6-Channel strain gage Measuring amplifier GSV-5A6

Operating Manual

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Contents

6-channel measuring amplifier GSV-5A6

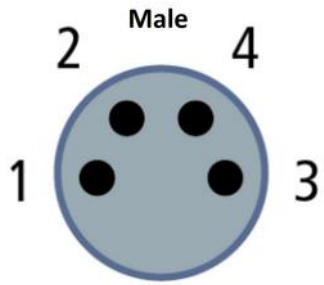
- Input sensitivities: [0,5 1,0 2,0 4,0] mV/V
- Output signal: ±10V at a 15-pin Sub-D
- Zero setting function: For individual channels or for all channels simultaneously by pushbuttons.
- Function-LED
- Operating menu via pushbuttons and LEDs

Description:

The GSV-5A6 measuring amplifier is an amplifier with 6 independent channels for sensors with strain gauges, such as force sensors, torque sensors, acceleration sensors or strain transducers. Sensors using six-wire technology are preferably connected to each channel. When connecting sensors using four-wire technology, the pin +UF must be bridged to +US and -UF must be bridged to -US.
This measuring amplifier is suitable for connecting bridge sensors from 120 ohms to 5000 ohms or full bridge strain gauges.
The GSV-5A6 measuring amplifier is delivered with an 18 V German power supply and cables for the Sub-D sockets.
All voltage outputs are located on the 15-pin Sub-D socket, 1x ground per channel for the analog output and a switching input for the shunt and the tare function. All voltage outputs are calibrated and can be used synchronously.
The GSV-5A6 is configured with 4 push buttons and the current state of the 6 channels can be seen on 14 LEDs.

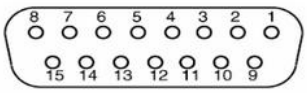
Connection diagram M8 Round plug for supply voltage

(Top view onto the device plug)



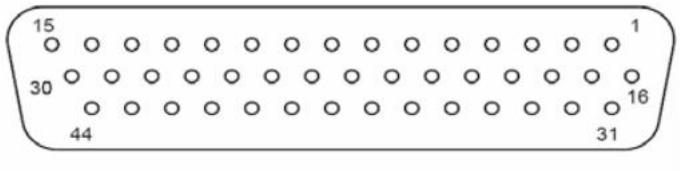
Meaning		Pin-No.
UB+	Supply voltage +	1
	n.c.	2
GND	Ground / -	3
	n.c.	4

Connection diagram for output socket: 15-pin Sub-D

Socket spring contacts	Designation	Pin-No.					
(Top view) 	Tara	8 purple					
	Shunt	7 blue					
	UB-EXT	15 red-white					
		channel 1	channel 2	channel 3	channel 4	channel 5	channel 6
	Output voltage	1 shiny black	2 brown	3 red	4 orange	5 yellow	6 dark green
	Electrical ground	9 gray	10 white	11 pink	12 light green	13 black-white	14 brown-white

The colors refer to the wire colors of the included 3 m cable with the 15-pin plug (SubD15).

Connection diagram for input socket: 44-pin Sub-D HD



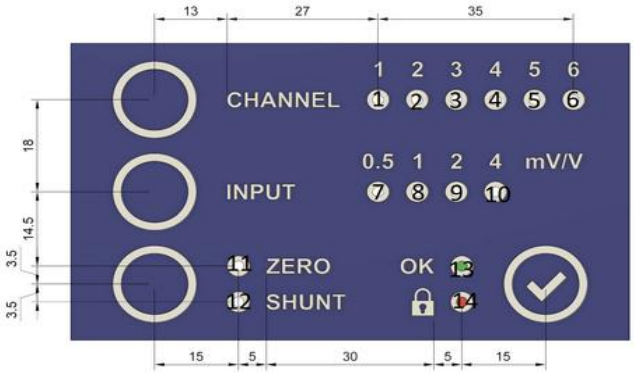
	Description	Pin-No.					
		Channel 1	Channel 2	Channel 3	Channel 4	Channel 5	Channel 6
+UF	Positive sense input (6-wire)	1	8	16	23	31	38
+US	Positive sensor supply	2	9	17	24	32	39
+UD	Positive differential input	3	10	18	25	33	40
-UD	Negative differential input	4	11	19	26	34	41
-US	Negative sensor supply	5	12	20	27	35	42
-UF	Negative sense input (6-wire)	6	13	21	28	36	43

Currently unused pins: 7; 14; 15; 22; 29; 30; 37; 44

When connecting sensors using four-wire technology, the pins +UF must be bridged to +US and -UF must be bridged to -US.

LEDs and buttons

Meaning of the LEDs



- LEDs 1-6: Selected channel
- LEDs 7-10: Sensitivity of input
- LED 11: Zero/Tare
- LED 12: Shunt
- LED 13: Enter confirmation
- LED 14: Menu locked

LEDs 1-6 represent the selected channel. LED 7-10 flashes to represent the current sensitivity of the selected channel. Continuous lighting of these LEDs indicates a selected input sensitivity, which can be switched to by pressing the “OK” button.
LEDs 11 and 12 light up permanently when the respective option is selected, and LED 12 flashes when the shunt is active. LED 13 flashes when a previously selected setting is confirmed with "OK". For example, changing a channel from 2 mV/V to 4 mV/V.

Function of the push buttons

Button	Designation	Abbreviation
1	CHANNEL button	„CH“
2	INPUT button	„IN“
3	ZERO/SHUNT button	„ZS“
4	OK button	„OK“

Button 1 [CH]:

1. Short press:
   With “CH” one or all channels can be selected by pressing. First, the 6 individual channels are selected by pressing a button and then all channels. When you press the button again, no channel is selected and the sequence starts again. LEDs 1-6 indicate the selected channel, all LEDs glowing means all channels are selected.
2. Long press:
   No function

Button 2 [IN]:

1. Short press: (Only possible if a channel has been previously selected)
   If one or all channels have been selected, a new input sensitivity can be set with “IN”. This needs to be

confirmed by pressing “OK”. Similar to “CH”, each sensitivity is selected one after the other with a push of the button.

2. Long press (min. 3s): (Only possible if a channel has been previously selected)
   By long pressing “IN” the “manufacturer tara” can be set for a selected channel. This does not have to be confirmed by pressing “OK” but is carried out immediately.
3. No function if no channel was selected or Activate Shunt was selected with “ZS”.

Button 3 [ZS]:

1. Short press:
   With “ZS” you choose between 2 options: Set zero/tare or activate shunt resistor.
   Set zero: When this function is selected, the ZERO LED No. 11 lights up. Zeroing is possible for individual channels or all at the same time and causes the output to be set to 0V.
   Activate shunt resistor: When this function is selected, SHUNT LED No.12 lights up. The shunt can only be activated on all channels at the same time. When the shunts are activated, the bridge inputs are additionally detuned, so that the output signals change significantly. This allows the function of the measuring amplifier to be checked.
   Both options must be confirmed by pressing “OK”. If neither of the two associated LEDs lights up, neither zero/tare nor shunt activation is selected - then, a channel can be selected as usual and the input sensitivity can be changed.
2. Long press:
   No direct function, only in combination with a simultaneous long press on “OK” (see there).

Button 4 [OK]:

1. Short press:
   Briefly pressing “OK” confirms the entry you have set. This locks each button for 3 seconds and is visually indicated by the flashing of LED 13.
2. Long press:
   No direct function. In combination with “ZS”, if both buttons are pressed simultaneously for at least 3 seconds, all buttons are locked. If both buttons are later pressed simultaneously for at least 3 seconds, all buttons are unlocked again. If LED 14 lights up permanently, the menu is locked.

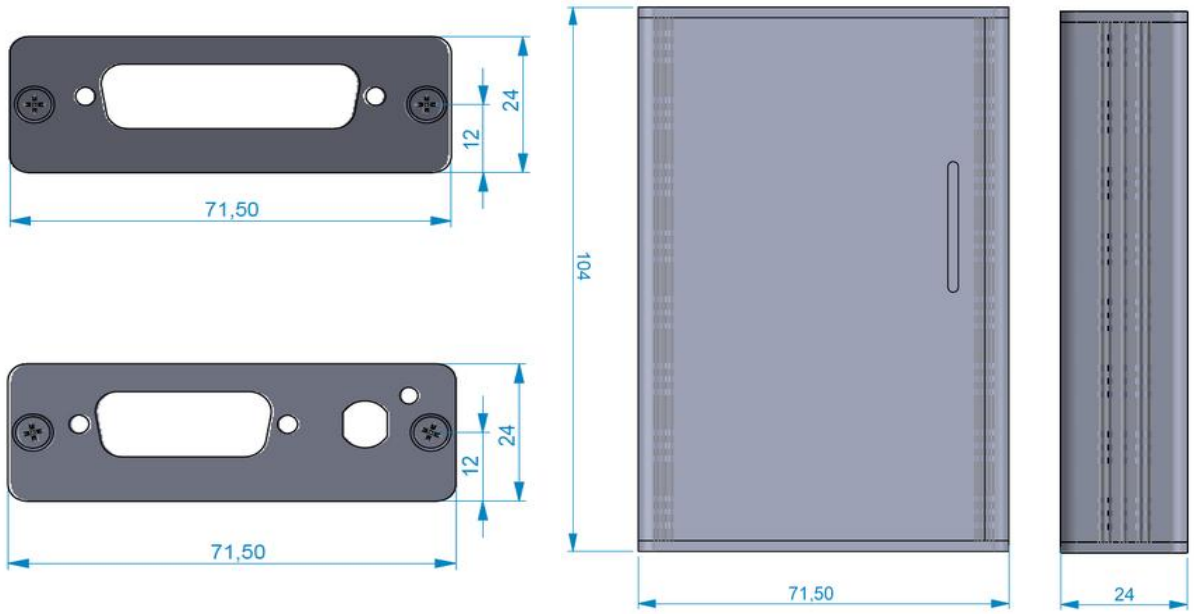
Further functions of all buttons:

1. Power saving/sleep mode
   If no button is pressed for at least 30 seconds, the device has not been actively locked and the shunt is not active, the energy saving mode is activated. In this mode, all LEDs are turned off except for the green Power LED on the side (this lights up permanently). The power-saving mode is terminated by pressing any key. The device can then be used as usual by pressing any button again, for example on “CH”.
2. Shunt active mode:
   If the shunt resistor has been activated (visually recognizable by the flashing of LED 12), it can be disabled by pressing any button. The GSV-5A6 can then be used as usual.

Technical data

Inputs	GSV-5A6	Unit
Input sensitivity (factory setting)	±2,0	mV/V
Can be switched to	±4,0; ±1,0; ±0,5	mV/V
Analog outputs		
Number	6	
Analog voltage output	±10	V
Output Impedance	47	Ohm
Cutoff frequency	250 / 2500 (Option)	Hz
Supply		
Supply voltage	10 ... 28	V
Bridge supply voltage	5	V
Type of interface	Analog	
Zero adjustment		
Tolerance	1	mV
Duration	160	ms
Debounce time	2	s
Trigger level switch input	3 ... 24	V
Trigger edge	falling	
Environmental data		
Nominal temperature range	-10 ... 65	°C
Usage temperature range	-40 ... 85	°C
Basic data		
Case dimensions (without plugs)	104 x 71,5 x 24	mm
Channels	6	
Analogue socket (input)	Sub-D 44 HD	
Analogue socket (output)	Sub-D 15	
Accuracy data		
Accuracy class	0,1	%
Relative linearity deviation	0,02	%FS
Temperature influence on the zero point	0,2	%FS/10°C
Temperature influence on the sensitivity	0,1	%RD/10°C
Warm-up time (99,8%FS)	5	Min.
Power consumption		
Inrush current (mean over 600 µs)	0,8	A
Continuous current consumption at 12 V	285	mA
Continuous current consumption at 18 V	205	mA
Continuous current consumption at 24 V	170	mA

Case dimensions GSV-5A6



Change log

Version	Date	Changes
1	2024	Initial release
1.1	05/2024	SW: Minor changes, Zero routine time corrected

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