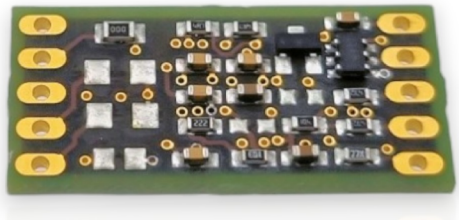
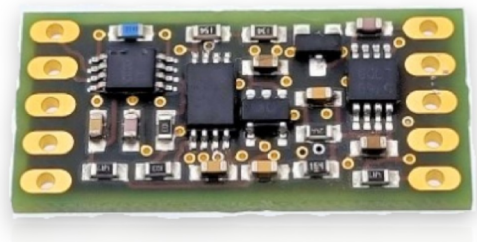
Strain gauge measuring amplifier GSV-14L





- Supply voltage 3.4...10 volt
- Unipolar output signal 0V...3V
- Zeroing across fixed resistors
- Scaling across fixed resistors
- Power consumption <10 mA
- Shutdown input for limiting power consumption <0.01mA
- Low-pass filter 1kHz

The measuring amplifier GSV-14L was developed for use in battery-driven devices.

The measuring amplifier works from a supply voltage of 3.4V. The output signal lies between 0.2V and 3V.

For the signed measurement, the zero point is shifted to 1.5V.

For an input sensitivity of ±2 mV/V, the output signal is scaled e.g. to ±1.5V.

The dimensions are only 13 mm x 37 mm x 5 mm All contacts are assigned with contact spacing 2.54 mm.

The measuring amplifier has a

The zero point (design 0805) and amplification (input sensitivity, design 0603) can be set across fixed resistors. A series resistor to the bridge power supply can also be inserted (design 0603).

Fine-tuning can thus be carried out for the scaling, e.g. in order to scale all sensors in a series with the same output signal.

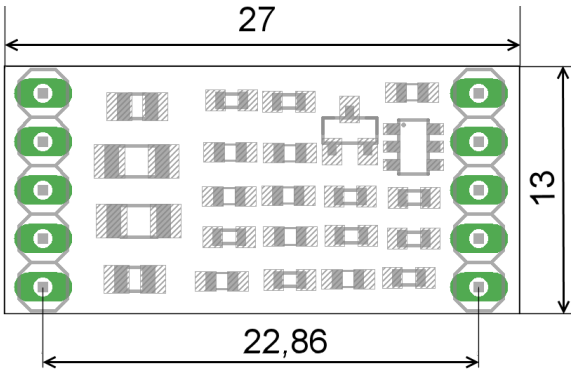
The measuring amplifier has a digital input shutdown.

This input is not connected or is connected to the ground if the measuring amplifier is to be switched on permanently.

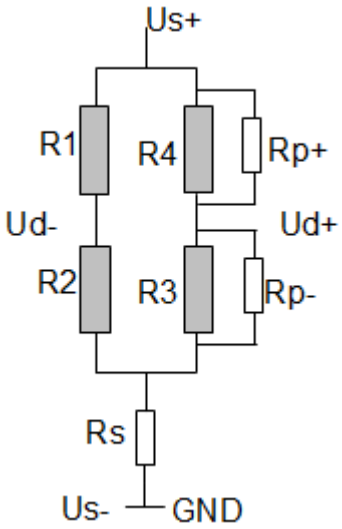
If the energy consumption is to be controlled via a microprocessor or a modem then the shutdown input is connected to the voltage source via a high ohm resistor (100kohm ...1Mohm) and is prompted to switch on at low potential by a digital output from a modem or a microprocessor.

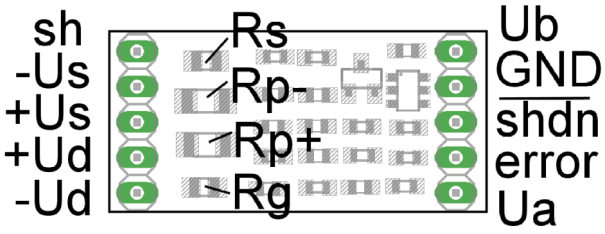
The output $\overline{\text{error}}$ signals a supply voltage that is too low with a low level.

Dimensions:



Terminal assignment





Adjustment of measuring range and offset

The resistor R21 is used to set the measuring range.
An input signal in the range of ±1.0 mV/V is amplified to an output voltage of ±1.25 V with a resistor R21 of 274 ohms.

Measuring range	Output voltage	R21
0... 0.5 mV/V	0.25V... 2.75 V	68 Ohm
0... 1.0 mV/V	0.25V... 2.75 V	136 Ohm
0... 2.0 mV/V	0.25V... 2.75 V	274 Ohm
±0.5 mV/V	1.5 V ±1.25 V	136 Ohm
±1.0 mV/V	1.5 V ±1.25 V	274 Ohm
±2.0 mV/V	1.5 V ±1.25 V	544 Ohm
±5.0 mV/V	1.5 V ±1.25 V	ca. 1k36 Ohm
±10.0 mV/V	1.5 V ±1.25 V	ca. 2k8 Ohm

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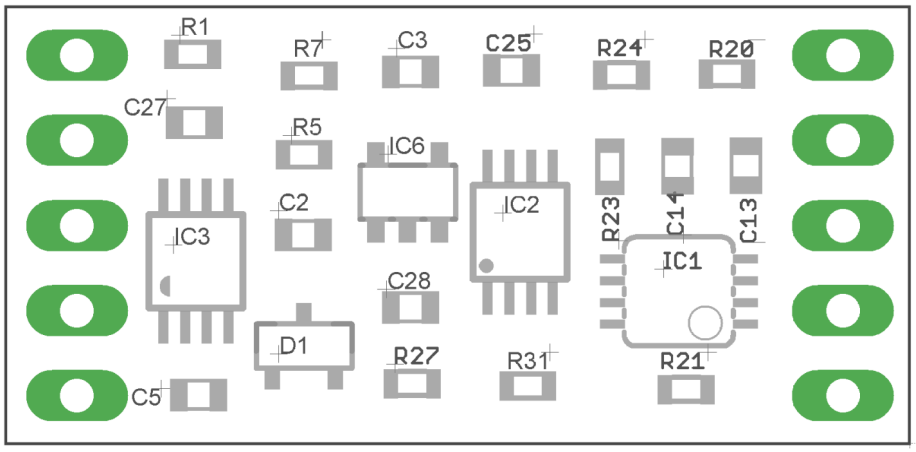
By soldering on a resistor Rg (type 0805), the gain of the circuit can be increased (the measuring range can be reduced). This is connected in parallel to the already integrated gain resistor R21. The signal can be attenuated.erden, wenn man einen Festwiderstand Rs (Bauform 0805) in Reihe zum Sensor anschließt.

The offset of the output signal is set with the resistors R31 and R27:
For an offset of 1.5V (default setting): R31 = 150k, R27 = 130k
For an offset of 0.25V: R31 = 10k, R27 = 102k||430k
For an offset of 0.5V: R31 = 27k, R27 = 130k||3M9
The zero signal of a Wheatstone bridge can be adjusted using fixed resistors Rp (type 1206).
Information on “shunt adjustment”:
https://www.me-systeme.de/en/basics/strain-gauges/shunt-calibration

Name	Description
Shield	Shield connector for the sensor
-Us	negative sensor power supply
+Us	positive sensor power supply
+Ud	positive differential input
-Ud	negative differential input
Ub	Supply voltage 3.4-10 volt (optional 4-18 volt)
GND	Ground
shdn	Switch off the amplifier with a high signal
error	Error indicator when below the min supply voltage / output low
Ua	Analogue output 0.2...3.0 volt

Assemby Plan



Assembly plan bottom GSV-14;

Technical data

Accuracy class	**0.1**	**%**
Inputs		
Measurement range (FS) 1)	**±2 (optional ±3.5, ±1, ±0.5)**	**mV/V**
Resolution	10000	parts
Strain gauge inputs for full bridge Bridge supply voltage	88 … 5000 5	ohm V
Common mode rejection Input impedance	95-110 >20Mohm, 300pF	dB
Low pass filter		
RC filter , Bessel, 3rd order	1kHz (optional 10Hz)	
Outputs		
Analogue output 1) Output resistance	0.2 ... 3 60	V ohm
Zero point of analogue output	0.2 … 2.9	V
Bridge supply voltage Current carrying capacity	3 35	V mA
Supply		
Supply voltage Power consumption at 350Ω	3.4 … 10 < 10mA	V DC
Temperature range		
Nominal temperature range Storage temperature range Drift of zero point Drift of sensitivity	-10…+85 -40…+85 < 0.05 <0.02	°C °C %FS/10°C %RD/10°C
Dimensions		
W x H x L Weight	27 x 13 x 5 2	mm x mm x mm g
Protection class		
	IP40	

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