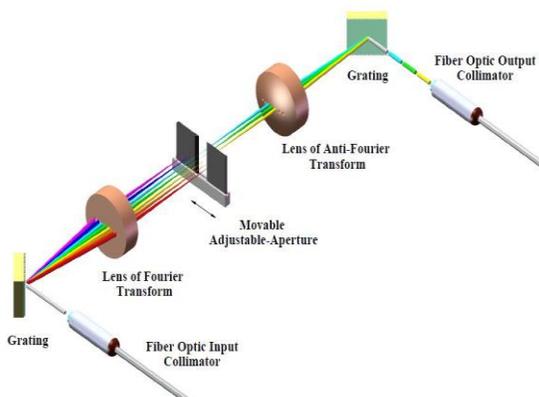




Bandwidth-Adjustable Tunable Filter (Flat-Top)

Bandwidth-Adjustable Filters of WLTF-BA-series are built based on free-space optical Fourier transformation combining with diffraction grating. It is a 2-port fiber-optic device. When a wide-band spectrum is injected to the input port, the tunable filter will select a target band for output and reject the rest band of spectrum. Both bandwidth and center wavelength of the selected target band are tunable independently. Wavelength-tuning is actuated by either a precise micrometer driver or a built-in micro step-motor connected to a PC through a USB interface in which actuation is monitored by a built-in encoder and controlled dynamically in a closed-loop.

Unique optics design provides offers flat-top transmission and unprecedented low insertion loss & polarization dependent loss (PDL). Precise tuning mechanism enables filters to provide high wavelength resolution and excellent wavelength repeatability. Both manual and electric version filters are available over X-, O-, S-, C-, & L- bands.



Operating Principle and Tuning Mechanism

Key Features

- Both center wavelength and bandwidth tunable independently
- Unprecedented low insertion loss and polarization-dependent loss (PDL)
- Sharp filter edge rolling-off slope
- Flat-top profile of transmission band
- Up to 120nm wavelength tuning range
- High out-band suppression
- High optical power handling up 5.0 W (CW)

Applications

- ASE noise suppression
- Wideband WDM channel filtering
- Wideband continuous light source
- Pulse Shaping
- Signal filtering



Manual Version of WLTF-BA-S- or P-



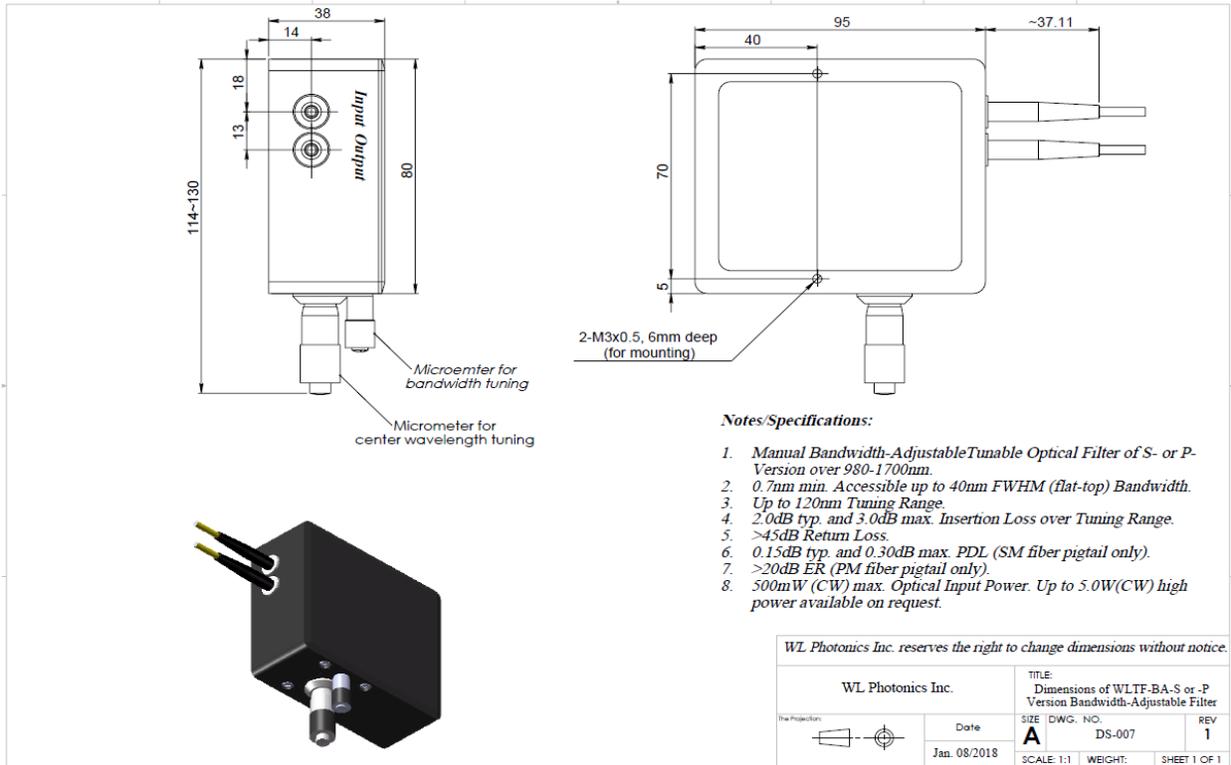
Specifications of Manual Tunable Filter (WLTF-BA-S, -P, or -U)

lat-top FWHM B³

Center Wavelength	1060nm±15nm	1310nm±15nm	1550nm±20nm	1600nm±20nm
Tuning Range (TR)	80nm-BW	100nm-BW	100nm-BW	100nm-BW
Insertion Loss	1.5dB typ. and 3.0dB max. (Connector exclusive)			
FWHM Bandwidth (BW) ²	BW ¹ _{min} to 40nm	BW _{min} to 40nm	BW _{min} to 40nm	BW _{min} to 40nm
	BW _{min} =1.40nm for S-version	BW _{min} =2.00nm for S-version	BW _{min} =2.50nm for S-version	BW _{min} =2.50nm for S-version
	BW _{min} =0.60nm for P-version	BW _{min} =0.80nm for P-version	BW _{min} =1.00nm for P-version	BW _{min} =1.20nm for P-version
	BW _{min} =0.20nm for U-version	BW _{min} =0.25nm for U-version	BW _{min} =0.35nm for U-version	BW _{min} =0.40nm for U-version
Wavelength Resolution	0.02nm			
Wavelength Repeatability	±0.02nm			
Polarization-Dependent Loss	0.15dB typ./0.30dB max. over tuning range (SM fiber pigtail only)			
Extinction Ratio	20dB (PM fiber pigtail only without connector)			
Spectral Shape	Flat-top			
Passband Flatness	<0.15dB (Measured with BW _{min})			
Filter Edge Rolling-Off Slope ³	30dB/nm for S-version	25dB/nm for S-version	22dB/nm for S-version	20dB/nm for S-version
	80dB/nm For P-version	60dB/nm For P-version	55dB/nm For P-version	50dB/nm For P-version
	150dB/nm For U-version	120dB/nm For U-version	100dB/nm For U-version	100dB/nm For U-version
Max. Optical Power	500mW (CW) standard and up to 5.0W (CW) high power available on request			
Return Loss	>45dB			
Out-Band Suppression	>50dB for BW < 2xBW _{min}			
Polarization Mode Dispersion	<0.2ps (SM fiber pigtail only)			
Group Delay	<0.1ps/nm			
Pigtail Fiber Type	HI1060	SMF-28 or SMF-28e		
	Panda PM980	Panda PM1300	Panda PM1550	
	PM fibers aligned in PM slow axes (fast-axis blocking) unless specified as others, LMA or PLMA fiber pigtails are available on request.			
Operating Temp.	10°C to 50°C			
Storage Temp.	-10°C to 75°C			
Dimension	See dimensions drawings below			
Weight	<0.75kg			
Other	RoHS compliant			
Note: ¹ Minimum achievable flat-top FWHM bandwidth. ² More than 40nm up to 100nm is available on request. ³ Measured from -3dB down to -43dB level.				

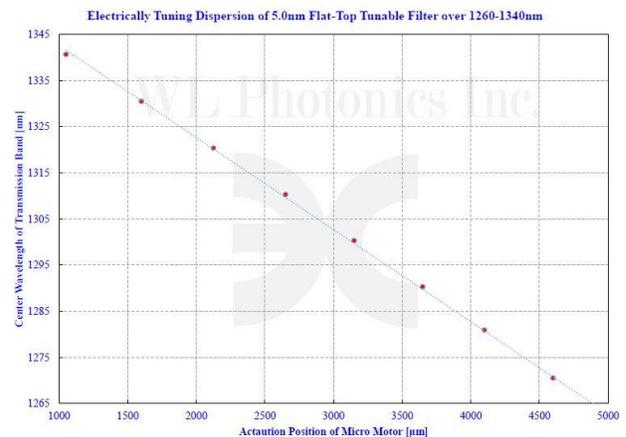
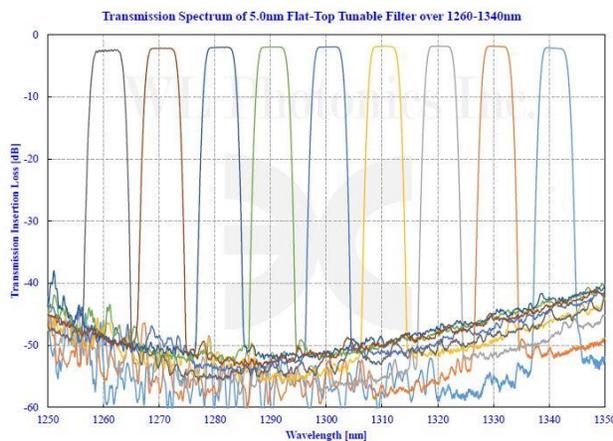


Dimensions of Manual Tunable Filter (WLTF-BA-S or P-version)



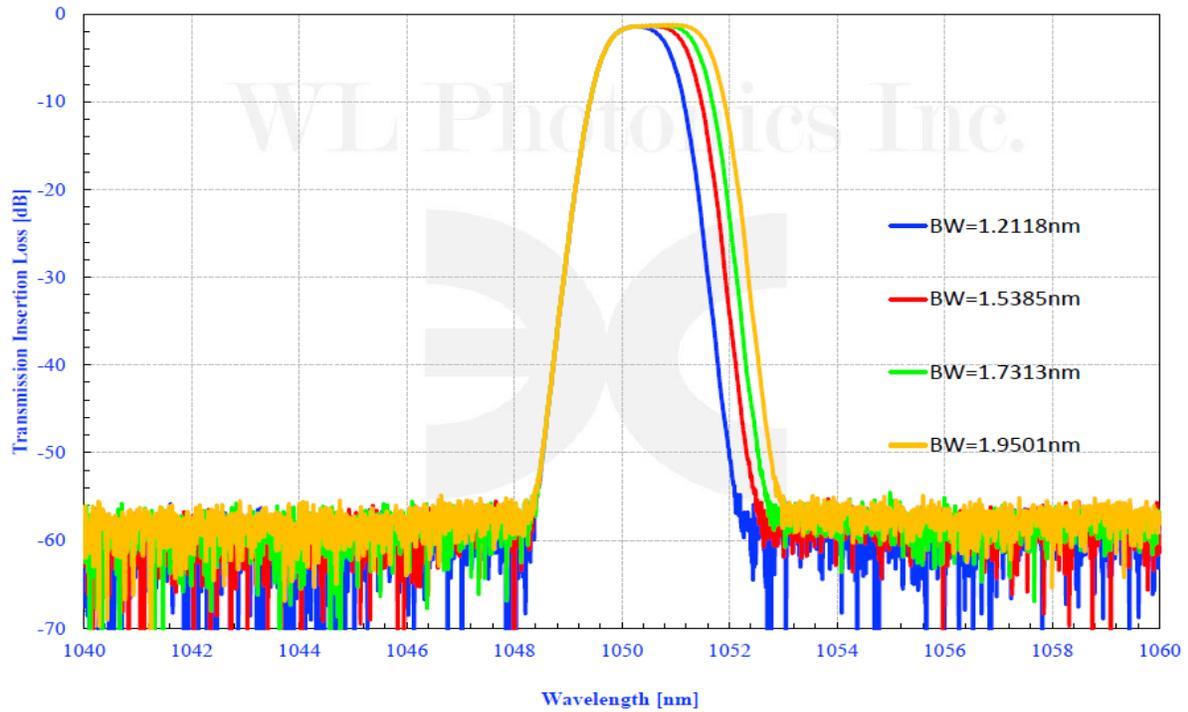
Example: Typical Transmission Spectrum and Tuning Dispersion of 5.0nm Filter over O-Band

Tuning Center Wavelength of Transmission Band over O-Band.

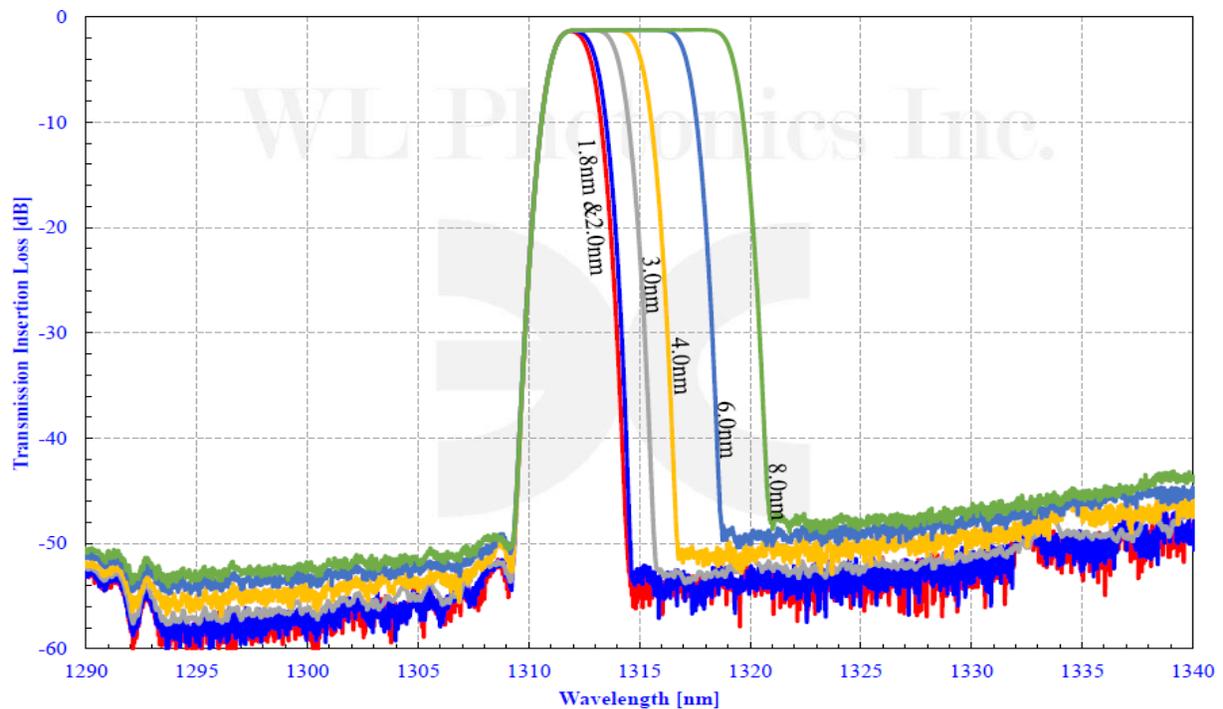




Bandwidth-Adjustment of S-Version Tunable Filter over 1010-1090nm

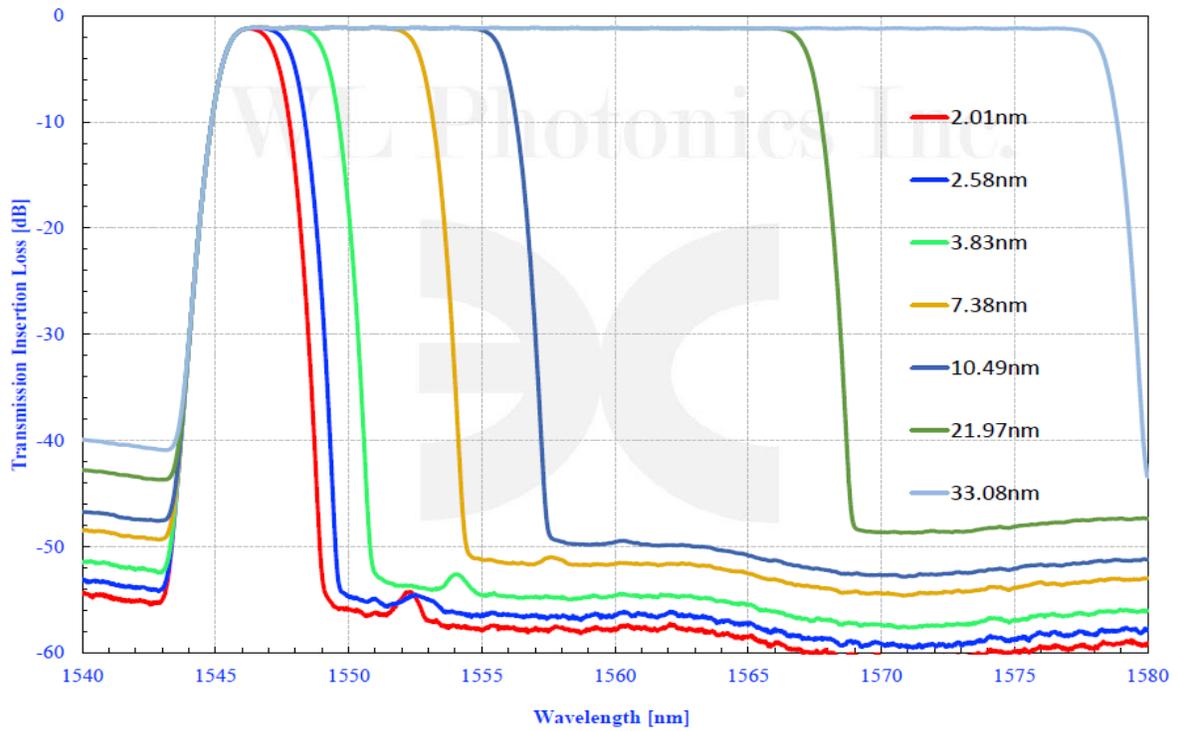


Bandwidth Adjustment of S-version Tunable Optical Filter over 1260-1350nm

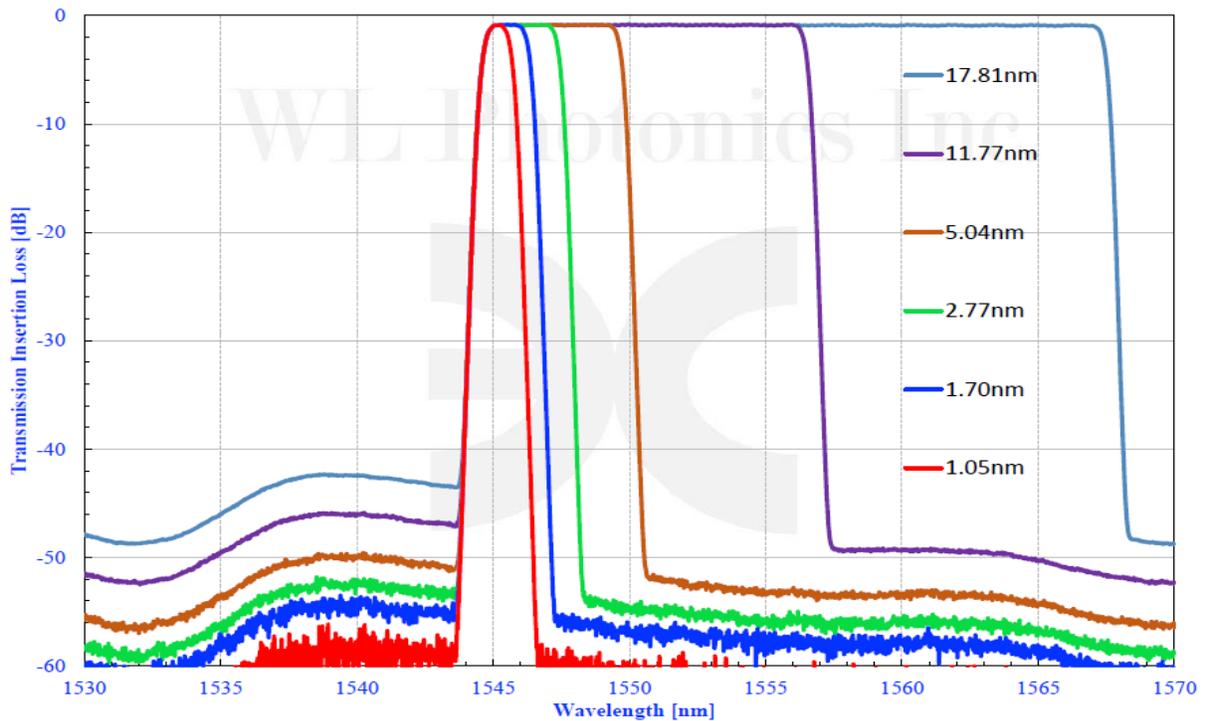




Bandwidth Adjustment of S-Version Tunable Filter over 1500-1600nm

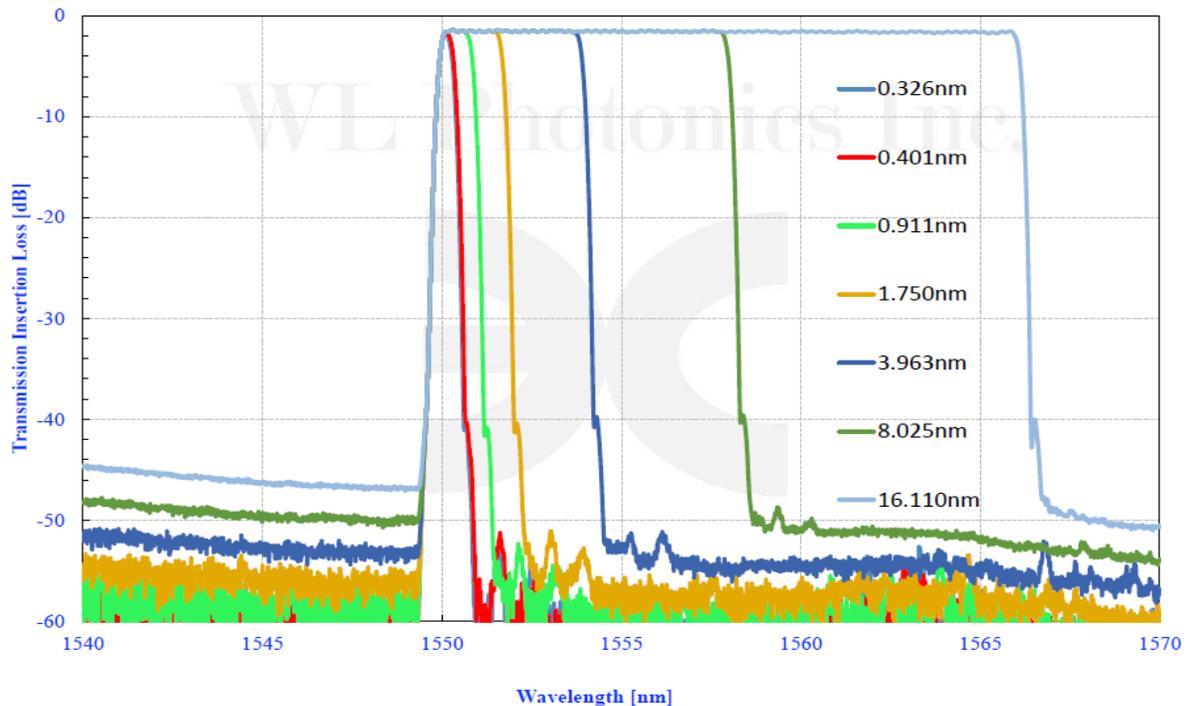


Bandwidth-Adjustment of P-Version Tunable Optical Filter over 1500-1600nm





Bandwidth-Adjustment of U-version Tunable Optical Filter over 1500-1600nm



Ordering Information

Part Number of Manual Version: WLTF-BA-A-B-C-D-E/F-G

- A. Version type: **S** is for S-version, **P** is for P-version and **U** is for U-version
- B. Center wavelength in nanometer: **1550** is for 1550nm center wavelength and **1310** is for 1310nm center wavelength.
- C. Tuning wavelength range in nanometer: **80** is for 80nm tuning range and **100** is for 100nm tuning wavelength range.
- 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-BA-S-1550-100-SM-3.0/1.0-FC/APC

Description: S-version fiber optic polarization-insensitive manually bandwidth-adjustable tunable optical filter over 100nm tuning range centred @1550nm with 1M long, 3.0mm OD loose cabled SMF-28 fiber pigtails terminated with FC/APC connectors on pigtail ends. Bandwidth adjustable from 2.5nm minimum up to 40nm flat-top FWHM bandwidth, 22dB/nm filter edge rolling-off slope and 500mW (CW) optical input power.



Example 2: WLTF-BA-P-1310-100-PM-3.0/1.0-SC/APC

Description: P-version fiber optic polarization-sensitive manually bandwidth-adjustable tunable optical filter over 100nm tuning range centred with 1M long, 3.0mm OD loose cabled Panda PM1300 fiber pigtails aligned in PM slow axes (fast-axis blocking) and SC/APC connectors on pigtail ports. Bandwidth adjustable from 0.8nm minimum up to 40nm flat-top FWHM bandwidth, 60dB/nm filter edge rolling-off slope and 500mW (CW) optical input power.

Example 3: WLTF-BA-P-1060-80-SM-0.9/1.0-FC/UPC-5.0

Description: P-version fiber optic polarization-insensitive manually bandwidth-adjustable tunable optical filter over 80nm tuning range @1060nm center wavelength with 1M long, 900µm OD loose cabled HI1060 fiber pigtails and FC/UPC connectors on pigtail ends. Bandwidth adjustable from 0.6nm minimum up to 40nm flat-top FWHM bandwidth, 80dB/nm filter edge rolling-off slope and 5.0W (CW) optical input power.

Example 4: WLTF-BA-U-1550-100-SM-3.0/1.0-FC/APC

Description: U-version fiber optic polarization-insensitive manually bandwidth-adjustable tunable optical filter over 100nm tuning range centred @1550nm with 1M long, 3.0mm OD loose cabled SMF-28 fiber pigtails terminated with FC/APC connectors on pigtail ends. Bandwidth adjustable from 0.35nm minimum up to 40nm flat-top FWHM bandwidth, 100dB/nm filter edge rolling-off slope and 500mW (CW) optical input power.

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