

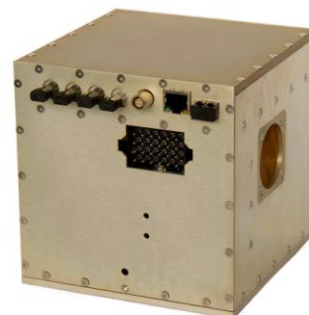
ULTRA DAQ

The ULTRA Data Acquisition enables rapid 16 bit collection of 16 channels of data via gigabit Ethernet.

Benefits

- Low noise
- High Dynamic Range
- Fast data acquisition
- Easy to interface
- Compact form factor

The Ultra Data Acquisition system has been designed to provide a high speed, high resolution, low noise measurement system that is easily interfaced to any processor system that supports Gigabit Ethernet communications. While designed initially for the readout of Silicon, MCT and InGaAs linear strip detectors, (see [ULTRA Detector](#)) the system also functions as a versatile and high specification general purpose data acquisition system.



Key features of the system are 16 parallel analogue input channels each with a dedicated 16-bit analogue to digital converter running at 1MHz. Each input channel features a true differential input with a 1V full scale and 15 μ V RMS noise levels. On board FPGA and processing resources allow the acquisition system to also provide front end data processing and/or data reduction before the data is steamed out over Gigabit Ethernet.

The Ethernet interface provides simple and straightforward connectivity to virtually all operating systems on any processor platform. All data and control/status information are accessible via a standard sockets interface.

Channels are fully multiplex capable and have been applied to 512 pixel sensors with a readout rate of over 20KHz per channel at 14 Bits. This is fully utilised by the [ULTRA Detector](#) also available from Quantum Detectors.

Features

Acquisition Speed	1,000,000 conversions per second/channel (simultaneous on 16 channels)
ADC Resolution	16 Bit (14 Bit ENOB)
Number of Input Channels	16
Analogue Full Scale	1V p-p
Analogue Noise Level	15μV RMS, 6.7 nV/Hz^{1/2}
Software	Comprehensive Flexible Windows [®] Software Interface
Integration time	600ns - 1 μ s
Power	90-240V AC, 50/60Hz, 10W

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Also available on the unit are:

- 12 filtered digital output lines and 1 filtered digital input line (to analogue interface)
- 4 bidirectional digital lines (LEMO)
 - Possible uses include TTL trigger signals
- SPI interface (with three spare chip selects)
- 2 temperature sensor inputs suitable for NTC thermistors
- Switched 12V, 5A output (switched via SSR, non-isolated)
- Switched 0-40V, 10mA output (switched via mechanical relay)
- 2 fibre optic inputs, support for up to 160MHz data rates or 80MHz clock frequency
- 2 fibre optic output, support for up to 160MHz data rates or 80MHz clock frequency
- Xilinx Virtex-4 FX12 FPGA + configuration memory
- 256MB DDR SDRAM
- 1MB Flash memory



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