# Manual Etalon-Based Fiber Optic Tunable Filter

(patent pending)

DATASHEET

Return to the Webpage


Based on a proprietary thin-film cavity filter platform, we manufacture fiber-optic tunable filters with standard center wavelengths from 1060 nm to 2050 nm (custom wavelengths available). These filters provide continuous tuning over ranges up to 100 nm with a ~1 nm linewidth. The tuning resolution is not the performance limit; the filter linewidth determines the spectral resolution. Longer-wavelength versions support wider tuning ranges. Wavelength tuning is performed by rotating a precision micrometer. The design delivers high reliability, low insertion loss, and low cost, making it well-suited for OEM applications in optical networks, fiber-optic sensing, and interrogation systems. Standard configurations are in volume production to ensure cost efficiency; custom wavelengths incur additional cost. These thin-film cavity filters include blocking structures to suppress off-band transmission.

## Features

- 1000nm to 2400nm
- 1nm Bandwidth
- 100nm Tuning Range
- SM and PM
- <3dB loss
- Up to 5W Optical Power
- Compact and Low Cost
- Low IL and PDL

## Applications

- DWDM networks
- Fiber Sensing
- ASE control
- Tunable Fiber Laser

## Specifications

| Parameter | | Min | Typical | Max | Unit |
|---|---|---|---|---|---|
| Center Wavelength | | 350 | | 2400 | nm |
| Tuning Range [1] | | - | ± 30 | ± 50 | nm |
| Tuning Resolution | | - | 0.1 | - | nm |
| Micrometer Resolution (Wavelength/Division) | | | 0.18 | | nm |
| Insertion Loss [2] | | 1.5 | 2 | 3.5 | dB |
| Bandwidth @-3dB | | - | 1 | 1.2 | nm |
| Bandwidth @-20dB | | - | 10 | - | nm |
| Off-Band Suppression | | - | 30 | - | dB |
| PDL (SM fiber only) | | - | 0.15 | 0.35 | dB |
| PMD (SM fiber only) | | - | - | 0.5 | ps |
| Polarization Extinction Ratio (PM fiber only) | | 18 | 23 | 30 | dB |
| Return Loss | | 40 | - | - | dB |
| Optical Power Handling (CW) | Standard version | - | 0.5 | | W |
| | High power version | | 10 | | W |
| Operating Temperature | | 0 | 20 | 60 | °C |
| Storage Temperature | | -10 | - | 70 | °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



Rev 01/05/26

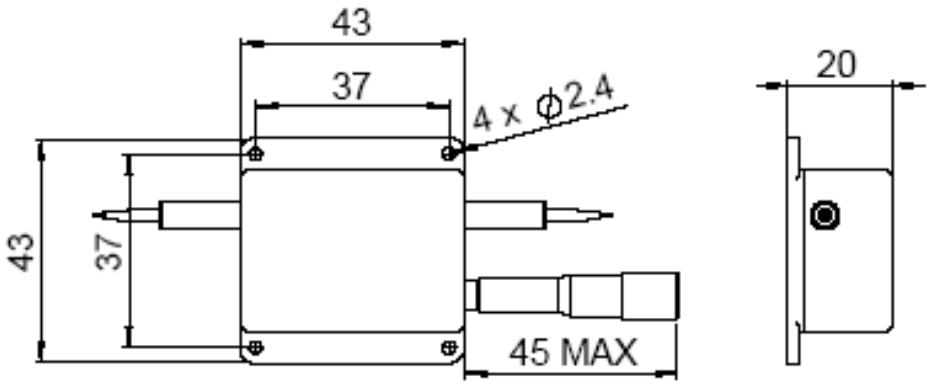
P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

# Manual Etalon-Based Fiber Optic Tunable Filter

(patent pending)

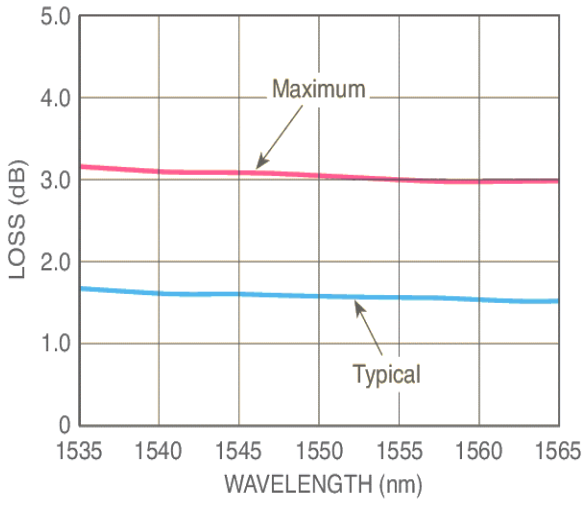
DATASHEET

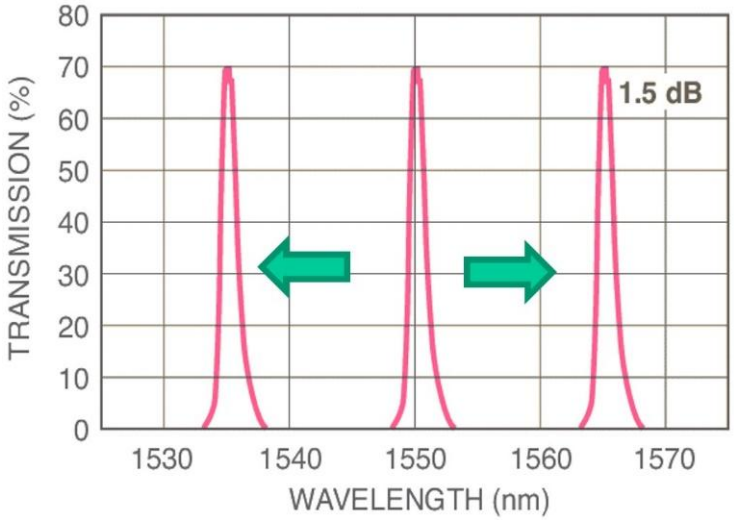
## Mechanical Dimension (mm)




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

## Typical Transmission Curve



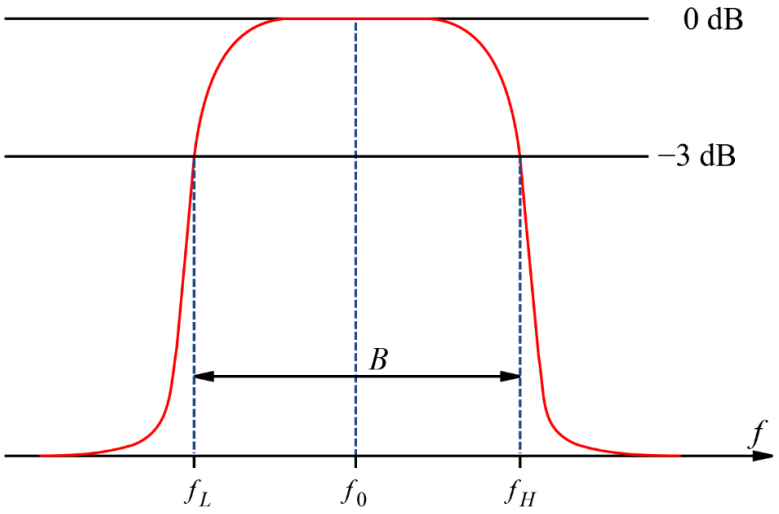

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

# Manual Etalon-Based Fiber Optic Tunable Filter

(patent pending)

DATASHEET

## Bandwidth Definition




## Ordering Information (Part Number) System

| | F1 | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
|---|---|---|---|---|---|---|---|---|
| **Prefix** | **Type** | **Wavelength** | **Power** | **PER** | **Fiber Type** | **Fiber Cover** | **Fiber Length** | **Connector[2]** |
| **FOTF-** | 02*<br>33* [1] | 2100± 60nm = 1<br>2295± 55nm = K<br>2195± 55nm = J<br>2095± 55nm = I<br>2050± 50nm = H<br>2000± 50nm = 2<br>1960± 40nm = 4<br>1850± 50nm = A<br>1800± 50nm = G<br>1620± 40nm = 7<br>1550± 50nm = 9<br>1550± 40nm = 5<br>1480± 40nm = 8<br>1395± 55nm = F<br>1310± 40nm = 3<br>1230± 50nm = E<br>1145± 45nm = D<br>1130± 40nm = C<br>1060± 40nm = 6<br>1005± 45nm = B<br>Special = 0 | 0.3W = 1<br>5W = 2<br>10W = 3<br>15W = 4<br>20W = 5 | Standard = 2<br>26 = 3<br>28 = 4<br>30 = 5 | SMF-28 = 1<br>HI1060 = 2<br>SM1950 = 9<br>PM980 = 3<br>PM1550 = 4<br>PM1310 = 8<br>PM1950 = A<br>Special = 0 | Bare fiber = 1<br>900um tube = 3<br>Special = 0 | 0.25m = 1<br>0.5m = 2<br>1.0 m = 3<br>Special = 0 | None = 1<br>FC/PC = 2<br>FC/APC = 3<br>SC/PC = 4<br>SC/APC = 5<br>ST/PC = 6<br>LC/PC = 7<br>Special = 0 |

[1]. The 3-port device is a fixed wavelength filter with light input from Port 1. The selected wavelength exits through Port 2, while the rejected light goes to Port 3, located on the side of the housing.

[2]. The connector cannot be installed directly onto bare fiber, as it is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer can remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SM28 fiber and decreases further with smaller core fibers.

* Old part number

Red Items require NRE of $1950 to make the filter

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com

# Manual Etalon-Based Fiber Optic Tunable Filter

(patent pending)

DATASHEET

## 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.”

P +1 781-935-1200 E sales@agiltron.com W www.agiltron.com