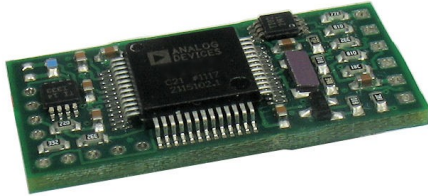


## Measuring amplifier GSV-15L 4-20/105/3,5

Item number: 5142



### Highlights

- Measuring amplifier with analogue output for sensors with strain gauge output signal 0V...10V or 4...20mA

- Zero setting input via digital input

- Autoscale function for automatic adjustment of the input sensitivity

- Threshold value switch open collector

- Supply voltage 14...30 volt

The measuring amplifier GSV-15L is suitable for connection with strain gauges, such as force sensors, torque sensors or strain sensors.

The measuring amplifier stands out due to its very small dimensions of just 16 mm x 33 mm x 5 mm.

Despite the small dimensions, it has special functions such as automatic zero adjustment across 2 mV/V and automatic scaling of the current measured value to 10 volt output signal. The GSV-15L has a 24V digital control input for each of these functions.

The open collector threshold value output "SW" reacts when 90% of the programmed measuring range has been exceeded.

The integrated digital filter facilitates the formation of a stable, low-noise and zero point stable output signal especially at low frequencies from 5...105 Hz, and also at high amplifications of low input signals of 0.1 mV/V for example.

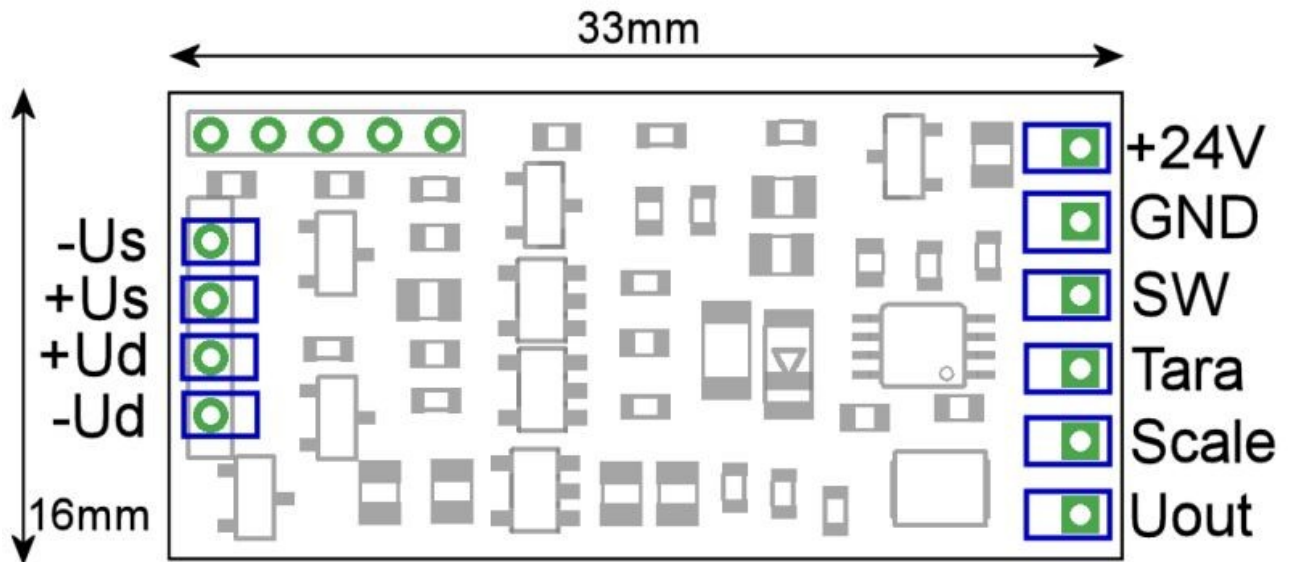
The resolution at the analogue output is 4096 parts.

The sampling frequency can also be set to 315 Hz or 1300 Hz in the factory.

The measuring amplifier can also be configured for the connection of acceleration sensors in the factory. The amplitude of the acceleration signal is then displayed at the output.

Versions are available with and without a header.

### Technical Drawing



## Technical Data

| Basic Data         |                      | Unit |
|--------------------|----------------------|------|
| Dimensions         | 16 mm x 33 mm x 5 mm |      |
| Housing            | Leiterplatte         |      |
| Connection         | Soldering connection |      |
| Number of channels | 1-channel            |      |

| Input analog                     |     | Unit |
|----------------------------------|-----|------|
| input sensitivity-stepsless from | 0.1 | mV/V |
| input sensitivity-stepsless to   | 3.5 | mV/V |

| Output analog                            |     | Unit |
|--|-----|------|
| Number of analog outputs                 | 1   |      |
| Output resistance - voltage output       | 50  | Ohm  |
| Current output from                      | 4   | mA   |
| Current output to                        | 20  | mA   |
| Maximum load resistance - current output | 300 | Ohm  |

| Accuracy data                                   |      | Unit     |
|---|------|----------|
| Accuracy class                                  | 0,1% |          |
| Temperature effect on the zero point            | 0.05 | %FS/10°C |
| Temperature effect on the measuring sensitivity | 0.01 | %RD/10°C |
| Resolution                                      | 16   | Bit      |

| Measuring frequency |     | Unit |
|---------------------|-----|------|
| Data frequency from | 5   | Hz   |
| Data frequency to   | 105 | Hz   |
| Sampling frequency  | 105 | Hz   |

| Supply                     |    | Unit |
|----------------------------|----|------|
| Supply voltage from        | 14 | V    |
| Supply voltage to          | 30 | V    |
| Current consumption from   | 15 | mA   |
| Strain gauge bridge supply | 5  | V    |

| Interface |  | Unit |
|-----------|--|------|
|-----------|--|------|

| Zero Adjustment |          | Unit |
|-----------------|----------|------|
| Type            | Regelung |      |

| Environmental Data               |      | Unit |
|----------------------------------|------|------|
| Rated temperature range from     | -10  | °C   |
| Rated temperature range to       | 85   | °C   |
| Operating temperature range from | -40  | °C   |
| Operating temperature range to   | 85   | °C   |
| Environmental protection         | IP40 |      |

## Mounting

### Configuration of GSV-15L

The GSV-15L measuring amplifier supplies an analogue output signal from 0.0 to 10.0V. The default input sensitivity is: 10V per 2 mV/V.

The input sensitivity (the measurement range) can be adjusted using the "scale function".

In unloaded state, the display can be adjusted to 0.0V or another factory-set value.

### Zero setting (tare function)

The output signal is automatically adjusted to 0.0V by applying a control pulse at the "tare" input. The control pulse must be at least 1 s high and then 100 ms low.

Please note: a high signal must not be applied at the tare input when switching on the electronics.

## Scale function

The GSV-15L measuring amplifier has a scale function. A high level at the "scale input" scales the current measuring signal to 10.0V.

The zero setting must be applied before activating the scale function.

Procedure: the sensor is subject to mechanical stress with 100% load. Output signal is automatically adjusted to 10.0V by applying a control pulse at the "scale" input. The control pulse must be at least 2 s high and then 100 ms low.

Please note: a high signal must not be applied at the scale input when switching on.

## Configuring the scale function (Set-up mode\_1)

The end value can also be scaled with less than 100% of the maximum load.

The proportion of calibration load in the maximum load can be configured in 5% increments in *Set-up mode\_1*

Procedure:

1.

switch off supply voltage;

2.

connect scale input (grey) to the supply voltage (high-potential);

3.

switch on supply voltage;

4.

disconnect scale input from the supply voltage (high-potential); (*Set-up mode\_1* is now active).

5.

The threshold is increased by 5% by re-applying the high-potential to the scale input (for 0.5 s).

The threshold is lowered by 5% by applying the high-potential to the tare input (for 0.5 s).

The output signal now indicates the tension that is displayed after activating the scale function.

Example: If a voltage of 1.0V is applied at the output (in *Set-up mode\_1*), calibration should be performed with 10% of the maximum load.

If a voltage of 9.0V is applied at the output (in *Set-up mode\_1*), calibration should be performed with 90% of the maximum load.

6.

switch off supply voltage;

7.

switch on supply voltage. The measuring amplifier is now in the normal operating mode again.

### Threshold value (open collector)

The threshold value switch reacts when the threshold value is exceeded. The default threshold value is 90% of the measurement range. The threshold value output is switched to ground when 90% is exceeded. If the strain falls below 88%, the output switches to high-impedance.

### Configuring the threshold value function (Set-up mode\_2)

The threshold of the threshold switch can be set in 5% increments.

#### Procedure:

1.

switch off supply voltage;

2.

connect tare input to the supply voltage (high-potential);

3.

switch on supply voltage;

4.

disconnect tare input from the supply voltage (high-potential). (The *Set-up mode\_2* is now active).

5.

The threshold is increased by 5% by re-applying the high-potential to the scale input. The threshold is lowered by 5% by applying the high-potential to the tare input. In *Set-up mode\_2*, the output signal displays at what point the threshold value is activated.

Example: If a voltage of 1.0V is displayed at the output, then the threshold value encoder is activated at 10% of the maximum load and reset again at 8%.

If a voltage of 9V is displayed at the output, then the threshold value encoder is activated at 90% of the maximum load.

6.

switch off supply voltage;

7.

switch on supply voltage. The measuring amplifier is now in normal operating mode again..

## Terminal assignment

*Figure 3: Terminal assignment, view: top*

| PIN | Name |  | X / mm | Y / mm |
|-----|------|--|--------|--------|
|-----|------|--|--------|--------|



|   |      |                              |        |         |
|---|------|------------------------------|--------|---------|
| 1 | -Ud  | negative differential input  | 1.4478 | 5.0038  |
| 2 | +Ud  | positive differential input  | 1.4478 | 7.0104  |
| 3 | +Us  | positive sensor power supply | 1.4478 | 9.0170  |
| 4 | -Us  | negative sensor power supply | 1.4478 | 10.9982 |
| 5 | RXD  | internally assigned          | 1,4320 | 14,7190 |
| 6 | TXD  | internally assigned          | 3,4320 | 14,7190 |
| 7 | PSEN | internally assigned          | 5,4320 | 14,7190 |
| 8 | VDD  | internally assigned          | 7,4320 | 14,7190 |
| 9 | GND  | internally assigned          | 9,4320 | 14,7190 |

|    |       |                                      |         |         |
|----|-------|--------------------------------------|---------|---------|
| 10 | +24V  | Supply voltage<br>12V...24V          | 31.4960 | 14,2494 |
| 11 | GND   | Ground                               | 31.4960 | 11,7094 |
| 12 | SW    | Threshold<br>value open<br>collector | 31.4960 | 9,1694  |
| 13 | Tare  | digital tare<br>input                | 31.4960 | 6,6294  |
| 14 | Scale | digital scale<br>input               | 31.4960 | 4,0894  |
| 15 | Uout  | output signal<br>0V...10V            | 31.4960 | 1,5494  |

Tabelle 1: Positionen der Pins