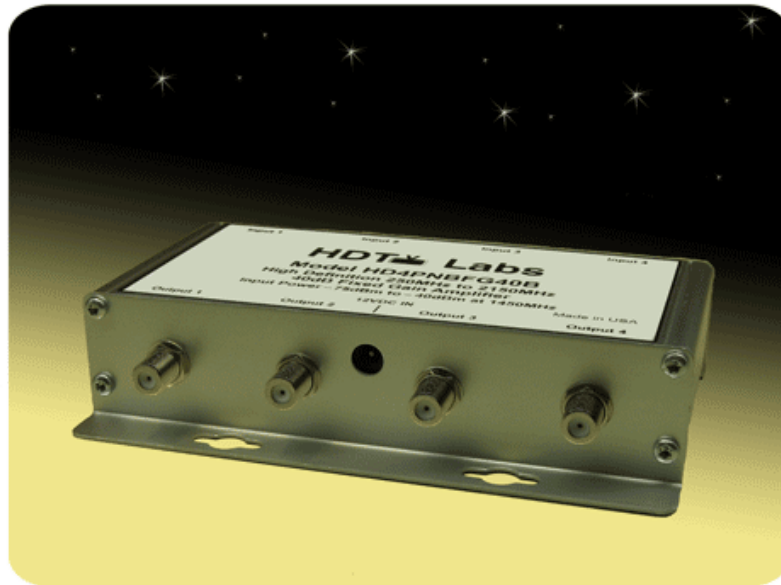


# HDTV Labs

## 40 dB Fixed Gain 4-Port Amplifier

### Model HD4PNBFG40B Instruction Manual



[www.hdtvlabs.tv](http://www.hdtvlabs.tv)

# HDTV Labs

## Model HD4PNBFG40B

### High Definition 250MHz to 2150MHz 40dB Fixed Gain Amplifier



### Connection Instructions

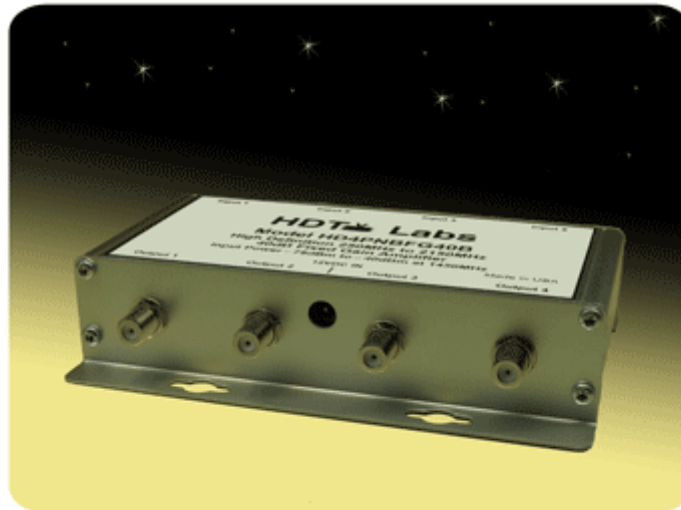
**Caution:** Ensure all cables and connectors have no short circuits. Make all cable connections before energizing the power supply connection or damage to the unit could occur.

1. Using High Definition RG-6 coaxial cable for all connections, attach amplifier inputs and outputs to corresponding devices.
2. Connect the external power supply to the amplifier "12VDC" jack.
3. Built-in DC blocking capacitors eliminate the need for any external capacitors.
4. The input signal level to this amplifier is only -75 dBm as compared to a typical -35 or -40 dBm level for existing amplifiers. Installers not accustomed to working with the weaker -75 dBm input signal risk overdriving the amplifier if they do apply a -35 or -40 dBm signal at the input.
4. If poor C/N ratio is seen at the output of the amplifier, it is being overdriven and the installer must reduce the input power for it to work correctly. Proper output signal should be checked with a meter to prevent overdriving any of the system's four channels.
6. Check our website at [www.hdtvlabs.tv](http://www.hdtvlabs.tv) for the latest instruction manual updates. This is HD4PNBFG40B Rev. 1.1

# HDT Labs

## Model HD4PNBFG40

### High Definition 40dB Fixed Gain 250MHz to 2150MHz Amplifier



### Description

The HD4PNBFG40B is a Professional-Grade 4-channel 40dB fixed gain amplifier designed to recover low-level signals that may be well below the threshold of most satellite power meters. Each channel has a fixed gain in excess of 40dB with 10dB slope compensation and covers a frequency range of 250MHz to 2150MHz. The HD4PNBFG40B is used in conjunction with stacked, multiswitch, and head-end systems to overcome cable, splitter, tap, and other system losses. The inputs and outputs of each of the four amplifier channels have internal DC blocking capacitors, thus eliminating the need to add external DC blocking capacitors.

**MADE IN USA**

### Features:

- Wide signal dynamic range capability
- Ultra-low level signal recovery
- Corrosion-resistant connectors
- Rugged aluminum construction

Specification	Minimum	Typical	Maximum
Frequency.....	250MHz		2150MHz
Noise Figure.....		3.8dB	4.8dB
Absolute Maximum Total Input Power <sup>1</sup> .....			-20dBm
Input Power Range.....	-75dBm <sup>2</sup>		-40dBm <sup>3</sup>
Individual Transponder Output Power.....		0dBm	
Gain			
at 250MHz.....	29.0dB	30.0dB	31.0dB
at 750MHz.....	34.5dB	35.5dB	36.5dB
at 950MHz.....	36.0dB	37.0dB	38.0dB
at 1450MHz.....	39.0dB	40.0dB	41.0dB
at 1650MHz.....	39.5dB	40.5dB	41.5dB
at 2150MHz.....	39.0dB	40.0dB	41.0dB
Channel-to-Channel Isolation <sup>4</sup> .....		45dB	

Specification	Minimum	Typical	Maximum
Input Return Loss			
at 250MHz.....		11dB	
at 950MHz.....		30dB	
at 1450MHz.....		17dB	
at 2150MHz.....		12dB	
Output Return Loss			
at 250MHz.....		12dB	
at 950MHz.....		18dB	
at 1450MHz.....		25dB	
at 2150MHz.....		11dB	
1dB Input Gain Compression Point <sup>5</sup>			
at 250MHz.....		-12dBm	
at 950MHz.....		-18dBm	
at 1450MHz.....		-22dBm	
at 2150MHz.....		-24dBm	
Input Signal Power for 3 <sup>rd</sup> Order Intermod Rejection Ratio of 40dB <sup>6</sup>			
at 250MHz.....		-21dBm	
at 950MHz.....		-30dBm	
at 1450MHz.....		-35dBm	
at 2150MHz.....		-36dBm	
DC Supply Voltage .....			12VDC
DC Supply Current.....			650mA

For Indoor Use Only. The HD4PNBFG40B is supplied with an external 12VDC power supply. Operating temperature of the HD4PNBFG40B is  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ . The mechanical dimensions are 6.4”W  $\times$  4.4”L  $\times$  1.5”H  
(Specifications subject to change without notice.)

Notes:

1. Absolute Maximum Power is the total power that arrives at the amplifier input from 250MHz to 2150MHz. Satellite power meters typically read the power level of a single transponder at a time. If all transponders are active from 250MHz to 2150MHz and the power of all transponders are equal, then total available input power across the 250MHz to 2150MHz bandwidth is approximated by taking the satellite power meter reading at 1450MHz and adding 20dB. Make sure not to exceed  $-20\text{dBm}$  as measured with a satellite power meter at 1450MHz.
2. The  $-75\text{dBm}$  level assumes that the overall system noise figure is not too high such that the carrier-to-noise ratio of the satellite signal has not been degraded such that signal recovery is not possible. Signal levels lower than  $-75\text{dBm}$  can be recovered with properly designed systems having over-all low system noise figures. Low noise figure systems are achieved by avoiding the addition of too many attenuators or too much loss in front of an amplifier block. It is always better to add loss after an amplifier to minimize system noise figure as long as the signal at the amplifier input does not over-drive that amplifier.
3. Assumes maximum power levels as measured with a satellite power meter and all transponder signals active from 250MHz to 2150MHz. (See note 1) A frequency response loss slope of 10dB is assumed, i.e. transponder power measured at 250MHz with a satellite power meter is 10dB higher than power measured at 2150MHz due to cable loss versus frequency characteristics. If transponder power levels are equal, limit the maximum power to  $-40\text{dBm}$  at all frequencies. An easy method to determine if the amplifier is being over-driven is to connect a satellite power meter to the output of the amplifier and check C/N, BER, and IRD performance. If acceptable transponder power levels are measured but low C/N values, high BER values, and low IRD levels are measured, reduce the input level into the amplifier until good C/N, BER, and IRD results are measured.
4. Channel-to-Channel Isolation is measured referenced to the output of each amplifier. Channel-to-Channel Isolation has a typical value of 35dB at 2150MHz.
5. Measured using a single CW signal. No transponder signals present.
6. Measured using two CW signals with 1MHz spacing. No transponder signals present.