Attenuators

Fixed • Variable • Stepped • Digital

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Attenuators

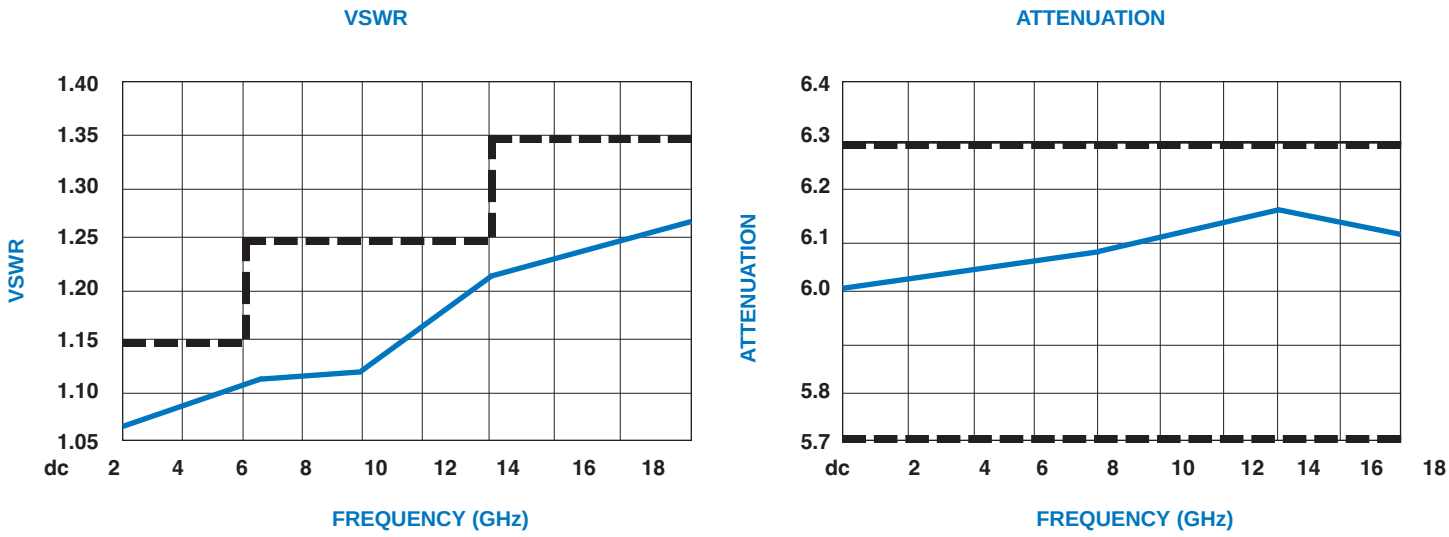
General Information

- **MIL-A-3933 Qualified (QPL)**
- **dc - 4, dc - 8, dc - 12.4, dc - 18 and dc - 26 GHz Performance**
- **Small Size, Light Weight, Rugged Construction**
- **Average Power available up to 20 Watts**
- **Meets MIL-E-5400 and MIL-16400 Environmental Requirements**
- **SMA, BMA, N, TNC, BNC, SC, 3.5mm, and 7mm Connector Configurations**

Attenuators are passive components designed for the purpose of reducing the input power in a matched transmission line system by a predictable amount on a linear basis. Midwest Microwave offers this complete product line of fixed coaxial attenuators, ruggedly designed for system or laboratory test use. These units exhibit low VSWR and high accuracy attenuation performance over the temperature range of -54C to +125C and meet the environmental requirements of MIL-E-5400 and MIL-E-16400. Medium power attenuators with average power levels of up to 20 Watts are available in up to 30 dB levels in .5 dB increments providing broadband performance and low frequency sensitivity while exhibiting very stable operation over temperature extremes. Standard cataloge units are available off the shelf for immediate delivery and special units can be custom designed by Midwest's engineering staff to accomodate unique system needs.

All Midwest Attenuators are completely manufactured in house and are 100% tested to insure only the highest quality performance whether for military or space use or for commercial applications.

Typical Fixed Attenuator Performance Characteristics



MIDWEST MICROWAVE

Attenuators

Definition of Parameters

Attenuation - The technical term is most often used in connection with loss or insertion loss in a transmission line. Insertion loss is a combination of two types of losses; impedance mismatch loss (*reflective*) and attenuation loss (*dissipative*). Mismatch loss is the ratio of power that would be absorbed by a unit or device under test , if it were perfectly impedance matched, to the actual power absorbed by thedevice. Attenuation is the ratio of power into a component to the power out under impedance matched conditions, and represents the actual power dissipated within the component. Thereby, Insertion loss is the ratio of the power delivered to a matched load by a matched generator before and after the insertion of a component into the transmission line. When a component is perfectly matched to the transmission line and to the load, the mismatch loss is zero and the insertion loss is the same as the attenuation.

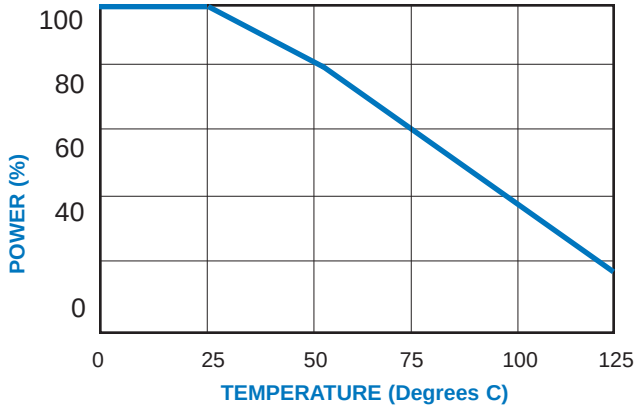
Precise Attenuator Assembly assures high performance

Average Power - The maximum average (cw) power is the maximum input power specified and applied for one hour minimum at the specified temperature of 25 degrees C with the output terminated in a matched impedance such that the specified properties of the attenuator will not be altered or changed after the unit is returned to ambient temperature at a power level that is 20 dB below the maximum specified input power. If the attenuator is operated at higher temperatures then it is necessary to derate the power rating accordingly. The derating curve and specifications shown below describes this specifically.

Peak Power - The maximum peak power at a pulse width or duty cycle of 5 microseconds together with the average power when applied for a minimum period of one hour with the output terminated with a matched load will not damage or permanantly alter the specified properties of the attenuator.

100% testing of performance parameters guarantees quality

Temperature Coefficient - The maximum change of insertion loss in dB per degree C from 20 C over the maximum operating temperature range. To obtain the change in insertion loss, multiply the temperature coefficient by the temperature change and then by the value in dB of the attenuator.



Custom Design Availability - In addition to the wide variety of standard model attenuators available on an off the shelf basis, Midwest Microwave retains an extensive engineering staff to accomodate your special requirements. A complete in-house design and manufacturing facility is provided including all testing and documentation for high reliability aerospace applications.

- Frequency applications that are extended
- Attenuation values in .5 dB increments
- Higher Power requrements
- High Performance, narrow bandwidth applications
- Connector interfaces and mounting requirements that ar extraordinary.

Temperature Specifications

Operating Temperature Range: -54C to +125C
Temperature Coefficient: 1/10,000 dB /dB/Degree C

Note: All mechanical dimensions are in inches with milimeters shown in parenthesis. tolerances are as follows: 0.XX = ± .020 and 0.XXX = ± .005

Attenuators

SMA Miniature Type

DC - 18 GHz High Performance

- **DC-2, DC-4, DC-8, and DC-12.4 units available**
- **0 - 60 dB Attenuation Values**
- **Rugged Stainless Steel Construction**
- **Any Male/Female combination available**
- **Low cost alternatives available**

Midwest Microwave's SMA miniature series of fixed coaxial attenuators provide temperature stable, ruggedly built, precision performance in a small light weight package size. Attenuation values up through 60 dB in 1 dB increments are available with any of the units described and with any combination of female or male SMA connectors.

SPECIFICATIONS - HIGH PERFORMANCE

Frequency: DC - 18.0, DC - 12.4, DC - 8.0 GHz
DC - 4.0, DC - 2.0 GHz

Attenuation Accuracy:

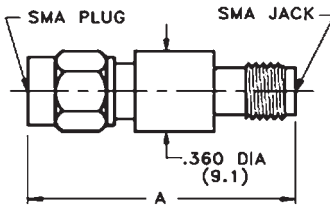
1-10 dB	± 0.3 dB
11-20 dB	± 0.5 dB
21-40 dB	±1.0 dB
41-60 dB	±1.5 dB

VSWR: 1.07+.015 (f GHz) max.
Power: 2 Watts Average @ 25C derated linearly to .5 Watts @ 125C
Peak Power: 200 Watts
Operating Temperature Range: - 65 to + 125C
Finish: Passivated Stainless Steel

DC - 18 GHz	263 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0263-XX-SMA-02	ATT-263F-XX-SMA-02	ATT-263M-XX-SMA-02

XX = Attenuation Value: Select 01-60dB in 1dB increments
(.5 dB increments available)

HIGH PERFORMANCE

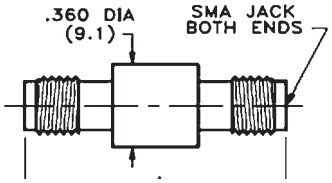


Attenuation Value	Length A
1-20 dB	1.20
21-60 dB	1.49

DC - 12.4 GHz	205 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0205-XX-SMA-02	ATT-205F-XX-SMA-02	ATT-205M-XX-SMA-02

XX = Attenuation Value: Select 01-60dB in 1dB increments
(.5 dB increments available)

HIGH PERFORMANCE

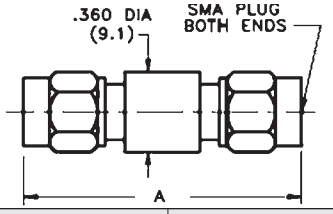


Attenuation Value	Length A
1-20 dB	1.07
21-60 dB	1.36

DC - 8.0 GHz	206 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0206-XX-SMA-02	ATT-206F-XX-SMA-02	ATT-206M-XX-SMA-02

XX = Attenuation Value: Select 01-60dB in 1dB increments
(.5 dB increments available)

HIGH PERFORMANCE



Attenuation Value	Length A
1-20 dB	1.33
21-60 dB	1.62

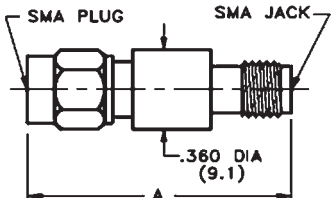
Note: * U.S. Patent No. 3,824,506 applies to all " Fixed Attenuators.

MIDWEST MICROWAVE

Attenuators

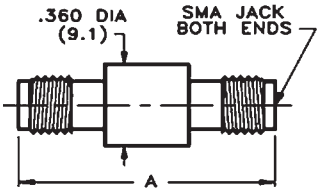
SMA Miniature Type

DC - 4.0 GHz	238 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0238-XX-SMA-02	ATT-238F-XX-SMA-02	ATT-238M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		



Attenuation Value	Length A
1-20 dB	1.20
21-60 dB	1.49

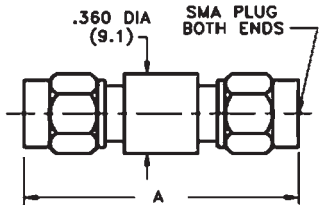
DC - 2.0 GHz	208 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0208-XX-SMA-02	ATT-208F-XX-SMA-02	ATT-208M-XX-SMA-02
XX = Attenuation Value: Select 01-60dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		



Attenuation Value	Length A
1-20 dB	1.07
21-60 dB	1.36

Low Cost - Inexpensive Types

DC - 18.0 GHz	333 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0333-XX-SMA-02	ATT-333F-XX-SMA-02	ATT-333M-XX-SMA-02
XX = Attenuation Value: Select 01-60dB in 1dB increments		
LOW COST		



Attenuation Value	Length A
1-20 dB	1.33
21-60 dB	1.62

DC - 8.0 GHz	334 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0334-XX-SMA-02	ATT-334F-XX-SMA-02	ATT-334M-XX-SMA-02
XX = Attenuation Value: Select 01-60dB in 1dB increments		
LOW COST		

DC - 2.0 GHz	335 SerieS	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0335-XX-SMA-02	ATT-335F-XX-SMA-02	ATT-335M-XX-SMA-02
XX = Attenuation Value: Select 01-60dB in 1dB increments		
LOW COST		

SPECIFICATIONS - LOW COST

Attenuation Accuracy:

	DC - 12.4 GHz	12.4 - 18 GHz
1-4 dB	± 0.75 dB	± 0.75 dB
5-8 dB_	± 0.75 dB	± 1.00 dB
9-12 dB	± 1.00 dB	± 1.25 dB
13-20 dB	± 1.50 dB	± 1.50 dB
21-40 dB	± 2.00 dB	± 2.00 dB
41-60 dB	± 2.50 dB	± 2.50 dB

VSWR:	Frequency (GHz)
1.25 max	DC - 4.0
1.45 max	4.0 - 12.4
1.65 max	12.4 - 18.0

Power: 2 Watts Average @ 25C derated linearly to .5 watts @ 125C

Peak Power: 200 Watts

Operating Temperature Range: -65 to +125C

Finish: Passivated Stainless Steel

Dimensions: Same as 263 Series

Note: * U.S. Patent No. 3,824,506 applies to all " Fixed Attenuators.

DC - 26.5 GHz High Performance

- **DC-2, DC-8, DC-12.4, and DC-18 GHzunits available**
- **Rugged Stainless Steel Construction**
- **Any Male/Female combination available**
- **Low cost alternatives available**

Midwest Microwave's SMA subminiature series of fixed coaxial attenuators (MINIPAD ®) provide temperature stable, ruggedly built, precision performance in a compact light weight package size. Attenuation values up through 30 dB in 1 dB increments are available with any of the units described and with any combination of female or male SMA connectors.

SPECIFICATIONS - HIGH PERFORMANCE

Frequency: DC - 18.0, DC - 12.4, DC - 8.0 GHz
DC - 4.0, and DC - 2.0 GHz

Attenuation Accuracy: 1-6 dB ± 0.3dB
7-20 dB ± 0.5 dB
21-30 dB ± 1.0 dB

VSWR: 1.07+.015 (f GHz) max.

Power: 2 Watts Average @ +25°C derated linearly to .5 watts @ +125°C

Peak Power: 200 Watts

Operating Temperature Range: -65 to +125C

Finish: Passivated Stainless Steel

DC - 26.5 GHz	298 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0298-XX-SMA-02	ATT-298F-XX-SMA-02	ATT-298M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

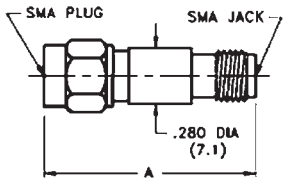
DC - 18 GHz	290 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0290-XX-SMA-02	ATT-290F-XX-SMA-02	ATT-290M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 12.4 GHz	291 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0291-XX-SMA-02	ATT-291F-XX-SMA-02	ATT-291M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

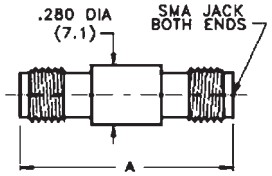
Note: * U.S. Patent No. 3,824,506 applies to all "MINIPAD" ® Fixed Attenuators

TYPE II LOW VSWR - HIGH PERFORMANCE IMPROVED SPECIFICATIONS

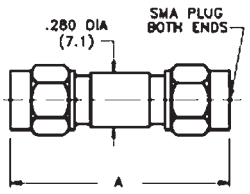
Frequency GHz	VSWR
DC - 4.0 GHz	1.12 max
4.0 - 8.0 GHz	1.15 max
8.0 - 18 GHz	1.20 max



Attenuation Value	Length A
1-12 dB	0.86
13-30 dB	1.02



Attenuation Value	Length A
1-12 dB	0.90
13-30 dB	1.03



Attenuation Value	Length A
1-12 dB	0.98
13-30 dB	1.12

DC - 8.0 GHz	292 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0292-XX-SMA-02	ATT-292F-XX-SMA-02	ATT-292M-XX-SMA-02

XX = Attenuation Value: Select 01-30dB in 1dB increments
(.5 dB increments available)

HIGH PERFORMANCE

DC - 2.0 GHz	294 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0294-XX-SMA-02	ATT-294F-XX-SMA-02	ATT-294M-XX-SMA-02

XX = Attenuation Value: Select 01-30dB in 1dB increments
(.5 dB increments available)

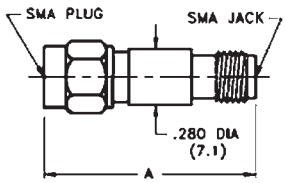
HIGH PERFORMANCE

LOW VSWR - Type II High Performance Attenuators

DC - 18.0 GHz	451 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0451-XX-SMA-02	ATT-451F-XX-SMA-02	ATT-451M-XX-SMA-02

XX = Attenuation Value: Select 01-30dB in 1dB increments

LOW VSWR - see improved performance specifications on page 10.

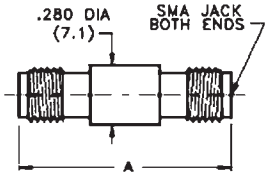


Attenuation Value	Length A
1-12 dB	0.86
13-30 dB	1.02

DC - 12.4 GHz	452 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0452-XX-SMA-02	ATT-452F-XX-SMA-02	ATT-452M-XX-SMA-02

XX = Attenuation Value: Select 01-30dB in 1dB increments

LOW VSWR - see improved performance specifications on page 10.

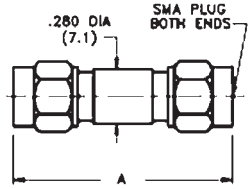


Attenuation Value	Length A
1-12 dB	0.90
13-30 dB	1.03

DC - 4.0 GHz	454 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0454-XX-SMA-02	ATT-454F-XX-SMA-02	ATT-454M-XX-SMA-02

XX = Attenuation Value: Select 01-30dB in 1dB increments

LOW VSWR -see improved performance specifications on page 10.



Attenuation Value	Length A
1-12 dB	0.98
13-30 dB	1.12

Notes: 1. Low VSWR Models are available in Hex Body - Designate by subsituting "HEX" for "SMA" in Model No.
2. U.S. Patent No. 3,824,506 applies to all "MINIPAD" ® Fixed Attenuators

Hex Body Types - High Performance

DC - 26.5 GHz	Hex Body 298HEX Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0298-XX-HEX-02	ATT-298F-XX-HEX-02	ATT-298M-XX-HEX-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 18.0 GHz	Hex Body 290HEX Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0290-XX-HEX-02	ATT-290F-XX-HEX-02	ATT-290M-XX-HEX-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 12.4 GHz	Hex Body 291HEX Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0291-XX-HEX-02	ATT-291F-XX-HEX-02	ATT-291M-XX-HEX-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 8.0 GHz	Hex Body 292HEX Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0292-XX-HEX-02	ATT-292F-XX-HEX-02	ATT-292M-XX-HEX-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 2.0 GHz	Hex Body 294HEX Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0294-XX-HEX-02	ATT-294F-XX-HEX-02	ATT-294M-XX-HEX-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

Note: * U.S. Patent No. 3,824,506 applies to all " Fixed Attenuators.

SPECIFICATIONS - HIGH PERFORMANCE

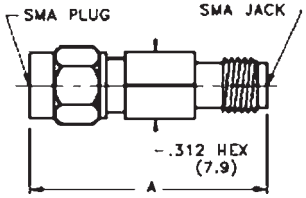
Attenuation Accuracy: 1-6 dB ± 0.3 dB
7-20 dB ± 0.5 dB
21-30 dB ± 1.0 dB

VSWR: 1.07+.015(f GHz) max

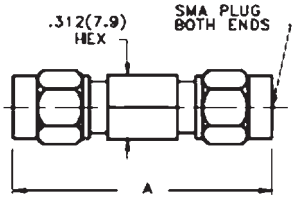
Power: 2 Watts Average @ +25 °C derated linearly to .5 watts @ +125 °C and 200 Watts peak

Operating Temperature Range: -65 °C to +125 °C

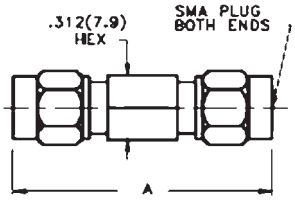
Finish: Passivated Stainless Steel



Attenuation Value	Length A
1-12 dB	0.86
13-30 dB	1.02



Attenuation Value	Length A
1-12 dB	0.90
13-30 dB	1.03



Attenuation Value	Length A
1-12 dB	0.98
13-30 dB	1.12

Attenuators

SMA Subminiature "MINIPAD"®

Round Body - Low Cost - Inexpensive Types

DC - 18.0 GHz	444 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0444-XX-SMA-02	ATT-444F-XX-SMA-02	ATT-444M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

DC - 12.4 GHz	445 Series	Model Numbers
Male/Female	Female /Female	Male/Male
ATT-0445-XX-SMA-02	ATT-445F-XX-SMA-02	ATT-445M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

DC - 8.0 GHz	446 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0446-XX-SMA-02	ATT-446F-XX-SMA-02	ATT-446M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

DC - 4.0 GHz	447 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0447-XX-SMA-02	ATT-447F-XX-SMA-02	ATT-447M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

DC - 2.0 GHz	448 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0448-XX-SMA-02	ATT-448F-XX-SMA-02	ATT-448M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

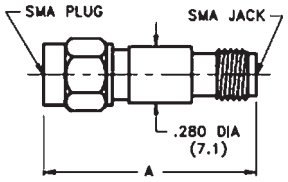
SPECIFICATIONS - LOW COST

Attenuation Accuracy:

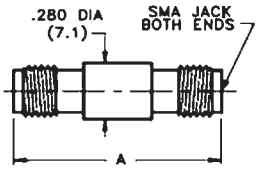
	DC - 12.4 GHz	12.4 - 18 GHz
1-4 dB	± 0.75 dB	± 0.75 dB
5-8 dB	± 0.75 dB	± 1.00 dB
9-12 dB	± 1.00 dB	± 1.25 dB
13-20 dB	± 1.50 dB	± 1.50 dB
21-30 dB	± 2.00 dB	± 2.00 dB

VSWR:

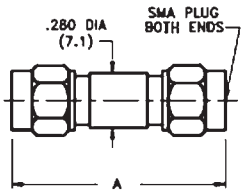
Frequency (GHz)	VSWR
DC - 4.0	1.25 max
4.0 - 12.4	1.45 max
12.4 - 18.0	1.65 max



Attenuation Value	Length A
1-12 dB	0.86
13-30 dB	1.02



Attenuation Value	Length A
1-12 dB	0.90
13-30 dB	1.03



Attenuation Value	Length A
1-12 dB	0.98
13-30 dB	1.12

Note: Low Cost Models are available in Hex Body - Designate by subsituting "HEX" for "000" in Model No.

Flange Mount Types - High Performance

DC - 18 GHz	Flange Mount 523 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0523-XX-SMA-02	ATT-523F-XX-SMA-02	ATT-523M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

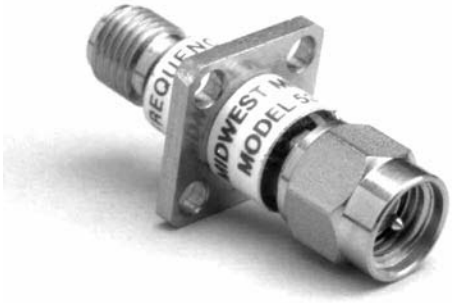
DC - 12.4 GHz	Flange Mount 524 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0524-XX-SMA-02	ATT-524F-XX-SMA-02	ATT-524M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 8.0 GHz	Flange Mount 531 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0531-XX-SMA-02	ATT-531F-XX-SMA-02	ATT-531M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 4.0 GHz	Flange Mount 525 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0525-XX-SMA-02	ATT-525F-XX-SMA-02	ATT-525M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

DC - 2.0 GHz	Flange Mount 526 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0526-XX-SMA-02	ATT-526F-XX-SMA-02	ATT-526M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		
HIGH PERFORMANCE		

Note: * U.S. Patent No. 3,824,506 applies to all " Fixed Attenuators.



SPECIFICATIONS - HIGH PERFORMANCE

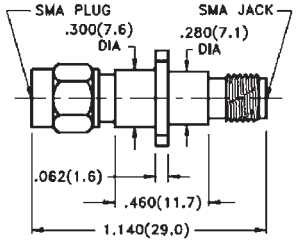
Attenuation Accuracy: 1-6 dB ± 0.3 dB
7-20 dB ± 0.5 dB
21-30 dB ± 1.0 dB

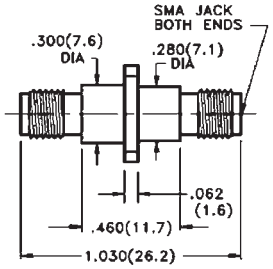
VSWR: 1.07+.015(f GHz) max

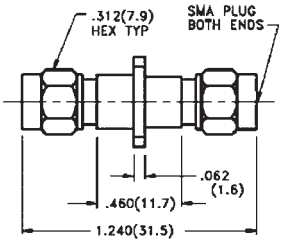
Power: 2 Watts Average @ +25 °C derated linearly to .5 watts @ +125 °C and 200 Watts peak

Operating Temperature Range: -65 to +125 °C

Finish: Passivated Stainless Steel







Flange Mount Types - Low Cost - Inexpensive

DC - 18 GHz	Flange Mount 532 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0532-XX-SMA-02	ATT-532F-XX-SMA-02	ATT-532M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

DC - 12.4 GHz	Flange Mount 533 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0533-XX-SMA-02	ATT-533F-XX-SMA-02	ATT-533M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

DC - 8.0 GHz	Flange Mount 534 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0534-XX-SMA-02	ATT-534F-XX-SMA-02	ATT-534M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST - Improved VSWR		

DC - 4.0 GHz	Flange Mount 535 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0535-XX-SMA-02	ATT-535F-XX-SMA-02	ATT-535M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST - Improved VSWR		

DC - 2.0 GHz	Flange Mount 536 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0536-XX-SMA-02	ATT-536F-XX-SMA-02	ATT-536M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments		
LOW COST		

Flange Mount type Attenuators are useful in many system or test instrument requirements where it is necessary to pass a signal through a panel and also take advantage of the opportunity to insert an attenuator while saving valuable space and weight. These units possess the same high performance characteristics as the standard 290 series.

The units are manufactured using rugged stainless steel construction and are designed to operate under very hostile environmental conditions.

SPECIFICATIONS - LOW COST

Attenuation Accuracy:

	DC - 12.4 GHz	12.4 - 18 GHz
1-10 dB	± 0.75 dB	± 0.75 dB
11-20 dB	± 0.75 dB	± 1.00 dB
21-30 dB	± 1.00 dB	± 1.25 dB

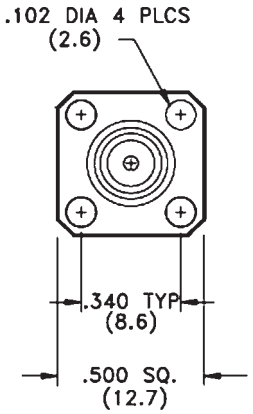
VSWR:

Frequency (GHz)	VSWR
DC - 4.0	1.25 max
4.0 - 12.4	1.45 max
12.4 - 18.0	1.65 max

Power: 2 Watts Average @ +25 °C derated linearly to .5 watts @ 125C and 200 Watts peak

Operating Temperature Range: -65 to +125 °C

Finish: Passivated Stainless Steel



Typical End View - All Models

Attenuators

SMA Ultraminiature Type

DC - 18 GHz High Performance

- **DC-2, DC-4, DC-8, and DC-12.4 units also available**
- **0 - 30 dB Attenuation Values**
- **Rugged Stainless Steel Construction**
- **Any Male/Female combination available**
- **Small Size - Lightweight**

Midwest Microwave's SMA Ultraminiature series of fixed coaxial attenuators provide temperature stable, ruggedly built, precision performance in a very small light weight package size. Attenuation values up through 30 dB in 1 dB increments are available with any of the units described and with any combination of female or male SMA connectors.

SPECIFICATIONS - HIGH PERFORMANCE

Frequency: DC - 18.0, DC - 12.4, DC - 8.0 GHz
DC - 4.0, DC - 2.0 GHz

Attenuation Accuracy: 1-6 dB ±0.3dB
7-20 dB ±0.5 dB
21-30 dB ±1.0 dB

VSWR: 1.07+.015 (f GHz) max.

Power: 2 Watts average @ +25 °C derated linearly to .5 watts @ +125 °C

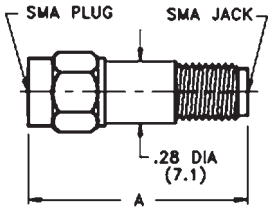
Peak Power: 200 Watts

Operating Temperature Range: - 65 to + 125 °C

Finish: Passivated Stainless Steel

DC - 18 GHz	275 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0275-XX-SMA-02	ATT-275F-XX-SMA-02	ATT-275M-XX-SMA-02

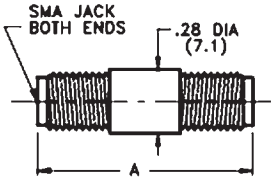
XX = Attenuation Value: Select 01-30dB in 1dB increments
(.5 dB increments available)
HIGH PERFORMANCE



Attenuation Value	Length A
1-12 dB	0.750
13-30 dB	0.875

DC - 12.4 GHz	276 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0276-XX-SMA-02	ATT-276F-XX-SMA-02	ATT-276M-XX-SMA-02

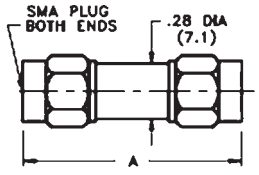
XX = Attenuation Value: Select 01-30dB in 1dB increments
(.5 dB increments available)
HIGH PERFORMANCE



Attenuation Value	Length A
1-12 dB	0.700
13-30 dB	0.825

DC - 8.0 GHz	277 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0277-XX-SMA-02	ATT-277F-XX-SMA-02	ATT-277M-XX-SMA-02

XX = Attenuation Value: Select 01-30dB in 1dB increments
(.5 dB increments available)
HIGH PERFORMANCE



Attenuation Value	Length A
1-12 dB	0.875
13-30 dB	1.00

Note: * U.S. Patent No. 3,824,506 applies to all " Fixed Attenuators.

Attenuators

SMA Ultraminiature Type

DC - 4.0 GHz	278 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0278-XX-SMA-02	ATT-278F-XX-SMA-02	ATT-278M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		

DC - 2.0 GHz	279 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0279-XX-SMA-02	ATT-279F-XX-SMA-02	ATT-279M-XX-SMA-02
XX = Attenuation Value: Select 01-30dB in 1dB increments (.5 dB increments available)		

DC - 26.5 GHz 3.5mm High Performance

- **Extended Frequency Performance**
- **0 - 20 dB Attenuation Values**
- **3.5 mm Precision Connectors (mates with SMA)**
- **Small Size - Light Weight**
- **Any Male/Female Connector Configuration**
- **Rugged Stainless Steel Construction**

Midwest Microwave's 3.5 mm subminiature series of precision fixed coaxial attenuators provide extended frequency operation of up to 26.5 GHz when mated with connector interfaces of the same family. These temperature stable, ruggedly built, precision attenuators allow high performance in a very small light weight package size Attenuation values up through 20 dB in 1 dB increments are available with any combination of female or male 3.5mm connectors.

SPECIFICATIONS - HIGH PERFORMANCE

Frequency: DC - 18.0, DC - 26.5 GHz

Attenuation Accuracy: 1-6 dB ± 0.5 dB
7-20 dB ± 0.7 dB

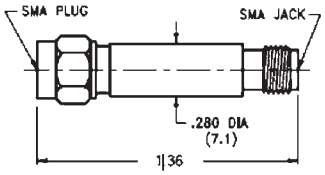
Operating Temp Range: - 65 to + 125C

VSWR: 1.07 + 0.015 f (GHz)

Power: 2 Watts Average @ +25 °C
derated linearly to .5 watts @ +125 °C

Peak Power: 200 Watts

Finish: Passivated Stainless Steel



DC - 26.5 GHz	550 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0550-XX-35M-02	ATT-550F-XX-35M-02	ATT-550M-XX-35M-02
XX = Attenuation Value: Select 01-20dB in 1dB increments (.5 dB increments available) *26.5 GHz Extended Frequency Performance*		

Note: dimensions shown above are for the Male/Female version. The length for the Female/Female version is 1.33 and for the Male/Male version is 1.39.

Note: For DC - 18.0 GHz Model, subsitute "551" for "550" in Model No.

Attenuators

QPL • High Reliability

MIL-A-3933 Qualified (QPL)

- **Non-Screened and Screened Units Available**
- **100% Tested**
- **Military Applications**

Midwest Microwave's QPL Attenuator productswere designed, tested and have been qualified to the stringent requirements of the latest effective issue of the applicable military specifications. By selecting a part that appears on a QPL list, a user is assured that the part will meet or exceed the performance specifications set forth in the MIL Specification as a minimum standard of performance.

MIL Part Slash No. Group	Description	Frequency (GHz)	Attenuation (dB)
MIL-A-3933/25	SMA Subminiature - Male/Female	DC - 4.0, DC - 12.4, DC - 18.0	0 - 40
MIL-A-3933/14	SMA Miniature - Male/Female	DC - 12.4	1 - 40
MIL-A-3933/16	SMA Miniature - Male/Female	DC - 18.0	0 - 40
MIL-A-3933/24	SMA Panel Mtd - Female/Female	2.0 - 12.4	10, 15, ,20, 40
MIL-A-3933/17	TNC - Male/Female	DC - 4.5, DC - 18.0	1-8, 10, 12, 15, 20, 25, 30, & 40
MIL-A-3933/19	BNC - Male/Female	DC - 4.5	1-6, 8, 10-13, 15, 20, & 40
MIL-A-3933/18	Type N - Male/Female	DC - 18.0	3, 6, , 10, 20, & 40
MIL-A-3933/16	Type N Lossy Line Type - Male/Female	0.4 - 18.0, 0.5-18.0 0.6 - 18.0 1.0 - 18.0 2.0 - 18.0	1 & 2 3 4 - 10 20

Note: Please refer to the QPL parts section on page 238 for complete listing of QPL part numbers.

Screened Attenuators per Table IV of MIL-A-3933

Screening Tests:

Thermal Shock
Conditioning
Visual & Mechanical Inspection
Pre-Burn-In Electrical:
DC Resistance
VSWR
Attenuation

Burn-In 240 Hours
Post Burn-In Electrical:
DC Resistance
VSWR
Attenuation
Radiographic Inspection

Non-Screened Attenuators per Table V of MIL-A-3933

Group A Inspection Tests

Visual & Mechanical Examination
VSWR
Attenuation
Stability of Attenuation:
After Peak Power

Note: All Screened Attenuators are tested 100% per Table IV and V of MIL-A-3933.
All Non-Screened Attenuators are tested 100% per Table V of MIL-A-3933.

Space Qualified Attenuators

Midwest Microwave manufactures High Reliability (Hi-Rel) Attenuators suitable for use under space flight conditions. These units are manufactured using a system that provides complete tracability of all of the piece parts that make up their assembly. All non-metal materials used meet or exceed the outgassing requirements of NASA specifications JSC SP-R-0022 for a TML of 1% max and a CVCM of .1% max.. All Hi-Rel components are manufactured in a clean room environment exceeding the requirements of FED-STD-201 Class 100,000. Hi-Rel attenuators are manufactured to individual customer specifications and undergo extensive testing similar to the testing outlined below.

In-Process Inspections	Sample Size
Visual & Mechanical Dimensions	100%
Plating Thickness	5 pcs.
Solderability	5 pcs.
Plating Adhesion	5 pcs.
Contact Captivation	100%
Rotational Contact Retention	6 pcs.
Axial Contact Retention	6 pcs.
Proof Torque	100%
Contact Engaging Force	100%
Contact Separating Force	100%

Group A Inspections - 100%

Visual & Mechanical Inspection
Thermal Shock
Sinusoidal Vibration
Electrical Characterisitics
Peak Power
Connector Engaging/Separating Force
Radiographic Inspections
PIND Test
Visual & Mechanical Inspection

Group B Inspections - 100%

Electrical Characteristics @ Operating Temperature Extremes
Contact Engaging/Separating Forces
Coupling Mechanism Proof Torque
Connector Mounting Proof Torque

Group C Inspections - 100%

Vibration
Shock
Moisture Resistance
Electrical Characteristics
Resistance to Solvents

Flange Mounted - Integrated Design

- **DC - 18 GHz Performance**
- **Tab, Slot, or Rod Contact for Microstrip use**
- **Interchangeable Transition Contact Pins**
- **Reduces Package Size and Weight**

This series of SMA flange mounted Connector-Attenuators are ideally suited for use on microstrip packages where size and weight are a consideration.By combining the Attenuator and the launching Connector, space and weight as well as cost savings is accomplished.The resistive film circuit is designed to improve reliability and lower mismatch losses by eliminating the need for separate coaxial components.The units exhibit low VSWR and are ruggedly constructed of stainless steel and are temperature stabilized for use in hostile environments.

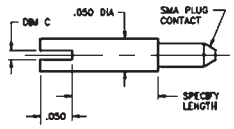
Model No.	Attenuation	VSWR	Fig.
ATT-0300--XX-SMA-02	01 - 06 ± 0.30 07 - 10 ± 0.50 11 - 20 ± 0.75	1.20 @ DC - 4 GHz 1.35 @ 4 - 12.4GHz 1.50@12.4 -18 GHz	1
ATT-0310--XX-SMA-02	01 - 06 ± 0.30 * 07 - 10 ± 0.50 11 - 20 ± 0.75 21 - 30 ± 1.00	1.15 @ DC - 4 GHz 1.25 @ 4-12.4 GHz 1.50 @12.4 -18GHz	2
ATT-0311-XX-SMA-02	01 - 06 ± 0.30 * 07 - 10 ± 0.50 11 - 20 ± 0.75 21 - 30 ± 1.00	1.15 @ DC - 4 GHz 1.25 @ 4-12.4 GHz 1.50 @12.4 -18GHz	3
ATT-0312-XX-SMA-02	01 - 06 ± 0.30 * 07 - 10 ± 0.50 11 - 20 ± 0.75 21 - 30 ± 1.00	1.15 @ DC - 4 GHz 1.25 @ 4-12.4 GHz 1.50 @12.4 -18GHz	4
ATT-0314-XX-SMA-02	01 - 06 ± 0.30 * 07 - 10 ± 0.50 11 - 20 ± 0.75 21 - 30 ± 1.00	1.15 @ DC - 4 GHz 1.25 @ 4-12.4 GHz 1.50 @12.4 -18GHz	5

Note: When ordering, replace "XX" in Model No. with desired Attenuation Value. Interchangeable center pin must be ordered separately, see Part No's below.

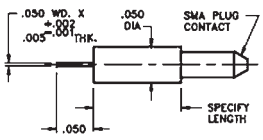
* From 12.4 to 18 GHz, Attenuation accuracy is ± 0.40 dB

Interchangeable Pin Configurations

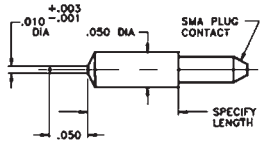
"CC"	DIM "C" ± .002
-01	0.012
-02	0.018
-03	0.028
-04	0.036



Part No. **PPM-0020-CC-YYY-01**



Part No. **PPM-0030-05-YYY-01**



Part No. **PPM-0040-06-YYY-01**

Notes:

1. Select desired length of interchangeable center pins in accordance with package requirements and substitue the three digit decimal length for "YYY" in the Part No.
2. All Attenuator Models are rated at 2 Watts Average and 200 Watts Peak.
3. Finish : Housings are Passivated Stainless Steel, Center Pins are gold plated.

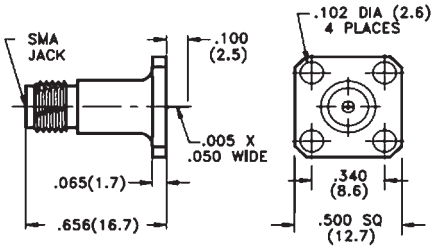


Figure 1 - non- removeable tab contact

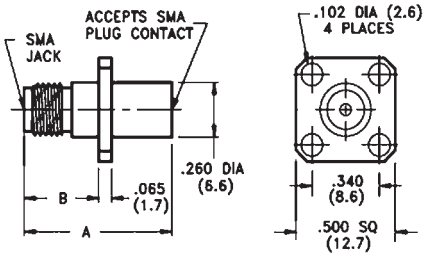


Figure 2

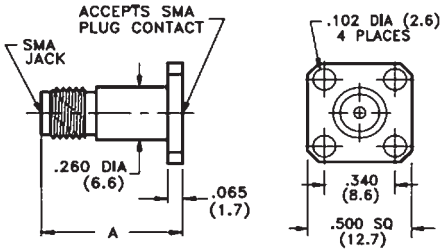


Figure 3

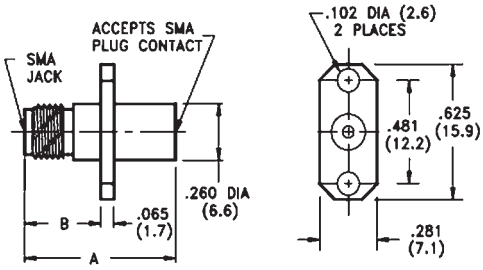


Figure 4

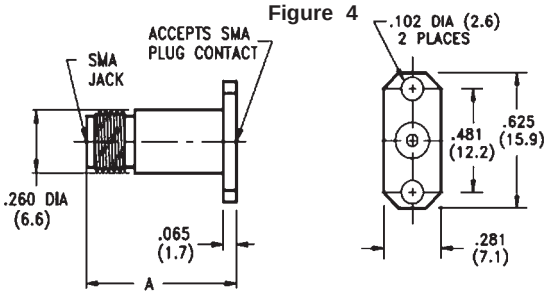


Figure 5

dB	DIM A	DIM B
1-12	.615 (15.6)	.375 (9.5)
13-30	.765 (19.4)	.525 (13.3)

Attenuators

SMA Medium Power Types

DC - 18 GHz High Performance

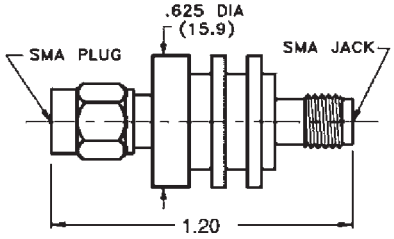
- **DC-18 GHz Performance**
- **5, 10, and 20 Watt Model selection**
- **Rugged Stainless Steel Interface Construction**
- **Any Male/Female combination available**
- **Low VSWR - High Performance**.

Midwest Microwave's SMA series of medium power fixed coaxial attenuators provide temperature stable, ruggedly built, precision performance in light weight reasonably sized packages. Attenuation values range through 40 dB in 1 dB increments and are available with any combination of female or male SMA connectors

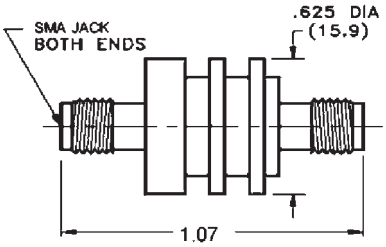
5 Watts - DC - 18 GHz

Frequency: DC - 18.0, DC-12.4, and DC-6.0 GHz units available
Attenuation Values: 1 thru 20 dB in 1 dB Increments
Attenuation Accuracy: 1- 6 dB ± 0.3dB
7-10 dB ± 0.5 dB
11-20 dB ± 0.7 dB
VSWR: 1.25 max. @ DC - 6.0 GHz, 1.30 max. @ 6 - 12.4 GHz, and 1.40 max. @ 12.4 - 18.0 GHz
Power: 5 Watts Average @ +40C derated linearly to 0.5 Watts @ +125C
Peak Power: 200 Watts
Operating Temperature Range: -54C to +125C
Finish: Black Anodized Aluminum and Stainless Steel Connectors

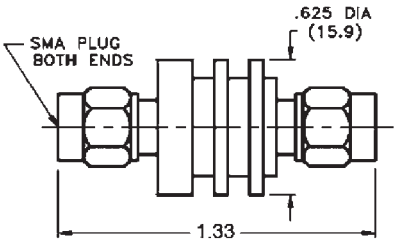
DC - 18.0 GHz	473 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0473-XX-SMA-07	ATT-473F-XX-SMA-07	ATT-473M-XX-SMA-07
XX = Attenuation Value: Select 01-20dB in 1dB increments		
5 WATTS		



DC - 12.4 GHz	474 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0474-XX-SMA-07	ATT-474F-XX-SMA-07	ATT-474M-XX-SMA-07
XX = Attenuation Value: Select 01-20dB in 1dB increments		
5 WATTS		



DC - 6.0 GHz	475 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0475-XX-SMA-07	ATT-475F-XX-SMA-07	ATT-475M-XX-SMA-07
XX = Attenuation Value: Select 01-20dB in 1dB increments		
5 WATTS		



MIDWEST MICROWAVE

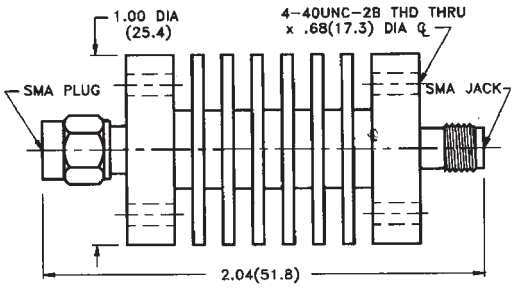
Attenuators

SMA Medium Power Types

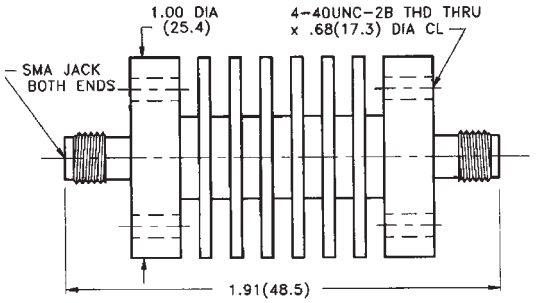
10 Watts - DC - 18 GHz Performance

Frequency: DC - 18.0, DC-12.4, DC-6.0, and DC-2.0 GHz units available
Attenuation Values: 1 thru 40 dB in 1 dB Increments
Attenuation Accuracy: 1- 10 dB ± 0.5dB
11-20 dB ± 0.7 dB
21-40 dB ± 1.0dB
VSWR: 1.25 max. @ DC - 2.0 GHz, 1.40 max. @ 2 - 12.4 GHz, and 1.50 max. @ 12.4 - 18.0 GHz
Power: 10 Watts Average @ +40C derated linearly to 0.5 Watts @ +125C
Peak Power: 100 Watts except 488 Series which is 5 Kilowatts
Operating Temperature Range: -54C to +125C
Finish: Black Anodized Aluminum and Stainless Steel Connectors

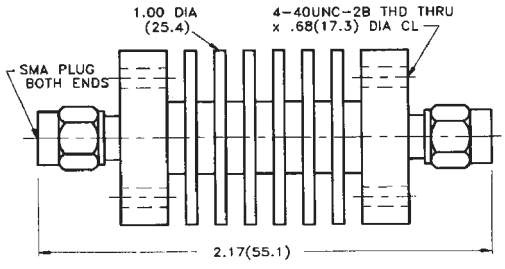
DC - 18.0 GHz	303 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0303-XX-SMA-07	ATT-303F-XX-SMA-07	ATT-303M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
10 WATTS		



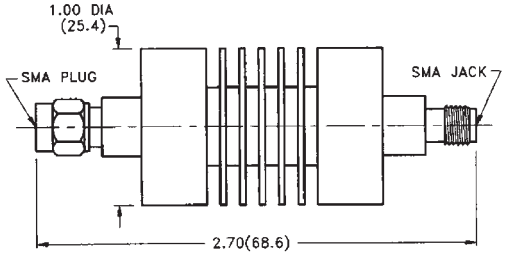
DC - 12.4 GHz	471 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0471-XX-SMA-07	ATT-471F-XX-SMA-07	ATT-471M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
10 WATTS		



DC - 6.0 GHz	472 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0472-XX-SMA-07	ATT-472F-XX-SMA-07	ATT-472M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
10 WATTS		



DC - 2.0 GHz	488 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0488-XX-SMA-07	ATT-488F-XX-SMA-07	ATT-488M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
10 WATTS Average - 5 Kilowatts Peak		



Attenuators

SMA Medium Power Types

20 Watts - DC - 18 GHz Performance

Frequency: DC - 18.0 , DC-12.4, DC-6.0, and DC-2.0 GHz units available

Attenuation Values: 1 thru 40 dB in 1 dB Increments

Attenuation Accuracy:

	DC-12.4 GHz	12.4 - 18 GHz
1- 6 dB	± 0.3 dB	± 0.5 dB
7-10 dB	± 0.5 dB	± 0.75 dB
11-20 dB	± 0.75 dB	± 1.0 dB
21-40 dB	± 1.0 dB	± 1.5 dB

VSWR: 1.25 max. @ DC - 12.4 GHz, and 1.50 max. @ 12.4 - 18.0 GHz

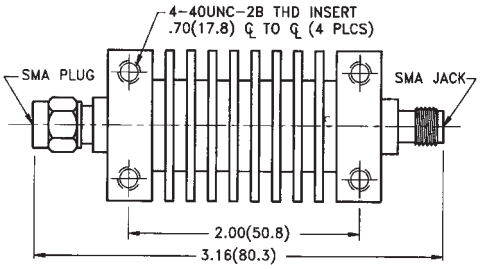
Power: 20 Watts Average @ +40C derated linearly to 5 Watts @ +125C

Peak Power: 500 Watts

Operating Temperature Range: -54C to +125C

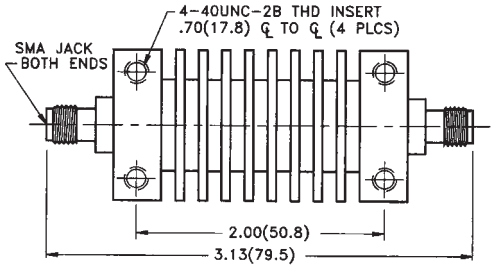
Finish: Black Anodized Aluminum and Stainless Steel Connectors

DC - 18.0 GHz	553 Series	Model Numbers
Male/Female	Female/Female	Male/Male
* ATT-0553-XX-SMA-07	*ATT-553F-XX-SMA-07	* ATT-553M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
20 WATTS		

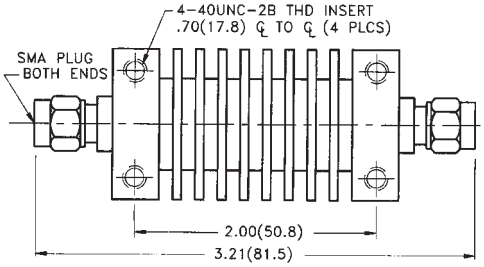


* Midwest has currently limited the test frequency on the above devices from the catalog listing of DC to 18 GHz, to an upper frequency of 15 GHz. Sorting for 18 GHz performance may be available upon request. Please consult the factory for additional information. Please be advised that sorting to 18 GHz may require an alternate performance specification than currently listed in the catalog.

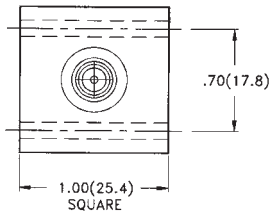
DC - 12.4 GHz	527 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0527-XX-SMA-07	ATT-527F-XX-SMA-07	ATT-527M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
20 WATTS		



DC - 6.0 GHz	554 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0554-XX-SMA-07	ATT-554F-XX-SMA-07	ATT-554M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
20 WATTS		



DC - 2.0 GHz	555 Series	Model Numbers
Male/Female	Female/Female	Male/Male
ATT-0555-XX-SMA-07	ATT-555F-XX-SMA-07	ATT-555M-XX-SMA-07
XX = Attenuation Value: Select 01-40dB in 1dB increments		
20 WATTS		



MIDWEST MICROWAVE

DC - 18 GHz Precision Performance

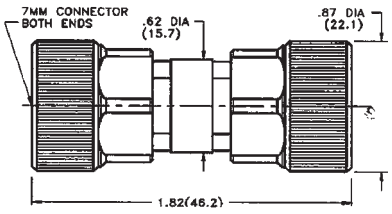
Frequency: DC - 18.0 GHz
Attenuation Values: 1 - 40 dB as noted
Attenuation Accuracy:

1 - 6 dB	± 0.3 dB
7 - 20 dB	± 0.5 dB
21 - 40 dB	± 0.7 dB
41 - 60 dB	± 1.5 dB

Impedance: 50 Ohms
VSWR: as noted
Power: as noted
Peak Power: 200 Watts on 2 Watt units and 100 Watts on medium power units
Operating Temperature Range: -54C to +125C
Finish: Black Anodized Aluminum and Stainless Steel Connectors

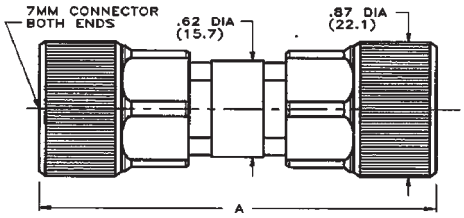
DC - 18.0 GHz	431 Series	Model Number
7mm Precision - Low VSWR		
ATT-0431-XX-7MM-02		

Attenuation Value = XX, Select 3, 6, 10, or 20 dB
VSWR: 1.12 @ DC-4.0, 1.15 @ 4.0-8.0, and 1.20 @ 8.0-18.0 (GHz) max.
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C



DC - 18.0 GHz	220 Series	Model Number
7mm Precision - Broadband Performance		
ATT-0220-XX-7MM-02		

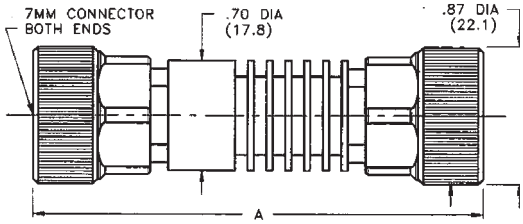
Attenuation Value= XX, Select 1 thru 60 dB in 1 dB Increments
VSWR: 1.07 + 0.015 f (GHz)
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C



Attenuation	A
1 - 20 dB	2.19
21 - 60 dB	2.47

DC - 12.4 GHz	395 Series	Model Number
7mm Precision - 5 Watts		
ATT-0395-XX-7MM-02		

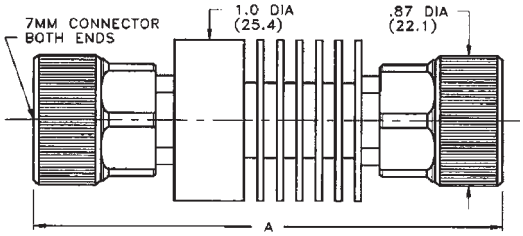
Attenuation Value = XX, Select 01 thru 40 dB in 1 dB increments
VSWR: 1.06 + 0.02f (GHz)
Power: 5 Watts average @ +25 °C derated linearly to 1 Watt @ +125 °C



Attenuation	A
1 - 6 dB	2.68
7 - 40 dB	3.12

DC - 12.4 GHz	396 Series	Model Number
7mm Precision - 10 Watts		
ATT-0396-XX-7MM-02		

Attenuation Value = XX, Select 01 thru 40 dB in 1 dB increments
VSWR: 1.06 + 0.02 f (GHz) max
Power: 10 Watts average @ +25 °C derated linearly to 1 Watt @ +125 °C



Attenuation	A
1 - 6 dB	2.68
7 - 40 dB	3.12

Attenuators

Type N

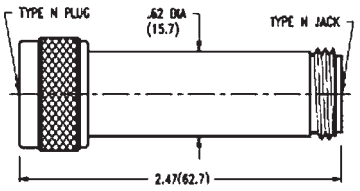
DC - 18 GHz Precision Performance

Frequency: DC - 18.0 GHz, DC - 12.4, and DC - 8.0 units available
Attenuation Values: 1 - 60 dB as noted
Attenuation Accuracy:

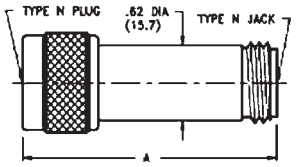
1 - 6 dB	± 0.3 dB
7 - 20 dB	± 0.5 dB
21 - 40 dB	± 0.7 dB
41 - 60 dB	± 1.5 dB

Impedance: 50 Ohms
VSWR: 1.07 + 0.015 f (GHz) max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 200 Watts
Operating Temperature Range: -54 °C to +125 °C
Finish: Stainless Steel

DC - 18.0 GHz	389 Series	Model Number
Type N Precision - Low VSWR		
ATT-0389-XX-NNN-02		
Attenuation Value = XX, Select 3, 6, 10, or 20 dB *Calibration Data Supplied*		VSWR: 1.12 @ DC-4 GHz 1.15 @ 4 - 8 GHz 1.20 @ 8 - 18 GHz

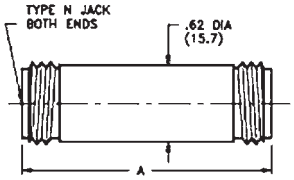


DC - 18.0 GHz	219 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0219-XX-NNN-02	ATT-219F-XX-NNN-02	ATT-219M-XX-NNN-02
Attenuation Value= XX, Select 1 thru 60 dB in 1 dB Increments		



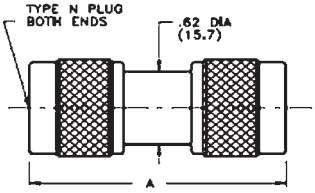
Attenuation Value	Length A
1 - 20 dB	1.77 (45.0)
21 - 60 dB	2.05 (52.1)

DC - 12.4 GHz	218 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0218-XX-NNN-02	ATT-218F-XX-NNN-02	ATT-218M-XX-NNN-02
Attenuation Value= XX, Select 1 thru 60 dB in 1 dB Increments		



Attenuation Value	Length A
1 - 20 dB	1.74 (44.2)
21 - 60 dB	2.02 (51.3)

DC - 8.0 GHz	217 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0217-XX-NNN-02	ATT-217F-XX-NNN-02	ATT-217M-XX-NNN-02
Attenuation Value= XX, Select 1 thru 60 dB in 1 dB Increments		



Attenuation Value	Length A
1 - 20 dB	1.56 (39.6)
21 - 60 dB	1.84 (47.0)

Note: U.S. Patent No. 3,824,506 and 4,011,531 applies to 217, 218, and 219 series Attenuators.

Attenuators

Type N - Medium Power

5 Watts - DC - 18 GHz Precision Performance

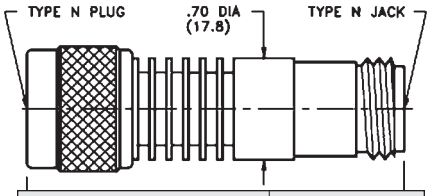
Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8, and DC - 2.0 units available
Attenuation Values: 1 - 40 dB as noted
Attenuation Accuracy:

	DC-12.4 GHz	12.4-18.0 GHz
1 - 6 dB	± 0.3 dB	± 0.5 dB
7 - 20 dB	± 0.5 dB	± 0.75 dB
21 - 40 dB	± 0.7 dB	± 1.0 dB

Impedance: 50 Ohms
VSWR: 1.06 + 0.02 f (GHz) max
Power: 5 Watts average @ +40 °C derated linearly to 1 Watt @ +125 °C
Peak Power: 100 Watts
Operating Temperature Range: -54 °C to +125 °C
Finish: Black Anodized Aluminum with Stainless Steel Connectors

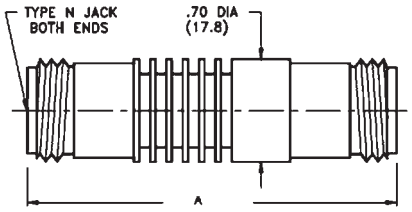
DC - 18.0 GHz	390 Series	Model Number
Male / Female	Female / Female	Male / Male
*ATT-0390-XX-NNN-07	*ATT-390F-XX-NNN-07	*ATT-390M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
5 Watts		

* Midwest has currently limited the test frequency on the above devices from the catalog listing of DC to 18 GHz, to an upper frequency of 15 GHz. Sorting for 18 GHz performance may be available upon request. Please consult the Factory for additional information. Please be advised that sorting to 18 GHz may require an alternate performance specification than currently listed in the catalog.



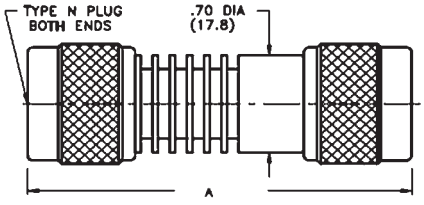
Attenuation Value	Length A
1 - 6 dB	2.38 (60.5)
7 - 40 dB	2.82 (71.6)

DC - 12.4 GHz	391 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0391-XX-NNN-07	ATT-391F-XX-NNN-07	ATT-391M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
5 Watts		



Attenuation Value	Length A
1 - 6 dB	2.32 (59.0
7 - 40 dB	2.75 (69.9)

DC - 8.0 GHz	393 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0393-XX-NNN-07	ATT-393F-XX-NNN-07	ATT-393M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
5 Watts		



Attenuation Value	Length A
1 - 6 dB	2.48 (63.0)
7 - 40 dB	2.91 (74.0)

DC - 2.0 GHz	394 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0394-XX-NNN-07	ATT-394F-XX-NNN-07	ATT-394M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
5 Watts		

Attenuators

Type N - Medium Power

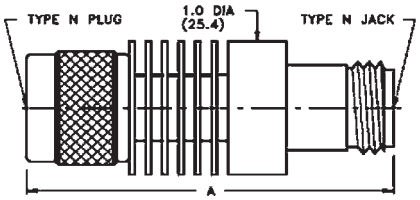
10 Watts - DC - 18 GHz Precision Performance

Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8.0 and DC - 2.0 units available
Attenuation Values: 1 - 40 dB as noted
Attenuation Accuracy:

	DC-12.4 GHz	12.4-18.0 GHz
1 - 6 dB	± 0.3 dB	± 0.5 dB
7 - 20 dB	± 0.5 dB	± 0.75 dB
21 - 40 dB	± 0.7 dB	± 1.0 dB

Impedance: 50 Ohms
VSWR: 1.06 + 0.02 f (GHz) max
Power: 10 Watts average @ 40C derated linearly to 1 Watt @ 125C
Peak Power: 100 Watts except Model 477 series is 5Kilowatts
Operating Temperature Range: -54 °C to +125 °C
Finish: Black Anodized Aluminum with Stainless Steel Connectors

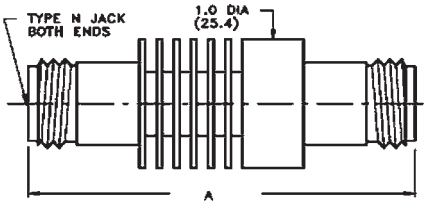
DC - 18.0 GHz	397 Series	Model Number
Male/Female	Female/Female	Male/Male
*ATT-0397-XX-NNN-07	*ATT-397F-XX-NNN-07	*ATT-397M-XX-NNN-07
Attenuation Value = XX, Select 01 thru 40 dB in 1 dB increments		
10 Watts		



Attenuation Value	Length A
1 - 6 dB	2.38 (60.5)
7 - 40 dB	2.82 (71.6)

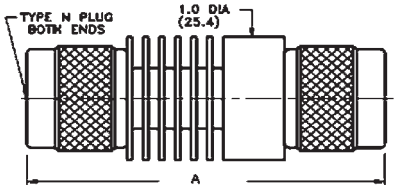
** Midwest has currently limited the test frequency on the above devices from the catalog listing of DC to 18 GHz, to an upper frequency of 15 GHz. Sorting for 18 GHz performance may be available upon request. Please consult the Factory for additional information. Please be advised that sorting to 18 GHz may require an alternate performance specification than currently listed in the catalog.

DC - 12.4 GHz	392 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0392-XX-NNN-07	ATT-392F-XX-NNN-07	ATT-392M-XX-NNN-07
Attenuation Value= XX, Select 01 thru 40 dB in 1 dB Increments		
10 Watts		



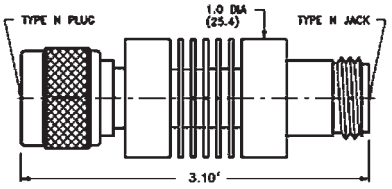
Attenuation Value	Length A
1 - 6 dB	2.32 (58.9)
7 - 40 dB	2.75 (69.9)

DC - 8.0 GHz	398 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0398-XX-NNN-07	ATT-398F-XX-NNN-07	ATT-398M-XX-NNN-07
Attenuation Value= XX, Select 01 thru 40 dB in 1 dB Increments		
10 Watts		



Attenuation Value	Length A
1 - 6 dB	2.48 (63.0)
7 - 40 dB	2.91 (73.9)

DC - 2.0 GHz	477 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0477-XX-NNN-07	ATT-477F-XX-NNN-07	ATT-477M-XX-NNN-07
Attenuation Value= XX, Select 03 thru 40 dB in 1 dB Increments		
10 Watts - 5 Kilowatts Peak		*VSWR: 1.25 Max.*



Note: Female to Female Model is 3.02 (76.7) long
Male to Male Model is 3.18 (80.8) long

Note: U.S. Patent No. 4,011,531 applies.

Attenuators

Type N - Medium Power

20 Watts - DC - 18 GHz Precision Performance

Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8, and DC - 2.0 units available

Attenuation Values: 1 - 40 dB as noted

Attenuation Accuracy:

	DC-12.4 GHz	12.4-18.0 GHz
1 - 6 dB	± 0.3 dB	± 0.5 dB
7 - 10 dB	± 0.5 dB	± 0.75 dB
11 - 20 dB	± 0.75 dB	± 1.0 dB
21 - 40 dB	± 1.0 dB	± 1.5 dB

Impedance: 50 Ohms

VSWR: 1.25 max @ DC - 12.4 GHz, 1.50 max @ 12.4 - 18.0 GHz

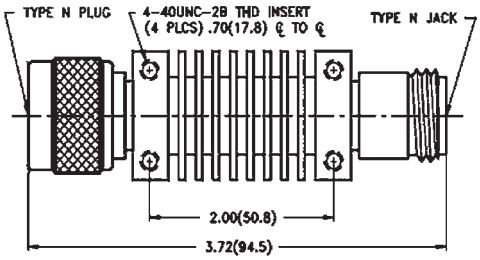
Power: 20 Watts average @ +40 °C derated linearly to 5 Watts @ +125 °C

Peak Power: 500 Watts

Operating Temperature Range: -54C to +125C

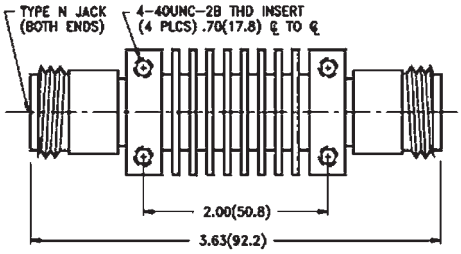
Finish: Black Anodized Aluminum with Stainless Steel Connectors

DC - 18.0 GHz	547 Series	Model Number
Male / Female	Female / Female	Male / Male
* ATT-0547-XX-NNN-07	*ATT-547F-XX-NNN-07	*ATT-547M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20Watts		

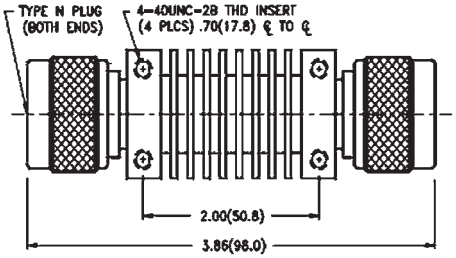


* Midwest has currently limited the test frequency on the above devices from the catalog listing of DC to 18 GHz, to an upper frequency of 15 GHz. Sorting for 18 GHz performance may be available upon request. Please consult the Factory for additional information. Please be advised that sorting to 18 GHz may require an alternate performance specification than currently listed in the catalog.

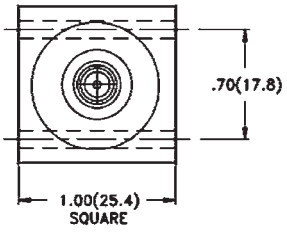
DC - 12.4 GHz	528 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0528-XX-NNN-07	ATT-528F-XX-NNN-07	ATT-528M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		



DC - 8.0 GHz	559 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0559-XX-NNN-07	ATT-559F-XX-NNN-07	ATT-559M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		



DC - 2.0 GHz	549 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0549-XX-NNN-07	ATT-549F-XX-NNN-07	ATT-549M-XX-NNN-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		



Attenuators

TNC Type

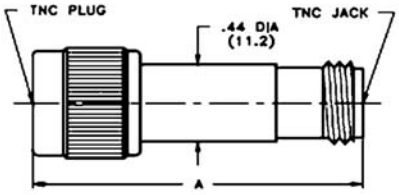
DC - 18 GHz Precision Performance

Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8.0 and DC - 2.0 units available
Attenuation Values: 1 - 60 dB in 1 dB increments
Attenuation Accuracy:

1 - 6 dB	± 0.3 dB
7 - 20 dB	± 0.5 dB
21 - 40 dB	± 1.0 dB
41 - 60 dB	± 1.5 dB

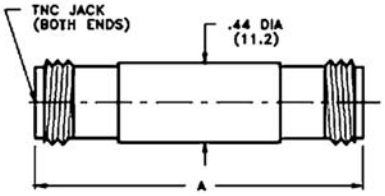
Impedance: 50 Ohms
VSWR: 1.07 + 0.015 f (GHz) max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 200 Watts
Operating Temperature Range: -54C to +125C
Finish: Stainless Steel

DC - 18.0 GHz	225 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0225-XX-TNC-02	ATT-225F-XX-TNC-02	ATT-225M-XX-TNC-02
Attenuation Value = XX, Select 01 thru 60 dB in 1 dB increments		
Broadband Performance		



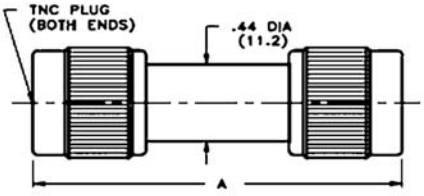
Attenuation Value	Length A
1 - 20 dB	1.57 (39.9)
21 - 60 dB	1.84 (46.7)

DC - 12.4 GHz	224 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0224-XX-TNC-02	ATT-224F-XX-TNC-02	ATT-224M-XX-TNC-02
Attenuation Value= XX, Select 01 thru 60 dB in 1 dB Increments		



Attenuation Value	Length A
1 - 20 dB	1.66 (42.2)
21 - 60 dB	1.93 (49.0)

DC - 8.0 GHz	223 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0223-XX-TNC-02	ATT-223F-XX-TNC-02	ATT-223M-XX-TNC-02
Attenuation Value= XX, Select 01 thru 60 dB in 1 dB Increments		



Attenuation Value	Length A
1 - 20 dB	1.71 (43.4)
21 - 60 dB	1.98 (50.3)

DC - 2.0 GHz	222 Series	Model Number
Male/Female	Female / Female	Male / Male
ATT-0222-XX-TNC-02	ATT-222F-XX-TNC-02	ATT-222M-XX-TNC-02
Attenuation Value= XX, Select 1 thru 60 dB in 1 dB Increments		

Note: U.S. Patent No. 3,824,506 and 4,011,531 applies.

Attenuators

TNC Type - Medium Power

10 Watts - DC - 18 GHz Precision Performance

Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8, and DC - 2.0 units available

Attenuation Values: 1 - 40 dB as noted

Attenuation Accuracy:

	DC-12.4 GHz	12.4-18.0 GHz
1 - 6 dB	± 0.3 dB	± 0.5 dB
7 - 20 dB	± 0.5 dB	± 0.75 dB
21 - 40 dB	± 1.0 dB	± 1.5 dB

Impedance: 50 Ohms

VSWR: 1.25 max @ DC - 12.4 GHz, 1.50 @ 12.4 - 18.0 GHz

Power: 10 Watts average @ 40 C derated linearly to 1 Watt @ 125 C

Peak Power: 100 watts and 5 Kilowatts on 476 Series

Operating Temperature Range: -54C to +125C

Finish: Black Anodized Aluminum with Stainless Steel Connectors

DC - 18.0 GHz	480 Series	Model Number
Male / Female	Female / Female	Male / Male
*ATT-0480-XX-TNC-07	*ATT-480F-XX-TNC-07	*ATT-480M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
10 Watts		

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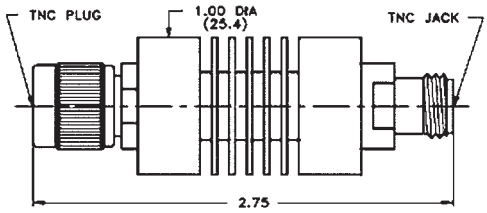
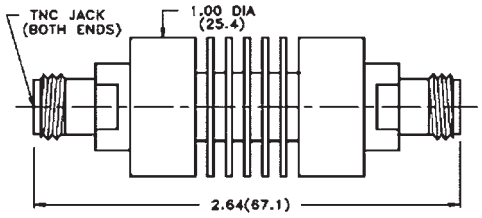
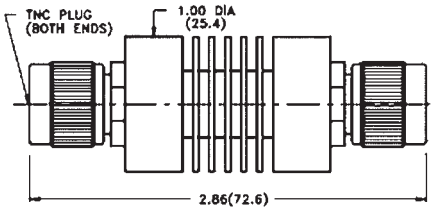


DC - 12.4 GHz	479 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0479-XX-TNC-07	ATT-479F-XX-TNC-07	ATT-479M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
10 Watts		



DC - 8.0 GHz	478 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0478-XX-TNC-07	ATT-478F-XX-TNC-07	ATT-478M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
10 Watts		



DC - 2.0 GHz	476 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0476-XX-TNC-07	ATT-476F-XX-TNC-07	ATT-476M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
10 Watts - 5 Kilowatts Peak		

Attenuators

TNC Type - Medium Power

20 Watts - DC - 18 GHz Precision Performance

Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8, and DC - 2.0 units available

Attenuation Values: 1 - 40 dB in 1 dB increments

Attenuation Accuracy:

	DC-12.4 GHz	12.4-18.0 GHz
1 - 6 dB	± 0.3 dB	± 0.5 dB
7 - 10 dB	± 0.5 dB	± 0.75 dB
11 - 20 dB	± 0.75 dB	± 1.0 dB
21 - 40 dB	± 1.0 dB	± 1.5 dB

Impedance: 50 Ohms

VSWR: 1.25 max @ DC - 12.4 GHz, 1.50 @ 12.4 - 18.0 GHz

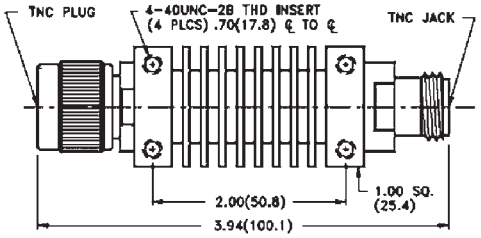
Power: 20 Watts average @ 40 C derated linearly to 1 Watt @ 125 C

Peak Power: 500 Watts

Operating Temperature Range: -54C to +125C

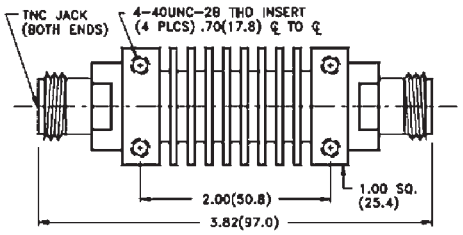
Finish: Black Anodized Aluminum with Stainless Steel Connectors

DC - 18.0 GHz	580 Series	Model Number
Male / Female	Female / Female	Male / Male
*ATT-0580-XX-TNC-07	*ATT-580F-XX-TNC-07	*ATT-580M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		

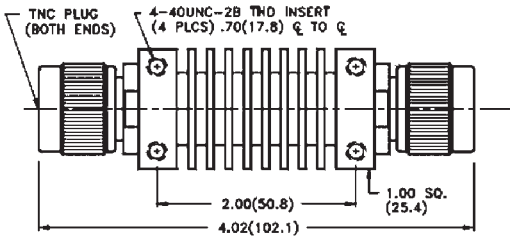


* Midwest has currently limited the test frequency on the above devices from the catalog listing of DC to 18 GHz, to an upper frequency of 15 GHz. Sorting for 18 GHz performance may be available upon request. Please consult the Factory for additional information. Please be advised that sorting to 18 GHz may require an alternate performance specification than currently listed in the catalog.

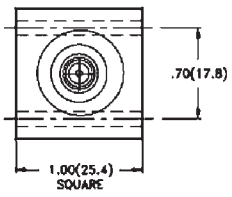
DC - 12.4 GHz	529 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0529-XX-TNC-07	ATT-529F-XX-TNC-07	ATT-529M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		



DC - 8.0 GHz	579 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0579-XX-TNC-07	ATT-579F-XX-TNC-07	ATT-579M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		



DC - 2.0 GHz	578 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0578-XX-TNC-07	ATT-578F-XX-TNC-07	ATT-578M-XX-TNC-07
Attenuation Value = XX, Select 1 - 40 dB in 1 dB increments		
20 Watts		



MIDWEST MICROWAVE

Attenuators

BNC Type

DC - 4 GHz Performance

Frequency: DC - 4.0 GHz and DC - 2.0 units available

Attenuation Values: 1 - 40 dB as noted

Attenuation Accuracy:

1 - 6 dB	± 0.3 dB
7 - 10 dB	± 0.5 dB
11 - 20 dB	± 0.75 dB
21 - 40 dB	± 1.0 dB
41 - 60 dB	± 1.5 dB

Impedance: 50 Ohms

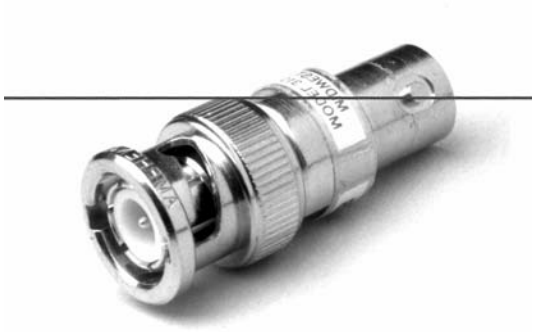
VSWR: 1.25 max

Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C U.O.S.

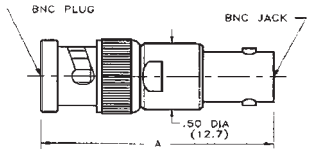
Peak Power: 200 Watts for 2Watt units and 100 Watts Peak for 5 & 10 Watt

Operating Temperature Range: -54C to +125C

Finish: Nickel Plated Brass and Black Anodized Aluminum

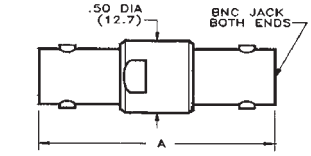


DC - 4.0 GHz	313 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0313-XX-BNC-10	ATT-313F-XX-BNC-10	ATT-313M-XX-BNC-10
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		

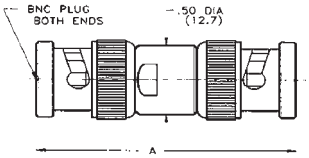


Attenuation Value	Length A
1 - 20 dB	1.36
21 - 60 dB	1.65

DC - 2.0 GHz	314 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0314-XX-BNC-10	ATT-314F-XX-BNC-10	ATT-314M-XX-BNC-10
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		

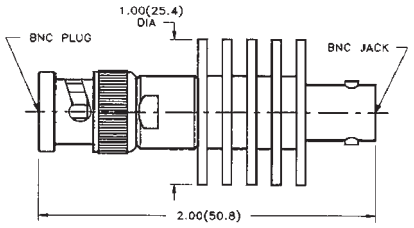


Attenuation Value	Length A
1 - 20 dB	1.43
21 - 60 dB	1.72

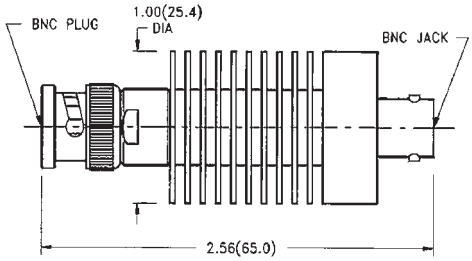


Attenuation Value	Length A
1 - 20 dB	1.55
21 - 60 dB	1.84

DC - 4.0 GHz	581 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0581-XX-BNC-07	ATT-581F-XX-BNC-07	ATT-581M-XX-BNC-07
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		
5 Watts		



DC - 4.0 GHz	582 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0582-XX-BNC-07	ATT-582F-XX-BNC-07	ATT-582M-XX-BNC-07
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		
10 Watts		



Attenuators

SC Type

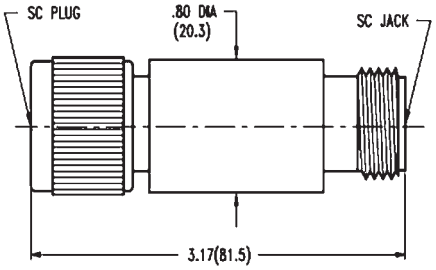
DC - 11GHz Performance

Frequency: DC - 11.0 GHz and DC - 2.0 units available
Attenuation Values: 1 - 60 dB in 1 dB increments
Attenuation Accuracy:

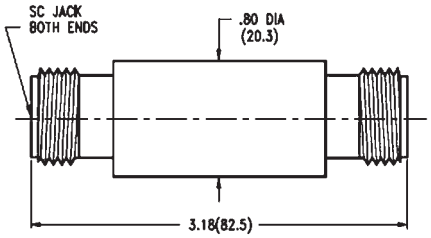
1 - 6 dB	± 0. 3 dB
7 - 20 dB	± 0.5 dB
21 - 40 dB	± 0.75 dB
41 - 60 dB	± 1.0 dB

Impedance: 50 Ohms
VSWR: 1.25 max
Power: 2Watts average @ 25 C derated linearly to 0.5 Watts @ 125 C
10 Watts average @ 40C derated linearly to 0.5 watts @ 125 C
Peak Power: 0.2 Kilowatts
Operating Temperature Range: -54C to +125C
Finish: Stainless Steel

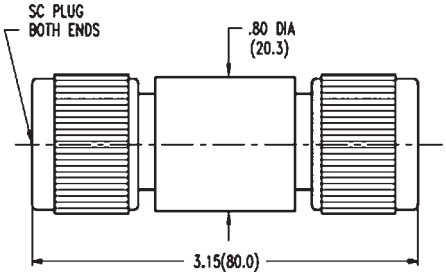
DC - 11.0 GHz	560 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0560-XX-SCO-02	ATT-560F-XX-SCO-02	ATT-560M-XX-SCO-02
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		



DC - 2.0 GHz	561Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0561-SCO-02	ATT-561F-XX-SCO-02	ATT-561M-XX-SCO-02
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		



DC - 11.0 GHz	562 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0562-XX-SCO-07	ATT-562F-XX-SCO-07	ATT-562M-XX-SCO-07
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		
10 Watts		



DC - 2.0 GHz	563 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0563-XX-SCO-07	ATT-563F-XX-SCO-07	ATT-563M-XX-SCO-07
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		
10 Watts - 5 Kilowatts Peak		

Attenuators

HN Type

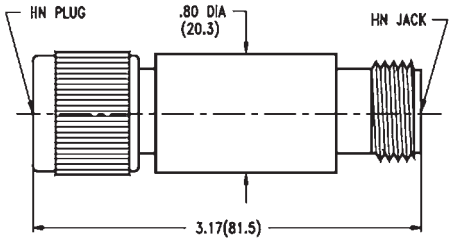
DC - 8 GHz Performance

Frequency: DC - 8.0 GHz and DC - 2.0 units available
Attenuation Values: 1 - 60 dB in 1 dB increments
Attenuation Accuracy:

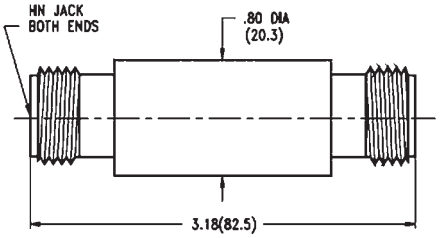
1 - 6 dB	± 0.3 dB
7 - 20 dB	± 0.5 dB
21 - 40 dB	± 0.75 dB
41 - 60 dB	± 1.0 dB

Impedance: 50 Ohms
VSWR: 1.25 max
Power: 2Watts average @ 25 C derated linearly to 0.5 Watts @ 125 C
10 Watts average @ 40C derated linearly to 0.5 watts @ 125 C
Peak Power: 0.2 Kilowatts
Operating Temperature Range: -54C to +125C
Finish: Stainless Steel

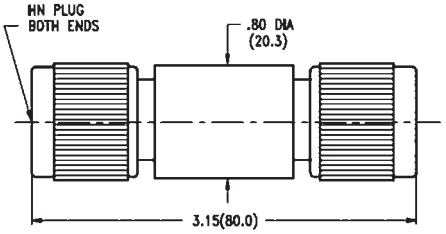
DC - 8.0 GHz	584 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0584-XX-HNO-02	ATT-584F-XX-HNO-02	ATT-584M-XX-HNO-02
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		



DC - 2.0 GHz	583Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0583-XX-HNO-02	ATT-583F-XX-HNO-02	ATT-583M-XX-HNO-02
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		



DC - 8.0 GHz	586 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0586-XX-HNO-07	ATT-586F-XX-HNO-07	ATT-586M-XX-HNO-07
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		
10 Watts		



DC - 2.0 GHz	585 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0585-XX-HNO-07	ATT-585F-XX-HNO-07	ATT-585M-XX-HNO-07
Attenuation Value = XX, Select 1 - 60 dB in 1 dB increments		
10 Watts - 5 Kilowatts Peak		

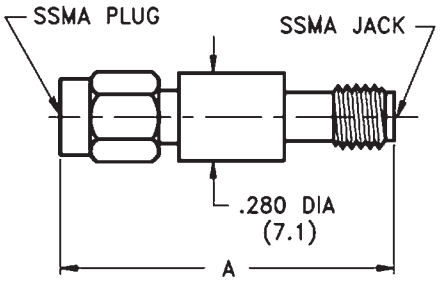
DC - 18 GHz Performance - Subminiature Size

Frequency: DC - 18.0 GHz, DC - 12.4, DC - 8, and DC - 2.0 units available
Attenuation Values: 1 - 20 dB as noted
Attenuation Accuracy:

1 - 6 dB	± 0.3 dB
7 - 10 dB	± 0.5 dB
11 - 20 dB	± 0.75 dB

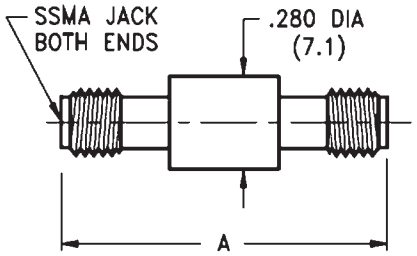
Impedance: 50 Ohms
VSWR: 1.25 max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 200 Watts
Operating Temperature Range: -54 °C to +125 °C
Finish: Stainless Steel

DC - 18.0 GHz	590 Series	Model Number
Male / Female	Female / Female	Male / Male
ATT-0590-XX-SSM-02	ATT-590F-XX-SSM-02	ATT-590M-XX-SSM-02
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		



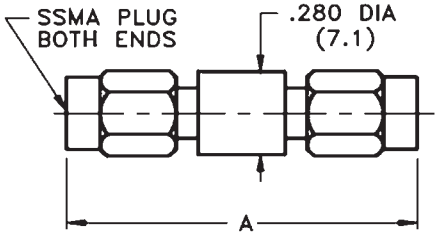
Attenuation Value	Length A
1 - 12 dB	1.10 (27.9)
13 - 20 dB	1.14 (29.0)

DC - 12.4 GHz	589 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0589-XX-SSM-02	ATT-589F-XX-SSM-02	ATT-589M-XX-SSM-02
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		



Attenuation Value	Length A
1 - 12 dB	0.98 (24.9)
13 - 20 dB	1.11(28.2)

DC - 8.0 GHz	588 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0588-XX-SSM-02	ATT-588F-XX-SSM-02	ATT-588M-XX-SSM-02
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		



Attenuation Value	Length A
1 - 12 dB	1.04 (26.4)
13 - 20 dB	1.17 (29.7)

DC - 2.0 GHz	587 Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0587-XX-SSM-02	ATT-587F-XX-SSM-02	ATT-587M-XX-SSM-02
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		

SMB and SMC - DC - 4 GHz Performance

This new series of SMB and SMC Attenuators are especially suitable for use in commercial and low frequency military systems. They have been designed to withstand the same hostile environmental conditions as all of the other Midwest Microwave series of Attenuators.

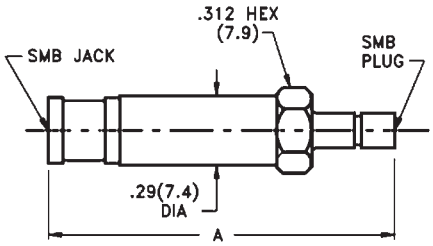
Frequency: DC - 4 GHz
Attenuation Values: 1 - 20 dB as noted
Attenuation Accuracy:

1 - 6 dB	± 0.3 dB
7 - 10 dB	± 0.5 dB
11 - 20 dB	± 0.75 dB

Impedance: 50 Ohms
VSWR: 1.25 max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 200 Watts
Operating Temperature Range: -54 °C to +125 °C
Finish: Nickel Plated Brass

SMB Type

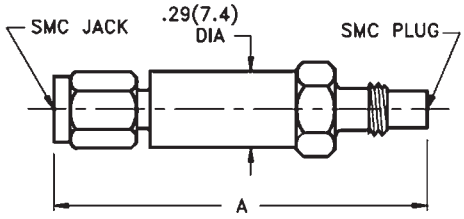
DC - 12.4 GHz	591 SMB Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0591-XX-SMB-10	ATT-591F-XX-SMB-10	ATT-591M-XX-SMB-10
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		



Attenuation Value	Length A
1 - 12 dB	1.42 (36.0)
13 - 20 dB	1.54 (39.1)

SMC Type

DC - 8.0 GHz	592 SMC Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0592-XX-SMC-10	ATT-592F-XX-SMC-10	ATT-592M-XX-SMC-10
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		



Attenuation Value	Length A
1 - 12 dB	1.42 (36.0)
13 - 20 dB	1.54(39.1)

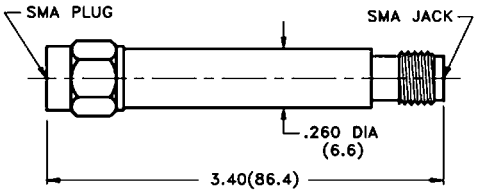
Attenuators

Lossy Line Type

SMA - 18GHz Performance

Specifications

Frequency Range: 1-18GHz 3-18 GHz 5-18 GHz 6-18 GHz
Attenuation Values: 1-4 dB 5-9dB 10-15dB 16-20 dB
Max Deviation from Nominal: ± 0.5 dB or 5% whichever is greater
Impedance: 50 Ohms
VSWR: 1.25 max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 5 Kilowatts
Operating Temperature Range: -54C to +125C
Finish: Passivated Stainless Steel
Calibration: Supplied at 4, 8, 12, and 18 GHz



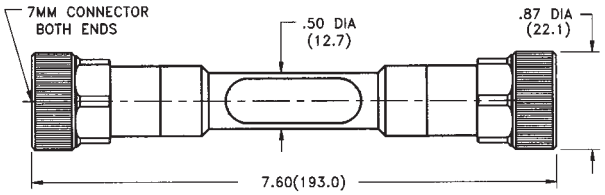
DC - 18.0 GHz	204 Series	Model Number
Male / Female		
ATT-0204-XX-SMA-02		
Attenuation Value = XX, Select 1 - 20 dB in 1 dB increments		
SMA		

7mm Precision - 1 - 18GHz Performance

Frequency Range: 1-18GHz 3-18 GHz 5-18 GHz
Attenuation Values: 3 & 6 dB 10 dB 20 dB
Max Deviation from Nominal: ± 0.3 dB @ 8 GHz
Frequency Sensitivity (from value @ 8 GHz):

dB Value	freq Sensitivity
3 dB	± 0.5 dB
6 dB	± 0.6 dB
10 dB	± 1.0 dB
20 dB	± 1.2 dB

VSWR: 1.08 + 0.03 / f (GHz)
Power: 2 Watts average @ +40 °C derated linearly to 0.5 Watts average @ +125 °C
Peak Power: 5 Kilowatts
Operating Temperature Range: -54C to +125C
Finish: Passivated Stainless Steel
Calibration: Supplied at 4, 8, 12, and 18 GHz



DC - 18.0 GHz	340A Series	Model Number
7mm Precision		
ATT-340A-XX-7MM-02		
Attenuation Value = XX, Select 3, 6, 10, and 20 dB		
7mm Precision		

Type N Precision 1-18 GHz Performance

This series of Lossy Line Attenuators are very useful for a variety of test bench requirements. The lossy line is the simplest, most basic type of coaxial attenuator. The lossy line in these attenuators is actually the center conductor of a simple coaxial structure. The lossy line possesses some basic advantages over conventional attenuators in that they exhibit low VSWR characteristics that improve as frequency increases and are also very useful where phase tracking is important.

Specifications

Frequency Range: 1-18 GHz | 3-18 GHz | 5-18 GHz

Attenuation Values: 3 & 6 dB | 10 dB | 20 dB

Max Deviation from Nominal: ± 0.3 dB @ 8 GHz

Frequency Sensitivity (from Value @ 8 GHz):

dB Value	freq Sensitivity
3 dB	± 0.5 dB
6 dB	± 0.6 dB
10 dB	± 1.0 dB
20 dB	± 1.2 dB

Power: 2 Watts average @ +40 °C derated linearly to 0.5 Watts @ +125 °C

Peak Power: 5 Kilowatts

Impedance: 50 Ohms

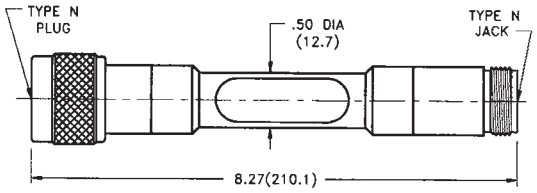
VSWR: 1.08 + 0.03/ f (GHz)

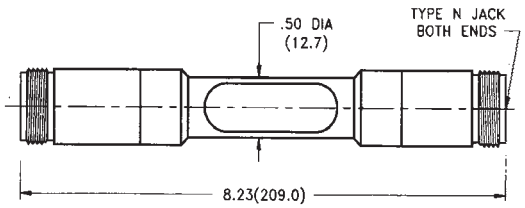
Operating Temperature Range: -54C to +125C

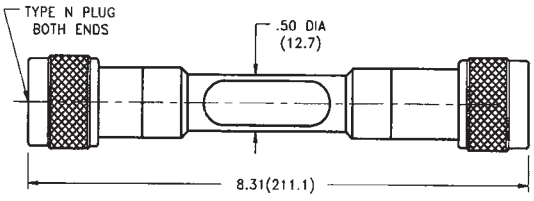
Finish: Passivated Stainless Steel

Calibration: Supplied at 4, 8, 12.4, and 18 GHz

DC - 18.0 GHz	340N Series	Model Number
Male/Female	Female/Female	Male/Male
ATT-0340-XX-NNN-02	ATT-340F-XX-NNN-02	ATT-340M-XX-NNN-02
Attenuation Value = XX, Select 3, 6, 10, & 20 dB		
Precision N		







Attenuators

Calibrated Sets

SMA - DC - 18 GHz Precision Performance

Frequency: DC-18.0 and DC - 12 .4 GHz sets
Attenuation Values: 3, 6, 10, and 20 dB one each per set
Attenuation Accuracy:

DC-18.0	DC-12..4	Accuracy
3 & 6 dB	3, 6, & 10 dB	± 0.3 dB
10 & 20 dB	20 dB	± 0.5 dB

Impedance: 50 Ohms
VSWR: 1.07 + 0.015 f (GHz) max
Power: 2 Watts average, 200 Watts peak
Finish: Passivated Stainless Steel
Calibration: Data Supplied at 4, 8, 12.4, and 18 GHz

DC - 18.0 GHz	Model Number	DC - 12.4 GHz
Male / Female		Male / Female
ATS-3554-18-SMA-02		ATS-3553-12-SMA-02

Midwest Microwave's Calibrated Attenuator Sets consist of a set of four precision, broadband, fixed attenuators with values of 3, 6, 10, and 20 dB. These sets are available with a choice of SMA, N, or 7mm passivated stainless steel precision connectors.

7mm - DC - 18 GHz Precision Performance

Frequency: DC - 18 .0 and DC-12.4 GHz sets
Attenuation Values: 3, 6, 10, and 20 dB one each per set
Attenuation Accuracy:

DC-18.0	DC-12..4	Accuracy
3 & 6 dB	3, 6, & 10 dB	± 0.3 dB
10 & 20 dB	20 dB	± 0.5 dB

Impedance: 50 Ohms
VSWR: 1.07 + 0.015 f (GHz) max
Power: 2 Watts average, 200 watts peak
Finish: Passivated Stainless Steel
Calibration: Data Supplied at 4, 8, 12.4, and 18.0 GHz

DC - 18.0 GHz	Model Number	DC - 12.4 GHz
7mm		7mm
ATS-3552-18-7MM-02		ATS-3555-12-7MM-02

Calibrated Attenuator Sets are intended for laboratory or field use. The precision, broadband, fixed attenuators are supplied in a shock resistant storage case. the inside cover of the storage case holds the calibration data.

Type N - DC - 18 GHz Precision Performance

Frequency: DC - 18 .0 and DC-12.4 GHz sets
Attenuation Values: 3, 6, 10, and 20 dB one each per set
Attenuation Accuracy:

DC-18.0	DC-12..4	Accuracy
3 & 6 dB	3, 6, & 10 dB	± 0.3 dB
10 & 20 dB	20 dB	± 0.5 dB

Impedance: 50 Ohms
VSWR: 1.07 + 0.015 f (GHz) max
Power: 2 Watts average, 200 Watts peak
Finish: Passivated Stainless Steel
Calibration: Data Supplied at 4, 8, 12.4, and 18.0 GHz

DC - 18.0 GHz	Model Number	DC - 12.4 GHz
Male / Female		Male / Female
ATS-3551-18-NNN-02		ATS-3550-12-NNN-02

The calibration data includes test results at DC, 4.0, 8.0, 12.4, and 18.0 GHz. All measurement standards used have calibration traceability to the National Bureau of Standards.

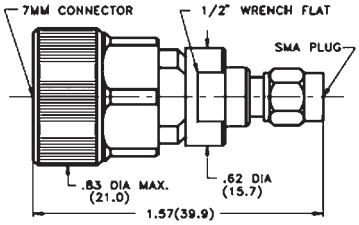
DC - 18 GHz 7 mm Precision Performance

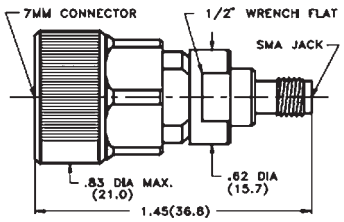
Specifications

Frequency: DC - 18.0 GHz
Attenuation Values: 1 - 10 dB in 1 dB increments and 20 dB
Attenuation Accuracy: 1 - 10 dB ± 0.3 dB
20 dB ± 0.5 dB
Impedance: 50 Ohms
VSWR: 1.12 @ DC-4, 1.15 @ 4-8, and 1.20 @ 8-18 GHz max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 200 Watts
Operating Temperature Range: -54 °C to +125 °C
Finish: Passivated Stainless Steel
Calibration: Supplied at 4, 8, 12, and 18 GHz

7mm to SMA

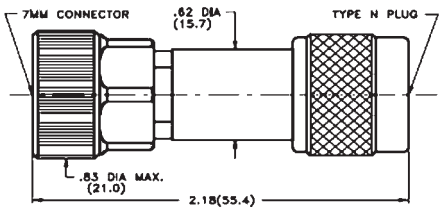
DC - 18.0 GHz	7mm / SMA	Model Numbers
7mm / SMA Male	7mm / SMA Female	
ADP-0105-XX-000-02	ADP-0106-XX-000-02	
Attenuation Value = XX, Select 01 -10 dB in 1 dB increments, and 20 dB		
7mm Precision		

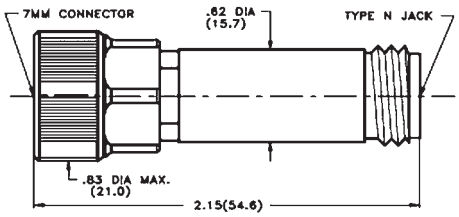




7mm to Type N

DC - 18.0 GHz	7mm / Type N	Model Numbers
7mm / N Male	7mm / N Female	
ADP-0107-XX-000-02	ADP-0108-XX-000-02	
Attenuation Value = XX, Select 01 -10 dB in 1 dB increments, 20 and 30 dB		
7mm Precision		





Type N to SMA DC - 18 GHz Performance

Specifications

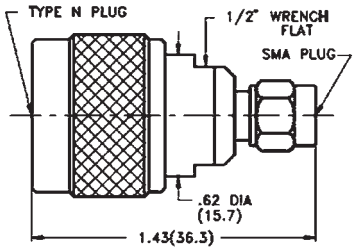
Frequency: DC - 18.0 GHz
Attenuation Values: 1 - 30 dB in 1 dB increments
Attenuation Accuracy:

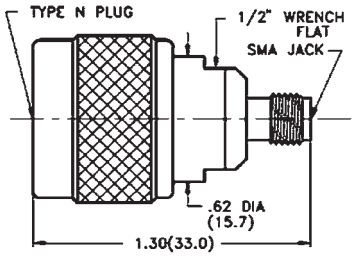
1 - 6 dB	± 0.3 dB
7 - 20 dB	± 0.5 dB
21 - 30 dB	± 1.0 dB

Impedance: 50 Ohms
VSWR: 1.10@ DC-4, 1.20 @ 4-10, and 1.30 @ 10-18 GHz max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 0.2 Killowatts
Operating Temperature Range: -54 °C to +125 °C
Finish: Passivated Stainless Steel

Type N Male to SMA

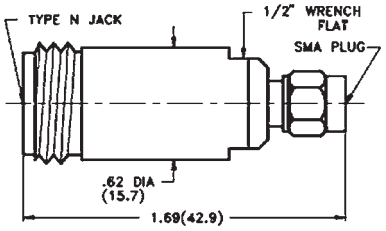
DC - 18.0 GHz	Type N / SMA	Model Numbers
N Male / SMA Male	N Male / SMA Female	
ADP-0101-XX-000-02	ADP-0102-XX-000-02	
Attenuation Value = XX, Select 01 -30 dB in 1 dB increments		
Precision N / SMA		

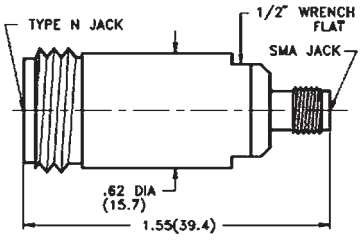




Type N Female to SMA

DC - 18.0 GHz	Type N / SMA	Model Numbers
N Female / SMA Male	N Female / SMA Female	
ADP-0103-XX-000-02	ADP-0104-XX-000-02	
Attenuation Value = XX, Select 01 -30 dB in 1 dB increments		
Precision N / SMA		





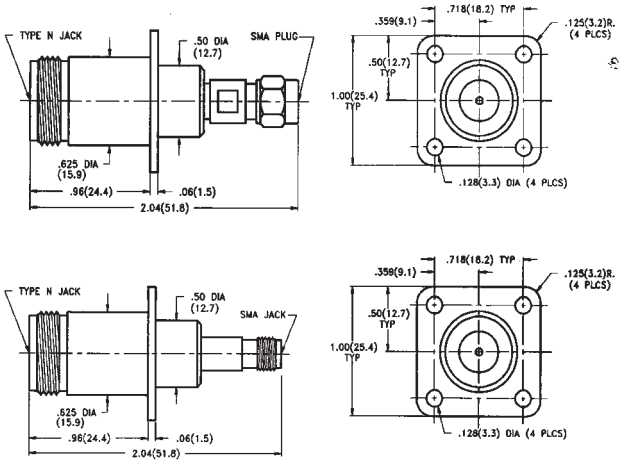
Type N and TNC F lange Mount to SMA

Specifications

Frequency: DC - 18.0 GHz
Attenuation Values: 1 - 20 dB in 1 dB increments
Attenuation Accuracy: 1 - 10 dB ± 0.5 dB
11- 20 dB ± 0.75 dB
Impedance: 50 Ohms
VSWR: 1.12 @ DC-4, 1.20 @ 4-10, and 1.30 @ 10-18 GHz max
Power: 2 Watts average @ +25 °C derated linearly to 0.5 Watts @ +125 °C
Peak Power: 0.2 Kilowatts
Operating Temperature Range: -54 °C to +125 °C
Finish: Passivated Stainless Steel

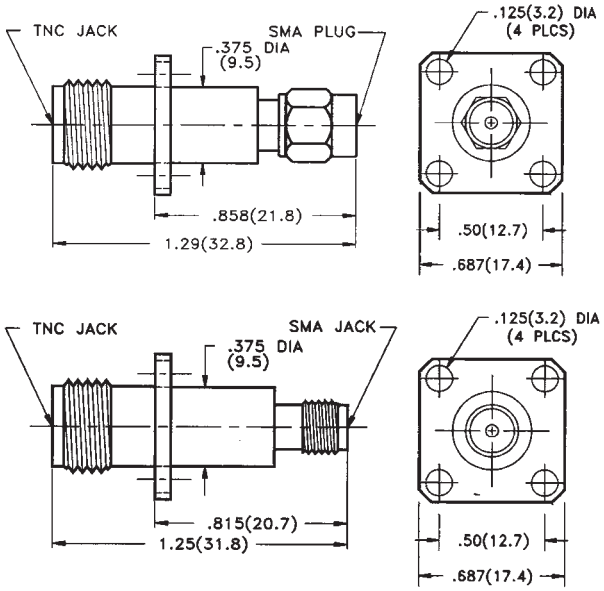
N Flanged Female to SMA

DC - 18.0 GHz	N Flange / SMA	Model Numbers
N Flange / SMA Male	N Flange / SMA Female	
ADP-304M-XX-000-02	ADP-304F-XX-000-02	
Attenuation Value = XX, Select 01 -20 dB in 1 dB increments		
Precision N		



TNC Flanged Female to SMA

DC - 18.0 GHz	TNC Flange / SMA	Model Numbers
TNC Flange Female/ SMA Male	TNC Flange Female / SMA Female	
ADP-533M-XX-000-02	ADP-533F-XX-000-02	
Attenuation Value = XX, Select 01 -20 dB in 1 dB increments		
Precision TNC		



Thumbwheel - Panel Mount - 0 to 69 dB in 1 dB Steps

Specifications

Frequency: DC-18.0 GHz

Attenuation Values: 0 -9 dB, 0-60 dB, and 0-69 dB Models available

Attenuation Accuracy:

0-9 dB in 1 dB steps		0-60 dB in 10 dB steps		0-69 dB in 1 dB steps	
Step	Deviation	Step	Deviation	Step	Deviation
0	1.0	0	1.0	0	1.0
1	± 0.5	10	± 0.5	1-9	± 0.5
2	± 0.5	20	± 0.7	10-19	± 1.0
3	± 0.5	30	± 0.9	20-29	± 1.2
4	± 0.5	40	± 1.0	30-39	± 1.4
5	± 0.5	50	± 1.4	40-49	± 1.5
6	± 0.5	60	± 1.5	50-59	± 1.9
7	± 0.5			60-69	± 2.0
8	± 0.5				
9	± 0.5				

Switching Repeatability: <0.05 dB

Switching Life: 1,000,000 cycles

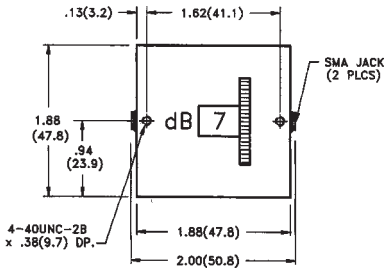
VSWR: 1.65 max

Impedance: 50 Ohms

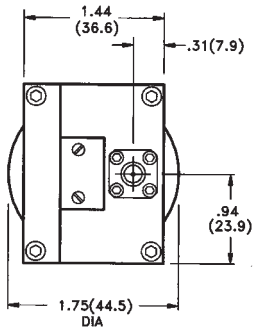
Power: 2 Watts average

Connectors: SMA, 7mm, or N Female* with Passivated Stainless Steel Finish

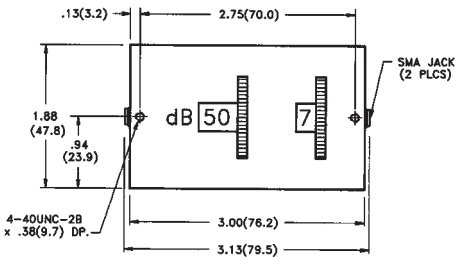
0 - 9 dB in 1 dB Steps		DC - 18.0 GHz
SMA	N	7mm Precision
STA-1095-18-SMA-79	STA-1095-18-NNN-79	STA-1095-18-7MM-79



0 - 60 dB in 10 dB Steps		DC - 18.0 GHz
SMA	N	7mm Precision
STA-1096-18-SMA-79	STA-1096-18-NNN-79	STA-1096-18-7MM-79



0 - 69 dB in 1 dB Steps		DC - 18.0 GHz
SMA	N	7mm Precision
STA-1097-18-SMA-79	STA-1097-18-NNN-79	STA-1097-18-7MM-79



*Note: TNC Connectors and or Male or Male/Female Connector combinations are available upon special request.