

Strain-bridge-amplifier SBB 1616

Supplying max. 6 DMS-strain bridge sensors

Features

- Bridge supply 2 ... 10V
- max. 6 DMS-strain bridge sensors
≥ 300Ω at 10V
- Output current max. 200mA
(short-circuit-proof)
- Line compensation (Sense)
up to max. voltage drop 1V
- Temperature coefficient 0.002%/K
- Case aluminium, IP65



General

Strain-bridge-Booster SBB 1616 will be used if more than one strain bridge sensor (DMS-sensor) is necessary. The device can supply max. 6 DMS-sensors. The total force or weight results from the sum of single loads or weights. It must be ensured, that all used DMS-sensors have the same measuring range and sensitivity (mV/V). Tolerance-conditioned differences in sensitivities are considered, by operating with the arithmetic average value of the used DMS-sensors (see example page 3).

Projecting notes

When constructing a force measurement with two or more DMS-sensors, it must be take under consideration, that no forces from the side will be applied to the sensor. For example, if sensors would be mounted directly on the ground under the legs of a tripod container, side forces will occur, when filling the container or the temperature is changing. To protect this, DMS-sensor should be mounted on vibration-absorbers (rubber-bonded metals)

For power transmission between container / DMS-sensor we offer suitable assembly saddles. Depending upon application, we adapt these to the customer application.

In case of cable length more than 2m between DMS-sensor and SBB1616 or 10m between SBB1616 and measuring device it's recommended to use the sense line to compensate the voltage drop on the cable. The additional measuring error without line compensation can be calculated as follows: .

Example:	Bridge voltage 10V DC	
	Voltage drop on the connection cable:	
	measuring device→SBB1616	20mV
	SBB1616 →DMS-strain bridge	5mV
	Total voltage drop	25mV

$$\text{Additional measuring error (\%)} = \frac{0.025\text{V}}{10\text{V}} \times 100 = 0.25\%$$

Technical data

Power supply

- Supply voltage : 230V AC $\pm 10\%$; 115V AC $\pm 10\%$, 24V AC $\pm 10\%$ or 24 V DC $\pm 15\%$
 Power consumption : max. 8VA
 Working temperature : -10 ... +55°C
 Rated voltage : 250V~ acc to VDE 0110 to the supply voltage
 Degree of pollution 2, Over voltage categoric III
CE - conformity : EN55022, EN60555, IEC1000-3/4/5/11/13

Input

- Input voltage : 2 ... 10V DC (bridge supply)
 Voltage drop between
 -input / output : maximum 2mV
 Input resistance : 10kOhm
 Number of strain bridges : max. 6 x 300 Ω at 10V
 Connection : 3 sensors directly, with 6 sensors in case 2 sensors parallel under one terminal

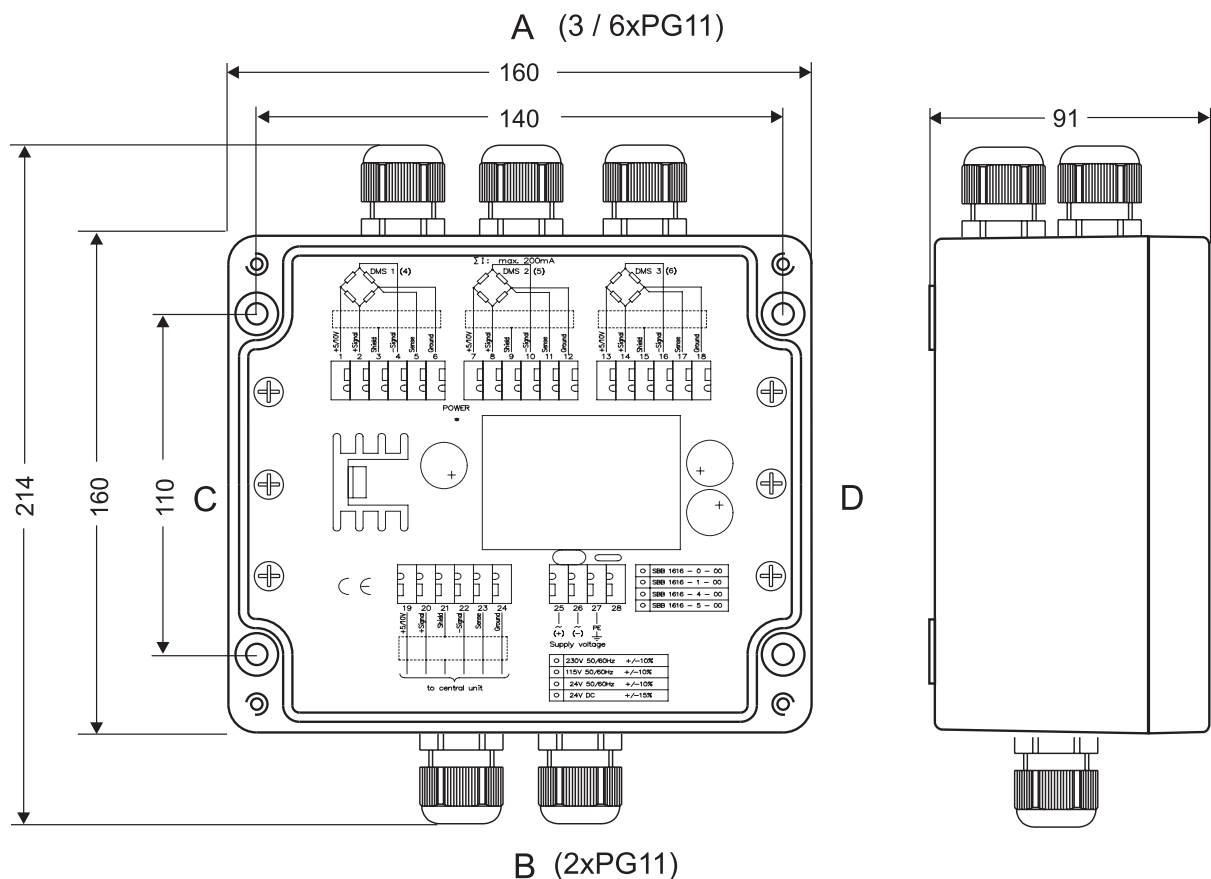
Output

- Bridge voltage : 2 ... 10V DC amplified bridge supply voltage of the measuring device
 Line compensation : up to 1V
 Output current : max. 200mA, short circuit proof
 Temp.- coefficient : 0.002%/K

Case

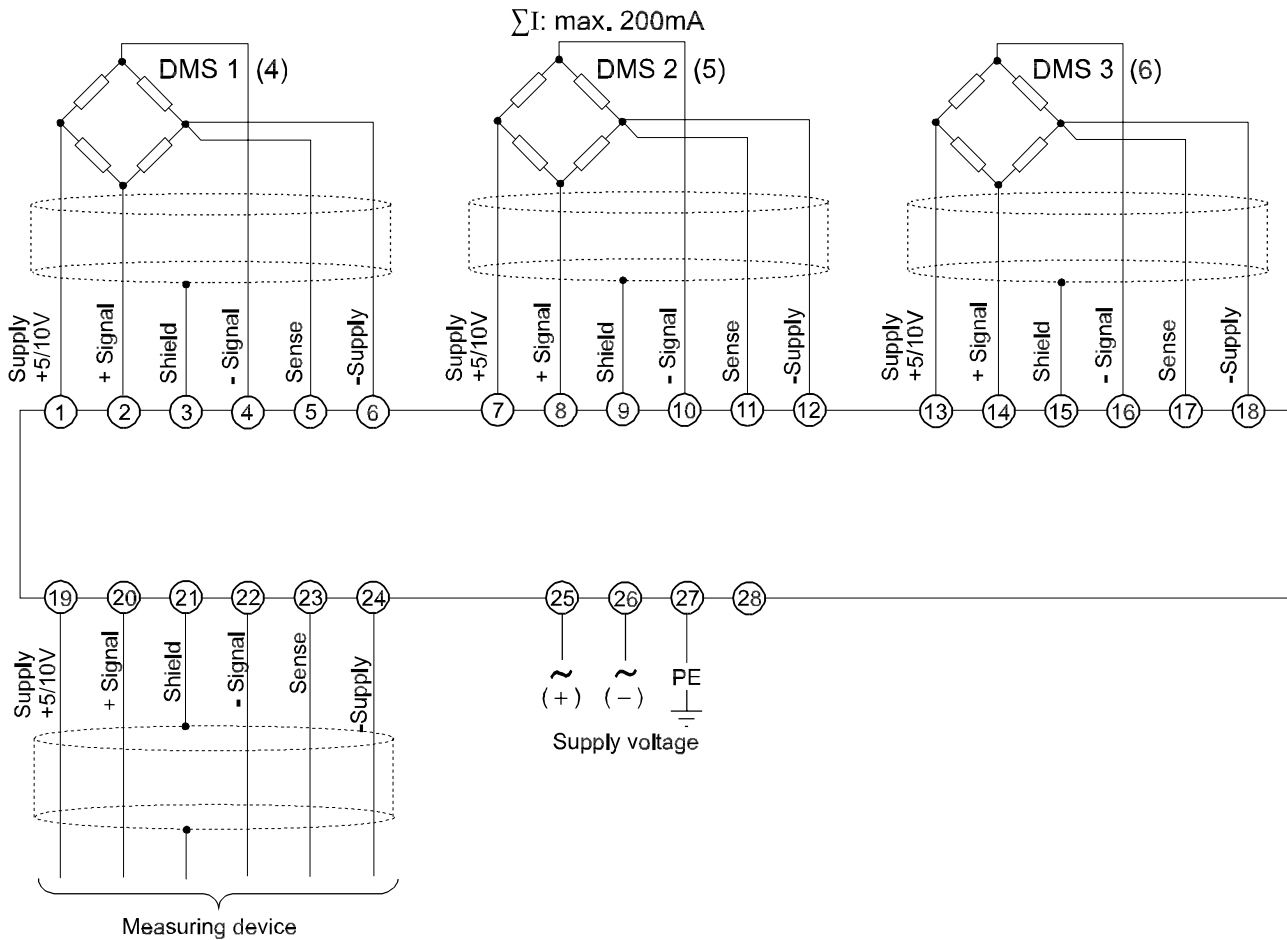
- : Aluminium, field mounting
 Dimensions : 160 x 160 x 91mm (WxHxD)
 Weight : max. 1900g
 Electrical connection : Clamp terminal, 2mm² single wire, 1mm² flexible wire, AWG14
 Protection : IP65, terminals IP20, finger safe acc. to BGV A2 (old VBG4)
 side A: 3/6 x PG11; side B: 2 x PG11

Dimensions



B (2xPG11)

Connection diagram



Comment:

All connected DMS-sensors must have the same measuring range and sensitivity. The output signal of the SBB1616 is connected to the input of a measuring device, e.g. the Strain-Bridge-Panelmeter DMS9648. The resulting measuring range of the system can be calculated by multiplying the number of used DMS-sensors with its range. When programming the DMS-sensors sensitivity on the measuring device, please use the arithmetic average value of the sensitivities from the installed DMS-sensors. If the SENSE line will be used only for line compensation between measuring device and SBB1616, a link between terminal 23-24 must be installed.

Example: A tripod container has a total weight of 50t. The installed DMS-sensors have a measuring range of 20t and a bridge sensitivity of 2,211mV/V; 1,987mV/V and 2,093mV/V.
 Arithmetic average value: $(2,211 + 1,987 + 2,093) : 3 = \mathbf{2,097mV/V}$

Configuration of the measuring device:
 Input sensitivity : 2,097mV/V
 Indicating range: 0 ... 60t

Order code

SBB1616- -

1. Supply voltage

0 230V AC $\pm 10\%$

1 115V AC $\pm 10\%$

4 24V AC $\pm 10\%$

5 24V DC $\pm 15\%$

2. Option

00 without option

01 3 additional cable glands PG11 at side A

Excerpt of the available DMS- load cells

Series PK Force from 0 ... 2kg up to 0 ... 1000kg



Series KR Force and traction from 0 ... 10kg up to 0 ... 30t



Series KS Force from 0 ... 10kg up to 0 ... 100t



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