

Amplifier

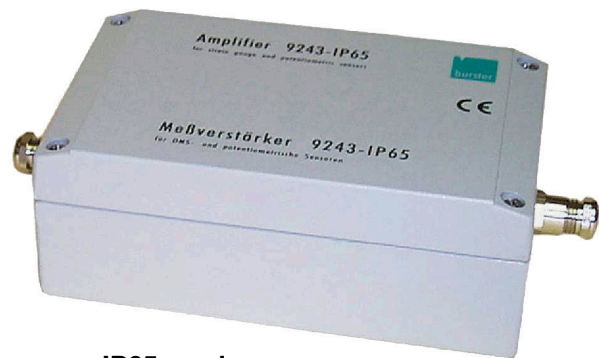
Module for strain gauge and potentiometric sensors

Model 9243

| | |
|-----------|-----------|
| Code: | 9243 EN |
| Delivery: | ex stock |
| Warranty: | 24 months |



Rail mounting module



IP65 version

- Accuracy < 0.05 %
- Outputs ± 5 V, ± 10 V and 0 (4) - 20 mA
- 6 wire technique
- Isolation between signal and power supply
- Cut-off frequency 1 kHz, optional 4 kHz
- Configuration via DIP switches
- Easy installation on DIN mounting rail

Application

The amplifier module model 9243 is used wherever measurement signals from strain gauges, potentiometric sensors or DC/DC sensors have to be converted into standard signals. Simply by mounting on conventional DIN-mount rails, it is possible to position the amplifier module on location, in the proximity of the sensor. Especially for rough environments a IP65 version is available.

The broad auxiliary power range and the choice between AC or DC permits operation on standard power supplies used in switch gear cabinets. A highly precise reference voltage source is built-in for calibration purposes. A calibrating shunt can also be connected via two separate terminals. This permits deliberate detuning of a strain gauge sensor for calibration or merely to check the measuring chain.

Description

A highly accurate precision amplifier performs the amplification of the sensor signal being applied. The necessary gain factor is adjusted coarsely with DIP switches while fine-tuning is carried out by using a potentiometer. Current and voltage outputs are available simultaneously. The sensor excitation is performed by the amplifier module itself so that no additional voltage source is required. It can also be set in steps of 2.5 V, 5 V, 10 V using DIP switches. The maximum feed current of 35 mA permits parallel connection of several strain gages, e.g. for the addition of measurement variables. Measurement errors brought about by varying line lengths or due to temperature fluctuations effecting the sensor cable are avoided by having probe lines measuring the actual feed voltage directly on site at the sensor itself (6 wire technology). Fluctuations are immediately corrected electronically. The cut-off frequency of the amplifier can be switched between 10 Hz and 1 kHz. The DIP switches for configuring the entire device are found easily accessible, under a cover.

Technical Data

Connectable sensors

Strain gauges

| | |
|------------------------|------------------|
| Bridge resistances: | 350 ... 1000 Ω |
| Connection technology: | 4 or 6 wire |
| Sensitivity: | from 0.1 mV/V |
| Excitation voltage: | 2.5 V, 5 V, 10 V |
| Excitation current: | max. 35 mA |

Potentiometer

| | |
|------------------------|-----------------------------|
| Resistance: | 1 kΩ ... 5 kΩ |
| Connection technology: | 3 wire |
| Measurement signal: | 0 V ... 5 V |
| Excitation voltage: | 5 V |
| Excitation current: | max. 35 mA |
| Zero shift: | selectable via DIP switches |

Transmitter i.e. DC/DC

| | |
|---------------------|--------------------|
| Measurement signal: | 2.5 mV ... 10 V |
| Excitation voltage: | 2.5 V / 5 V / 10 V |
| Excitation current: | max. 35 mA |

Sensor excitation

| | |
|----------|-----------------------------------|
| Voltage: | 2.5 V, 5 V, 10 V via DIP switches |
| Current: | max. 35 mA |

Analog output

| | | |
|-------------------|-------------------------------|----------------|
| Voltage output: | max. 11.5 V at open terminals | ±10 V |
| Current output: | 0 ... 20 mA | or 4 ... 20 mA |
| Load: | 200 ... 500 Ω | |
| Input impedance: | | 1 GΩ |
| Output impedance: | with 10 V output: | 470 Ω |
| | with monitor output: | 10 kΩ |

General amplifier data

| | |
|--------------------------|---|
| Gain: | 0.5 ... 50 000 (via DIP switches + potentiometer) |
| Shift zero point: | up to 100 % possible |
| Accuracy: | < 0.05% |
| Temperature coefficient: | < 50 ppm / K |
| Frequency response: | 0 -10 Hz or 0 -1000 Hz (via DIP switches) |
| Electrical isolation: | input and output with respect to power supply |
| | 50 V continuous |
| | 500 V test voltage |
| Power supply: | 20 - 36 V DC |
| | 14 - 26 V AC |
| | < 3 VA |
| Operating temperature: | 0 ... 60 °C |
| Stocking temperature: | - 25 °C ... 70 °C |

Rail mounting module

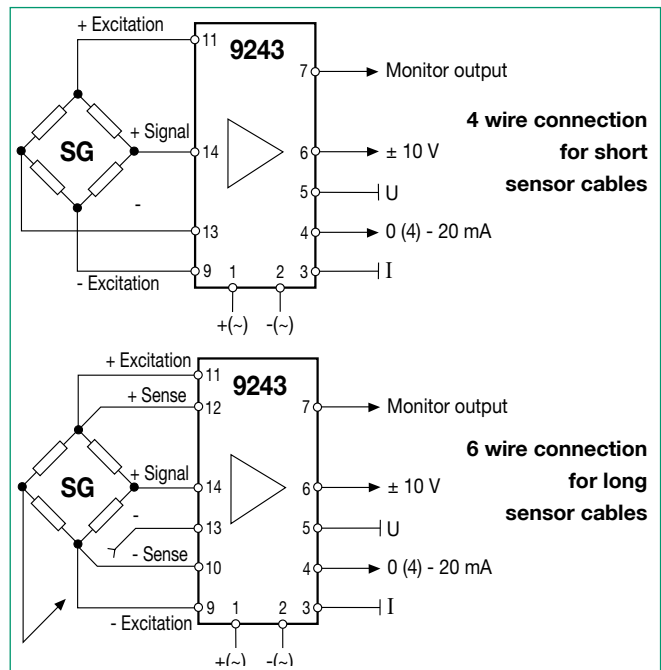
| | |
|-------------------------|-------------------------------------|
| Connections: | terminal connector, 2 x 8 terminals |
| Dimensions [W x H x D]: | 45 x 75 x 108 [mm] |
| Material: | polyamide 6.6, color: green |
| Assembly: | on DIN EN 50 022 mount rails |
| Protection class: | IP20 |
| Weight: | approx. 250 g |

IP65 version

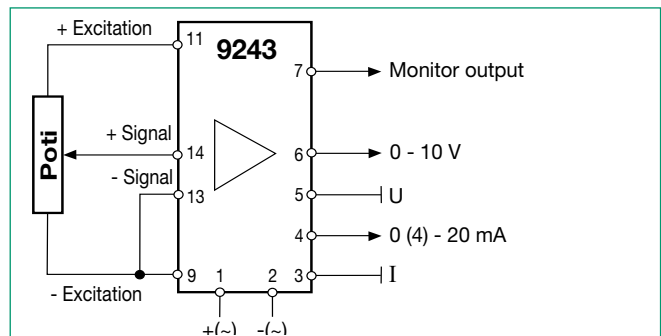
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|-------------------------|--------------------------------------|
| Connection: | terminal connector, 2 x 8 terminals |
| Dimensions [W x H x D]: | 160 x 100 x 65 [mm] |
| Material: | cast-aluminium |
| Assembly: | screw mounting |
| Protection class: | IP65 |
| Weight: | approx. 880 g |
| Screen distance: | 143 x 63 [mm] |
| | shaft screw ø 4.7 mm; screw ø 8.5 mm |

Connection Schematic

► for strain gauge sensors, e.g. force, pressure or torque sensors



► for potentiometric sensors, e.g. displacement or angle sensors



Manufacturers default settings

| | |
|---------------------------|-----------------|
| Excitation: | 5 V |
| Filter: | 1 kHz |
| Gain (roughly): | 1320 ± 1.5 mV/V |
| Integrated analog output: | 10 V |
| Current output: | 0 ... 20 mA |

Order Code

| | |
|--|-------------------------|
| Amplifier module (rail mounting version) | Model 9243 |
| Amplifier module (IP65 housing) | Model 9243-IP 65 |
| Amplifier module (cut-off frequency 4 kHz) | Model 9243-V001 |

Calibration of entire measuring chain

Consisting of sensor and amplifier model 9243 **Model 9243-ABG**

Please specify the adjustment data
e.g. 0 N ± 0 V; 500 N ± 10 V; cut-off frequency 1 kHz

Accessories

| | |
|--|------------------------|
| Rail mounting transformer 230 V AC (115 V AC) / 24 V AC 12 VA for the power supply max. 4 amplifier modules Dimensions (W x H x D): 60 x 50 x 50 mm | |
| in 230 V version | Model 9243-Z001 |
| in 115 V version | Model 9243-Z002 |
| Plug-in socket; 8 pins | Model 9900-V106 |

DMS Simulator

for an easy adjustment of the amplifier to SG sensors
(refer to data sheet 76-9405) **Model 76-9405**