

Pressure Transmitters

Integrated into a Bourdon Tube Pressure Gauge
Electrical Output 0-20 mA, 4-20 mA, or 0-10 V



Model

DMU

Application

Pressure transmitters integrated into a Bourdon tube pressure gauge allow the long-distance transmission of pressure measuring values on electrical receivers. These receivers can be those for indication, registration, or control.

Advantages

The electrical output signal is independent from the reading resp. the measuring system of the pressure gauge. This means that, for example, a fault of the movement does not influence the electrical output signal. Or the other way around: a fault of the electrical system does not interrupt the local reading.

Assembly and Function

The piezoresistive sensor is built into the pressure gauge case, together with the amplifier.

The diffused resistors change their values when pressurized. Four resistors are connected to a Wheatstone-bridge, whose output voltage is directly proportional to the pressure. The amplifier connected behind the sensor changes this voltage into a linear DC-output signal which is transmitted by a 2-wire- or 3-wire-connection.

Zero and span can be adjusted from outside after removing the terminal box cover ($\pm 5\%$).

Technical Data

Output Signal:

2-wire-connection: 4-20 mA

3-wire-connection: 0-20 mA or 0-10 V

Accuracy Output Signal (DMU)

Better than $\pm 0.5\%$ f.s., linearity and hysteresis included

Temperature Limitations

Storing temperature: $-55...+125\text{ }^{\circ}\text{C}$ ($-67...+257\text{ }^{\circ}\text{F}$)

Operating temperature: $-10...+80\text{ }^{\circ}\text{C}$ ($+14...176\text{ }^{\circ}\text{F}$)

Power Supply

2-wire-connection: 10...40 VDC (4-20 mA)

3-wire-connection: 8...28 VDC (0-20 mA)

13...28 VDC (0-10 V)

Max. External Resistance:

2-wire-connection: $\frac{\text{power supply} - 10\text{ V}}{0.02\text{ A}}$

3-wire-connection: $\frac{\text{power supply} - 8\text{ V}}{0.02\text{ A}}$ (min. 10 kOhm)

Installation Features

The pressure transmitter DMU is available for all pressure and vacuum ranges between 0/1 bar (0/15 psi) resp. -1/0 bar (-30" Hg/0) and 0/1000 bar (0/15000 psi) acc. to EN 837-1, compare the data sheets for the individual pressure gauge models and general information leaflet 1000. The following pressure gauge models can be applied with a pressure transmitter DMU:

RB 160 - data sheet 1101

RCh 160 - data sheet 1201

RCha 160 - data sheet 1200

Preferred version RSCh 100 - data sheet 1600

RSCh 160 - data sheet 1600

RFCha 160 - data sheet 2200

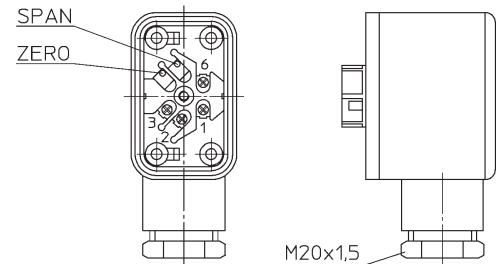
RFCh 160 - data sheet 2201

All models are also available in liquid-filled version, ordering code Oe, e.g. RBOe 160 (filling fluid transformer oil).



Electrical Connection

Terminal box; the terminals of the terminal box are numbered according to the circuit diagrams (see reverse side). A grounding terminal exists. The terminal box has a screwed cable gland M 20 x 1.5 with strain relief.



For assuring the electromagnetic conformity (EMC) please use a shielded cable (e.g. LP/LiMYCY). The shield must be connected to the case resp. to the ground terminal of the terminal box.

Model RSCh resp. RSChOe, sizes 100 (4") or 160 (6") are usually supplied with a terminal box on the left side of the case (left side from the viewer's perspective when looking on the dial).

All the other models have the terminal box mounted on the back of the case.

Dimensions and circuit diagrams see reverse side.

Special Options:

- For gauges with solid front and blow-out back (RSCh and RSChOe, nom. sizes 100 and 160 resp. 4" and 6"): Limit-switch contact assemblies upon request
- For gauges with solid front and blow-out back (RSCh and RSChOe, nom. sizes 100 and 160 resp. 4" and 6"): version for oxygen service, free of grease and oil
- Attachment of chemical seals, see catalogue heading no. 7
- Other output signals upon request

How to Order

Please add the following information to the ordering description of the individual pressure gauge models:

"with DMU 0-20 mA", "... 4-20 mA" or "... 0-10 V"

Examples for Ordering Information

RSCh 100-3, 10 bar, 1/2" BSP (=G1/2B), with DMU 4-20 mA

RChaOe 160-3, -1/+9 bar, 1/2" NPT, with DMU 0/20 mA



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Dimensions, Circuit Diagrams, Manual

Please take the dimensions of the available case configurations from the data sheet of the pressure gauge model that you choose (data sheets 1101, 1200, 1201, 1600, 2200 or 2201).

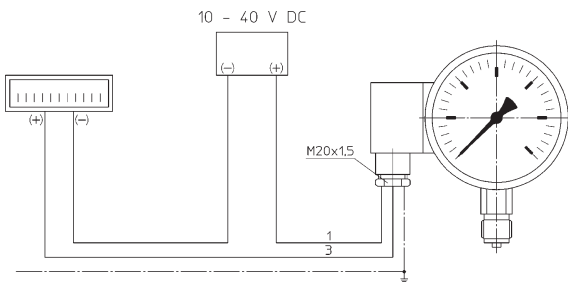
Only the following dimensions differ from the standard data due to the transmitter installation:

Model **RSCh / RSChOe 100** (data sheet 1600)
Dimensions **a, a₁, b, b₁** - each to **add 10 mm (.39")**

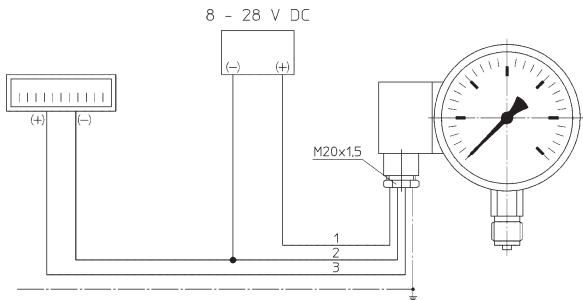
All the other models and dimensions remain unchanged.

Circuit Diagrams

2-wire-connection



3-wire-connection



Mounting and Working Instructions :

The national and international safety and health standards (e.g. VDE 0100) have to be observed when mounting, starting and working this pressure transmitter. A violation of valid regulations can lead to serious injuries or material damages.

This instrument should only be installed, worked on and replaced by skilled personnel who have been properly instructed.

Do use the wrench flat provided on the process connection of the pressure transmitter (SW) and the proper size wrench to mount the instrument to the measuring point.

Do use the suitable sealing (flat sealing ring according to EN 837-1) for the process connection.

Do follow the cable grouping shown at the key plan above for the electrical connection.

The stated protection class can only be kept when the diameter of the cable suits to the nominal size of the seal-inset of the screwed cable gland, and when the screwings are fitted together tightly.

Fasten the centered fixing screw of the terminal box fingertight.

For assuring the electromagnetic conformity (EMC) only shielded cable may be used (e.g. LP/LiMYCY). The shield must be connected to the case respectively to the ground terminal of the terminal box.

The instrument is maintenance-free.

Every kind of repair work has to be done exclusively from the manufacturer.

The information in this leaflet is given in good faith, but we reserve the right to make changes without notice.

Recalibration

The pressure transmitters are delivered accurate calibrated, and the potentiometer should not be adjusted.

However, if a zero-adjustment might be required, it can be done as follows:

- Release the center screw of the terminal box and lift the cover
- Now it is possible to turn the trimming potentiometer ZERO (compare drawing) with a screw driver for adjustment.

It is not allowed to adjust the final terminal value (SPAN; trimming potentiometer right over ZERO, compare drawing), except by the manufacturer!

