Martens Elektronik GmbH
Kiebitzhörn 18 • D-22885 Barsbüttel / Germany • www.martens-elektronik.de
☎ +49-(0)40-670 73-0 • Fax +49-(0)40-670 73-288 • ✉ info@martens-elektronik.de

Strain-Bridge Converter DMS 1000

Weight - Force - Pressure - Torque with DMS Strain-Bridges

Features

- 1- or 2 way action, e.g. force or force/traction programmable
- Teach-in function
- Front side LCD-Display with backlighting
- Programming via front keypad
- Tare-function (internal / external) and simulation mode
- Integrated bridge-supply 2.5 V/5 V/10 V
- Resolution 16 Bit
- Accuracy <0.05 % ±2 digit
- Analog output 0/4 ... 20 mA; 0 ... 10V DC
- 1 Alarm output, relay SPDT
- Wall- and DIN-rail TS35 mounting

General

The DMS1000 converts small signal output of any common strain bridges (load cells) into a standard signal 0/4...20 mA, 0...10 V DC. Bridge supply and an input for tare fade-out is included. If an application needs more than one load cell they must be parallel connected. If the max bridge current would be more than 50 mA, it is necessary to connect a strain bridge booster SBB1616 between load cells and DMS1000.

Short information

Programming	The device will be programmed via front-side membrane keypad in connection with integrated LCD-Display.
Teach-in function	When operating with two reference weights, the DMS1000 can calculate the bridge-sensitivity of an installed load cell, respectively the arithmetic average value of the sensitivity, if several load cells are installed.
Tare-function	The displayed value can be set to “ 0 " by keypads or external control signal.
Alarm output	Switching performance for the alarm output is programmable as minimum or maximum function. The status of the output will be displayed.
Analog output	DMS1000 offers an analog output signal 0/4 ... 20 mA or 0 ... 10 V DC proportional to the mechanical load within the programmed measuring range.
Sense input	The sense input is used to compensate the line resistance between DMS strain-bridge (load cell) and DMS1000.

Technical data

Power supply

Supply voltage	:	230 V AC ±10 %; 115 V AC ±10 %; 24 V AC ±10 % or 24 V DC ±15 %
Power consumption	:	max. 3.5 VA
Working temperature	:	-10 ... +55 °C (14 ... 131 °F)
Rated voltage	:	250 V~ acc. to DIN VDE 0110 between, input, analog output/relay output/ supply voltage, Degree of pollution 2, over-voltage category III
Test voltage	:	4kV=, between input, analog output/relay output/supply voltage
CE - conformity	:	EN55022, EN60555, IEC61000-4-3/4/5/11/13

Input

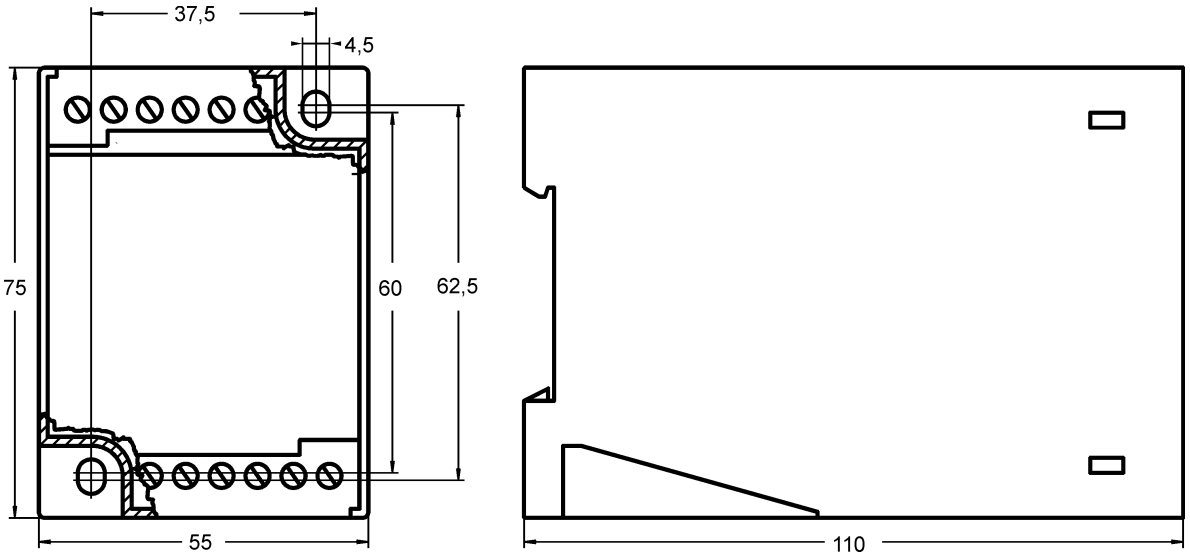
Bridge supply	:	2.5/5/10 V DC ; programmable; max. 50 mA
Bridge sensitivity	:	0.4/0.2/0.1 ... 5.00 mV/V
Sense connection	:	Line resistance about max. 10 Ω is compensated
Accuracy	:	< 0.05 % ±2 Digit
Temperature coefficient	:	0.005 %/K
Display	:	LCD Dot-Matrix 2 lines 8 characters each, character height 5 mm, backlighting
Display range	:	±9999(0) digit with leading zero suppression

Output

Relay	:	SPDT <250 V AC <250 VA <5 A, <300 V DC <50 W <2 A
Analog output	:	0/4 ... 20 mA burden ≤500 Ω or 0 ... 10 V load max 5 mA, programmable (not isolated to the measuring input)
-Accuracy	:	0.1 %; TK 0.01 %/K

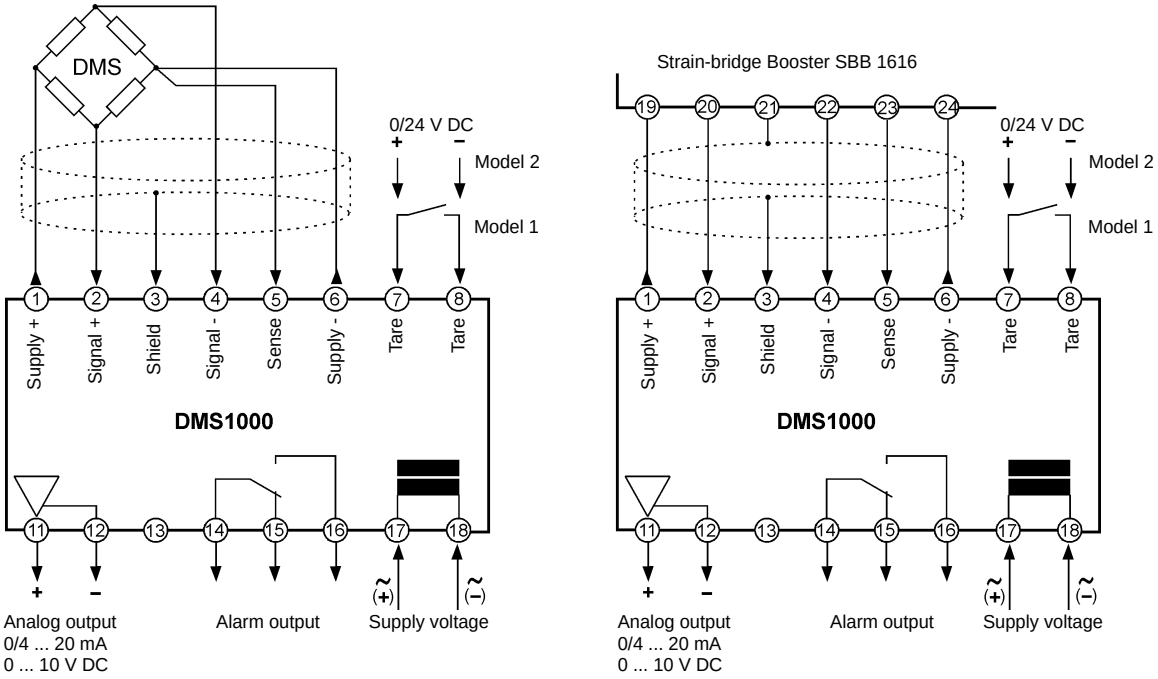
Case	:	Standard case Polycarbonate 8020 UL 94V-1, DIN-rail TS35 mounting, or wall mounting
Dimensions	:	55x75 mm(WxH) mounting depth 110 mm
Weight	:	max. 390 g
Connection	:	Screw terminals, max. 4 mm²
Protection	:	Case IP40, terminals IP20, finger safe acc. to German BGV A3

Abmessungen

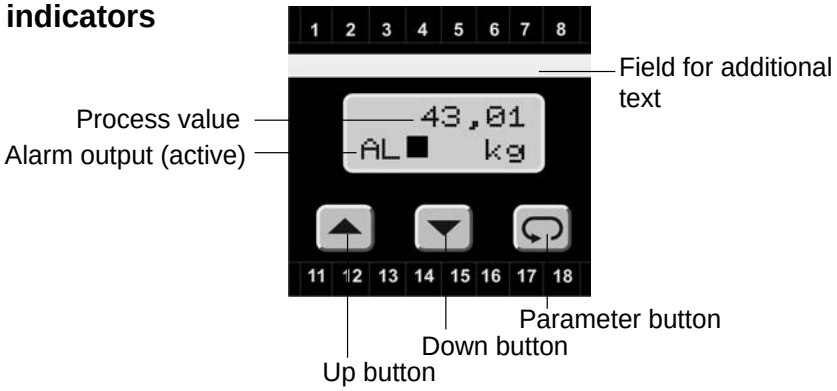


Wall-mounting with 2 screws M4 acc. to DIN46121 / DIN 43660
or DIN-rail mounting TS35 acc. to DIN 46277 and DIN EN 50022

Connection diagrams



Controls and indicators



Description

Operation of the device is arranged in 2 levels. While programming, pressing button saves the current parameter and moves to the next programming step. For selection within a parameter or for entering data, use buttons and .

Button combinations:

+ one parameter back.

+ setting parameter to zero or minimum value.

After powering up, the device initializes itself. The display shows the message DMS1000 and software version. After the initialization the device is located in the **Working level**. The set point of the alarm output can be adjusted and min- and max. values can be called.
Pressing the button for more than 2 seconds, activates the **Configuration level**. Now all the parameters which defines the function of the converter can be programmed.
After finishing the configuration or when no button was pushed for more than 2 minutes, the program returns to the working level and the display shows the process value. Leaving the configuration level is possible at any time by pushing the button for 2 seconds.

Error messages:

Display flashes	If the input signal leaves the programmed range.
P-ERROR	Factory calibration is necessary
P-lock	Programming lock. See configuration page 7, parameter 23

Installation note!
Before the device can be used, it must be configured for the intended use.

⇒ see page 5

Notes to representation

Parameter is only displayed if configured

Parameter is only displayed if included (see order code)

Note: All parameters can be called if they are not blocked by other programmed parameters and if they are available. Factory settings are shown in the **display graphic**.

Working level

Button	Display	Description
	450 AL■ kg	Process-value Indication of alarm output (only if activated). □ = OFF and ■ = ON
	558 max kg	Display max. value Reset with button ▲ , or at every power off.
	-1 min kg	Display min. value Reset with button ▲ , or at every power off.
	1 Tare kg	Tare-function Pressing button ▲ for more than 3 s , the display will be reset to " 0 ".
	DsplConv X1.00	Display conversion, **option 11** Setting possible from x0,10 ... x10,00 with buttons ▲ und ▼.
	Alarmp. 10	Setpoint alarm output Setting possible in the programmed measuring range with buttons ▲ und ▼.

Configuration

Button	Display	**Description** (displayed values are factory settings)
press 2s		**Configuration level**
	1 ■ deutsch □ english	Language of the operating instructions Selection with buttons ▲ and ▼.
	2 D.-Filt. ▲▼ 0.1s	Digital filter. Averaging of the measured values over the programmed time [s]. OFF, 0.1, 1.5, 10, 20, 40s Selection with buttons ▲ and ▼.
	3 UnitDis ▼ kg	Display unit kg, t, N, kN, bar Selection with buttons ▲ and ▼.
	4 Fixed ■AUS □AN	Fixed zero 0, e.g. 2500+0. Selection with buttons ▲ and ▼.
	5 DecPoint ▼ 0000	Decimal point position 0000; 000,0; 00,00; 0,000 Selection with buttons ▲ and ▼.
	6 UnitCell ▼ kg	Measuring unit of the strain bridge (load cell) kg, t, N, kN, bar Selection with button ▲ and ▼.
	7 Nom. kg 1000	Nominal load of the strain bridge (load cell) Setting possible from 1 ... 9999 Digit with buttons ▲ and ▼. If the load is distributed to several identic cells, the summation of the nominal load has to be entered.
	8 Supply ▼Ub=2.5V	Bridge supply 2.5V, 5V , 10V DC Selection with buttons ▲ and ▼.
continue page 6		

Button	Display	**Description** (displayed values are factory settings)
↓	9 TeachIn? ■OFF □ON	Teach-in function. Adjustment of the strain-bridge with reference weights to determine the bridge-sensitivity [mV/V]. Selection with buttons ▲ and ▼.
↓	10 m1 kg 0	1. calibration point Setting possible in range of the programmed nominal load with buttons ▲ and ▼. This parameter will not be left automatically after 120 seconds.
↓	11 m2 kg 180	2. calibration point The difference to the 1.calibration point must be at least 10% of the programmed nominal load. Setting possible with buttons ▲ and ▼. This parameter will not be left automatically after 120 seconds.
↓	12 DMS mV/V 2.000	Bridge-sensitivity [mV/V] Setting possible from 0.100 ... 5.000mV/V with buttons ▲ and ▼. If the load is distributed to several identic cells, the arithmetic average value of the bridge sensitivity has to be entered. Note: When the teach-in function is accomplished, the calculated value of the sensitivity will be displayed. If this value is out of range, an error message occurs and the value will not be stored.
↓	13 Direct ▼ 1-dir	Direction of action. 1-dir = 0 ... measuring range; or 2-dir = 0 ... ± measuring range. Selection with buttons ▲ and ▼.
↓	14 Output ▼ 0-20mA	Analog output 0 – 20, 4 – 20 mA or 0-10V Selection with buttons ▲ and ▼.
↓	15 MR Start 0kg	Start value for measuring range and analog output Setting possible from 0 (-9999) ... 9999 digit with buttons ▲ and ▼.
↓	16 MR End 1000kg	End value for measuring range and analog output Setting possible from -9999 ... 9999 digit with buttons ▲ and ▼. Note: If MR Start > MR End, the output works with a decreasing characteristic

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Button	Display	**Description** (displayed values are factory settings)
↓	17 Alarm ▼OFF	Switching performance alarm output OFF, MIN, MAX Selection with buttons ▲ and ▼.
↻		
↓	18 Setpoint 0	Setpoint alarm output Setting possible within the programmed measuring range with buttons ▲ and ▼.
↻		
↓	19 Hyst. 1	Hysteresis alarm output Setting possible within the programmed measuring range with buttons ▲ and ▼.
↻		
↓	20 Simul. 1850kg	Simulation of the load-cell The DMS1000 works as a simulator. The analog output changes within the programmed measuring range. Setting possible with the buttons ▲ and ▼. Please note: This parameter will not be left automatically after 120 seconds.
↻		
↓	21 Corr.AO 0.000mA	Correction start value analog output Setting possible ±2 mA or ±1 V with buttons ▲ and ▼.
↻		
↓	22 Corr.AO 20.000mA	Correction end value analog output Setting possible ±2 mA or ±1 V with buttons ▲ and ▼.
↻		
↓	23 P-Lock ▼ OFF	Parameter lock OFF : no lockout CONFIG : configuration level locked ALL : all parameters locked Selection with buttons ▲ and ▼.
↻		
↓	24 FactCode 0	Code for factory settings
↻		
	450 AL■ kg	Back to the working level

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Ordering code

	1.		2.		3.		4.		5.		6.
DMS1000 -		-		-		-		-		-	

1. Model

1	Input Strain-Bridge (DMS-load cell), integrated bridge-supply 2.5/5/10 V DC max. 50 mA, input for extern tare function with voltage free contact
2	as before, but extern tare function with 24 V DC signal intern isolated by opto-coupler

2. Alarm output

1R	1 Alarm output	Relay SPDT

3. Analog output

AO	Analog output	0/4 ... 20 mA or 0/2 ... 10 V DC not isolated to the measuring input

4. Supply voltage

0	230 V AC	± 10 %	50-60 Hz
1	115 V AC	± 10 %	50-60 Hz
4	24 V AC	± 10 %	50-60 Hz
5	24 V DC	± 15 %	

5. Option

00	Without option
11	Display conversion from x0,10 ... x10,00

6. Additional text (appears on the face plate in the field additional text, maximum 3mm x 50mm wxH)