SCPS01 pressure switch

Device features

- Long service life
- No readjustment
- For harsh environments
- Accurate switching



The SCPS01 electronic pressure switches were designed to be used in mass-produced machines.

Installation and production

In order to reduce the complexity of installation for the customer, the pressure switch can be programmed with customer-specific values at the factory. There is then no longer any need to make time-consuming adjustments while the system is pressurized.

More safety for the equipment manufacturer

The pressure switch can be set-up by the equipment manufacturer using a software program. This prevents the switch from being manipulated by unauthorized end users.

Components

This pressure switch contains no moveable parts. All components which come into contact with the substance are made from stainless steel. This feature, combined with the welded, thin-layer pressure sensor, ensure optimal compatibility with the substance. A cushioning mechanism can be optionally integrated in the substance inlet. The stainless steel housing enables the switch to be used in extremely harsh environments.

Application area

The switches have been designed with EMC characteristics, shock resistance and vibration resistance so that they can be used in a wide variety of applications and with mobile machines.

They have e1 approval and the SCPS01 are therefore approved for use in public transportation vehicles.

Thanks to their sturdy, compact design, long-term stability, the SCPS01 are the alternative to mechanical pressure switches.

Application examples

- Construction machines
- Commercial vehicles
- Press construction
- Wind power facilities
- Injection-mould machines
- Tool-making machines
- Power packs
- Special machine construction
- Replacement for mechanical pressure switches

SCPS01 pressure switch

Technical data

SCPS01-	025	060	100	250	400	600	800
Pressure range P_n, relative (bar) Adjusting range RSP...SP (Lowest reset switch point ... highest switch point)	0...25 bar	0...60 bar	0...100 bar	0...250 bar	0...400 bar	0...600 bar	0...800 bar
Overload pressure* P_{max}, relative (bar)	2 x P_n						
Bursting pressure** P_{burst} relative (bar)	4 x P_n						3 x P_n
Smallest adjustable difference between SP and RSP (SP-RSP)	0.3 bar	0.6 bar	1 bar	3 bar	4 bar	6 bar	8 bar

Information about selecting the pressure range
The system pressure and pressure value used for switching are relevant for pressure switches:
Since a 400-bar pressure switch has a comparable resolution as that of a 600-bar pressure switch,
it is possible to use a pressure switch with a higher pressure range of P_n 600 bar – even when there is a smaller nominal pressure (for example, 315 bar).
This is a positive feature because it provides the same precision with improved safety (higher P_{max} over-pressure) and fewer product variants.
* DIN EN 60770-1
** DIN 160866

General	
Response time	Typ. 10 ms, max. 20 ms
Long-term stability	< 0.2 % FS / a
Switching cycles	> 100 million
Weight	Approx. 100 g
MTTFd	> 100 years
Accuracy	
Linearity, pressure hysteresis and reproducibility	≤0.5 %FS
Switching accuracy	≤1.0 % FS (0...+80 °C) ≤1.5 % FS (-25...+100 °C) ≤2.5 % FS (-40...+125 °C)
Ambient conditions	
Ambient temperature range*	-40...+125 °C
Temperature of substance	-40...+150 °C
Storage temperature	-40...+125 °C
Vibration resistance	IEC 60068-2-6: 20 g
Shock resistance	IEC 60068-2-27: 500g
EM compatibility	
Disturbance emissions	EN 61000-6-3
Resistance to interference	EN 61000-6-2

* not for cable version

Electrical connection	
Plug	M12 plug; German DT04 Cable outlet 1 m
Supply voltage	9...36 VDC 10 % allowed residual ripple at 50 Hz
Current consumption	40 mA
Output signal	1x PNP, 2x PNP 1x NPN, 2x NPN
Output current	Max. 500 mA per switch output
Electrical protection	Short circuit, signal against GND/0 V and protection against polarity reversal
Protection degree	IP67 and IP69k (dependent on the electrical connection used)
Material	
Housing	Stainless steel EN/DIN 1.4301
Membrane	Stainless steel EN/DIN 1.4548
Parts in contact with substances	Stainless steel EN/DIN 1.4548 / FKM (replaceable seal) *
Process connection	
Connection	¼ BSP ; ¼ NPT**
Tightening torque	Max. 35 Nm

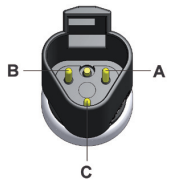
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SCPS01 pressure switch

Pin assignment

DT04-3P

SCPS01-xxx-xx-0E

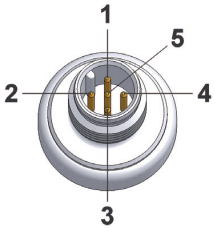


PIN	Assignment
A	V_+
B	0 V / GND
C	S1 out
Housing	GND
Material	Plastic PBT-GF30 Ultradur B4300 G6 black

Protection class IP67

M12x1

SCPS01-xxx-xx-05



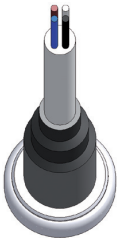
PIN	Assignment
1	V_+
2	Out 2
3	0 V / GND
4	S1 out & Prog.
5	n.c.*
Housing	GND
Material	Plastic PBT-GF30 Ultradur B4300 G6 black

Protection class IP67

* n.c. = do not connect

2 m fixed cable

SCPS01-xxx-xx-00



Cable	Assignment
bn	V_+
black	S1 out & Prog.
blue	0 V / GND
white	Out 2
Housing	GND

Protection class IP69k

bn = brown-braun / bk = black-schwarz / bu = blue-blau / wh = white-weiß

Software

Adjustable parameters

- Each output individually adjustable
- Switching point / reset point
- Switching delay / reset delay
- NO/NC contact
- Hysteresis window

Displayable parameters

- Pressure range
- Current pressure
- Serial number
- Firmware

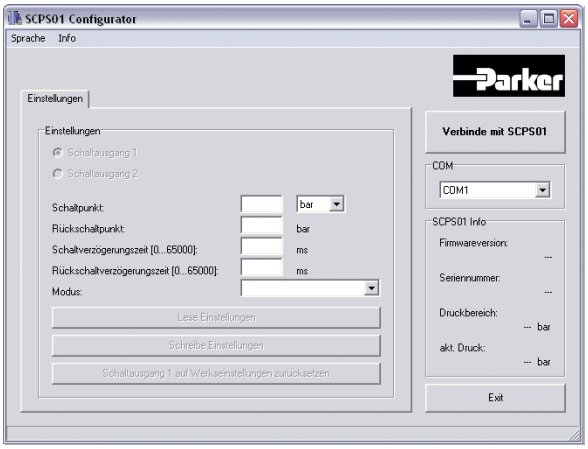
Standard setting

SP1 = 60 % FS rSP1 = 40 % FS

SP2 = 70 % FS rSP2 = 30 % FS

Connection

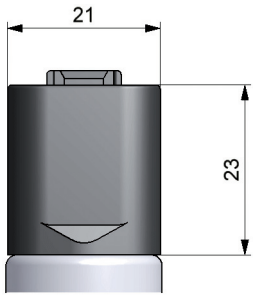
USB 2.0



SCPS01 pressure switch

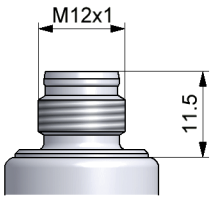
SCPS01-xxx-xx-0E

DT04-3P



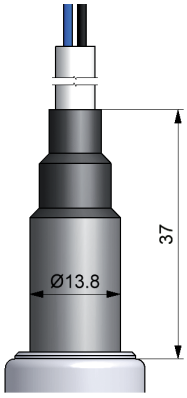
SCPS01-xxx-xx-05

M12x1



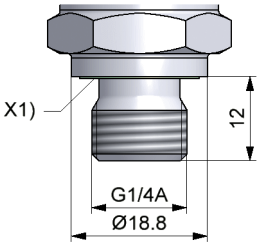
SCPS01-xxx-xx-00

Stationary cable (2 m)



SCPS01-xxx-x4-0x

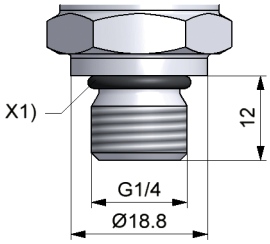
G 1/4, DIN 3852 T 11 (Form E)



X1) = ED-seal

SCPS01-xxx-x8-0x

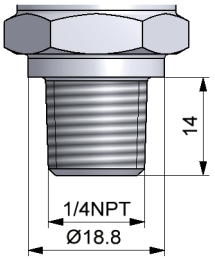
G1/4 O ring



X1) = O ring

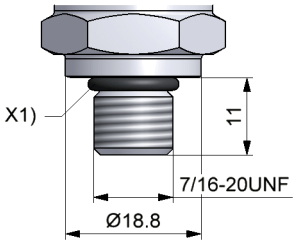
SCPS01-xxx-x5-0x

1/4 NPT



SCPS01-xxx-x7-0x

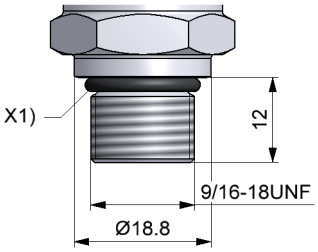
SAE 04 - O ring



X1) = O ring 8.92x1.83

SCPS01-xxx-x6-0x

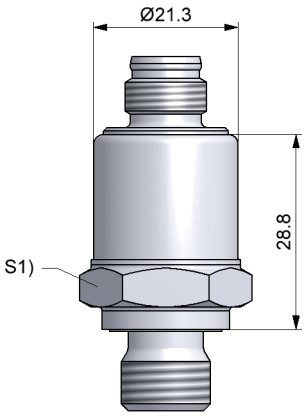
SAE 06 - O ring



X1) = O ring 11.89x1.98

SCPS01-xxx-xx-xx

M12x1



S1) = SW22

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SCPS01 pressure switch

Order code

Pressure sensor SCPS01 — **SCPS01-xxx-xx-0x**

Pressure range
- 0…25 bar — **025**
- 0…60 bar — **060**
- 0…100 bar — **100**
- 0…250 bar — **250**
- 0…400 bar — **400**
- 0…600 bar — **600**
- 0…800 bar — **800**

Output signal
- 1 x PNP — **1**
- 2 x PNP — **2**
- 1 x NPN — **3**
- 2 x NPN — **4**

Process connection
- G1/4 BSPP — **4**
- 1/4 NPT (P_n max. = 600 bar) — **5**
- 9/16-18 UNF, SAE 6 O ring (P_n max. = 400 bar) — **6**
- 7/16-20 UNF SAE-4 O ring (P_n max. = 400 bar) — **7**
- G1/4 O ring (P_n max. = 600 bar) — **8**

Connecting plug
- Stationary cable 2 m — **0**
- Circular connector M12x1 5-pole — **5**
- Device plug DT04 3-pole — **E**

Accessories

Programming kit with circular connector M12x1 5-pole — **SCPS01-PRG-Kit**

Connection cable and single plug

Connection cable, assembled (open cable end) — **SCK-400-xx-xx**

Cable length (m)
- 2 m — **02**
- 5 m — **05**
- 10 m — **10**

Connecting plug
- M12 cable jack; straight — **45**
- M12 cable jack; 90° angled — **55**

Single connector

M12 cable jack; straight	**SCK-145**
M12 cable jack; 90° angled	**SCK-155**

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