Differential Pressure Transmitter
Model 891.34.2189
DELTA-trans

Applications

- Suitable for all gaseous and liquid media that will not obstruct the pressure system
- Heating, ventilation, air-conditioning and dust removing technology
- Technical building equipment, filter plants, drinking and service water treatment
- Monitoring and control of pumps in pressure boosting and fire extinguishing plants

Special Features

- Differential pressure measuring ranges from 0 … 160 mbar
- High working pressure (static pressure): 25 bar
- Overload value either side up to 25 bar
- Solid case construction for protection against external mechanical effects
- Integrated pressure equalising valve as optional extra

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

Description

The differential pressure transmitters DELTA-trans are particularly intended for the measurementof very low differential pressures with high demands on 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-stabilised 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.

Differential pressure gauge DELTA-plus see data sheet PM 07.15
Differential pressure gauge DELTA-comb see data sheet PM 07.16
Differential pressure switch DELTA-switch see data sheet PM 07.17

Specifications		*DELTA-trans*, Model 891.34.2189
Differential pressure range	bar	0 ... 0.16 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 compress. spring	exposed to medium	Stainless steel 1.4310
Press. element separ. diaphragm	exposed to medium	FPM/Viton fabric back stay (optional: NBR)
Links	exposed to medium	Stainless steel 1.4305, FPM/Viton (optional: NBR)
Sealing rings	exposed to medium	FPM/Viton (optional: NBR)
Press. equalising valve (optional)	exposed to medium	Stainless steel and FPM/Viton
4-way valve manifold (optional)	exposed to medium	Cu-alloy or stainless steel, 1x pressure 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		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
permissible max. load R_A		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	% of span	± 15
Span, electrical	% of span	± 30
Linearity	% of span	2.5 (limit point calibration)
(including hysteresis)		Optional: 1.6 (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 coefficients in		
compensated temperat. range		
average T_K of zero point	% of span / 10 K	≤ 0.4
average T_K of span	% of span / 10 K	≤ 0.4
LCD-display (optional)		Only with 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 reserve polarity and overvoltage
EMC (electromagnetic		Interference emission per EN 50 081 - 1 (March 93) and EN 50 081 - 2 (March 94),
compatibility		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

Approval German Lloyd (optional)

Additional or deviating technical data				
Pressure ranges	bar	0 ... 0.25 to 0 ... 10		
Output signal		4 ... 20 mA, 2-wire or 0 ... 20 mA, 3-wire, current limit I < 32 mA		
Permissible				
ambient temperature	°C	- 10 … + 70		
EMC (electromagnetic				
compatibility)		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)		
ESD	kV	+/- 8	contact discharge	IEC 1000-4-2
Electromagnetic				
fields	V/m	10	80 % AM, 1 kHz, 0.01 ... 1000 MHz	IEC 1000-4-3
Burst	kV	+/- 2	coupling clamp	IEC 1000-4-4
Conducted				
HF-disturbance	V	3	80 % AM, 1 kHz, 0.01 ... 100 MHz	IEC 1000-4-6
Surge	kV	+/- 0.5	symmetrically	IEC 1000-4-5
	kV	+/- 1	asymmetrically, R_i = 42 Ohm	
	kV	+/- 1	symmetrically	
	kV	+/- 2	asymmetrically, R_i = 42 Ohm, , with surge protection	
			only e.g. model MM-DS/x-NFE(L), firm Dehn & Söhne	
			or equivalent	
Conducted				
NF-disturbance	Veff	3	0.05 ... 10 kHz	IEC 945
Vibration test F_c				
2 ... 25 Hz, +/- 1.6 mm	%	< 2.5	error	IEC 68-2-6
25 ... 100 Hz, 4 g	%	< 2.5	error	

Design and operating principle

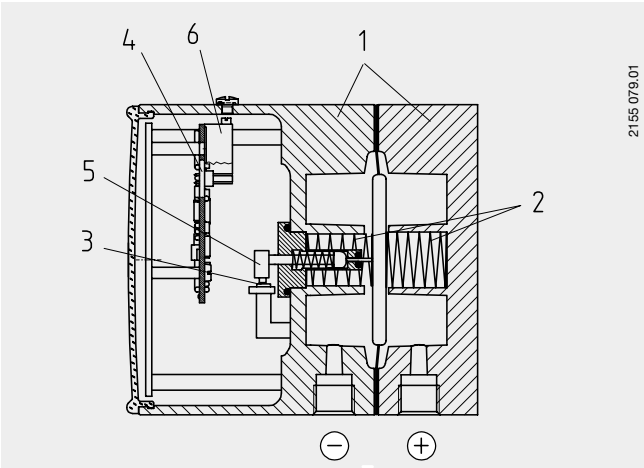
The differential pressure transmitter consists mainly of a mechanical measuring system (1) with elastic pressure element (2), magnetic-field-dependent sensor (3) with signal processing board (4) and case with the connecting parts for the electronics.

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 %.

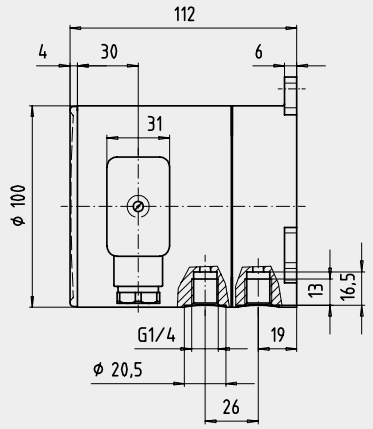
Illustration of operating principle

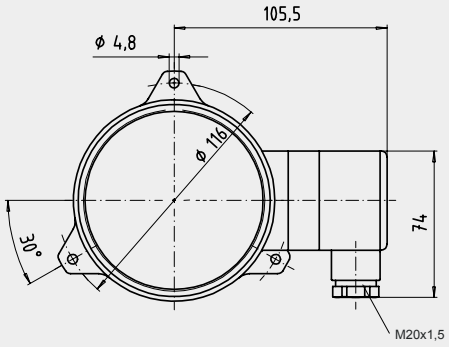


Pressure entries identified
⊕ high pressure and ⊖ low pressure

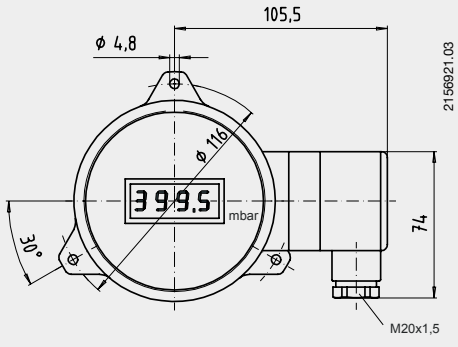
Dimensions in mm

Standard version





LCD-display (optional)



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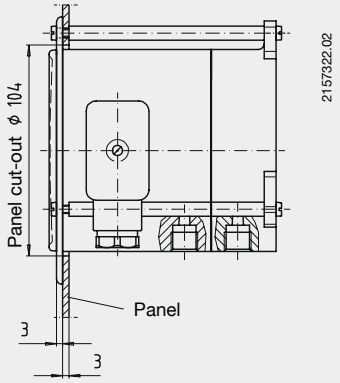
Panel mounting (optional)



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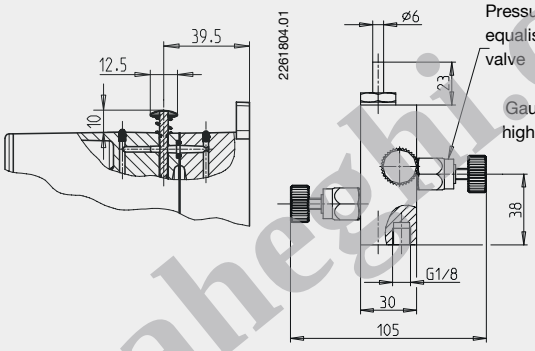
Integrated pressure equalising valve (optional)



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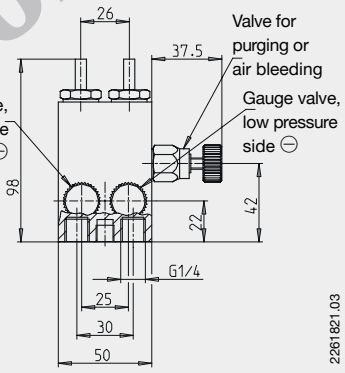
4-way valve manifold (optional)



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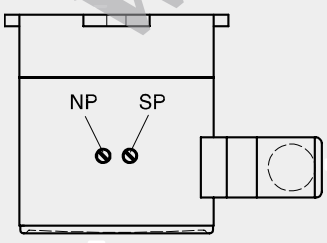
Position of the potentiometers in the electronics case

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



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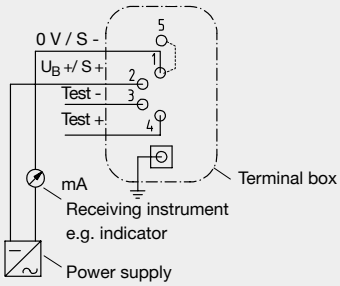
SP potentiometer for span

NP potentiometer for zero point

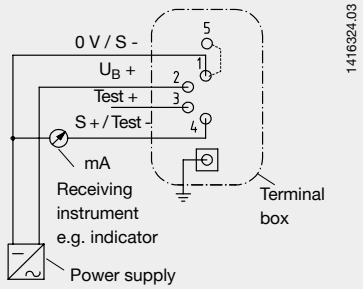
Connection details

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



0 … 20 mA 3-wire system



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Ordering information

Field No.		Code	Features	
			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	
		AM	0 ... 0.16 bar	
		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 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	
		J	FPM/Viton	*standard*
6		**G**	NBR	
			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 with electrical output signal 4 ... 20 mA, 2-wire system*

Ordering information, continued

Field No.		Code	Features	
			Valve manifold / pressure equalising valve	
		Z	without	*standard*
		I	integrated pressure equalising valve	
		M	4-way valve manifold, Cu-alloy	
11		**V**	4-way valve manifold, stainless steel	
			Approvals	
		Z	without	*standard*
12		**G**	with GL-approval	

		Additional order details			
		YES	**NO**		
13		**1**	**Z**	quality certificates	*Please state in clearly understandable text!*
14		**T**	**Z**	additional text	*Please state in clearly understandable text!*

Order code for ***DELTA-trans***:

	1	2	3		4	5	6	7	8	9	10	11	12		13	14
891.34.2189 -		-			-									-		

Additional text: _____

Modifications may take place and materials specified may be replaced by others without prior notice.
Specifications and dimensions given in this leaflet represent the state of engineering at the time of printing.

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