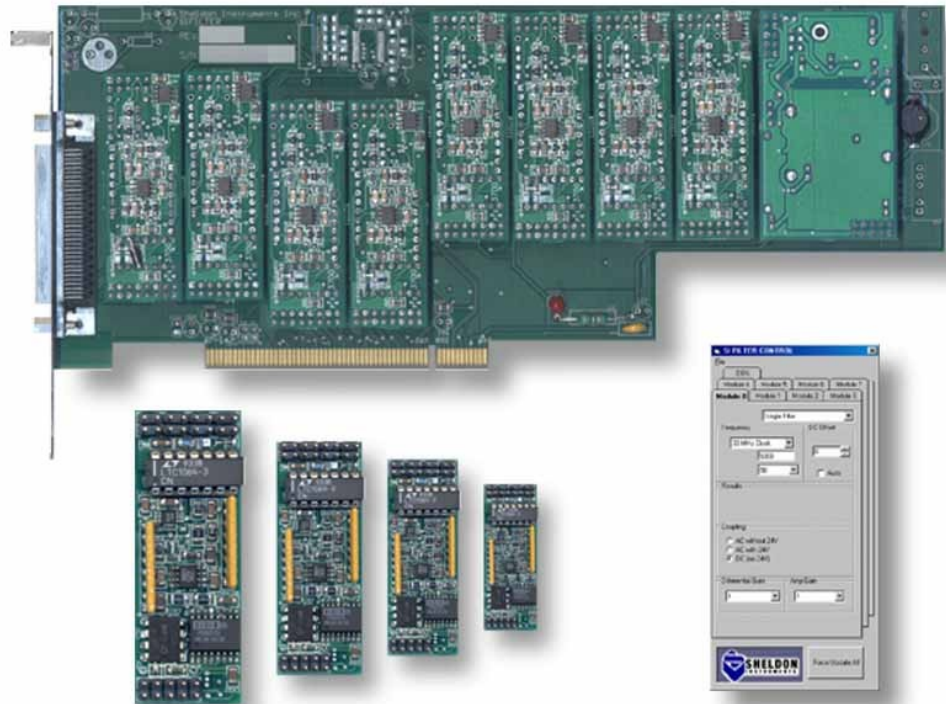




SI-FILTER-8 Card for PCI Bus

Introduction

The SI-FILTER-8 is a PCI bus card with 8 channels of excitation, amplification, and anti-alias filtering for differential and single ended analog input signals, making it an ideal companion for any plug-in data acquisition card. The SI-FILTER-8 comes with all necessary application software and drivers for Win9x/2000/NT and Linux.



Hardware Features

The SI-FILTER-8 features up to 8 independent channels with some of the most important analog signal conditioning functions necessary for data acquisition. This basic functionality includes excitation, amplification, and anti-alias filtering for differential/single ended input signals. The result is a robust output signal conveniently available on an external connector that is easily interfaced with all types data acquisition cards on the market. The SI-FILTER family of signal conditioning cards are fully software programmable, free of jumpers or clumsy potentiometers.

Analog Input Types and Excitation

For single ended operation, software controlled features include AC or DC coupling, as well as piezocrystal excitation with a +24Vdc source and 2mA-4mA current regulation, ideal for powering accelerometers.

For differential ended operation, a separate pin selectable 100mA current source is available for Wheatstone bridge sensors or strain gauges.



Amplification and DC Biasing

For improved dynamic performance, amplification is implemented with two different stages with gains ranging from 1 to 1000. The first stage is a precision differential input instrumentation amplifier with gains of 1, 2, 5, & 10. The second stage is a programmable amplifier with gains of 1, 10, 100.

Unwanted DC biases are removed with an 8 bit trimming DAC under full software control.

Filtering

The anti-alias filters are 8th order low pass switch capacitor filters that are available in a variety of topologies: Butterworth, Bessel, Cauer, and Elliptic.

The cutoff/corner frequency of each filter can be independently set to 0hz to 70khz, in increments of 1hz accuracy. This degree of flexibility is only attainable with a switched capacitor topology, which oversamples an input signal with an external sampling clock whose relative frequency is on the order of 100 times greater than the desired passband to corner/cutoff frequency.

Each filter's external sampling clock is derived from its own independent 16 bit divider/counter, which in turn sources its master clock from the fixed internal 33Mhz PCI clock, or an optional Direct Digital Synthesis circuit.

The optional DDS circuit provides programmable clock rates with precision up to +/-1hz resolution.

The final output signal is buffered with a fixed 2 pole lowpass filter set at 70khz. The overall AC accuracy of the filter circuit is 14 bits.

Software Support

The SI-FILTER comes with a complete stand-alone setup utility in addition to a DLL for interfacing to a wide array of popular third party software applications such as LabVIEW, Delphi, Visual Basic/C/C++, VEE, etc. Both the utility and the DLL allow access to an onboard EEPROM that stores all hardware configuration information. Driver support is standard for Win9x/2000/NT and Linux.



Technical Specifications

Analog Inputs:

- +/-5Vp maximum input voltage range.
- High input impedance of 1Mohm.
- AC/DC coupling.
- Differential or single ended input signals.
- Software controlled trim DAC for removing all unwanted DC biasing, part # MAX549 (Maxim).
- Two stage amplifier input with programmable gains of 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000:
 - First gain stage- is a precision differential instrumentation amplifier with gains of 1, 2, 5, 10, part #PGA207 (Burr Brown).
 - Second gain stage- is a precision amplifier with gains of 1, 10, 100, part #PGA103 (Burr Brown).
- Excitation:
 - Software selectable 2mA current source for piezo electric sensors.
 - Pin selectable 100mA current source for resistive bridge transducers, derived from auxiliary PC power supply connector.
- Filter:
 - Switch capacitor low pass filter with cutoffs ranging from 0hz to 70khz, part #LT106x (Linear Technology).
 - Optional onboard DDS for switch cap sample generator, +/-1hz resolution, part #AD9850 (Analog Devices).

- Software selectable clock source derived from fixed 33Mhz clock or optional DDS output.

Analog Outputs:

- One single ended output per channel compatible with any data acquisition card.
- Maximum output impedance of 10ohms.
- +/-5Vp bipolar voltage range.
- Fixed 70khz, 2-pole linear phase smoothing filter.

General Features:

- Completely software selectable parameters with supplied stand-alone application software.
- Complete with DLLs for easy integration with any third party software such as LabVIEW, Delphi, Visual Basic/C/C++, VEE, etc.
- Driver support for Win9x/2000/NT and Linux.
- On-board EEPROM nonvolatile memory for storing configuration parameters.

Hardware Interface

- PCI bus interface with target accesses.
- Analog I/O signals accessible with SCSI style 68 pin subminiature DSUB connector, reference AMP part number 787169-7.

Physical Dimensions & Electrical Requirements:

- 3/4 size PCI-bus card measuring 10"(L) x 3.9"(H).
- 14 watts typical.

Contact Information

Sheldon Instruments
10393 San Diego Mission Road - Suite 202
San Diego, CA 92108-2176
Tel (619) 282-6700
Fax (619) 282-6710



Microsoft®
Visual Basic®



Email info@sheldoninst.com
Web www.sheldoninst.com