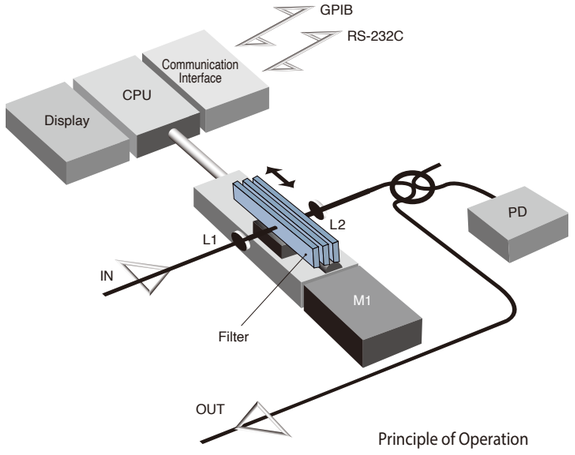
OTF-930

Optical Tunable Filter

Product Overview

The OTF-930 is a polarization independent 80 nm tunable filter. Santec's unique "Linear Sliding" technology is a breakthrough in filter design that enables precise and continuous wavelength tuning with constant optical properties such as PDL, bandwidth and insertion loss. The instrument is designed to allow filters to be cascaded to increase filter isolation with minimal increase in insertion loss. This model has a wide selection of filters that are suitable for most of the fiber optic applications in the market.



Principle of Operation

Features

- 80 nm tuning range
- Low insertion loss
- Low PDL (< 0.1 dB) & PMD (< 0.1 ps) over whole tuning range
- 0.01 nm resolution
- Full GPIB support

Applications

- ASE noise suppression
- Wavelength channel selection
- Incoherent light source

ASE Noise Suppression

When optical signals are amplified with EDFAs, the unwanted effect of amplified spontaneous emission (ASE) could decrease the signal-to-noise ratio. The OTF-930 with 08-S1, 08-S2 or 12-S2 filters are able to remove the ASE noise with minimal loss.

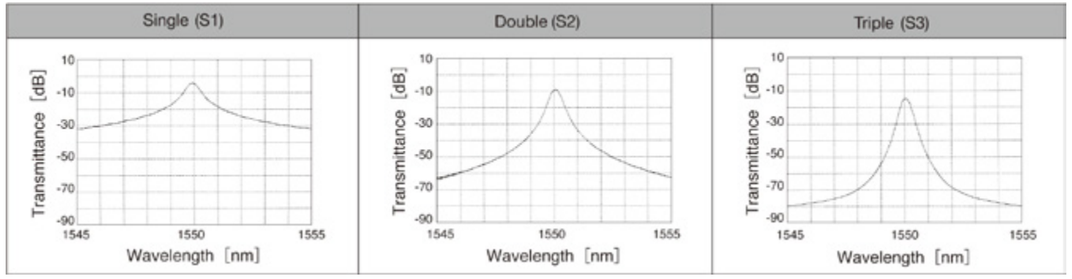
Wavelength Channel Selection

The 03-S2 filter configuration is particularly suitable for selecting a single DWDM wavelength from a 100 GHz grid. Other filters can be used to select other ITU grid spaced signals.

Incoherent Light Source

When used in combination with a broadband light source the OTF-930 can be configured as a tunable light source. Although the output power is relatively low (-30 to -20 dBm) incoherent light is used for applications that are affected by coherent resonance effects or non-linear interference.

Filter Structure



OTF Filter Selections

Filter Type					
Filter Structure		Bandwidth @ -3 dB (nm)	Bandwidth @ -20 dB (nm)	Insertion Loss (dB)	Chromatic Dispersion (ps/nm) (typ.)
03	S1	0.4 ± 0.1	< 3.8	3.5	23 / -19
	S2	0.3 ± 0.1	< 1.5	6	33.5 / -31.5
	S3	0.25 ± 0.1	< 1.2	7.5	35 / -23
04	S1	0.5 ± 0.1	< 5.0	3	18 / -12.5
	S2	0.35 ± 0.1	< 1.7	5	21.5 / -17.5
	S3	0.3 ± 0.1	< 1.2	6.5	26 / -17
06	S1	0.7 ± 0.1	< 7.5	2.5	6.5 / -6.5
	S2	0.5 ± 0.1	< 2.4	3	14.5 / -11
	S3	0.4 ± 0.1	< 1.5	4	26.5 / -17.5
08	S1	0.95 ± 0.1	< 9.8	2	7 / -7
	S2	0.65 ± 0.1	< 3.0	3	8 / -5
	S3	0.5 ± 0.1	< 2.2	3.5	12 / -10.5
12	S1	1.3 ± 0.1	< 15.0	2	3.5 / -4
	S2	0.9 ± 0.1	< 4.5	2.5	5 / -5
	S3	0.7 ± 0.1	< 3.0	3	8 / -5.5
24	S1	2.9 ± 0.3	< 32.0	2.5	3.5 / -3.5
	S2	1.95 ± 0.3	< 10.0	2.5	3.5 / -3.5
	S3	1.5 ± 0.3	< 6.5	2.5	3.5 / -3.5
50	S1	5.5 ± 0.1	< 60 (Typ.)	2.9	- / -
05 (1510 to 1630 nm)	S1	0.5 ± 0.1	< 5.0	4.5 [1]	18 / -12.5
	S2	0.35 ± 0.1	< 1.7	6.5 [1]	21.5 / -17.5
	S3	0.3 ± 0.1	< 1.2	8 [1]	26 / -17
12 (1270 to 1350 nm)	S1	1.3 ± 0.15	< 15.0	3	3.5 / -4
	S2	0.9 ± 0.1	< 4.5	3.5	5 / -5
	S3	0.7 ± 0.1	< 3.0	4	8 / -5.5

Notes:
[1] *The insertion loss at 1500-1530 nm and 1610-1630 nm may increase by 1 dB.*

OTF Specifications

Parameter	Unit	Specification	Notes
Wavelength Characteristics			
Tuning Range	nm	1530-1610 1500-1630 (05 bandwidth) 1270-1350 (12 bandwidth)	
Resolution	nm	0.01	Mechanical resolution
Accuracy	nm	< ± 0.1, < ± 0.15(24), < ± 0.2(50)	
Repeatability	nm	< ± 0.05, < ± 0.1(50)	n = 50/ Measured at center wavelength of slider
Temperature Stability	pm/°C	2	
Power Characteristics			
PDL (SMF)	dB	< 0.2	Filter structure(S2) and (S3)
Insertion Loss [1]	dB		Refer to "Filter Selections" (Typ.)
Return Loss	dB	> 45	
Power Monitor			
Relative Accuracy	dB	< ± 0.1	Output power : -20 ~ +10 dBm
Max Rating			
Maximum Input Power	dBm	+20	Damage threshold
PMD	ps	< 0.1	Design guaranteed performance
Environmental Conditions			
Operating Temperature	°C	20-30	
Operating Humidity	%	< 80 RH	Non-condensing
Interface			
Optical Fiber	-	SMF or PMF [2]	
Optical Connector	-	FC or SC	
Connector Polish	-	SPC or APC [3]	
Power supply			
Communication Interface	-	GPIB (IEEE-488) & RS-232C	
Voltage	V	AC100-240	
Frequency	Hz	50/60	
Dimensions			
Power Consumption	VA	35 @ 230 to 240 V 30 @ 100 to 120 V	
Width x Height x Depth	mm	210 x 80 x 300	
Weight	kg	4	

Notes:
[1] *In case of PMF, the insertion loss increases by 1.0 dB.*
[2] *In case of PMF, polarization extinction ratio 20 dB (typical). Polarization axis in alignment with connector key.*
[3] *SPC = Super Physical Contact, APC = Angled Physical Contact.*

Ordering Scheme & Instructions

1. Configure OTF Optical Tunable Filter

OTF-930-□-□□-□□-□-□-□□

WAVELENGTH RANGE	
1	1530 - 1610nm
2	1500 - 1630 nm (Only 05 Bandwidth)
3	1270 - 1350 nm (Only 12 Bandwidth)
4	Other

BANDWIDTH TYPE	
03	03
04	04
06	06
08	08
12	12
24	24
50	50
05	05 (Only Range 2: 1500 - 1630 nm)

FILTER STRUCTURE	
S1	1 stage
S2	2 stage
S3	3 stage

FIBER TYPE	
S	SMF
P	PMF

CONNECTOR TYPE	
F	FC
S	SC

CONNECTOR POLISH	
SP	SPC
AP	APC (Angled PC)

Santec Regional Sales Offices

SANTEC CORPORATION
5823 Ohkusa-Nenjozaka, Komaki,
Aichi, 485-0802, Japan
Tel: +81-568-79-3536 | Fax: +81-568-79-1718

SANTEC U.S.A. CORPORATION
433 Hackensack Ave., Hackensack
NJ, 07601, USA. Toll Free: +1-800-SANTEC1 (726-8321)
Tel: +1-201-488-5505 | Fax: +1-201-488-7702

Santec Europe Ltd.
99 Park Drive, Milton Park, Abingdon,
Oxfordshire, OX14 4RY, United Kingdom
Tel: +44-20-3176-1550

Santec (Shanghai) Corporation Limited
21F Room H, Hua Du Bldg., No.838 Zhangyang Road
Pudong District, Shanghai, 200122, China
Tel: +86-21-5836-1261 | Fax: +86-21-5836-1263

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