MEMS Tunable Fiber Optic Filter

1.4nm peak width, 40nm tuning range, 20ms speed, 1060 to 2000nm

DATASHEET

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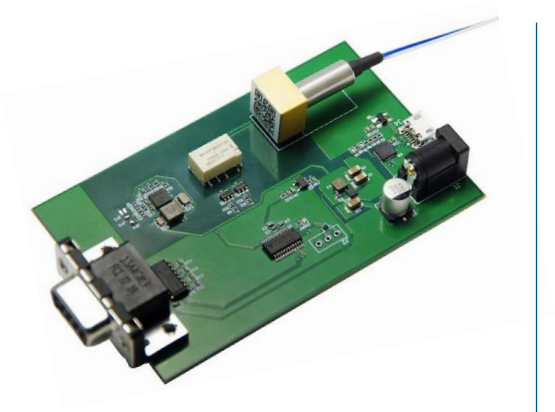

Agiltron offers Fiber Optic MEMS Tunable Filters with central wavelengths of 1060nm, 1310nm, 1550nm, and 2000nm. It is tunable continuously over a spectral range of up to 80nm at a speed of about 80ms. The wavelength tuning is actuated by driving a rotating MEMS mirror that is optically coupled with a grating and a dual fiber collimator. It is conveniently controlled with a user-friendly GUI and USB or RS232 and I2C control interfaces.

Features

- Compact
- Wide Tune Range
- Low IL and PDL
- Fast Tuning Speed
- USB. RS232, I2C Control Interfaces
- Gaussian-Shaped Passband

Applications

- DWDM networks
- Fiber Sensing
- Tunable Fiber Laser

Specifications

Parameter	Min	Typical	Max	Unit
Center Wavelength	1060	1550	2000	nm
Tuning Range [1]	-	± 20		nm
Wavelength Repeatability	-	0.03	-	nm
Tuning Speed	-	1	-	nm/ms
Temperature Dependent Wavelength			0.008	nm/C°
Insertion Loss [2]	2	2.5	3.5	dB
Bandwidth @-3dB	1.3	1.5	2.5	nm
Off-Band Suppression	20	30	-	dB
PDL (SM fiber only)	-	0.15	0.35	dB
PMD (SM fiber only)	-	-	0.5	ps
Extinction Ratio (PM fiber only)	18	23	-	dB
Return Loss	40	-	-	dB
Optical Power Handling	-	0.3	0.5	W
Power Consumption (5V power supply)		0.3		W
Operating Temperature	-5	20	70	°C
Storage Temperature	-40	-	85	°C

Notes:

[1]. Longer the wavelength, larger the tuning range

[2]. It is defined as the total light coupled out over the filter's spectral passing band. Measured using a broadband light source with integration of the transmission peak. Extra loss can occur if the laser source does not match the filter profile. A special filter can be made to match the application. The smaller the fiber core, the higher the loss. Excluding connector loss

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link]:

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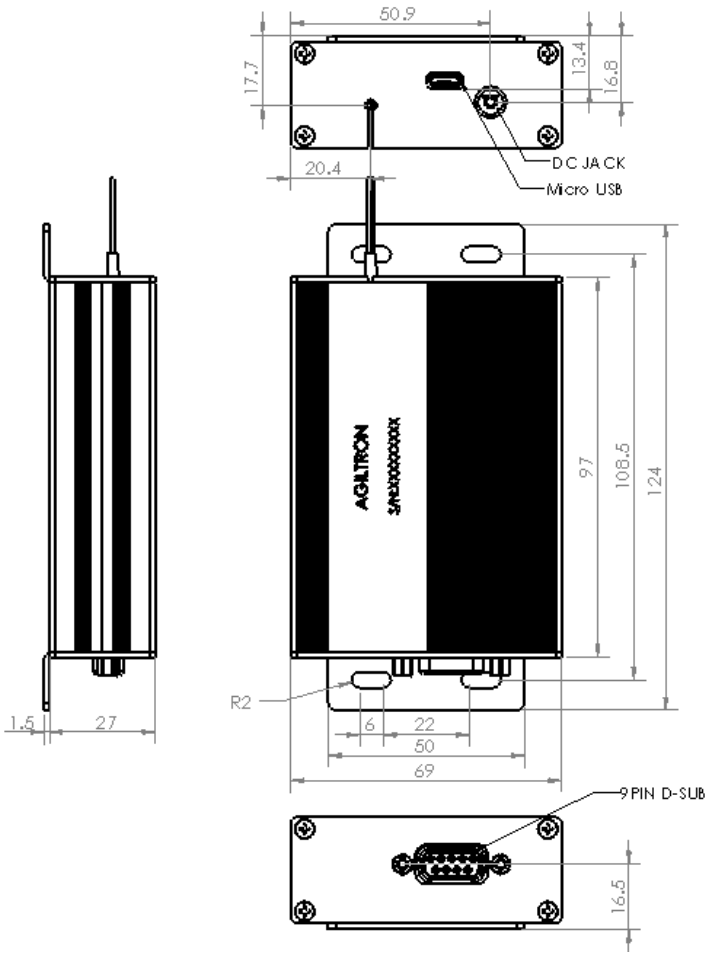
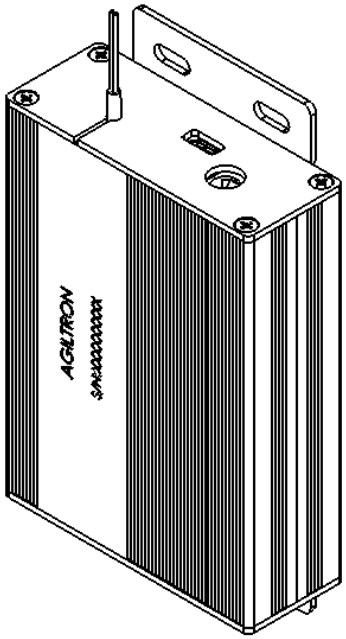
Mechanical Dimension (mm) – With Driver





Ship with a 5V DC power supply, an USB-micro USB cable, an USB flash disk, and user manual.

*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

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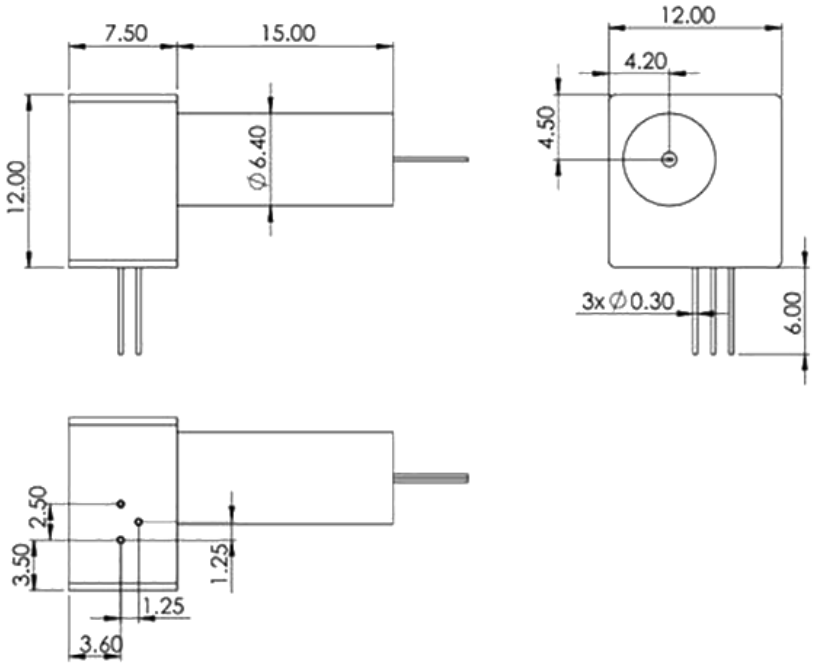
Mechanical Dimension (mm) – No Driver

No driver:



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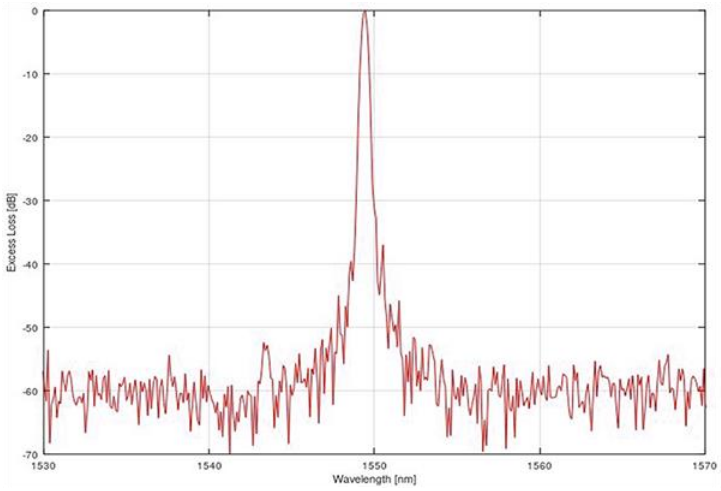
Typical Transmission Curve



Electrical Driving

Agiltron provides communication protocols and a computer control kit with USB or RS232 interface and Windows™ GUI.

Connector Pin Definition:

Power	Pin 1	GND
	Pin 2	12V

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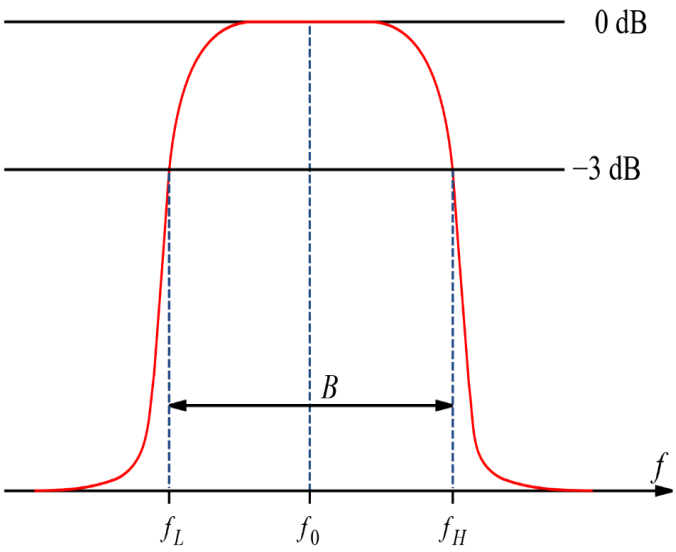
Bandwidth Definition



Ordering Information

	☐	☐	☐	☐	☐	☐	☐	☐
Prefix	**3dB Width**	**Wavelength**	**Power**	**Control**	**Fiber Type**	**Fiber Cover**	**Fiber Length**	**Connector**
FOTF-	1.5nm = B	1528~1610nm=5 1960 ± 40nm = 4 1620 ± 40nm = 7 1480 ± 40nm = 8 1395 ± 55nm = F 1310 ± 40nm = 3 1230 ± 50nm = E 1145 ± 45nm = D 1130 ± 40nm = C 1060 ± 40nm = 6 Special = 0	Standard = 1 High Power = 2	USB = 1 RS232 = 2 None = 5	SMF-28 = 1 HI1060 = 2 PM980 = 3 PM1550 = 4 SM1950 = 5 PM1950 = 6 Special = 0	Bare fiber = 1 900um tube = 3 Special = 0	0.25m = 1 0.5m = 2 1.0 m = 3 Special = 0	None = 1 FC/PC = 2 FC/APC = 3 SC/PC = 4 SC/APC = 5 ST/PC = 6 LC/PC = 7 LC/APC = A LC/UPC = U Special = 0

Red Items require NRE of $1950 to make the filter

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Operation Manual

1. Connect the accompanied wall pluggable power supply
2. Install the accompanied GUI into a computer
3. Connect the device with the computer using the accompanied cable
4. Connect the optical fibers, normally with one end to a source and the other to a system
5. Open the GUI and start scanning the wavelength

How to test the insertion loss of a tunable optical filter

The filter only works in a specific range. Beyond this range, extra peaks may show. These peaks can be blocked with special order. Please follow these instructions to do an optical insertion loss test:

1. Connect a broadband fiber-coupled laser source to OSA, sweep one time over the specified range of the tunable filter, and then fix the curve in Trace A as a reference.

2. Connect the broadband laser source to the fiberoptic tunable filter fiber as input, then connect the other fiber port of the tunable filter as the output to the OSA.

3. Set OSA Trace B as 'write,' Trace C as 'Calculate: B-A.' Auto sweep Trace C from the specific range. Tune the micrometer to shift the peak at a different wavelength. Use 'Peak search' to record IL at a different wavelength."

Application Notes

Fiber Core Alignment
Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness
Fibers with smaller core diameters (<5 μm) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power
Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the how handling by expanding the core side at the fiber ends.