

TFN Ultra Narrowband Tunable Optical Filter



The TFN Narrowband Tunable Optical Filter combines TeraXion's fiber Bragg grating (FBG) technology and a thermally-tunable platform to create a tunable filter with unprecedented stability and resolution. The compact and reliable TFN is available in two models: reflection (R) and transmission-reflection (T-R). The narrowband option enables bandwidths from 2 GHz to 50 GHz, and the ultra-narrowband option enables bandwidths from 50 MHz to 500 MHz.

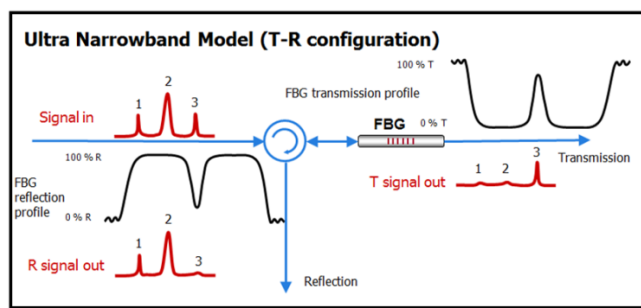
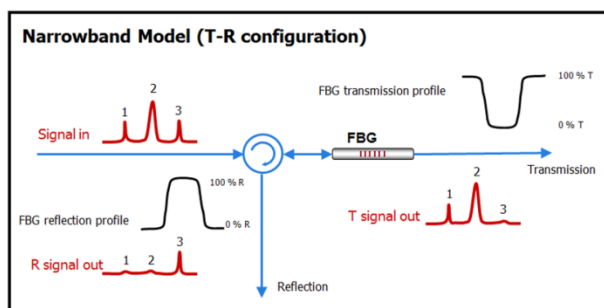
Both models feature wavelength tuning resolution of 2 pm (250 MHz at 1550 nm) over a range of +/- 30 MHz around the center wavelength.

The TFN tunable optical filter has been specifically designed for high-precision applications that require a high-optical isolation coupled with precise and accurate narrowband filtering. It provides excellent sideband filtering and carrier suppression, making this tunable filter ideal for RF over fiber and advanced fiber-optic sensing systems.

Top 6 Features

- **Ultra-Narrow Bandwidth:** The TFN supports bandwidths as narrow as 50MHz.
- **Precision Tuning:** The TFN is tunable over a range of ± 30 GHz around the center frequency with a resolution of 2 pm.
- **High Optical Isolation:** Narrowband models can reach optical isolation as high as 25 dB.
- **Sharp-Edged:** Both the narrowband flat-top filter and ultra-narrowband notch filter have sharp-edged spectra for precision wavelength filtering.
- **Flexible:** The TFN R and T-R modules can be cascaded to separate, redirect, and combine different wavelength peaks.
- **Easy Integration:** The TFN comes equipped with LabVIEW™-based control software that makes this tunable filter ready-made for advanced fiber-optic systems that require precise tuning and excellent sideband suppression.

Fiber Bragg grating (FBG) filtering profile



General Specifications

Parameters	Narrowband configuration	Ultra-narrowband configuration	Units
Single center wavelength at 25 °C (referenced to vacuum) ⁽¹⁾	1 525 to 1 565	1 525 to 1 565	nm
Reflection bandwidth	2 to 50	0.05 to 0.5	GHz
Tuning range	±30	±30	GHz
Tuning resolution ⁽²⁾	2	2	pm
Typical insertion loss (including circulator)	<3.5	<3.5	dB
Polarization extinction ratio	>20	>20	dB
SMSR	>20	N/A	dB
Power handling	Up to 500	Up to 10	mW
Fiber type	<u>PM or non-PM</u>	<u>PM</u>	
Operating temperature		-5 to 65	°C
Storage temperature		-40 to 85	°C
Control interface		I ² C	
Voltage		5	V
Typical power consumption		3	W
R module dimensions		130 x 22 x 14	mm
T-R module dimensions		150 x 54 x 19.5	mm
RoHS compliant		Yes	

(1) 780 to 2 000 nm available as an option

(2) Laser frequency may have to be adjusted to match ultra-narrowband filter

Ordering information

For orders, questions, specific requirements or to learn more about TeraXion's products, contact us at info@teraxion.com

TeraXion

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