

Calibration and Testing



Features

System	Measurement chain
Sources	Strain gauge bridges Current signals Voltage signals Thermocouples Pt100 resistors Frequency




Applications

- Industrial measurement and control technology
- Test bench measurement
- Mobile measurement

Functions and Benefits

The devices serve for highly accurate simulation of strain gauge bridges to check strain gauge amplifiers. The Test Simulator offers in addition physically correct simulation of potentiometers, thermocouples, Pt100 resistors, as well as current and voltage sensors, and speed indicators.

Device Overview

Device	Output							Page
	Strain gauge	Voltage	Current	Potentiometer	Thermocouples	Pt100	Frequency	
Sensor								
GHM SensorSimulator SIM-1	●	●	●		●	●	○	3
								
Stain Gauge Calibrator, manual operation	●							5
								
Stain Gauge Calibrator, IEEE 488 operation	●							6
								

- standard
- alternative

Mistakes reserved, technical specifications subject to change without notice.

Product information

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GHM SensorSimulator SIM-1



Characteristics

The GHM SensorSimulator outputs various voltage and current signals.

The GHM SensorSimulator can also simulate sensors such as Pt100, thermocouples and strain gage sensors optimally through the additional back-up measurement of the supply voltages and currents of the connected measuring amplifiers. Optionally a frequency output is available.

It can be used to calibrate and verify displays, transducers or complete measurement chains.

In addition, voltages and currents can be measured with the device.

Technical Data

General	
Accuracy	See Simulation and Measure
Connection	7-pol. Binder socket for Signal In- and Output Micro-USB for Supply voltage and charging
Display	Graphic-LCD, monochrome, (180 x 128 Pixel) adjustable backlighting
Operation	Keypad
Languages	German, English
Dimensions	160 x 86 x 37 mm (H x W x D)
Weight	250g (incl. Accu)
Supply voltage	5 V DC (Micro-USB)
Accu	Lithium-Ion
Ambient temperature	0..+50 °C

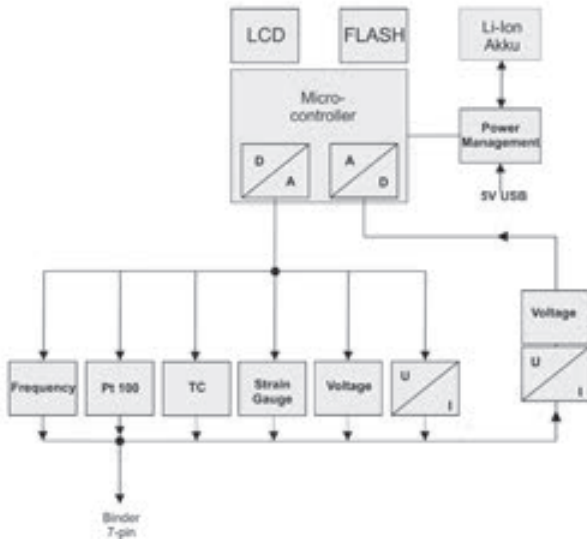
Simulation		
Voltage	Simulation Range	± 10 V
	Accuracy	± 1 %
Signal Current	Simulation Range	± 25 mA
	Accuracy	± 1 %
Strain Gage	Simulation Range	0, 0.5, 1, 2, 4, 5, 10, 25, 50 mV/V
	Accuracy	± 1 %
	Supply	2,5 V, 5 V, 10 V
Thermo-couple, Type K (Others opt.)	Simulation Range	-100..+1000 °C (-100 .. 100 °C: 10°C steps 100 .. 500 °C: 25°C steps 500 .. 1000 °C: 50°C steps)
	Accuracy	simulated compensation: ± 1%; internal temperature measurement: ± 3 K
Thermo-couple, Type J (Others opt.)	Simulation Range	-100..+1000 °C (-100 .. 100 °C: 10°C steps 100 .. 500 °C: 25°C steps 500 .. 1000 °C: 50°C steps)
	Accuracy	simulated compensation: ± 1%; internal temperature measurement: ± 3 K
Thermo-couple, Type N (Others opt.)	Simulation Range	-100..+1250 °C (-100 .. 100 °C: 10°C steps 100 .. 500 °C: 25°C steps 500 .. 1250 °C: 50°C steps)
	Accuracy	simulated compensation: ± 1%; internal temperature measurement: ± 3 K
Thermo-couple, Type S (Others opt.)	Simulation Range	-50..+1600 °C (-50 .. 100 °C: 10°C steps 100 .. 500 °C: 25°C steps 500 .. 1600 °C: 50°C steps)
	Accuracy	simulated compensation: ± 1%; internal temperature measurement: ± 3 K
Pt100	Simulation Range	-100..+850 °C (-100 .. 100 °C: 10°C steps 100 .. 500 °C: 25°C steps 500 .. 850 °C: 50°C steps)
	Accuracy	± 1 %
Frequency (Option F)	Simulation Range	1 Hz .. 500 kHz (Steps: 1 .. 10 Hz: 1 Hz 10 .. 100 Hz: 10 Hz 100 Hz .. 1 kHz: 100 Hz 1 .. 10 kHz: 1 kHz 10 .. 100 kHz: 10 kHz 100 .. 500 kHz: 100 kHz)
		Level (adjustable)
	Accuracy	± 1 %

Measuring		
Voltage	Simulation Range	± 1 %
	Accuracy	± 0,5 %
Current	Measuring Range	± 30 mA
	Accuracy	± 0,5 %

Product information

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Block Diagram



Delivery Content

- GHM SensorSimulator with protective silicon cover
- Accu, Charger
- Connection cable
- User Manual

Ordering Code

SIM-SenSim-1 1.

1. Option	Order number
No Option	201164
F Frequency output	201366

Accessoires

Name	Description	Order number
SIM-SenSim-KAB	Adapter cable for SIM-SenSim-1 7-pol. Binder on 7-pol. Wago-clamp (Supplied with the unit)	201367
SIM-SenSim-KAB-BNC	Adapter cable for SIM-SenSim-1 - 7-pol. Binder on BNC connector Suitable for simulation of voltage, current, frequency and measurement of voltage, current	201377
SIM-SenSim-BAN-BOX	BreakOutBox with 7 banana jacks for connection to SIM-SenSim-KAB adapter cable	201368
SIM-SenSim-Case	Case for GHM-SenSim-1 and accessories (340 x 275 x 83 mm)	201378
SIM-SenSim-ST-BB7	7 pin Binder connector Suitable for SIM-SenSim for the self-assembly of connecting cables	200448

DMS Manual Calibrator



Picture with 2 bridge resistances

Characteristics

The **manual strain gauge calibrator** is used for simulation of strain gauge sensors with bridge resistances of 120 W, 350 W or 1000 W. Other bridge resistances or the combination of up to 2 bridges in one housing are available on request. The device is used wherever strain gauge amplifiers need to be tested or calibrated. The sensitivity setting is done by parallel connection of resistances to a shunt arm. For switching of polarity the shunt circuit is reversed.

Sensitivity settings and switching of polarity are done manually with high-precision switches.

Technical Data

Sensitivity settings	0; 0.25; 0.5; 1; 2; 4; 5; 8; 10; 25; 50 mV/V
Bridge resistances	120, 350, 1000 Ω
Terminal(s)	7-pole Lemo jack series 2B (others on request) optional 7 Banana jacks
Accuracy DC	± 0,02 % (for setting ≥ 2 mV/V)
for carrier frequency 5 kHz	± 0.5 %
Stability	± 0,02 % (for setting ≥ 2 mV/V)
Environmental temperature	0..50 °C

Dimensions

118 x 64 x 170mm (B x H x T)

Ordering Code

SIM-DMS - - - - -

1. Hand-operated simulator	
120	Bridge resistance 120 Ω
350	Bridge resistance 350 Ω
1000	Bridge resistance 1000 Ω
120 / 350	Housing with 2 bridge resistances 120 / 350 Ω
120 / 1000	Housing with 2 bridge resistances 120 / 1000 Ω
350 / 1000	Housing with 2 bridge resistances 350 / 1000 Ω
2. Option	
FK1	Frequency inspection up to 5 kHz for 1 bridge resistance
FK2	Frequency inspection up to 5 kHz for 2 bridge resistances
3. Terminal	
-	7-pole Lemo socket (standard)
BAN	optional plus 7 banana sockets (only for 1 bridge resistance)
4. Accessories	
LS7	Plug for 7-pole Lemo socket, price per plug

Example: SIM-DMS-120/350R-LS7

Product information

Calibration and Testing

DMS IEEE 488 Calibrator



Characteristics

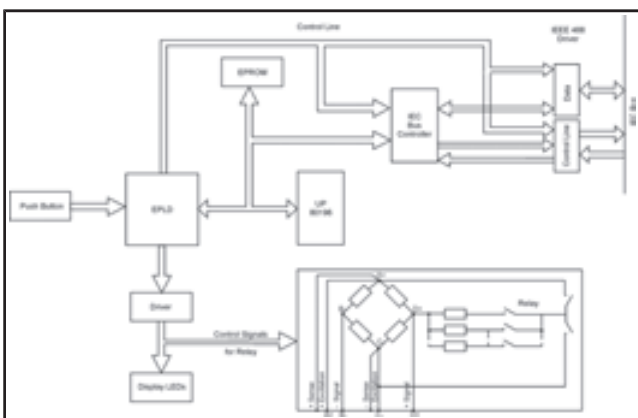
The **IEEE 488 strain gauge calibrator** is used for simulation of strain gauge sensors with bridge resistances of 120 W, 350 W or 1000 W. Other bridge resistances or the combination of up to 2 bridges in one housing are available on request. The device is used wherever strain gauge amplifiers need to be tested or calibrated. The sensitivity setting is done by parallel connection of resistances to a shunt arm. For switching of polarity the shunt circuit is reversed.

The feed-forward control by a computer is done via the IEEE 488 interface. For that the address can be configured with a DIP switch on the back side. Functions like ZERO, sensitivity, and switching of polarity can be also manually set with keys. LED strips display the sensitivity in mV/V, other LEDs display polarity setting and selected bridge resistance.

Technical Data

Sensitivity settings	0; 0.1; 0.2; 0.3; 0.4; 0.5; 0.6; 0.8; 1; 1.5; 2; 3; 4; 5; 10; 20; 30; 40; 50; 100; 250 mV/V
Bridge resistances	120, 350, 1000 Ω
Terminal(s)	7-pole Lemo jack series 2B, optional 7 Banana jacks
Accuracy DC	± 0,02 % (for setting ≥2 mV/V)
for carrier frequency 5 kHz	± 0.5 %
Stability	± 0,02 % (for setting ≥2 mV/V)
Environmental temperature	0..50 °C

Block Diagram



Dimensions

480 x 40 (80) x 290 mm (B x H x T)

Ordering Code

SIM-DMS-IEEE - / R - -

1. IEEE simulator	
120	Bridge resistance 120 Ω
350	Bridge resistance 350 Ω
1000	Bridge resistance 1000 Ω
120 / 350	Housing with 2 bridge resistances 120 / 350 Ω
120 / 1000	Housing with 2 bridge resistances 120 / 1000 Ω
350 / 1000	Housing with 2 bridge resistances 350 / 1000 Ω
2. Option	
FK1	Frequency inspection up to 5 kHz for 1 bridge resistance
FK2	Frequency inspection up to 5 kHz for 2 bridge resistances
3. Terminal Accessories	
-	7-pole Lemo socket, 7 banana sockets (Standard)
LS7	Plug for 7-pole Lemo socket, price per plug

Example: SIM-DMS-IEEE-350-R

Product information

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Product Overview

„Industrial Sensors and Instrumentation“

Temperature
 Flow
 Level / Filling Height
 Analysis
 Humidity
 Pressure
 Weighing Instruments



„Process Instrumentation “Hygienic Design“

GHMadapt
 Temperature
 Flow
 Level / Filling Height
 Analysis



“Laboratory Instrumentation“



„Industrial Electronics“

Displays / Controller
 Transmitter / Signal conditioning
 Isolating converters
 Safety and Monitoring Devices
 Power Electronics
 Calibration and Testing



“Measuring Data Acquisition“

Data Logging and Monitoring
 Test Bench Measurement Technology
 Renewable Energies

