

# SINGLE WINDOW FIXED IN-LINE

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## ATTENUATORS (1310, S, C, L, AND C+L BAND)

### SWFA Series

#### Features

- ◆ Wavelength Independent
- ◆ Low Insertion Loss and PDL
- ◆ High Power Handling
- ◆ Guaranteed Reliability

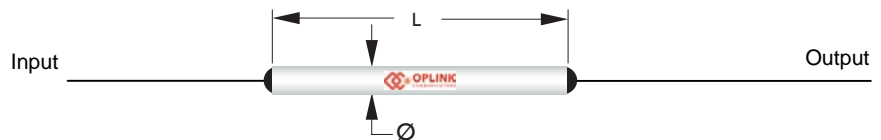
#### Applications

- ◆ Flatness Adjustment
- ◆ Power Management
- ◆ Testing Instruments
- ◆ Laboratory R&D

#### Single Window Fixed In-line Attenuators (1310, S, C, L, and C+L band)

The Oplink fused single window wideband Fixed In-line Attenuators provide accurate attenuation over wide bandwidth with high performance and high reliability. These attenuators have excellent temperature stability, very good wavelength flatness, very low polarization sensitivity and are available with various attenuation ratios, wavelength ranges, and connector options. All devices are shown to be able to handle high optical power up to 4W and are tested according to industry standard procedures. Reliability is guaranteed through stringent tests to fully meet Telcordia GR-1221 requirements.

Oplink can provide customized designs to meet specialized feature applications. Also, Oplink offers modular assemblies that integrate other components to form a full function module or subsystem.



#### Performance Specifications

Parameter		1310nm	S band	C band	L band	C+L band
Operating Wavelength Range	nm	1270~1350	1420~1500	1530~1565	1570~1605	1530~1610
Fiber Type		Corning SMF-28				
Insertion Loss <sup>1</sup>		See Insertion Loss Table I, II, III				
Return Loss	min	50 dB				
Temperature Dependent Loss <sup>2</sup>	min	< 0.15 dB				
Optical Power Handling	max	4 W				
Operating Temperature Range <sup>3</sup>		-40 to 75 °C				
Storage Temperature Range		-40 to 58 °C				
Package Dimension <sup>4</sup>		P1: 250µm SMF-28 bare fiber P2: 900µm loose tube P3: 3mm cable		(Ø)3.0 x (L)47 mm (Ø)3.0 x (L)60 mm (L)96 x (W)12 x (H)6.4mm		
Qualifications		Telcordia GR-1221				

1. Values are referenced without connector loss.

2. Temperature Sensitivity Coefficient ~0.002dB/°C at the range of -5 to 75°C

3. Operating temperature range changes to -5 to 75°C in P2, P3 package and all package with connectors

4. The mechanical tolerance should be +/- 0.2 mm on all package dimensions unless otherwise custom specified.

## Insertion Loss Tables

### Insertion Loss (IL) I : C or L band coupler

Attenuation	IL <sup>1</sup> (dB)	WDL <sup>2</sup> (dB)	PDL <sup>3</sup> (dB)
20dB	19.0-21.0	≤0.45	≤0.12
18dB	17.50-19.0	≤0.45	≤0.15
17dB	15.5-17.5	≤0.40	≤0.15
15dB	13.5-15.5	≤0.30	≤0.15
13dB	11.5-13.5	≤0.25	≤0.10
11dB	10.5-11.5	≤0.25	≤0.10
10dB	9.50-10.50	≤0.25	≤0.10
9dB	8.50-9.50	≤0.25	≤0.10
8dB	7.50-8.50	≤0.25	≤0.10
7dB	6.50-7.50	≤0.20	≤0.10
6dB	5.50-6.50	≤0.20	≤0.10
5dB	4.60-5.50	≤0.20	≤0.10
4dB	3.70-4.30	≤0.20	≤0.10
3dB	2.70-3.30	≤0.20	≤0.10
2dB	1.70-2.30	≤0.15	≤0.10
1dB	0.85-1.15	≤0.15	≤0.10

1. Insertion loss over operating wavelength range at ~23°C (excluding PDL and TDL).

2. Insertion loss change over the specified wavelength range.

3. Insertion loss change over the all input polarization states.

### Insertion Loss (IL) II : 1310nm, S<sup>2</sup> or C+L band coupler

Attenuation	IL <sup>1</sup> (dB)	WDL <sup>2</sup> (dB)	PDL <sup>3</sup> (dB)
20dB	18.5-21.5	≤0.90	≤0.20
18dB	17.5-18.8	≤0.80	≤0.15
17dB	16.0-17.5	≤0.70	≤0.15
15dB	13.8-16.0	≤0.60	≤0.15
13dB	12.0-13.8	≤0.50	≤0.10
11dB	10.5-12.0	≤0.50	≤0.10
10dB	9.90-10.5	≤0.50	≤0.10
9dB	8.70-9.90	≤0.50	≤0.10
8dB	7.60-8.70	≤0.50	≤0.10
7dB	6.50-7.60	≤0.45	≤0.10
6dB	5.40-6.50	≤0.45	≤0.10
5dB	4.40-5.40	≤0.40	≤0.10
4dB	3.40-4.40	≤0.35	≤0.10
3dB	2.60-3.40	≤0.35	≤0.10
2dB	1.70-2.30	≤0.25	≤0.10
1dB	0.80-1.20	≤0.20	≤0.10

1. Insertion loss over operating wavelength range at ~23°C (excluding PDL and TDL). For S-band product, add 0.1dB due to water absorption peak of fiber.

2. Insertion loss change over the specified wavelength range. For S-band product, add 0.1dB in WDL due to water absorption peak of fiber.

3. Insertion loss change over the all input polarization states.

**Ordering Information**

Oplink can provide a remarkable range of customized optical solutions. For detail, please contact Oplink's OEM design team or account manager for your requirements and ordering information (510) 933-7200.

