

The Symmetric Research USB4CH A/D system provides 24 bits of high resolution A/D conversion for 4 analog input channels at fixed sampling rates from DC to 10 kHz. The system also provides 4 digital inputs, 4 digital outputs, a GPS interface, and on board temperature sensor.

Equipped with an individual 24 bit sigma delta A/D converter per channel, the system provides excellent performance, minimizing crosstalk and channel skew. All analog inputs are fully differential for low input noise, and a precision buried zener reference as well as a 1.5 ppm master clock ensure long term stability. On the digital side, acquired data is buffered with a 2 Mbyte DRAM FIFO to guarantee continuous acquisition without data loss even on heavily interrupted or networked systems.

Interfacing to standard USB ports, setup for the USB4CH is easy. Software support for Windows XP/7 and Linux are included. Finished GUI and command line acquisition programs, as well as a DLL user library, source code, and circuit diagrams are also provided. Free software updates via web download are available at no additional cost.

## HARDWARE FEATURES

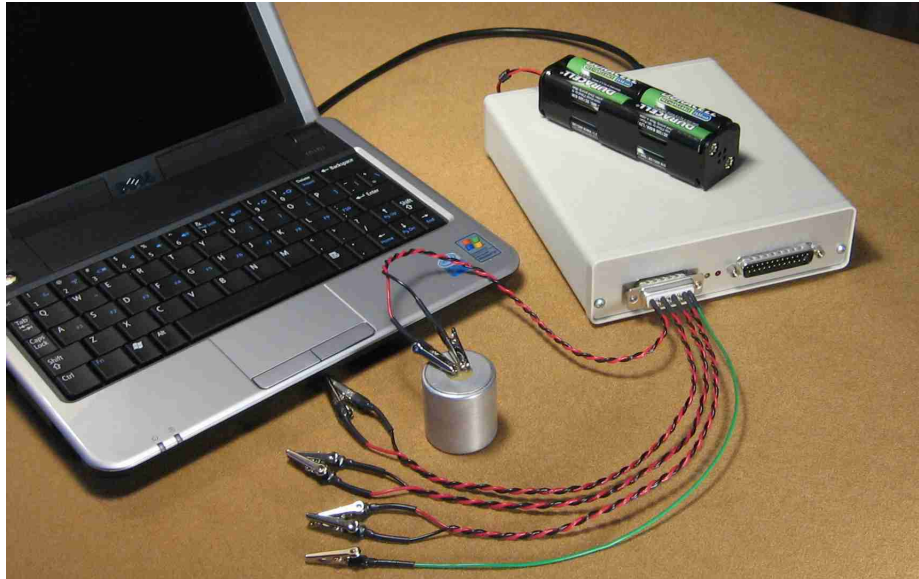
- Ideal for applications requiring 24 bit A/D conversion on 4 channels from DC to 10 kHz
- Individual 24 bit A/D converter for each channel with op amp front end
- Continuous sampling at 3, 6, 13, 19, 32, 39, 65, 78, 130, 651, 1302, 2604, 4882, 9765 Hz
- High precision 6 digit analog accuracy, 1 microvolt / count
- Differential analog inputs with +/- 4 volt range and 51K to 10M ohm input impedance
- Precision buried zener analog reference for exceptional stability
- GPS interface (PPS and NMEA) with 800 ns accuracy, compatible with many antennas
- 1.5 PPM master clock for accurate time base even without GPS
- Synchronous digital sampling on 4 inputs along with 4 programmable digital outputs
- On board temperature sensor continuously recorded for TC corrections
- 2 Mbyte FIFO buffering guarantees no data loss even in heavily networked environments
- Simple USB plug and play installation
- Low 100 milliamp current draw, runs for over 20 hours on 8 AA batteries
- Small footprint 5.25" x 6" multilayer board with split power and ground planes
- USB cable, external power supply, enclosure and analog input cable included

## SOFTWARE FEATURES

- Ready to go applications for immediate data acquisition and display
- DVM (digital voltmeter), GUI Scope, and command line acquisition programs
- DLL library support for Windows and Linux programming
- Full documentation including source code and circuit diagrams

SR Product	Description	Price
USB4CH	4 channel 24 bit A/D USB data acquisition system with software	\$700
USB4CH-GPS-DB25	Garmin GPS 16x HVS antenna with 5 meter cable, terminated to DB25	\$120

One popular USB4CH configuration is with a mini Netbook for portable data acquisition. In the photo below, a passive geophone sensor is connected to one analog input.



The red/black wires are differential pairs for each of the four analog input channels. The green wire is AGND, which is not required for a floating sensor. Digital input/output and GPS connections are available on the right front panel DB25. For power, a 110vac wall transformer is supplied with the system (220 available on request). The USB4CH can also be powered from eight AA rechargeable batteries for over 20 hours. Connecting to a PC104 embedded computer is popular for many field box applications.

