

## Introduction

A Micro Analog 2 system comprises a chassis, a backplane and a set of printed circuit card modules (PCBs) which plug into the backplane through the front opening in the chassis. The rear panel carries all system connectors (power, input, output, USB.)

More details of the Micro Analog 2 system can be found on the Fylde web site <http://www.fylde.com>.

This FE-357-USBM module provides up to 40 channels of USB data acquisition function for the FE-MM40 system. An additional FE-357-MUX card is required.

## USB Interface Module : Specification

Analog Inputs	Quantity	8 signals from FE-357-MUX module.
	Operating Range	$\pm 10$ V relative to Analog 0 V.
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	$\pm 10$ V
	Sampling Rate	Maximum throughput 400,000 samples per second. For 40 channels, Max 10,000 samples per second per channel.
	Offset	$< \pm 5$ mV
	Noise	$< 2$ mV pk-pk
	Crosstalk	-90 dB at 50 kS/s with 5k Hz sine wave input
	Absolute Gain Error	$< 0.1\%$
Environment	Temp. Range	-40°C to +85°C operating. System startup to be at -15 °C or above. An option to have the module conformally coated to avoid condensation effects is available.
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.

A header links the module to an adjacent multiplexor module (FE-357-MUX) which the DSP controls to provide up to 40 channels of analogue inputs.

Both processors are "soft" coded which means that their software is loaded from the host PC when the system is powered up. Future enhancements to the USB system will thus be provided entirely through new host software.

**Host Device Driver Software.**

Host Device Driver Software is compatible with the Microsoft Windows 2000 and XP operating systems. The Host device driver is provided by Cypress semiconductor who are the manufacturers of the USB processor and is shipped free of charge with the system.

The Host Device Driver recognises the USB device as a USB interface device which has not yet received its operating software. It downloads the operating software and then resets the device. The host now recognises the USB device as a USB interface with Fylde FE-357-USB software and allows the transfer of data.

**Data Acquisition Package Support.**

Direct support for data acquisition packages LabView and DASyLab. In addition a DLL to allow application programmers to link to the device is provided.

It is also possible for application programmers to call the Cypress Device Driver directly, Fylde will provide full documentation on how to do this.

MADAQ Software to allow data acquisition and analysis using the 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>