

Operating Manual

ME11 | Pressure Transmitter

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1 Safety Guidelines

1.1 Generalities

This operating manual contains instructions fundamental to the installation, operation and maintenance of the instrument that must be observed unconditionally. It must be read by the assembler, operator and the specialised personnel in charge of the instrument before it is installed and put into operation. This operating manual must be kept close by where it is easily accessible to the responsible specialised personnel.

The subsequent sections about general safety instructions 1.2-1.7 and the following special instructions about use through to disposal 2-10 contain important safety information, non-observance of which can endanger persons, animals, the environment and physical objects.

1.2 Personnel Qualification

Staff assigned to assembly, operating, maintenance and inspection tasks shall be adequately qualified for this work and must be sufficiently instructed and trained to meet the requirements of assembly, operating, maintenance and inspection work.

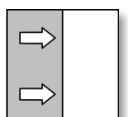
1.3 Risks due to Non-Observance of Safety Instructions

Non-observance of these safety instructions, the intended use of the instrument or the limit values given in the technical specifications can be hazardous or cause harm to persons, the environment or the system itself. The manufacturer will not be liable for damage claims should this happen.

1.4 Safety Instructions for the Operating Company and the Operator

The safety instructions governing correct operation of the instrument must be observed. The operating company must make them available to the installation, maintenance, inspection and operating personnel.

Dangers arising from electrical components, energy discharged by the medium, escaping medium and incorrect installation of the instrument must be eliminated. For more information, please see the applicable national and international regulations. In Germany these are the DIN EN, UVV regulations, specific industrial guidelines such as DVGW, Ex, GL, etc., the VDE- regulations and the regulations of the local energy supply companies.



1.5 Unauthorised Modification

Modifications of or other technical alterations to the instrument by the customer are not permitted. This also applies to replacement parts. Any modifications / alterations required must be carried out by the manufacturer only.

1.6 Inadmissible Modes of Operation

The operational safety of this device can only be guaranteed if it is used as intended. The device model must be suitable for the medium used in the system. The limit values given in the technical data may not be exceeded.

1.7 Safe working practices for maintenance and installation work

The safety instructions given in this operating manual, any nationally applicable regulations on accident prevention and any of the operating company's internal work, operating and safety guidelines must be observed.

The operating company is responsible for ensuring that all required maintenance, inspection and installation work is carried out by qualified specialized personnel.

1.8 Pictogram explanation



WARNING!

... indicates a potentially dangerous situation, non-observance of which could endanger persons, animals, the environment or objects.



INFORMATION!

... highlights important information efficient and smooth operation.



TIP!

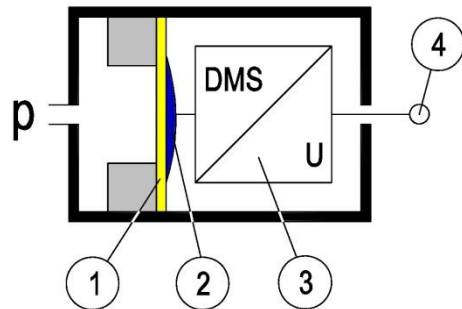
... indicates recommendations that are not specifically necessary in certain situations but which could be useful.

2 Application Purpose

The pressure transmitter ME11 is used to measure over-pressure and under-pressure. The device may only be used for the purpose stipulated by the manufacturer. If there is dirty or aggressive media in the system, or if this is to be expected, the device must be modified in terms of those parts that come into contact with the media. Please talk to the manufacturer first before placing the order.

3 Description of the product and functional description

3.1 Function Diagram



- 1 Ceramic membrane
- 2 DMS bridge
- 3 Transformer electronics
- 4 Analogue output

3.2 Design and mode of operation

The measuring pressure acts on a ceramic membrane that deforms when under pressure. There is a DMS bridge attached to the ceramic membrane. When the ceramic deforms, the output signal of the DMS bridge changes. The electronics integrated into the device convert the bridge signals into electrical unit signals 4...20 mA or 0...10 V DC um.

4 Installation and Assembly

The device is set ex-works for vertical installation; however any installation position is possible.

To guarantee safe working conditions during installation and maintenance, suitable stop valves must be fitted in the system.

Using recommended accessories such as a manometer stop valve MZ 5 / MZ 6 etc., the device can:

- be depressurized or taken out of operation
- be disconnected from the power supply within the applicable system for repairs or inspections.

4.1 Process connection

- By authorized and qualified specialized personnel only.
- Only for designated mechanical process connections. For the model, see the order code on the instrument's type plate.
- Release the cables before connecting the device.
- Do not mount the device against existing water columns, and secure suitably against pressure surges.
- Use only with media suitable for operation.

- Maximum pressures must be observed.
- Check that the pressure connections do not leak before commissioning.

4.2 Measuring lines that need to be connected

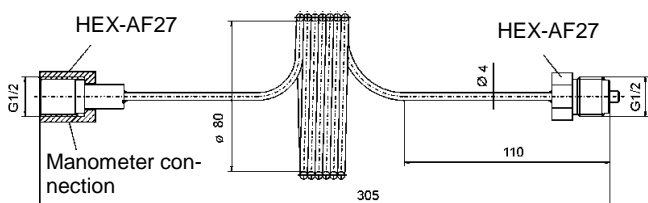
The following points need to be observed when connecting the pressure line:

- To ensure there is no influence on the measured values, severe bends and coils in the wire should be avoided.
- To prevent deposits, there should be a continuous incline or drop of at least 8%.
- When measuring steam pressure, a water bag-forming loop must be provided due to the temperature. (e.g.: accessories: MZ10/MZ11)
- The transmitter must be positioned below the measuring point for liquid measurements. Vent the pressure line before commissioning.
- The transmitter must be positioned above the measuring point for gas measurements.

4.3 Pressure surge absorption

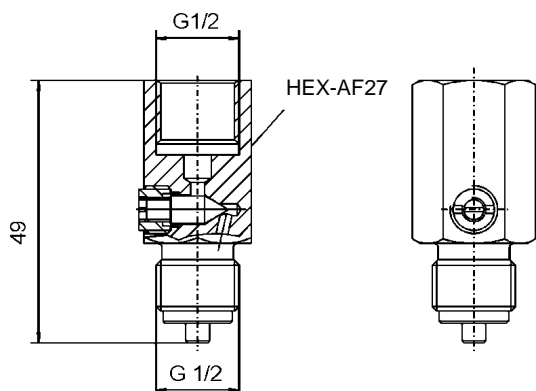
If there are pulsating pressure surges on the system side, this may impact on the function of the device. We recommend installing a damping element in the pressure connection lines as a protective measure.

4.3.1 Capillary throttle coils MZ40



4.3.2 Configurable damping throttle MZ41

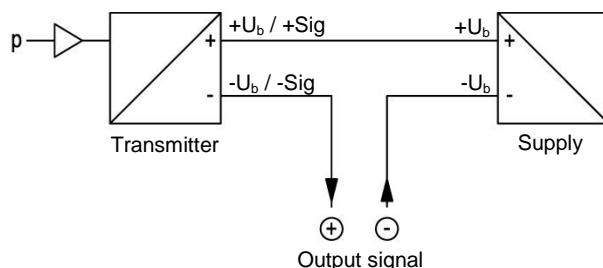
In operating mode, the damping throttle must be set so that the output signal follows the pressure changes with a delay.



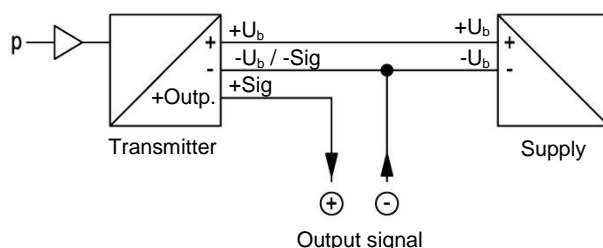
4.4 Electronic connection

- By authorized and qualified specialized personnel only.
- The electrical connection of the device shall be performed according to relevant VDE and local electricity board regulations.
- Disconnect the system from the mains before connecting the device.
- Add a fuse adapted to the energy requirements.

4.4.1 2-wire connection



4.4.2 Three-wire connection



4.4.3 Standardised plug DIN EN 175 301-803-A

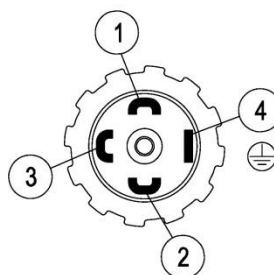


Table 1: 2-wire connection 4...20 mA

Pin	Signal name	Cable colour
1	Supply/output +U _b +Sig	red
2	Supply/output -U _b -Sig	blue
3	n.c.	
4	n.c.	

Table 2: 3-wire connection 0...10 V

Pin	Signal name	Cable colour
1	Delivery +Sig	black
2	Supply/output -U _b -Sig	blue
3	Supply +U _b	red
4	n.c.	

4.4.4 M12 plug connection

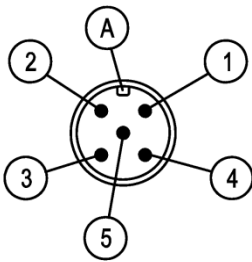


Table 3: 2-wire connection 4...20 mA

Pin	Signal name			Cable colour
A	Coding			
1	Supply	+U _b	+Sig	brown
2	n.c.			
3	Supply/output	-U _b	-Sig	blue
4	n.c.			

Table 4: 3-wire connection 0...10 V

Pin	Signal name			Cable colour
A	Coding			
1	Supply	+U _b		brown
2	n.c.			
3	Supply/output	-U _b	-Sig	blue
4	Delivery		+Sig	black

5 Commissioning

All electrical supply, operating and measuring lines and the pressure connections must have been correctly installed before commissioning. All supply lines are arranged so that there are no mechanical forces acting on the device.

- If liquid measuring media are used the pressure connection lines must be deaerated, as liquid columns of different heights in the pipes can cause measuring errors. The instrument must be protected against frost if water is used as a medium.
- Appropriate shutoff valves must be provided to ensure safety during installation, maintenance and inspection.

6 Maintenance and Repeat Tests

The instrument is maintenance-free. We recommend the following regular inspection to guarantee reliable operation and a long service life:

- Check the function in combination with downstream components.
- Check the leak-tightness of the pressure connection lines.
- Check the electrical connections.

The exact test cycles need to be adapted to the operating and environmental conditions. In combination with other devices, the operating instructions for the other devices also need to be observed.

7 Transport

The measuring device must be protected against impacts. It should be transported in the original packaging or a suitable transport container.

8 Service



All damaged or faulty devices must be sent directly to our repair department. Please coordinate all shipments with our sales department.

Warning

Process media residues in and on dismantled devices can be a hazard to people, animals and the environment. Take adequate preventive measures. If required, the devices must be cleaned thoroughly.

Return the device in the original packaging or a suitable transport container.

9 Accessories

Please refer to data sheet MZ for accessories for the pressure transmitter ME11.



10 Disposal

Incorrect disposal may pose a risk to the environment.

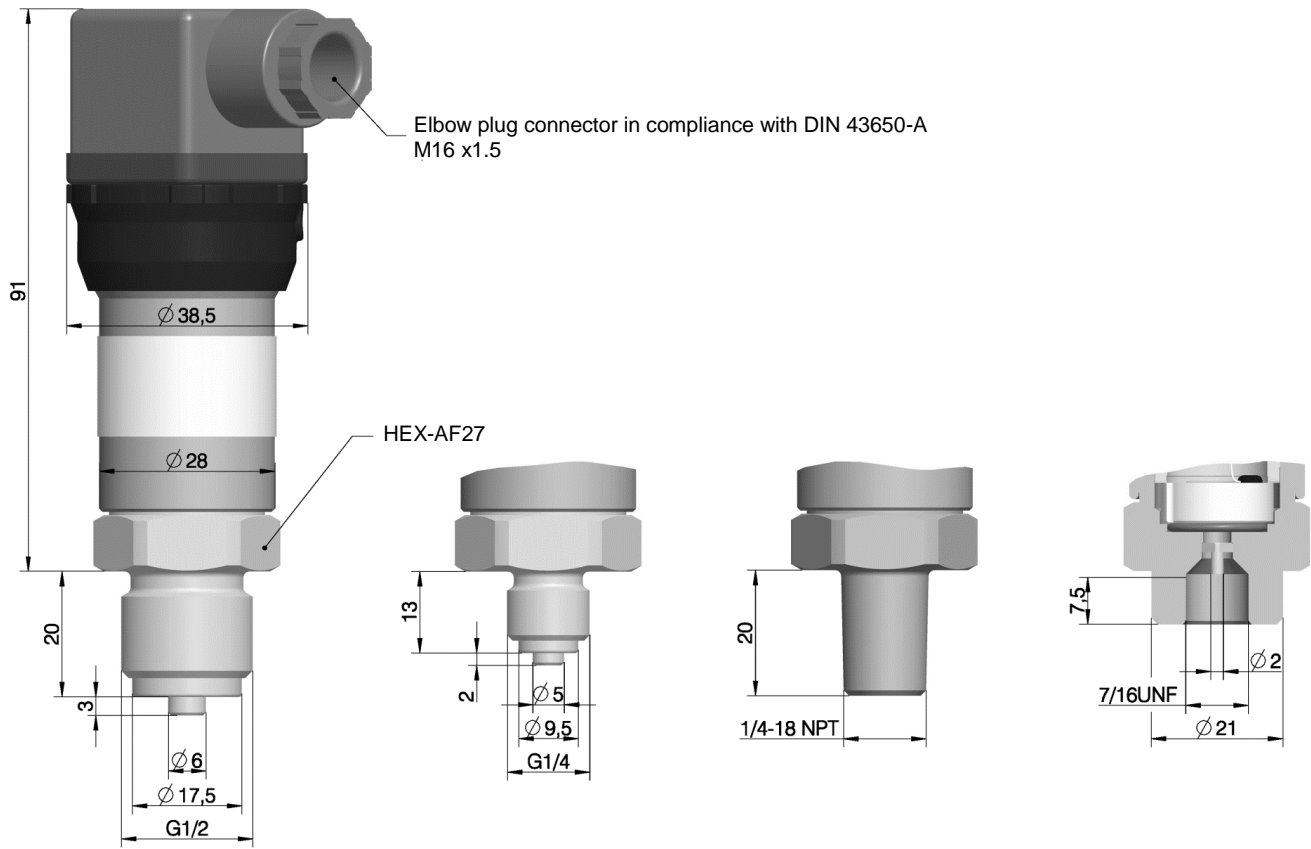
Please help to protect the environment by always disposing of the work pieces and packaging materials in compliance with the valid national waste and recycling guidelines or reuse them.

11 Technical data

Measuring ranges (bar)	-1 - 0	-1 - 0.6	-1 - 1.5	-1 - 3	-1 - 5	-1 - 9	-1 - 15	-1 - 24	0 - 1.6	0 - 2.5	0 - 4	0 - 6	0 - 10	0 - 16	0 - 25	0 - 40	0 - 60
Overpressure-proof	3	5	8	12	20	32	50	80	5	8	12	20	32	50	80	120	200

	General points	
Linearity	< 1 % FS	
Hysteresis	< 0.5 % FS	
Admissible ambient temperature	0 ... 60 °C	
Permissible medium temperature	0 ... 85 °C	
Pressure connection	See order code	
Electrical connection	Standardised plug acc. to DIN EN 175301-803-A M12 plug connection	
Type of protection	IP 65 as per DIN EN 60 529	
Material: parts with contact to the medium	Chrome-Nickel-Steel 1.4305, ceramics: Al ₂ O ₃ , seal: see order code	
Material: Casing	Chromium nickel steel 1.4305	
	Electrical data	
Electrical connection type	2-wire	Three-wire
Rated Voltage	24 V DC	24 V AC/DC
Allowed operating voltage U _b	6...30 V DC	15...30 V AC/DC
Output signal	4-20 mA	0-10 V DC
Apparent ohmic resistance	(U _b -6 V) / 0,02 A	≥ 5 kΩ from 15 VDC ≥ 2 kΩ from 20 VDC
Current/voltage limit	ca. 26 mA	approx. 10.5 V DC
Temperature drift, zero-point	0.07 % FS/K	0.07 % FS/K
Temperature drift, measuring range	0.05 % FS/K	0.05 % FS/K

12 Dimensional drawings (all dimensions in mm unless otherwise specified)



13 Order Codes

Pressure Transmitter

ME11

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Measuring ranges

- 0 ... 1,6 bar > 0 3
- 0 ... 2,5 bar > 0 4
- 0 ... 4 bar > 0 5
- 0 ... 6 bar > 0 6
- 0 ... 10 bar > 0 7
- 0 ... 16 bar > 0 8
- 0 ... 25 bar > 0 9
- 0 ... 40 bar > 1 0
- 0 ... 60 bar > 1 1
- 1 ... 0 bar > 3 1
- 1 ... 0.6 bar > 3 2
- 1 ... 1.5 bar > 3 3
- 1 ... 3 bar > 3 4
- 1 ... 5 bar > 3 5
- 1 ... 9 bar > 3 6
- 1 ... 15 bar > 3 7
- 1 ... 24 bar > 3 8
- 0 ... 60 kPa > F 1
- 0 ... 100 kPa > F 2
- 0 ... 160 kPa > F 3
- 0 ... 250 kPa > F 4
- 0 ... 400 kPa > F 5
- 0 ... 600 kPa > F 6
- 0 ... 1000 kPa > F 7
- 0 ... 1600 kPa > F 8
- 0 ... 2500 kPa > G 1
- 0 ... 4000 kPa > G 2
- 0 ... 6000 kPa > G 3
- 0 ... 30 PSI > H 5
- 0 ... 60 PSI > H 6
- 0 ... 100 PSI > H 7
- 0 ... 160 PSI > H 9
- 0 ... 250 PSI > Q 1
- 0 ... 500 PSI > P 9
- 30 Inch Hg vac ... + 15 PSI > S 2
- 30 Inch Hg vac ... +100 PSI > S 5

Measuring accuracy

- Characteristic curve deviation gauge pressure 1.0 > M

Pressure connection

- Connecting port with outer thread G ¼ B, 1.4305 > 8 5
- Connecting port with outer thread G ½ B, 1.4305 > 8 7
- Connecting port with outer thread ¼ -18 NPT EXT, 1.4305 > 8 8
- Connection for the Schrader®- screw connection > S 1

Electrical output signal

- 4 – 20 mA (only 2-wire) > B
- 0 – 10 V DC (only 3-wire) > C

Electrical connection

- Plug 4-pin, standardised plug DIN EN 175 301-803-A > H
- M12 plug connector > C

Operating voltage

- 24 V DC (only 2-wire) > 9
- 24 V AC/DC (only 3-wire) > L

Casing

- IP65 > 0
- IP65, cast version > V

Media-Contact Seal

- FKM (standard) > V
- CR (Chloroprene Rubber) > C
- EPDM (Ethylene propylene diene rubber) > E
- H-NBR (Hydrogenated Acrylonitrile Butadiene Rubber)
can be used between -25 °C and +100 °C > H

Measuring System / Design

- Standard > 0
- System for measuring O₂ (only with FKM seal) > 3
- Silicon-free version > A

14 Declaration of conformity

EG-Konformitätserklärung

Wir erklären in alleiniger Verantwortung, dass nachstehend genannte Produkte

EC Declaration of Conformity

We declare under our sole responsibility that the products mentioned below

Drucktransmitter / Pressure Transmitter

ME11 #####

gemäß gültigem Datenblatt übereinstimmen mit der

specified by the actual data sheet complies with the

EG-Richtlinie

EC Directive

2004/108/EG (EMV)

2004/108/EC (EMC)

Die Produkte wurden entsprechend der folgenden Normen geprüft (Störfestigkeit für Industriebereich, Störaussendung für Wohnbereich):

The instruments have been tested in compliance with the norms (Immunity for industrial environments, emission for residential environments):

DIN EN 61326-1:2004-05
DIN EN 61326-2-3
DIN EN 61010-1:2002-08

DIN EN 61326-1:2004-05
DIN EN 61326-2-3
DIN EN 61010-1:2002-08

Die Geräte werden gekennzeichnet mit:

The gauges are marked with:



Bad Salzuflen, 22.06.09
(Ort, Datum / place, date)

(rechtsverb. Unterschrift / authorized signature)

