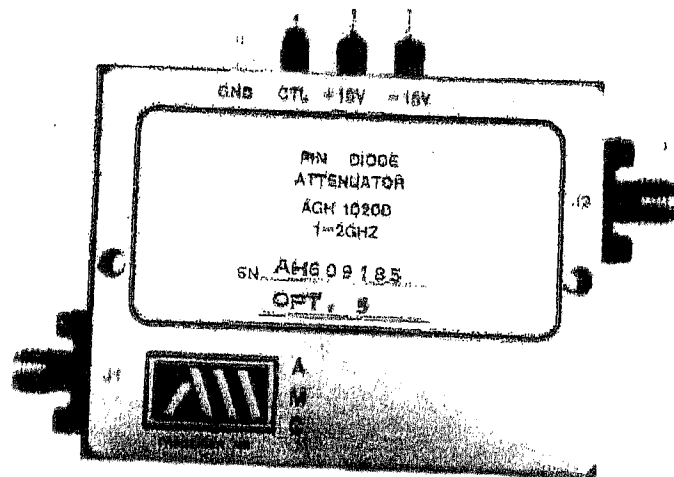


**AMERICAN Microwave**  
corporation

## AGH D SERIES LINEARIZED ATTENUATOR MODULATORS 18 GHz, 60 dB



### FEATURES

- Solid State Reliability
- Absorptive Type
- 3:1 Bandwidth
- Linearized
- Voltage Controlled

### DESCRIPTION

The AGH suffix D Series are voltage controlled linearized attenuator/modulators that operate over greater than octave bandwidth and are non-reflective at all attenuation levels. The units consist of an AGH Series modulator and an integrated hybrid linearizer that provides 10 dB per volt control function. Seven models in the series cover the frequency band from 1 to 18 GHz. The RF circuit employs two microstrip arrays of pin diodes that are hybrid coupled at the input and output with large couplers for repeatable low loss performance.

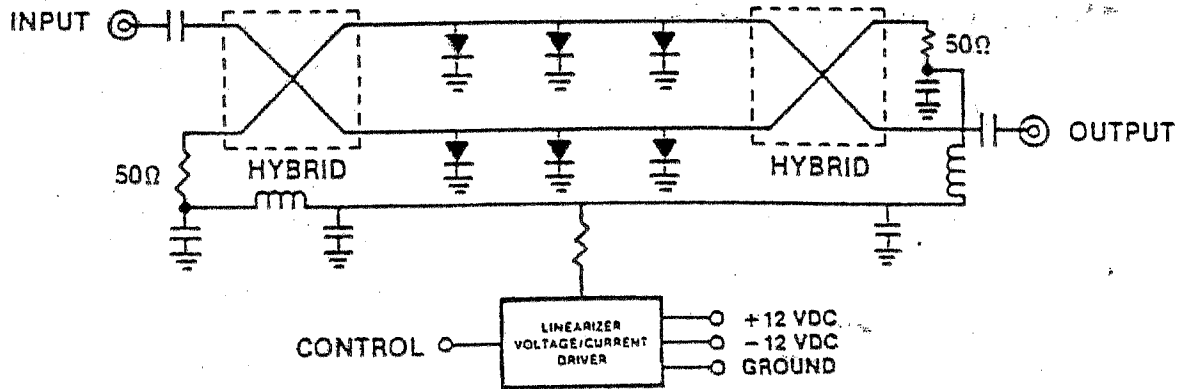
4/89

REVISED  
OCTOBER 9, 1997

7311G GROVE ROAD, FREDERICK, MARYLAND 21701

Tel.: (301) 662-4700  
Fax: (301) 662-4938

# FUNCTIONAL SCHEMATIC



## SPECIFICATIONS

MODEL	FREQUENCY RANGE (GHz)	INSERTION LOSS, MAX (dB)	VSWR MAX.	FLATNESS ( $\pm$ dB) AT NOMINAL ATTENUATION TO LEVELS OF			
				10 dB	20 dB	40 dB	60 dB
AGH-1020D	1.0-2.0	1.8	1.5	0.45	0.8	1.5	1.6
	0.75-2.25	1.9	2.0	0.6	1.4	3.0	3.5
AGH-2040D	2.0-4.0	1.8	1.5	0.3	0.8	1.5	1.6
	1.5-4.5	1.9	2.0	0.5	1.4	3.0	3.5
AGH-2550D	2.5-5.0	2.0	1.6	0.3	0.8	1.5	1.6
	1.9-5.6	2.1	2.1	0.5	1.4	3.0	3.5
AGH-4080D	4.0-8.0	2.4	1.7	0.3	0.8	1.5	1.6
	3.0-9.0	2.5	2.2	0.5	1.4	3.0	3.5
AGH-5010D	5.0-10.0	2.6	1.7	0.5	0.9	1.5	1.6
	3.75-11.25	2.7	2.2	0.7	1.4	3.0	3.5
AGH-6012D	6.0-12.0	2.7	1.8	0.7	1.0	1.5	1.6
	4.5-13.5	2.8	2.2	0.9	1.5	3.0	3.5
AGH-8018D	8.0-18.0	2.7 (Note 1)	2.0	0.7	1.0	1.5	1.6
	6.0-18.0	2.7 (Note 1)	2.0	0.9	1.5	3.0	3.5

- NOTES: 1. Typical loss to 16 GHz.  
 3.7 dB, max loss 16-18 GHz.  
 2. Extended frequency range specifications are typical.

*Handwritten notes:*  
 HLB  
 R.A. WP KH  
 B9 PD EK

REVISED  
 OCTOBER 9, 1997

## ADDITIONAL SPECIFICATIONS

Attenuation Range .....	60 dB
Deviation from Linearity .....	0 to 30 dB = 0.5 dB
	30 to 50 dB = 1.0 dB
	50 to 60 dB = 1.5 dB
Monotonicity .....	Guaranteed
Attenuation Change with Temperature .....	= .025 dB/°C, Max.
Power Handling (Operating) .....	+ 20 dBm
Rise and Fall Times .....	Rise Time: 1.5 $\mu$ sec, Max. Fall Time: 50 ns, Max.
Control Characteristics .....	Range: 0 to 6 volts: = 15 volts, Maximum Transfer Function: 10 dB/volt Input Impedance: 10 k Ohms
Power Supply Requirements	+ 12 V $\pm$ 5% @ 100 Ma - 12 V $\pm$ 5% @ 20 Ma

## AVAILABLE OPTIONS

<u>NUMBER</u>	<u>DESCRIPTION</u>
001	Two SMA Male RF Connectors
002	One SMA Male and One SMA Female RF Connector
003	5 dB/volt Sensitivity
004	0 - 30 dB Range
005	= 15 Volt Power Supply
006	SMA - F Control Connector
008	SMC - M Control Connector
102	= 18 Volt Power Supply
200	Removable SMA Female RF Connector

## ENVIRONMENTAL RATINGS

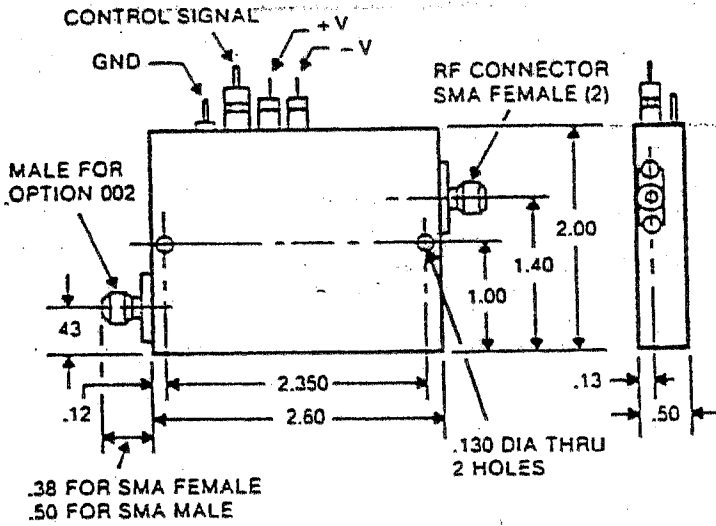
Operating Temperature .....	-54°C to +110°C
Non-operating .....	-65°C to +125°C
Humidity .....	Mil-Std - 202F, Method 103B Cond B, 96 Hrs @ 95%
Shock .....	Mil-Std - 202F, Method 213B Cond B, 75G, 6 msec
Vibration .....	Mil-Std - 202F, Method 204D Cond B
Altitude .....	Mil-Std - 202F, Method 105C Cond B, 50,000 Ft.
Temp Cycling .....	Mil-Std - 202F, Method 107D Cond A, 5 Cycles

REVISED  
OCTOBER 9, 1997

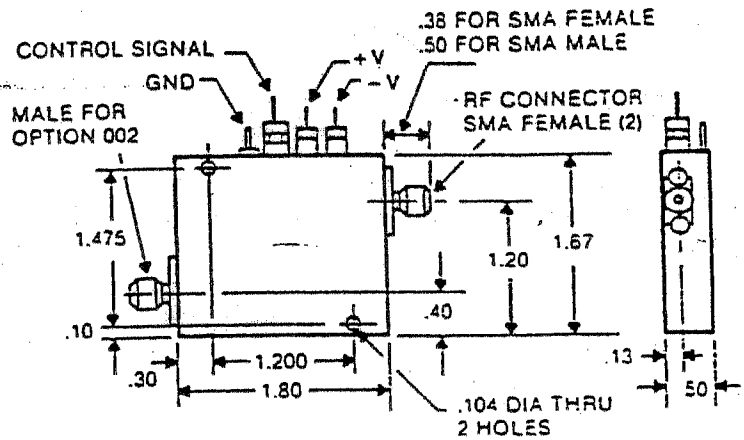
*R.A. W.P. W.H.  
B.G. M. E.K.*

# MECHANICAL DATA

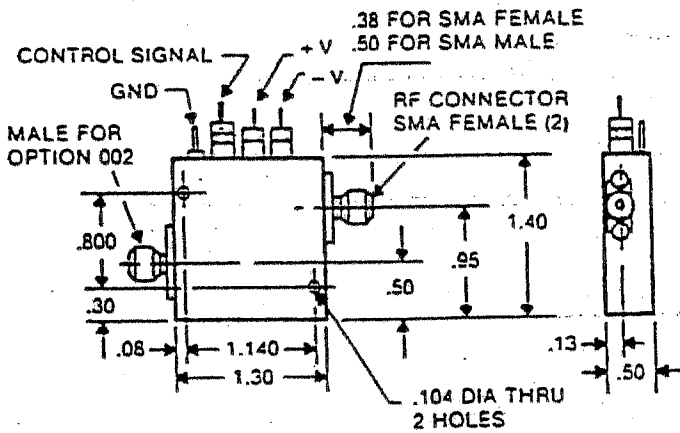
## DIMENSIONS AND WEIGHTS



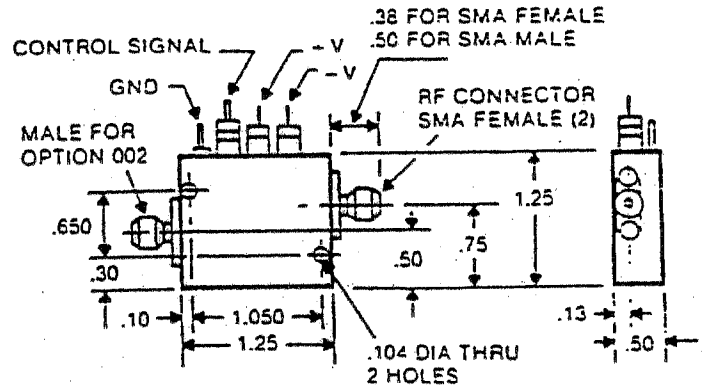
MODEL: AGH-1020D  
Wt. 3 oz. (85 gm) approx.



MODELS: AGH 2040D, 2550D  
Wt. 2 oz. (57 gm) approx.



MODELS: AGH-4080D, 5010D, 6012D  
Wt. 1 oz. (28 gm) approx.



MODEL: AGH-8018D  
Wt. 1 oz. (28 gm) approx.

Dimensional Tolerances unless otherwise indicated xx = 0.020 xxx = 0.005

*2A. WP MH  
BG PW EIC*

REVISED  
OCTOBER 9, 1997