Differential Pressure Transmitter

DELTA - trans

Model 891.34.2189

Pressure Gauges

- **Differential pressure measuring ranges from 0 ... 250 mbar to 0 ... 25 bar**
- **High working pressure (static pressure) 25 bar**
- **Overload value either side 25 bar**
- **Solid case construction as protection against external mechanical effects**
- **Integrated pressure equalizing valve as optional extra**
- **Industrial standard signals 4 ... 20 mA or 0 ... 20 mA**
- **CE - conformity**
- **Integrated 3½-digit LCD-display (see illustration) as optional extra**
- **Three cast-on mounting brackets for wall mounting**
- **Long service life**
- **Optimal price/performance ratio**

DELTA - trans with integrated 3½-digit LCD-display (optional extra) and compression fitting with ferrule (optional extra)

General features

These differential pressure transmitters are particularly intended for the measurement of very low differential pressure with high demands to one-sided overload.

Standard output signals of 4 … 20 mA (2-wire system) or 0 … 20 mA (3-wire system) can be provided from a non-stabilized DC supply of 10 … 30 V.

Due to the solid and compact design of the instrument, the operation requires almost no maintenance even under arduous industrial service conditions.

As an optional extra, the differential pressure transmitter ***DELTA-trans*** (in 2-wire design; 4 ... 20 mA) may be supplied with an integrated 3 ½-digit LCD-display.

Electrical connection is made by means of a cable box with cable gland M20x1.5.

Main applications

- Heating, climatic and ventilating technology
- Dust removing technology
- Technical building equipment
- Filter plants
- Drinking and service water treatment
- Monitoring and control of pumps in pressure boosting and fire exstinguishing plants

Suitable for all gaseous and liquid media that will not obstruct the pressure system.

Supplementary data sheets

- Differential pressure gauge with integrated working pressure gauge Model 702.01.100 (see data sheet PM 07.15) ***DELTA-plus***
- Differential pressure gauge with integrated working pressure gauge and microswitch Model 702.02.100 (see data sheet PM 07.16) ***DELTA-comb***
- Differential pressure switch Model 851.02.100 (see data sheet PM 07.17) ***DELTA-switch***

Design and operating principle

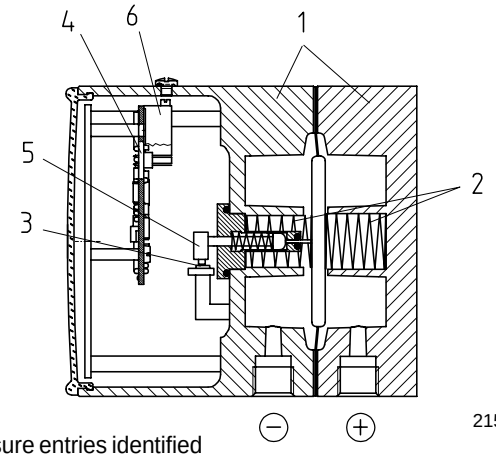
The differential pressure transmitter consists mainly of a mechanical measuring system (1) with elastic pressure element (2), magnetic-field-dependent sensor (3) with signal processing board (4) and case with the connecting parts for the electronics.

A magnet (5) rigidly coupled to the pressure element influences the electromagnetic field of the HALL sensor. The resulting signal is amplified to a standard output signal via the signal processing board.

For recalibration, zero and span can be adjusted by means of easily accessable potentiometers (6). 1)

1) Restriction: If an LCD display is integrated, it must be noted that the zero point and span adjustment is to be used only for recalibration of the measuring range. Changes of the measuring range made by the user by means of the zero and span adjustment will not be taken into account by the display. If zero / span adjustments are to be applied during use, we recommend a display 0 ... 100 %.

Illustration of operating principle



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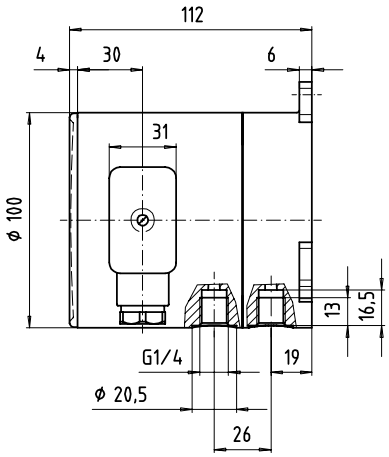
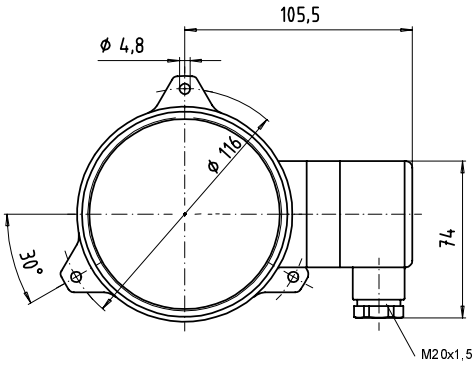
Pressure entries identified
⊕ high pressure and ⊖ low pressure

Technical data		*DELTA-trans* Model 891.34.2189
Differential measuring range	bar	0 … 0.25 to 0 … 25
Working pressure (stat.) max.	bar	25
Overload value		
either side max.	bar	25
Pressure connections	exposed to medium	2 x G ¼ female, bottom, in-line, axle base 26 mm (optional: other pressure connections male or female or compression fitting with ferrule for pipe Ø 6, 8 or 10 mm respectively)
Pressure media chamber	exposed to medium	GD-AlSi 12 (Cu) 3.2982, black painted (optional GD-AlSi 12 (Cu) HART-COAT surface protection or stainless steel)
Press. element compression spring	exposed to medium	stainless steel 1.4310
Press. element separ. diaphragm	exposed to medium	NBR fabric back stay (optional FPM/Viton)
Links	exposed to medium	stainless steel 1.4104, NBR (optional FPM/Viton)
Sealing rings	exposed to medium	according to membrane material, NBR or FPM/Viton
Press. equalising valve (optional)	exposed to medium	stainless steel and NBR or FPM/Viton according to membrane material
4-way valve manifold (optional)	exposed to medium	Cu-alloy or stainless steel, 1x press. equalising valve, 2x gauge valve, 1x valve for purging or air bleeding
Power supply U_B	DC V	$10 < U_B \leq 30$ (optional LCD-display $14 < U_B \leq 30$)
Permissible residual ripple	% of span / 10 V	≤ 0.1
Supply voltage effect	% ss	≤ 10
Output signal and permissible max. load R_A		4 … 20 mA, 2-wire system $R_A \leq (U_B - 10\,V) / 0.02\,A$ with R_A in Ohm and U_B in Volt 0 … 20 mA, 3-wire system $R_A \leq (U_B - 10\,V) / 0.02\,A$ with R_A in Ohm and U_B in Volt
Effect of load	% of span	≤ 0.1
Response time	s	approx. 1 (optional approx. 50 ms)
Output signal adjustment		
Zero point, electrical 1)	% of span	± 15
Span, electrical 1)	% of span	± 30
Linearity (including hysteresis)	% of span	2.5 with measuring ranges 0 ... 250 or 0 ... 400 mbar (limit point calibration) 1.6 with measuring ranges ≥ 0 ... 0,6 bar (limit point calibration)
Permissible		
Medium temperature	°C	+80 maximum
Ambient temperature	°C	-10 … +60 (optional LCD-display 0 … +50)
Compensated temperat. range	°C	-10 … +60 (optional LCD-display 0 … +50)
Temperature coefficient in compensated temperat. range		
average T_K on zero point	% of span / 10 K	≤ 0.4
average T_K on span	% of span / 10 K	≤ 0.4
LCD-display (optional)		only electrical output signal 4 ... 20 mA, 2-wire system
- Voltage load	DC V	3.5
- Display		3½-digit, height 12.7 mm
- Ambient temperature	°C	0 … +50
- Storage temperature	°C	-10 … +80
Wiring		Terminal box (screw terminals up to 2.5 mm²)
Wiring protection		Protected against polarity crossing and overvoltage
EMI (electro-magnetic immunity)		Interference emission per EN 50 081-1 (March 93) and EN 50 081-2 (March 94), Interference immunity per EN 50 082-2 (March 95)
Ingress protection per EN 60 529 / IEC 529		IP 54 (optional IP 65)
Weight	kg	approx. 1.3
Dimensions	mm	see drawings

Dimensions in mm





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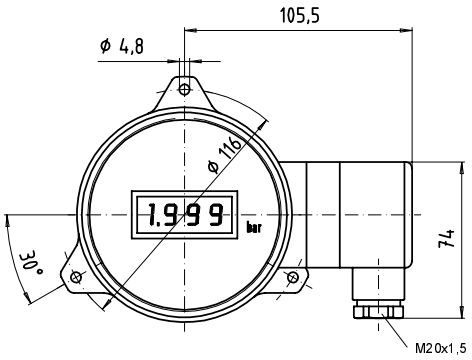
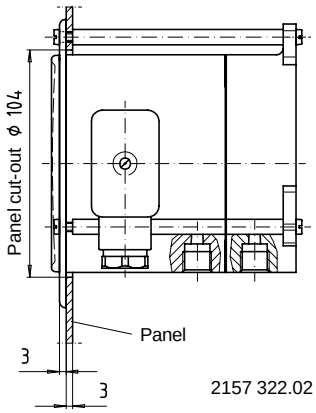
LCD-display as optional extra



Panel mounting as optional extra



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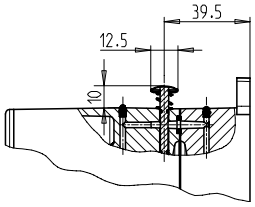
Integrated pressure equalizing valve as optional extra



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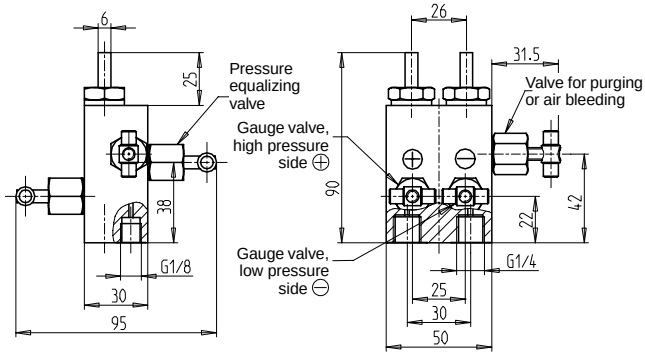
4-way valve manifold as optional extra



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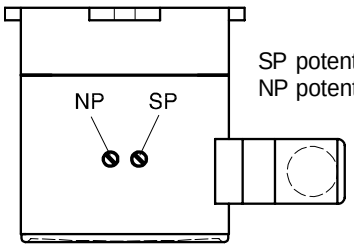
Position of the potentiometers in the electronics case

The potentiometers are accessible after unscrewing the screw plugs in the top of the casing.



SP potentiometer for span
NP potentiometer for zero point

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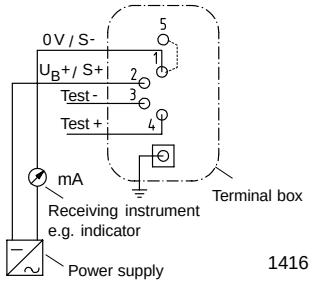
Connection details

The terminals 1 and 5 are bridged internally in the terminal box providing two terminals for the 0 V / S - connection.

4 ... 20 mA 2-wire system



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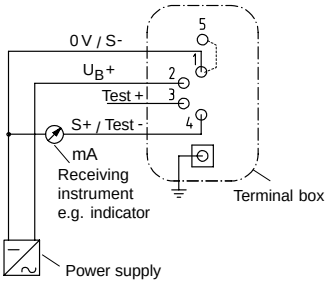
0 ... 20 mA 3-wire system



Order code for Differential Pressure Transmitter *DELTA-trans* Model 891.34.2189

Field No.		Code	Instrument design	
			Output signal	
		A	4 ... 20 mA, 2-wire system	*standard*
1		**B**	0 ... 20 mA, 3-wire system	
			Unit	
		B	bar	
2		**?**	other	*Please state as additional text*
			Measuring range	
		AN	0 ... 0.25 bar	
		BB	0 ... 0.4 bar	
		BC	0 ... 0.6 bar	
		BD	0 ... 1 bar	
		BE	0 ... 1.6 bar	
		BF	0 ... 2.5	

Field		Code	Instrument design	
			bar	
		BG	0 ... 4 bar	
		BH	0 ... 6 bar	
		BI	0 ... 10 bar	
		BK	0 ... 16 bar	
		BL	0 ... 25 bar	
3		??	other	*Please state as additional text*
			Process connection	
		AA	2 x G 1/4 female	*standard*
		AM	2 x G 1/4 B Cu-alloy	
		AN	2 x G 1/4 B stainless steel	
		DA	compression fitting with ferrule, steel for pipe Ø 6 mm	
		DB	compression fitting with ferrule, steel for pipe Ø 8 mm	
		DC	compression fitting with ferrule, steel for pipe Ø 10 mm	
		DE	compression fitting with ferrule, stainless steel for pipe Ø 6 mm	
		DF	compression fitting with ferrule, stainless steel for pipe Ø 8 mm	
		DG	compression fitting with ferrule, stainless steel for pipe Ø 10 mm	
		DK	compression fitting with ferrule, Cu-alloy for pipe Ø 6 mm	
		DL	compression fitting with ferrule, Cu-alloy for pipe Ø 8 mm	
		DM	compression fitting with ferrule, Cu-alloy for pipe Ø 10 mm	
4		??	other	*Please state as additional text*
			Pressure media chamber	
		A	aluminium	*standard*
		H	aluminium HART-COAT	
		C	stainless steel	
5		?	other	*Please state as additional text*
			Separation diaphragm / Sealing rings	
		G	NBR	*standard*
6		J	FPM/Viton	
			Mounting flange / bracket	
		Z	without	*standard*
		D	front flange, black steel	
7		?	other	*Please state as additional text*
			Ingress protection	
		F	IP 54	*standard*
8		I	IP 65	
			Wiring	
		P	terminal box M20x1.5	*standard*
		D	terminal box with 1.0 m cable length	
9		?	other	*Please state as additional text*
			Display	
		Z	without	*standard*
10		D	LCD-display	only electrical output signal 4 ... 20 mA, 2-wire system
			Valve manifold / Pressure equalizing valve	
		Z	without	*standard*
		I	integrated pressure equalizing valve	
		M	4-way valve manifold, Cu-alloy	
11		V	4-way valve manifold, stainless steel	

Order code for *DELTA-trans* Model 891.34.2189

	1	2		3		4	5	6	7	8	9	10	11	12		13	14
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Additional text: _____

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W 1283 GB 10 04.00 CM 9017 224 Printed in Germany