

Pressure Transmitters

Integrated into a Bourdon Tube Pressure Gauge

Electrical Output 4-20 mA, 0-20 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 indication-, registration- or control-receivers.

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 round: 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 externally after removing the terminal box cover ($\pm 5\%$).

Standard Version

Output Signal (up to inclusive of 60 bar)

		auxiliary supply	resistance (Ohm)
4 ... 20 mA	2-wire	10...40 VDC	(UB - 10V) / 0.02 A
0 ... 20 mA	3-wire	8...28 VDC	(UB - 8V) / 0.02 A
0 ... 10 V	3-wire	13...28 VDC	min. 10 kOhm

Output Signal (100 bar and above)

		auxiliary supply	resistance (Ohm)
4 ... 20 mA	2-wire	9...30 VDC	(UB - 9V) / 0.02 A
0 ... 20 mA	3-wire	9...30 VDC	(UB - 9V) / 0.02 A
0 ... 10 V	3-wire	14...30 VDC	min. 10 kOhm

Accuracy Output Signal (DMU)

Better than $\pm 0.5\%$ of full scale value, linearity and hysteresis included

Temperature Limitations

Storing temperature: -40...+70 °C (-40...+158 °F)

Ambient temperature: -40...+60 °C (-40...+140 °F)

Medium temperature: -10...+80 °C (+14...+176 °F)

Reference Temperature

+20 °C (+68 °F)

Temperature influence

Zero < 0.3% / 10 K

Span < 0.2% / 10 K

Long-term Stability

typical $\pm 0.25\%$ p.a.

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 ¹⁾
Preferred version RSch	100 - data sheet 1600²⁾
RSch	160 - data sheet 1600
RFCha	160 - data sheet 2200 ¹⁾
RFCh	160 - data sheet 2201

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

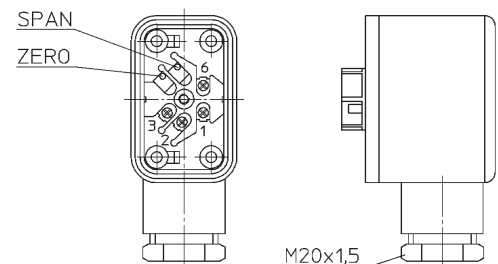
¹⁾ Case configuration Rh not available

²⁾ not with back connection



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 compatibility (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.

Position of the Cable Box

Model RSch resp. RSchOe, sizes 100 (4") or 160 (6"), case configuration bottom connection, Rh and Fr: left side
All other models: back of the case

Dimensions and wiring diagrams see reverse side.

Special Versions:

- For DMU with gauge model RSch/RSchOe, NCS 100 and 160 (4" and 6") installation of limit-switch contact assemblies upon request
- For DMU with gauge model RSch/RSchOe, NCS 100 and 160 (4" and 6") version for oxygen, free of grease and oil
- Attachment of chemical seals, see catalogue heading no. 7
- Other output signals upon request

Ordering Information:

Please add the following information to the ordering code of the particular pressure gauge models:

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

Examples for Ordering Code

- 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, Wiring Diagrams, Operating Instructions

Dimensions

The dimensions of the available case configurations can be seen in the corresponding data sheets of the pressure gauge models (data sheets 1101, 1200, 1201, 1600, 2200 or 2201).

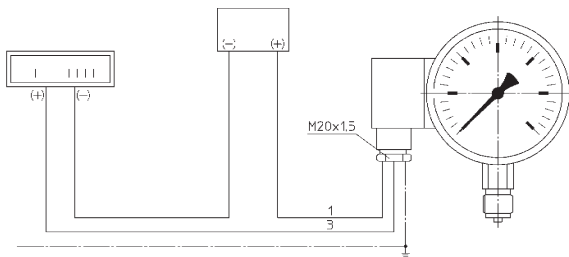
Only the following dimensions differ from the standard data due to the transmitter installation:

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

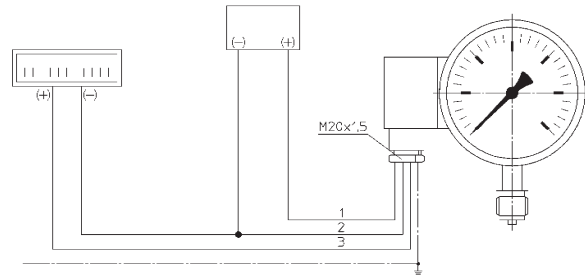
All the other models and dimensions remain unchanged.

Wiring Diagrams

2-wire-connection



3-wire-connection



Mounting and Operating 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 qualified 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 finger-tight.

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 may only be executed by the manufacturer.

Our instruments are developed constantly, therefore changes are excepted.

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!

