

Contrans P Transmitter

AMD 200 / AMD 220 for Gauge Pressure

Span: 5 mbar to 600 bar
(0.5 kPa to 60,000 kPa)

10/15-5.40 EN



(18 029.tif)

- Measuring Media: Gases, vapours, liquids
- High overload capability
- Two-wire technique
- DC 12 to 45 V operating voltage
- 4...20 mA output signal
- - 40°C to + 80°C ambient temperature
- IP 65 Degree of Protection, field mounting
- Small size and low weight
- E.M.C. according to IEC 801
- Lower range value and span are adjustable
- Built-in damping potentiometer
- Corrosion-resistant materials
- Mounting directly at the process
- „Intrinsic Safety“ explosion protection

The gauge-pressure measuring mechanism consists of the pressure sensor and the process connection. The AMD has two sensor types, with the AMD 220 Transmitter, the gauge pressure which is present acts directly on the ceramic diaphragm whereas with the AMD 200 Transmitter the pressure is transmitted to the internal sensing diaphragm via the isolating diaphragm and the filling liquid. The slight deflection of the sensing diaphragm is converted into 4...20 mA in an amplifier. The high over-ranging capability provides for high operational safety, also with disturbances from the process.

Versatile usage with high operational safety is ensured by various international approvals and certificates.

Technical Data

Measuring Mechanism

Measuring limits

-100% (≥ -1 bar) and +100% of the max. span

Lower range value

continuously adjustable between the measuring limits

Span

continuously adjustable between 12.5% and 100% of the max. span,
with range 60 mbar: min. measuring span is 5 mbar

Characteristic

linear, rising

Over-ranging limit

AMD 220:

ranges ≤ 400 mbar: 10 bar

- with perfluorelastomer (FFPM) O-ring: 5 bar
range 2.5 bar: 25 bar

range 16 bar: 2 times the range end value

AMD 200:

ranges 2.5 bar...250 bar: 2 times the range end value
range 600 bar: 900 bar

Filling liquid volume

approx. 0.2 cm^3 (AMD 200 only)

Process wetted parts

AMD 220:

Sensing diaphragm: ceramic Al_2O_3

Process connection: 316 Ti st.st.(1.4571)

O-ring: see Ordering Data



The O-ring prevents the medium reaching the atmosphere.

AMD 200:

Isolating diaphragm: Hastelloy C

Process connection: 316 L st.st.(1.4404)

Front bonded diaphragm (see Dimensional Diagrams):
316 L st.st.(1.4404)

Power Supply

Operating voltage at transmitter

$U_{B,max} = \text{DC } 45 \text{ V}$ $U_{B,min} = \text{DC } 12 \text{ V}$

Output signal

4...20 mA, gauge-pressure proportional

Load R

$$R \leq \frac{U_s - 12 \text{ V DC}}{20 \text{ mA}} \text{ k}\Omega \quad U_s = \text{Supply voltage}$$

General and Safety Data

Ambient Conditions

Ambient temperature range

$-40^\circ\text{C} \dots +80^\circ\text{C}$

AMD 220 with perfluorelastomer O-ring: $-15^\circ\text{C} \dots +80^\circ\text{C}$

AMD 220 with Viton O-ring: $-18^\circ\text{C} \dots +80^\circ\text{C}$

AMD 200 with filling liquid carbon fluoride: $-20^\circ\text{C} \dots +80^\circ\text{C}$

Process temperature range

$-40^\circ\text{C} \dots +80^\circ\text{C}$

AMD 220 with perfluorelastomer O-ring: $-15^\circ\text{C} \dots +80^\circ\text{C}$

AMD 220 with Viton O-ring: $-18^\circ\text{C} \dots +80^\circ\text{C}$

AMD 200 with filling liquid carbon fluoride: $-20^\circ\text{C} \dots +80^\circ\text{C}$

Storage temperature range

$-50^\circ\text{C} \dots +80^\circ\text{C}$

Humidity

$\leq 95\%$, annual mean, condensation permissible

Amplifier Enclosure, Mounting, Weight

Material

Die cast copperfree aluminium (GD-AISI)

Screw cover made of polycarbonate

Protective varnish

Epoxy resin, gravel-grey, RAL 7032

Degree of Protection

IP 65 (jet waterproof) according to EN 60529

(= NEMA standard type 4)

Type of Mounting

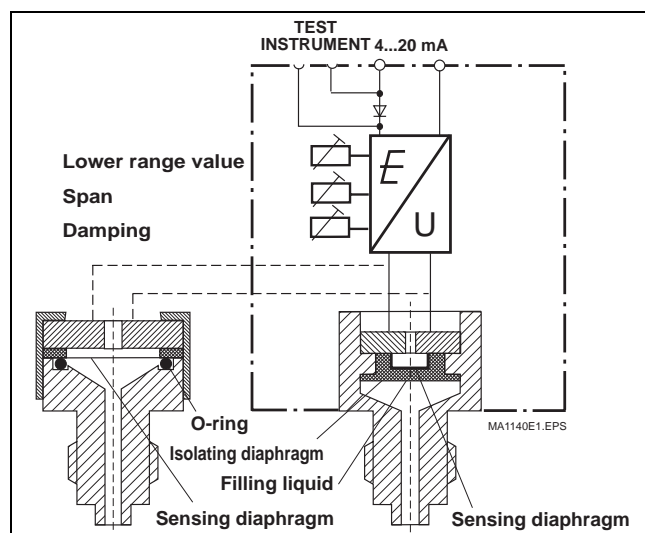
Preferably mounted vertically directly onto fitting.

Wall or pipe mounting with accessories (option).

Weight

Approx. 0.85 kg

Functional Diagram



Technical Data

Transient Response

at reference conditions

All values are limit values and refers to the output span. The effects identified with a * on the zero ($p_e = 0$) and the long-term drift are with reference to the measuring range and are to be multiplied by the turn-down factor.

Conformity

including hysteresis and dead band, terminal-based

0.2 %¹⁾

Hysteresis

0.1 %¹⁾

Dead band

0.02 %

Ambient temperature effect per 10 K between -10°C...+60°C

* on zero

0.2 %

on span

0.15 %

Power supply

voltage effect per volt

0.005 %

* Long term drift within 6 months

0.3 %

Rise time acc. to DIN 16 086

0.3 s

additional adjustable time constant

0...6.6 s

DIN...= German Standard

¹⁾ with adjusted span <10 mbar, the factor 1.5 is to be taken into account

Explosion protection, Certification

Explosion protection Intrinsic Safety "i"

Identification Code (DIN EN 50 014): EEx ib IIC T4 or T6

Type Approval Certificate:

for AMD 200

PTB No. Ex-89.C.2098

for AMD 220

PTB No. Ex-89.C.2179

Operating conditions:

max. ambient temperature 80°C with T4

max. ambient temperature 40°C with T6

Connected to an intrinsically safe current circuit with the highest values:

with T4 temperature class:

$U \leq 28 \text{ V}$

$I \leq 100 \text{ mA}$

$P \leq 1.0 \text{ W}$

or

$U \leq 28 \text{ V}$

$R_i \geq 250 \Omega$

or

with T6 temperature class:

$U \leq 19 \text{ V}$

$I \leq 25 \text{ mA}$

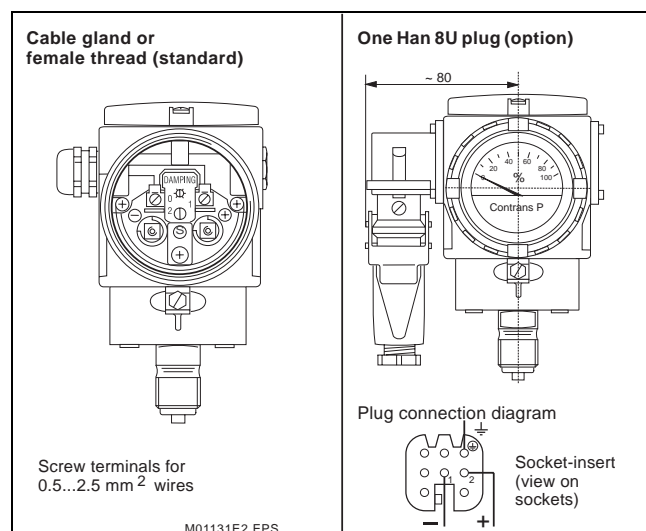
$P \leq 0.46 \text{ W}$

effective internal capacitance $\leq 0.015 \mu\text{F}$

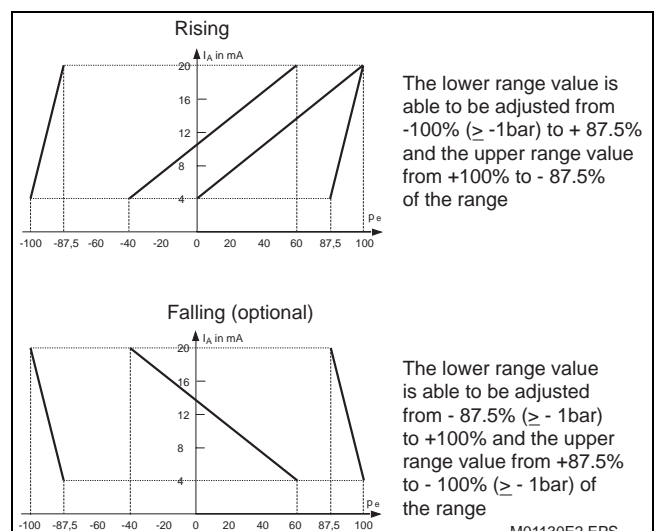
effective internal inductance $\leq 0.01 \text{ mH}$

Further approvals, such as Ex Designs (Switzerland, Austria), on request.

Electrical Connections



Possible characteristics (adjustable)



Ordering Data

To order, the order number and the data of the adjustable values: lower and upper range values will suffice.

Transmitter AMD 220	Order No.	<input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value="6"/>	-	<input type="text" value="2"/>	-	
<hr/>						
Measuring range (maximum span)		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
0 ... 60 mbar (6 kPa)	.....					1010
0 ... 400 mbar (40 kPa)	.....					1014
0 ... 2.5 bar (250 kPa)	} (not with perfluorelastomer O-ring)					2018
0 ... 16 bar (1,600 kPa)						2022
Adjusted from ...to...mbar/bar/kPa (data is necessary ; falling characteristic Code No. 215)						
<hr/>						
O-ring material		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Buna	.....					060
Viton (restricted operating temperature -18°C...+80°C)	.....					160
Perfluorelastomer (corresponding to PTFE, restricted operating temperature -15°C...+80°C, only for ranges 60/400 mbar)	.....					126
<hr/>						
Process connection		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Spigot DIN 16288 Form B-G 1/2 A (R1/2")	.....					067
1/2-14 NPT female thread	.....					170
<hr/>						
Output signal		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
4 ... 20 mA	.....					021
<hr/>						
Electrical connection		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
One Pg 13,5 cable gland	.....					044
Two Pg 13,5 cable glands	.....					268
Two 1/2-14 NPT female threads	.....					270
One plug connector (Han 8U)	.....					272
<hr/>						
Order No.		<input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value="6"/>	-	<input type="text" value="2"/>	-	<input type="text"/> / <input type="text"/> / <input type="text"/> / ...

Ordering Data

Transmitter AMD 200	Order No.	<input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value="3"/> <input type="text" value="6"/>	-	<input type="text" value="2"/>	-	
<hr/>						
Measuring range (maximum span)		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
0 ... 2.5 bar (250 kPa)	} (Special design; only with Code No. 070)					3018
0 ... 16 bar (1,600 kPa)						3022
0 ... 40 bar (4,000 kPa)	.....					2024
0 ... 100 bar (10,000 kPa)	.....					2026
0 ... 250 bar (25,000 kPa)	.....					2028
0 ... 600 bar (60,000 kPa)	.....					1030
Adjusted from ...to...bar/kPa (data is necessary ; falling characteristic Code No. 215)						
<hr/>						
Process connection		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Spigot DIN 16288 Form B-G 1/2 A (R1/2")	.....					067
1/2-14 NPT female thread	.....					170
Front bonded diaphragm	.....					162
<hr/>						
Filling liquid		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
Silicone oil	.....					070
Carbon fluoride (only 40/250 bar ranges, restricted operating temperature -20°C...+80°C)	.....					133
<hr/>						
Output signal		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
4 ... 20 mA	.....					021
<hr/>						
Electrical connection		<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
One Pg 13,5 cable gland	.....					044
Two Pg 13,5 cable glands	.....					268
Two 1/2-14 NPT female threads	.....					270
One plug connector (Han 8U)	.....					272
<hr/>						
Order No.		<input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="5"/> <input type="text" value="3"/> <input type="text" value="6"/>	-	<input type="text" value="2"/>	-	<input type="text"/> / <input type="text"/> / <input type="text"/> / ...

If necessary, the Code Nos. are to be suffixed to the Order No.

Additional Ordering Data for Instrument Options (Code-Nos.)

Code Nos. can be suffixed to the Order No.

Instrument Options	Code No.
Diaphragm with Fluid film grade I (to reduce hydrogen diffusion), not with AMD 220	145
Ex-design: EEx ib IIC T4/T6	550
Conformity < 0.1%	544
Falling characteristic (e.g. adjusted from 0 bar to -1 bar or +400 mbar to 0 bar)	215
Oil and grease-free for Oxygen measurement up to 100 bar (with AMD 200 only combined with order No. 133, with AMD 220 only combined with order No. 160)	189
Indicating instrument (Normal or Ex "i" design)	209
Scale markings 0...100% linear	092
(of the indicating scale divisions according to data instrument)	423
Tagging (on Type plate, max. 32 characters)	205
Tagging on Tie-on plate (stainless steel, max. 32 characters)	202
Mounting bracket for wall mounting (carbon steel)	141
Mounting bracket and U-bolts for 2" pipe mounting (carbon steel)	142
Mounting bracket for wall mounting (stainless steel)	143
Mounting bracket and U-bolts for 2" pipe mounting (stainless steel)	144
Documentation	
Instructions (state total number of copies) ¹⁾	
German (42/15-536, no details required for one copy) (...copies)	Z2D
English (42/15-536 EN, Code No. always required) (...copies)	Z2E
French (42/15-536 FR, Code No. always required) (...copies)	Z2F

¹⁾ One copy without charge

Scope of Supply

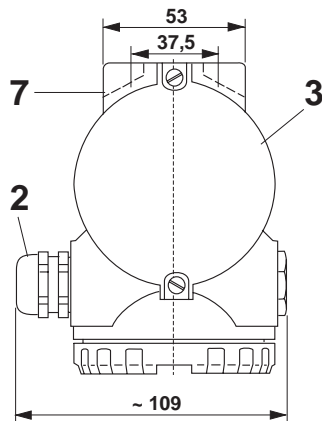
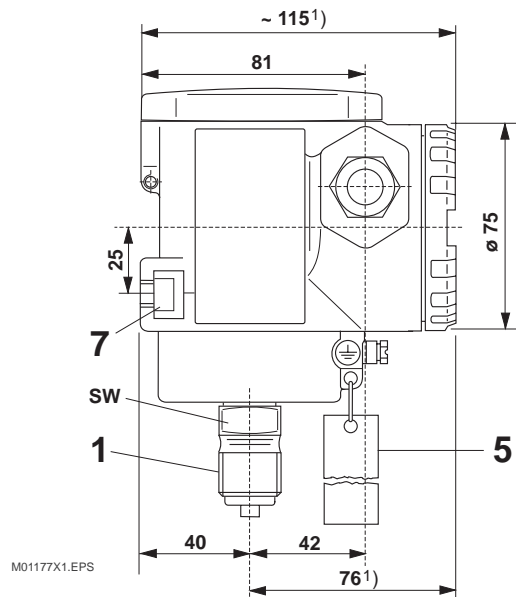
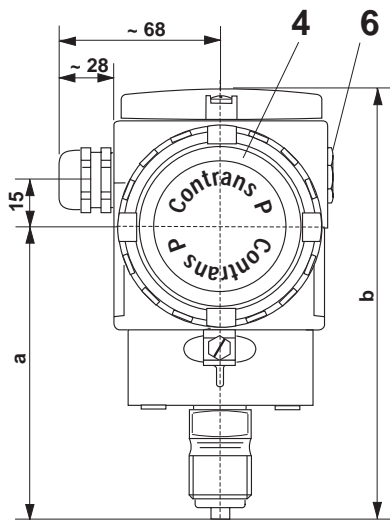
- 1 Instructions
- 1 Instrument socket with plug connector design

Supplied against special order:

Pipe unions, remote seals, power supply e.g. Data Sheet 18-8.38 EN,
Spare Parts Transmitter AMD,
Spare Parts Gauge Pressure Measuring Mechanism D036/D056.

Dimensional Diagrams

Errors and omissions excepted. All dimensions in millimeters (mm).



- 1 Process connection
 - 2 Electrical connection: Pg 13.5 cable gland or two cable glands, one each on the right and left or 1/2-14 NPT female thread on both sides or one Han 8U plug
 - 3 Type label
 - 4 Screw cover
 - 5 Tie-on plate e.g. for tag number (optional)
 - 6 Sealing plug
 - 7 Groove for screws when mounting on wall or pipe
- The dimensions "a" and "b" are dependent upon the transmitter type and the process connection.

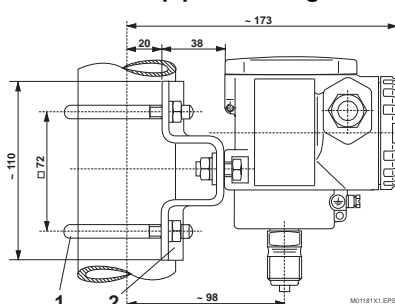
SW (= width between flats in mm):

- SW 22 (standard)
- SW 27 for 1/2-14 NPT female thread process connection and ranges ≤ 250 bar.
- SW 36 for 1/2-14 NPT female thread process connection and range 600 bar.

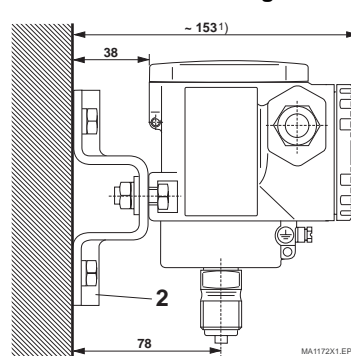
Process connection	AMD 220		AMD 200	
	Dimens. "a"	Dimens. "b"	Dimens. "a"	Dimens. "b"
Spigot DIN 16288-Form B	106.5	156.5	106.5	156.5
1/2-14 NPT female thread	97	147	97	147
Front bonded diaphragm	---	---	100.5	150.5
1/2-14 NPT male thread	111.5	161.5	130	180
Spigot G1/2-Form D for convex seal	111.5	161.5	111.5	161.5
1/2-14 NPT female thread and range 600 bar	---	---	130	180

Possible mounting with mounting bracket (optional)

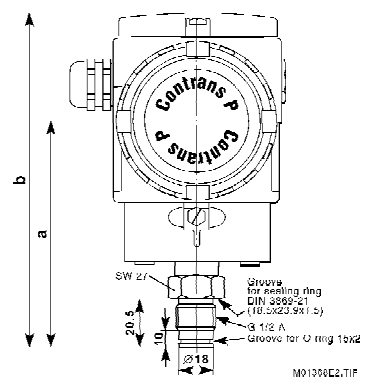
Vertical pipe mounting



Wall mounting



Front bonded diaphragm



1 U-bolts for pipe mounting (optional), 2" pipe diameter.

2 Mounting bracket, 11mm hole diameters (optional).

¹⁾ with Indicating Instrument plus 15 mm.



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