

Features

- Ideal for load cell signal conditioning.
- 10VDC bridge excitation with drive for up to 4 x 350Ω load cells.
- Selectable sensitivity from 0.1 to 30mV/V using switches and fine trim potentiometer.
- Conditioned output signal can be selected from 0-20mA, 4-20mA, 0-10V, 0-5V, ±5V or ±10V.
- 1-5kHz adjusted filter for test and measurement applications.
- Switch selectable offset ±70% FS using switches and fine trim potentiometer.
- Optional bridge completion module available.
- Optional isolated DC supply.
- Optional DIN rail mounted case.
- Optional PCB only.



Description

The SGA is a high-performance signal conditioner for single or multiple strain gauge bridge sensors such as load, force, pressure, and torque. The SGA/A and SGA/D provide strain gauge signal conditioning for load cells and offer a wide bandwidth and a wide input signal range. The device can be powered from AC or DC supplies providing excitation for up to four x 350Ω strain gauge bridges.

The conditioned output signal can be selected from 0-20mA, 4-20mA, 0-10V, 0-5V, ±5V or ±10V. Other options include a bridge completion module, isolated DC supply, DIN rail mount for the case or to be supplied as a PCB only. More information regarding the bridge completion module can be found on **Page 3** of this data sheet.

As standard, the SGA is supplied in a waterproof IP67 NEMA4 bulkhead mountable case and is available with AC or DC power supply options. The strain gauge signal conditioning module is robust and fully CE compliant.

Typical Specification

PARAMETER	MINIMUM	TYPICAL	MAXIMUM	UNITS
SGA/A Power Supply 50-60Hz	99/198	110/230	126/253	VAC
SGA/D Power Supply	18	-	24	VDC ⁽¹⁾
SGA/D Isolated Power Supply OPTIONAL IS12/24	9	-	36	VDC
Maximum Absorption DEPENDS ON LOAD	50	90	200	mA
Bridge Excitation 10V RANGE	9.75	10	10.25	V
Bridge Excitation 5V RANGE	4.85	5	5.15	V
Bridge Resistance	85	-	-	Ω
Bridge Sensitivity SWITCHABLE	0.06	-	30	mV/V
Gain Adjustment POTENTIOMETER FINE ADJUSTMENT	0.06	-	1.0	mV/V ⁽²⁾
Offset Adjustment POTENTIOMETER FINE ADJUSTMENT	-1.25	-	+1.25	%FR
Offset Adjustment SWITCHABLE COARSE ADJUSTMENT	±1.25	-	±80	%FR
Output Load VOLTAGE OUTPUT	-	-	2	mA
Output Load CURRENT OUTPUT	0	-	500	Ω
Bandwidth (NO FILTER + >2mV/V) 3dB POINT	DC	-	6000	Hz
Filter Cut-Off (SWITCHABLE RANGES) 3dB POINT	1	-	5000	Hz
Zero Temperature Coefficient AT 2.5mV/V	-	0.002	-	%FR/°C at 2.5mV/V FR
Span Temperature Coefficient	-	0.007	-	%FR/°C
Linearity	-	0.03	-	%FR
Gain Stability 1ST 1000 HOURS	-	0.2	-	%FR
Gain Stability 2ND 1000 HOURS	-	0.1	-	%FR

90 Day Offset Stability	-	3.3	-	µV
PARAMETER	MINIMUM	TYPICAL	MAXIMUM	UNITS
Output Load Stability GAIN 0-100%	-	-	0.01	%FR
Output Load Stability OFFSET 0-100%	-	-	0.01	%FR
Power Supply Rejection GAIN 0-100%	-	-	0.01	%FR
Power Supply Rejection OFFSET 0-100%	-	-	0.01	%FR

⁽¹⁾ 18V maximum at full load. ⁽²⁾ Depends on sensitivity settings.

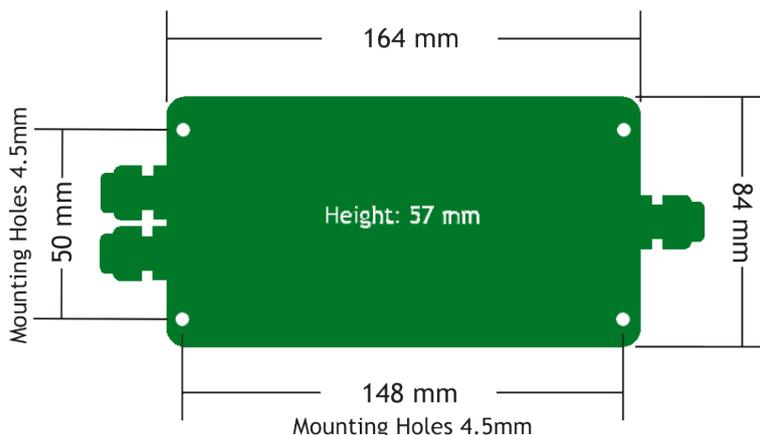
Environmental

PARAMETER	VALUE
Storage Temperature	-20 to + 70°C
Operating Temperature	-10 to +50°C
Relative Humidity	95% maximum non-condensing.
CE Environmental Approval	European EMC Directive 2004/108/EC, Low Voltage Directive 2006/95/EC

Useful Information

- **Connections:** Field screw terminals – 2.5mm² rising clamp.
- **Controls:** Gain potentiometer, coarse gain switches, coarse offset switches, filter cut-off switches, output mode switch.

Outline Dimensions in millimetres



Ordering Codes

ORDERING CODE	DESCRIPTION
SGA/A	110/230V AC and/or 18-24V DC powered.
SGA/D	18-24V DC powered.
IS12/24	Optional plug-in PCB for SGA/D – Isolated DC supply 9-36V.
D4	DIN rail mount for cased SGA.

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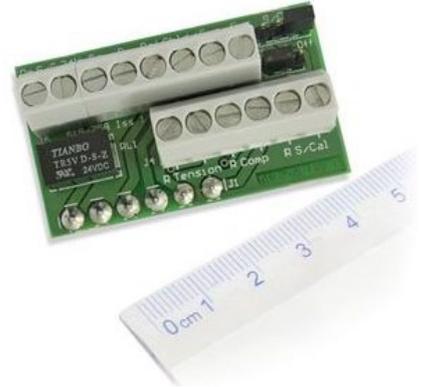
Description

The SGA-BCM is a retro-fit PCB which facilitates the connection of a half or quarter-bridge strain gauge to the SGA load cell amplifier. The SGA-BCM PCB comes with a 5ppm/°C resistor for 350Ω bridge completion (both quarter and half) and a shunt calibration resistor.

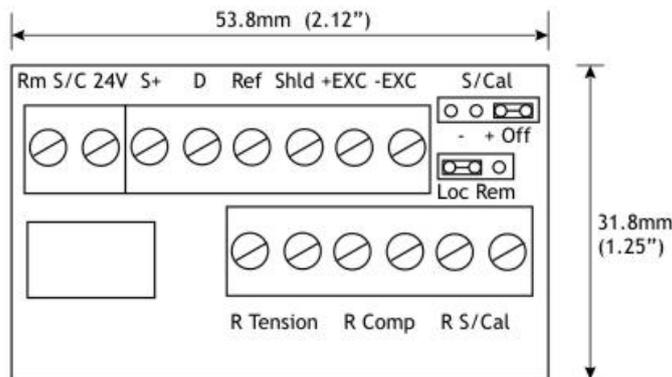
The SGA-BCM is compatible with all variants of the SGA amplifier, i.e. SGA/A, SGA/D as well as SGAs fitted with the IS12/24 isolated DC power supply module.

Features

- Easy installation; screws into the existing load cell connector on the SGA.
- On-board screw terminal connections accept a wide range of bridge completion resistor to enable on-site installation without soldering.
- High stability resistors (5ppm/°C) fitted for the 'fixed' arms of the bridge.
- Small footprint ~53x32mm, screws into existing J2 connector.
- Can be ordered in conjunction with an SGA or ordered separately for retro fitting.
- Screw terminals for a 'Shunt Calibration' shunt resistor to be fitted to periodically check the strain gauge, wiring or calibration integrity.
- 'Remote Shunt Cal' can be performed by energising a miniature 24V relay fitted to the BCM. Multiple SGAs in an installation can be shunt calibrated simultaneously.
- The quarter bridge strain gauge circuit, together with its completion resistor can be wired for tension or compression giving a positive output.



Outline Dimensions in millimetres



Connections

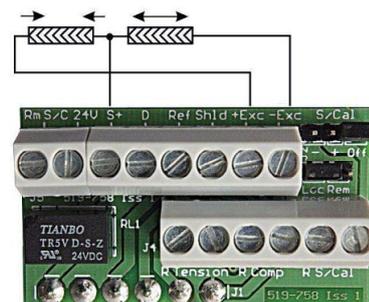
RETRO FIT PCB

Screw the SGABCM Module into the normal load cell connector J2.



HALF BRIDGE

The half-bridge is simply connected to the SGA via the screw terminals as shown below and no additional components are required.



QUARTER BRIDGE

The quarter-bridge, together with its completion resistor can be wired in two ways depending on whether the user requires a positive output as a result of the strain gauge being subjected to a compression force or a tension force. A 350Ω 5ppm/°C completion resistor and a 120k 15ppm/°C shunt calibration resistor are provided in the SGA-BCM kit.

QUARTER BRIDGE – COMPRESSION POSITIVE OUTPUT	QUARTER BRIDGE – TENSION POSITIVE OUTPUT

SHUNT CALIBRATION

To implement 'shunt cal' a set of header pins are provided with a jumper link that can be fitted in one of three positions: 'Off', '+' (positive shift) and '-' (negative shift). These are clearly marked on the PCB. The shorting link should be parked in the 'Off' position for normal use. A second set of pins select between 'Local' and 'Remote' shunt cal.

"OFF"	"POSITIVE"	"NEGATIVE"

REMOTE SHUNT CALIBRATION

'Remote Shunt Cal' is performed by setting the jumper to 'Rem' and energising the 24V DC relay fitted to the module.

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