



# Intrinsically Safe Electronic Pressure Switch with current output

# DPSX9I

## Main Features

- Measuring ranges 0...5 mbar up to 0...2000 bar
- Output signal 4...20 mA
- Switch signal 2x pnp
- Ex-approved II 1G Ex ia IIC T4 Ga (ATEX)
- Media temperature range -40°C to 100°C
- No internal transmitting media (fully welded, "dry" measuring cell)
- Shock and vibration resistance > 1000 g shock, > 20 g vibration
- Protection against reverse polarity and excess charges (evaluation electronics)
- Compact and robust stainless steel design
- Measuring range adjustable up to 4:1
- Output short circuit proved
- Degree of protection IP67

## Applications

- General industrial applications
- Automotive industry
- Hydraulics
- Pneumatics
- Cryogenic engineering and air conditioning
- Environmental engineering
- Mechanical engineering
- Applications in environments requiring ex-approved devices
- Usable under explosiv environments



## Beschreibung

The pressure transmitter consists of a detached measuring cell, which can be installed within an area exposed to explosion hazards, and evaluation electronics. The evaluation electronics, which is to be mounted outside the range of hazard, materializes the required separation of electrical systems. Appropriate protective circuits provide protection against reverse polarity, excess voltage resistance and limitation of performance loss in case of failure.

The stainless steel membrane is entirely vacuum-tight, extremely burst-proof and can be used with all standard media in hydraulics, pneumatics and environmental, processing, semi-conductor and automotive technology, as far as they are compatible with stainless steel. In the pressure range below 500 mbar, the measuring cell comes with a silicon membrane.

The evaluation electronics includes two switch-signal outputs as pnp high-side switches. Both outputs are limited with regard to current. They can be set by means of the keys at the display for each channel independently.

The digital transmitter concept provides for the possibility of adjusting many parameters, such as the measuring rate, filter types, switch modes and changes in the measuring range.

The measuring cell is available with a wide range of mechanical connections. If required, a test certificate acc. to DIN ISO 9001 or DKD is provided.



## Specifications

### PRESSURE RANGE silicon technology

Measuring range*	p [mbar]	10	16	20	25	40			
Overload pressure	p [mbar]	50	80	100	125	200			
Burst pressure	p [mbar]	100	160	200	250	400			
Measuring range*	p [mbar]	60	100	160	200	250	400		
Overload pressure	p [mbar]	120	200	320	400	500	800		
Burst pressure	p [mbar]	180	300	480	600	750	1200		

### PRESSURE RANGE stainless steel diaphragm

Measuring range*	p [bar]	0,6	1,0	1,6	2,0	2,5	4,0	6,0	10,0
Overload pressure	p [bar]	6	6	6	6	6	10	20	20
Burst pressure	p [bar]	9	9	9	9	9	15	30	30
Measuring range*	p [bar]	16	20	25	40	60	100	160	200
Overload pressure	p [bar]	40	40	100	100	200	200	400	400
Burst pressure	p [bar]	60	60	150	150	300	300	600	600
Measuring range*	p [bar]	250	400	600	1000	1600	2000		
Overload pressure	p [bar]	750	750	840	1200	2400	2400		
Burst pressure	p [bar]	1000	1000	1050	1500	3000	3000		

(Vacuum, relative pressure, +- or absolute pressure are available)

### ELECTRICAL PARAMETER

Output signal*		3-wire		
Supply voltage	$U_s [V_{DC}]$	4...20 mA		
Load resistor	$R_A [\Omega]$	14-32		
Switch output – Number		acc. to $R_A \leq 400 \Omega$		
Switch output – Function		2 pnp		
Switching current	I [A]	NO / NC, windows- and hysteresis function freely adjustable		
Response time	t [ms]	0,1 (output short circuit proved)		
Maximum supply current	I [mA]	$\leq 100$		
Isolation voltage*	U [V <sub>dc</sub> ]	100 mA (in start up phase 400 mA) (typ. 50 mA)		
		500 VAC		

### ACCURACY

		for pressure range of 0,6 bar to 2000 bar		for pressure range of 0,01 bar to 0,4 bar
Accuracy @RT	% of the range	$\leq 0,50^{**}$ Option $\leq 0,25$		$\leq 1,00^{**}$ Option $\leq 0,5$
	BFSL	$\leq 0,125$		$\leq 0,25$
Non-linearity	% of the range	$\leq 0,15$		$\leq 0,15$ ** incl. nonlinearity, hysteresis, repeatability,
Repeatability	% of the range	$\leq 0,10$		$\leq 0,10$ zero-offset- and final-offset
Stability/year	% of the range	$\leq 0,10$		$\leq 0,10$ (acc. to IEC 61298-2)


### ACCEPTABLE TEMPERATURE RANGES

		zone 0		zone 1	processing unit
Measuring medium	T [°C]	-20...60		-40...100	
Ambience	T [°C]	-20...60		-40...85	-40...70
Storage	T [°C]	-40...85		-40...85	
Compensated range*	T [°C]	-20...60		-20...85	
Mean TC offset	% of the range	$\leq 0,15 / 10K$		$\leq 0,15 / 10K$	
Mean TC range	% of the range	$\leq 0,15 / 10K$		$\leq 0,15 / 10K$	
Total error	% of the range	-20°C 1,00%		-40°C 1,00%	
		60°C 1,00%		85°C 1,00%	

### Directive ATEX

Type of ignition protection		transmitter		processing unit
		II 1D EX iaD T135°C Da		II (1)D [Ex IaD]T Da
		or II 1G Ex ia IIC T4 Ga		or II (1) G [EX ia] IIC Ga
Underlying standards		EN 60079-0, EN 60079-11		
Maximum connected power		43 mA		
Temperature class		T4 (ambient temperature -40...+85° C)		

### MECHANICAL PARAMETER

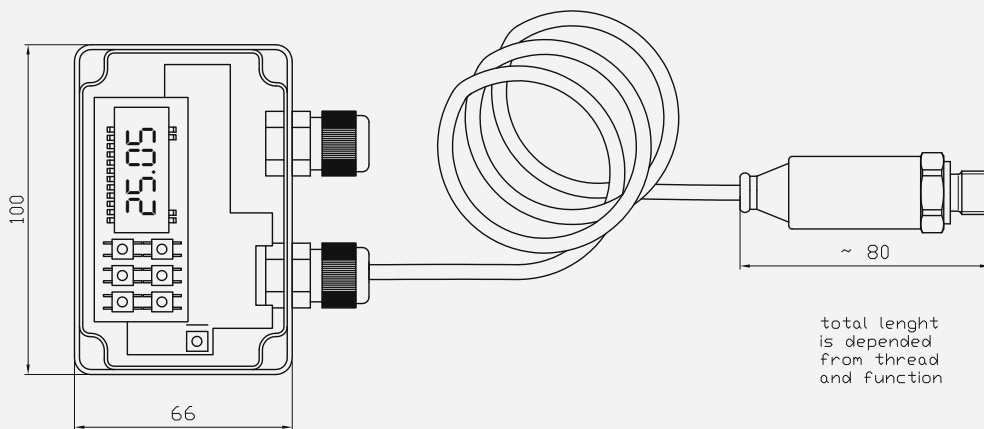
Parts in contact with the measuring medium*		stainless steel		for pressure range of 0,6 bar to 2000 bar
Parts in contact with the measuring medium*		silicon		for pressure range of 0,01 bar to 0,4 bar
Housing		stainless steel		
Shock resistance	g	1000		acc. to IEC 68-2-32 - free fall
Vibration resistance	g	20		acc. to IEC 68-2-6 and IEC 68-2-36 - vibration, sinusoidal
Mass	m [g]	~ 200		(depending on design)
CE - conformity		IBExU09ATEX1106 		
IP system of protection (IEC 60529) up to IP69K		The IP system of protection as specified in the data sheets generally applies, with appropriate mating plug connected.		

\* customer specific configurations available

## Configuration

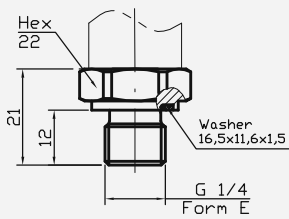


## Technical drawing

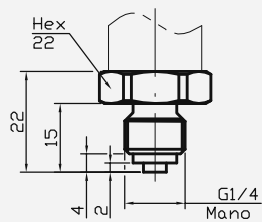


## Pressure Connections\* -examples-

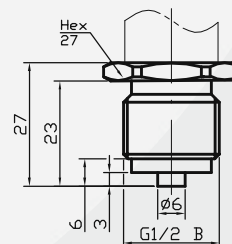
G 1/4 A; DIN 3852; Form E



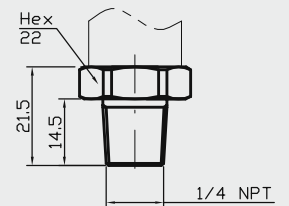
G 1/4 B



G 1/2 B



1/4 NPT

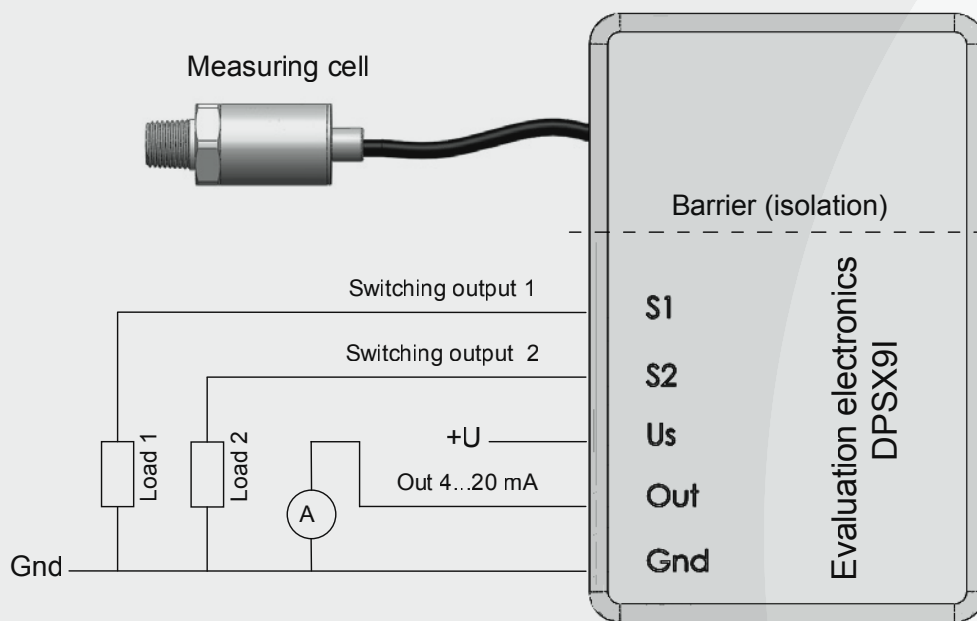


\* customer specific configurations available

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## Electrical Connections\*



## Safety Notice

Please make sure to observe the respective national safety regulations when assembling, taking into operation and operating these pressure sensors (e.g. VDE0100). Acc. to EN60079-14, the detached measuring cell is admitted for use in areas exposed to explosion hazards.

\* custom-made adjustments are possible

## Product line

DS5	Electronic Pressure Switch	SME	Pressure Transmitter in Miniature Design
DPSX9I	Intrinsically Safe Electronic Pressure Switch for Current	SMF	Pressure Transmitter with Flush Diaphragm
DPSX9U	Intrinsically Safe Electronic Pressure Switch for Voltage	SMH	High Pressure Transmitter
PS1	Level Sensor	SML	Pressure Transmitter for Industrial Application
PSX2	Intrinsically Safe Level Sensor	SMO	Pressure Transmitter in Mobile Hydraulics
SHP	High Precision Pressure Transmitter	SMS	OEM Pressure Transmitter for Hydraulics and Pneumatics
SIS	Low Pressure Transmitter in Short and Compact Design	SMX	Intrinsically Safe Pressure Transmitter for Industrial Application
SIL	Low Pressure Transmitter for Industrial Application	SMX2	Intrinsically Safe Pressure Transmitter for Industrial Application
SKE	High Temperature Pressure Transmitter with Detached Electronics	TPSE	Multi-Function Transmitter for Pressure and Temperature – external sensor
SKL	High Temperature Pressure Transmitter with Cooling Fins	TPSI	Multi-Function Transmitter for Pressure and Temperature – internal sensor
SMC	Pressure Transmitter with CANopen Interface		



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Subject to change  
due to technical progress.  
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