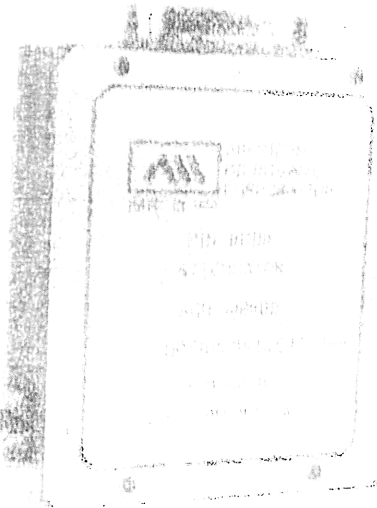


**AMERICAN Microwave  
Corporation**

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



### FEATURES

- Solid State Reliability
- Absorptive Type
- 3:1 Bandwidth
- Linearized
- 8 Bit Digital Control

### DESCRIPTION

The AGC suffix DD Series are digitally controlled linearized attenuator/modulators that operate over greater than octave bandwidth and are non-reflective at all attenuation levels. The units consist of an AGC 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.

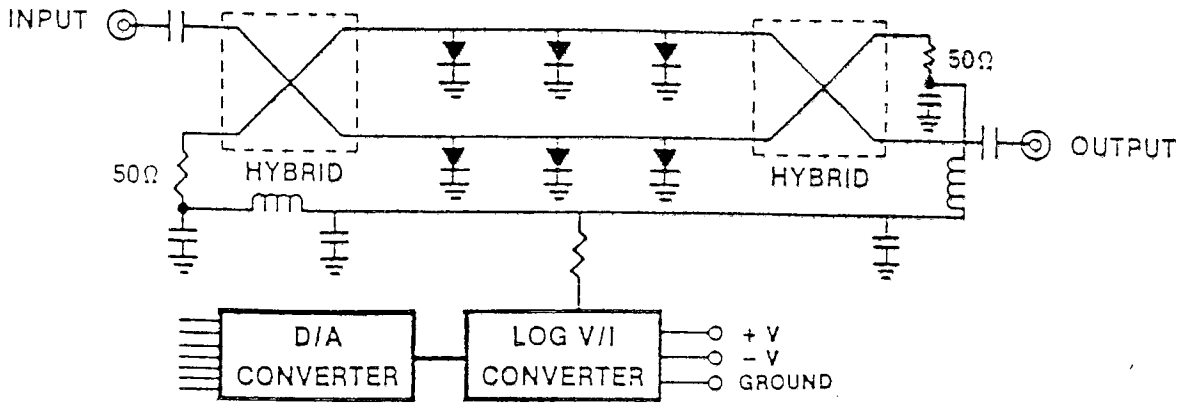
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OCTOBER 9, 1997

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# 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-1020DD	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-2040DD	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-2550DD	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-4080DD	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-5010DD	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-6012DD	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-8018DD	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

NOTE: Extended Frequency Range Specifications Are Typical.

1. Maximum loss to 16 GHz. 3.7 dB Maximum loss from 16 - 18 GHz.

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*Handwritten initials:*  
KJ  
P.A. W.P. H.H.  
B.G. J.W. E.K.

## ADDITIONAL SPECIFICATIONS

Attenuation Range .....	60 dB
Deviation from Linearity .....	0 to 30 dB $\pm$ 0.5 dB 30 to 50 dB $\pm$ 1.0 dB 50 to 60 dB $\pm$ 1.5 dB
Monotonicity .....	Guaranteed
Attenuation Change with Temperature .....	$\pm$ .025 dB/°C, Max.
Power Handling .....	AGH-1020D: + 10 dBm CW All Others: + 20 dBm CW Survival Power: + 30 dBm
Rise and Fall Times .....	Rise Time: 1.5 $\mu$ sec, Max. Fall Time: 50 ns, Max.
Control Characteristics .....	8 Bit Positive True Binary (see Table 1)
Power Supply Requirements .....	+ 12 V $\pm$ 5% @ 100 mA - 12 V $\pm$ 5% @ 20 mA

TABLE 1

J3 PIN FUNCTIONS	
PIN	8 BIT BINARY
1	GND
2	ANALOG INPUT
3	NOT USED
4	GND
5	0.25 dB (LSB)
6	0.5 dB
7	1.0 dB
8	2.0 dB
9	4.0 dB
10	8.0 dB
11	16.0 dB
12	32.0 dB
13	+V
14	-V
15	NOT USED

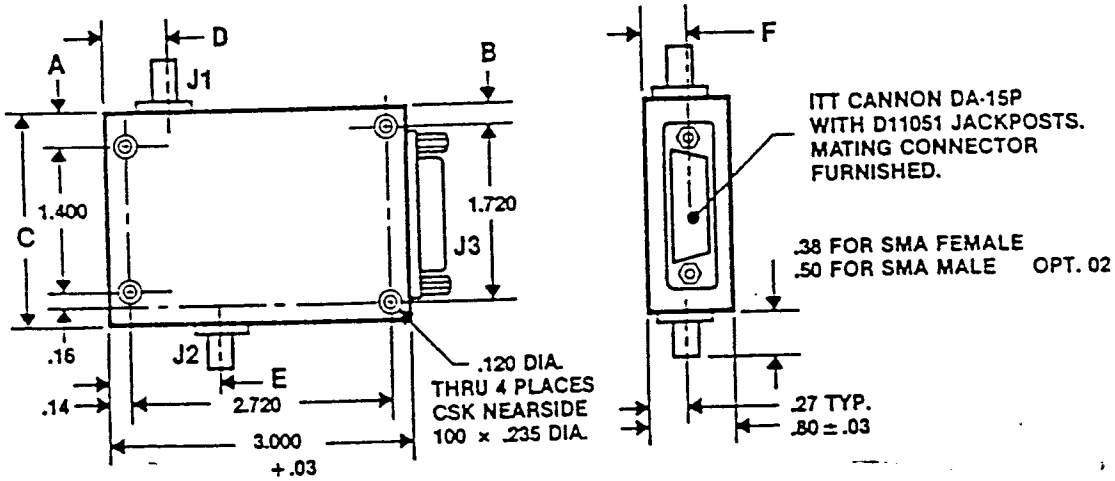
## AVAILABLE OPTIONS

<u>NUMBER</u>	<u>DESCRIPTION</u>
001	Two SMA Male RF Connectors
002	One SMA Male and One SMA Female RF Connector
004	0 - 30 dB Range
005	$\pm$ 15 Volt Power Supply

*Handwritten notes:*  
2A. H8  
WP  
B6 pin EK

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# MECHANICAL DATA



MODEL	DIM 'A'	'B'	'C' ± .03	'D'	'E'	'F'
AGH-1020DD	.58	.42	2.56	.56	1.53	.29
AGH-2040DD	0.30	0.14	2.00	0.50	1.29	0.34
AGH-2550DD	0.30	0.14	2.00	0.50	1.29	0.34
AGH-4080DD	0.30	0.14	2.00	0.75	1.19	0.34
AGH-5010DD	0.30	0.14	2.00	0.75	1.19	0.34
AGH-6012DD	0.30	0.14	2.00	0.75	1.19	0.34
AGH-8018DD	0.30	.14	2.00	0.75	1.00	0.27

NOTES: Unless otherwise ruled, all dimensions are in inches.  
Tolerances: XX ± .02      XXX ± .005 inches.

## 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

*Handwritten initials:* J.S., R.A., W.P., B.G., H.H., J.W., E.K.

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