



# GSAF-10

## 16-Bit, Precision Analog Filter

### Outstanding Specifications

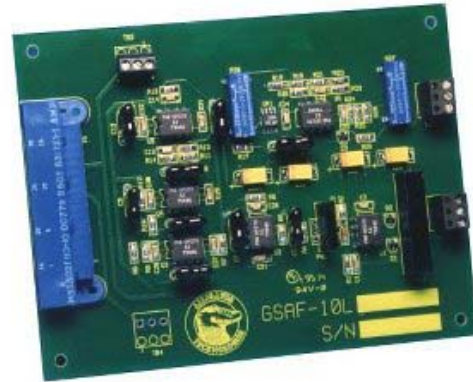
½ LSB Error, 16 Bit  
.001% Gain Error  
 $27\text{nV}/\sqrt{\text{Hz}}$  Noise

### Features

- Ready to run 16-bit anti-aliasing
- Rack mount chassis available
- Noise less than  $27\text{nV}/\sqrt{\text{Hz}}$
- 96 dB common-mode rejection ratio
- Gain trim to  $\pm 100 \mu\text{V}$
- DC offset trim to  $\pm 1.0 \mu\text{V}$
- Output impedance  $< 10\text{m}\Omega$
- Input impedance  $15\text{K}\Omega$
- 9-pole Butterworth and Bessel transfer functions
- Standard fixed frequencies of 100Hz, 200Hz, 500Hz, 1K, 2K, 5K, 10K, 20K, 50K
- Custom frequencies available upon request

### Applications

- Standards laboratories
- Student laboratories.
- Precision Filtering
- Low level signals



*GSAF-10 Filter Board*

### Description

The GSAF-10 is a ready-to-run filter board designed specifically for 16-bit applications in a laboratory environment. With excellent specifications on common-mode rejection, filter shape accuracy, gain accuracy, and DC offset, the GSAF-10 reaches unmatched performance levels.

The combined total of all standard performance-degradation sources -- offset initial, offset drift, gain initial, gain drift, temperature and aging -- equate to less than  $\pm 2$  LSB of a 16-bit system. Total harmonic distortion with a 1 kHz 20Vpp input signal is an outstanding 0.002%.

### Alligator Technologies

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www.alligatortech.com

## More on the GSAF-10

A feedback topology at the output stage provides for a 10 mΩ output impedance, making the GSAF-10 capable of driving any A/D converter input stage without further buffering. Input impedance is 20kΩ ±2%.

Pre-installed offset trimming and output-gain scaling potentiometers permit nulling of offset and gain for expansion of dynamic range for maximum resolution. Both adjustments are incorporated at the last stage of the filter to compensate for all filter component variations.

## GSAF-10 Specifications

### Filter Characteristics

Response type ..... 9-pole low-pass,  
Butterworth or Bessel  
(Chebychev optional)

F<sub>C</sub> tolerance ..... ±2%

Corner frequencies\* ..... 100 Hz, 200 Hz, 500Hz,  
1.0 kHz, 2.0 kHz, 5.0 kHz,  
10.0 kHz, 20.0 kHz, and  
50 kHz

Total harmonic distortion  
..... 20vpp; 1 kHz ≤ .002%,  
10 kHz ≤ .008%

### Analog Input

Voltage range ..... ±10V

Differential gain ..... 1 ± .001dB

Common-mode  
rejection (@ 1kHz) ..... 92 dB min, 96 dB typ

Common-mode voltage  
range ..... ±40V

Impedance ..... 15 kΩ ±2%

Maximum safe voltage ..... ±40V

### Analog Output

Impedance ..... 5 mΩ typ, 10 mΩ max

Linear operating range ..... ±10V @ ±2mA

Offset voltage ..... ±300 μV

Noise (5 Hz to 50 kHz) ..... 25 μVrms typ,  
30 μVrms max

Load Capacitance ..... 100pF max

### Environmental

Operating temperature ..... 0°C to 50°C

Storage temperature ..... -20°C to +70°C

Relative humidity ..... 0% to 95% @ 60°C  
(non-condensing)

## Application Versatility

## LS-100

The LS-100 is a rackmount chassis available with any mix GSAF-10 Gold Series modules. Simply specify the filter type and cutoff frequency for each module location.

Custom filters, amplifiers or other special functions can be provided. Contact the factory for custom requirements.

## Ordering

To order, fill out the following chart by specifying the cutoff frequency and the filter type for every filter location. Mark an X in either column, Bessel or Butterworth, then specify the desired cutoff frequency, 100, 200, 500, 1K, 2K, 5K, 10K, 20K, or 50KHz

Channel	Bessel	Butterworth	Cutoff
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

**For more information contact Alligator Technologies or your local Alligator distributor.**

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