



SCS-830, SCS-832

100kHz to 2MHz tunable analog Butterworth or Bessel 1-Channel Amplifier and Low-Pass Filter Modules

Features

- 1 tunable analog filter per module
- 8-pole Butterworth (SCS-832) or Bessel (SCS-830)
- All module parameters are software selectable
- Cutoff frequencies from 100kHz to 2MHz
- Amplifier gains of 1 to 10
- AC coupled
- Proprietary DC transformer differential output drive
- Uni-polar (0 to 5volt) to Bi-polar ± 10 volt offset
- Graphical application software SystemView 800™ included

The SCS-830 and SCS-832 series of modules provide one programmable channel of low-pass filtering with a high-quality instrumentation amplifier for front-end signal conditioning of low level signals.

Each filter channel is tunable to a wide range of corner frequencies, under software control, in 5kHz increments from 100kHz to 2MHz. Signals are always AC coupled.

High-quality instrumentation amplifiers on each channel provide software-selectable gain. Channels are independently programmable for gain settings of 1, 2, 4, or 10.

A high input impedance and overvoltage protection limits input current or voltage overloads.

Uni-polar to Bi-polar offset extends the range of the A/D converter by shifting 0 to 5 volt signals to be bi-polar

± 10 volt output. This output can then be amplified to provide full-scale A/D input signals.

Support Software

The SCS-800 comes with the **SystemView 800™** graphical control menu-driven software. SystemView 800 software provides simple menu-selection using point and click options to configure any of the SCS-800 modules.

- **SystemView 800 for Windows 95/98/NT**



Point and click setup

SystemView 800 setup is as easy as pointing to the proper box and clicking on a selection. All module parameters are viewed simultaneously eliminating the hassle of bouncing back and forth from screen to screen.

Alligator Technologies

Filter Specifications

	Cutoff Frequency	Passband Performance	Rolloff @ $f = 2f_c$	Total Wideband Noise
SCS-830 Bessel	100kHz – 2MHz	Group delay $\pm 1\%$ max to cutoff droop: @ $0.5f_c = 0.6\text{dB}$ @ $0.8f_c = 1.8\text{dB}$ typ	6 dB	400nV $\sqrt{\text{Hz}}$
SCS-832 Butterworth	100kHz – 2MHz	+0.05dB to -0.05dB max, to 0.85 cutoff	48 dB	400nV $\sqrt{\text{Hz}}$

Analog Input

DC offset..... Calibrated at factory, 5mV DC max
 Amplifier gain accuracy..... ± 0.08 dB max
 Common-mode rejection..... 60 dB in, 86 dB typ
 Common-mode voltage..... ± 10 V max
 Common-mode protection... ± 15 V max
 Input voltage ± 10 V max
 Input protection ± 15 V max
 Input impedance 100k Ω each side to analog ground
 Input bias current 600nA max
 Input offset current 150nA max
 Amplifier slew rate..... 170 V/ μsec typ
 Settling time 200nS to .01%

Analog Output

Output voltage ± 10 V min
 Load resistance..... 1K Ω min
 Output impedance..... 20 Ω \pm 5%

Miscellaneous

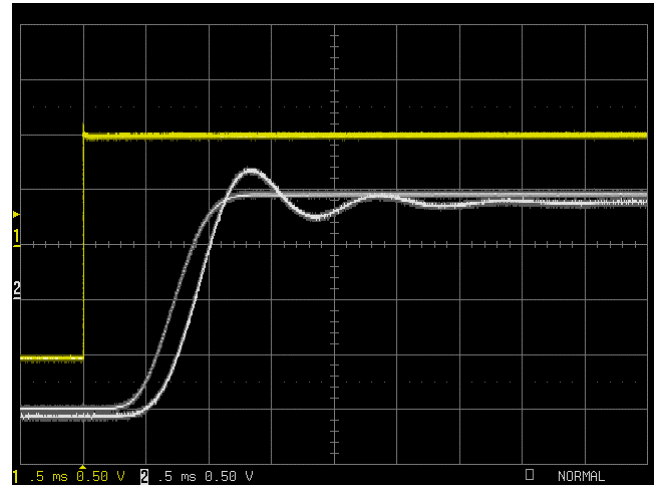
Power Watts (max.) .. 9.5 W
 Power Watts (typ.) 6.6 W
 Operating temperature 0°C to 55°C

Application

To pick the appropriate filter, it must be determined whether the data is to be analyzed in the time domain or the frequency domain. The Butterworth filter has a flat frequency response, which rolls off at 160dB/decade while the Bessel frequency response droops after $0.6f_c$. The Butterworth step response exhibits approximately 15% overshoot while the Bessel step response exhibits less than 1% overshoot.

The Butterworth filter is more useful where the requirements are fast rolloff in the frequency domain. The Bessel filter is more useful where smooth step response is required. The Bessel filter provides constant group delay (linear phase) over the pass band out to approximately 2 times the corner frequency.

Step Response Comparison



The smooth output waveform is from the SCS-830 Bessel filter, the step response with overshoot is from the SCS-832 Butterworth filter.

System Configuration

Either the SCS-830 or SCS-832 may be installed in any SCS-800 slot. The combination of all slots gives a maximum of 8 channels of filtering and amplification. For up to 18 channels modules may be used with the SCS-801 rack mount chassis. These modules may be mixed with other modules to provide a truly universal filter system.

For more information, contact Alligator Technologies or your local Alligator Distributor

Alligator Technologies

2900 Bristol St., Suite E-101 • Costa Mesa, CA 92626 USA Tel: 714-850-9984 • Fax: 714-850-9987 iinfo@alligatortech.com •
 www.alligatortech.com