



WLTF-NE Electrical Narrowband Tunable Filter

The WLTF-NE is a Gaussian-shape narrow bandwidth optical tunable filter that allows electrical-tuning of center wavelength over X, O, S, C, & L bands. 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.

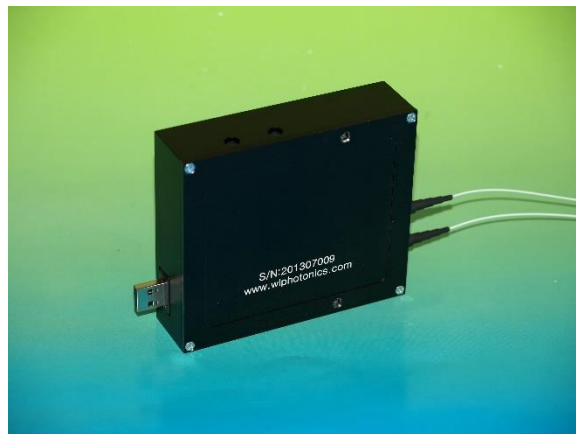
Unique optics design enables the filter to offer a great variation of bandwidth options, unprecedented & unsuppressed low insertion loss and polarization dependent loss (PDL) over main wavelength bands from 1000nm to 1700nm. Precise tuning mechanism enables filter to provide high wavelength resolution 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

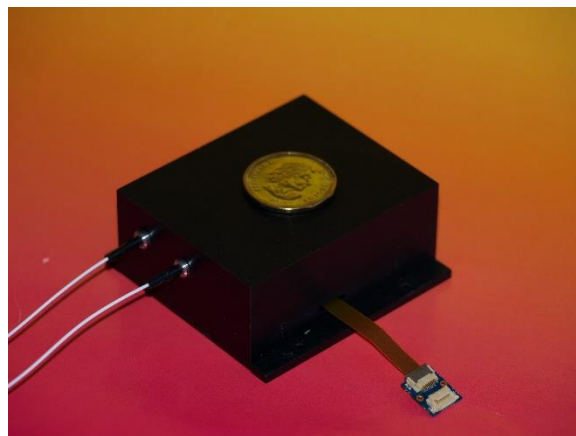
- Wavelength range available over X-, O-, S-, C- and L- bands
- Up to 120nm wavelength tuning range
- Down to 0.1nm FWHM bandwidth
- Unprecedented low IL and PDL
- High out-band suppression
- High optical power handling
- Custom OEM versions available

Applications

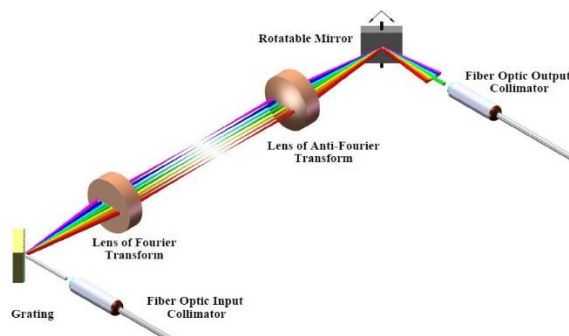
- ASE noise suppression
- Optical channel monitor
- Narrowband DWDM channel filtering
- Pulse Shaping
- Tunable fiber lasers
- Portable optical spectrum analyzer



Standard Version (Pigtail and Receptacle)



OEM Version (Pigtail only)



Operating Principle and Tuning Mechanism



Main Specifications of Narrow Bandwidth Tunable Filter:

Center Wavelength	1060nm±15nm		1310nm±15nm		1550nm±20nm		1600nm±20nm	
Tuning Range ¹	40nm	75nm	40nm	80nm	50nm	100nm	60nm	110nm
Insertion Loss (without connector)	1.75dB typ.	1.95dB typ.	1.5dB typ.	1.8dB typ.	1.5dB typ.	1.8dB typ.	1.5dB typ.	1.8dB typ.
	2.5dB max.	3.0dB max.	2.5dB max.	3.0dB max.	2.5dB max.	3.0dB max.	2.5dB max.	3.0dB max.
FWHM Bandwidth ¹	0.80nm, 0.70nm, 0.60nm, 0.40nm, 0.35nm, 0.26nm, 0.20nm, 0.15nm, 0.10nm.		1.40nm, 1.15nm, 1.00nm, 0.90nm, 0.80nm, 0.70nm, 0.60nm, 0.50nm, 0.45nm, 0.40nm, 0.35nm, 0.30nm, 0.25nm, 0.20nm, 0.18nm, 0.15nm, 0.13nm, 0.10nm.		1.40nm, 1.20nm, 1.00nm, 0.90nm, 0.80nm, 0.70nm, 0.60nm, 0.50nm, 0.45nm, 0.40nm, 0.35nm, 0.30nm, 0.25nm, 0.20nm, 0.18nm, 0.15nm, 0.13nm, 0.11nm.		1.50nm, 1.40nm, 1.25nm, 0.85nm, 0.75nm, 0.65nm, 0.55nm, 0.50nm, 0.40nm, 0.35nm, 0.30nm, 0.25nm, 0.20nm, 0.18nm, 0.15nm.	
Polarization-Dependent Loss	0.08dB typ./0.15dB max. over 40nm range and 0.10dB typ./0.25dB max. over 100nm range (polarization-insensitive)							
Wavelength Resolution	0.007nm		0.008nm		0.010nm		0.010nm	
Wavelength Repeatability	±0.01nm		±0.015m		±0.020nm		±0.020nm	
Max. Tuning Speed	80nm/Sec.		90nm/Sec.		100nm/Sec.		100nm/Sec.	
Optical Shape of Transmission	Gaussian-like							
3/20/30dB Bandwidth Ratio	~1/2.5/3.5							
Bandwidth Variation	±2% over 40nm and ±4% over 100nm							
Input Optical Power ²	500mW (CW)							
Return Loss	>45dB							
Out Band Suppression	>45dB (peak to the average of background)							
Polarization Mode Dispersion	<0.2ps							
Group Delay Variation Within - 3dB Bandwidth	<1ps/nm							
Pigtail Fiber Type ³	HI1060				SMF-28			
Electric Interface	USB 2.0 (standard version), or I ² C, SPI (OEM version optional)							
Electric Power Consumption	<0.5W							
Operating Temperature	0 to 50°C							
Storage Temperature	-10 to 75°C							
Dimension	Standard: 30mm (H)x95mm (W)x110mm (L)/OEM: 26.6mm (H)x70mm (W)x70mm (L)							
Weight	0.5kg							
Other	RoHs compliant							
Notes	¹ Customized tuning range and bandwidth are available. ² High power version up to 3.0W (CW) is available on request. ³ PM fiber, in which the slow axes of PM fibers are aligned (fast-axis blocking), or other type fibers are available on request.							

Ordering Information

Part Number: **WLTF-NE-ABC/DEF/GH**

- A. 13 is for standard version and 6.0 is for OEM version (pigtail only).
- B. Center wavelength in nanometer: 1550 is for 1550nm center wavelength and 1310 is for 1310nm center wavelength.
- C. Tuning wavelength range in nanometer: 60 is for 60nm tuning range and 100 is for 100nm tuning wavelength range.
- D. FWHM bandwidth in nanometer: 0.5 is for 0.5nm FWHM bandwidth.
- E. Fiber type: SM is for single mode fiber and PM is for Panda polarization maintaining fiber.
- F. 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).
- G. Pigtail length in meter: 0.5 is for 0.5m long and 1.0 is for 1M long (only existing for pigtail version).
- H. 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-NE-13-1550-120/0.25-SM-3.0/1.0-FC/APC**

Description: Fiber pigtail polarization-insensitive electrically tunable optical filter of 0.25nm FWHM bandwidth over 120nm tuning range @ 1550nm center wavelength with 1M long, 3.0mm OD loose cabled SMF-28 single mode fiber pigtails and FC/APC connectors on both ports with USB interface.

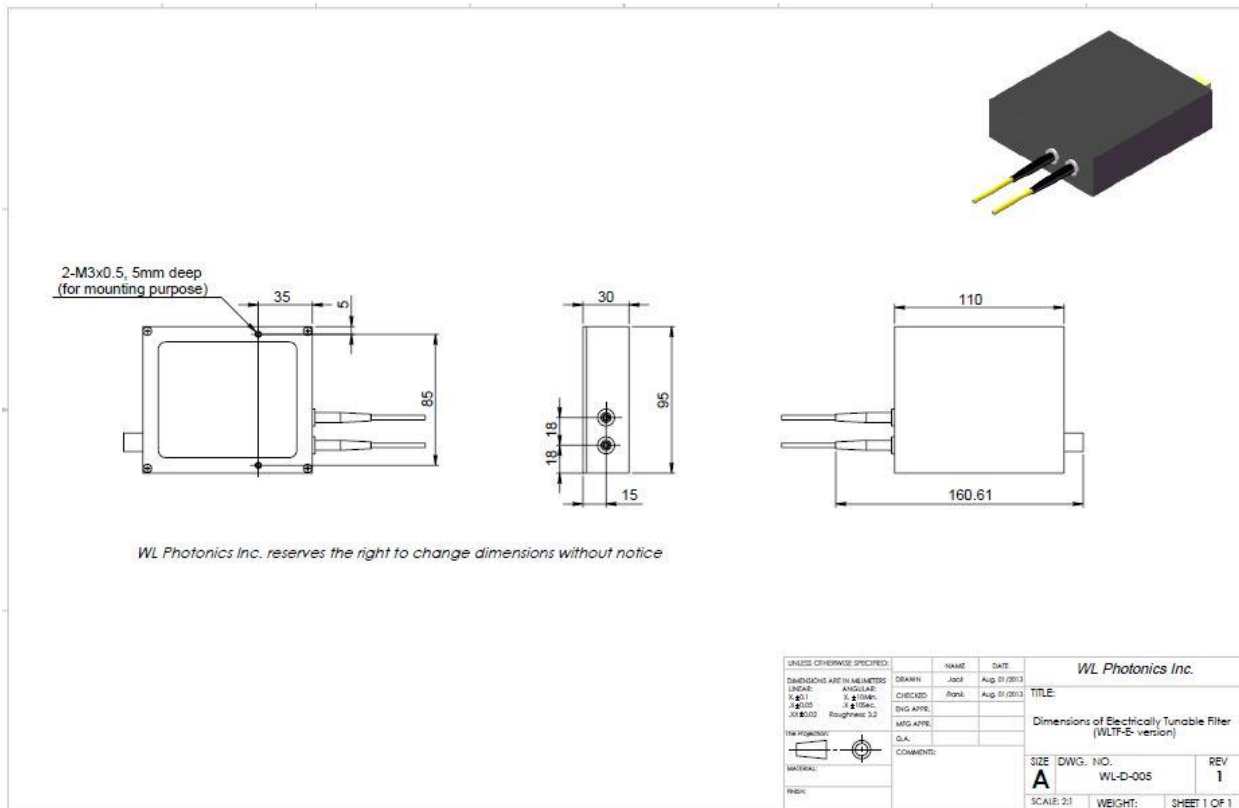
Example 2: **WLTF-NE-13-1310-60/0.5-SM-FC/APC**

Description: Fiber optic polarization-insensitive electrically tunable optical filter of 0.50nm FWHM bandwidth over 60nm tuning range @ 1310nm center wavelength with receptacle input and output for FC/APC connectors. SMF-28 operating fiber with USB interface.

Example 3: **WLTF-NE-6.0-1060-80/0.1-SM-0.9/1.0-00**

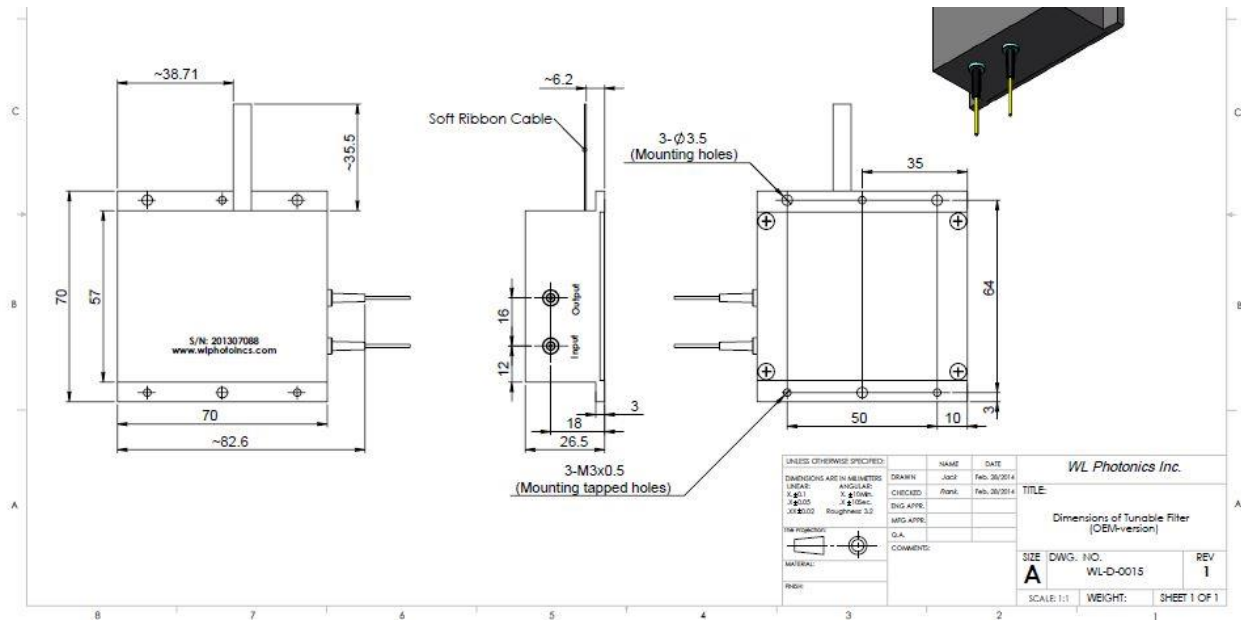
Description: Fiber pigtail polarization-insensitive electrically tunable optical filter (OEM version) of 0.1nm FWHM bandwidth over 80nm tuning range @ 1060nm center wavelength with 1M long, 900µm OD loose cabled HI1060 single mode fiber pigtails and no connectors on both ports with I²C (or SPI) digital control interface.

Dimensions of WLTF-NE-13 (Standard Version)





Dimensions of WLTF-NE-6.0 (OEM Version)



Typical Spectrum

