

## PSGC-1 Universal Amplifier

The amplifier module PSGC-1 provides separate signal processing of two strain gauge bridges. Each strain gauge bridge is supplied by a short-circuit proof 5V-source providing an output of up to 45mA that is adequate to feed a full bridge of 120 strain gauges. The use of higher-resistance strain gauges is also possible without any problem. The gain and the off-set can be digitally adjusted via a special bus.

A 14Bit-DAU is employed for the gain. The gain can be tuned at a ratio of 1:10 in more than 10,000 steps. Thus, with the basic gain of 750 (factory setting, variable) the resulting total gain ranges from 750 to 7,500. That means the input sensitivity can be varied between  $\pm 0.6\text{mV/V}$  and  $\pm 2.6\text{mV/V}$ . The range of the nominal output voltage is  $\pm 10\text{V}$ .

The off-set of the amplifier is also generated by a 14Bit-DAU. The range of the off-set is  $\pm 20\text{V}$  and can be adjusted in steps of approx. 2.5mV each.

The signal bandwidth of the amplifier is approx. 10kHz, but

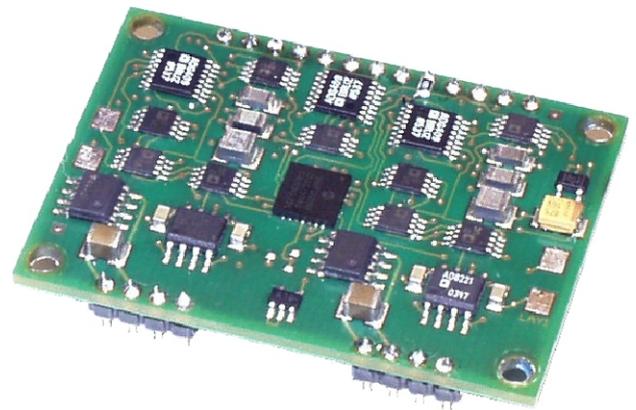
### Technical Data:

- Variation of linearity max. 0.005 %
- Total gain adjustable by software between 750 and 7,500
- Absolute gain error at 25°C max. 0.1<sup>1</sup> %
- Relative gain error at 25°C max. 0.05 %
- Gain reproducibility at 25°C max. 0.01 %
- Gain drift typ. 0.01 %/K, between -30°C and +70°C
- Off-set resolution 14 bit
- Off-set range, adjustable by software between -20V and +20V
- Off-set stepping typ. 2.5mV, max. 5 mV
- Absolute offset error at 25°C max. 0.1<sup>2</sup> %
- Off-set drift 1uV/K RTI, between -30°C and +70°C
- Bandwidth without filter typ. 10 kHz
- FILTER can be turned off by software
- Possible factory setting of cut-off frequency between 1 and 1,000 Hz
- Steepness of Bessel filters 18 dB/octave
- Voltage of bridge supply 5V
- Drift typ. 0.002 %/K, max. 0.01 %/K, between -30°C and +70°C
- §Nominal output current between 4mA and 45mA

<sup>1</sup> Without calibration at factory 1.5 %

<sup>2</sup> Without calibration at factory 1 %

### New Product



can additionally be limited by a software switched filter. A Bessel low-pass of 3rd order is employed for the filter. The cut-off frequency is set at factory in line with customer request.

## Application Example Odometer Amplifier

The output voltages of 12 strain gauge bridges are to be recorded in the hub of an odometer. The realisation of this task requires six PSGC-1 modules to be attached to a suitably shaped base plate. Since each module has two independent measuring amplifiers, the desired number of measuring channels is met. If circumstances permit, the quantity of PSGC-1 modules on one base plate can also be increased.

Besides carrying the PSGC-1 modules, the base plate accommodates the voltage supply for the modules and a centrally located external micro controller providing the control (for parametrisation and offset setting) of the PSGC-1 modules.

The electrically isolated voltage supply is placed in the centre of the base plate to minimise the centrifugal forces. The six PSGC-1 modules are circularly arranged around the centre. The micro controller module is centrally located at the rear side of the base plate. The controller module is the slightly modified controller module as employed in the MAS MATCH-II ADV recorder.

The two analogue signal outputs of each PSGC-1 module and the pertaining sensor supply are attached at the outer edge of the base plate and so easily accessible. They can be brought out for further external signal processing via a suitable collector ring.

Furthermore, the base plate accommodates its own 12 Bit analogue / digital converter. All analogue output signals



(measuring signals and sensor supplies) can be switched on this converter via a bus. Thus, the signals can be made available as digital signals, too. They are transmitted from the base plate to the PC via an electrically isolated RS232 interface. With the aid of the known SWIFT Terminal program the parametrisation of the PSGC-1 modules is also carried out via the same interface. There is no need to connect the PC during the actual measuring process.

The voltage supply of the base plate is between 18V and 36V DC.