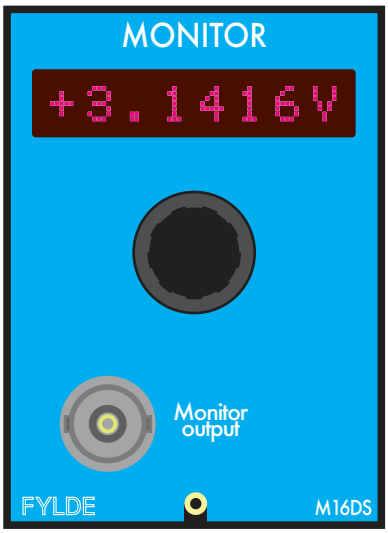
FYLDE

MODULAR INSTRUMENTATION

FE-M16-DS
16 Channel Monitor



Front panel shown actual size

A 16-channel digital monitor, the M16-DS is ideal for use in any FYLDE enclosure where it will monitor and display the outputs from each installed module.

It provides a switchable selection for 16 differential inputs or 32 single ended inputs.

It is normally purchased as part of a system of Fylde modules, configured to select from multiple signals in the system. (Typically this would be all system outputs and all tranducer excitation voltages).

The monitor will also measure A.C. with its built in precision rectifier scaled for RMS.

A peak hold function completes the display options for time varying signals.

A front panel BNC socket enables additional monitoring equipment to be connected.

- 5 Digit Accuracy
- DC or AC (RMS)
- 8 Digit Display
- 16 Differential Inputs
- 32 Single Ended Inputs

SPECIFICATION

The FE-M16-DS is a 16 channel monitor unit, normally used in a FYLDE system to provide a display of each channel's output. The unit allows any of DC, AC rectified average, or peak hold to be selected and displayed for any channel. 16 channels of differential inputs are available, or in systems with more than 32 signals to monitor, the module provides 32 single ended inputs.

METER	Display	8 digit Red LED, 5 mm high, 5x7 dot matrix
	Sample Rate	16.7 readings / second.
DC	Scaling	±10.239 volts dc.
	Accuracy	0.05 % ±1 count @ 20°C.
	Stability	25 ppm / °C.
AC	Measurement type	Precision rectifier.
	Accuracy	±1% conversion.
	Scaling	RMS (Average responding) 0 - 7.07v (20v pk-pk).
	Frequency Range	20 Hz - 20 kHz 1%
Peak Hold	Peak Capture	Internal Positive and Negative Peak hold circuits.
	Display	Peak held digitally on display.
	Reset	Options for reset of peak hold by front panel controlled menu.
	Polarity	Options for Positive or Negative peak or Peak to Peak by front panel controlled menu.
	Droop	Display of previous peak is held until next peak exceeds internal store of previous peak or peak is reset.
Input	Switching	16 fully differential input channels, or 32 Single Ended input channels
Output	Connector	BNC - Monitoring the selected input signal.
	Output impedance	100 Ω
Mechanical	Width	2 inches.
	Compatible Enclosures	FE-PE4 with two 1 inch modules or one 2 inch module.
		FE-PE8 with six 1 inch modules or three 2 inch modules.
		FE-PE17 with fifteen 1 inch modules or seven 2 inch modules.
Power	Normally 230 V mains.	May also be configured as 115 V mains or 12 V DC powered.

Section	Contents:-	Page
	Data Sheet and Specification	
1.0	General Description	2
2.0	Initial Operating Procedure (Preparations for Use)	2
2.1	Power	2
2.2	Signal Connections	2
2.3	Module Removal and Replacement	2
3.0	Installation	2
4.0	Operation	3
4.1	Channel Selection.	3
4.2	Channel Settings.	3
4.3	Reset Peak Hold.	3
4.4	Negative Peak Measurement	3
4.5	Peak to Peak Measurement	3
4.6	AC Measurement	4
4.7	DC Measurement	4
4.8	Main Settings.	4
5.	Calibration.	4
	Appendix	
	Module User Drawing	5

1.0 General Description

The FE-M6-DS is a member of the Fylde range of blue panelled modular signal conditioning units. It provides a display of up to 16 differential signals or 32 single ended signals. A front panel control selects the signal to display, and selects from DC, AC (RMS), Peak or Peak to Peak.

2.0 Initial Operating Procedure (Preparations for Use)

2.1 Power

Normally this unit is supplies as part of a system and the unit's power configuration is matched to the system power supply. However, for modules supplied un-cased, it is imperative to check that the configuration of the module (one of mains 115 V AC, mains 230 V AC or 12 V DC) matches the configuration of the case, sub-rack or other module housing before fitting them together. See the User drawing in the appendix to this handbook for details. If in any doubt, contact the factory for advice.

2.2 Signal Connections

See the user drawing in the appendix to this handbook.

Note that the front panel BNC connector carries the signal selected at the front panel. This connector is an output with an impedance of approximately 100 ohms. It must only be connected to high impedance (inputs) of following equipment.

2.3 Module Removal and Replacement

There are no adjustable features which require a module to be removed.

To remove a module from a FYLDE case proceed as follows.

1. Disconnect all power to the module case.
2. Unscrew and remove any front module retaining rail (FE-PE8 and FE-PE17 cases only).
3. Screw the 8 BA tapped extractor tool provided into the hole at the bottom centre of the module font panel.
4. Pull on the extractor tool to remove the module. The module may be replaced without the aid of a tool.

3.0 Installation

Before installing a new module in an enclosure, refer to the user drawing to check that the module power supply is correctly configured.

4.0 Operation

4.1 Channel Selection.

Rotating the selector knob selects the channel, 1-16 for differential inputs and 1-32 for single ended inputs. When a new channel is selected peak values are cleared. The selected channel and mode are remembered when the unit is powered down and up.

The front panel BNC carries the selected signal.

4.2 Channel Settings.

A short press of the selector knob displays the channel number followed by the user selected function for the selected channel. Rotating the selector knob at this stage cycles through the available functions plus the peak hold reset in the following order.

Text Displayed	Display Function
RESET PH	Reset all peak hold values and hardware.
VOLTS-PK	Negative peak hold voltage (0.0 to -10.23V)
VOLTS+PK	Positive peak hold voltage (0.0 to +10.23V)
VOLTS PP	Peak to peak voltage (0.0 to 20.4V)
VOLTS AC	AC RMS Voltage (0.0 to 7.5V).
VOLTS DC	DC voltage (-10.23 to +10.23V).

A short press confirms the channel mode selection and returns to the normal display.
If not pressed the display times out and returns to the normal display with the selected mode.
Alternatively a long press brings up a sub menu allowing the setting to be applied to all channels, even channels, or odd channels by rotating the selector knob. A short press confirms the selection and returns to the normal meter display. If not pressed the display times out and the chosen function will be applied to the current channel only.

All previous channel settings are restored at power up.

4.3 Reset Peak Hold.

Selecting “RESET PH” resets the hardware peak hold circuitry and sets the values for positive peaks, negative peaks and peak to peak measurements to zero for the current channel. All peak values are also cleared when a new channel is selected, ie they are not remembered between channel changes.

4.4 Negative Peak Measurement

With “Volts-Pk” selected the front panel displays the most negative value seen at the input of the currently selected channel in the range 0.0 to -10.2V. Positive values are ignored such that if the input is in the range +5V to +10V the display will still show 0V and this will be used in the calculation of the peak to peak value.4.2.4 Positive Peak Measurement
With “Volts+PK” selected the front panel displays the most positive value seen at the input of the currently selected channel in the range 0.0 to +10.2V. Negative voltages are ignored such that if the input is in the range -5V to -10V the display will still show 0V and this will be used in the calculation of the peak to peak value.

4.5 Peak to Peak Measurement

With “Volts PP” selected the front panel displays the difference between the maximum and minimum peak values in volts. This can only be a positive value in the range 0 to 20.0V and is limited by the restrictions on the positive and negative peak hold values explained below.

4.6 AC Measurement

With “VOLTS AC” selected the front panel meter reading represents the RMS value in volts of the selected input channel. Note that ‘~’ is displayed when the AC function is selected.

4.7 DC Measurement

With “VOLTS DC” selected the front panel meter reading represents the D.C. level of the selected input in Volts. The Reading is limited to the output range of FE-M16-DS ADC which is 10.23V. Output signals from the modules in the system are nominally ±10V, so front panel meter reading will faithfully represent the DC level of the selected channel provided that the channel output is not higher or lower than its nominal ±10V range. Beyond that range the reading will be limited by either the output range of the selected channel or the range of the FE-M16-DS ADC. In the case of the latter either “+Limit!” or “-Limit!” will be displayed.

4.8 Main Settings.

A long press of the selector knob displays the main setting options.
Rotate the selector knob to choose either 16 differential input channels (“16 CH DF”) or 32 single ended input channels (“32 CH SE”). A third option here (“F-RESET”) returns the unit to a factory default setting of 16 differential input channels measuring DC voltage.

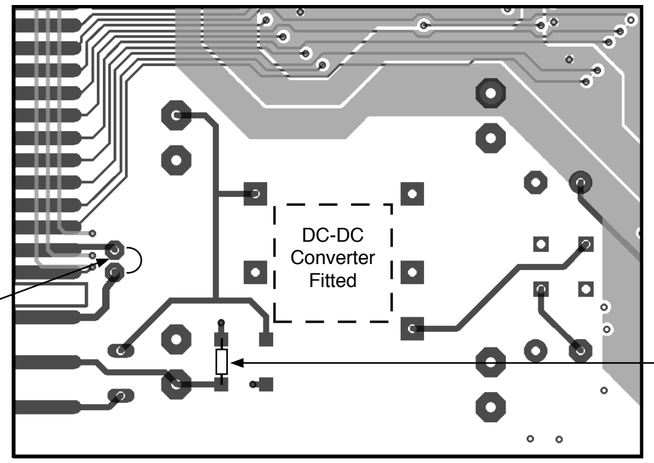
5. Calibration.

A calibration procedure is available on request from the factory. The unit was tested at the factory before delivery and is warranted to remain within its specified accuracy for 24 months.

Appendix : User Drawing

Issue	Date	Change History
1	29/01/18	New Drawing

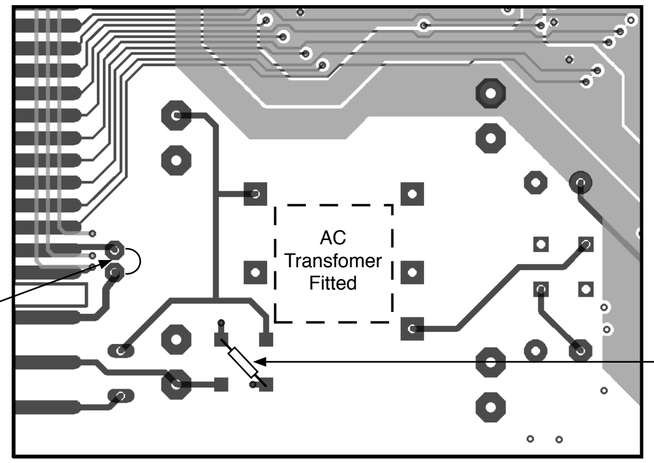
Underside of Board



Fit mains earth to common link here.

Sleeved link for 12V DC operation.

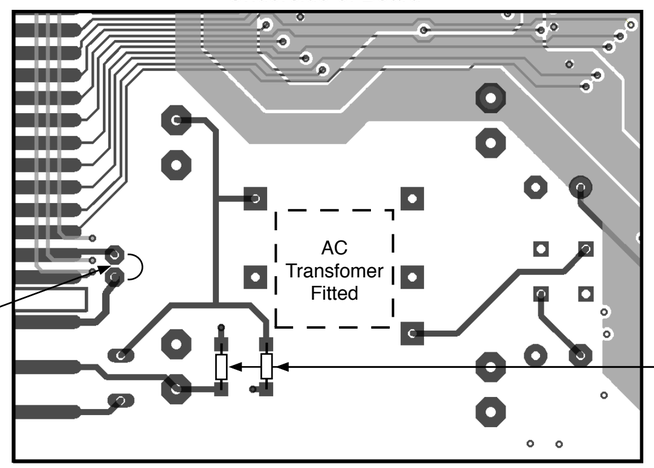
Underside of Board



Fit mains earth to common link here.

Sleeved link for 230V AC operation.

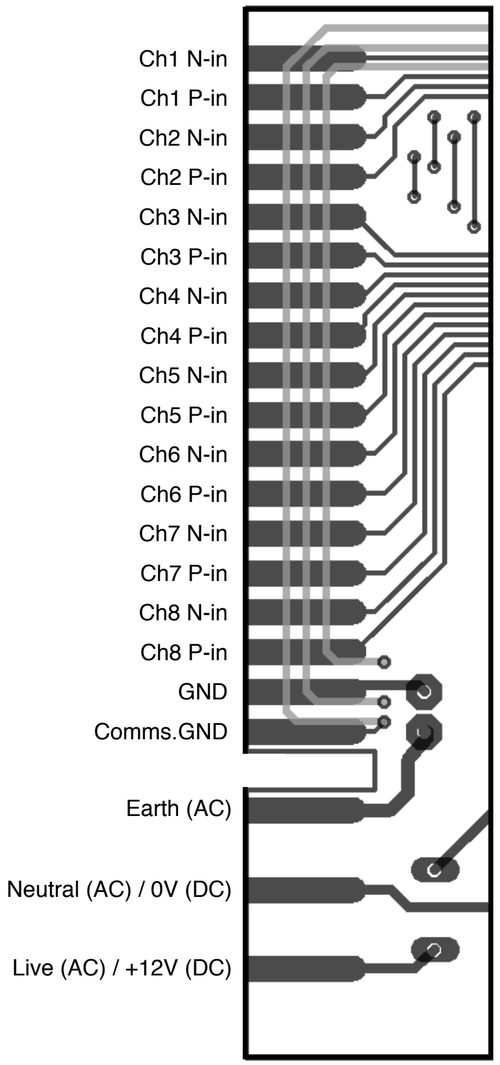
Underside of Board



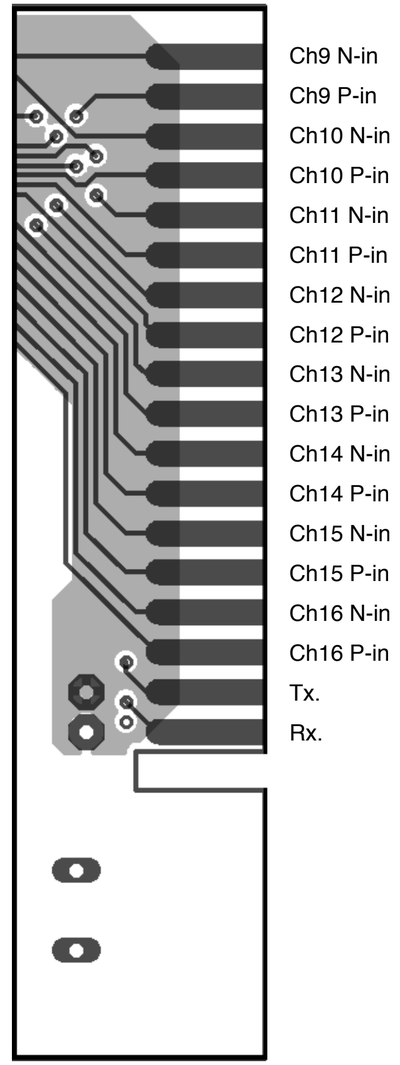
Fit mains earth to common link here.

Sleeved links for 115V AC operation.

Edge Connector Bottom Side



Edge Connector Top Side



TITLE: FE-M16-DS User Drawing (Power supply links and edge connector pin out.)	REF:	DRG.No: PC-1325	Issue : 1	Date : 29/01/2018	Checked

FYLDE Electronic Laboratories Limited. 49-51 Fylde Road. Preston Lancs. PR1 2XQ England Phone 01772 257560 web http://www.fylde.com