Models 115A thru 119A Manual Step Attenuators

dc to 18.0 GHz 2 Watt

Choice of Type N or SMA Connectors

Features

- **Safety Mechanical Stop** - A mechanical stop between maximum and 0 attenuation positions on all models prevents damage to the mechanical drive as well as preventing large power changes that could cause damage to sensitive equipment.
- **Available *Express* Models:** AF117A-69
  Other models may be available for Express delivery.
- **Choice of Attenuation Ranges** - Five standard attenuation ranges are available: 0-9 dB, 0-69 dB, and 0-99 dB in 1 dB steps, and 0-60 dB and 0-90 dB in 10 dB steps.
- **Broadband** - All models are available in a choice of 2 frequency ranges: dc-4 and dc-18 GHz.
- **Right-Angle Drive** - The center conductor of the connector is perpendicular to the control shaft, offering greater flexibility of applications: panel mounting or bench setup. All models are bidirectional.
- **Custom Configurations Available Upon Request.**
- **Low Deviation from Nominal Value** - These Mini Step Attenuators have flat frequency response over specified bands and excellent attenuation accuracy. Deviation from nominal value is low at all settings.
- **Excellent Repeatability and Long Life Switch** - Repeatability is better than 0.05 dB to 18.0 GHz for over 1,000,000 switchings of the drum.

Description

The Aeroflex / Weinschel Models 115A through 119A are a series of broadband, step attenuators in a right-angle drive configuration, where the center conductor of the connector is perpendicular to the control shaft. They feature excellent performance characteristics suitable for use in high reliability 50 ohm systems and applications requiring extra-small components for the precision control of power in discrete steps. They can be used either as input or output attenuators in signal sources, receivers, field strength meters, spectrum analyzers, etc.

Specifications

NOMINAL IMPEDANCE: 50 Ω

FREQUENCY RANGE (add Model No. Prefix to Designate Range):

All Models: dc to 4.0 GHz (AC)
dc to 18.0 GHz (AF)

STANDARD INCREMENTAL ATTENUATION RANGE:

Model 115A:	0 to 9 dB in 1 dB steps
Model 116A:	0 to 60 dB in 10 dB steps
Model 117A:	0 to 69 dB in 1 dB steps
Model 118A:	0 to 90 dB in 10 dB steps
Model 119A:	0 to 99 dB in 1 dB steps

MAXIMUM SWR (Models 117A & 119A):

Frequency Range (GHz)	117A & 119A	115A, 116A & 118A
dc - 4	1.35	1.25
dc - 18	1.70	1.60

POWER RATING: 2 watts **average** to 25°C ambient temperature, derated linearly to 1 watt @ 54°C. 200 watts **peak** (5 µsec pulse width; 0.5% duty cycle)

POWER COEFFICIENT: < 0.005/dB/dB/watt

TEMPERATURE COEFFICIENT: < 0.0004/dB/dB/°C

TEMPERATURE RANGE: Operating: 0°C to +54°C
Nonoperating: -54°C to +54°C

INCREMENTAL PHASE SHIFT: ~0.5° per dB x f(GHz)

REPEATABILITY: Better than 0.05 dB across frequency band for switch life.

SWITCH LIFE: Over 1,000,000 steps

INDEXING: 36°

MAXIMUM INSERTION LOSS (dB):

Model Number	CONN Type	Frequency Range (GHz) dc-4	4-8	8-12.4	dc-18*
115A	N	0.3	0.4	0.5	0.7
	SMA	0.3	0.5	0.7	1.0
116A	N	0.3	0.4	0.5	0.7
	SMA	0.4	0.5	0.7	1.0
117A	N	0.5	0.7	0.9	1.2
	SMA	0.6	0.8	1.0	1.5
118A	N	0.4	0.5	0.6	0.8
	SMA	0.5	0.6	0.7	1.0
119A	N	0.5	0.7	0.9	1.2
	SMA	0.6	0.8	1.0	1.5

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Revision Date: 12/15/04

Specifications (Con't):

TEST DATA: Insertion Loss data is supplied as follows. Other test data can be supplied at additional cost.

dc to 4 GHz: At 50 MHz and 4 GHz
dc to 18 GHz: At 50 MHz, 4, 8, 12 and 18 GHz

RELATIVE HUMIDITY: 95%

ALTITUDE: to 10,000 ft.

SHOCK (non-operating): 8 g's, 100 ms, 1/2 sine

DRUM CONFIGURATIONS:

Single Drum: 115A, 116A, 118A
Dual Drum: 117A, 119A

VIBRATION (non-operating):

5 to 8 cps, 0.20 inch double amplitude
8 to 15 cps, 0.10 inch double amplitude
15 to 55 cps, 0.36 inch double amplitude
Supported rigidly front and back

SHAFT ROTATION: Clockwise for increasing attenuation

CONSTRUCTION:

Materials:	Housing: aluminum alloy, clear irridite, MIL-C-5541.
Dust Cover:	Painted aluminum alloy
Drum:	Aluminum alloy
Shaft:	Passivated stainless steel
Connector:	Stainless steel and beryllium copper contacts.

CONNECTOR: SMA and Type N connectors per MIL-STD-348 interface dimensions - mate nondestructively with MIL-C-39012 connector. Connector sex is optional as follows:

Connector Options	Type/Description
1	SMA, Female
2	SMA, Male
3	Type N, Female
4	Type N, Male

WEIGHT:

115A	340 g (12 oz)
116A	340 g (12 oz)
117A	760 g (27 oz)
118A	450 g (16 oz)
119A	880 g (31 oz)

INCREMENTAL INSERTION LOSS (±dB):

Model Number	dB Range	Frequency Range (GHz) dc-4	dc-18*
115A	1-9	0.3	0.5
117A	1-9	0.3	0.5
	10-19	0.7	1.0
	20-29	0.9	1.2
	30-39	1.0	1.4
	40-49	1.1	1.5
	50-59	1.2	1.7
	60-69	1.3	1.9
119A	1-9	0.3	0.5
	10-19	0.7	1.0
	20-29	0.9	1.2
	30-39	1.0	1.4
	40-49	1.1	1.5
	50-59	1.2	1.7
	60-69	1.3	1.9
	70-79	1.4	2.1
	80-89	1.5	2.3
	90-99	1.6	2.5
116A	10	0.3	1.0
	20	0.3	1.0
	30	0.4	1.0
	40	0.5	1.2
	50	0.7	1.5
	60	0.8	1.8
118A	10	0.3	1.0
	20	0.3	1.0
	30	0.4	1.0
	40	0.5	1.2
	50	0.7	1.5
	60	0.8	1.8
	70	0.9	2.1
	80	1.0	2.3
	90	1.2	2.5

MODEL NUMBER DESCRIPTION:

Example:

AC116A - XX - XX

- AC116A: Frequency Range (GHz) / Basic Model Number
- XX: Maximum Attenuation Value (dB)
- XX: Connector Options*
  1st digit is J1 side (front)
  2nd digit is J2 side (rear)

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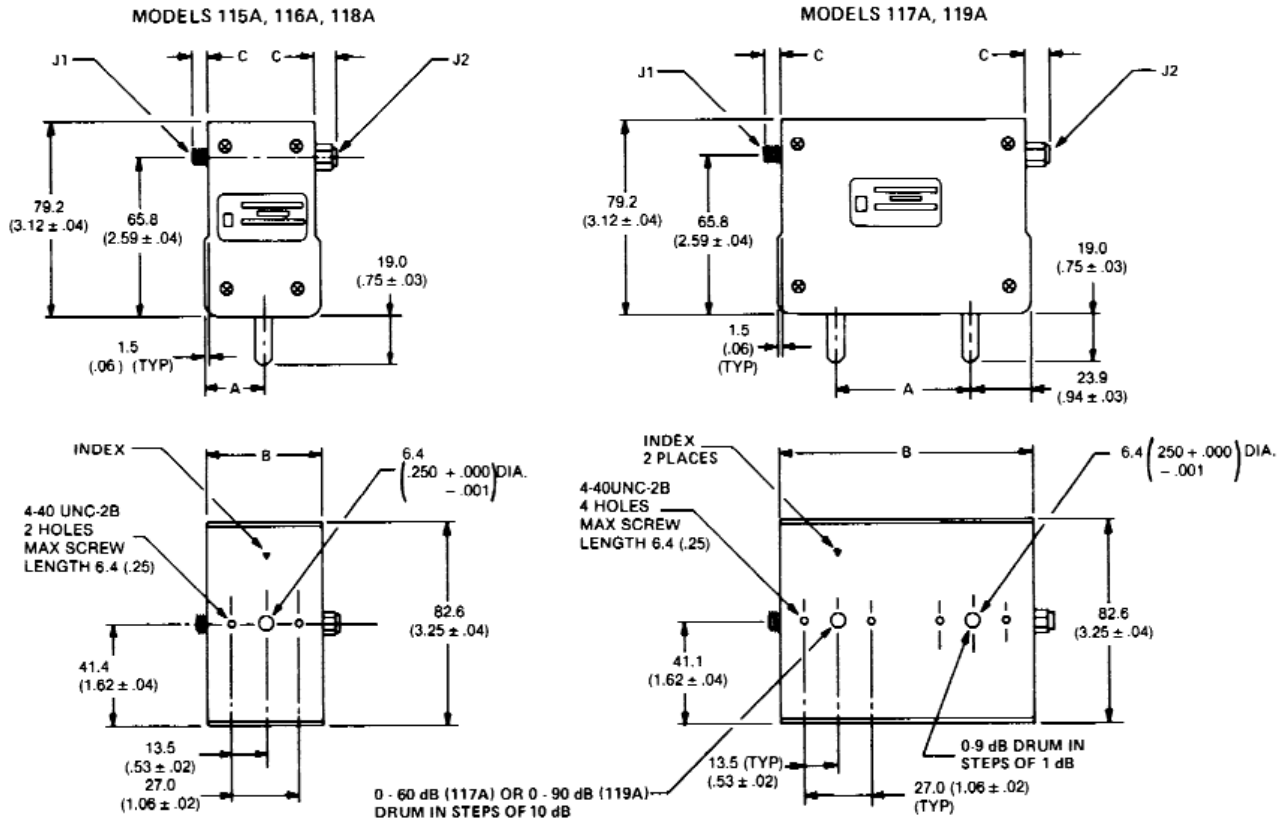
PHYSICAL DIMENSIONS:



Model No.	DIM A	DIM B
119A	58.7 (2.31)	111.3 (4.38)
118A	29.0 (1.14)	57.7 (2.27)
117A	54.0 (2.11)	101.1 (3.98)
116A	23.9 (0.94)	47.5 (1.87)
115A	23.9 (0.94)	47.5 (1.87)

CONN Type	DIM C
Type N, Male	20.6 (0.81)
Type N, Female	18.3 (0.72)
SMA, Male	9.4 (0.37)
SMA, Female	7.9 (0.31)

NOTE: All dimensions are given in mm (inches) and are maximum, unless otherwise specified.

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