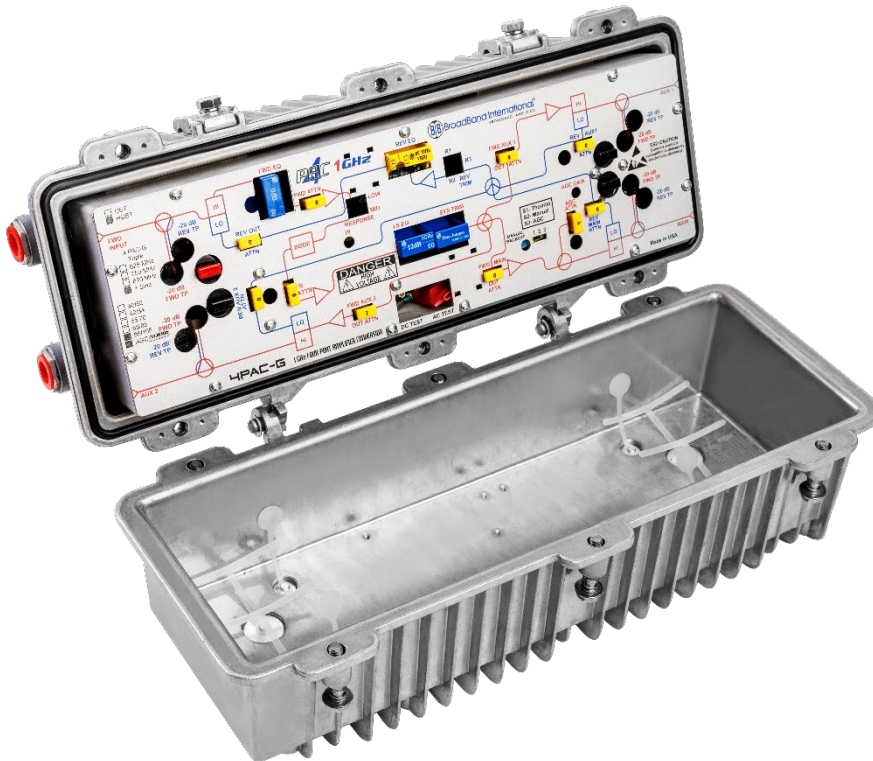


# 1 GHz System Amplifiers 4PAC-G HGBT (High Gain Balanced Triple)

Replaces/Upgrades Cisco®/Scientific Atlanta®  
550/625/750/870/1000 MHz Systems



The 4PAC-G HGBT enhanced system amplifier module from Broadband International® is designed to drop into any existing SA II, III or GainMaker® system amplifier housing. The forward bandwidth is up to 1 GHz and may be optimized for any bandwidth from 550 to 1 GHz. This is accomplished by alignment of the interstage response network and by the type of cable equalizers utilized. Performance may be optimized by the choice of hybrids to achieve different operating gains.

The amplifier accepts any standard GainMaker® style equalizer and long JXP style pads. The unit can be ordered with a high efficiency power supply that is built into the back of the amplifier or will accept the standard power plug from any existing GainMaker® power pack. The use of plug-in hybrids makes this system amplifier easier to service than the OEM models now offered utilizing surface-mounted gain blocks.

## Features:

- Specified bandwidth performance from 550 MHz up to 1 GHz
- Utilizes GainMaker® plug-in equalizers and JXP style pads
- Multiple options for return path bandwidth
- GaAs plug-in hybrid technology
- Plug-in diplex filter for future reverse split changes
- Surge Protection Crowbar included
- Three QAM AGC frequencies available at 423, 609 and 711 MHz
- Five Analog AGC frequencies available at 427.25, 445.25, 499.25, 527.25 and 547.25 MHz
- New BBI housing available with Chromate Conversion coating



Numerous analog and QAM automatic gain controls modules (AGC) are available to meet your current and future system requirements.

4PAC-G HGBT Amplifier Conversion Performance to 1 GHz			
Pass Band	MHz	105-1002	5 - 85
Frequency Response (Flatness)	dB	+/- 0.75	+/- 0.5
Return Loss	dB	16	16
Noise Figure	dB	8	8
Full Gain	dB	45	20
Operating Gain with AGC-4 dB back off	dB	41	20
Bode Control Range	dB	+/- 4	N/A
AC Hum Mod @ 12 Amperes	dBc	<-60	<-60
AC Hum Mod @ 15 Amperes	dBc	<-60	<-60
Reference Analog Output Level (1002/109 MHz)	dBmV	50/36.3	35-40
Output Slope (typical)	dB	13.7	0
Hybrid Technology	dB	GaAs	Si PP
Test Points	dB	20 +/-1 dB)	20 +/-1 dB)
<b>Noise and Distortion Performance</b>	<b>Units</b>	<b>Forward</b>	<b>Reverse</b>
Composite Triple Beat-(Analog 109-550/256 QAM 558-1002 MHz)	dB	79	82
Cross-Modulation	dB	74	71
Composite Second Order	dB	80	81
Carrier to Intermodulation Noise (CIN)	dB	65	N/A
<b>Amplifier Delay Characteristics</b>			
Forward Chrominance to Luminance Delay ns/3.58 MHz		Reverse Group Delay 1.5 MHz	
Frequency (MHz)	Delay (ns)	Frequency (MHz)	Delay (ns)
109.25 to 112.83	15	5.0 to 6.5	65
115.25 to 118.83	8	6.5 to 8.0	24
121.25 to 124.83	5	8.0 to 9.5	12
		80.5 to 82	11
		82 to 83.5	13
		83.5 to 85	21
<b>Powering Data</b>	<b>Units</b>		
DC Voltage	VDC		24
DC Power Consumption- Manual	A		1.97
DC Power Consumption- with AGC	A		2.03
AC Input voltage range	VAC		38-90

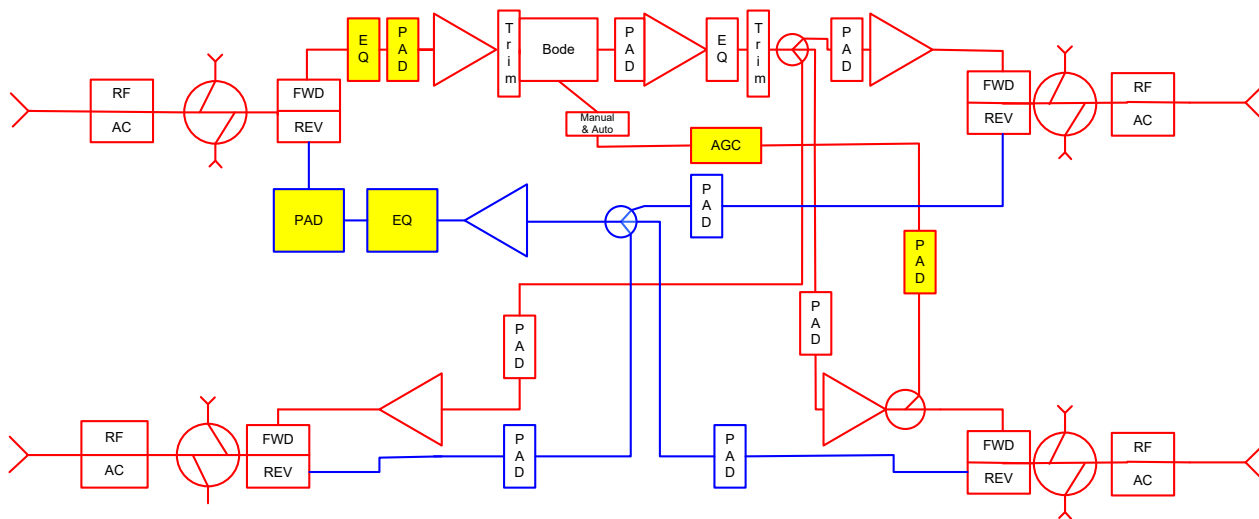
All measurements at +68 degrees F – Specification subject to change without notice

**Powering Data (continued)**

4PAC-G HGBT	With BBI PS		AC Voltage										
	I DC		90	85	80	75	70	65	60	55	50	45	40
<b>Thermal</b>	1.97	AC current draw	0.9	0.92	0.96	1.01	1.07	1.13	1.21	1.31	1.43	1.57	1.75
<b>AGC</b>	2.03	AC current draw	0.95	0.94	0.98	1.03	1.09	1.16	1.24	1.34	1.46	1.61	1.79

**4PAC-G HGBT Diagram and Ordering Information**

The following Required Accessories highlighted in yellow must be ordered separately (all other pads and equalizers are provided)



The Broadband International 4PAC-G amplifier can be configured in many different frequencies and options. Please consult your account representative for assistance with specific plug-in options.

Required Accessories	Part Number
<b>Plug-in Pads (attenuators): Available in 0 dB steps from 0 to 25 dB</b>	589xxx
- 1 Pad required for forward input	
- 1 Pad required for reverse output	
- 1 Pad required for AGC, (if applicable)	
*To determine AGC pad value, subtract 29 dB from the design value main port RF output level at the AGC pilot FQ	
<b>Forward Cable Equalizer: Available in 1.5 dB steps from 0 to 30 dB</b>	2011xx
- 1 Forward Equalizer required for forward input	
<b>Reverse Cable Equalizer: Available in 1 dB steps from 0 to 12 dB at 85 MHz</b>	2068xx
- 1 Reverse Equalizer required for reverse output	