Singlemode Build Out Attenuators

Features

- A range of fixed attenuation values. Standard values of 1 through 20 and 25dB
- UPC and APC offer Excellent Return Loss
- FC, SC, ST, and D4 styles
- Attenuation is wavelength independent and polarization insensitive
- Low PDL
- Low modal noise
- Long term reliability
- Very low reflectance
- Excellent Price/Performance
- Vibration resistant
- Single and Dual Window
- Designed to comply with Bellcore GR-NWT-00910

Applications

- Power leveling in DWDM transmission systems
- Test and Measurement
- Power attenuation at the receiver

Available Collateral

- Application Specification 114-13055
- Test reports qualifying product to Bellcore 910
- Customer Drawings

Customizable Features

- Attenuation tolerance
- PC and SPC configurations
- Attenuation values in 1dB increments
- Labeling
- Kitting/Packaging
- Wavelength Dependent Loss
- Reflectance
- Pass Band

Tyco Electronics' high performance Build Out Attenuators utilize a unique all-fiber construction to absorb the optical signal.

By employing a Tyco Electronics' technology, the design minimizes reflectance, attenuation tolerance and PDL while maximizing reliability, environmental stability, and power handling. There are no filters, air gaps, or core mismatches.

Specifications

Attenuation Values —
1-20dB and 25 dB (Fixed)

Reflectance —
<-45dB, -50, -55 and -60dB for PC, SPC, UPC and APC polish respectively

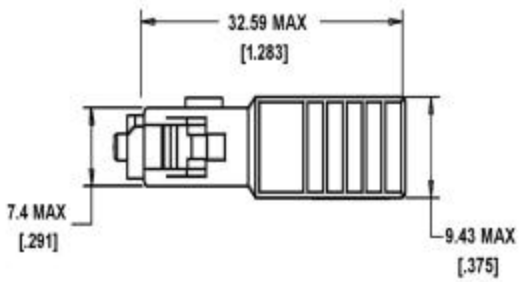
Operating Temperature —
-40°C to +75°C

Vibration Resistance —
<0.1 x attenuation

AMP

Singlemode
SC Attenuators, Build Out Style, Fixed Value

Dual Window and Bellcore Bandpass



R=Reflectance
Note: Additional attenuation values available upon request.

Dual Window Attenuators

Part Numbers — **Bandpass 1310/1550nm ±25nm**

Attenuation (dB)	SC/UPC R≤ -55 dB
1	209943-1
2	209943-2
3	209943-3
4	209943-4
5	209943-5
6	209943-6
7	209943-7
8	209943-8
9	209943-9
10	1-209943-0
11	1-209943-1
12	1-209943-2
13	1-209943-3
14	1-209943-4
15	1-209943-5
16	1-209943-6
17	1-209943-7
18	1-209943-8
19	1-209943-9
20	2-209943-0
25	2-209943-5

Note: Attenuation Tolerance, Ambient ---
≥ 5 dB: ± .10 x nominal attenuation value
< 5 dB: ± 0.50 dB

Bellcore Bandpass Attenuators

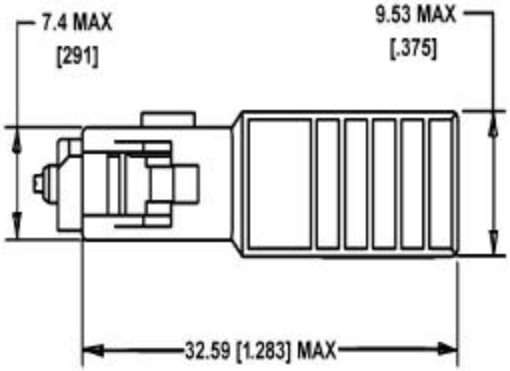
Part Numbers — **Bandpass 1260-1360nm & 1430-1580nm**

Attenuation (dB)	SC/UPC R≤ -55 dB
1	209250-1
2	209250-2
3	209250-3
4	209250-4
5	209250-5
6	209250-6
7	209250-7
8	209250-8
9	209250-9
10	1-209250-0
11	1-209250-1
12	1-209250-2
13	1-209250-3
14	1-209250-4
15	1-209250-5
16	1-209250-6
17	1-209250-7
18	1-209250-8
19	1-209250-9
20	2-209250-0
25	2-209250-5

Note: Attenuation **Tolerance, Ambient ----**
≥ 5 dB: ± .15 x nominal attenuation value
< 5 dB: ± 0.75 dB

Singlemode
SC Attenuators, Build Out Style
Fixed Value

SC/APC (8°)



R=Reflectance
Note: Additional attenuation values available upon request.

***9° APC Available (417496-X)**

Dual Window Attenuators

Part Numbers — **Bandpass 1310/1550nm ±25nm**

Attenuation (dB)	SC/APC R≤ -60 dB
1	209597-1
2	209597-2
3	209597-3
4	209597-4
5	209597-5
6	209597-6
7	209597-7
8	209597-8
9	209597-9
10	1-209597-0
11	1-209597-1
12	1-209597-2
13	1-209597-3
14	1-209597-4
15	1-209597-5
16	1-209597-6
17	1-209597-7
18	1-209597-8
19	1-209597-9
20	2-209597-0
25	2-209597-5

Note: Attenuation Tolerance, Ambient ---
≥ 5 dB: ± .10 x nominal attenuation value
< 5 dB: ± 0.50 dB

Bellcore Bandpass Attenuators

Part Numbers — **Bandpass 1260-1360nm & 1430-1580nm**

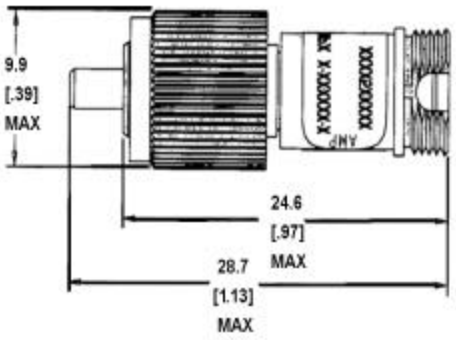
Attenuation (dB)	SC/APC (8°) R≤ -60 dB
1	417021-1
2	417021-2
3	417021-3
4	417021-4
5	417021-5
6	417021-6
7	417021-7
8	417021-8
9	417021-9
10	1-417021-0
11	1-417021-1
12	1-417021-2
13	1-417021-3
14	1-417021-4
15	1-417021-5
16	1-417021-6
17	1-417021-7
18	1-417021-8
19	1-417021-9
20	2-417021-0
25	2-417021-5

Note: Attenuation Tolerance, Ambient ---
≥ 5 dB: ± .15 x nominal attenuation value
< 5 dB: ± 0.75 dB

AMP

Singlemode
FC Attenuators, Build Out Style
Fixed Value

Dual Window and Bellcore Bandpass



R=Reflectance
Note: Additional attenuation values available upon request.

Dual Window Attenuators

Part Numbers	Bandpass 1310/1550nm ±25nm
Attenuation (dB)	FC/UPC R≤ -55 dB
1	209948-1
2	209948-2
3	209948-3
4	209948-4
5	209948-5
6	209948-6
7	209948-7
8	209948-8
9	209948-9
10	1-209948-0
11	1-209948-1
12	1-209948-2
13	1-209948-3
14	1-209948-4
15	1-209948-5
16	1-209948-6
17	1-209948-7
18	1-209948-8
19	1-209948-9
20	2-209948-0
25	2-209948-5

Note: Attenuation Tolerance, Ambient ---
≥ 5 dB: ± .10 x nominal attenuation value
< 5 dB: ± 0.50 dB

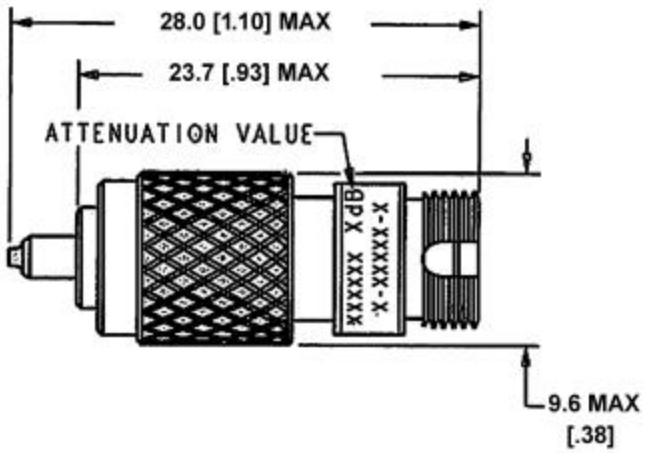
Bellcore Bandpass Attenuators

Part Numbers	Bandpass 1260-1360nm & 1430-1580nm
Attenuation (dB)	FC/UPC R≤ -55 dB
1	209285-1
2	209285-2
3	209285-3
4	209285-4
5	209285-5
6	209285-6
7	209285-7
8	209285-8
9	209285-9
10	1-209285-0
11	1-209285-1
12	1-209285-2
13	1-209285-3
14	1-209285-4
15	1-209285-5
16	1-209285-6
17	1-209285-7
18	1-209285-8
19	1-209285-9
20	2-209285-0
25	2-209285-5

Note: Attenuation Tolerance, Ambient ---
≥ 5 dB: ± .15 x nominal attenuation value
< 5 dB: ± 0.75 dB

Singlemode
FC Attenuators, Build Out Style
Fixed Value

FC/APC (8°)



R=Reflectance
Note: Additional attenuation values available upon request.

Dual Window Attenuators

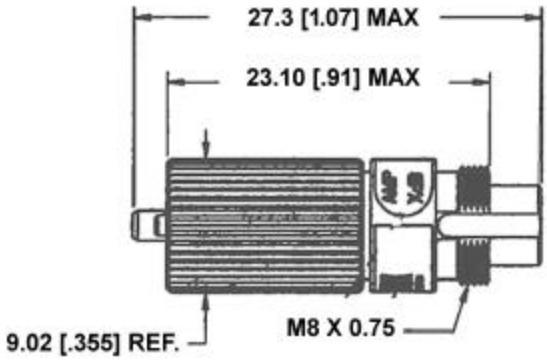
Part Numbers	Bandpass 1310/1550nm ±25nm
Attenuation (dB)	FC/APC R≤ -60 dB
1	209845-1
2	209845-2
3	209845-3
4	209845-4
5	209845-5
6	209845-6
7	209845-7
8	209845-8
9	209845-9
10	1-209845-0
11	1-209845-1
12	1-209845-2
13	1-209845-3
14	1-209845-4
15	1-209845-5
16	1-209845-6
17	1-209845-7
18	1-209845-8
19	1-209845-9
20	2-209845-0
25	2-209845-5

Note: Attenuation Tolerance, Ambient ---
≥ 5 dB: ± .10 x nominal attenuation value
< 5 dB: ± 0.50 dB

AMP

Singlemode
D4 Attenuators, Build Out Style
Fixed Value

D4 Attenuator



R=Reflectance
Note: Additional attenuation values available upon request.

Dual Window Attenuators

Part Numbers	Bandpass 1310/1550nm ±25nm
Attenuation (dB)	**D4/PC R≤-45 dB**
5	209570-5
10	1-209570-0
15	1-209570-5
20	2-209570-0

Note: Attenuation **Tolerance, Ambient ---**
≥ 5 dB: ± .15 x nominal attenuation value
< 5 dB: ± 0.75 dB

Variable Optical Attenuators

Features

- Repeatable, variable attenuation from 2 to 40dB
- <-65dB reflectance (unconnectorized)
- Slim design allows dense mounting with easy access to adjustment screw
- Available with standard connector types or unterminated
- Polarization insensitive
- Low modal noise
- Long-term reliability

Applications

- Test and measurement
- Power attenuation at the receiver
- Power leveling in DWDM transmission systems

Available Collateral

- Customer Drawings

Customizable Features

- Lead lengths
- Termination types, including LC, MU, SC, ST, FC

The Tyco Electronics' Variable Optical Attenuator achieves high reliability with a specially processed fiber that is conveniently adjusted to varying radii by the user. Cladding modes are well controlled by a specially processed fiber.

Specifications

Minimum Attenuation —
< 2dB

Maximum Attenuation —
≥ 40dB

Operational Wavelength —
1250-1580nm

Reflectance —
≤ -65dB unconnectorized

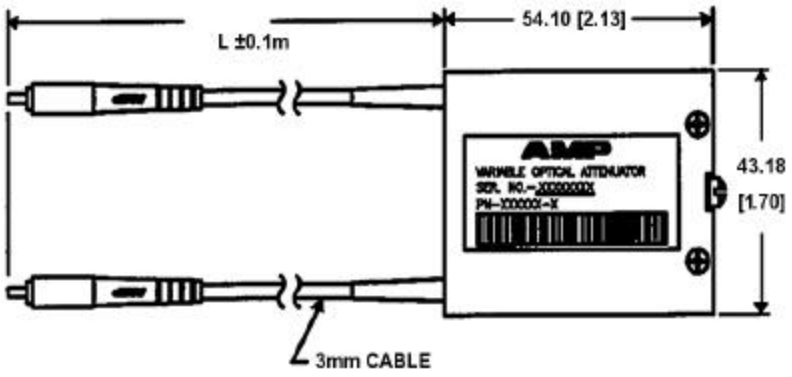
Operating Temperature —
-40°C to +75°C

Vibration Resistance —
< 0.15 x attenuation setting

Adjustment Resolution —
Continuously Adjustable

Singlemode Variable Attenuators

Fiber Conn Type	Part Number	Lead Length
None	107059-1	1.2 meters
FC/PC	107059-2	1.0 meter
SC/PC	107059-5	1.0 meter
ST/PC	107059-6	1.0 meter
FC/SPC	1-107059-2	1.0 meter
SC/SPC	1-107059-5	1.0 meter
FC/APC	209544-1	1.0 meter
FC/UPC	209544-3	1.0 meter
SC/APC	209544-5	1.0 meter
SC/UPC	209544-6	1.0 meter
SC/APC	3-209544-5	3.0 meters
SC/UPC	3-209544-6	3.0 meters
SC/APC SC/UPC	3-209544-7	3.0 meters



Connector Polish

Polish	Back Reflection
PC	-45 dB
SPC	-50 dB
UPC	-55 dB
APC	-65 dB

In Line Attenuators

Product Facts

- A range of fixed attenuation values. Standard values of 1 through 20, and 25 dB
- UPC and APC offer Excellent Return Loss
- Attenuation is wavelength independent and polarization insensitive
- Low PDL
- Low modal noise
- Long term reliability
- <-60dB reflectance (unconnectorized)
- Low cost
- Vibration resistant
- Single and Dual Window
- Designed to comply with Bellcore GR-NWT-00910

Applications

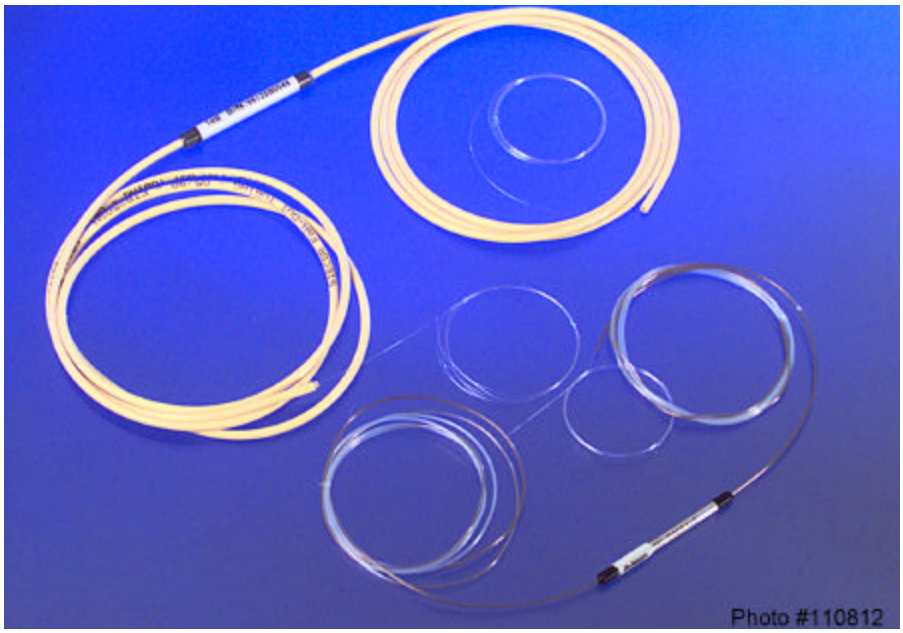
- Power leveling in DWDM transmission systems
- Test and Measurement
- Power attenuation at the receiver

Available Collateral

- Product designed to meet Bellcore 910
- Customer Drawings

Customizable Features

- Lead lengths
- Connectorized types, including LC, MU, SC, ST, and FC
- Available in Heavy Duty, Medium Duty, and Light Duty



Tyco Electronics' High Performance In Line Attenuators utilize a unique all fiber construction to absorb the optical signal.

By employing a Tyco Electronics' technology, the design minimizes reflectance, attenuation tolerance and PDL while maximizing reliability, environmental stability, and power handling. There are no filters, air gaps, or core mismatches.

Specifications

Attenuation Values —
1-20dB and 25 dB (Fixed)

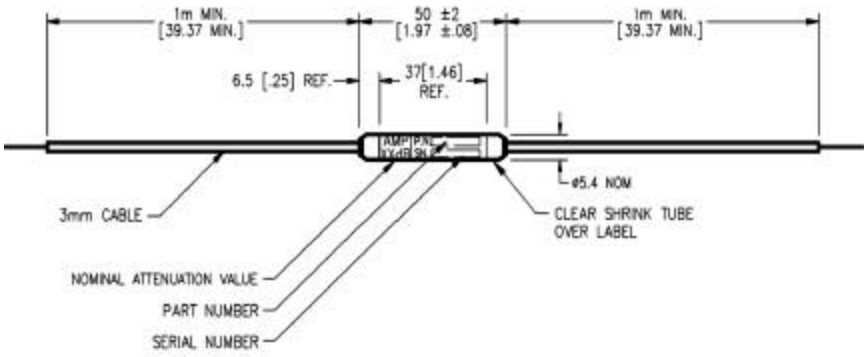
Reflectance —
<-45dB, -50, -55 and -60dB for PC, SPC, UPC and APC polish respectively

Operating Temperature —
-40°C to +75°C

Vibration Resistance —
<0.1 x attenuation

AMP

Singlemode
In Line Attenuators, Heavy Duty
Fixed Value



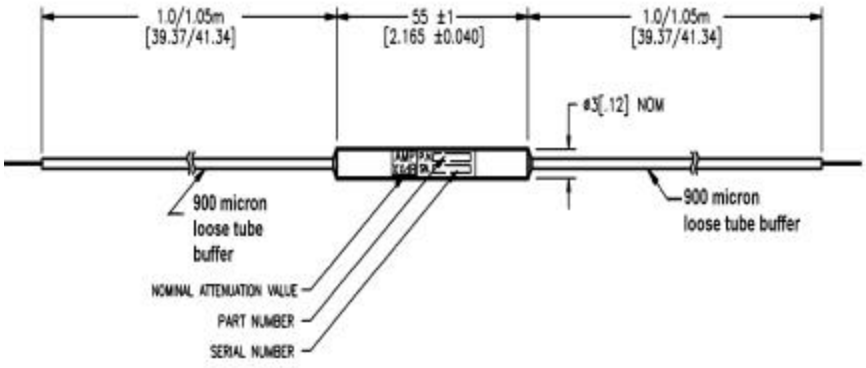
R=Reflectance
Note: Connectorization available upon request.

Dual Window In Line Attenuators

Part Numbers	Bandpass 1310/1550nm ±25nm
Attenuation (dB)	R ≤ -60 dB
1	417277-1
2	417277-2
3	417277-3
4	417277-4
5	417277-5
6	417277-6
7	417277-7
8	417277-8
9	417277-9
10	1-417277-0
11	1-417277-1
12	1-417277-2
13	1-417277-3
14	1-417277-4
15	1-417277-5
16	1-417277-6
17	1-417277-7
18	1-417277-8
19	1-417277-9
20	2-417277-0
25	2-417277-5

Note: Attenuation Tolerance,
Ambient, 25° C unconnectorized---
≥ 5 dB: ± .10 x nominal attenuation value
< 5 dB: ± 0.50 dB

Singlemode
In Line Attenuators, Medium Duty
Fixed Value



R=Reflectance
Note: Connectorization available upon request.

Dual Window In Line Attenuators

Part Numbers	Bandpass 1310/1550nm ±25nm
Attenuation (dB)	R≤ -60 dB
1	1321273-1
2	1321273-2
3	1321273-3
4	1321273-4
5	1321273-5
6	1321273-6
7	1321273-7
8	1321273-8
9	1321273-9
10	1-1321273-0
11	1-1321273-1
12	1-1321273-2
13	1-1321273-3
14	1-1321273-4
15	1-1321273-5
16	1-1321273-6
17	1-1321273-7
18	1-1321273-8
19	1-1321273-9
20	2-1321273-0
25	2-1321273-5

Note: Attenuation Tolerance,
Ambient, 25° C unconnectorized---
≥ 5 dB: ± .10 x nominal attenuation value
< 5 dB: ± 0.50 dB

AMP

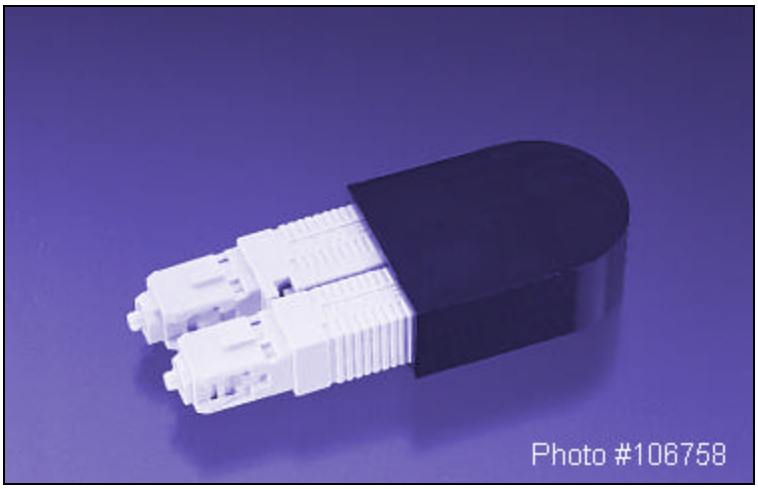
Loopback Attenuators

Features

- Fixed attenuation values of 0 to 14 dB. Other attenuation values available
- Simulates FDDI cable plant budget
- Compact package
- Mechanically and environmentally stable
- Wavelength independent

Applications

- Test an FDDI station
- Attenuate signal at cross-connect panel
- Simulate system optical budget
- Shipping cover for transceiver modules



Tyco Electronics' Loopback Attenuators utilize a unique all-fiber mechanism to cause a fixed attenuation of an optical signal. There are no filters, air-gaps, or core mis-matches.

Tyco Electronic's fixed value attenuators use a patented fused fiber technology that relies on the natural physical property of evanescent coupling to create the desired attenuation level.

Specifications

Various Attenuation Values —
0-14 dB (Fixed)
(Others available upon request)
Operational Wavelengths —
850, 1310, 1550nm
Operating Temperature —
-40°C to +75°C
Weight —
<1 oz.

Part Numbers — **Operating Wavelength 600-1600nm Tested @ 1310nm**

Attenuation (dB)	Fiber Size 62.5/125
0	417338-1
3	417338-3
6	417338-6
9	417338-9
11	1-417338-1
14	1-417338-4

Note: Attenuation Tolerance, Ambient:
= ± 15%
Except 0 dB = + 0.6dB
3 dB = ± 0.6dB
6 dB = ± 1.0dB

Part Numbers — **Operating Wavelength 600-1600nm Tested @850 nm**

Attenuation (dB)	Fiber Size 62.5/125
0	417355-1
5	417355-5
6	417355-6

Note: Attenuation Tolerance, Ambient:
0 dB = + 0.6dB
5 dB = ± 0.75dB
6 dB = ± 1.0dB