Fixed Attenuators

Bulkhead Attenuators

68 Series

Bulkhead / Feedthru Attenuators provide an economical solution for applications that do not require low back reflection yet will maintain repeatable performance.

Technical Specifications

Attenuation Values	+/- 1.5 dB @ 5, 10 or 15 dB +/- 2.0 dB @ 20 dB
Durability	500 matings < 0.20 dB x Attenuation

Ordering Information

Connector	1310nm	1550nm	1310/1550nm	850nm	1300nm
FC	68-FF-1-xx31	68-FF-1-xx15	68-FF-1-xx35	68-FF-1-xx85	68-FF-1-xx13
SC	68-YY-8-xx31	68-YY-8-xx15	68-YY-8-xx35	68-YY-8-xx85	68-YY-8-xx13
ST	68-JJ-7-xx31	68-JJ-7-xx15	68-JJ-7-xx35	68-JJ-7-xx85	68-JJ-7-xx13

Replace the 'xx' with the attenuation value 5, 10, 15 or 20 dB

Plug Style Attenuators

77 & 79 Series

Single mode and multimode plug style attenuators provide high optical performance that is critical to todays netwrokingsystems. They will perform over a wide bandpass for exisiting multimode, S and C bands and even into the L band.

Technical Specifications

Attenuation Values (single mode)	+/- 10% for 1-5 dB +/- 0.50dB for 6-15 dB +/- 10% for 16-30 dB
Attenuation Values (multimode)	+/- 0.50 for 1-5 dB +/- 0.75dB for 6-10 dB +/- 10% for 11-20 dB
Uniformity (single mode)	≤ 0.50 dB attenuation difference from 1310nm to 1550nm
Return Loss (single mode)	UPC > 55 dB (For ST > 50 dB) APC > 65 dB
Durability	500 matings <0.2 dB x Attenuation

Ordering Information

Connector	1310/1550nm	850nm	1300nm	850nm	1300nm
	9/125um	62.5/125um		50/125um	
FC	77-PP-xx	79-6-EE-xx85	79-6-EE-xx13	79-5-EE-xx85	79-5-EE-xx13
SC	77-TT-xx	79-6-ZZ-xx85	79-6-ZZ-xx13	79-5-ZZ-xx85	79-5-ZZ-xx13
ST	77-RR-xx	79-6-GG-xx85	79-6-GG-xx13	79-5-GG-xx85	79-5-GG-xx13
LC	77-LL-xx	79-6-LL-xx85	79-6-LL-xx13	79-5-LL-xx85	79-5-LL-xx13
MU	77-MM-xx	--	--	--	--
FC/APC	77-UU-xx	--	--	--	--
SC/APC	77-QQ-xx	--	--	--	--

Replace the 'xx' with the attenuation value 1-30 dB single mode and 1-20 dB multimode
Hybrid styles are also available. Contact FOC for details.

Variable Attenuators

Plug Style Variable Attenuators

76P Series

These plug or buildout style VOAs are 100% factory tested and are available with UPC or APC end-faces. Using air-gap technology, they can offer a wide attenuation range with low backreflection. Environmentally stable, high temperature performance and meets Telcordia GR-CORE 326 specifications.

Technical Specifications

Operating Wavelength	1240~1600nm Single Mode 850~1300nm Multimode
Resolution	0.05dB
Optical Return Loss	UPC > 55dB APC > 60dB
Attenuation Range	0~30dB

Ordering Information

Connector	Singlemode	62.5 Multimode
FC	76P-S8-P	76P-M6-E
SC	76P-S8-T	76P-M6-Z
FC/APC	76P-S8-U	--
SC/APC	76P-S8-Q	--

Patchcord Variable Attenuators

76 Series

VOA patchcords utilize both collimated and air-gap technologies offering a choice on performance. Mid-range air-gap VOAs are also available when a wide attenuation range is not required.

Technical Specifications

Type	Collimated	Air-Gap
Operating Wavelength	1200-1600nm	1200-1600nm
Residual Attenuation	1.5dB Max	1.5dB Max
Attenuation Range	1.5 to 45dB	1.5 to 40dB
Resolution	0.15dB Max	0.15dB Max
Optical Return Loss	<55dB	<55dB

Ordering Information

Available with most connector styles and in any lenght. Also available in rack mountable modules. Please contact FOC for details.

Dynamic Attenuators / Power Limiters

106120 Series

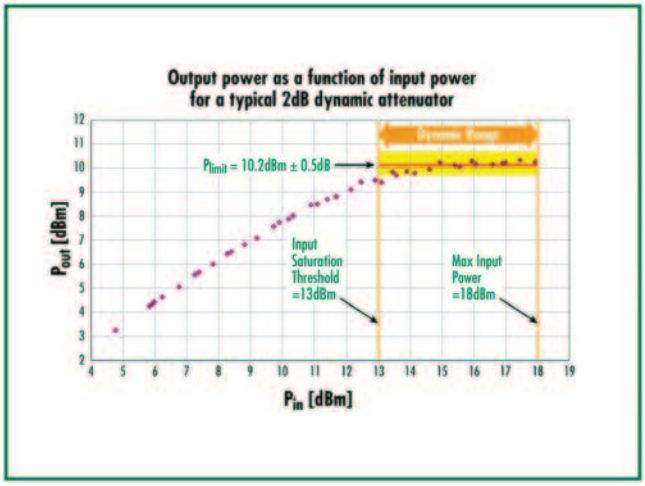
Dynamic Attenuators utilize nano-particle technology to provide optical power level control in an easy to us LC plug style package. Dynamic Attenuators can replace traditional fixed attenuaotrs offering increased optical power protection for sensitive optical receivers and optical test equipment. Additionally, the device's spring loaded ferrule protects fixed ferrule transceiver interfaces from mating damage.

Features & Benefits

- Prevents damage to fixed optical interfaces such as transcivers
- Mates with simplex or duplex LC adapters, transceivers and cables
- Increased reliability performance
- Sutiable for uncontrolled temperature applications
- Stable performance in a small easy to use package
- Protects latch from damage while enabling easy mating / unmating

Technical Specifications

Return Loss	-50 dB
Attenuation and Power Level	See table
Operating Wavelength	1510 to 1610nm
Durability	200 cycles
Operating Temperature	-40 to +85 °C



Ordering Information

Attenuation	0 dBm Power Limit	10 dBm Power Limit
2 +/- 0.5dB	--	106120-0250
5 +/- 0.5dB	106120-0200	106120-0260
10 +/- 0.5dB	106120-0210	106120-0270
15 +/- 1.0dB	106120-0220	106120-0280
20 +/- 1.0dB	106120-0230	106120-0290
25 +/- 1.0dB	106120-0240	106120-0295

Loopbacks

Loopbacks

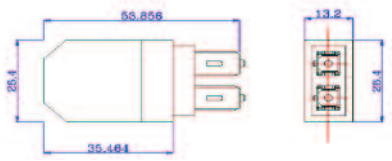
L Series

Single mode and multimode loopback attenuators and adapters are an economical solution for test simulations without the need for additional components and equipment. The single mode version uses erbium doped fiber to prevent light scattering with tight insertion loss and return loss specifications.

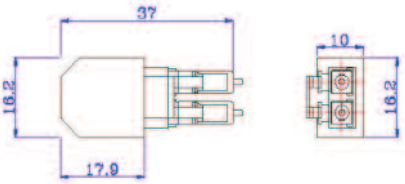
Technical Specifications

Type	Loopback Attenuator	Loopback Adapter
Single Mode Attenuation / IL	+/- 0.50dB (1-10dB) +/- 10% (11-20dB)	< 0.50dB
Multimode Attenuation / IL	+/- 1.0dB (3-10dB) +/- 15% (11-20dB)	< 0.75dB
Single Mode Return Loss	> 55dB UPC > 65dB APC (SC Only)	
Multimode Return Loss	> 35dB	
Operating Temperature	-40 to ~ +85 °C	
Durability	<0.2dB - 500 matings	

SC Dimensions (mm)



LC Dimensions (mm)



Ordering Information - Attenuators

Connector	Single Mode	Multimode 62.5/125um		Multimode 50/125um	
		850nm	1300nm	850nm	1300nm
LC	L-AT-L-XX	L-AT-6-L-XX85	L-AT-6-L-XX13	L-AT-5-L-XX85	L-AT-5-L-XX13
SC	L-AT-T-XX	L-AT-6-T-XX85	L-AT-6-T-XX13	L-AT-5-T-XX85	L-AT-5-T-XX13
SC/APC	L-AT-Q-XX	--	--	--	--

Ordering Information - Adapter

Connector	Single Mode	Multimode 62.5/125um		Multimode 50/125um	
		850nm	1300nm	850nm	1300nm
LC	L-AD-L-00	L-AD-6-L-0085	L-AD-6-L-0013	L-AD-5-L-0085	L-AD-5-L-0013
SC	L-AD-T-00	L-AD-6-T-0085	L-AD-6-T-0013	L-AD-5-T-0085	L-AD-5-T-0013
SC/APC	L-AD-Q-00	--	--	--	--

Replace the 'xx' with the attenuation value 1-20 dB single mode and 3-20 dB multimode

Terminators

10 Series

Single mode or multimode terminators create low back reflection in unused ports or dark fiber modules. These are typically used in single mode DWDM systems or multimode gigabit ethernet systems.

Technical Specifications

Fiber Type	Single Mode	Multimode
Back Reflection	SPC < -45dB UPC < -55dB APC < -65dB	< -30dB
Operating Wavelength	1310nm +/-30nm 1550nm +/-30nm	850nm or 1300nm
Operating Temperature	-40 to + 75 °C	-40 to + 75 °C
Maximum Optical Power	200mW	200mW

Ordering Information

Connector	Single Mode - UPC	Single Mode - APC
FC	10-P-55	10-U-65
SC	10-T-55	10-Q-65
ST	10-R-55	--
LC	10-L-55	--
MU	10-M-55	--