

Calibration and Testing



Features

- System** Measurement chain
- Sources** Strain gauge bridges
- Current signals
- Voltage signals
- Potentiometer
- Thermocouples
- Pt100 resistors
- Frequency
- Speed indicators, pulses




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	Speed indicator	
Strain Gauge Calibrator, manual operation	●							3
								
Strain Gauge Calibrator, IEEE 488 operation	●							4
								
Test Simulator	●	●	●	●	●	●	●	5
								

Mistakes reserved, technical specifications subject to change without notice.

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 Ω, 350 Ω or 1000 Ω. 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	± 0,02 % (for setting ≥ 2 mV/V)
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 compensation for 1 bridge resistance
FK2	Frequency compensation 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

DMS IEEE 488 Calibrator



Characteristics

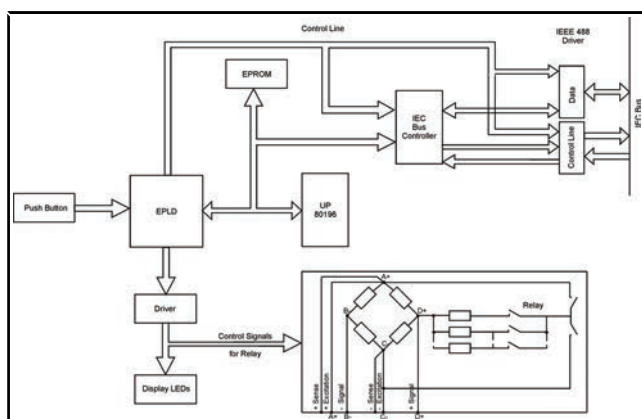
The **IEEE 488 strain gauge calibrator** is used for simulation of strain gauge sensors with bridge resistances of 120 Ω, 350 Ω or 1000 Ω. Other bridge resistances or the combination of up to 2 bridges in one housing are available on request. The device is used wherever strain gauge amplifiers need to 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	± 0,02 % (for setting ≥ 2 mV/V)
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 - - - -

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 compensation for 1 bridge resistance
FK2	Frequency compensation 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

Test Simulator



Thermo-couples J,K	Ranges	-50, 0, +50, +150, +200 °C, watch CJC
	Accuracy	± 0.2 % measurement range
Pt100	Temperature Ranges	-50, 0, +50, +100, +150, +200 °C
	Resistance	80.31/ 100/ 119.4/ 138.5/ 157.3/ 175.8 Ω
	Accuracy	± 0.2 % measurement range
Frequency (Speed)	Output	4-wire, constant current supply
	Ranges	0.5, 2, 10, 50, 200, 1000 Hz 5, 10, 15*, 20, 62*, 100, 138* kHz
	Type	TTL square, PWM 1:1
Voltage measurement (Option DVM)	Accuracy	± 0.02 % m.range, * 0.1 %
	Range	± 10 V
Voltage measurement (Option DVM)	Accuracy	± 0.02 % m.range (auto adjust)
	Range	± 10 V

Characteristics

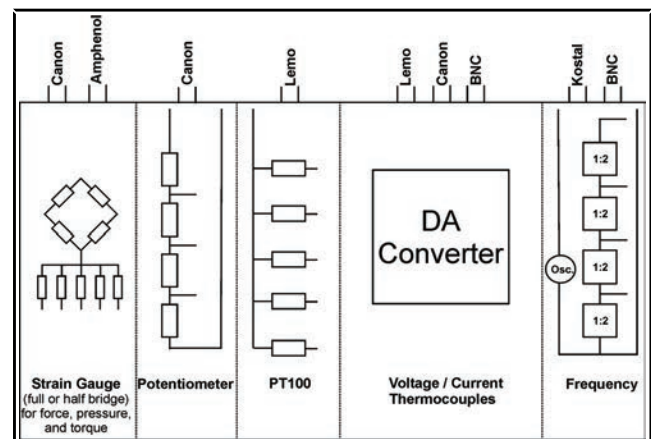
The **Test Simulator** is used for quick testing and checking of measuring devices like strain gauge and thermocouple amplifiers, tachometer generators and others. Rechargeable battery operation and mains operation allow mobile and flexible use. Handling of the device is done by the user via a membrane keyboard, settings are displayed by a 2x16 digit LCD.

Physical quantities like pressure, force, or torque can be entered directly by the user, allowing simultaneous correlation of the measuring device readings. The microprocessor of the test simulator converts for example the continuous sensitivity changes of a strain gauge bridge into the resulting force in Newton.

Technical Data

General	Supply voltage	15 V (400 mA) with AC adapter
	Environmental temperature	0..50 °C
Strain gauge, force, torque, pressure	Sensitivity	0.25, 0.5, 1, 2, 4, 20, 40 mV/V
	Accuracy	± 0.1 % FS for values ≥1 mV/V
	Bridge type	Full bridge, half bridge 350 Ω
	Output	6-wire technology (Lemo jack)
Voltage	Fixed selectable ranges	100 mV, 200 mV, 500 mV, 1 V, 2 V, 5 V, 10 V
	Numerical entry via keyboard	± 10 V, variable
	Accuracy	± 0.05 % m.range (auto adjust)
	Temp. drift	0.2 mV/°C (auto adjust)
Signal current	Fixed selectable ranges	0, 4, 10, 20, 40 mA
	Numerical entry via keyboard	0..50 mA, variable (U _{max} 10 V)
	Accuracy	± 0.03 % m.range (auto adjust)
Potentiometer	Ranges	0, 20, 40, 60, 80, 100 %
	Resistance	5 kΩ
	Accuracy	± 0.1 % measurement range
	Output	5-wire technology (Lemo jack)

Block Diagram



Dimensions

255 x 65 x 190mm (B x H x T)

Ordering Code

SIM-TN - 1.

1. Option Test simulator	
DVM	Measuring voltage ± 10 V with digital display

Example: SIM-TN-DVM

Product Information

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

