

Intrinsically Safe Electronic Pressure Switch with voltage output

DPSX9U

Main Features

- Measuring ranges 0...5 mbar up to 0...2000 bar
- Output signal 0...10 V
- Switch signal 2x pnp
- Ex-approved II 1G Ex ia IIC T4 (ATEX) [cell]
- 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
- 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
- Industrial Equipment and Automation technology

Description

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]	300	300	300	300	300			
Burst pressure	p [mbar]	500	500	500	500	500			
Measuring range*	p [mbar]	60	100	160	200	250	400		
Overload pressure	p [mbar]	300	300	300	300	2000	2000		
Burst pressure	p [mbar]	500	500	500	500	3000	3000		
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	(vacuum, relative pressure,	
Burst pressure	p [bar]	1000	1000	1050	1500	3000	3000	+ - or absolute pressure are available)	
Electrical parameter	signal			U _s [V _{dc}]		R _L [kΩ]			
Output signal * and maximum acceptable burden R _A	R _A in Ohm	0...10 V _{dc} (3-wire)		14...32		> 5,0			
Switch point	individually adjustable via external control keys or factory setting								
Number	2 pnp								
Function	NO / NC, windows- and hysteresis function freely adjustable								
Switching current	I [A]	0,1							
Supply voltage	U [V _{dc}]	14-32							
Response time * (10-90%)	t [ms]	< 100							
Dielectric strength	U [V _{dc}]	350							
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	≤ 0,50**	Option ≤ 0,25	≤ 1,00**	Option ≤ 0,5				
	BFSL	≤ 0,125		≤ 0,25					
Non-linearity	% of the range	≤ 0,15		≤ 0,15	** incl. nonlinearity, hysteresis, repeatability,				
Repeatability	% of the range	≤ 0,10		≤ 0,10	zero-offset- and final-offset				
Stability/year	% of the range	≤ 0,10		≤ 0,10	(acc. to IEC 61298-2)				
Acceptable temperature ranges	processing unit								
Measuring medium	T [°C]	-40...100							
Ambience	T [°C]	-40...85	-40...70						
Storage	T [°C]	-40...125							
Compensated range*	T [°C]	-20...85							
Temperature coefficient within the compensated range									
Mean TC offset	% of the range	≤ 0,15 / 10K							
Mean TC range	% of the range	≤ 0,15 / 10K							
Total error	% of the range	-40°C	2,00%						
	% of the range	105°C	2,00%						
Directive ATEX	transmitter				processing unit				
Type of ignition protection	II 1D Ex iaD T135°C (I BExU09ATEX 1106) or II 1G Ex ia IIC T4				II (1) D [EX iaD] T (I BExU09ATEX 1106) or II (1) G [EX ia] IIC				
Underlying standards	EN 60079-0, EN 60079-11								
Maximum connected power	3,3 V, 43 mA								
Temperature class	T4 (ambient temperature -40...+85° C)								

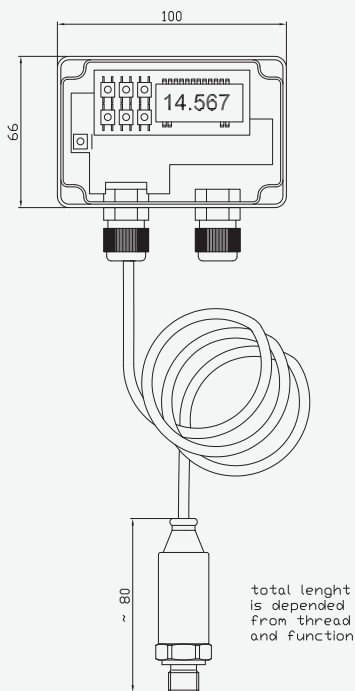
Mechanical parameter

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
Vibration resistance	g	20 acc. to IEC 68-2-6 and IEC 68-2-36
Mass	m [g]	~ 200 (depending on design)
CE - conformity	EC Directive 89/336/EWG	
IP system of protection	The IP system of protection as specified in the data sheets generally applies, with their mating plug connected. Relative pressure transmitters usually require a ventilated mating plug and/or cable to allow for pressure compensation. From a pressure range of 60bar, a ventilated mating plug and/or cable is not necessarily required.	
* others upon request		

Configuration

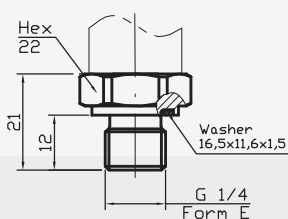


Technical drawing

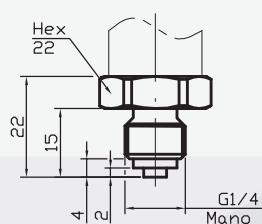


Pressure Connections*

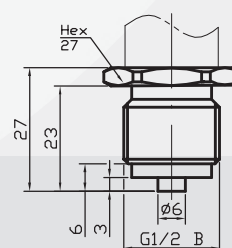
G 1/4 A; DIN 3852; Form E



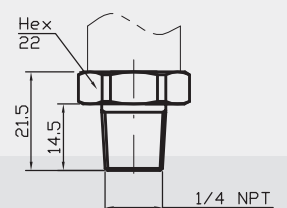
G 1/4 B



G 1/2 B



1/4 NPT



* custom-made adjustments acc. to pressure connections and connecting options are possible

DPSX9U

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Pressure Switch with voltage output

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.

Product line

DS4	Electronic Pressure Switch	SMC	Pressure Transmitter with CANopen Interface
DPSX9I	Intrinsically Safe Electronic Pressure Switch for Current	SME	Pressure Transmitter in Miniature Design
DPSX9U	Intrinsically Safe Electronic Pressure Switch for Voltage	SMF	Pressure Transmitter with Flush Diaphragm
PS1	Level Sensor	SMH	High Pressure Transmitter
PSX2	Intrinsically Safe Level Sensor	SML	Pressure Transmitter for Industrial Application
SHP	High Precision Pressure Transmitter	SMO	Pressure Transmitter in Mobile Hydraulics
SIS	Low Pressure Transmitter in Short and Compact Design	SMS	OEM Pressure Transmitter for Hydraulics and Pneumatics
SIL	Low Pressure Transmitter for Industrial Application	SMX	Intrinsically Safe Pressure Transmitter for Industrial Application
SKE	High Temperature Pressure Transmitter with Detached Electronics	TPS	Multi-Function Transmitter for Pressure and Temperature
SKL	High Temperature Pressure Transmitter with Cooling Fins		



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