

**Model 940-60**

**Model 940-114**

**Precision Continuously Variable Attenuators**

**dc to 4.0 GHz**

**dc to 2.0 GHz**

**5 Watts**

**Choice of SMA or Type N Connectors**



## Features

- /// **Wide Variable Attenuation Range** - Variable attenuation range of 60 dB for Model 940-60 and 114 dB for Model 940-114, with minimum insertion loss at 6 dB.
- /// **Approximately Linear Calibrated Dial** - Direct reading dial individually calibrated in approximately linear 1 dB increments from 6 dB to full scale.
- /// **Rugged** - Designed to meet the environmental requirements of MIL-A-24215.
- /// **Long Life** - These variable attenuators offer a cycle life of up to 10,000 cycles. Optional models are also available to extend the life to 50,000 cycles.
- /// **Available Express Models:** 940-60-11  
940-60-33  
940-60-33-1

Other models may be available for Express delivery.

## Specifications

**NOMINAL IMPEDANCE:** 50  $\Omega$

**FREQUENCY RANGE:** Model 940-60: dc to 4.0 GHz  
Model 940-114: dc to 2.0 GHz

**INCREMENTAL ATTENUATION RANGE:**

Model 940-60: 60 dB  
Model 940-114: 114 dB

### MAXIMUM SWR:

Frequency Range (GHz)	SWR
dc - 1	1.50
1 - 2	1.60
2 - 3	1.70
3 - 4	1.80

### DIRECT READING DIAL ACCURACY:

Model	ACCURACY*
940-60-XX	$\pm 0.25$ dB or 0.4% @ 2 GHz
940-114-XX	$\pm 0.25$ dB or 0.4% @ 1 GHz
940-60-XX-1	$\pm 0.5$ dB or 1% @ 2 GHz
940-114-XX-1	$\pm 0.5$ dB or 1% @ 1 GHz

\*Whichever is greater.

### CHARACTERISTIC INSERTION LOSS, RESIDUAL:

6 dB nominal

### DIAL CALIBRATION (in 1 dB increments):

Model 940-60: 6 to 66 dB

Model 940-114: 6 to 120 dB

### DIAL INCREMENTS: 1 dB

### RESOLUTION OF SCALE:

Model 940-60:  $\sim 115^\circ$

Model 940-114:  $\sim 270^\circ$

**CYCLE LIFE:** A cycle consists of a rotation from minimum to maximum and back to minimum

Model 940-XX-XX : 10,000

Model 940-XX-XX-1: 50,000

### PHASE SHIFT WITH CHANGE IN ATTENUATION:

$1^\circ$  per dB x f(GHz) maximum

**POWER RATING:** 5 watts average to 40°C ambient temperature, derated linearly to 0 watts @ 85°C. 500 watts peak (5  $\mu$ sec pulse width; 0.5% duty cycle).

**POWER COEFFICIENT:** < 0.005 dB/dB/watt

**TEMPERATURE COEFFICIENT:** <0.001 dB/dB/°C

### TEMPERATURE RANGE:

Operating: 0°C to +85°C

Nonoperating: -55°C to +125°C.

### FREQUENCY SENSITIVITY:

Model 940-60:  $0.05 \times A \times (F - F_d)$  dB

Model 940-114:  $0.1 \times A \times (F - F_d)$  dB

A = Attenuation setting in dB,  $F_d$  = Dial cut frequency in GHz, F = Operation frequency in GHz

**TEST DATA:** Test frequency for Model 940-60 is 2 GHz and 1 GHz for 940-114. Test data is available at additional cost.

# Variable Attenuators



## Specifications-Con't

**CONNECTOR:** SMA or Type N connector per MIL-STD-348 interface dimensions - mate nondestructively with MIL-C-39012 connector.

Connector Options	INPUT (J1)	OUTPUT (J2)
11	SMA, Female	SMA, Female
12	SMA, Female	SMA, Male
22	SMA, Male	SMA, Male
33	N, Female	N, Female
34	N, Female	N, Male
44	N, Male	N, Male

**CONSTRUCTION:** Aluminum body and stainless steel connector; gold plated beryllium copper contacts. Knob is included with each unit.

**WEIGHT:** Net 1,570 g (3 lbs, 8 oz)

## MODEL NUMBER DESCRIPTION:

Example:

**940 - XX - XX - \***

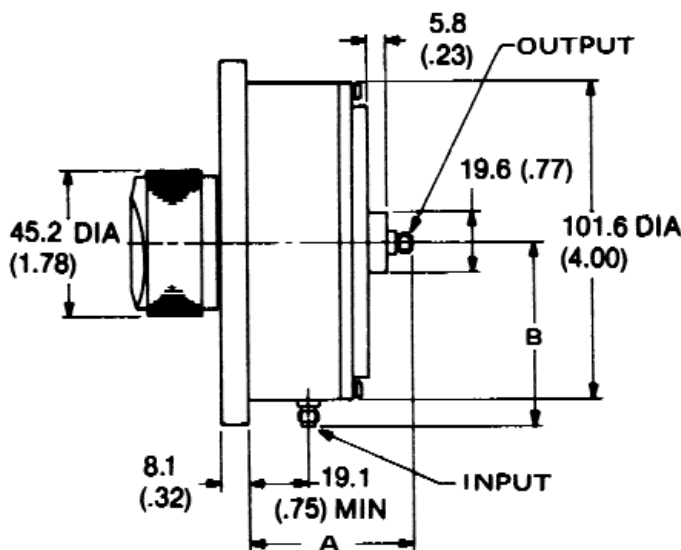
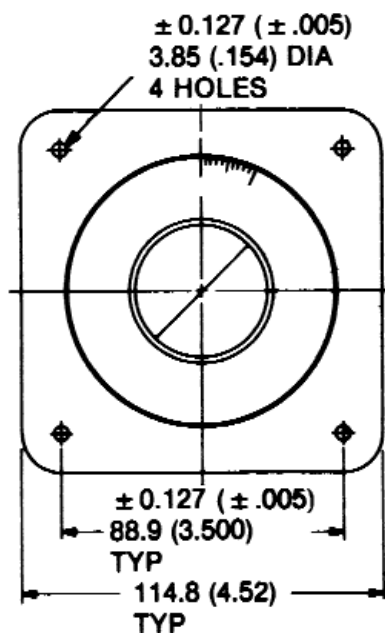
Basic Model Number      Attenuation Value (dB)      Connector Options

\* Add -1 for long life version.

## ACCESSORIES

**ATTENUATOR STAND, MODEL 940 Z:** This stand allows a user to easily mount any Model 940 for those bench applications.

## PHYSICAL DIMENSIONS:



Model No.	DIM A	DIM B
940-XX-11	52.3 (2.06)	58.2 (2.29)
940-XX-12	55.6 (2.19)	58.2 (2.29)
940-XX-22	55.6 (2.19)	61.5 (2.42)
940-XX-33	61.0 (2.40)	68.1 (2.68)
940-XX-34	66.0 (2.60)	68.1 (2.68)
940-XX-44	66.0 (2.60)	71.9 (2.83)

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