

FYLDE

M O D U L A R
I N S T R U M E N T A T I O N

FE-UX16 USB Data Acquisition System

This is a 16 channel USB data acquisition system designed for continuous streaming of data to a PC. The DSP based architecture allows repeated bulk transfer of 16 bit samples to a Windows PC without loss of data at 400 kSamples / s.

Each input channel is differential (± 10 V signal range) with an exceptional common mode range of ± 270 V providing isolation performance.



Power is derived from the USB bus which makes the unit truly portable.

Each input can be connected using either a BNC , screw terminal or multi-way 'D' connector.

16 channels can operate at 25 kSamples per second for each channel or an 8 channel mode operating continuously at 50 kSamples per second may be selected.

8 channels of digital I/O (isolated : 4 inputs, and 4 outputs) completes the system.

Software support includes LabView and DASyLab drivers together with a standard DLL for use with C/C++, or other languages.

Our standard MADAQ data acquisition software is supplied with this system providing immediate access to display, recording and replay and processing of acquired data.

- 16 differential inputs , 8 isolated Digital I/O
- 400 k Samples per second continuous data acquisition
- Excellent Input common mode range and protection

Introduction

The FE-UX16 is a 16 channel USB data acquisition system. The system is designed for high speed continuous data streaming to a PC at an overall data rate of 400 k samples per second. It provides BNC inputs for individual connection to each input channel with additional screw terminals and a multiway connector. A common mode range of +/- 270 V and protection up to +/- 500 V provides isolation performance and protection from transients. Power is derived from the USB connection hence galvanic isolation can be obtained using an isolated USB hub. Data is acquired and buffered by a high speed DSP and transferred on demand from the USB host. Comprehensive data acquisition software for Windows is provided as well as drivers for software from other vendors.

USB Interface Module : Specification

Analog Inputs	Quantity	16 differential, unity gain
	Operating Range	$\pm 10\text{V}$ pk-pk
	Common Mode Range	$\pm 270\text{ V}$ (see note 1.)
	Protection	$\pm 500\text{ V}$ (transient) , $\pm 300\text{ V}$ (continuous)
	Gain Error	$\pm 0.05\%$ (max) $\pm 0.01\%$ (typical)
	Anti-Alias filter	$F_c = 25\text{ kHz}$ (-3 dB) 2 pole Butterworth response
Digital Outputs	Quantity	4 signals.
	Level	Isolated Open Collector type outputs
Digital Inputs	Quantity	4 signals.
	Level	Isolated input (TTL compatible)
A to D Conversion	Resolution	16 bits
	Range	$\pm 10\text{ V}$
	Sampling Rate	Maximum throughput 400,000 samples per second. Max 25,000 samples per second per channel. (Max 50,000 samples per second per channel in 8 channel mode)
	Offset	$< \pm 5\text{ mV}$ (including input differential amplifier and filter)
	Noise	$< 1\text{ mV}$ pk-pk
	Crosstalk	-90 dB at 25 kS/s with 5k Hz sine wave input
	Absolute Gain Error	$< 0.1\%$
	Environment	Temp. Range
Electrical	Power dissipation	0.75 W
Standards	USB	Full Speed Universal Serial Bus Specification Revision 2.0
	EMC	The complete system complies with the requirements of the EMC directive 89/336/EEC ; the applicable standard is EN 61326.
	Safety	The completed system complies with the protective requirements of Low Voltage Directive 73/23/EEC and Amending Directive 93/68/EEC ; the applicable harmonised standard is EN 61010-1 (Industrial Equipment).

USB Interface Module : General Description.

The interface module operates using two 200 k samples per second 16 bit A to D converters controlled by a Digital Signal Processor (DSP.) A separate USB processor reads data acquired by the DSP and transfers it to the Host PC using USB bulk transfers.

Data Acquisition Package Support.

Direct support for data acquisition packages LabView and DASyLab. Other vendors supported by request. In addition a DLL supports Windows application programming in C++, VisualBasic etc.

MADAQ Software to allow data acquisition and analysis is included with the system. A detailed specification of this software is available from Fylde on request or from our website <http://www.fylde.com>

Note 1 : If applied voltages are accessible then they are subject to user safety limitations.