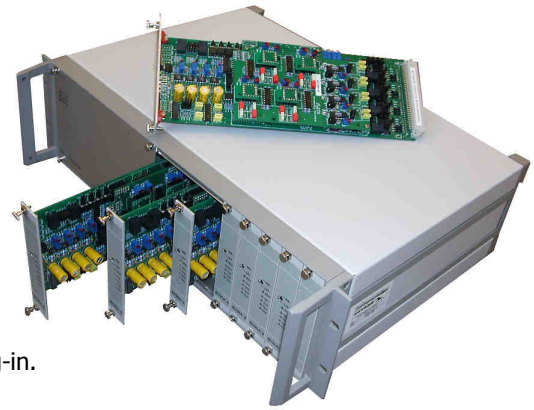
GLE/SGA-4 Four Channels Wide Bandwidth Conditioner for Strain Gages



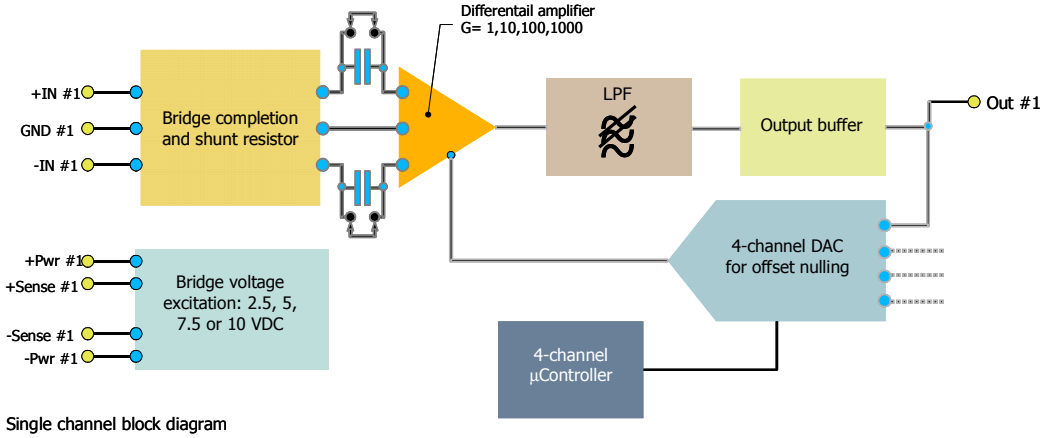
- Four input channels per card for ¼, ½ and full bridge configurations (ICP compatible sensors option).
- Particularly suitable for:
  - structural analysis, both static and dynamic,
  - fatigue analysis,
  - mechanical experimentation,
  - test benches,
  - testing on vehicles,
  - destructive tests on materials.
- Low-pass active filter; different cut-off frequencies (from AC to 40kHz) can be set by resistors plug-in.
- Wide bandwidth up to 100kHz.
- Selectable bridge voltage supply (with sense) in 4 steps: 2.5, 5, 7.5 or 10VDC.
- Selectable input sensitivity in 4 steps: ±1mV/V, ±10mV/V, ±100mV/V, ±1V/V.
- Automatic offset nulling through 12bit internal DAC.
- 19" x 3U rack-mountable chassis.

Overview

The GLE/SGA-4 quad channel amplifier belongs to the family of modular conditioners developed by GreenLake Engineering for the measurement of dynamic signals incoming from strain-gauge bridges.
GLE/SGA-4 is a wide bandwidth conditioner (100kHz; -3dB@gain=100) specifically designed to offer an accurate and convenient solution both for stress analysis and for measurements by strain-gage transducers (including accelerometers, load cells, potentiometers, pressure transducers).
When combined with stand-alone or PC-based data acquisition systems, GLE/SGA-4 is ideal as pre-conditioning unit, both for static and dynamic measurement environments.

The gain and the voltage supply to sensor bridge are user-definable on single channel basis. The gain is selectable from 1 to 1000 with 4 steps, while constant voltage excitation provided to the bridge can be set equal to one of the following values: 2.5, 5, 7.5 or 10VDC. Moreover, a DAC-based circuit provides automatic zero suppression capability that can be activated separately or not for each channel, as depicted in the block diagram reported below.

The GLE/SGA-4 encompasses a 4th-order Butterworth active low-pass filter. The cut-off frequencies can be change in the range 500-50000Hz, simply substituting the removable resistors on the plug-in. One resistor circuit is included accomplishing the cut-off frequency defined by the user at the order.



Single channel block diagram

Bridge completion (both for ¼ and ½ bridges) could be done directly on each board, where an appropriate area has been foreseen in order to accommodate the needed resistors

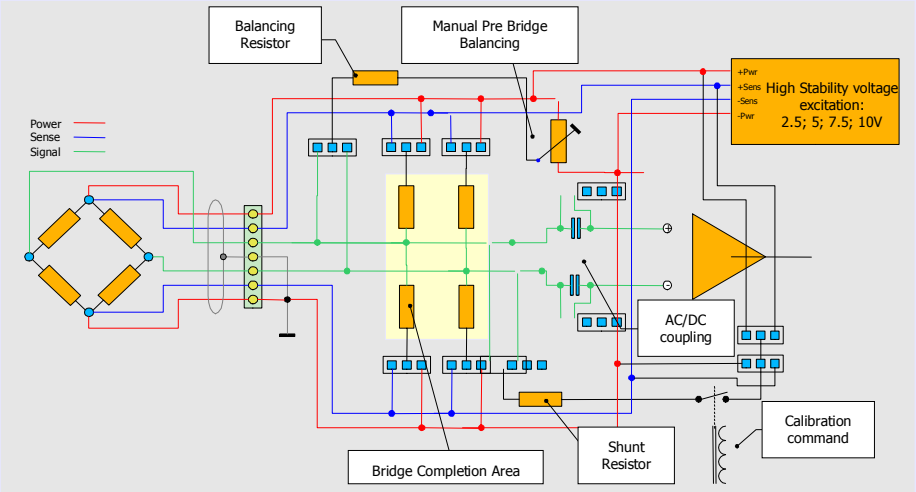
To verify the strain-gages measurement systems, an internal shunt resistor can be introduced through a special digital line activated by a relay. The shunt resistor is then connected to one bridge arm, in order to introduce a known bridge unbalancing and perform calibration. User can easily change the value of the shunt resistor, which is removable and mounted in an accessible area on each board.

The GLE/102-DySA cards are designed to be plugged into the 19" 3U rack mountable chassis GLE/EuroRack. Optionally the GLE/SGA-4 amplifiers can be provided with constant current excitation for ICP transducers and/or with input Galvanic isolation.

Technical Specifications- GLE/SGA-4

Number of input channels	4
Input type	Differential
Coupling	AC or DC (selectable)
Impedance	≅ 10 MΩ
Input configurations	¼; ½ and full bridge with on-board completion
Input full scale	±1mV/V, ±10mV/V, ±100mV/V, ±1V/V. Gain selectable (on-board) among: 1, 10, 100 and 1000, according to the input full scale
Excitation voltage	2.5, 5, 7.5 or 10VDC, on-board selectable on single-channel basis (35mA maximum current for each channel).
Excitation voltage sense	Yes
Offset nulling	Automatically activated by digital command line or by switch on GLE/EuroRack-8. Zero control circuit comprises a 12bit DAC (range=±1V/gain r.t.i.) It is also possible to manually pre-balance through an on-board trimmer.
Shunt calibration	An user-defined parallel resistor can be mounted directly on-board shunting one arm of the bridge (positive or negative). This can be done by means of relay controlled by digital line or of a switch on the GLE/EuroRack-8 front panel.
Bandwidth	DC/AC ÷ 100kHz (-3dB) @ gain=100; Pass-band ripple ≤±0.2dB
Low-pass filter	4 poles Butterworth. One cut-off frequency must be specified at the order (fc >500Hz <50kHz @ -3dB); fc can be modified via plug-in module replacement
Linearity	0.1 % FS or better
Gain accuracy	0.1 % FS @1000Hz
Output impedance	<< 50 Ω
SNR (Typ.)	≅ 72 dB @ G=100;(f_C≤40kHz)
Stability	±50ppm/°C r.t.o. ±2.5ppm/°C r.t.i., typ
Power supply	From GLE/EuroRack-8 (90W max)
Power consumption	5W /card (sensors included)
Operating temperature	-20 ÷ +50°C
Card dimension	EuroCard 100 x 280 mm
GLE/EuroRack-8 dimension	19" x 3U x 325 mm (L x H x P).
Input connectors	Screw terminals (Phoenix 12-poles) on the GLE/EuroRack-8 rear panel
Output connectors	Multiple poles on the GLE/EuroRack-8 rear panel (BNC as option)

Due to continuous developments specifications subject to change without prior notice.



This product is not intended for applications whose its failure to perform can be expected to cause damages to properties and/or persons and/or injury to human life.

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