Measuring amplifier GSV-5H

Item number: 14831



Highlights

- Zero setting function via control line
- 250 Hz filter in the standard version
- 30 Hz, 2.5 kHz or 10 kHz filter configurable (via NFC)
- continuous analog signal flow, suitable for vibration analysis
- Measuring range configurable in 4 levels via NFC/smartphone APP (4mV/V, 2mV/V, 1 mV/V, 0.5mV/V)
- Output signal ±10V or 4...20mA configurable via NFC
- 6-wire technology
- 2 threshold value transmitters, galvanically decoupled, configurable via NFC/smartphone APP
- Power supply for up to 8 full bridges of 350 ohms each
- Connection of half and full bridges as an option

The GSV-5H is a single-channel strain gauge amplifier for force sensors, torque sensors and strain transducers. It supplies excitation to the connected measurement bridge, amplifies its differential signal and provides the measured value as an analog voltage or current signal. The housing is 19.5 mm wide and designed for DIN rail mounting.

In its factory configuration, the GSV-5H operates with a measurement range of 2 mV/V, a voltage output of ±10 V and a low-pass cutoff frequency of 250 Hz. The signal path from the sensor input to the analog output is analog throughout.

The measurement range, output signal, zero output level and low-pass filter are configured via the NFC interface and the smartphone app. The measurement range can be set to 0.5, 1, 2 or 4 mV/V. The available low-pass cutoff frequencies are 30 Hz, 250 Hz, 2.5 kHz and 10 kHz.

Two threshold-controlled switching outputs allow the monitoring of limit values or signal ranges. The ZERO function for zero adjustment and the SHUNT function for electrical testing are activated via control inputs. The sensor, power supply, analog output and control signals are connected via spring-clamp terminals.

Configuration via smartphone app and NFC

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Stand: 11.11.2026

The free “GSV-5H-APP” is available for Android and iPhone. An NFC-enabled smartphone can be used to read, modify and transfer the device settings to the amplifier. A PC is not required for configuration.

Parameter	Available settings
Measurement range	0.5 / 1 / 2 / 4 mV/V
Output signal	Voltage: ±10 V or 0…10 V Current: 4…20 mA
Zero output level / offset	0 V or 5 V, or 4 mA or 12 mA, depending on the selected output configuration
Low-pass cutoff frequency	30 Hz / 250 Hz / 2.5 kHz / 10 kHz
Threshold detectors	Upper and lower switching thresholds and switching mode: Hyst, HystInv, Win or WinInv

The zero output level defines the output value provided by the amplifier after zero adjustment. It is therefore distinct from the lower and upper limits of the output range.

Google Play Store: GSV-5H-APP	App Store for iPhone: GSV-5H-APP

Terminal assignments

Sensor connection

The sensor is connected to the upper terminal blocks. The following assignments describe the connection of a strain gauge full bridge.

Terminal	Designation	Function

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1	-Uf	Negative excitation sense lead
2	-Us	Negative sensor excitation
3	+Us	Positive sensor excitation
4	+Uf	Positive excitation sense lead
5	+Ud	Positive sensor signal
6	-Ud	Negative sensor signal
8	Sh	Sensor cable shield

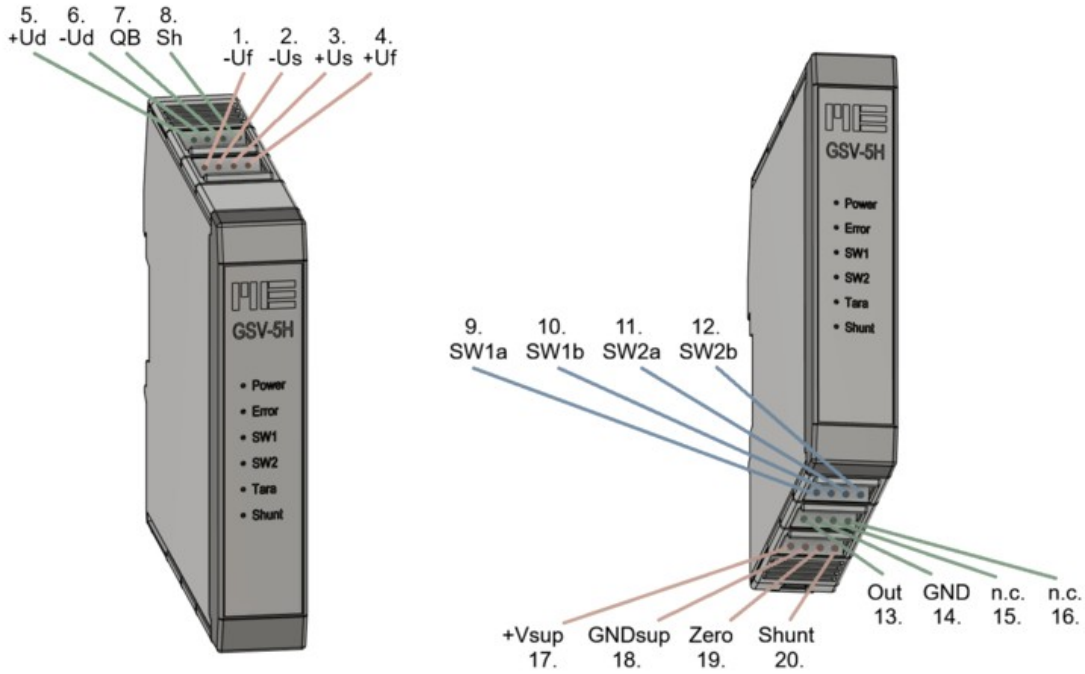
For sensors with a 6-wire connection, the sense leads are connected to -Uf and +Uf.

For sensors with a 4-wire connection, two jumpers are required: terminal 1 to terminal 2 (-Uf to -Us) and terminal 3 to terminal 4 (+Us to +Uf).

Power supply, analog output and control signals

The power supply is connected to terminal 17 (+Vsup) and terminal 18 (GNDsup). The analog output signal is available at terminal 13 (Out), referenced to terminal 14 (GND).

The switching outputs are available at terminals 9 and 10 (SW1a/SW1b) and terminals 11 and 12 (SW2a/SW2b). The ZERO and SHUNT control inputs are located at terminals 19 and 20.



Functions

ZERO – zero adjustment / tare

The ZERO function sets the output signal to the configured zero output level at the sensor's current load condition. To do this, the amplifier determines a correction value that is applied to subsequent measurements.

The correction value is stored in non-volatile memory and is retained when the power supply is switched off.

To activate the function, connect the ZERO input at terminal 19 to the supply voltage for at least 2 seconds. Zero adjustment takes place on the subsequent falling edge, when the control signal changes from High to Low.

The front-panel "Tara" LED remains illuminated while the ZERO input is High.

SHUNT – electrical function test

The SHUNT function electrically unbalances the connected measurement bridge. A resistor is connected between -Ud and -Us, placing it in parallel with one of the sensor's bridge resistors. This causes the output signal to change in the positive direction without applying a mechanical load to the sensor. The function is controlled via the SHUNT input at terminal 20.

The magnitude of the bridge imbalance depends on the shunt resistance, the strain gauge resistances and the sensor's electrical circuit. Additional resistors used for temperature compensation or sensitivity adjustment affect the signal step. The bridge imbalance is

expressed in mV/V; the resulting voltage or current output also depends on the amplifier configuration.

The shunt test checks the electrical signal path comprising the measurement bridge, connecting cable and amplifier. It does not replace sensor calibration using a mechanical reference load.

Threshold detectors and switching outputs

The GSV-5H has two threshold detectors with switching outputs SW1 and SW2. In the closed state, there is a conductive connection between SW1a and SW1b or between SW2a and SW2b, respectively. The outputs use galvanically isolated solid-state relays. The maximum switching current is 0.5 A, and the maximum switching voltage is 60 V.

For threshold detector 1, the upper threshold TH1 U and the lower threshold TH1 L are configured. The corresponding settings for threshold detector 2 are TH2 U and TH2 L. Values are specified as a percentage of the measurement range. Each upper threshold must be greater than its corresponding lower threshold.

Switching mode	Output behavior
Hyst	The output closes when the signal exceeds the upper threshold and opens when the signal falls below the lower threshold. Between the thresholds, the output retains its previous switching state.
HystInv	The output opens when the signal exceeds the upper threshold and closes when the signal falls below the lower threshold. Between the thresholds, the output retains its previous switching state.
Win	Window mode: The output is closed while the signal is within the range defined by the two thresholds and open when the signal is outside this range.
WinInv	Inverted window mode: The output is open while the signal is within the range defined by the two thresholds and closed when the signal is outside this range.

LED indicators

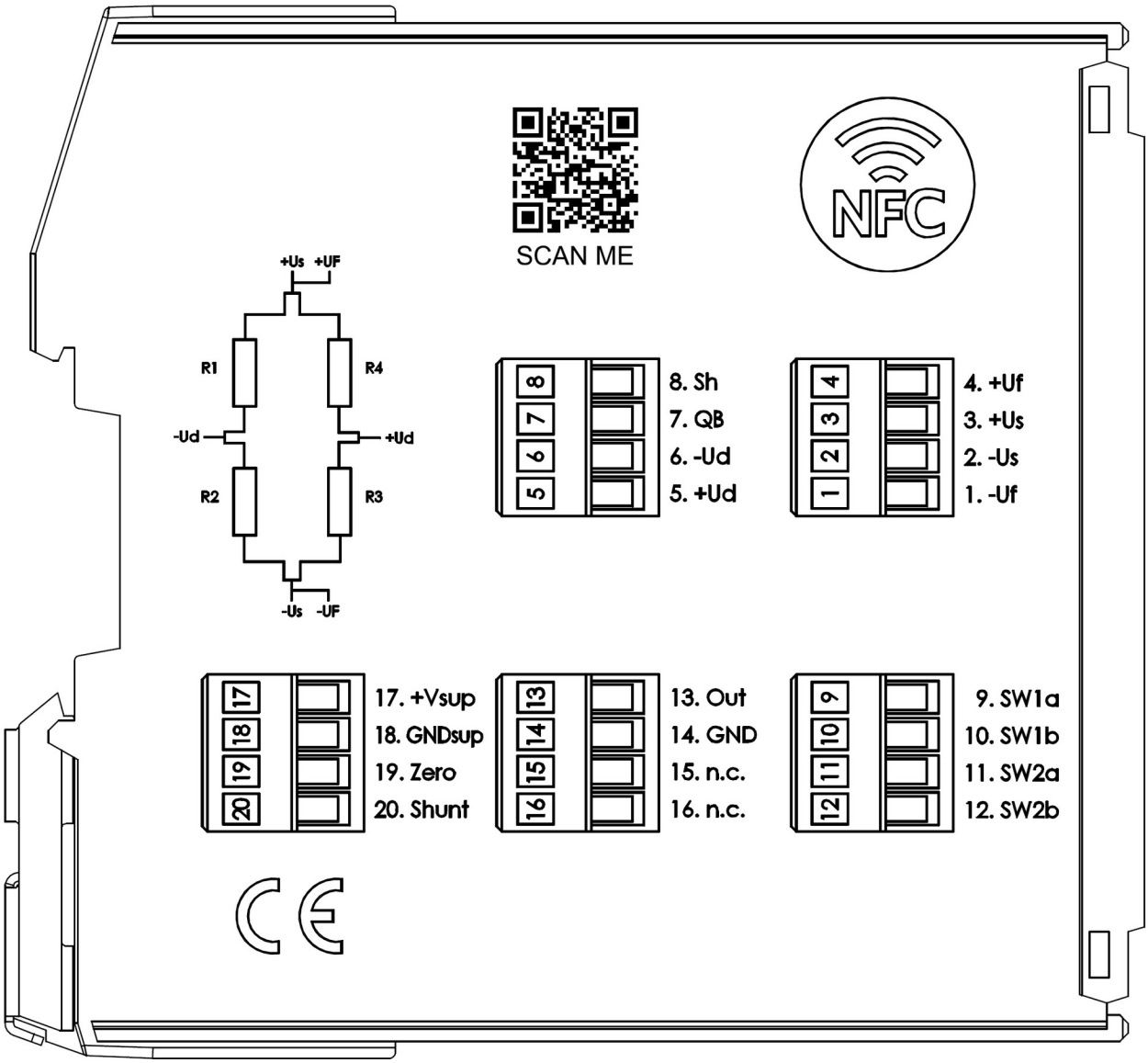
The front-panel LEDs indicate the operating status and the states of the switching outputs and control inputs.

LED	Meaning
Power	Supply voltage present
Error	Fault condition; identified by continuous illumination or a flashing pattern
SW1	Switching output 1 active
SW2	Switching output 2 active
Tara	ZERO control input active
Shunt	SHUNT control input active

Error indication

Error LED indication	Meaning
Continuously illuminated	The sensor signal check (UD test) has failed. Possible causes include a broken wire, an incorrect sensor connection or a defective sensor. The check reports a signal level below 1.25 V or above 3.5 V, or a differential voltage between +Ud and -Ud with a magnitude greater than 40 mV. Zero adjustment is not performed while this fault condition is present.
Slow flashing	Error in the NFC configuration data
Flashing at 1 Hz	Voltage output fault, for example due to a short circuit
Flashing at 2 Hz	Current output fault, for example due to an open current loop; this indication may also occur when several faults are present simultaneously
Flashing at 4 Hz	Output driver overtemperature

Technical Drawing



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Technical Data

Basic Data		Unit
Dimensions	19.5 x 117 x 111	mm³
Housing	Din rail	
Connection	Spring clamp	
Number of channels	1-channel	
Interface	NFC	
Functions	Tara, Range, Offset, Frequency, Threshold	

Input analog		Unit
Number of analog inputs	1	
Input sensitivity-steps	0.5 | 1.0 | 2.0 | 4.0	mV/V
Strain-gauge-full-bridge resistance from	87.5	Ohm
Strain-gauge-full-bridge resistance to	5000	Ohm
Input resistance strain-gauge-half- /quarter-bridge	120 | 350 | 1000	

Output analog		Unit
Number of analog outputs	1	

Accuracy data		Unit
Accuracy class	0,1%	
Relative linearity error	0.02	%FS
Temperature effect on the zero point	0.05	%FS/10K
Temperature effect on the measuring sensitivity	0.05	%RD/10K
Resolution	150	nV/V Pk-Pk @10Hz

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Measuring frequency		Unit
Data frequency from	10	Hz
Data frequency to	10	kHz

Supply		Unit
Supply voltage from	10	V
Supply voltage to	28	V
Strain gauge bridge supply	5	V

Interface		Unit
Type of the interface	Analog	

Zero Adjustment		Unit
Type	Digital | Button	
Tolerance	0.1	%FS
Time period	160	ms
Debouncing time	2	s
Trigger level from	3	V
Trigger level to	28	V
Trigger edge	falling	

Filter		Unit
Type	low-pass	
Quantity	4	
Limit frequency (analog) from	10	Hz
Limit frequency (analog) to	10	kHz
Order	2	
Algorithm	butterworth	

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Environmental Data		Unit
Rated temperature range from	-10	°C
Rated temperature range to	65	°C
Operating temperature range from	-40	°C
Operating temperature range to	85	°C
Environmental protection	IP20	

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