



DPS+

Pressure Transmitter for Differential Pressure

- ▶ piezoresistive pressure sensor
- ▶ for use in industry and laboratory
- ▶ differential pressure ranges from 0 ... 6 mbar up to 0 ... 1000 mbar

The pressure transmitter DPS+ is suited for measuring gauge pressure, vacuum, and differential pressure of non-aggressive gases.

Basic element of the DPS+ is a temperature compensated piezoresistive pressure sensor. It works without wear and ensures maintenance-free operation.

The integrated electronics delivers an electrical output signal which is proportional to the applied pressure (current 0 (4) ... 20 mA or voltage 0 ... 10 V). A damping function is provided for case of heavily alternating pressure peaks.

The DPS+ can be supplied with 24 V_{DC} (reverse polarity protection) or 230 V_{AC}.

Due to its rugged design the transmitter is suited for laboratory use well as for industrial environment. The pressure transducer DPS+ features good long-term stability, linearity, and repeatability.

Preferred areas of use are:

- ▶ heating and air conditioning
- ▶ clean room technology
- ▶ medical equipment
- ▶ filter technology, flow measurement
- ▶ level measurement (via air column)
- ▶ flow velocity measurement
- ▶ pitot tube, orifice plate

Characteristics

- ▶ for gauge and differential pressure
- ▶ current and voltage output signals in 2-, 3- and 4-wire systems
- ▶ high overload limits
- ▶ integrated temperature compensation
- ▶ short reaction time
- ▶ long operation life



DPS+
Differential Pressure Transmitter

Input pressure range

Nominal pressure P_N [mbar] (gauge pressure, vacuum)	6	10	20	40	60	100	160	250	400	600	1000
Overpressure [mbar]	100	100	200	500	500	1000	1000	1000	1000	3000	3000

Output signal / Supply

Standard	2-wire:	4 ... 20 mA / $V_s = 12 \dots 31 V_{DC}$ (without display)			
Optional	2-wire:	4 ... 20 mA / $V_s = 19 \dots 31 V_{DC}$ (with display)			
	3-/ 4-wire:	4 ... 20 mA / $V_s = 19 \dots 31 V_{DC}$	or	230 V_{AC} / 50/60 Hz ($\pm 10 \%$ tolerance)	
				110 V_{AC} / 50/60 Hz ($\pm 10 \%$ tolerance)	
				230 V_{AC} / 50/60 Hz ($\pm 10 \%$ tolerance)	
				110 V_{AC} / 50/60 Hz ($\pm 10 \%$ tolerance)	
0 ... 10 V / $V_s = 19 \dots 31 V_{DC}$					

Performance

Accuracy ¹	$P_N > 160$ mbar:	$\leq \pm 0.35\%$ FSO	(BFSL: $\leq \pm 0.175\%$ FSO)
	$P_N = 40 \dots 160$ mbar:	$\leq \pm 1\%$ FSO	(BFSL: $\leq \pm 0.5\%$ FSO)
	$P_N < 40$ mbar:	$\leq \pm 2\%$ FSO	(BFSL: $\leq \pm 1\%$ FSO)
Permissible load	current 2-wire:	$R_{max} = [(V_s - V_{smin}) / 0.02] \Omega$	
	current 3-/ 4-wire:	$R_{max} = 500 \Omega$	
	voltage 3-/ 4-wire:	$R_{min} = 1 M\Omega$	
Influence effects	supply:	0.05 % FSO / 10 V	
	load:	0.05 % FSO / k Ω	

Thermal errors (Offset and Span)

Nominal pressure P_N	≤ 10 mbar	≤ 20 mbar	≤ 250 mbar	> 250 mbar
Tolerance band	$\leq \pm 2\%$ FSO	$\leq \pm 1.5\%$ FSO	$\leq \pm 1\%$ FSO	$\leq \pm 0.5\%$ FSO
TC, average [% FSO / 10 K]	± 0.3	± 0.25	± 0.15	± 0.08
in compensated range	0 ... 60 °C			

Electrical protection

Short-circuit protection	permanent
Reverse polarity protection	no damage, but also no function
Electromagnetic compatibility	emission and immunity according to EN 61326
Protection class	protection class 2; protective insulation (acc. to EN 61010-1)

Permissible temperatures

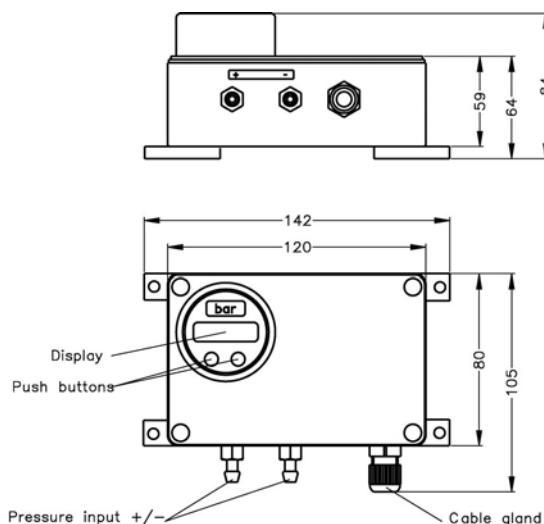
Medium	-40 ... 80 °C
Electronics / environment	-25 ... 50 °C
Storage	-40 ... 50 °C

¹ accuracy according to IEC 60770 – limit point adjustment (non-linearity, hysteresis, repeatability)

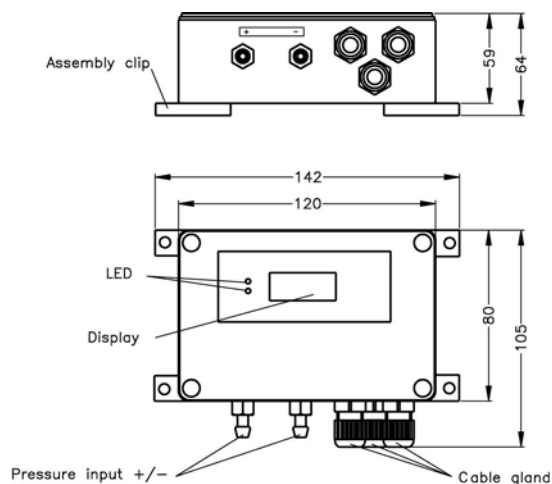
Mechanical connection

Standard	Ø6.6 x 11 (for flexible tubes with Ø6)
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2-wire-electronics



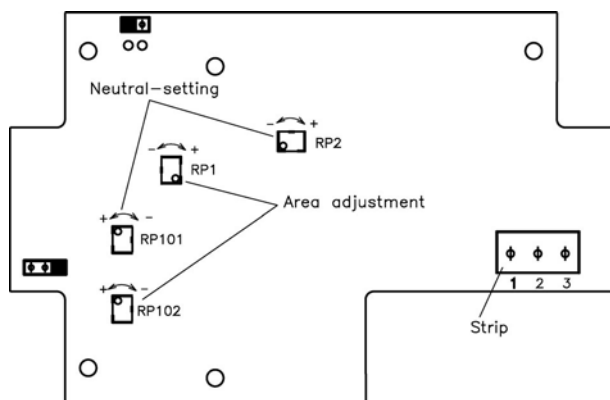
3-/ 4-wire-electronics



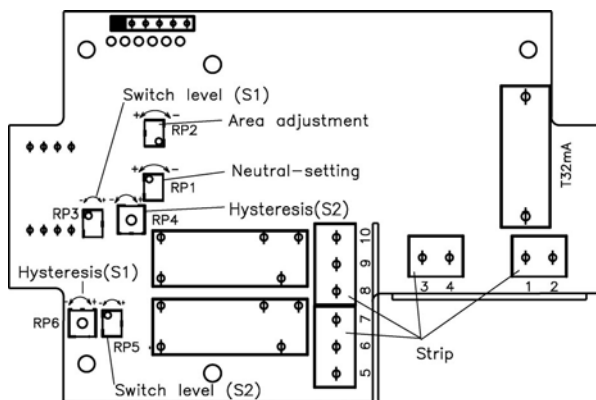
Electrical connection

Standard	Screw terminals max. 1.5 mm ² , with DC power supply cable gland Pg7, with AC supply Pg9
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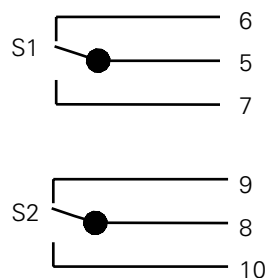
2-wire-electronics



3-/ 4-wire-electronics



Switch contacts (two-way)



Materials

Pressure port	brass, nickel plated
Case	ABS
Sensor	silicon, glass, RTV, ceramics Al_2O_3 , nickel
Media wetted parts	pressure port, sensor, silicon rubber

Miscellaneous

Current consumption (without switching outputs)	Signal output current: max. 25 mA Signal output voltage: max. 14 mA
Dimensions	120 x 80 x 55 (L x W x H)
Weight	approx. 500 g
Installation position	any
Ingress protection	IP 54

Option

Display	2-wire: 4-digit, red LE-display; digit size 7 mm 3-/ 4-wire: 3 1/2-digit LC-display; digit size 10 mm
Limit contacts ² (only with 3-wire version)	1 or 2 relay outputs 5A / 230 V _{AC} (setting ranges: switch output 5 ... 95 % FSO, hysteresis 1 ... 5 % FSO)

Pin configuration

Electrical connection		terminals
2-wire without display (V _s = 12 ... 31 V _{DC})	Supply +	1
	Supply –	2
	Ground	3
2-wire with display (V _s = 19 ... 31 V _{DC})	Supply +	1
	Supply –	2
	Ground	3
3-wire (V _s = 19 ... 31 V _{DC})	Supply +	2
	Supply –	4
	Signal +	3
4-wire (230 V _{AC} / 110 V _{AC})	Supply L	1
	Supply N	2
	Signal +	3
	Signal –	4

² only possible with 3- or 4-wire version

Ordering code DPS+

DPS+

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Pressure									
differential pressure	8	0	8						
gauge pressure	8	0	9						
Input [mbar]									
6			0	0	6	0			
10			0	1	0	0			
20			0	2	0	0			
40			0	4	0	0			
60			0	6	0	0			
100			1	0	0	0			
160			1	6	0	0			
250			2	5	0	0			
400			4	0	0	0			
600			6	0	0	0			
1000			1	0	0	1			
customer			X	X	X	X			
Output									
4 ... 20 mA / 2-wire ^{1, 2}						1			
0 ... 20 mA / 3- or 4-wire						2			
0 ... 10 V / 3- or 4-wire						3			
customer						X			
Accuracy									
P _N < 40 mbar	2,0 %					G			
P _N = 40 mbar ... 160 mbar	1,0%					8			
P _N > 160 mbar	0,35 %					3			
Supply									
12 ... 31 V _{DC} / 2-wire ¹						1			
19 ... 31 V _{DC} / 2- or 3-wire ²						2			
230 V _{AC} / 3- or 4-wire						3			
110 V _{AC} / 3- or 4-wire						4			
customer						X			
Display									
without display						0			
LE-display, 4 digit ³						D			
LC-display, 3 1/2 digit ⁴						1			
customer						X			
Limit contacts									
without limit contact						0			
with 2 limit contacts ⁵						2			
with 1 limit contact ⁵						1			
customer						X			
Special version									
standard						0	0	0	
customer						X	X	X	

¹ 2-wire version without display only possible with output signal 4 ... 20 mA / 2-wire and supply 12 ... 31 VDC / 2L

² 2-wire version with LE-Display only possible with output signal 4 ... 20 mA / 2-wire and supply 19 ... 31 VDC

³ LE-display only possible with 2-wire version

⁴ LC-display only possible with 3- or 4-wire version

⁵ limit contacts only possible with 3- or 4-wire version