

Strain-Bridge-Panelmeter DMS 9648

Weight - force - pressure - torque with DMS-strain gauges

Features

- LED-Display 14.2mm red
- Display range $\pm 9999(0)$ digit
- Indicating range and decimal point free programmable
- Tara-function
- Integrated bridge supply 5/10V DC
- 1- or 2 way action, e.g. force or force / traction programmable
- Max. 8 Parameter sets programmable
- Max. 4 outputs SPDT relay or transistor
- Isolated analog output
0/4 ... 20mA or 0/2 ... 10V DC
- Front protection IP65



DIN 96x48mm

General

The Strain-Bridge-Panelmeter DMS9648 has been designed for measuring forces pressure and torques with DMS-bridges (strain-gauges). The device offers a programmable bridge-supply 5/10V DC; max. 50mA output current. Measuring errors by line resistance can be compensated by using a sense line. Indicating range and decimal point are free programmable in range ± 9999 digit (standard) and ± 99990 (dummy zero selected).

Short information

Programming	Parameters are programmed via front-side membrane keypad.
Alarm outputs	Switching performance for the alarm outputs is programmable as minimum or maximum function.
Digital filter	With activated digital filter last 16 measured values will be averaged continuously and the result shown in the display
Analog output	Proportional to the input signal an isolated analog output signal 0 ... 20mA / 0 ... 10V DC or 4 ... 20mA / 2 ... 10V DC can be generated. Output changed automatically from current signal to voltage signal, depending on burden.

Technical data

Power supply

Supply voltage	: 230V AC $\pm 10\%$; 115V AC $\pm 10\%$, 24V AC $\pm 10\%$ or 24 VDC $\pm 15\%$
Power consumption	: max. 3.5VA, with analog output 5VA
Operating temperature	: -10 ... +55°C
Rated voltage	: 250V~ acc. VDE 0110 between input / output / supply voltage Degree of pollution 2, over-voltage category III
Test voltage	: 4kV-, between input / output / supply voltage
CE - conformity	: EN55022, EN60555, IEC1000-4-3/4/5/11/13

Input

Bridge supply	: 5V DC or 10V DC ; programmable; max. 50mA
Bridge resistance	: at 5V min. 100 Ω ; at 10V min. 200 Ω
Bridge sensitivity	: 0.900 ... 6.600mV / V programmable
Sense connection	: Line resistance of max. 10 Ω can be compensated
Accuracy	: < 0.1% ± 2 Digit
Temperature coefficient	: 0.005%/K

Display

Display	: LED red, 14.2mm
Display range	: $\pm 9999(0)$ digit , leading zero suppression.
Parameter display	: LED 2-digit red, 7mm (parameter - and output indicator)

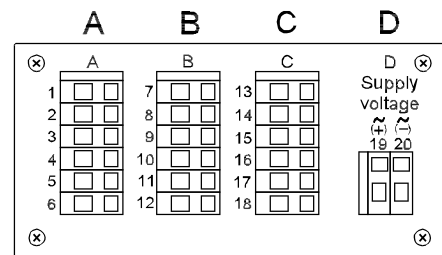
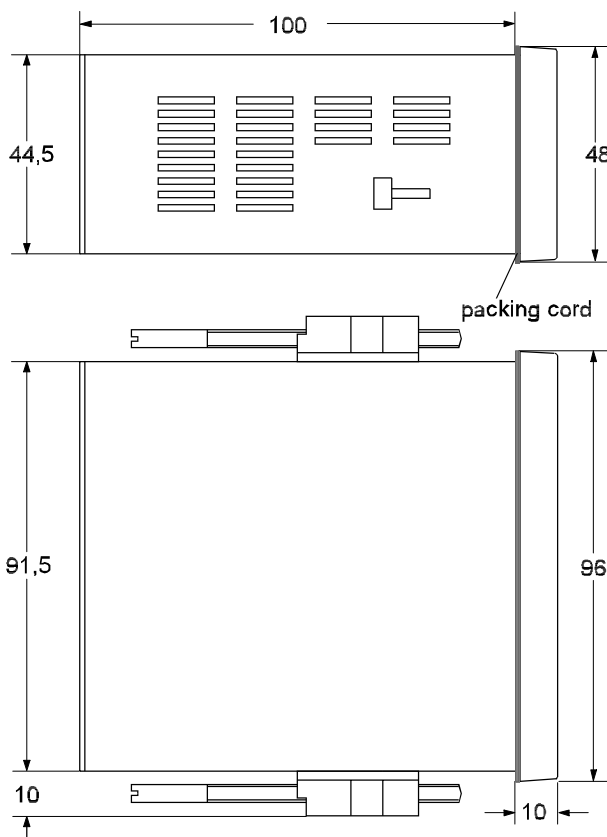
Output

Relay	: SPDT <250V AC<250VA<2A, <300V DC<50W<2A
Transistor	: max. 35V AC/DC / 100mA, short circuit protected
Analog output	: 0/4 ... 20mA burden $\leq 500\Omega$; 0/2 ... 10V burden $>500\Omega$, isolated Automatic output changing (burden dependent)
-Accuracy	: 0.1%; TK 0,01% / K

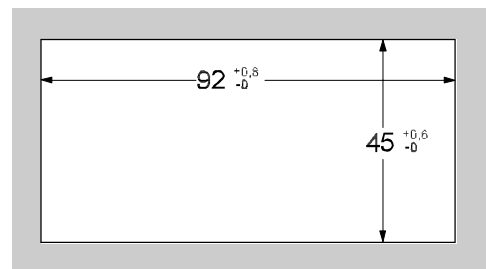
Panel case

Dimensions	: DIN 96x48mm, material PA6-GF; UL94V-0
Weight	: max. 390g
Electrical connection	: Clamp terminals, 2mm ² single wire, 1mm ² flexible wire, AWG14
Protection	: Front IP65, terminals IP20, fingersafe acc. to German BGV A2 (old VBG4)

Dimensions



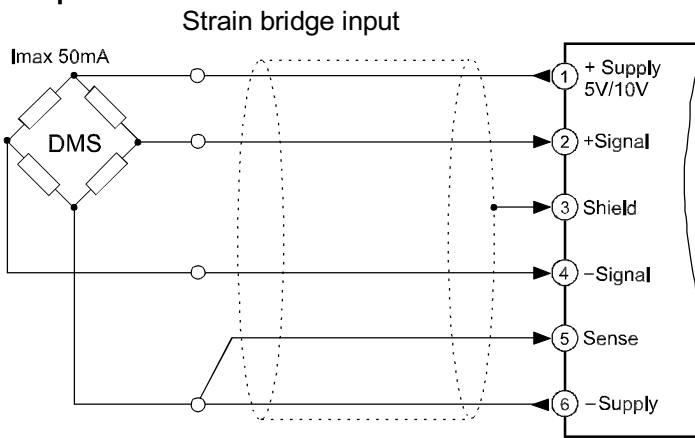
Position terminal strips



Panel cut-out
acc. to DIN 43700-96x48mm

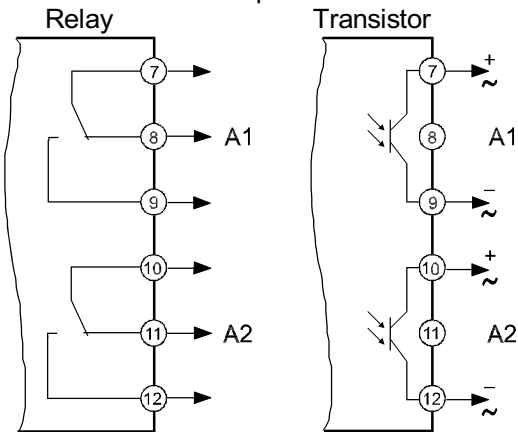
Connection diagrams

Terminal strip A



Terminal strip B (varies with version)

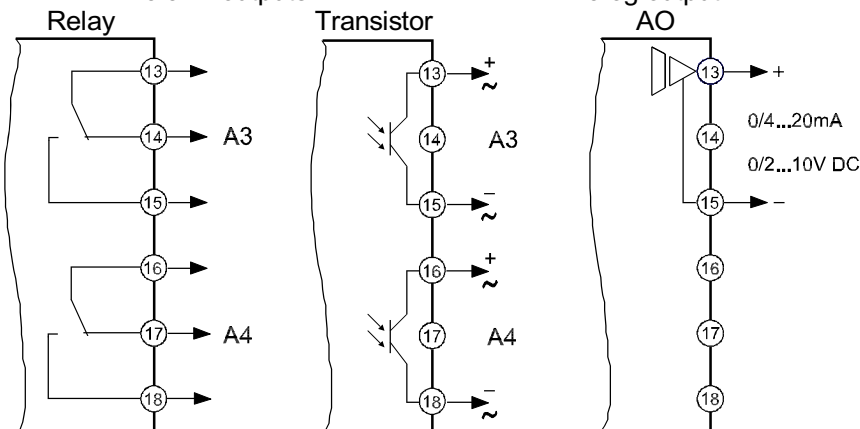
2 alarm outputs



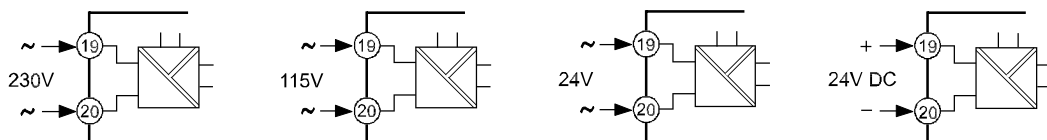
Terminal strip C (varies with version)

2 alarm outputs

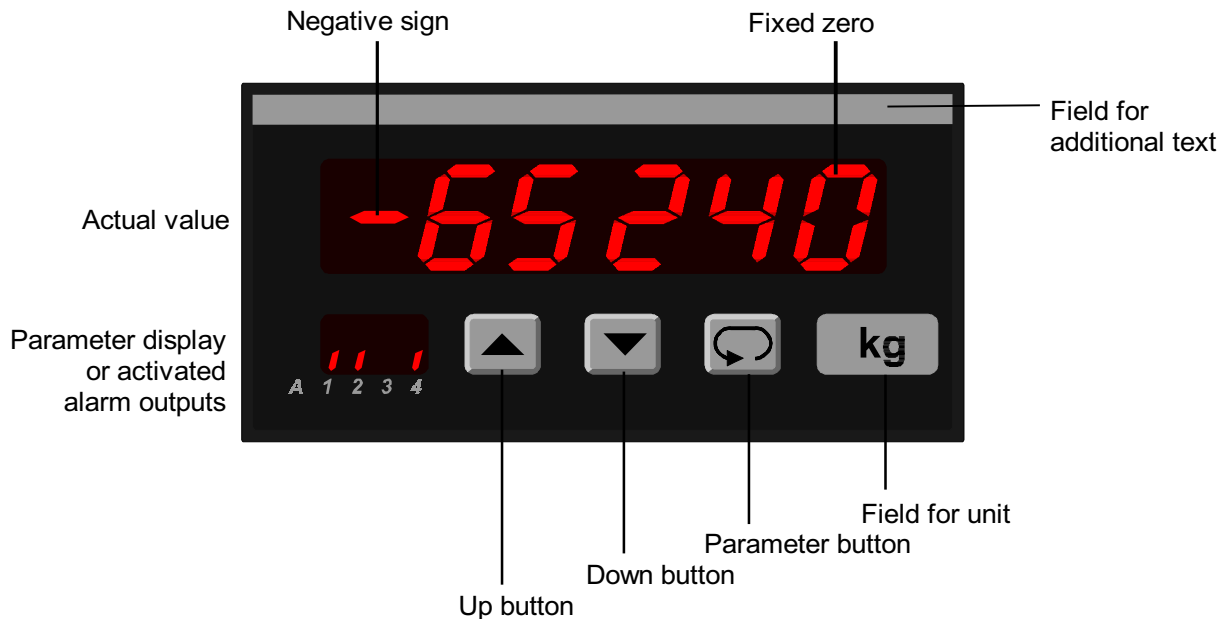
Analog output



Terminal strip D supply voltage (varies with version)




Controls and indicators




Description

Operating of the device is arranged in 2 levels. The requested parameter can be called by  button. Selection within a parameters or entering data, use buttons  and . Parameters are stored zero-voltage safe in the EEPROM.


After switching on the supply voltage, the device initializes itself. The display shows the message *init.* After the initializing procedure the device is working in the **Working level**. Set points of the alarm outputs can be preselected if available.

Activating the  button for more than 2 seconds, the program is jumping into the **Configuration level**. Now all the parameters defining the function of the panelmeter can be programmed. This may be the switching performance of the alarm outputs and the analog output.

After finishing the configuration or when longer than 2 minutes no button was pushed, the program jumps back to the working level. Leaving the configuration level is possible at any time when pushing the button  for 2 seconds.

Error codes:

Display If the measured signal is more than 3% outside of the programmed range the A/D- converter is over driven and the display flashes with appr. 1Hz.

Error! EEPROM test. Reading this message, a program error has been occurred. When pushing the button  a copy of the EEPROM will be reloaded and the device will work with the factory settings. If this copy does not work, please ship the panelmeter to factory for repair service.


Loc Program lockout. See configuration page 7.


Start-up note:

Before the device can be used, it must be configured for the intended use

⇒ see page 6


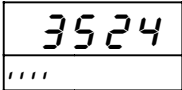



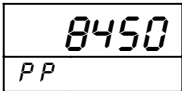



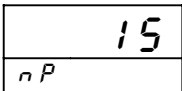



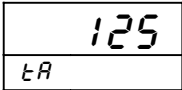


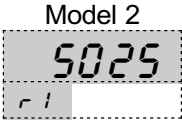



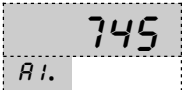



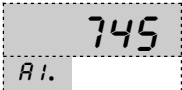
Notes to representation

 Parameter is only displayed when configured


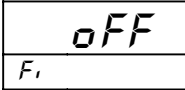



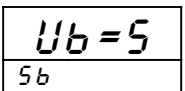



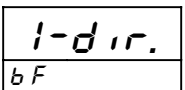



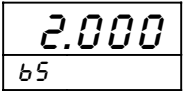



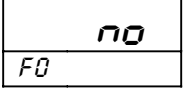



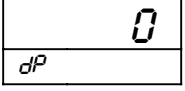



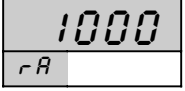



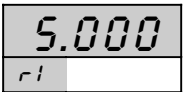





 Parameter is only displayed when feature is included (see order code)

Please 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 [].

Working level

Button	Display	Description
		Actual value.
		Output indication. (only if installed and activated)
		Display peak reading. Reset with buttons  or  , or at every power off.
		Display valley reading. Reset with buttons  or  , or at every power off.
		Tara-function; Sensor offset or measuring error e.g. an empty container. Pressing button  , the display will be reset to ZERO
		Selection of the parameter set $r_1 \dots r_8$. It is possible to select 8 programs to the set point of the outputs A1...A4 Selection with buttons  or  .
		Setpoint output A1. Setting possible from 0... ± end value with buttons  and  .
		Note: Model 2 only for the selected parameter set. Set point for alarm outputs A1 to A4 are identical.

Configuration level

Button	Display	Description	[Factory settings]
 press 2 sec.		Digital filter. <i>oFF, on</i> ; Averaging of the last 16 measured values continuously. Selection with buttons  and  .	[<i>oFF</i>]
 ↓		Bridge supply. <i>Ub=5</i> → 5V DC, <i>Ub=10</i> → 10V DC Selection with buttons  and  .	[<i>Ub=5</i>]
 ↓		Direction of action. <i>1-dir.</i> 0 ... measuring range; or <i>2-dir.</i> 0 ... ± measuring range. Selection with buttons  and  .	[<i>1-dir.</i>]
 ↓		Bridge sensitivity [mV/V]. Setting possible from <i>0.900</i> ... <i>6.600</i> mV/V with buttons  and  .	[<i>2.000</i>]
 ↓		Fixed zero <i>0</i> , e.g. <i>3690+0</i> . <i>no</i> ; <i>YES</i> Selection with buttons  and  .	[<i>no</i>]
 ↓		Decimal point position. if <i>FD = no</i> <i>0.0 .00 .000</i> if <i>FD = YES</i> <i>0. .00 .000 .0000</i> Selection with buttons  and  .	[<i>0.</i>]
 ↓	Model 1 	End value for indicating range and analog output Setting possible from <i>0</i> ... <i>9999</i> digit with buttons  and  .	[<i>1000</i>]
 ↓	Model 2 	End value for indicating range and analog output program <i>r!</i> Setting possible from <i>0</i> ... <i>9999</i> digit with buttons  and  .	[<i>1000</i>]
 ↓	⋮ 	⋮ Note: Settings for program sets <i>r!</i> ... <i>rB</i> are identical Option 08 with model 2 is not possible!	
 cont. page 7			

Button	Display	Description	[Factory settings]
↓ ↻	oFF A1	Switching performance output A1. Function oFF; on L (min); or on J (max) In case of modification new configuration of the alarm outputs is necessary. Selection with buttons ▲ and ▼ . In case of modification (Model 2) new configuration of the alarm outputs of all parameter sets is necessary.	[oFF]
↓ ↻	0 A1.	Setpoint output A1. Setting possible from 0 ... e.g. ± end value with buttons ▲ and ▼ . Note: only model 2 for the selected parameter set.	[0]
↓ ↻	10 H1	Hysteresis output A1. Setting possible from 1 ... 9999 (0) digit with buttons ▲ and ▼ . Model 2: hysteresis for all parameter sets will be changed.	[10]
↻		Note: Switching performance and setpoint of the alarm outputs A1 to A4 are identical.	
↓ ↻	0-20 A0	Analog output. 0 - 20 mA (0 - 10 V DC) or 4 - 20 mA (2 - 10 V DC). The switch-over from current to voltage output is load dependent (≤ 500Ω = current output, > 500Ω = voltage output). Selection with buttons ▲ and ▼ .	[0 - 20]
↓ ↻	0 A5	Analog output Start value Setting possible from 5 L ... E n of the display range with buttons ▲ and ▼ .	[0]
↓ ↻	1000 A E	Analog output End value Setting possible from 5 L ... E n of the display range with buttons ▲ and ▼ .	[1000]
↻		Note: If the display range would be changed afterwards, the range of the analog output get the same values. Start- and end value of the analog output can be set anywhere in the display range. If A E > A 5 the output works with a decreasing characteristic.	
↓ ↻	00 E o	Code for factory settings.	
↓ ↻	oFF L c	Program lockout. oFF = no lock L o n F = configuration level locked A L L = alle parameters locked Selection with buttons ▲ and ▼ .	[oFF]
↻	3524	Return to the working level	

Order code

DMS9648 - 1. - 2. - 3. - 4. - 5. - 6. - 7.

1. Terminal strip A

- 1 Input strain bridge 1 parameter set
integrated bridge supply 5/10V DC max. 50mA
- 2 Input strain bridge 8 parameter sets
integrated bridge supply 5/10V DC max. 50mA

2. Terminal strip B

- 00 not installed
- 2R 2 alarm outputs relay
- 2T 2 alarm outputs transistor

3. Terminal strip C

- 00 not installed
- 2R 2 alarm outputs relay
- 2T 2 alarm outputs transistor
- AO Analog output 0/4 ... 20mA ; 0/2 ... 10V DC, isolated

4. Terminal strip D supply voltage

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

5. Option

- 05 without option
- 01 min- and max-peak-hold
- 08 analog output separately programmable in the display range
(only model 1 with 1 parameter set DMS9648- 1 - xx)

6. Unit (appears in the field unit)

7. Additional text (appears on the face plate in the field additional text, maximum 3mm x 90mm wxH)

Ihr kompetenter Ansprechpartner / Your competent contact partner : * seit 1958 *

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