

# E. Electronic Pressure Switches



# 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

## Technical details

Type	<b>0540</b> NO / NO <b>0541</b> NC / NC <b>0542</b> NO / NC		<b>0544</b> NO / NO <b>0545</b> NC / NC <b>0546</b> 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 – 25 bar	0 – 100 bar	0 – 250 bar	0 – 600 bar
Overpressure protection $p_u^{1)}$ :	40 bar	100 bar	400 bar	1,000 bar	1,650 bar
Burst pressure <sup>1)</sup> :	80 bar	200 bar	800 bar	2,000 bar	2,000 bar
Mechanical life expectancy:	10,000,000 pulsations at rise rates to 5 bar/ms at $p_{nom}$				
Permitted pressure change rate:	$\leq 5$ bar / ms				
Switching point adjustment range:	2 ... 100 % of the nominal pressure range (Full Scale, FS), programmable at factory				
Hysteresis:	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:	$\pm 0.5$ % of the nominal pressure range (FS) at room temperature, $\pm 0.25$ % 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				
Long term stability:	$\pm 0.1$ % FS p. a.				
Repeatability <sup>1)</sup> :	$\pm 0.1$ % FS				
Temperature error <sup>1)</sup> :	$\pm 0.02$ % / 1 K FS				
Compensated temperature range:	-20 °C ... +80 °C (-4 °F ... +176 °F)				
Temperature range media:	-40 °C ... +125 °C (-40 °F ... +257 °F)				
Temperature range ambient:	-40 °C ... +100 °C (-40 °F ... +212 °F)				
Wetted parts material:	Stainless steel 1.4305 (AISI 303) and titanium				
Housing material:	Stainless steel 1.4305 (AISI 303)				
Insulation resistance:	> 100 M $\Omega$ (500 VDC, $R_i > 42 \Omega$ )				
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/s <sup>2</sup> ; 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. 80 g (DIN 175301 approx. 110 g, cable version approx. 135 g)				

<sup>1)</sup> Within the compensated temperature range.

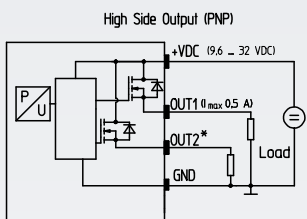
<sup>2)</sup> Static pressure. Dynamic value is 30 to 50 % lower. Values refer to the hydraulic/pneumatic part of the electronic pressure switch.

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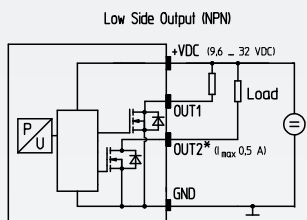
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### Connection diagrams



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



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

Technical modifications and errors excepted.



# 0540 / 0541 / 0542 / 0544 / 0545 / 0546

Electrical connectors and threads

### M 12 – DIN EN 61076-2-101 A

Pin	Assignment
1	Uv+
2	Out 2
3	Gnd
4	Out 1

IP67  
x ~ 54 mm  
d ~ Ø 22 mm  
**Order number: 002**

### ISO 15170-A1-4.1

Pin	Assignment
1	Uv+
2	Out 2
3	Gnd
4	Out 1

IP67, IP6K9K  
x ~ 65 mm  
d ~ Ø 27 mm  
**Order number: 004**

### DEUTSCH DT04-4P

Pin	Assignment
1	Gnd
2	Uv+
3	Out 2
4	Out 1

IP67, IP6K9K  
x ~ 74 mm  
d ~ Ø 23 mm  
**Order number: 008**

### Cable connection

Cable	Assignment
brown	Uv+
white	Out 2
black	Out 1
blue	Gnd

IP67  
x ~ 44 mm (+ 20 mm bend relief)  
Cable length ~ 2 m  
d ~ Ø 22 mm  
**Order number: 011**

**Thread code: 41**

**Thread code: 03**

**Thread code: 04**

**Thread code: 09**

**Thread code: 30**

**Thread code: 20**

**Thread code: 21**

**Thread code: 42**

# 0540 / 0541 / 0542 / 0544 / 0545 / 0546

## Order matrix for electronic pressure switches

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	Type	Pressure range	Pressure connection	Pressure unit	Electrical connection
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### 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 <sup>2)</sup>	Burst pressure	Adjustment range <sup>1)</sup>	
40 bar	80 bar	0 – 10 bar (approx. 145 PSI)	101
100 bar	200 bar	0 – 25 bar (approx. 362 PSI)	251
400 bar	800 bar	0 – 100 bar (approx. 1,450 PSI)	102
1,000 bar	2,000 bar	0 – 250 bar (approx. 3,620 PSI)	252
1,650 bar	2,000 bar	0 – 600 bar (approx. 8,700 PSI)	602

### Pressure connection

G 1/4 – DIN EN ISO 1179-2 (DIN 3852-11) form E	41
G 1/4 – 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
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### 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 2 m standard)	011

<b>Order number:</b>	05XX	XXX	XX	B	XXX
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<sup>1)</sup> Please state switching point and hysteresis when ordering.

<sup>2)</sup> Static pressure, dynamic pressure 30 to 50% lower. Values refer to the hydraulic or pneumatic part of the electronic pressure switch.



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