SensorPro
Advanced analogue sensor conditioning & data acquisition module

FEATURES

- 24-bit sigma-delta ADC.
- 100-10,000 SPS data rate.
- Excellent DC performance.
- 4 fully differential analogue inputs (±10v).
- 1 current/voltage analogue output (±0.1%).
- 0.1-10,000 software/hardware gain.
- 32-bit embedded real time signal processing.
- On board low noise power supply.
- USB and RS232 connectivity.
- EEPROM (standalone applications).
- Win32 driver support for Windows XP/7.
- Windows SDK available.

DESCRIPTION

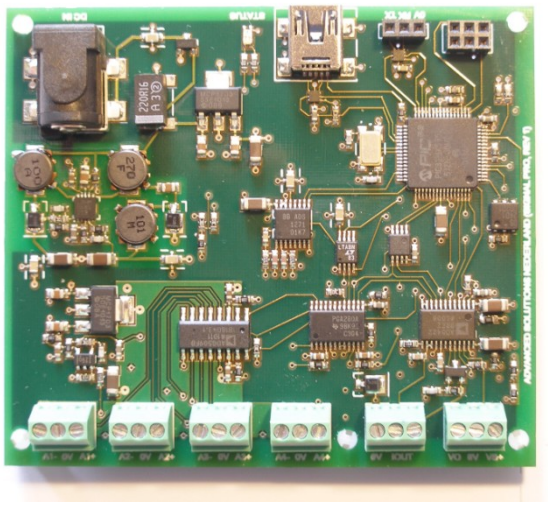
The SensorPro module is Advanced Solutions Nederland's newest advanced sensor conditioning and analysis module that integrates 24-bit data acquisition and embedded real time signal processing functionality into a single product.

A simple to use Windows DLL provides a PC interface via USB/RS232 to the SensorPro module allowing the experimenter to integrate the module's embedded functionality easily into their Matlab, C/C++ or .NET application without having to understand complicated Windows drivers.

The SensorPro module is ideally suited for laboratory analysis but can be easily configured for standalone/demo sensor applications requiring real time signal processing by virtue of the module's on board non-volatile memory feature.

SENSORPRO MODULE

The SensorPro module provides you with a complete standalone signal conditioning system, allowing you to demonstrate your sensor application to your customer simply and cost effectively.



Dimensions (75mm × 65mm)

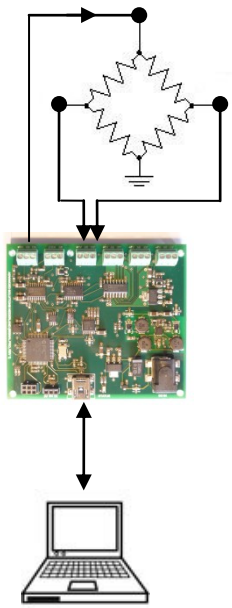
APPLICATIONS

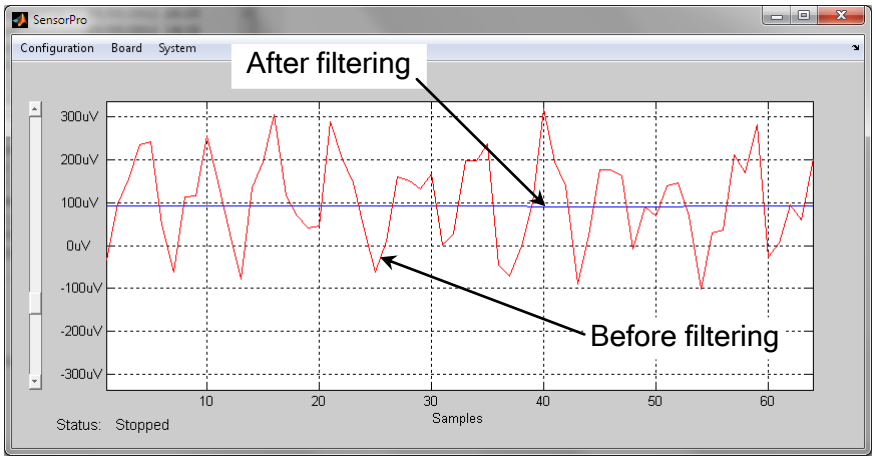
- Loadcells and strain gauges.
- Pressure sensors.
- Microphones.
- Thermocouples, NTCs and RTDs.
- Photodiodes and LDRs.
- Biomedical signal processing.
- Industrial control.
- Process control.
- Avionic instrumentation.
- Automotive transducer applications.
- Instrumentation and measurement.
- Vibration analysis.

TECHNICAL SPECIFICATIONS

- 24-bit sigma-delta ADC
  - Single channel sampling.
  - 19 ENOB.
- 100-10,000 SPS data rate.
- Typical DC performance:
  - ±0.03% PGA gain error.
  - ±2µV/°C offset drift.
- 4 fully differential analogue inputs:
  - Input voltage range: ±10v
  - Input impedance: > 1GΩ
  - ±40V overvoltage protection.
- 1 single ended analogue output (±0.1%):
  - 0-10V, ±10V and 0-20mA.
  - Remote sensing functionality.
  - ±12V TVS protection.
- Software/hardware gain:
  - Hardware (1/8,1/4,1/2,1,2,4,8,16,32, 64 and128).
  - Software (PC application only).
- 32-bit embedded real time signal processing functions:
  - 2-128 tap FIR, 2nd/4th order IIR, 3rd-17th order median filter, smoothing filter, 25-1000Hz power line interference cancellation filter, trend removal and absolute value.
- On board low noise power supply.
  - +5-12v DC external power supply required.
  - Recommended: +5V @ 500mA.
- USB and RS232 connectivity.
  - USB 1.1, 2.0 (Full speed).
  - RS232 (115,200 bps).
- EEPROM (standalone applications).
- Win32 driver support for Windows XP/7.
- Windows SDK available:
  - Matlab, C/C++ and .NET

TYPICAL APPLICATION (LOADCELL)

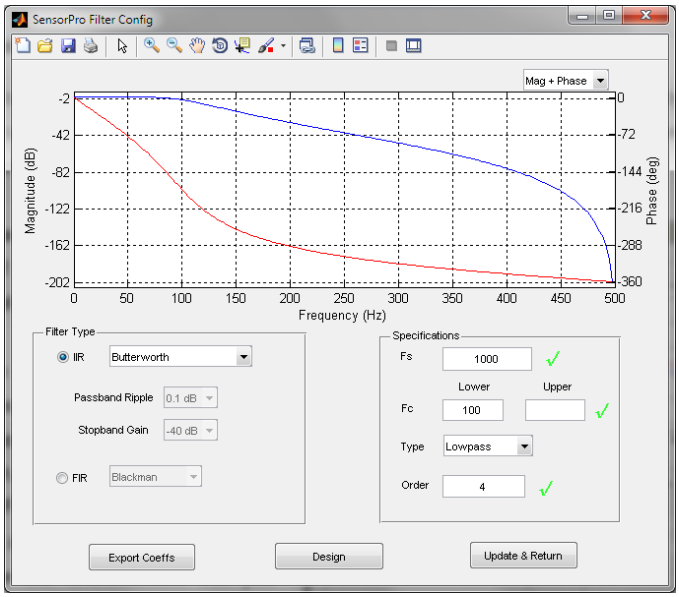




SensorPro analysis GUI: Loadcell measurement performance for a constant load (initial offsets removed) in the presence of 50Hz power line interference.

GRAPHICAL USER INTERFACE

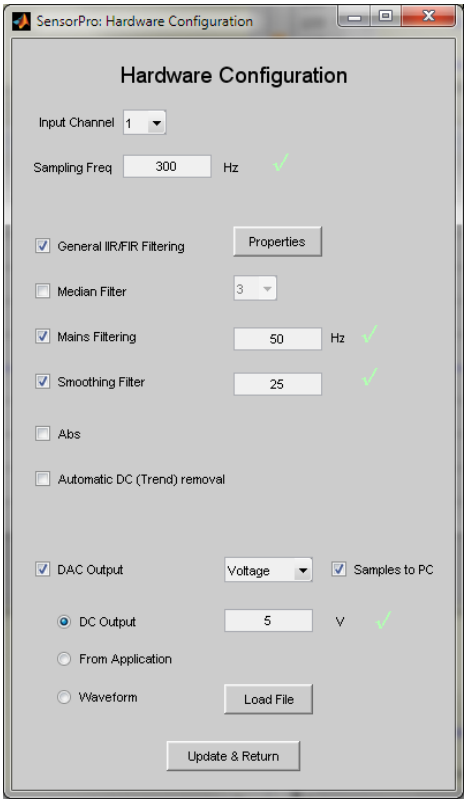
The SensorPro's free development GUI reduces your research and development costs, by providing you with an easy to use and intuitive experimentation platform, allowing you to get on with the measurements rather than worrying about details of the signal processing algorithms.



Modifying the characteristics of the SensorPro's IIR filters and FIR filter to suit your application is simple by virtue of the GUI's filter design tool.

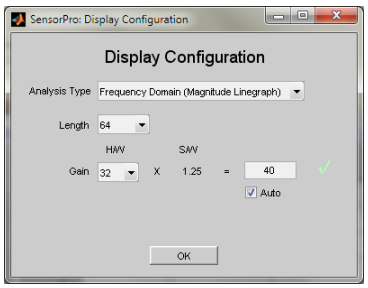
The filter design tool supports the design of lowpass, highpass, bandpass and bandstop responses, and as such designing a 2nd or 4th order Butterworth, Elliptic or Chebyshev IIR filter or even up to a 128 tap FIR for any application can be completed in just a few mouse clicks.

Simply choose the characteristics that you want, such as cut off frequency, filter type, filter order and let the GUI design the filter and automatically download the correctly quantised coefficients to the SensorPro module for you.



Other filter options include a 3rd to 17th order median filter and a unique 25-1000Hz power line interference cancellation filter, as well as a post smoothing alpha filter. These filters, as well as other signal processing operations (absolute, trend removal etc) can be enabled/disabled as required by the hardware configuration options.

The DAC can be configured for either DC current or DC voltage output, or even configured to route your filtered input signal back out to the outside world.



Swap between time and frequency domain plots quickly and effortlessly and adjust the display settings to suit your needs. The flexible software/hardware gain adjustment feature allows for sensor performance evaluation up to a gain of 10,000 which is ideal for bridge measurement applications.