

Electronic pressure switch with display Model PSD-10

WIKA Data Sheet PE 81.13

Applications

- Hydraulic and pneumatic applications
- Filter
- Pumps
- Machine tools

Special features

- 4-digit display
- Switch points freely programmable
- Switching output 2 may be used as error output
- Rotatable case 280°
- Optional analogue output

Description

Comfortable handling

Robust and compact design combined with easy handling are the features of these state-of-the-art pressure switches. The well-conceived form with slanted display and a large indication, which rotates by 280°, enables the user to read off measurements from various directions, even under difficult lighting conditions or from a distance. Unit, set points as well as zero point and span can easily be configured by means of the self-explanatory menu. The adjustable password provides protection from unauthorised access.

Proven measuring technologies

Sensors made by WIKA have guaranteed high accuracy, long-term stability and repeatability in industrial pressure measurement for decades. The appropriate sensor principle used - either metal thinfilm or ceramics - depends on the respective measuring range. As it is designed for rugged environments, the pressure switch is extremely resistant to interference, shocks and vibrations.



Fig. Pressure switch PSD-10

The PSD-10 provides the user with an instrument with excellent switching functionality. It is ideally suited for permanent use in series production in industrial applications.

Elaborate functions

As it is equipped with up to two switching outputs, which can be individually configured, a pressure display as well as an optional analog output, the PSD-10 combines the tasks of a pressure switch, a digital display and a pressure transmitter. A switching output as well as an LED can also be used as error status indicator according to the DESINA® concept.

Versatile and multifaceted

The efficient copying of requested settings and functions to other pressure switches is enabled by means of an optional programming module. A fast and easy mounting can be realised with the optional mounting bracket.

Specifications

Model PSD-10

Ceramic sensor									
Pressure ranges	bar	- 1 ... 2.5	-1 ... 4	-1 ... 6	-1 ... 10	-1 ... 16			
Over pressure safety	bar	10	10	20	20	40			
Burst pressure	bar	12	12	25	25	50			
Thin-film sensor									
Pressure ranges	bar	25	40	60	100	160	250	400	600
Over pressure safety	bar	50	80	120	200	320	500	800	1200
Burst pressure	bar	250	400	550	800	1000	1200	1700	2400
Materials									
■ Wetted parts		Stainless steel, with ceramic sensor additional Ceramic AL ₂ O ₃ , NBR ¹⁾							
		¹⁾ Others sealing materials on request							
■ Case		Zinc diecast Z 410; lacquered silver-coloured							
■ Keyboard		Polyester							
Power supply U _B	U _B in DC V	15 < U _B ≤ 30 (nominal 24 DC V protection class 3)							
Signal output and maximum load R _A	R _A in Ohm	{0/4 ... 20 mA; programmable and freely adjustable}							
Switch points		Individually adjustable via external control keys							
■ Number		1 or 2 (PNP)							
■ Function		NO / NC; windows- and hysteresis function freely adjustable							
■ Contact rating	DC V	Supply voltage U _B – 1.5 V (U _B in Volt)							
■ Switching current ²⁾		1.4 A (for two wired outputs 0.7 A per switch)							
		²⁾ Higher contact rating on request							
■ Response time	ms	≤ 10							
■ Accuracy	% of span	≤ 1.0							
Display									
■ Design		7-Segment-LED, red 4-digit, height 9 mm							
■ Range		- 999 ... 9999							
■ Accuracy	% of span	≤ 1.0 ± 1 digit							
Current consumption	mA	≤ 100							
Accuracy	% of span	≤ 0.5 (BFSL)							
	% of span	≤ 1.0 ³⁾							
		³⁾ Including non-linearity, hysteresis, non-repeatability, zero point and full scale error (corresponds to error of measurement per IEC 61298-2). Adjusted in vertical mounting position with lower pressure connection.							
Non-linearity	% of span	≤ 0.4 (BFSL) according to IEC 61298-2							
1-year stability	% of span	≤ 0.2 (≤ 0,3 with pressure range ≤ 16 bar) (at reference conditions)							
Permissible temperature of									
■ Medium ⁴⁾		-30 ... +100 °C				-22 ... +212 °F			
		(-20 ... +85 °C with pressure range ≤ 16 bar)				(-4 ... +185 °F with pressure range ≤ 16 bar)			
■ Ambient ⁴⁾		-20 ... +85 °C				-4 ... +185 °F			
■ Storage ⁴⁾		-40 ... +100 °C				-40 ... +212 °F			
		⁴⁾ Also complies with EN 50178, Tab. 7, Operation (C) 4K4H, Storage (D) 1K4, Transport (E) 2K3							
Compensated temperature range		0 ... +80 °C				32 ... +176 °F			
Temperature coefficients within compensated temp range									
■ Mean TC of zero	% of span	≤ 0.3 / 10 K							
■ Mean TC of range	% of span	≤ 0.3 / 10 K							
CE-conformity									
		89/336/EWG interference emission and immunity see EN 61 326							
		Interference emission limit class A and B							
		97/23/EG Pressure equipment directive							
Wiring protection		Protected against reverse polarity and short circuiting on the instrument side							
Load alternation		Typ. 100 millions (10 millions with pressure range ≤ 16 bar)							
Mass	kg	Approx. 0.28							

{ } Items in curved brackets are optional extras for additional price.

Dimensions in mm

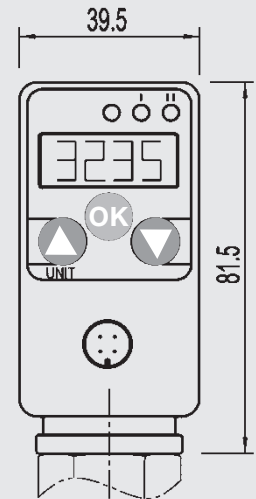
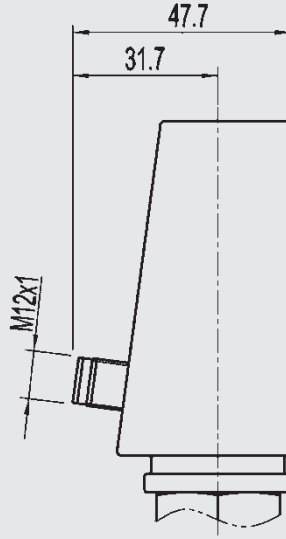
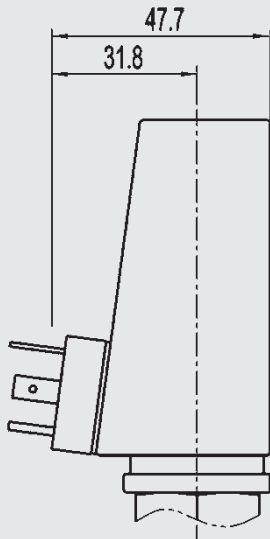
Ingress Protection IP per IEC 60 529

Electrical connections

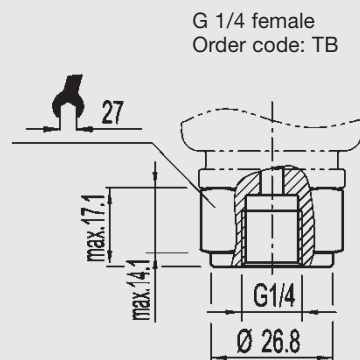
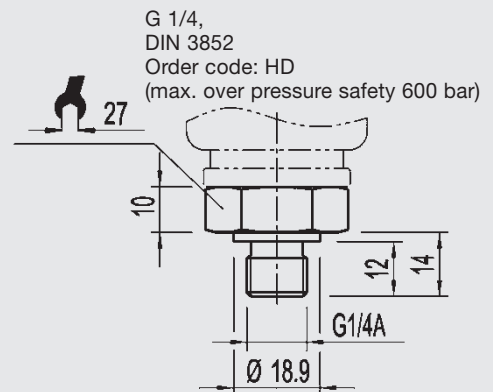
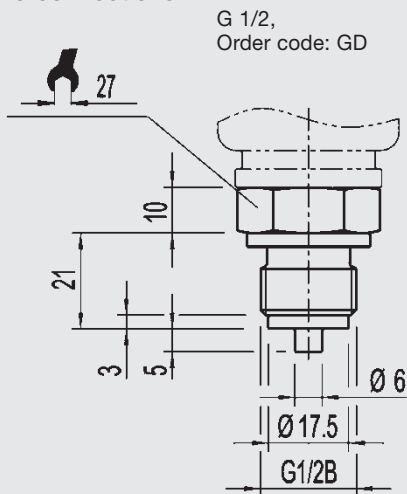
L-connector
DIN EN 175301-803, Form A
for conductor cross section up to
max. 1.5 mm²,
conductor outer diameter 6 - 8 mm,
IP 65
Order code: A4

Circular connector *)
M 12x1, 5-pin
IP 67
Order code: M5

Circular connector *)
M 12x1, 4-pin
IP 67
Order code: M4



Pressure connections

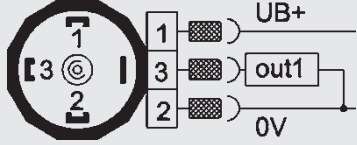
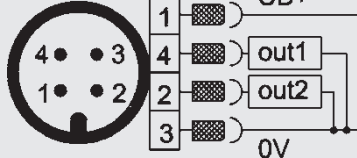
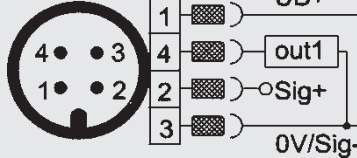
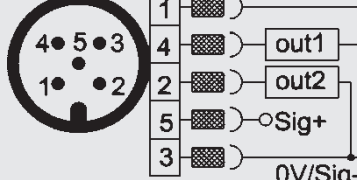


Others on request

For installation and safety instructions see the operating instructions for this product.
For tapped holes and welding sockets please see Technical Information IN 00.14 for download at
www.wika.de -Service

*) Connectors are not included in delivery

Wiring details

Output	Circuit diagram	
<p>{1 Switching output}</p>	<p>L-connector</p>	
<p>Desina</p> <p>2 Switching outputs</p>	<p>Circular connector M12x1 4-pin</p>	
<p>{1 Switching output + 1 analogue output}</p>	<p>Circular connector M12x1 4-pin</p>	
<p>{2 Switching outputs + 1 analogue output}</p>	<p>Circular connector M 12x1 5-pin</p>	

Legend:

out 1	external Load 1
out 2	external Load 2
Sig+	Analogue output

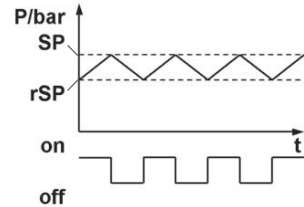
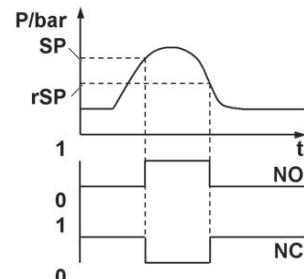
{ } Items in curved brackets are optional extras for additional price.

Hysteresis function

If the system pressure fluctuates around the nominal value, the hysteresis keeps the switch status of the outputs stable. When the system pressure is rising, the output switches when it reaches the respective set point (SP); if the pressure falls again, the output switches back only if the reset point (rSP) is reached.

Application example: loading an accumulator.

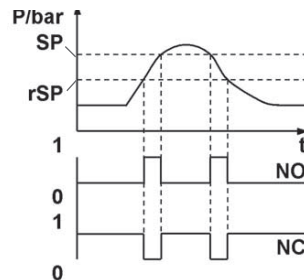
The shut-off valve loads up to 80 bar and then shuts off. When 70 bar is reached again, it switches on once more,



Window function

The window function allows the monitoring of a defined range.

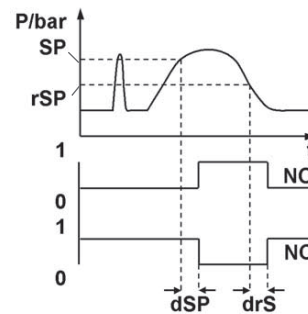
If the system pressure is between the set point (SP) and the reset point (rSP), the output is activated (NO) respective deactivated (NC).



Delay times (0,00 to 9,99 s):

By this means unwanted pressure peaks of short duration or high frequency can be filtered out.

The pressure must remain for at least this time to enable the switch to operate. The switching output does not immediately change its status when it reaches the switching event, but only after the delay time has elapsed. If the switching event no longer pertains when the delay time has elapsed, the switching output does not change.

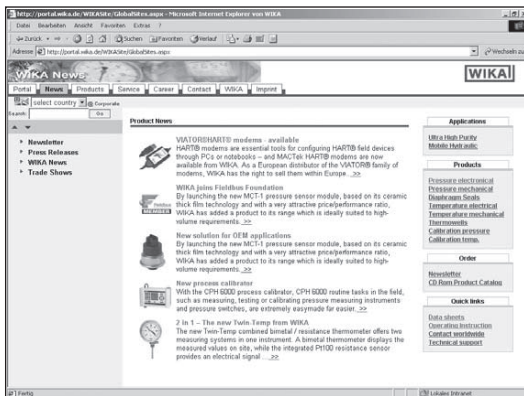


Error function

Switching output 2 can be used optionally as an error output to display pressure switch function errors. As an error output it is normally closed and in case of errors (Er1, Er2, Er3) it is open. At the same time LED II lights up. The display and the output remain active until the error is cleared.

Further informations

You can obtain further information (data sheets, instructions, etc.) via Internet address www.wika.de



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

Parameter	Factory setting	Adjustable range	Please fill in!
Switching output 1			*)
Upper set point	Full scale value	Pressure range (enter as pressure value)	_____
Lower set point	Full scale value - 10 %	Pressure range (enter as pressure value) ¹⁾	_____
Switching function	NO	NO	<input type="checkbox"/>
		NC	<input type="checkbox"/>
Switching type	Hysteresis	Window	<input type="checkbox"/>
		Hysteresis	<input type="checkbox"/>
Time delay for the upper set point	0.05 s	0.00 ... 9.99 s	___, ____
Time delay for the lower set point	0.05 s	0.00 ... 9.99 s	___, ____
Switching output 2			
Upper set point	Full scale value	Pressure range (enter as pressure value)	_____
Lower set point	Full scale value - 10%	Pressure range (enter as pressure value) ¹⁾	_____
Switching function	NO	NO	<input type="checkbox"/>
		NC	<input type="checkbox"/>
Switching type	Hysteresis	Window	<input type="checkbox"/>
		Hysteresis	<input type="checkbox"/>
Time delay for the upper set point	0.05 s	0.00 ... 9.99 s	___, ____
Time delay for the lower set point	0.05 s	0.00 ... 9.99 s	___, ____
Options			
Password	0000 (= no password)	0000 ... 9999	_____
Displayed unit	bar	MPa	<input type="checkbox"/>
		PSI	<input type="checkbox"/>
		bar	<input type="checkbox"/>
Displayed parameter	Actual pressure	Max-value	<input type="checkbox"/>
		Min-value	<input type="checkbox"/>
		Display off	<input type="checkbox"/>
		Switching output 2	<input type="checkbox"/>
		Switching output 1	<input type="checkbox"/>
Analogue output	4-20 mA	4-20 mA	<input type="checkbox"/>
		0-20 mA	<input type="checkbox"/>
Initial pressure value (analogue output)	Initial pressure value = 4mA 4mA	Pressure range (enter as pressure value)	_____
Full scale pressure value (analogue output)	Full scale value = 20 mA	Pressure range (enter as pressure value) ²⁾	_____
Zero offset	Factory setting	Factory setting	
		Adjustment to actual pressure ³⁾	
		Back to menu	
Reset of peak value memory	Do not delete memory	Delete memory	
		Do not delete memory	
Switching output 2 used as error output	No	Yes	<input type="checkbox"/>
Software version	---	No	<input type="checkbox"/>
Number of displayed decimals	⁴⁾	Lowering by 1 decimal	<input type="checkbox"/>

1) The lower set point must be 0.5% of full scale value below the upper set point minimum.

2) The full scale pressure value (analogue output) must be 5% of span above the initial pressure value (analogue output).

3) Max. 5% of full scale.

4) Depends on pressure range and engineering unit (3 digits for bar, 4 digits for psi).

*) In case of blank fields the pressure switch will be adjusted to the factory setting.

