FBG Fabry-Perot interferometer fiber Bragg grating 600-2300nm

● Product Description

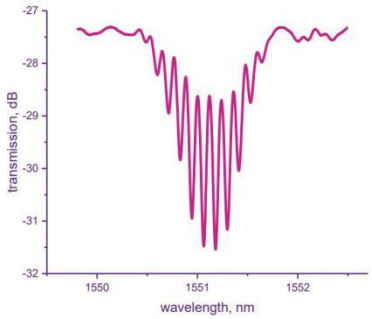
Fiber Bragg Grating is currently one of the hotspots in the field of fiber optic sensing research. For many applications that require measuring very small temperature or strain changes, using fiber Bragg gratings can improve acoustic sensitivity. The fiber Fabry Perot interferometer is such a pair of fiber Bragg gratings. In this case, a small phase shift can be detected. By coating the optical fibers between gratings with electrical, magnetic, or acoustic enhancement coatings, small changes in these fields can be measured. For sensing purposes and evaluating small vibrations or acoustic signals through interferometry, using low precision is usually sufficient. Transmission spectra of Fabry Perot cavity. The Fabry Perot fiber interferometer is shown in the figure.

● Part Number

GTL-FBG-FPI-810-RS

Parameters

FBG Characteristics	GTL-FBG-FPI-810-RS	Tolerance/Notes
Wavelength Range nm	600 ~ 2300	± 0.1 ~ ± 1 custom
Fiber type	SM, PM， Rad resistance	Or custom
Reflectivity, %	0.5-99	2~5 custom
Bandwidth (FWHM), nm	0.3-0.8	custom
Distance between FBGs mm	1-200	custom
FBG pigtail length m	⩾ 0.5	Or custom
FBG inscription thought the fiber protective coating	Acrylate, polyimide	or custom
FBG Recoating	Acrylate, polyimide, aluminum, copper	or custom
Tensile Strength, Kpsi	>100	or custom
Optical Connectors	Bare fiber, FC/APC, LC/APC	or custom



Special application fiber Bragg gratings (FBG) include

Wavelength locker FBG
WDM ITU filter 100/200 GHz FBG
Raman laser FBG
Fabry-Perot interferometer FBG
High-temperature resistant fiber Bragg grating
Radiation-resistant FBG

The application range of the special FBG series:

External reflector for laser diodes
Filtering optical signals

Optical add/drop multiplexers in WDM systems
Measuring minute temperature or strain changes
Evaluating small vibrations or sound signals
Multi-stage Raman lasers
High-temperature applications
Nuclear industry
Aerospace

GTL-FBG-WL-810 Wavelength-Locking Fiber Bragg Grating
Used as an external reflector for laser diodes. With the help of these FBGs, it is easy to stabilize the wavelength generation of pump semiconductor lasers and single-frequency lasers. Low-reflection gratings with a Full Width at Half Maximum (FWHM) bandwidth of 0.3 nm to 0.8 nm and a reflectivity of 2% to 5% are ideal for stabilizing pump power in lasers. FBGs with a FWHM bandwidth of around 0.1 nm and a reflectivity of 10% to 20% are placed near the semiconductor laser crystal to create single-frequency sources. FORC Photonics offers wavelength-locking FBGs with highly precise wavelength positions (up to ±0.02 nm).

GTL-FBG-WDM-810 Series WDM ITU Filter 100/200 GHz Fiber Bragg Grating
With narrow spectral bandwidth, this FBG is a good element for filtering optical signals. It is widely used as an optical add/drop multiplexer in WDM systems, allowing for high levels of Side-Lobe Suppression Ratio (SLSR) to prevent adjacent channel crosstalk in the system. These FBGs have a flat-top reflection spectrum and steep spectral drop-offs. The non-thermal encapsulation of these FBGs ensures wavelength stability of <0.16 nm in the temperature range from 0° C to +70° C, which is essential for stable operation.

GTL-FBG-RL-880 Raman Laser Fiber Bragg Grating
Can be used to create highly efficient multi-stage Raman lasers based on phosphate-silicate fibers at different wavelengths. Compared to germanium-doped fibers, it allows for about three times the Raman shift. For many applications that require very precise measurements of small temperature or strain variations using acoustic waves, paired FBGs can enhance sensitivity.

GTL-FBG-FPI-810 Fabry-Pérot Interferometer Fiber Bragg Grating
This is a pair of FBGs that can detect very small phase shifts. By applying electrically, magnetically, or acoustically enhanced coatings on the fiber between the gratings, extremely small changes in these fields can be measured. For sensing purposes and to assess small vibrations or acoustic signals through interference measurement methods, a low-finesse Fabry-Pérot cavity is typically sufficient.

GTL-FBG-HE-810 High-Environment Fiber Bragg Grating
These FBGs can be provided as separate or different wavelength FBG chains, enabling multi-point temperature monitoring. Various types of single-mode (SM) fibers and fiber coatings can be used to write these gratings. High-temperature acrylate-coated fibers are suitable for temperatures up to +150° C. Polyimide or metal (copper, aluminum) coated fibers are used for high-temperature applications up to +300° C and +500° C, respectively. With steel tube protection, our high-environment FBGs can be used at temperatures up to +700° C.

GTL-FBG-RH-880 Radiation-Hard Fiber Bragg Grating
Written with radiation-hard pure quartz core fibers, this FBG is well-suited for applications in the nuclear industry, aerospace, and other radiation-intensive environments.

The following configurations can be modified according to customer requirements to customize the fiber Bragg grating solution:

Parameter/ PN#	GTL-FBG-WL-810	GTL-FBG-WDM-810W	GTL-FBG-RL-880	GTL-FBG-FPI-810	GTL-FBG-HE-810	GTL-FBG-RH-880
	Wavelength Locker FBGs	DMITU Filter100/200GHzFBGs	Raman LaserFBGs	Fabry- Perot Interferometer FBGs	HardEnvironment FBGs	RadiationHardFBGs
Wavelength Range [nm]	630-2300	1530-1565 (C-band) or custom 1510-1580	124,012,701,484	600-2300		1000-2300
Quick Order Wavelength [nm]]	30 values from 633 to 2300	-	-	-	30 values from 633 to 2300	-
Fiber Type	SM, PM, Custom	SM, Corning SMF-28	SM, PM, Dual-core, LMA, Custom	SM, PM, Dual-core, Radiation-resistant, Custom	SM, PM, Dual-core, LMA, Custom	SM, PM, Dual-core, Radiation-resistant, Custom
Reflectivity [%]	2-5,10-20	10-99, Flat-top typical >99.5	5-99.9	0.5-99		
Bandwidth	0.3-0.8,	100/200GHzon ITU For	0.15-1.	0.3-0.8	0.15-0.	0.3-0.5

(FWHM) [nm]	0.1-0.15	100GHz:@-0.5dB>0.3nm, @-20dB0.65 nm	2		8	
Distance Between FBGs [mm]	-	-	-	1-200，Custom	-	-
Channel Isolation [dB]	-	-20	-	-	-	-
Insertion Loss [dB]	-	<0.15	-	-	-	-
Cladding Mode Loss [dB]	-	<0.5 (only for cladding mode suppression fiber)	-	-	-	-
Return Loss[dB]	~10	-	~8	-	~8	~8
FBG pigtail length[m]	⩾0.5，custom					
FBG Coating	None, Acrylic, Polyimide, Aluminum, Copper, Customized	None, Acrylic, Polyimide, Customized		None, Acrylic, Polyimide, Aluminum, Copper, Customized.		
Tensile Strength [kpsi]	>100	-	>100			
Thermal Wavelength Stability(0°C-+70°C)[nm]	-	<0.16	-	-	-	-
Optical Connector	Bare Fiber, FC/APC, LC/APC, Custom					
Dimensions LxWxH[mm]	-	66×18×12	-	-	-	-