

Relative pressure switch type 521

Pressure range
0 ... 2.5 – 600 bar



The compact type 521 pressure switch is based upon the Huba Control developed thick film technology where the pressure measuring cell is fully welded.

Switching points set in factory are available both N/C and N/O function. Various electrical and pressure connections are available to suit given applications.

- Compact, rugged construction
- Welded without sealing parts
- Saving time by quick cable mounting by the customer with swift connector
- Large selection of connections available.

Technical overview

Pressure range

Relative	0 ... 2.5 – 600 bar
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Operating conditions

Medium	Liquids, gases and refrigerants (incl. ammonia)	
Temperature	Medium	-40 ... +135 °C
	Ambient	-30 ... +85 °C
	Storage	-50 ... +100 °C
Tolerable overload	≤ 6 bar	5 x FS
	> 6 bar	3 x FS (max. 1500 bar)
Rupture pressure	≤ 6 bar	10 x FS
	> 6 bar	6 x FS (max. 2500 bar)

Materials

Pressure Connection	Stainless steel 1.4404 / AISI 316L (inside thread Schrader 1.4305 / AISI 303 only)	
Plug accommodation	Polyarylamide 50% GF VO	
Materials in contact with medium	Pressure connection	Stainless steel 1.4404 / AISI 316L (inside thread Schrader 1.4305 / AISI 303 only)
	Sensor	Stainless steel

Electrical overview

Output	High-Side Switch (PNP)	Semiconductor (open collector)
Switching contact	High-Side Switch (PNP)	N/C contact or N/O contact
Switch load	High-Side Switch (PNP)	max. 200 mA
Power supply		7 ... 33 VDC
Current consumption		< 4 mA
Insulation voltage		500 VDC

Protection class

Protection class III

Dynamic response

Response time	< 2 ms, 1 ms typ.
Load cycle	< 100 Hz

Adjustment of switching points (factory set)

Upper switching point	8 ... 100% fs
Lower switching point	5 ... 97% fs
Hysteresis	≥ 3 % fs

Protection standard

IP 67

Electrical connection

Swift connector without or with cable 1.5 m
Connector M12x1

Pressure connection

Inside thread	7/16 - 20 UNF	without or with Schrader
	G 1/4	with O-Ring seal FPM spec. (-30 ... +135 °C)
	1/2 - 14 NPT	≤ 60 bar
Outside thread	7/16 - 20 UNF	
	1/4 - 18 NPT	
	G 1/4	sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)
	R 1/4	DIN 2999
	G 1/2	sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)
	G 1/2	sealed at front
	M20x1.5	

Installation arrangement

Unrestricted

Tests / Admissions

Electromagnetic compatibility	CE conformity acc. EN 61326-2-3
Shock acc. IEC IEC 68-2-27	100 g, 11 ms half sine wave, all 6 directions, free fall from 1 m on concrete (6x)
Constant shock acc. IEC 68-2-29	40 g for 6 ms, 1000x all 3 directions
Vibration acc. IEC 68-2-6	20 g, 15 ... 2000 Hz, 15 ... 25 Hz with amplitude ± 15 mm, 1 Octave/min. all 3 directions, 50 constant load

Weight

~ 90 g

Packaging (Please state on order)

Single packaging in cardboard	accessories integrated
Multiple packaging in cardboard (25 pcs)	



Accuracy

Parameter		Unit	
Switching points ¹⁾		% fs	± 0.5
Resolution		% fs	0.1
Thermal characteristic ²⁾	max.	% fs/10K	± 0.2
Long term stability acc. IEC EN 60770-1	max.	% fs	± 0.25

Test conditions: 25°C, 45% RH, power supply 24 VDC

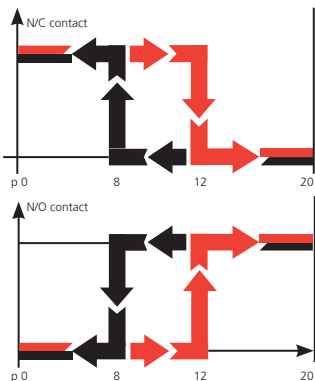
Order code selection table in bar

			521.9	X	X	X	X	X	X	X	X	X	X	X
Pressure range ³⁾	0 ... 2.5 bar		1	4										
	0 ... 4 bar		1	5										
	0 ... 6 bar		1	7										
	0 ... 10 bar		3	0										
	0 ... 16 bar		3	1										
	0 ... 25 bar		3	2										
	0 ... 40 bar		3	3										
	0 ... 60 bar		4	0										
	0 ... 100 bar		4	1										
	0 ... 160 bar		4	2										
	0 ... 250 bar		4	3										
	0 ... 400 bar		5	4										
0 ... 600 bar		5	5											
Version	standard						S	0						
	for oxygen applications						S	1						
Switching contact	Contact N/O	High-Side-Switch PNP							1					
	Contact N/C	High-Side-Switch PNP							2					
Electrical connection	Swift connector									0				
	Connector M12x1 ⁴⁾									3				
	Swift connector with cable 1.5 m									L				
Pressure connection ⁵⁾	Inside thread	7/16"-20 UNF Schrader								0	0	N		
	Inside thread	7/16"-20 UNF								K	0	1		
	Inside thread	G 1/4 with O-Ring seal FPM spec. (-30 ... +135 °C)								1	0	1		
	Inside thread	1/2"-14 NPT (≤ 60 bar)								D	0	1		
	Outside thread	M20x1.5								E	0	1		
	Outside thread	7/16"-20 UNF								2	0	1		
	Outside thread	1/4"-18 NPT								3	0	1		
	Outside thread	G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)								4	0	1		
	Outside thread	R 1/4 acc. to DIN 2999								7	0	1		
	Outside thread	G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)								8	0	1		
	Outside thread	G 1/2 sealed at front								9	0	1		
Material	Stainless steel 1.4305 / AISI 303												N	
pressure connection	Stainless steel 1.4404 / AISI 316L													1
Switching points	Indicate W and state switching points on order (e.g.: W100/60bar)													W

Accessories

			Order number
Swift connector			107359
Straight-wire box for connector M12x1	3-pole		114570
Straight-wire box for connector M12x1 with cable	3-pole	200 cm	114605
Corner-wire box for connector M12x1 with cable	3-pole	200 cm	114604
Corner-wire box for connector M12x1	3-pole		106975
Calibration certificate			104551

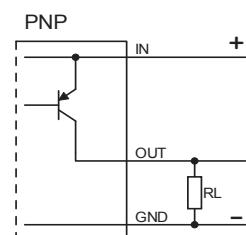
Function



N/C contact: When pressure is applied ($p_0 \rightarrow p_{max}$) the switch will disconnect the applied load as soon as the upper switching point is reached. As the pressure falls ($p_{max} \rightarrow p_0$) the switch will connect the load as soon as the lower switching point is reached.

N/O contact: When pressure is applied ($p_0 \rightarrow p_{max}$) the switch will connect the applied load as soon as the upper switching point is reached. With a fall in pressure ($p_{max} \rightarrow p_0$) the switch will disconnect the load as soon as the lower switching point is reached.

Example: p_0 20 bar
 Upper switching point 12 bar
 Lower switching point 8 bar
 max. switching load 100 mA



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¹⁾ typ. ; max. 1.0% fs (incl. hysteresis and repeatability)

⁴⁾ Delivery without female connector

²⁾ -15 ... 85 °C

⁵⁾ Other pressure connections on request

³⁾ Other pressure ranges on request

Order code selection table in psi		521.9	X	X	X	X	X	X	X	X	X	X	X	X	
Pressure range ¹⁾	0 ... 30 psi	B	4												
	0 ... 60 psi	B	5												
	0 ... 100 psi	B	7												
	0 ... 200 psi	C	1												
	0 ... 300 psi	C	2												
	0 ... 500 psi	C	3												
	0 ... 750 psi	D	0												
	0 ... 1000 psi	D	1												
	0 ... 2000 psi	D	2												
	0 ... 3000 psi	D	3												
	0 ... 5000 psi	E	4												
	0 ... 7500 psi	E	5												
	Version	standard				S	0								
	for oxygen applications				S	1									
Switching contact	Contact N/O High-Side-Switch PNP								1						
	Contact N/C High-Side-Switch PNP								2						
Electrical connection	Swift connector									0					
	Connector M12x1 ²⁾									3					
	Swift connector with cable 1.5 m									L					
Pressure connection ³⁾	Inside thread 7/16-20 UNF Schrader										0	0	N		
	Inside thread 7/16-20 UNF										K	0	1		
	Inside thread G 1/4 with O-Ring seal FPM spec. (-30 ... +135 °C)										1	0	1		
	Inside thread 1/2 -14 NPT (≤ 750 psi)										D	0	1		
	Outside thread M20x1.5										E	0	1		
	Outside thread 7/16 -20 UNF										2	0	1		
	Outside thread 1/4 -18 NPT										3	0	1		
	Outside thread G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)											4	0	1	
	Outside thread R 1/4 acc. to DIN 2999											7	0	1	
	Outside thread G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)											8	0	1	
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Material	Stainless steel 1.4305 / AISI 303													N	
pressure connection	Stainless steel 1.4404 / AISI 316L													1	
Switching points	Indicate W and state switching points on order (e.g.: W1000/400psi)													W	

Order code selection table in MPa		521.9	X	X	X	X	X	X	X	X	X	X	X	X	
Pressure range ¹⁾	0 ... 0.25 MPa	G	4												
	0 ... 0.4 MPa	G	5												
	0 ... 0.6 MPa	G	7												
	0 ... 1 MPa	H	0												
	0 ... 1.6 MPa	H	1												
	0 ... 2.5 MPa	H	2												
	0 ... 4 MPa	H	3												
	0 ... 6 MPa	K	0												
	0 ... 10 MPa	K	1												
	0 ... 16 MPa	K	2												
	0 ... 25 MPa	K	3												
	0 ... 40 MPa	L	4												
	0 ... 60 MPa	L	5												
	Version	standard				S	0								
		for oxygen applications				S	1								
Switching contact	Contact N/O High-Side-Switch PNP								1						
	Contact N/C High-Side-Switch PNP								2						
Electrical connection	Swift connector									0					
	Connector M12x1 ²⁾									3					
	Swift connector with cable 1.5 m									L					
Pressure connection ³⁾	Inside thread 7/16-20 UNF Schrader										0	0	N		
	Inside thread 7/16-20 UNF										K	0	1		
	Inside thread G 1/4 with O-Ring seal FPM spec. (-30 ... +135 °C)										1	0	1		
	Inside thread 1/2 -14 NPT (≤ 6 MPa)										D	0	1		
	Outside thread M20x1.5										E	0	1		
	Outside thread 7/16 -20 UNF										2	0	1		
	Outside thread 1/4 -18 NPT										3	0	1		
	Outside thread G 1/4 sealed at back DIN 3852 form E with Profile seal ring in FPM spec. (-30 ... +135 °C)											4	0	1	
	Outside thread R 1/4 acc. to DIN 2999											7	0	1	
	Outside thread G 1/2 sealed at back and manometer (combi) with Profile seal ring in FPM spec. (-30 ... +135 °C)											8	0	1	
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Material	Stainless steel 1.4305 / AISI 303													N	
pressure connection	Stainless steel 1.4404 / AISI 316L													1	
Switching points	Indicate W and state switching points on order (e.g.: W10/5MPa)													W	



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²⁾ Delivery without female connector

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