

Variable Attenuators and Phase Shifters

18-325 GHz

3(WG) 103/112 Series

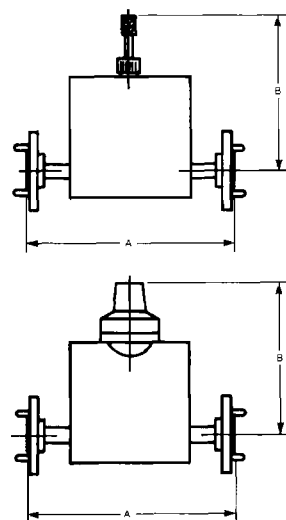
Dial Variable Phase Shifter Features

- 0°-180° Phase Shift
- Accurate Repeatability
- Minimum Insertion Loss
- Frequency Calibration Available

Description

Variable waveguide phase shifters provide a simple and convenient means of varying the electrical length of a transmission line. Principal usage is in a bridge circuit where it is possible to compare a known phase shift to some unknown phase shift of a device under test. Differential phase shifts of production units can be tested quickly by this null test and accurate numbers can be assigned to phase differences from unit to unit. Single frequency operation is recommended, but calibrations can be provided over a range of frequencies.

In this series of phase shifters, a dielectric vane traverses the center of the waveguide broadwall through a non-radiating waveguide slot. The positioning mechanism is controlled by a locking dial counter driving a differential screw. This allows fine definition of the phase shift angle and assures repeatability of any selected position. The design provides for a minimum of 180° of phase shift at the lowest frequency in any of the waveguide bands from 18 to 325 GHz.



Description

This series of dial adjustable attenuators provides an inexpensive method of making measurements in fixed frequency laboratory or production test set-ups. They consist of a section of waveguide into which an adjustable resistive vane is inserted. The mechanical drive is designed to reduce backlash and provide positive definition for attenuation settings of up to 30 dB. A calibration chart will be provided with model number series 103.

Variable Attenuator Features

- Dial Variable
- Calibrated and Uncalibrated
- Low and High Power
- Full Waveguide Bandwidths
- Accurate Resetability
- Minimum VSWR

Mechanical Specifications

Waveguide	WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10	WR-08	WR-06	WR-05	WR-04	WR-03
RF Mating												
Flange	54-001-M	68-001	67B-006	67B-007	67B-008	67B-009	67B-010	74-001	74-002	74-003	74-004	74-005
MIL-F-3922/												
UG	595/U	599/U	383/U	383/U-M	385/U	387/U	387/U-M	Pin Contact	Pin Contact	Pin Contact	Pin Contact	Pin Contact
Reference												
Dim. (Max)												
Inch	3.50	3.00	3.00	3.00	2.75	2.75	2.75	2.50	2.50	2.50	2.50	2.50
(mm)	(88.9)	(76.2)	(76.2)	(76.2)	(69.9)	(69.9)	(69.9)	(63.5)	(63.5)	(63.5)	(63.5)	(63.5)

Specifications Subject to Change Without Notice.

M/A-COM Inc. ■ 1011 Pawtucket Boulevard, Lowell, MA 01853 USA

■ Telephone: 800-366-2266

Specifications at 25°C

Variable Attenuators²

Waveguide	Frequency (GHz)	VSWR (Max.)	Power (W)	Knob Variable Model No.	Dial Variable Model No.	Dial Calibrated ¹ Model No.
WR-42	18-26.5	1.15	0.7	3-42-101	3-42-102	3-42-103-XX
WR-28	26.5-40	1.15	0.6	3-28-101	3-28-102	3-28-103-XX
WR-22	33-50	1.15	0.6	3-22-101	3-22-102	3-22-103-XX
WR-19	40-60	1.15	0.5	3-19-101	3-19-102	3-19-103-XX
WR-15	50-75	1.15	0.4	3-15-101	3-15-102	3-15-103-XX
WR-12	60-90	1.15	0.4	3-12-101	3-12-102	3-12-103-XX
WR-10	75-110	1.15	0.3	3-10-101	3-10-102	3-10-103-XX
WR-08	90-140	1.17	0.1	3-08-101	3-08-102	3-08-103-XX
WR-06	110-170	1.19	.08	3-06-101	3-06-102	3-06-103-XX
WR-05	140-220	1.21	.05	3-05-101	3-05-102	-
WR-04	170-260	1.25	.03	3-04-101	3-04-102	-
WR-03	220-325	1.30	.01	3-03-101	3-03-102	-

Notes:

1. Replace "XX" in model number with desired center frequency.

2. Variable to 30 dB Max.

Specifications 25°C

Phase Shifters

Waveguide	Frequency (GHz)	VSWR (Max.)	Insertion Loss (dB)	Power Handling (W)	Model No.
WR-42	18-26.5	1.15	0.5	.5	3-42-112
WR-28	26.5-40	1.15	0.5	.5	3-28-112
WR-22	33-50	1.15	0.5	.5	3-22-112
WR-19	40-60	1.15	0.7	.3	3-19-112
WR-15	50-75	1.15	0.7	.3	3-15-112
WR-12	60-90	1.15	1.0	.3	3-12-112
WR-10	75-110	1.15	1.0	.3	3-10-112
WR-08	90-140	1.20	0.9	.3	3-08-112
WR-06	110-170	1.25	0.9	.2	3-06-112
WR-05	140-220	1.30	1.0	.2	3-05-112
WR-04	170-260	1.35	1.2	.1	3-04-112
WR-03	220-325	1.40	1.5	.1	3-03-112

Specifications Subject to Change Without Notice.