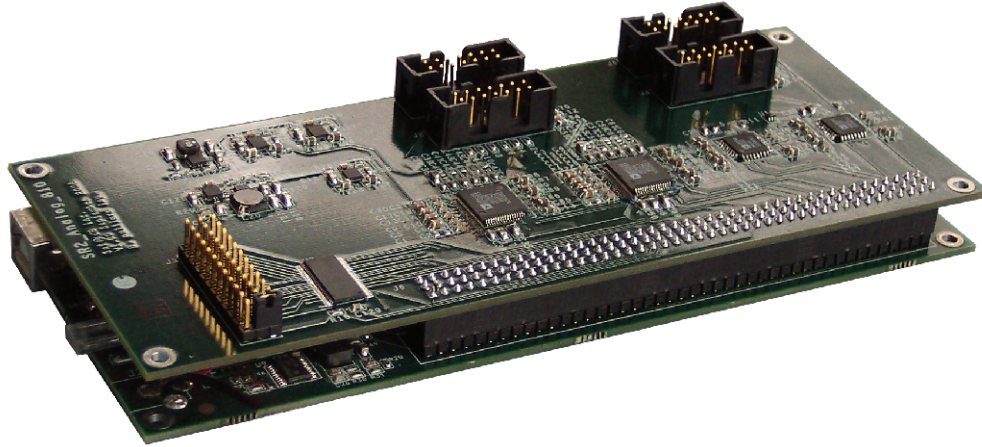


DSP-based system for Scanning Probe Microscopy (SPM) applications



This new DSP-based system has been specially designed to meet the Scanning Probe Microscopy (SPM) application requirements:

- 8 analog I/O capable of operating at up to 150 kHz with a $\pm 10V$ dynamic range
- Low noise and very high DC stability
- Very low input-output group-delay
- Free complete SPM software (see <http://gxsm.sourceforge.net>)
- 5502 DSP from Texas Instrument running at 300 MHz
- SPARTAN 3 FPGA from Xilinx
- High Speed USB interface controller

Advanced SPM features can be implemented using the 16 individually configurable GPIOs and the two 16-bit counters. These counters are synchronized with the analog sampling and can be used as simple pulse counters or Quadrature Encoder Pulse (QEP) counters.

With all these features , the kit SR2-A810 + SR-Mk2 has the best performance/price ratio on the market for a SPM control system.

TECHNICAL DATA

Inputs

- Number of Inputs: 8
- Resolution: 16 bits
- Noise: 1 bit RMS = 150 μV RMS on $\pm 5V$ range
1 bit RMS = 300 μV RMS on $\pm 10V$ range
- Sampling Rate: 11.4 Hz to 150 kHz
- Analog input bandwidth: 0 to 10 MHz (includes DC)
- Input type: Single Ended
- Dynamic range: $\pm 5V$, $\pm 10V$
- Input leakage: $\pm 1 \mu A$ max
- Anti-aliasing filter: None
- Group-delay: 2 samples (includes all hardware and software FIFO delay)

Outputs:

- Number of Outputs: 8
- Resolution: 16 bits
- Noise: 20 MHz bandwidth: up to 55mV pk-pk on 0xFFFF(-1) to 0x0000 (0) alternating code sequence.
20 kHz bandwidth: <25µV RMS
- Offset drift with temp.: ±2 ppm FSR / °C
- Gain drift with temp.: ±2 ppm FSR / °C
- Offset drift with Time: ±13ppm FSR / 500 hours
- Sampling Rate: 11.4 kHz to 150 kHz
- Analog output bandwidth: 0 to >80 kHz (includes DC)
- Output type: Single Ended
- Dynamic Range: ±10V
- Source/Sink ability: 4 mA
- Anti-aliasing filter: None

GPIOs:

- Number of IOs: 16
- Configurability: All IOs individually configurable as input or output.
- IO level: 3.3V CMOS (5V-tolerant inputs)

Counters:

- Number of counters: 2
- Counter width: 16-bit (can be increased to any width in software)
- Inputs: Two Quadrature Encoder Pulse (QEP) inputs and one general-purpose pulse input per counter
- IO level: 3.3V CMOS (5V-tolerant inputs)
- Max count frequency: 50 MHz
- Min pulse width: 20 ns (to be reliably counted the high and low states on the counter inputs must be at least 20ns wide)

OPTIONAL ENCLOSURE:

SPM Open Source Controller
Model MK2-A810



SR-mk2+SR2-A810 mounted inside a rack-mount
8 inputs, 8 outputs and 2 pulse counters inputs.

For more information, please consult Soft dB website at www.softdb.com or contact us by phone at **418-686-0993**, toll free at **1-866-686-0993** or by email at contact@softdb.com.