

# Compact pressure switch

## For industrial applications, adjustable switch hysteresis

### Model PSM02

WIKA data sheet PV 34.82



#### Applications

- Hydraulics and mobile hydraulics
- Pneumatics
- Mobile working machines
- Plastics injection moulding machines

#### Special features

- Adjustable switch hysteresis
- Setting ranges: 0.2 ... 2 bar [3 ... 30 psi] to 30 ... 320 bar [450 ... 4,600 psi] and -0.85 ... -0.15 bar [-25 inHg ... -5 inHg]
- Non-repeatability of the switch point:  $\leq 2\%$
- Switching functions: Normally closed, normally open or change-over contact
- Media: Compressed air, neutral and self-lubricating fluids and neutral gases



Compact pressure switch, model PSM02

#### Description

Model PSM02 screw-in pressure switches in a diaphragm or piston design open or close a circuit, depending on whether the pressure is falling or rising. With one adjustment screw, respectively, the required switch point and the switch hysteresis can also be easily and conveniently set on-site. Optionally, WIKAI offers its customers the factory setting of the switch point.

Model PSM02 mechanical pressure switches are employed wherever compressed air, neutral and self-lubricating fluids or neutral gases are used and a precisely set switch hysteresis is needed.

The high reproducibility of the switch point of  $\pm 2\%$  and the adjustable switch hysteresis make the model PSM02 pressure switches interesting for all customers who place a value on precision as well as an attractive price.

## Setting ranges

Unit	Max. working pressure	Setting range	Non-repeatability <sup>1)</sup>	Measurement principle	
bar	20	-0.85 ... -0.15	±0.05	Diaphragm	
		60	0.2 ... 2		±0.04
			0.5 ... 8		±0.16
			1 ... 16		±0.32
	350	10 ... 30	±0.6	Piston	
		10 ... 80	±1.6		
		10 ... 120	±2.4		
		20 ... 200	±4		
		20 ... 250	±5		
		30 ... 320	±6.4		
psi	300	-25 ... -5 inHg	±1.4 inHg	Diaphragm	
		870	3 ... 30		±0.6
			7 ... 115		±2.3
			15 ... 225		±4.5
	5,000	150 ... 425	±8.5	Piston	
		150 ... 1,150	±23		
		150 ... 1,700	±34		
		150 ... 2,300	±46		
		300 ... 2,900	±58		
		300 ... 3,600	±72		
		450 ... 4,600	±92		

1) Only for pressure switches with adjustable switch point setting. For instruments with fixed factory setting, which are not adjustable, see "Non-repeatability" on page 3.

The given setting ranges are also available in MPa.  
Other units and setting ranges on request.

### Switch point setting

- No factory setting, adjustable
- Fixed factory setting, not adjustable
- Factory setting, adjustable

The main selection criterion for the pressure switch is the max. working pressure (see table "Setting ranges") which can be reached in the application.

From that follows the choice of the setting range in which the desired switch point must lie. The switch point should be in the the range of 30 ... 70 % of the setting range end value. This enables an optimal repeatability and ease of setting of the switch point.

For the switch point setting "Fixed factory setting, not adjustable", the ordering information of max. working pressure (20 bar [300 psi], 60 bar [870 psi] or 350 bar [5,000 psi]), together with the desired switch point, is sufficient. With this ordering information, the pressure switch can be optimally designed, set and sealed with respect to non-repeatability and long service life. The selection of the setting range is not required with this variant.

### Switch contact

High-quality snap-action switch with self-cleaning, solid silver contacts

### Switching frequency

max. 1 Hz

### Service life per ISO 10771-1

> 2 x 10<sup>6</sup> load cycles

## Switching function

Selectable: Normally open, normally closed, change-over contact

Electrical connection	Normally open	Normally closed	Change-over contact
Angular connector DIN 175301-803 A (4-pin)	-	-	x
Circular connector M12 x 1 (4-pin)	-	-	x
Cable outlet	x	x	x

## Electrical rating

Utilization category <sup>1)</sup>	Voltage			Current
	Angular connector	M 12 x 1, cable	All	
Resistive load AC-12, DC 12	AC 250 V	AC 48 V	DC 24 V	4 A
Inductive load AC-14, DC 14	AC 250 V	AC 48 V	DC 24 V	2 A
Min. switching power	25 mW with solid silver contacts			

1) per DIN EN 60947-1

## Non-repeatability

Non-repeatability (guideline value)	Switch point setting
≤ 2 % of setting range end value	No factory setting, adjustable
	Factory setting, adjustable
≤ 4 % of set switch point <sup>2)</sup>	Fixed factory setting, not adjustable

2) For diaphragm switches ≥ 0.04 bar; for piston switches ≥ 0.6 bar

## Switch hysteresis (adjustable)

Measurement principle	Switch hysteresis (guideline value)
Diaphragm (vacuum)	250 mbar
Diaphragm (gauge pressure)	0.1 bar [1.4 psi] + 5 ... 20 % of switch point Example: With a switch point of 3 bar [42 psi], the switch hysteresis is 0.25 ... 0.7 bar [3.5 ... 9.8 psi].
Piston	5 bar [70 psi] + 5 ... 15 % of switch point Example: With a switch point of 100 bar [1,500 psi], the switch hysteresis is 10 ... 20 bar [145 ... 290 psi].

## Operating conditions

### Permissible temperature ranges

Medium temperature	Sealing material
-20 ... +80 °C [-4 ... +176 °F]	NBR
0 ... 100 °C [32 ... 212 °F]	FKM
-40 ... +100 °C [-40 ... +212 °F]	EPDM
-40 ... +80 °C [-40 ... +176 °F]	TNBR
-40 ... +100 °C [-40 ... +212 °F]	FVMQ

### Permissible air humidity (per IEC 68-2-78)

≤ 67 % r. h. at 40 °C [104 °F] (in accordance with 4K4H per EN 60721-3-4)

### Vibration resistance (IEC 60068-2-6)

10 g (10 ... 2,000 Hz)

### Shock resistance (IEC 60068-2-27)

30 g

### Storage and transport temperature

-20 ... +80 °C [-4 ... +176 °F]

## Process connections

Thread	Process connection standard	Material of wetted parts
G 1/8 B	DIN EN ISO 228-1	<ul style="list-style-type: none"> <li>■ Galvanised steel</li> <li>■ Stainless steel</li> </ul>
G 1/4 B	DIN EN ISO 228-1	Stainless steel
G 1/2 B	DIN EN ISO 228-1	Stainless steel (only with measurement principle: Diaphragm)
M10 x 1	DIN 13-5	Galvanised steel
7/16-20 UNF BOSS	SAE J514 E	<ul style="list-style-type: none"> <li>■ Galvanised steel</li> <li>■ Stainless steel</li> </ul>
1/8 NPT	ANSI/ASME B1.20.1	<ul style="list-style-type: none"> <li>■ Galvanised steel</li> <li>■ Stainless steel</li> </ul>
1/4 NPT	ANSI/ASME B1.20.1	<ul style="list-style-type: none"> <li>■ Galvanised steel</li> <li>■ Stainless steel</li> </ul>
R 1/8	ISO 7	<ul style="list-style-type: none"> <li>■ Galvanised steel</li> <li>■ Stainless steel</li> </ul>
R 1/4	ISO 7	<ul style="list-style-type: none"> <li>■ Galvanised steel</li> <li>■ Stainless steel</li> </ul>

Other process connection on request


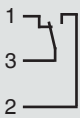
## Electrical connection

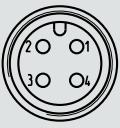
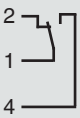
Designation	Ingress protection <sup>1)</sup>	Wire cross-section	Cable Ø
Angular connector DIN 175301-803 A (4-pin)	IP65	-	-
Circular connector M12 x 1 (4-pin)	IP67	-	-
Cable outlet, 2-wire <sup>2)</sup>	IP67	2 x 0.75 mm <sup>2</sup> [1.16 x 10 <sup>-3</sup> in <sup>2</sup> ]	5.0 mm [0.2 in]
Cable outlet, 3-wire <sup>2)</sup>	IP67	3 x 0.5 mm <sup>2</sup> [7.75 x 10 <sup>-4</sup> in <sup>2</sup> ]	5.3 mm [0.21 in]



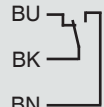
1) The stated ingress protection (per IEC/EN 60529) only applies when plugged in using mating connectors that have the appropriate ingress protection.

2) Cable lengths available in 0.5 m, 1 m and 2 m (1.5 ft, 2 ft or 6 ft), other cable lengths on request.

## Connection diagrams

Angular connector DIN 175301-803 A (4-pin)	
Change-over contact	
	<p>SPDT</p>  <p>1 = NC 2 = NO 3 = COM</p>

Circular connector M12 x 1 (4-pin)	
Change-over contact	
	<p>SPDT</p>  <p>1 = COM 2 = NC 3 = NO 4 = NO</p>

Cable outlet		
	Normally open/ normally closed	Change-over contact
	<p>NO/NC</p> 	<p>SPDT</p> 

Colour coding per IEC 60757

BK Black  
BN Brown  
BU Blue

## Materials

### Wetted parts

- Galvanised steel
- Stainless steel 303
- PTFE sealing at the piston (only piston version)

For sealing materials, see “Permissible temperature ranges”, page 3.

### Non-wetted parts

Case: Galvanised steel or stainless steel

The choice of material for the process connection means that the case is made of the same material.

## Approvals

Logo	Description	Country
	<b>EU declaration of conformity</b> <ul style="list-style-type: none"> <li>■ Pressure equipment directive</li> <li>■ Low voltage directive</li> <li>■ RoHS directive</li> </ul>	European Union
	<b>EAC</b> <ul style="list-style-type: none"> <li>■ EMC directive</li> <li>■ Low voltage directive</li> </ul>	Eurasian Economic Community

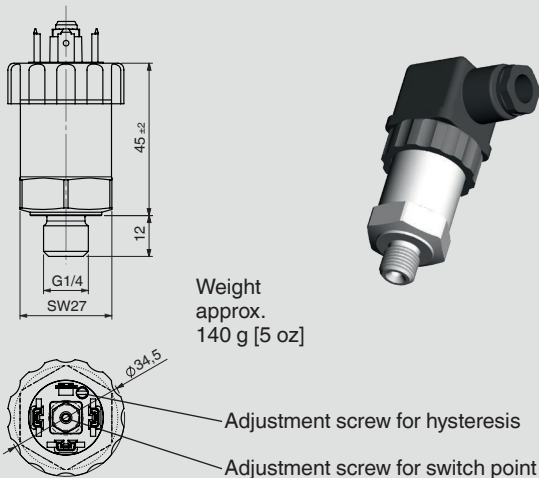
Approvals and certificates, see website

## Dimensions in mm [in]

### Standard version

#### Electrical connection

Angular connector DIN 175301-803 A

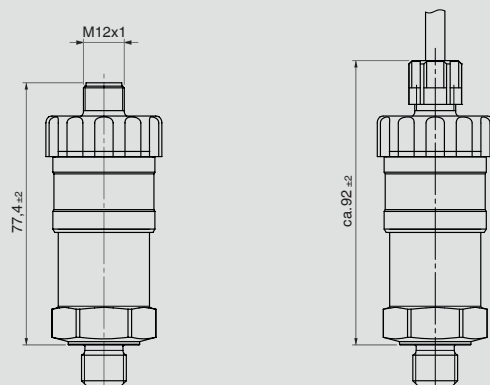


### Option

#### Electrical connection

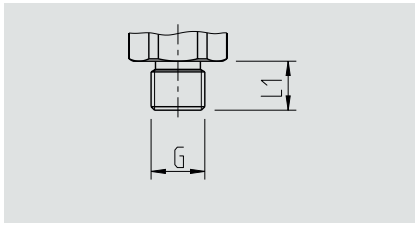
M12 x 1

Cable

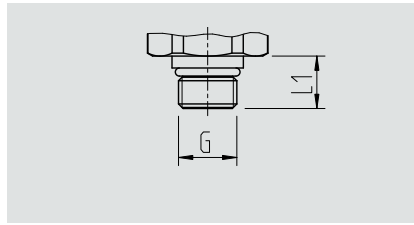


## Dimensions in mm [in]

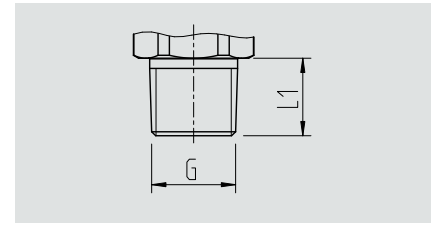
### Process connections



G	L1
G 1/8 B	10 [0.4]
G 1/4 B	12 [0.47]
G 1/2 B	14 [0.55]
M10 x 1	10 [0.4]



G	L1
7/16-20 UNF SAE BOSS	9 [0.35]



G	L1
1/8 NPT	10 [0.4]
1/4 NPT	12 [0.47]
R 1/8	10 [0.4]
R 1/4	12 [0.47]

### Scope of delivery

- Pressure switch in individual or multiple packaging
- Only for piston switches: Sealing ring NBR/galvanised steel (G 1/8 B, G 1/4 B, M10 x 1)
- Allen key (2 mm) for switch point setting (only with adjustable pressure switch variants)

### Accessories

#### Mating connector

Designation	Order number			
	without cable	with 2 m cable	with 5 m cable	with 10 m cable
Circular connector M12 x 1 (4-pin)				
■ straight	2421262	14086880	14086883	14086884
■ angled	2421270	14086889	14086891	14086892

### Ordering information

Model / Switch point setting / Setting range / Maximum working pressure / Switching function / Process connection / Sealing / Electrical connection / Options

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