



## **WLTF- WE Electrical Wide Bandwidth Tunable Filter**

The WLTF-WE is a flat-top wideband optical tunable filter that allows electrical-tuning of center wavelength over X, O, S, C, & L bands. Its bandwidth ranges from 1.5nm to several tens nm. The filter is built based on WL Photonics' proprietary platform of "Crystal-Bench" with free-space diffraction grating. Wavelength-tuning is actuated by a built-in micro motor connected to a PC through a USB interface. The actuation is monitored by a built-in encoder and controlled dynamically in a closed-loop. The control software of the motor is provided.

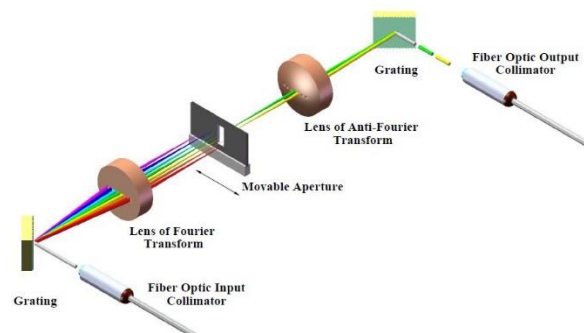
Unique optics design enables the filter to offer a great variation of bandwidth options, unprecedented & unsuppressed low insertion loss and polarization dependent loss (PDL) over main wavelength bands from 1000nm to 1700nm. Precise tuning mechanism enables filter to provide high wavelength resolution and excellent wavelength repeatability. Company proprietary compact design and manufacturing process allow the filter to maintain excellent stability. The fast setup enables the filter of being an affordable OEM wavelength-tuning solution for system integrations.

### **Key Features**

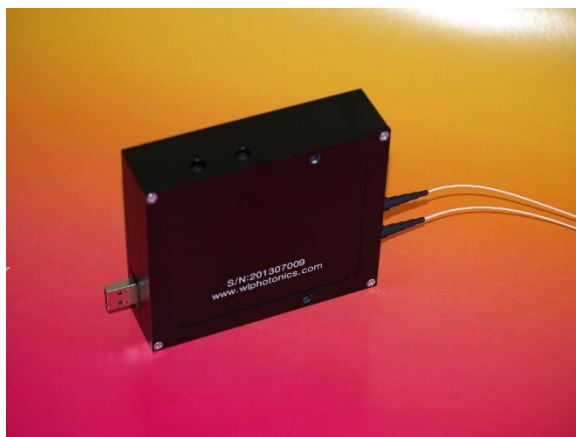
- Wavelength range available over X-, O-, S-, C- and L- bands
- Up to 120nm wavelength tuning range
- 1.5nm to several tens nm bandwidth
- High out-band suppression
- High optical power handling

### **Applications**

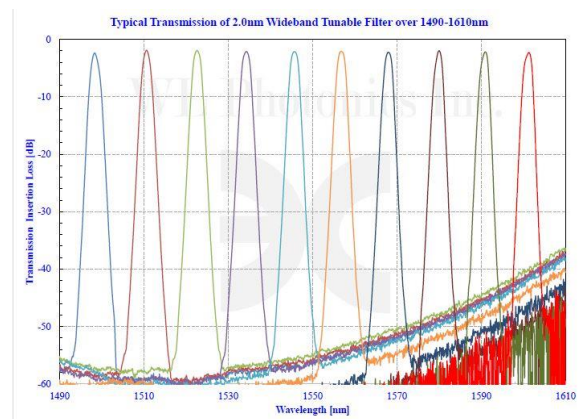
- ASE noise suppression
- Wideband WDM channel filtering
- Pulse Shaping
- Signal filtering



Operating Principle and Tuning Mechanism



Standard Version (pigtail and receptacle)



Typical Transmission of Wideband Filter



## Main Specifications of Wide Bandwidth Tunable Filter:

Center Wavelength	1060nm±15nm	1310nm±15nm	1550nm±20nm	1600nm±20nm
Tuning Range	80nm- BW	100nm-BW	1200nm-BW	120nm-BW
Insertion Loss	2.0dB typ.   3.0dB max.	2.0dB typ.   3.0dB max.	2.0dB typ.   3.0dB max.	2.0dB typ.   3.0dB max.
Bandwidth (BW) <sup>1</sup>	0.7nm to 30nm	1.0nm to 35nm	1.5nm to 40nm	1.8nm to 40nm
Wavelength Resolution	0.007nm	0.008nm	0.010nm	0.010nm
Wavelength Repeatability	±0.01nm	±0.015nm	±0.02nm	±0.02nm
Max. Tuning Speed	80nm/Sec.	90nm/Sec.	100nm/Sec.	100nm/Sec.
Polarization-Dependent Loss	0.08dB typ./0.15dB max. over 60nm range and 0.15dB typ./0.30dB max. over 120nm range			
Transmission Shape	Flat-top			
Filter Roll-off Slope	20dB/nm			
Bandwidth Variation	± 4% over 100nm			
Input Optical Power <sup>2</sup>	500mW (CW)			
Return Loss	>45dB (Optional: built-in isolator on input inside)			
Out Band Suppression	>40dB (peak to the average of background)			
Polarization Mode Dispersion	<0.2ps			
Group Delay Variation Within - 3dB Bandwidth	<1ps/nm			
Pigtail Fiber Type <sup>3</sup>	HI1060	SMF-28 (or 28e)		
Electric Interface	USB 2.0 (standard version), or I <sup>2</sup> C, SPI (optional)			
Electric Power Consumption	<0.5W			
Operating Temperature	10 to 50°C			
Storage Temperature	-10 to 75°C			
Dimension	Standard version:30mm (H)x95mm (W)x110mm (L)			
Weight	<0.5kg			
Other	RoHS compliant			
Notes	<sup>1</sup> Any bandwidth can be specified within the range. <sup>2</sup> High power version up to 3.0W (CW) is available on request. <sup>3</sup> Panda PM fiber available on request, which are aligned in the PM slow axes (fast-axis blocking).			

## Ordering Information

Part Number: **WLTF-WE-13-A-B/C-D-E/F-G**

- A. Center wavelength in nanometer: **1550** is for 1550nm center wavelength and **1310** is for 1310nm center wavelength.
- B. Tuning wavelength range in nanometer: **80** is for 80nm tuning range and **100** is for 100nm tuning wavelength range.
- C. FWHM bandwidth in nanometer: **2.5** is for 2.5nm FWHM bandwidth.
- D. Fiber type: **SM** is for single mode fiber and **PM** is for Panda polarization maintaining fiber.
- E. 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 version).
- F. Pigtail length in meter: **0.5** is for 0.5m long and **1.0** is for 1M long (only existing for pigtail version).
- G. 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.

### Example 1: **WLTF-WE-13-1550-120/10-SM-3.0/1.0-FC/APC**

Description: Fiber pigtail polarization-insensitive electrically tunable optical filter of 10nm FWHM flat-top bandwidth over 120nm tuning range @ 1550nm center wavelength with 1M long,



3.0mm OD loose cabled SMF-28 single mode fiber pigtailed and FC/APC connectors on both ports with USB interface.

### Example 2: **WLTF-WE-13-1310-60/5.0-SM-FC/APC**

Description: Fiber optic polarization-insensitive electrically tunable optical filter of 5.0nm FWHM flat-top bandwidth over 60nm tuning range @ 1310nm center wavelength with receptacle input and output for FC/APC connectors. SMF-28 operating fiber and USB interface.

### Dimensions of WLTF-WE-13 (Standard Version)

