with and FC/APC connector on pigtail end. USB control interface.

Example 3: **WLTL-200-1490-SM-FC/APC-I^{2}C**
Description: Electrically tunable fiber laser of 5mW (CW) typical output power over 1440-1540nm tuning range with receptacle output interface for FC/APC connector. I^{2}C digital output interface.