

FOR FINE PRESSURE AND FLOW MEASUREMENT

## Relative and absolute pressure switch type 529

Pressure range -1 ... 0 – 60 bar



The compact type 529 pressure switch is based upon the Huba Control developed unique ceramic technology used for the last 20 years in millions of applications.

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
- Negligible temperature influence on accuracy
- Large selection of connections available.
- Saving time by quick cable mounting by the customer with swift connector

Technical overview							
Pressure range							
Relative						-1 0 – 60	bar
Absolute						0 1 – 16 b	bar
Operating conditions							
Medium						Liquids and g	gases
						FPM	-15 +125 °C
				Medium			-40 + 125 °C
Temperature						MVQ	-40 +125 °C
				Ambient			-30 +85 °C
				Storage		3.0 x fs	-50 +100 °C
Tolerable overload / Rupture pressure				> 4 bar		2.5 x fs	
Pressure Connection						Stainless stee	al 1 4404 / AISI 3161
Plug accommodation						Polyarylamid	le 50% GF UL 94 V-0
				Pressure conne	ection	Stainless stee	el 1.4404 / AISI 316L
Materials in contact with medium				Sensor Sealing materi	al	EPM EPDM	J₃ (96%) NBR_MVO
				Scaling match	ai		
Electrical overview							
Output Switching contact				High Side Swit	tch (DND)	Semiconduct	tor (open collector)
Switch load				High-Side Swit	tch (PNP)	max. 200 m/	A
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	s typ.
Load cycle						< 100 Hz	
Adjustment of switching points (factory	set)						
Upper switching point	,					8 100% f	S
Lower switching point						<u>5 97% fs</u>	
Hysteresis						<u>&gt; 3 % 15</u>	
Protection standard							
IP 67							
Electrical connection							
Swift connector without or with cable 1.5 m	1						
Connector M12x1							
Pressure connection							
	G ¼		with O-Ring sea	al FPM (-30 +135 °C)			
Inside thread	1/2 - 14 NPT						
	<sup>7</sup> / <sub>16</sub> - 20 UNF						
	1/4 -18 NPT						
- · · · · ·	G 1/4		sealed at back	DIN 3852-E with Profile sea	l ring in FPM (-30	+135 °C)	
Outside thread	R 1/4		EN 10226	and manometer (combi) wit	th Profile seal ring in	FPM (-30 +13	35 °C)
	M20x1.5		sealed at back	and manometer (combi) will	an nome searning in	11101(-50 +1.	55 C/
	G 1⁄2		sealed at front				
Installation arrangement							
Unrestricted							
The data belief	-	-					
Iests / Admissions	CE conformit	v acc. EN 613	26-2-3				
Shock acc. IEC IEC 68-2-27	100 g, 11 ms	half sine way	ve, all 6 directions	, free fall from 1 m on conc	rete (6x)		
Constant shock acc. IEC 68-2-29	40 g for 6 m	s, 1000x all 3	directions				
Vibration acc. IEC 68-2-6	20 g, 15 2	000 Hz, 15	. 25 Hz with ampl	itude ± 15 mm, 1 Octave/m	in. all 3 directions, 5	50 constant load	
Weight							
~ 90 g							
Packaging (Please state on order)							
Single packaging in cardboard						accessories i	ntegrated
Multiple packaging in cardboard (25 pcs)							
A							
Accuracy							
Parameter		Unit		] Test conditi	ons: 25°C 45%	RH, power su	pply 24 VDC
Switching points 1)		% fc	± 0 5		, . , . , . , . , . , . , . ,	, - 51101 50	
Resolution		% fs	0.1	-			
Thermal characteristic <sup>2)</sup>	max.	% fs/10K	± 0.2	]			
Long term stability acc. IEC EN 60770-1	max.	% fs	± 0.25	]			

Order code selection table in bar         529.         X				1	2	3	4	5	6	7	8	9	10	11
-10har       9       0.1       1 <t< td=""><td>Order code select</td><td>tion table in</td><td>bar 529.</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td><td>Х</td></t<>	Order code select	tion table in	bar 529.	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
0         1 bar         9         1         1         1         0<		-1 0 bar		9	0	1								
0.       1 bar       9       1       2       0 <td rowspan="2">-</td> <td>0 1 bar</td> <td></td> <td>9</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	-	0 1 bar		9	1	1								
0       2       2       2       4       0       1       4       0       1       4       0       1       1       1       0       1 <td>0 16 bar</td> <td></td> <td>9</td> <td>1</td> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		0 16 bar		9	1	2								
0       A bar       9       1       5       0<		0 2.5 bar		9	1	4		0						
Pressure range (relative)       0       1       2       0       1       2       0       1<		0 4 bar		9	1	5		0						
Owner or one of a standard of a sta	Pressure range (relative) <sup>1)</sup>	0 6 bar		9	1	7		0						
Image: border in the bar         Image:	· · · · · · · · · · · · · · · · · · ·	0 10 bar		9	3	0		0						
Image: constraint of the second sec		0 16 bar		9	3	1		0						
0         40 bar         9         3         3         0         1 <th1< th=""> <th1<< td=""><td></td><td>0 25 bar</td><td></td><td>9</td><td>3</td><td>2</td><td></td><td>0</td><td></td><td></td><td></td><td></td><td><math> \rightarrow </math></td><td></td></th1<<></th1<>		0 25 bar		9	3	2		0					$ \rightarrow $	
0         60 bar         9         4         0 <td></td> <td>0 40 bar</td> <td></td> <td>9</td> <td>3</td> <td>3</td> <td></td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		0 40 bar		9	3	3		0						
Orm         Orm <td>-</td> <td>0 60 bar</td> <td></td> <td>9</td> <td>4</td> <td>0</td> <td></td> <td>0</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	-	0 60 bar		9	4	0		0						
0         1 bar         0         1 bar         0		0 00.001			-			<u> </u>					-	
Pressure range (absolue)         0         1.0a         0         1.0a         0 <th< td=""><td></td><td>0 1 har</td><td></td><td>8</td><td>1</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>		0 1 har		8	1	1								
Pressure range (absolute)       0       4 bar       8       1       4       6       6         0       6 bar       8       1       5       6       6       6         0       10 bar       8       3       0       6       6       6         0       16 bar       8       3       0       6       6       6         0       16 bar       8       3       0       6       6       6         Sealing material       FPM       Fluoro elastomer       8       3       1       6       6         MVQ       Silicone polymer       6       7       6       6       6         MVQ       Silicone polymer       6       7       6       6       6         Switching contact       Contact N/C       High-Side-Switch PNP       7       6       6       6         Swift connector       Contact N/C       High-Side-Switch PNP       7       6       6       6         Swift connector with cable 1.5 m       6       6       6       6       6       6		0 16 bar		8	1	2							$ \rightarrow$	
Pressure range (absolute) <sup>10</sup> 0 4 bar       8       1       5       1       6       1       6       1       6       1       6       1       6       1       6       1       6       1       6       1       6       1       6       1       6       1 <td rowspan="5">Pressure range (absolute) <sup>1)</sup></td> <td>0 2.5 har</td> <td></td> <td>8</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td>	Pressure range (absolute) <sup>1)</sup>	0 2.5 har		8	1	1							-	
Trestore range (absolute)       0       1       1 <th1< th="">       1<!--</td--><td>0 2.5 bar</td><td></td><td>8</td><td>1</td><td>5</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th1<>		0 2.5 bar		8	1	5								
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		0 4 bar		8	1	7							$ \rightarrow $	
Image: Constraint of bar         Image: Constraint of bar <thimage: bar<="" constraint="" of="" th=""> <thimage: co<="" td=""><td>0 10 bar</td><td></td><td>8</td><td>3</td><td>,</td><td></td><td></td><td></td><td></td><td></td><td></td><td><math> \rightarrow </math></td><td></td></thimage:></thimage:>		0 10 bar		8	3	,							$ \rightarrow $	
Sealing material         FPM         Fluoro elastomer         0         1         1		0 10 bar		0 8	2	1							$ \rightarrow$	
Sealing material         Initial		EDM	Fluoro elastomer	0	5		0						$ \rightarrow$	
Sealing material         Litty little propriation         1		EDDM	Ethylono propulano				1						$ \rightarrow$	
NoteDistance Acyonative201010MVQSilicone polymer30010101for oxygen applications0101010101Switching contactContact N/OHigh-Side-Switch PNP0101001000<	Sealing material		Rutadiana Aculanitrila				2						$\rightarrow$	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		MVO	Silicono polymor				2						$ \rightarrow$	
Application         Standard         O         I		standard					2	0					$ \rightarrow$	
Switching contact         Contact N/C         High-Side-Switch PNP         Image: Contact N/C         Image: Contact N/C         Image: Contact N/C         High-Side-Switch PNP         Image: Contact N/C         Image: Cont	Application	for ovugon applica	tions				0	1						
Switching contact         Contact N/C         High-Side-Switch PNP         Import of the system of the sys		Cantact N/O	Lligh Cide Cuitch DND				0	1	1					
Swift connector         Impriside-switch PNP         Impriside-swit	Switching contact	Contact N/O	High-Side-Switch PNP						ן ר					
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			High-side-switch PNP						2	0				
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Flantsian Language attack	Swift connector	2)							0				
Switt connector with cable 1.5 m         I         <	Electrical connection	Connector IVI12X1	2/							3				
Pressure connection 3)         Inside thread         G // With O-King seal PPM         Image: Marcon of the seal PPM		Swift connector w								L	4			
Pressure connection 3) $\frac{1}{2} \cdot 14$ NP1 $1$			G 1/4 WITH O-KING Seal FPM								1			
Pressure connection 3)         Without pressure tip orifice         Witho		Inside thread	<u>/2 - 14 NPI</u>								D		$ \rightarrow $	
Pressure connection 3)       1/6 -20 UNF       0       0       0       0       3       0       0       0       3       0			7/16-20 UNF	<u> </u>							K			
Pressure connection 3) $\frac{14}{3}$ -18 NPI $1$			1/16 - 20 UNF								2			
G ½ sealed at back DIN 3852-E with Profile seal ring in FPM         Image: Constraint of the seal ring in FPM <th< td=""><td>Pressure connection 3)</td><td></td><td>1/4 - 18 NPI</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>3</td><td></td><td></td><td></td></th<>	Pressure connection 3)		1/4 - 18 NPI								3			
Outside thread       R ¼ acc. to EN 10226       Image: Constraint of the seal ring in FPM       Image: Constrein the seal ring in FPM       Image: Constrai			G ¼ sealed at back DIN 3852-E with Profile seal ring in FPM								4			
$ G \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \$		Outside thread	R ¼ acc. to EN 10226								7			
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$			G ½ sealed at back and manometer with Profile seal ring in FPM								8			
G ½ sealed at front       9       9       1       1         Version       without pressure tip orifice       1       1       1       1         withing points       Indicate W and state switching points on order (e.g.: W40/30bar)       1       1       2       1       2       1			M20x1.5 sealed at front and manometer (combi)								E			
Version       without pressure tip orifice       1       1         with pressure tip orifice       2       2       1         Switching points       Indicate W and state switching points on order (e.g.: W40/30bar)       0			G <sup>1</sup> / <sub>2</sub> sealed at front								9			
with pressure tip orifice       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state switching points on order (e.g.: W40/30bar)       Image: Constraint of the second state stat	Version	without pressure t	ip orifice									1	1	
Switching points Indicate W and state switching points on order (e.g.: W40/30bar)		with pressure tip c	prifice									2	1	
	Switching points	tching points Indicate W and state switching points on order (e.g.: W40/30bar)												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	
Mounting bracket with screw			118716	
Calibration certificate			104551	

## Mounting bracket





<sup>2)</sup> Delivery without female connector

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<sub>fs</sub> 20 bar Upper switching point 12 bar Lower switching point 8 bar max. switching load 100 mA



			1	2	3	4	5	6	7	8	9	10	11
Order code select	tion table in	psi 529.	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
	-30 0"hg		9	В	0								
	0 15 psi		9	В	1								
	0 20 psi		9	В	2								
	0 30 psi		9	B	4		0						
	0 60 psi		9	B	5		0						
Pressure range (relative) 1)	0 100 psi		9	B	7		0						
ressure runge (relative)	0 150 psi		9	C	0		0				$\vdash$		
	0 200 psi		9	C	1		0						
-	0 300 psi		9	C	2		0						
	0 500 psi		9	C	2		0				$\vdash$	$\vdash$	
	0 750 psi		a		0		0				$\vdash$	$\vdash$	_
	0750 psi		5		0		0						
	0 15 psi		8	В	1								
	0 20 psi		8	B	2								
	0 30 psi		8	B	4								
Pressure range (absolute) <sup>1</sup>	0 60 psi		8	B	5								
Tressure runge (ussolute)	0 100 psi		8	B	7						$\vdash$		
	0 150 psi		8	C	0						$\vdash$		
	0 200 psi		8	C	1								
	EPM	Fluoro elastomer			-	0						$\vdash$	
	EPDM	Ethylene propylene				1							
Sealing material	NRR	Butadiene Acylonitrile				2					$\vdash$	$\vdash$	
	MVO	Silicone polymer				2					$\vdash$	$\vdash$	
	standard					5	0				$\vdash$	$\vdash$	
Application	for oxygon applica	tions				0	1				$\vdash$	$\vdash$	
		Ligh Side Switch DND				0	1	1			$\vdash$	$\vdash$	
Switching contact	Contact N/C	High Side Switch PNP		<u> </u>				2			$\vdash$	$\vdash$	
	Contact IVC	High-side-switch Five		<u> </u>				2	0		$\vdash$	$\vdash$	
Flantsian Language attack	Switt connector	2)	-						0		$\vdash$	$\vdash$	
Electrical connection	Connector IVI12X1			<u> </u>					3		$\vdash$	$\vdash$	
	SWITE CONNECTOR W			<u> </u>					L	4	$\vdash$	$\vdash$	
	المحتاب والمتعال			<u> </u>							$\vdash$	$\vdash$	
	Inside thread	<u>/2 - 14 NP1</u> <u>7/ - 20 LINE</u>		<u> </u>						U	$\vdash$	$\vdash$	
		7/16-20 UNF		<u> </u>						K	$\square$	$\vdash$	
		7/16-20 UNF		<u> </u>						2	$\vdash$	$\vdash$	
Pressure connection 3)		74-18 NPI		_						3	$\vdash$	$\vdash$	
		G ¼ sealed at back DIN 3852-E with Profile seal ring in FPM		<u> </u>						4			
	Outside thread	R ¼ acc. to EN 10226	<u> </u>							7			
		G ½ sealed at back and manometer with Profile seal ring in FPM								8			
		M20x1.5 sealed at front and manometer (combi)	<u> </u>	<u> </u>						E	$\square$	$\square$	
		G 1/2 sealed at front								9			
Version	without pressure t	ip orifice									1	1	
	with pressure tip o	rifice									2	1	
Switching points Indicate W and state switching points on order (e.g.: W30/16psi)									[ ]	1	W		

			1	2	3	4	5	6	7	8	9	10	11
Order code selec	tion table in M	Pa 529.	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х
	-0.1 0 MPa		9	G	0								
	0 0.1 MPa		9	G	1								
	0 0.16 MPa		9	G	2								
	0 0.25 MPa		9	G	4		0						
	0 0.4 MPa		9	G	5		0						
Pressure range (relative) 1)	0 0.6 MPa		9	G	7		0						
<b>J</b>	0 1 MPa		9	Н	0		0						
	0 1.6 MPa		9	Н	1		0						
	0 2.5 MPa		9	Н	2		0						
	0 4 MPa		9	Н	3		0						
	0 6 MPa		9	К	0		0						
	0 0.1 MPa		8	G	1								
	0 0.16 MPa		8	G	2								
	0 0.25 MPa		8	G	4								
Pressure range (absolute) <sup>1</sup>	0 0.4 MPa		8	G	5								
	0 0.6 MPa		8	G	7								
	0 1 MPa		8	Н	0								
	0 1.6 MPa		8	Н	1								
	FPM	Fluoro elastomer				0							
	EPDM	Ethylene propylene				1							
Sealing material	NBR	Butadiene Acylonitrile				2							
	MVQ	Silicone polymer				3							
A	standard						0						
Application	for oxygen applicatio	ns				0	1						
Considerable in an and a set	Contact N/O	High-Side-Switch PNP						1					
Switching contact	Contact N/C	High-Side-Switch PNP						2					
	Swift connector								0				
Electrical connection	Connector M12x1 <sup>2)</sup>								3				
	Swift connector with	cable 1.5 m							L				
		G ¼ with O-Ring seal FPM								1			
	Inside thread	1/2 -14 NPT								D			
		7/ <sub>16</sub> -20 UNF								Κ			
		7/16 -20 UNF								2			
Prossure connection 3)		1⁄4 -18 NPT								3			
Pressure connection *		G ¼ sealed at back DIN 3852-E with Profile seal ring in FPM								4			
	Outside thread	R ¼ acc. to EN 10226								7			
		G ½ sealed at back and manometer with Profile seal ring in FPM								8			
		M20x1.5 sealed at front and manometer (combi)								Ε			
	G ½ sealed at front									9			
Varian	without pressure tip of	prifice									1	1	
version	with pressure tip orifi	ce									2	1	
Switching points	Indicate W and state	switching points on order (e.g.: W4/1.2MPa)											W
													-







13.5



<sup>1=</sup> brown 2=green 3=white



7/16-20 UNF 7/16-20 UNF inside **ss** 24

<sup>1)</sup> Other pressure ranges on request

6

<sup>2)</sup> Delivery without female connector