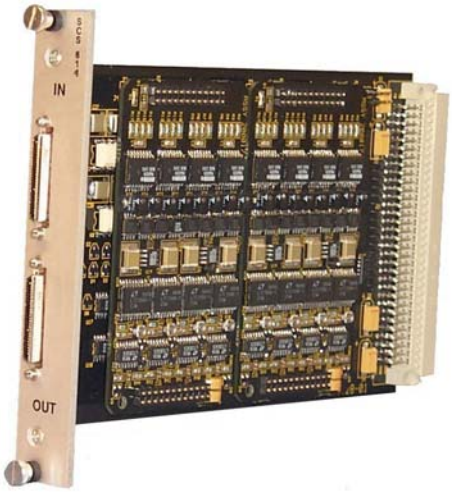
SCS-812
Elliptic or Linear Phase 8-Channel Amplifier and Low-Pass Filter Module for the SCS-800 Signal Conditioning System

Features

- 8 amplifiers/filters per module
- Independent channel corner frequency selector
- Corner frequencies 0.5Hz to 100kHz Linear Phase
- Corner frequencies 0.5Hz to 50kHz Elliptic
- Independent gain control
- Programmable A/D clock output
- ±10V input and output
- Uni-polar to Bi-polar (0 to 5 V > ± 2.5V)
- Automatic DC offset compensation
- Offset guaranteed <2mV @ G = 1
- Differential output, drives up to 30 meter output cable
- Onboard channel and module multiplexers
- Input cable shield drive



The SCS-812 provides 8 programmable channels of low-pass filtering and high-quality instrumentation amplifiers for front-end signal conditioning of low level signals.

Each filter channel is tunable to any corner frequency, under software control, for the entire bandwidth of 0.5Hz to 50kHz with linear phase characteristics or 1Hz to 100kHz with elliptic characteristics. Coupling may be either AC or DC, and is software selectable for the entire module. Alternatively, the corner frequency of each filter can be controlled for tracking applications with a selection of one of 4 external clocks.

High-quality instrumentation amplifiers on each channel provide software-selectable gain as well as differential inputs with 90 dB common mode rejection. Channels are independently programmable for gain settings of 1, 2, 5, 10, 20, 50, 100, 200, 500 or 1000.

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 ±2.5 volt output. This output can then be amplified to provide full-scale A/D input signals.

DC Offset. The module features automatic DC offset compensation provides a total DC offset (RTI) of 2 mV.

Input

The SCS-812 has eight separate differential inputs, which may be DC or AC coupled to the instrumentation amplifier. The amplifier has an input voltage range of ±10V and is protected to ±40V. A common mode shield drive amplifier protects input signals.

Output

A proprietary DC transformer™ circuit provides true differential outputs, with 10 ohm impedance. This circuit guarantees that common-mode noise will not effect the signal at the A/D converter. This circuit also allows for use of single ended inputs on the A/D converter, effectively doubling the number of A/D channels without sacrificing common-mode rejection. Each channel output is available as a differential signal on the output connector.

The SCS-800 provides two multiplexing methods for bringing outputs to a data acquisition host:

All output signals can be time-multiplexed onto one set of analog output lines via the SCS-812's front-panel output connector, or can be time-multiplexed with all other module outputs via the SCS-800 backplane to one connector on the SCS-804 System Controller Module. This method provides channel multiplexing, or channel and module multiplexing.

The two methods are independent. Some modules may be multiplexed onto the backplane, and others multiplexed out their own front panel, while other modules can have all channels as independent outputs.

Alligator Technologies
2183 Fairview Ave. ,Suite 220 ● Costa Mesa, CA 92627 USA Tel: 949-515-1400 ● Fax:949-515-4724 info@alligatortech.com ● www.alligatortech.com

Filter Specifications

	Cutoff Frequency	Passband Performance	Stopband Rejection	Total Wideband Noise
8-Pole Elliptic	1 Hz - 100 kHz	+0.4dB, -0.2dB max; 0.85dB at cutoff	90 dB typ	530μVRMS typ
8-Pole Linear Phase	1 Hz - 50 kHz	Group delay ±0.5% max; 2dB droop max at 0.75 cutoff, low-frequency gain = +0.4dB, -0.2dB max	90 dB typ	450μVRMS typ

Physical

All SCS-800 modules fit a standard 3U form factor and use triple row VME connectors for reliability.

Board connectors feature grounding for the shell and chassis together before any pins mate. Such a fully-shielded connector provides maximum protection from ESD.

SystemView 800™ Software Control

The capabilities of the SCS-800 result from the meticulous design of SystemView 800, an easy-to-use graphical application for controlling the SCS-800.

Achieving system setups in just seconds, SystemView provides point and click navigation through pull-down menus for quick selection of key parameters, such as filter cut-off frequencies, amplifier gains and AC/DC coupling. As parameters are changed, SystemView makes all relevant calculations, reducing setup time.

The SCS-800 stores the last selected configuration in non-volatile memory, and automatically reconfigures itself after power is applied. Multiple configurations can be saved on the host PC and can be easily applied by selecting the file and sending its data to the SCS-800.

SystemView 800 is built on a powerful set of dynamically linked library of utilities that can be called from any custom application or graphical data acquisition environment such as LabView®, DASYLab®, HP-VEE®, Diadem® and more.

SystemView 800 is available in a 32-bit version for Windows 95, 98 and NT.

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

Specifications

Coupling

AC cutoff…….. 0.03Hz typical

Input

Voltage range…….. ±10V
Common mode rejection… 80dB min, 92dB typ
Noise (RTI @G=1)…….. 30ηV per Hz
Coupling…… AC or DC
Impedance…… 2MΩ/20pF
Protection…….. ±40V
Bias current…….. ±2pA typ, ±100pA max

Offset

Voltage…….. ±0.1mV typ, ±1.0mV max
Current…….. ±1pA typ, ±100pA max

Gain

Steps…… 1,2,5,10,20,50,100,200, 500, 1000
Accuracy……. 0.5%

Output

Impedance…….. 10Ω
Voltage Range…….. ±10V

General

Temperature, operating… 0°C to 55°C
Temperature, storage…… -25°C to 85°C
Humidity…….. 0% to 95% non-condensing

Multiplexer

Minimum switching time… 100μS
Settling time (controller card specification)…….. 10μS to 0.1%

Connector

Input and output…….. Amp 787096-1
Latch…… Amp 787003-3

Mating Connector

Input and output…….. Amp 787131-1
Backshell…….. Amp 787133-1

Alligator Technologies
2183 Fairview Ave. ,Suite 220 ● Costa Mesa, CA 92627 USA Tel: 949-515-1400 ● Fax:949-515-4724 info@alligatortech.com ● www.alligatortech.com