

FE-537-SGA Dynamic Strain Gauge Amplifier



Front panel shown actual size

- Low noise dynamic measurements
- No balancing required
- 3 current settings
- Dynamic calibration
- Built-in filtering

The FE-537-SGA is a low noise differential amplifier designed for dynamic strain gauge applications at frequencies from 1Hz to over 100kHz, which may be applied advantageously with a single gauge, and 1/2 or full bridges.

The FE-537-SGA energises a remote strain gauge with an exact constant current allowing operation with long twisted pair cables and zener barriers whilst providing immunity from long term effects such as temperature variation.

The amplifier is A.C. coupled and provides a dynamic signal with the D.C. level of any static signal removed. Bridge balancing is not required.

A special dynamic calibration feature, which is traceable to national standards, enables the exact transfer function of the system to be proven. Both high pass and low pass filters are included, allowing the required measurement bandwidth to be configured.

Simple front panel controls allow precise gains of up to x3000, with 3 current settings for application with gauges from 120Ω to over 1kΩ. No bridge completion is required.

Front panel controls may be locked if required.

Power requirement is 200-250V AC or alternatively 100-120 V AC. 12V D.C. powered modules are also available.

The module is mechanically and electrically compatible with other FYLDE modules and with FYLDE 2U racks and instrument cases.

Gauge Supply	Type	Low noise dynamic constant current.	
	Settings	5mA, 10mA, 20mA $\pm 0.2\%$.	
	Impedance	>250k Ω .	
	Stability	0.02% / $^{\circ}\text{C}$.	
	Noise Monitor	<10nA RMS (equivalent to 1 μ Strain pk to pk in 350 Ω). Indicates gauge o/c / disconnected.	
Amplifier	Gain Settings	x100, x300, x1000, x3000 $\pm 0.2\%$,	
	Stability	0.02% / $^{\circ}\text{C}$.	
	Input impedance	1M Ω balanced differential.	
	Noise	3 μ V RMS RTI .	Note 1
	CMR	>100dB on maximum sensitivity.	
	Bandwidth	<1Hz to >100kHz (-3dB).	Note 2
Calibration	Dynamic Level	500Hz squarewave. Determined by plug-in calibrated resistor network.	
	Standard	0.1 Ω (equiv. strain E = 0.1 / GFx RG)	Note 3
Filter	Low Pass	Butterworth 8 pole (-48db/octave roll-off). Programmable by plug-in resistor network in the range 20Hz to 20kHz.	
	High Pass	Butterworth 2 pole (-12db/octave roll-off). Programmable by plug-in resistor network in the range 2.5Hz to 1kHz.	
Output Note 4	Direct	$\pm 10\text{V}$ @ $\pm 5\text{mA}$, 1 Ω impedance.	
Power Supply	FE-PE2/4 case	100-120V or 200-250V (50/60Hz) or 12V DC option.	
	FE-PE8/17 case	As above, and additionally 100-120V & 200-250V when dual voltage switch is fitted.	
Temperature	Storage	-20 $^{\circ}\text{C}$ to 75 $^{\circ}\text{C}$.	
	Operating.	0 - 40 $^{\circ}\text{C}$.	
Dimensions		Fylde 'blue panel' format (2u) Panel 2.75" x 1" wide (70 x 25mm), depth 7.7". Wt.6oz (150gm).	
Housing	FE-PE2	2 channels.	
	FE-PE4	4 channels or 2 channels & FE-M6-DS.	Note 5
	FE-PE8	8 channels or 6 channels & FE-M6-DS.	
	FE-PE17(RK)	16 channels or 14 channels & FE-M6-DS.	Note 6

Note 1. 100kHz measurement bandwidth.

Note 2. Slew rate is 1.2V/ μ s which may limit power bandwidth on low gain settings: $\pm 10\text{V}$ output at 100kHz bandwidth is achieved on x1000 and x3000 ranges.

Note 3. Where RG is Gauge resistance in ohms. GF = Gauge Factor (special networks are available).

Note 4. At DC. Additionally, BNC output connectors incorporate EMC filters adding 100 Ω impedance.

Note 5. FE-M6-DS is a 16 channels max. Digital Monitor module.

Note 6. RK denotes rack mount version.

Spec correct as of Aug.2009. May be revised without notice.