SCS-824 Series Includes SCS-825, SCS-826, SCS-827

4-Channel Strain Gage Amplifier Module for the SCS-800 Signal Conditioning System

Features

- Complete software control of all parameters
  - Excitation
    - 4 voltages, (2.0, 2.5, 5 and 10 Volts)
    - Kelvin connection
    - Current Limited @ 60mA
  - Excitation shutdown
  - Gain selection from 1 to 1000 in 1-2-5 steps
  - Analog 4-pole anti-aliasing filter f_c software settable from 5 Hz to 1275 Hz (SCS-824,SCS-825) or 185 to 47.22kHz (SCS-826,SCS-827)
  - Filter bypass
  - Auto calibration (resistor user supplied)
  - Auto zero
  - Input coupling AC or DC

- Bridge completion for ½ bridge included
- Bridge completion for ¼ bridge (user supplied)
- Differential instrumentation op amp input
- Input shield drive
- Differential output

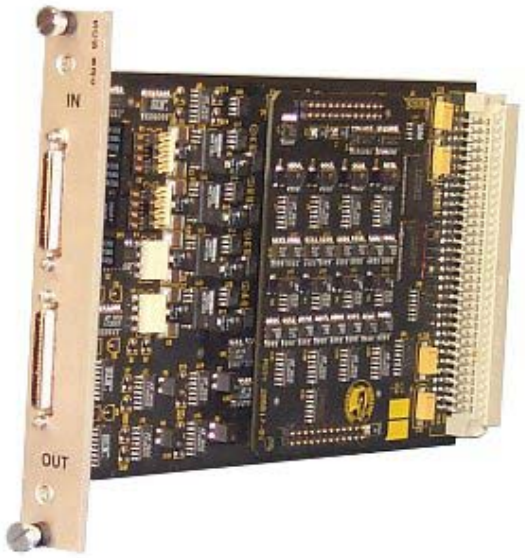
Overview

The SCS-824 series provides 4 channels of strain gage inputs for the SCS-800 signal conditioning system. The SCS-824 series interfaces all strain gage types, from single-element quarter bridges to 4-element full bridges

Excitation Sources. The SCS-824 series' excitation source is a very stable Kelvin connected voltage. This excitation source features current limiting to prevent damage from short-circuits or overloads and can be shut down. Selection can be made from one of four output voltages.

Bridge Completion Resistors. Physical locations are provided for bridge completion and calibration resistors. Bridge completion is selected through software for ¼, ½ or full bridge. The SCS-824 series provides completion resistors for ½ bridges, while ¼ bridges resistors are user-supplied.

A calibration resistor is also user-supplied. The resistor is connected to the bridge "C" node and is connected to either excitation hi or excitation low via software command



SCS-824 SERIES STRAIN GAGE MODULE

Input Amplifier. The SCS-824 series' two stage instrumentation amplifier offers software-selectable gain settings from 1 to 1000. Both input and output offset errors are calibrated to zero at the factory.

Auto-Calibration. Auto-calibration for residue gage errors is accomplished via a feedback circuit which measures the DC offset on each channel, then compensates the input amplifier offset via an D/A converter. This circuit is effective for up to 2.5 volts of gage error.

Filtering. An analog 4-pole low-pass filter provides superior low-noise and DC performance. The filter, which may be software bypassed, is available with Bessel or Butterworth characteristics and software-selectable cutoff frequencies from 5Hz to 1275Hz for the SCS-824 and SCS-825 or 185Hz to 47.22kHz for the SCS-826 and SCS-827.

Differential Output. A propriety DC transformer™ circuit buffers output signals and provides true differential output with voltage compliance of ±12V. Because the circuit acts as a transformer, the output of the SCS-824 series can drive long twisted-pair output cables with minimum interference from common-mode signals. This allows the SCS-824 series module to be located up to 50 meters from the receiving instrument (A/D).

Output to A/D. The SCS-824 series provides three means of attaching analog output signals to any data

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acquisition system. Each SCS-824 series features a 50-pin output connector that can connect directly to an A/D board.

All outputs on a module are multiplexed together via software control available on the module output connector.

In addition, all four differential outputs of the SCS-824 series module can be multiplexed onto the SCS-800 backplane under software control. A receiver on the SCS-804 controller board buffers the multiplexed signals from all installed modules, again buffers with a DC transformer buffer, then sends the signals out a front-panel connector. This provision provides a means to multiplex all channels together and out one differential output. The result is simplified cabling and elimination of the need for a separate relay module.

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

Excitation Output	
Excitation voltage	Selectable 2,2.5,5,or 10VDC
Excitation current	50ma max
Excitation current limit	60ma typ
Bridge completion	
Resistor tolerance for	0.1% absolute
½ bridge	0.02% ratio matching
	2.0ppm ratio tracking
Thermal EMF	±0.1μV/°C
Filter Characteristics	
Filter Type	*SCS-824,826* Butterworth
	SCS-825,827 Bessel
Number of Poles	4 pole
Cutoff frequency range	*SCS-824,825* 5Hz to 1275Hz
	SCS-826,827 185Hz to 47.2kHz
Input	
Voltage	±10V
Common mode rejection	80dB min, 92dB typ
Noise (RTI @G=1)	42ηV per√Hz
Coupling	AC or DC
AC coupling cutoff	0.03Hz cutoff
Impedance	2MΩ/4pF
Protection	±40V
Gain Steps	1,2,5,10,20,50,100,200, 500, 1000
Gain accuracy	±0.07% @ 1≤ G ≤ 10
	±0.10% @ 20 ≤ G ≤ 100
	±0.25% @ 200 ≤ G ≤ 1000
Offset	0.5mV typ @ gain=1
Output Characteristics	
Impedance	10°
Voltage range	±10V
General	
Operating temperatue	0° to 55°C
Storage temperature	-25°C to 85°C
Humidity	0% to 95% non-condensing
Multiplexer	
Minimum switching time	100μS
Settling time (controller card specifications)	10μS to 0.1%
Connector	
Standard Connector (SCS-82x)	
Input and output	Amp 787096-1
Latch	Amp 787003-3
Lemosa Connector (SCS-82x-LEM)	
Input	EXG1B308HLN
Output	EGG2B316CLL
Mating Connector	
Standard Connector (SCS-82x)	
Input and output	Amp 787131-1
Latch	Amp 787133-1
Lemosa Connector (SCS-82x-LEM)	
Input	FGG1B308CLD□
Output	FGG2B316CLD□

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