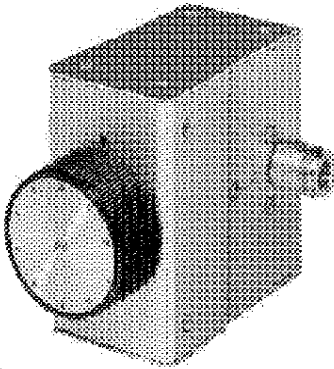


Models 115A thru 119A MANUAL STEP ATTENUATORS

dc to 18.0 GHz

2 WATTS

Type N, GPC-7, TNC, 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.
- ❑ **Miniature Size** - The Models 115A through 119A are most suitable for applications requiring small components with high performance features, whether it be in systems, laboratory, or production setups.
- ❑ **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 4 frequency ranges: dc-4, dc-8, dc-12.4, and dc-18 GHz (dc-16 for units with TNC connectors).
- ❑ **Right-Angle Drive** - The center conductor of the connectors 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.
- ❑ **Type N, GPC-7, TNC, or SMA Connectors** - All models available with choice of stainless steel Type N, TNC, SMA, or GPC-7 precision connectors.

DESCRIPTION

The Weinschel Corporation Models 115A through 119A are a series of broadband, miniature Step Attenuators in a right-angle drive configuration, where the center conductor of the connectors 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 RANGES (add Model No. Prefix to Designate Range):

All Models:	dc to 4.0 GHz (AC)
	dc to 8.0 GHz (AD)
	dc to 12.4 GHz (AE)
	dc to 18.0 GHz* (AF)

* dc to 16.0 GHz for TNC connectors

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

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

POWER COEFFICIENT: < 0.005/dB/dB/watt

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

TEMPERATURE RANGE:

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

SPECIFICATIONS (Con't)

MAXIMUM INSERTION LOSS:

Model Number	CONN Type	Frequency Range (GHz)			
		dc-4	dc-8	dc-12.4	dc-18*
115A	N/GPC7 SMA/TNC	0.3	0.4	0.5	0.7
		0.3	0.5	0.7	1.0
116A	N/GPC7 SMA/TNC	0.3	0.4	0.5	0.7
		0.4	0.5	0.7	1.0
117A	N/GPC7 SMA/TNC	0.5	0.7	0.9	1.2
		0.6	0.8	1.0	1.5
118A	N/GPC7 SMA/TNC	0.4	0.5	0.6	0.8
		0.5	0.6	0.7	1.0
119A	N/GPC7 SMA/TNC	0.5	0.7	0.9	1.2
		0.6	0.8	1.0	1.5

* dc to 16.0 GHz with TNC connectors.

MAXIMUM SWR (Models 117A and 119A):

Frequency Range (GHz)	SMA, N, GPC-7	TNC
dc - 4	1.25	1.35
dc - 8	1.30	1.40
dc - 12.4	1.45	1.55
dc - 18*	1.60	1.70

MAXIMUM SWR (Models 115A, 116A, and 118A):

Frequency Range (GHz)	SMA, N, GPC-7	TNC
dc - 4	1.20	1.30
dc - 8	1.25	1.35
dc - 12.4	1.40	1.50
dc - 18	1.50	1.60

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

dc to 4 GHz: At 0.05 and 4 GHz
dc to 8 GHz: At 0.05, 4 and 8 GHz
dc to 12.4 GHz: At 0.05, 4, 8 and 12 GHz
dc to 18 GHz: At 0.05, 4, 8, 12 and 18 GHz*

* dc to 16.0 GHz with TNC units.

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

INCREMENTAL ATTENUATION ACCURACY (±dB):

Model Number	dB Range	Frequency Range (GHz)			
		dc-4	dc-8	dc-12.4	dc-18*
115A	1-9	0.3	0.3	0.3	0.5
117A	1-9	0.3	0.3	0.3	0.5
	10-19	0.7	0.7	0.8	1.0
	20-29	0.9	1.0	1.0	1.2
	30-39	1.0	1.1	1.2	1.4
	40-49	1.1	1.2	1.3	1.5
	50-59	1.2	1.4	1.6	1.7
	60-69	1.3	1.6	1.8	1.9
119A	1-9	0.3	0.3	0.3	0.5
	10-19	0.7	0.7	0.8	1.0
	20-29	0.9	1.0	1.0	1.2
	30-39	1.0	1.1	1.2	1.4
	40-49	1.1	1.2	1.3	1.5
	50-59	1.2	1.4	1.6	1.7
	60-69	1.3	1.6	1.8	1.9
	70-79	1.4	1.7	2.0	2.1
	80-89	1.5	1.9	2.2	2.3
	90-99	1.6	2.0	2.4	2.5
116A	10	0.3	0.4	0.5	1.0
	20	0.3	0.4	0.5	1.0
	30	0.4	0.5	0.6	1.0
	40	0.5	0.6	0.8	1.2
	50	0.7	0.8	1.0	1.5
	60	0.8	0.9	1.2	1.8
118A	10	0.3	0.4	0.5	1.0
	20	0.3	0.4	0.5	1.0
	30	0.4	0.5	0.6	1.0
	40	0.5	0.6	0.8	1.2
	50	0.7	0.8	1.0	1.5
	60	0.8	0.9	1.2	1.8
	70	0.9	1.1	1.4	2.1
	80	1.0	1.2	1.6	2.3
	90	1.2	1.4	1.8	2.5

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
Connectors: Stainless steel and beryllium copper contacts.

SPECIFICATIONS (Con't)

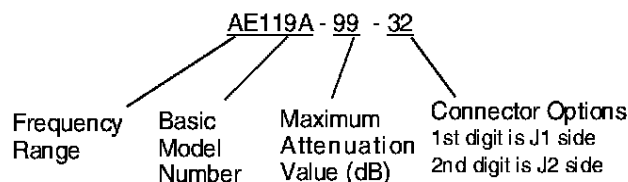
CONNECTORS: SMA, Type N, or TNC connectors per MIL-STD-348 interface dimensions - mate nondestructively with MIL-C-39012 connectors. GPC-7 connectors mate with other connectors conforming to IEEE-STD-287.

Connector Options	Type/Description
1	SMA, Female
2	SMA, Male
3	Type N, Female
4	Type N, Male
5	GPC 7
6	TNC, Female
7	TNC, Male

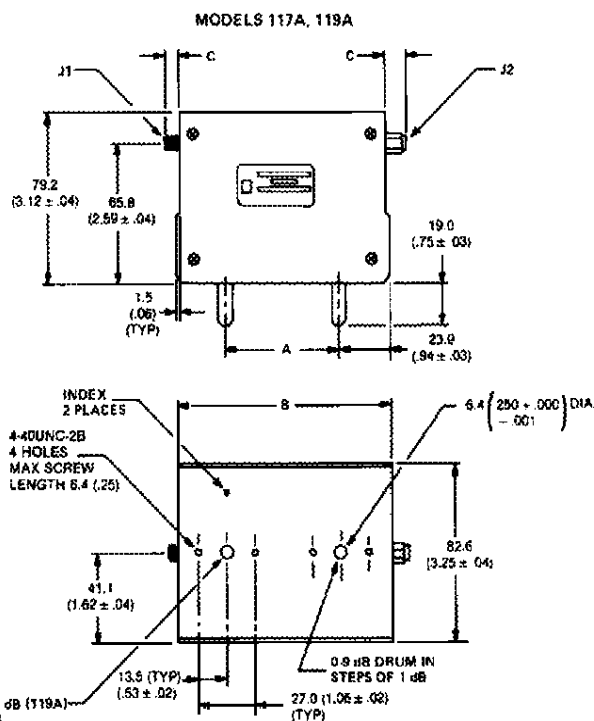
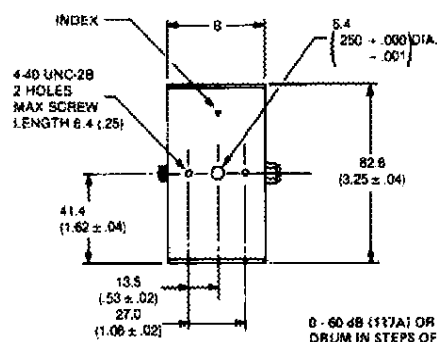
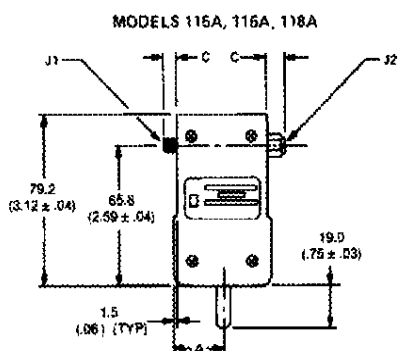
WEIGHT:	115A	340 g (12 oz)
	116A	340 g (12 oz)
	117A	760 g (27 oz)
	118A	450 g (16 oz)
	119A	880 g (31 oz)

MODEL NUMBER DESCRIPTION:

Example



PHYSICAL DIMENSIONS:



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

CONN. TYPE	DIM C
TNC, Male	35.0 (1.38)
TNC, Female	38.1 (1.50)
GPC-7	21.0 (0.83)
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)