

Tunable Optical Filter-Electrical Version

WL Photonics' WLTF-E-6 series tunable optical filter is built on the athermal platform of "Crystal-Bench" with high quality diffraction grating. The filter directs a selected narrow transmission band among the input lights to the output port. The center wavelength of the selected passband can be tuned continuously over the entire range. Wavelength tuning is actuated by a built-in micro motor connected to a PC through a USB interface. Tuning actuation is monitored by a built-in encoder and controlled dynamically in a closed-loop. The control software of the motor is provided. WL Photonics Inc. proprietary compact design and manufacturing process allow the filter to maintain excellent stability. The fast setup enables the filter of being a cost-effective OEM wavelength-tuning solution for system integrations such as low cost optical spectrum analyzer (OSA) and FBG fiber sensing Interrogator. Two versions are available with this filter: one is receptacle style for various male connectors and the other is fiber pigtail one with specified connectors on terminations.

Key Features:

- Center wavelength available over 1050-1650nm and wide tuning range
- Accurate and uniform transmission bandwidth
- Extremely low insertion loss (IL) and polarization-dependent loss (PDL)
- High out-band suppression
- Fast tuning speed
- Fast start up

Applications:

- Tunable fiber lasers
- Optical signal noise suppression
- Optical fiber sensor interrogators
- Low cost spectrometers
- Narrowband DWDM channel filtering
- Optical channel monitors

Main Specifications

Center Wavelength	1060nm		1310nm		1550nm		1600	
Tuning Range ¹	40nm	75nm	40nm	80nm	50nm	100nm	60nm	110nm
Insertion Loss (without connector)	1.75dB typ. 2.5dB max.	2.0dB typ. 3.0dB max.	1.5dB typ. 2.5dB max.	1.8dB typ. 3.0dB max.	1.5dB typ. 2.5dB max.	1.8dB typ. 3.0dB max.	1.5dB typ. 2.5dB max.	1.8dB typ. 3.0dB max.
FWHM Bandwidth ¹	0.80nm, 0.70nm, 0.60nm, 0.40nm, 0.35nm, 0.30nm, 0.20nm, 0.15nm, 0.10nm.		1.40nm, 1.20nm, 1.00nm, 0.90nm, 0.75nm, 0.60nm, 0.50nm, 0.40nm, 0.33nm, 0.25nm, 0.18nm, 0.16nm.		1.60nm, 1.40nm, 1.20nm, 1.00nm, 0.80nm, 0.70nm, 0.60nm, 0.55nm, 0.40nm, 0.30nm, 0.25nm, 0.20nm.		1.70nm, 1.35nm, 1.20nm, 0.85nm, 0.75nm, 0.65nm, 0.50nm, 0.42nm, 0.35nm, 0.30nm, 0.25nm, 0.22nm.	
Polarization-Dependent Loss (PDL)	0.08dB typ./0.15dB max. over 40nm range and 0.10dB typ./0.25dB max. over 100nm range (within -3dB, polarization-insensitive version only)							
Wavelength Resolution	0.007nm		0.008nm		0.010nm		0.010nm	
Wavelength Repeatability	±0.020nm		±0.020nm		±0.020nm		±0.020nm	
Max. Tuning Speed	80nm/Sec.		90nm/Sec.		100nm/Sec.		100nm/Sec.	
Optical Shape of Transmission	Gaussian alike							
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), or I ² C, SPI (optional)							
Electric Power Consumption	<0.5W							
Operating Temperature	0 to 50°C							
Storage Temperature	-10 to 75°C							
Dimension	30mm (H)x95mm (W)x110mm (L)							
Weight	0.5kg							
Other	RoHs compliant							
Note	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 of Part No.: WLTF-EP(or ER)-6-Center Wavelength-Tuning Range/Bandwidth-Fiber Type/Cable Diameter-Length-Connector Type

EP : electrical version with fiber pigtail input & output.

ER : electrical version with receptacle input & output.

Center Wavelength : in nanometer such as 1060 for 1060nm and 1550 for 1550nm.

Tuning Range : in nanometer such as 120 for 120nm entire tuning range listed as above options or customized range.

Bandwidth : in nanometer such as 1.0 for 1.0nm FWHM bandwidth listed as above options or customized bandwidth.

Fiber Type : SM for standard single mode fiber; PM for Panda polarization maintaining fiber on request.

Cable Diameter (only for EP version) : in millimeter such as 0.9 and 3.0 for 900µm and 3mm OD cable respectively.

Length (only for EP version) : in meter such as 1.5 for 1.5m long pigtail (1.0m is standard length here)

Connector Type : such as FC/APC, FC/UPC, SC/APC, LU/UPC or O0 for bare fiber ends.

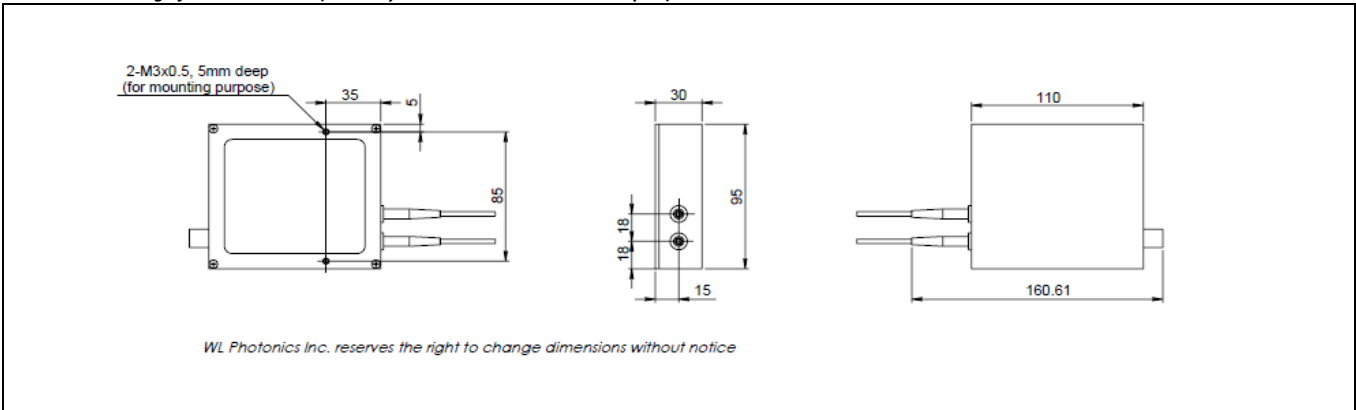
Example 1: WLTF-EP-6-1550-100/0.25-SM/3.0-1.0-FC/APC

Description: Fiber pigtail polarization-insensitive electrically tunable optical filter of 0.25nm FWHM bandwidth over 100nm 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.

Example 2: **WLTF-ER-6-1310-40/0.5-SM-FC/APC**

Description: Fiber optic polarization-insensitive electrically tunable optical filter of 0.50nm FWHM bandwidth over 40nm tuning range @ 1310nm center wavelength with receptacle input and output for FC/APC connectors. Operating fiber is SMF-28.

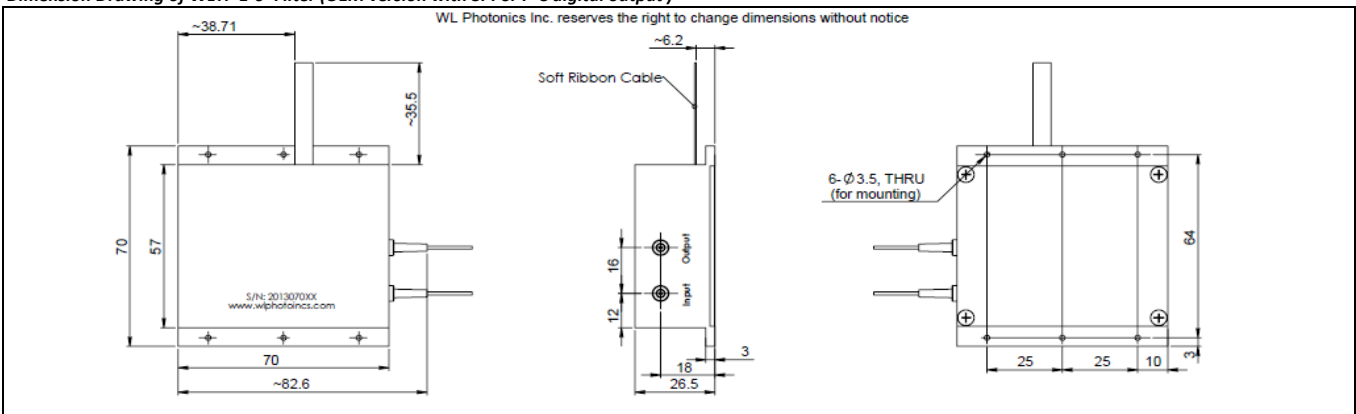
Dimension Drawing of WLTF-E-6- Filter (turn-key version with USB control adapter)



WLTF-E-6- Filter (turn-key version with USB control adapter)



Dimension Drawing of WLTF-E-6- Filter (OEM version with SPI or I²C digital output)



WLTF-E-6- Filter (OEM version with SPI or I²C digital output)

