Strain Gauge Amplifier HART

MISG

● Characteristics

- Input:	1 strain gauge full bridge, 4-wire
- Bridge resistance:	350 Ω minimum
- Sensitivity:	1...4 mV/V
- Output:	4...20 mA HART
- Resolution:	16 bit
- Bridge supply:	1 VDC
- Gross error:	0,3% of range
- Electrical connection:	Several plugs, cable
- Casing:	PBT GF30 black
- Dimensions:	72x28x35 mm (without electr. connection)
- Protection:	At least IP65

● Technical Data

Input

Sensor:	1 strain gauge full bridge
Bridge resistance:	350 Ω minimal
Bridge supply:	1 VDC
Bridge connection:	4-wire
Range input signal:	1...4 mV/V
Cable towards sensor:	Length: 10 m maximum
	Type: Double-shielded

Output

Current signal:	4...20 mA with superimposed communication signal (HART), 2-wire current loop
Current range:	3,6...21 mA
Signal on error:	21 mA (sensor break, sensor open circuit, sensor short circuit, underflow)

Measuring Amplifier

Gross error:	0,3% of range
Resolution:	16 Bit
Filter adjustment:	0...99 s
Transient response:	Linear with strain gauge signal
Switch-on delay:	<5 s
Measurement rate:	10 measurements/s
Linearization:	10 calibration points
Configuration:	Via software (HART communication)

Supply

Current loop:	12...40 VDC
Load:	R = (U_B-12 V) / 21 mA
Reverse voltage protection:	Yes (no function, no damage)

● Applications

The measuring amplifier adapts the sensor signal for an evaluation unit. The output of the measuring amplifier is a standard signal, which can then be further processed, e. g. with a SPS. At the same time, the higher signal level reduces interference.

Photo: Rainer Sturm @ pixelio.de

● *Technical Data (Continued)*

Environmental Conditions

Operation temperature:	-20...+80 °C
Storage temperature:	-20...+85 °C

Mechanics

Casing:	Material:	PBT GF30
	Color:	Black (other colors on request)
	Flammability:	UL94 HB
	Dimensions:	72x28x32 mm (without electrical connection)
Electrical connection:	Towards sensor:	M12x1 female, 5-pole, with adapter / Cable, 2 m
	Towards evaluation:	Several plugs, cable
Fitting position:	Any	
Equipment proection:	Protection class:	At least IP65 (electronics)
	PCB:	Completely potted
Weight:	60 g	
Dimensions:	Approx. 104x28x32 mm (outlet M12x1 on both sides)	

Configurable features

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Measuring amplifier:	Nominal measuring range start (LRL) / Nominal measuring range end (URL) / Measuring range start (LRV) / Measuring range end (URV) / Filter function / Adjustment output current / Simulation output current / HART address / Linear output signal / 2-point calibration / 10-point calibration (linearization)

● *Dimensions (in mm)*

top view	side view	frontal view
104 / 72 / 35		24 / 28
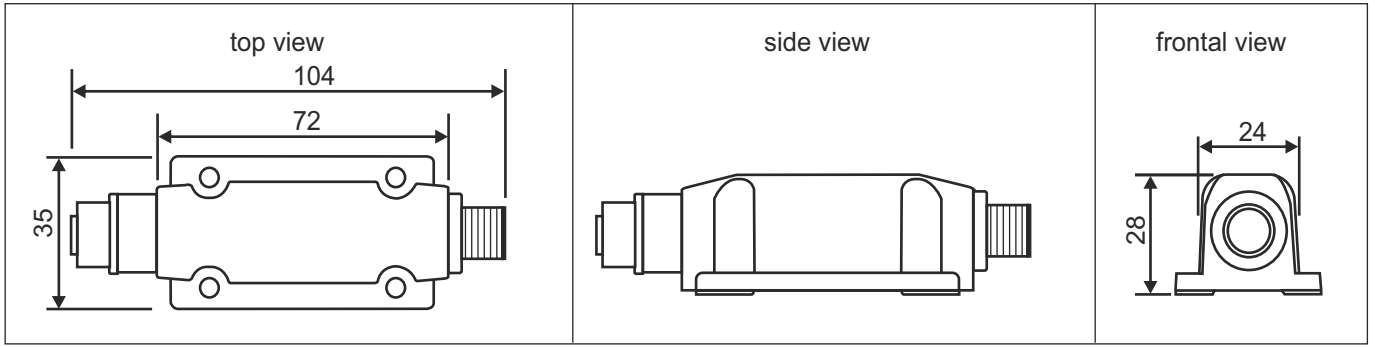
● *Mounting Dimensions (in mm)*

Ø4,6 / 26 / 45,5
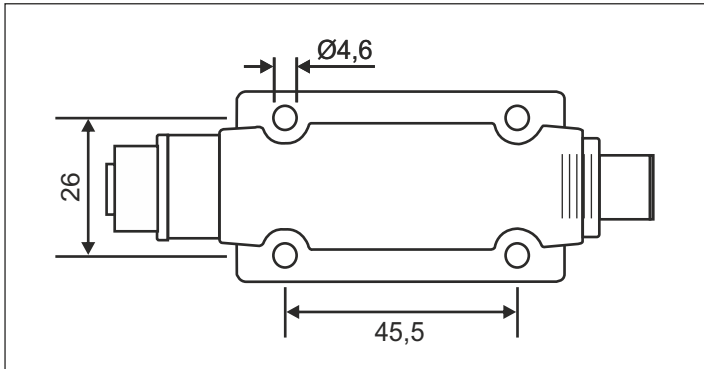
● *Electrical Connection towards Sensor*

M12x1 (socket)	Cable
5-pole	5-pole
Supply+ = 1	Supply+ = bn
Supply- = 3	Supply- = bu
Signal out+ = 2	Signal out+ = wh
Signal out- = 4	Signal out- = bk
Shield* = 5	Shield* = gy

● *Electrical Connection towards Evaluation*

M12x1 4-pole	M12x1 5-pole	M12x1 8-pole	Super Seal 3-pole	Deutsch DT04 3-pole
U+ = 1	U+ = 1	U+ = 1	U+ = 1	U+ = A
U- = 3	U- = 3	U- = 3	U- = 3	U- = B
Shield* = 4	Shield* = 4	Shield* = 4	Shield* = 2	Shield* = C

Deutsch DT04 4-pole	Bayonet (DIN) 4-pole	Valve 4-pole	MIL 6-pole	Cable outlet n-pole
U+ = 1	U+ = 1	U+ = 1	U+ = A	U+ = ye
U- = 3	U- = 2	U- = 2	U- = C	U- = wh
Shield* = 4	Shield* = 4	Shield* = ⏚	Shield* = D	Shield* = gy

Notes for Electrical Connection:
The information listed on this page can sometimes deviate from the actual values of the device. Please observe product label data! The product label always lists the most up-to-date information concerning the specific device.

* Shielding is only provided on request.

● Order Code

Input:	1x strain gauge bridge	0
Output:	4...20 mA HART	2
Casing:	U-CASE5	5
Supply:	12...40 VDC	2
Electr. connection: (towards sensor)	M12x1, 5-pole, female (standard)	1
	Cable, 2 m	9
Electrical connection: (towards evaluation)	M12x1, 4-pole	1
	M12x1, 5-pole	2
	M12x1, 8-pole	3
	Deutsch DT04, 3-pole	4
	Deutsch DT04, 4-pole	5
	Super Seal 1.5, 3-pole	6
	Bayonet (DIN), 4-pole	7
	Valve plug, 4-pole	8
	Cable, 2 m	9
	MIL, 6-pole	A
Configuration:	Factory setting[1]	1
Special model:	No	0
	Yes (please specify)	1

1) Configuration: Settings are made as per order

● HART Communication and Configuration

The HART-Tool is a graphical user interface for the MI series with a menu-driven program for configuration. It can be used for start-up, configuration, signal analysis, data backup and device documentation. Connection via HART / PC-USB interface or handheld HART-communicator; for operating systems: Windows 2000, Windows XP, Windows 7, 8.1 and 10.

Possible settings are:
- Adjustment of output current
- Limits of nominal measuring range (URL, LRL)
- Limits of measuring range (LRV, URV)
- 10-point calibration (linearization)
- Simulation of output current
- Linear output signal
- 2-point calibration
- Filter function
- HART address

Please note: When using communication via a HART modem, a communication resistance of 250 Ω has to be taken into account.