

Electronic pressure switch with display

Model PSD-30, standard version

Model PSD-31, with flush diaphragm

WIKA data sheet PE 81.67



Applications

- Machine tools
- Hydraulics and pneumatics
- Pumps and compressors
- Machine building

Special features

- Easily-readable, robust display
- Intuitive and fast setup
- Easy and flexible mounting configurations



Electronic pressure switch model PSD-30

Description

Award-winning in design and functionality

The successful design and the excellent functionality of the WIKA switch family were already confirmed by winning the "iF product design award 2009" for the PSD-30 pressure switch.

The robust LED display has been designed using 9 mm high characters (the largest possible) and with a slight incline in order to make reading the level as easy as possible from a long way off. A 14-segment display has been used, since it represents text very well.

The 3-key operation makes simple, intuitive menu navigation possible, with no need for additional assistance. The menu navigation conforms to the latest VDMA standard.

A new VDMA standard for fluid sensors (24574-1, part 1 - pressure switches) has the aim of simplifying the use of pressure switches by standardising menu navigation and display.

The control keys have been designed as large as possible and are arranged ergonomically to ensure fast and easy adjustments. Operation without any additional assistance is made easier through the tactile feedback.

Customised installation

The installation of the PSD-30 and PSD-31 can be flexibly adapted to the individual mounting situation. Due to the almost unlimited rotation of the display and case by more than 300°, the display can be adjusted independently of the electrical connection. The display can thus always be aligned to face the operator, and the M12 x 1 connection positioned to suit the desired cable routing.

High quality

During development of the WIKA switch family a high value was placed on a robust design and the selection of appropriate materials suited to machine building applications. For this reason the case and the threaded connection of the electrical connector are made from stainless steel. Overwinding or tearing off the connector is therefore virtually impossible.

Measuring ranges

Relative pressure								
bar	0 ... 1 ¹⁾	0 ... 1.6 ¹⁾	0 ... 2.5	0 ... 4	0 ... 6	0 ... 10	0 ... 16	0 ... 25
	0 ... 40	0 ... 60	0 ... 100	0 ... 160	0 ... 250	0 ... 400	0 ... 600	
psi	0 ... 15 ¹⁾	0 ... 25 ¹⁾	0 ... 30 ¹⁾	0 ... 50	0 ... 100	0 ... 160	0 ... 200	0 ... 300
	0 ... 500	0 ... 1000	0 ... 1500	0 ... 2000	0 ... 3000	0 ... 5000	0 ... 8000	

Absolute pressure								
bar	0 ... 1 ¹⁾	0 ... 1.6 ¹⁾	0 ... 2.5	0 ... 4	0 ... 6	0 ... 10	0 ... 16	0 ... 25
psi	0 ... 15 ¹⁾	0 ... 25 ¹⁾	0 ... 30 ¹⁾	0 ... 50	0 ... 100	0 ... 160	0 ... 200	0 ... 300

Vacuum and +/- measuring range								
bar	-1 ... 0 ¹⁾	-1 ... 0.6 ¹⁾	-1 ... 1.5	-1 ... 3	-1 ... 5	-1 ... 9	-1 ... 15	-1 ... 24
psi	-14.5 ... 0	-14.5 ... 15	-14.5 ... 30	-14.5 ... 50	-14.5 ... 100	-14.5 ... 160	-14.5 ... 200	-14.5 ... 300

1) Not available for PSD-31.

Overpressure limit

2 times

Display

14-segment LED, red, 4-digit, 9 mm character size

Display can be turned electronically through 180°

Update (adjustable): 100, 200, 500, 1000 ms

Output signals

Switching output 1	Switching output 2	Analogue signal
PNP	-	4 ... 20 mA
PNP	-	DC 0 ... 10 V
PNP	PNP	-
PNP	PNP	4 ... 20 mA
PNP	PNP	DC 0 ... 10 V

Alternatively also available with an NPN instead of a PNP switching output.

With the IO-Link option, switching output 1 is always PNP.

Zero offset adjustment

maximum 3 % of span

Analogue signal

Current output load: $\leq 500 \Omega$

Voltage output load: $> 10 \text{ k}\Omega$

Settling time: 3 ms

Switching output

Switch point 1 and 2 are individually adjustable

Normally-open and normally-closed function: freely adjustable

Window and hysteresis function: freely adjustable

Switching current

■ without IO-Link: maximum 250 mA

■ with IO-Link: maximum 100 mA

Switching voltage: Power supply - 1 V

Settling time: $\leq 10 \text{ ms}$

Voltage supply

Power supply

DC 15 ... 35 V

The power supply for the pressure transmitter must be made via an energy-limited electrical circuit in accordance with section 9.3 of UL/EN/IEC 61010-1, or an LPS to UL/EN/IEC 60950-1, or class 2 in accordance with UL1310/UL1585 (NEC or CEC). The power supply must be suitable for operation above 2,000 m should the pressure transmitter be used at this altitude.

Current consumption

maximum 100 mA

Total current consumption

■ without IO-Link: max. 600 mA including switching current

■ with IO-Link: max. 500 mA including switching current

Accuracy

Analogue signal

$\leq \pm 1.0 \%$ of span

Including non-linearity, hysteresis, zero-point and full scale deviations (corresponds to measured error per IEC 61298-2). Calibrated in vertical mounting position with process connection facing downwards.

Non-linearity: $\leq \pm 0.5 \%$ of span (BFSL, IEC 61298-2)

Long-term drift: $\leq \pm 0.2 \%$ of span (IEC 61298-2)

Switching output

$\leq \pm 0.5 \%$ of span

Display

$\leq \pm 1.0 \%$ of span ± 1 digit

Temperature error in rated temperature range

■ typical: $\leq \pm 1.0 \%$ of span

■ maximum: $\leq \pm 2.5 \%$ of span

Temperature coefficients in rated temperature range

Mean TC zero point: $\leq \pm 0,2 \%$ of span / 10 K (typical)

Mean TC span: $\leq \pm 0,1 \%$ of span / 10 K (typical)

Reference conditions

Temperature:	15 ... 25 °C
Atmospheric pressure:	950 ... 1050 mbar
Humidity:	45 ... 75 % relative
Nominal position:	Process connection lower mount
Power supply:	DC 24 V
Load:	see output signals

Operating conditions

Temperatures and humidity

Medium temperature:	-20 ... +85 °C
Ambient temperature:	-20 ... +80 °C
Storage temperature:	-20 ... +80 °C
Rated temperature range:	0 ... 80 °C
Permissible humidity:	45 ... 75 % relative

Mechanics

Mounting position:	as required
Vibration resistance:	10 g (IEC 60068-2-27, under resonance)
Shock resistance:	50 g (IEC 60068-2-6, mechanical)
Service life:	10 million load cycles

Ingress protection

IP 65 and IP 67

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

Electrical connections

Connections

- Circular connector M 12 x 1, 4-pin
- Circular connector M12 x 1, 5-pin 1)

1) Only for version with two switching outputs and analogue signal

Electrical safety

Short-circuit resistance:	S+ / SP1 / SP2 vs. U-
Reverse polarity protection:	U+ vs. U-
Insulation voltage:	DC 500 V
Overvoltage protection:	DC 40 V

Connection diagram

Circular connector M 12 x 1, 4-pin



Assignment

U+	U-	S+	SP1	SP2
1	3	2	4	2

Circular connector M 12 x 1, 5-pin



Assignment

U+	U-	S+	SP1	SP2
1	3	5	4	2

Legend:

U+	Positive supply voltage
U-	Negative supply voltage
SP1	Switching output 1
SP2	Switching output 2
S+	Analogue output

- 1-Brown
- 2-White
- 3-Blue
- 4-Black
- 5-Grey

Process connections

Model PSD-30

Standard	Thread
DIN 3852-E	G 1/4 A
	G 1/2 A
EN 837	G 1/4 B
	G 1/4 female
	G 1/2 B
ANSI / ASME B1.20.1	1/4 NPT
	1/2 NPT
ISO 7	R 1/4
KS	PT 1/4
-	G 1/4 female (Ermeto compatible)

Other connections on request.

Model PSD-31

Standard	Thread
-	G 1/2 B with flush diaphragm

Sealings

	DIN 3852-E
Standard	without
Option	NBR, FPM / FKM

Materials

Wetted parts

Process connection: Stainless steel 316L

Pressure sensor

- ≤ 10 bar: Stainless steel 316L
- > 10 bar: Stainless steel 13-8 PH

Non-wetted parts

Case: Stainless steel 304
 Keyboard: TPE-E
 Display window: PC
 Display head: PC+ABS-Blend

Approvals, directives and certificates

Approvals

Standard	without
Option	cULus

CE conformity

- Pressure equipment directive 97/23/EC
- EMC directive 2004/108/EC, EN 61326 emission (group 1, class B) and immunity (industrial application)

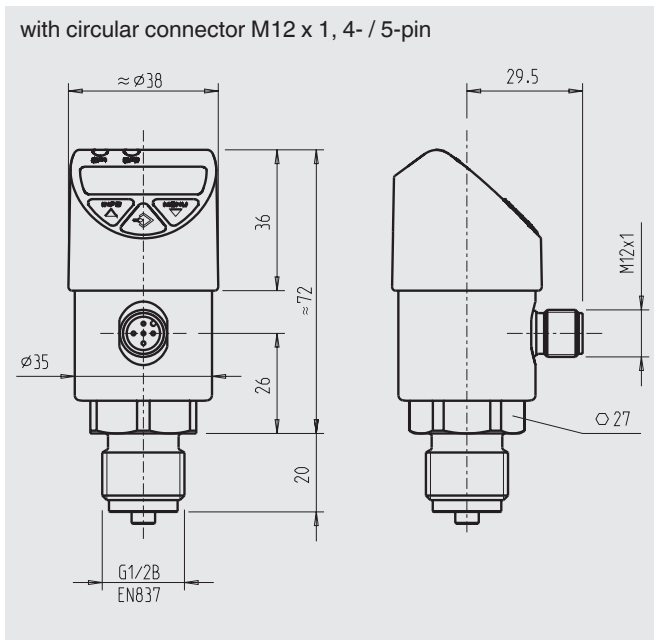
RoHS conformity

Yes

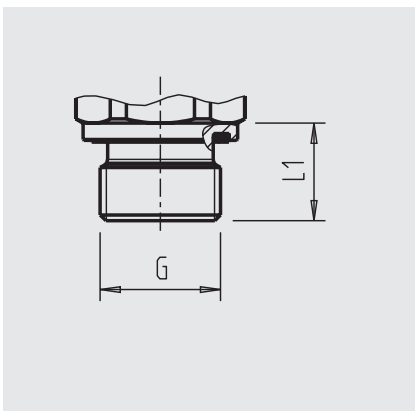
Dimensions in mm

Pressure switch

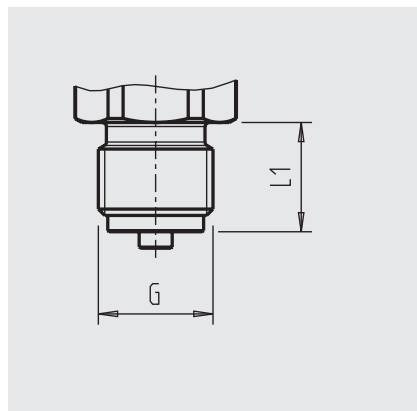
with circular connector M12 x 1, 4- / 5-pin



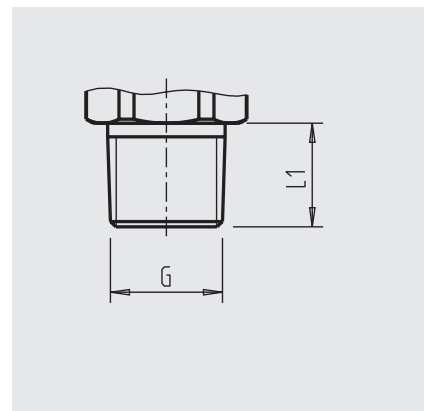
Process connections model PSD-30



G	L1
G 1/4 A DIN 3852-E	12
G 1/2 A DIN 3852-E	14

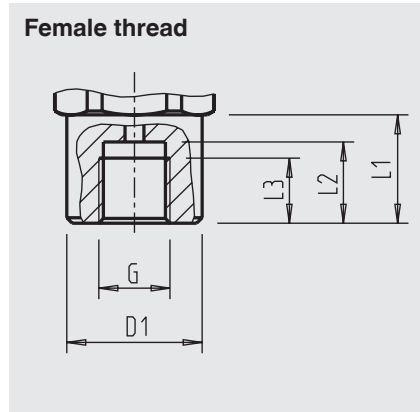


G	L1
G 1/4 B EN 837	13
G 1/2 B EN 837	20



G	L1
1/4 NPT	13
1/2 NPT	19
R 1/4	13
PT 1/4	13

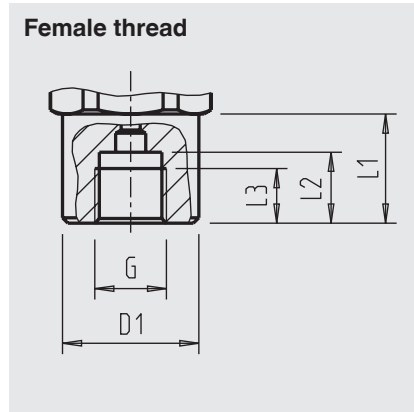
Process connections model PSD-30



G	L1	L2	L3	D1
G 1/4 ¹⁾	20	15	12	Ø 25

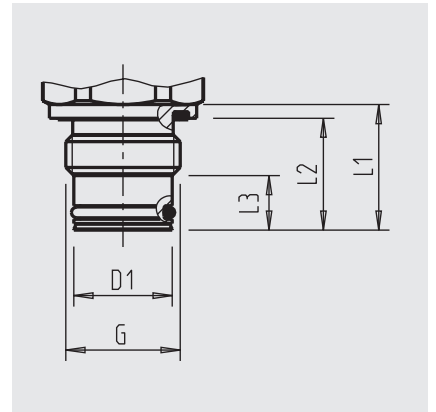
Ermeto compatible

Female thread



G	L1	L2	L3	D1
G 1/4	20	13	10	Ø 25

Process connection model PSD-31



G	L1	L2	L3	D1
G 1/2 B	20	13	10	Ø 25

Ordering information

Model / Measuring range / Output signal / Process connection / Approvals

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