

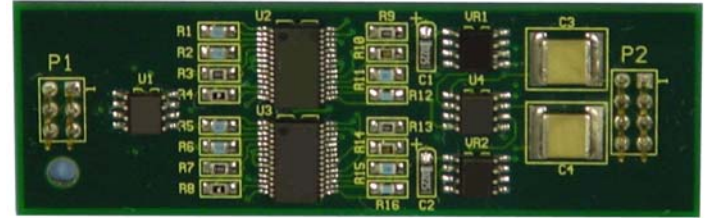


# AAF-HP

## Programmable, 2-Channel High-Pass Filter Module

Compatible with the AAF-3 and AAF-3PCI multi-channel amplifier/filter control boards

- Compatible with AAF-3 and AAF-3PCI motherboards
- 8-pole pseudo-elliptic hi-pass filter
- Software-selectable cutoff frequencies 1 Hz to 10 kHz
- Set band-pass filters on AAF-3 and AAF-3PCI with maximum bandwidth of 200:1 high pass to low pass Fc
- $\pm 10V$  input and output



The AAF-HP series provides 2 programmable channels of hi-pass filtering on a plug-in module that is pin compatible with the popular AAF-1F, AAF-2F, and AAF-3F modules

*The AAF-HP can be used with the low pass filters on the AAF-3 and AAF-3PCI Filter Board to create a programmable bandpass filter.*

The hi-pass filter is an 8-pole pseudo-elliptic which has been optimized for minimum pass-band ripple of  $\pm 0.5$  dB. The stop-band attenuation is of 100 dB typical.

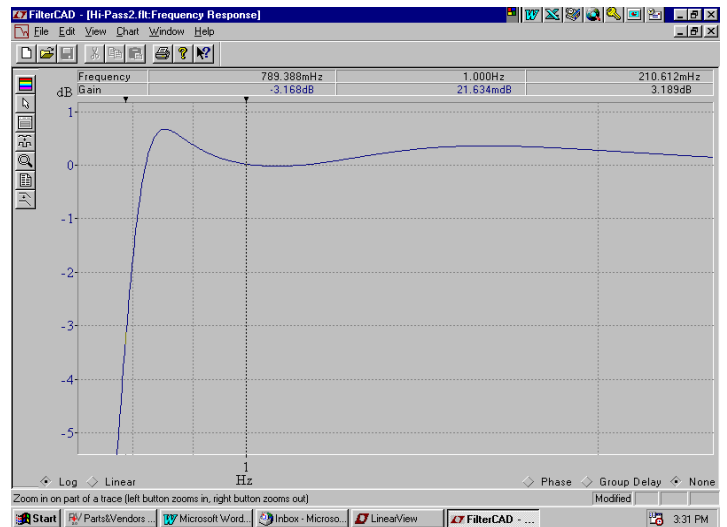
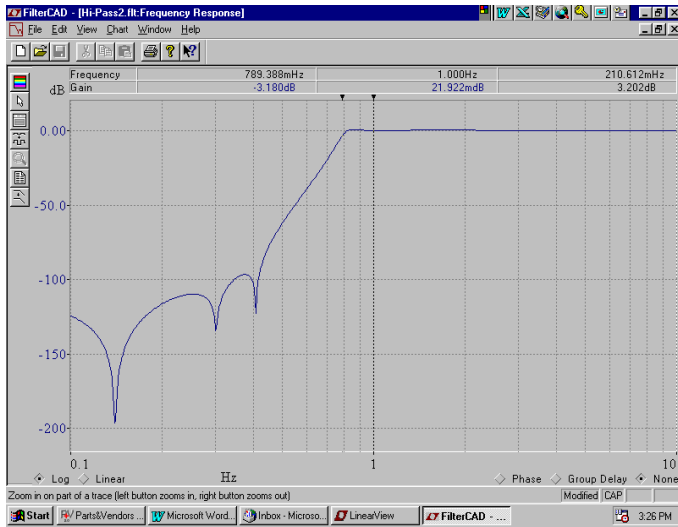
The cutoff frequency of each 2-channel pair of filters can be set with an external clock or programmed for a range of frequencies from below 1Hz to 10kHz

**DC Offset** The AAF-HP feature AC coupled outputs thus has no output DC offset.

### Filter Corner Frequency

The following figure details the corner frequency characteristics of the AAF-HP filter.

### Frequency Response



## Standard Filter Specifications (Software-selectable)

	Cutoff Frequency	Passband Performance	Stopband Rejection	Total Wideband Noise
<b>High-Pass</b>	1 Hz to 10 kHz (pseudo elliptic)	$0 \pm 5$ dB max to cutoff, low-freq gain $0 \pm 0.25$ dB max, <1Ohm output impedance, 0mV offset	90 dB Typ.	$135\mu$ V <sub>RMS</sub> Typ.

### Analog Input (with Gain)

DC offset ..... Output is AC coupled  
 Passband gain .....  $\pm 0.5$  dB max  
 Input voltage .....  $\pm 10$  V max  
 Input protection .....  $\pm 30$  V max  
 Input impedance .....  $20\text{K}\Omega$

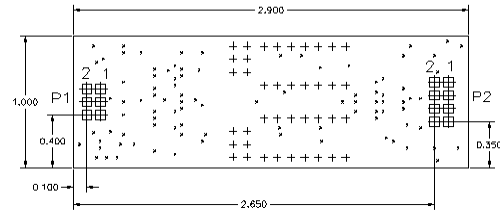
### Analog Output

Output voltage .....  $\pm 10$  V min  
 Load resistance .....  $1\text{K}\Omega$  min  
 Output impedance .....  $<1.0\Omega$

### Miscellaneous

Power consumption ..... 60mA at  $\pm 15$ V  
 Operating temperature .....  $0^\circ\text{C}$  to  $70^\circ\text{C}$

### Physical Dimensions



## How to create a 4 channel bandpass filter with the AAF-3

The AAF-HP has been specifically designed to be used with the AAF-3 and AAF-3PCI motherboards to provide band-pass filtering. The AAF-HP and one of the AAF-3F, AAF-2F, AAF-1F filter modules are wired in series to provide band-pass filtering. The system is configured with an optional gain module feeding a low-pass filter feeding the hi-pass filter. This configuration can be achieved in the cable connection to the AAF-3's input and output connectors or by attaching wires directly on the AAF-3. The AAF-3PCI bandpass channel cascade is controlled by a software selectable switch.

When configured in this manner, the software provided with the AAF-3 or AAF-3PCI can be used to control the high-pass  $f_c$ , the low-pass  $f_c$  and the Gain level. The AAF-HP is a switch-capacitor device which dictates the maximum input frequencies should not exceed 200 times the high-pass corner frequency otherwise aliasing will occur above  $200F_c$  frequencies. For this reason, the AAF-HP must be used in conjunction with a low pass filter module with the low pass corner frequency set below  $200F_c$ . This will remove all of the alias behavior of the AAF-HP. The result is a highly controllable band pass filter with exceptional performance.

### Pin Description

Pin #	Input Connector	Output Connector
1	In_A_Hi	Agnd
2	In_A_Lo	Out_A_Hi
3	Agnd	Agnd
4	not used	Out_B_Hi
5	In_A_Hi	+12V
6	In_A_Lo	-12V
7	N/A	Filter Clock
8	N/A	DGnd

## Alligator Technologies