Silicon-on-Saphire Sensor with Two Switching Functions

Type	0540 NO / NO 0541 NC / NC 0542 NO / NC			0544 NO / NO 0545 NC / NC 0546 NO / NC	
Number of transistor outputs:	2 PNP outputs (High Side N-channel MOSFET)			2 NPN outputs (Low Side N-channel MOSFET)	
Supply voltage:	9.6 – 32 VDC				
Idle power consumption:	< 15 mA				
Standard-Adjustment range p_{nom}:	0 – 10 bar (0 – 145 psi)	0 – 25 bar (0 – 360 psi)	0 – 100 bar (0 – 1,450 psi)	0 – 250 bar (0 – 3,625 psi)	0 – 600 bar (0 – 8,700 psi)
Overpressure protection p_u:[1]	40 bar (580 psi)	100 bar (1,450 psi)	400 bar (5,800 psi)	1,000 bar (14,500 psi)	1,650 bar (23,930 psi)
Burst pressure:[1]	80 bar (1,160 psi)	200 bar (2,900 psi)	800 bar (11,600 psi)	2,000 bar (29,000 psi)	2,000 bar (29,000 psi)
Mechanical life expectancy:	10,000,000 pulsations at rise rates to 72.5 psi/ms (5 bar/ms) at p_{nom}				
Permitted pressure change rate:	≤ 72,518 psi/s (≤ 5,000 bar/s)				
Switching point adjustment range:	2 … 100 % of the nominal pressure range (Full Scale, FS), programmable at factory				
Differential:	0.2 … 99.8 % of the nominal pressure range (Full Scale, FS), programmable at factory (5 % of the switching point is set as standard)				
Accuracy:	±0.5 % of the nominal pressure range (FS) at room temperature, ±0.25 % BFSL				
Resolution:	0.1 % of the nominal pressure range (FS)				
Switching delay:	ON (0 ... 0.5 s) / OFF (0 ... 2 s) delay in increments of 1 ms, irrespective of switching point, programmable at factory (specify value when Ordering, otherwise default value of 0 s is set)				
Output:	0.5 A transistor output with short-circuit and overvoltage protection				
Operating mode:	with hysteresis or window function (see page 101), programmable at factory				
Long term stability:	±0.1 % FS p. a.				
Repeatability:[2]	±0.1 % FS				
Temperature error:[2]	±0.02 % / 1 K FS				
Compensated temperature range:	-4 °F . . . +176 °F (-20 °C . . . +80 °C)				
Temperature range media:	-40 °F . . . +257 °F (-40 °C . . . +125 °C)				
Temperature range ambient:	-40 °F . . . +212 °F (-40 °C . . . +100 °C)				
Wetted parts material:	Stainless steel AISI 303 (1.4305) and titanium				
Housing material:	Stainless steel AISI 303 (1.4305)				
Insulation resistance:	> 100 MΩ (500 VDC, Ri > 42 Ω)				
Switching time:	< 2 ms				
Vibration resistance:	20 g at 4 … 2000 Hz sine wave; DIN EN 60068-2-6				
Shock resistance:	half sine wave 500 m/s²; 11 ms; DIN EN 60068-2-27				
Protection class:	Refer to the electrical connections				
EMC:	EMC 2014/30/EU, EN 61000-6-2:2005, EN 61000-6-3:2007				
Short-circuit, overvoltage and reverse polarity protection	Built-in				
Weight:	approx. 2.8 oz / 80 g (DIN 175301 approx. 3.8 oz / 110 g, cable version approx. 4.7 oz / 135 g)				

[1] Within the compensated temperature range.

[2] Static pressure, dynamic value is 30 to 50 % lower. Values refer to the hydraulic/pneumatic part of the electronic pressure switch.

E.6

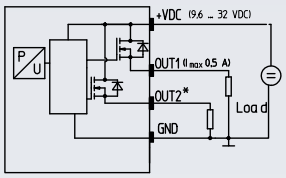
hex 22
High Performance
2 switching outputs

0540 / 0541 / 0542 / 0544 / 0545 / 0546

Electrical connectors and threads

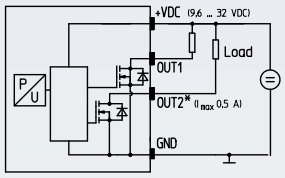
Connection diagrams

High Side Output (PNP)



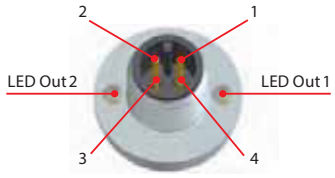
Pin assignment depending on electr. connection
*OUT2 only for 054x

Low Side Output (NPN)

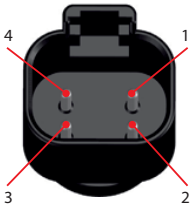


Pin assignment depending on electr. connection
*OUT2 only for 054x

Technical modifications and errors excepted.

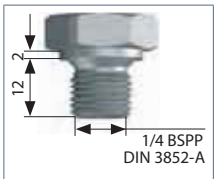
M 12 – DIN EN 61076-2-101 A	
	
Pin	Assignment
1	Uv+
2	UOut 2
3	Gnd
4	UOut 1
IP67	
x ~ 54 mm	
d ~ Ø 22 mm	
Order number: 002	

ISO 15170-A1-4.1	
	
Pin	Assignment
1	Uv+
2	Gnd
3	UOut 1
4	UOut 2
IP67, IP6K9K	
x ~ 65 mm	
d ~ Ø 27 mm	
Order number: 004	

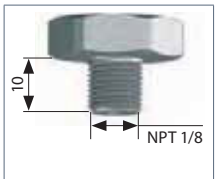
DEUTSCH DT04-4P	
	
Pin	Assignment
1	Gnd
2	Uv+
3	UOut 2
4	UOut 1
IP67, IP6K9K	
x ~ 74 mm	
d ~ Ø 23 mm	
Order number: 008	

Cable connection	
	
Pin	Assignment
red	Uv+
white	UOut 2
black	UOut 1
blue	Gnd
IP67	
x ~ 44 mm (+ 20 mm bend relief) Cable length ~ 6.5 ft (2 m)	
d ~ Ø 22 mm	
Order number: 011	

Thread code: 41



Thread code: 03



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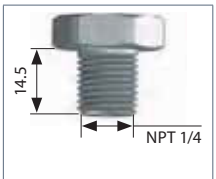
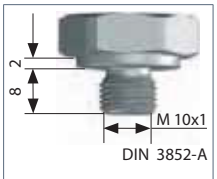
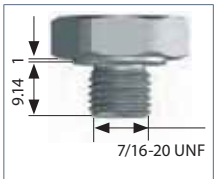


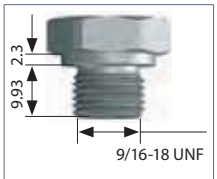
Thread code: 09



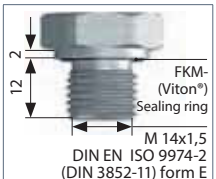
Thread code: 30



Thread code: 20



Thread code: 21



Thread code: 42

RoHS III 2020 - 209 compliant

0540 / 0541 / 0542 / 0544 / 0545 / 0546

Order matrix for electronic pressure switches

Silicon-on-Saphire Sensor with Two Switching Functions

	Type	Pressure range	Pressure connection	Pressure unit	Electrical connection
Type	↓	↓	↓	↓	↓
PNP output (High Side), NO / NO (NO/NO)	0540				
PNP output (High Side), NC / NC (NC/NC)	0541				
PNP output (High Side), NO / NC (NO/NC)	0542				
NPN output (Low Side), NO / NO (NO/NO)	0544				
NPN output (Low Side), NC / NC (NC/NC)	0545				
NPN output (Low Side), NO / NC (NO/NC)	0546				

Max. overpressure [2]	Burst pressure	Adjustment range [1]	
40 bar (580 psi)	80 bar (1,160 psi)	0 – 10 bar (0 - 145 psi)	101
100 bar (1,450 psi)	200 bar (2,900 psi)	0 – 25 bar (0 - 362.5 psi)	251
400 bar (5,800 psi)	800 bar (11,600 psi)	0 – 100 bar (0 - 1,450 psi)	102
1,000 bar (14,500 psi)	2,000 bar (29,000 psi)	0 – 250 bar (0 - 3,625 psi)	252
1,650 bar (23,930 psi)	2,000 bar (29,000 psi)	0 – 600 bar (0 - 8,700 psi)	602

Pressure connection ↓	
1/4 BSPP – DIN EN ISO 1179-2 (DIN 3852-11) form E	41
1/4 BSPP – DIN 3852-A	03
NPT 1/8	04
NPT 1/4	09
M 10x1 cyl. DIN 3852-A	30
7/16-20 UNF	20
9/16-18 UNF	21
M 14x1,5 – DIN EN ISO 9974-2 (DIN 3852-11) form E	42

Pressure unit ↓	
bar	B

Electrical connection ↓	
M 12 – DIN EN 61076-2-101 A	002
Bayonet ISO 15170-A1-4.1 (DIN 72585-A1-4.1)	004
Deutsch DT04-4P	008
Cable connection (length of cable 6.5 ft / 2 m standard)	011

	↓	↓	↓	↓	↓
Order number:	05XX	XXX	XX	B	XXX

[1] Please state switching point and differential when ordering.

[2] Static pressure, dynamic pressure 30 to 50% lower. Values refer to the hydraulic or pneumatic part of the electonic pressure switch.

RoHS III 2020 - 209 compliant

E.6

hex 22

High Performance

2 switching outputs

Electronic pressure switches, High-Performance series

hex 22 with two switching outputs

- Outstanding overpressure protection (up to 4 x)
- Ideal choice for mobile hydraulic applications
- Long service life even under high pressure change rates
- Wetted parts made of stainless steel and titanium ensuring excellent media compatibility
- All welded design, no elastomeric seal
- Silicon-on-sapphire technology (SoS) for highest reliability, accuracy and reliable process monitoring
- Very low temperature error and very good long-term stability
- Adjustment of switching point and hysteresis at factory