



## Paddle Flow Monitor for liquids



measuring  
•  
monitoring  
•  
analysing

PSR/PSE



- Switching ranges:  
2.5 - 4.8 ... 383 - 533 l/min water
- $p_{\max}$ : 250 bar,  $t_{\max}$ : 110 °C
- Connection:  
G 1/4 ... G 1 1/2,  
1/4" NPT ... 1 1/2" NPT
- Material:  
brass or stainless steel
- Replaceable stainless steel  
paddle

33



KOBOLD companies worldwide:

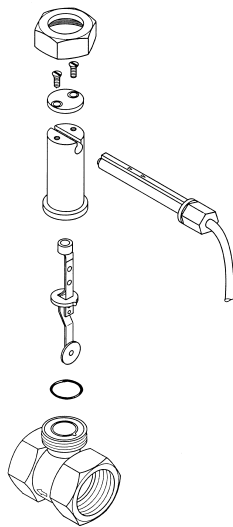
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**Description**

The KOBOLD flow monitor types PSE and PSR are simple, reasonably-priced and reliable monitors of fluid motions.

Depending on the flow velocity/flow throughput, the baffle plate is deflected and it moves over the balance arm the permanent magnet into the operating range of the reed contact mounted outside the process fluid.



The leaf spring, which also serves as a support for the balance arm, forces the baffle plate back to its rest position when there is no flow. KOBOLD baffle plate flow monitors are supplied completely assembled with pipe length up to nominal size 40. For bigger nominal pipe sizes the devices are supplied without pipe length for direct fitting and are screwed into standard T pieces or reducing pipes. PTFE tape is used for sealing.

**PSR and PSE versions**

PSR made of brass or stainless steel with fitting and female thread for nominal sizes G ¼ to G 1 ½.

PSE made of brass or stainless steel with external thread for larger nominal sizes NW 50 ... NW 200.

**Model: PSE**



**Model: PSR**



**Technical Details**

Tolerance: ±15 %  
 Temperature of medium: -20 ... +70 °C (NBR-seal)  
 -10 ... +110 °C (FPM-seal)  
 Ambient temperature: -20 ... +70 °C (NBR-seal)  
 -20 ... +110 °C (FPM-seal)

Max. Pressure	Brass Version	Stainless steel Version
PSE PSR-¼ ...1	100 bar	250 bar
PSR-1 ¼, 1 ½	25 bar	40 bar

Protection type: IP 65  
 Preferred mounting position: Upright, horizontal  
 PSE-1x52/PSE-1x14: only upright  
 5 x DN in each case

**Electrical Details**

**Bistable reed contact**

- R** N/O contact/N/C contact standard  
 max. 2 A, max. 230 V<sub>AC/DC</sub>, max. 40 W, 40 VA
- U** Changeover contact standard  
 max. 0.5 A, max. 150 V<sub>AC/DC</sub>, max. 20 W, 20 VA
- C** N/O contact/N/C contact   
 2A, 20 V<sub>AC</sub>, 0.18 A, 230 V<sub>AC</sub>, max. 40 W
- D** Changeover contact   
 0.13 A, 150 V<sub>AC</sub>, 0.5 A, 40 V<sub>AC</sub>, max. 20 W

**ATEX and IECEx**

**R, U** N/O/N/C contact and changeover contact  
 max. 2 A, max. 60 V<sub>AC/DC</sub>, max. 40 W, 20 VA

Ex-range:

- |                           |    |                       |
|---------------------------|----|-----------------------|
| Model PS*-* * * * * H     | or | Model PS*-* * * * * * |
| I M1Ex ia I Ma            |    | Ex ia I Ma            |
| II 1GEx ia IIC T3 Ga      |    | Ex ia IIC T4 Ga       |
| II 1DEx ia IIIC T135°C Da |    | Ex ia IIIC T135°C Da  |
| II 2DEx ia IIIC T150°C Db |    | Ex ia IIIC T110°C Db  |

**Materials**

	PSR/PSE-11../-21..	PSR/PSE-12../-22..
Case	brass 58	st. steel 1.4301
Baffle plate	st. steel 1.4301	st. steel 1.4301
Leaf spring	st. steel 1.4310	st. steel 1.4310
Balance arm	st. steel 1.4310	st. steel 1.4310
Sleeve	brass 58	st. steel 1.4301
Magnet	oxide ceramics	oxide ceramics
Seal	NBR	FPM
Contact tube	polyamide, glass-fibre-reinforced	
Cable	PVC (standard 1.5 m)	

**Applications**

- Cooling and lubricant circuits
- Dry running protection for pumps
- Prevention of low water levels
- Monitoring of pipe fracture

**Special advantages**

- Pressure-resistant, forged case for model PSR-xx08...PSR-xx25
- Baffle plate system made of spring stainless steel  
 This precludes bending of paddle even with flow rates well outside the switching range
- Baffle plate exchangeable

Order Details Standard Version (Example: PSR-1108 3 R08 R 1)



Standard switch. ranges <sup>1)</sup>		Nominal size	Q <sub>max</sub> l/min water	Model <sup>3)</sup>		Connection	Contact	Cable length
Rising flow rate l/min water	Falling flow rate l/min water			Material brass	Material st. steel			
2.3-4.7	1.6-4.6	DN 8	30	PSR-1108 3...	PSR-1208 3...	R08 = G ¼ N08 = ¼" NPT	R = N/O contact (standard CE) C = N/O contact (cCSAus) U = changeover contact (standard CE) D = changeover contact (cCSAus)	<b>PVC cable</b> 1 = 1.5 m (standard) 2 = 2.0 m <sup>2)</sup> 4 = 3.0 m <sup>2)</sup> 6 = 4.0 m <sup>2)</sup> 8 = 5.0 m <sup>2)</sup> P = PVC cable, special length <sup>3)</sup> S = silicone cable <sup>3) 4)</sup> G = yellow PUR cable <sup>3) 4)</sup>
2.8-6.0	2.3-5.5	DN 10	40	PSR-1110 3...	PSR-1210 3...	R10 = G ¾ N10 = ¾" NPT		
2.7-6.4	1.9-6.3	DN 15	45	PSR-1115 3...	PSR-1215 3...	R15 = G ½ N15 = ½" NPT		
7.7-13.4	5.9-13.0	DN 20	80	PSR-1120 6...	PSR-1220 6...	R20 = G ¾ N20 = ¾" NPT		
7.4-18.2	7.3-17.2	DN 25	130	PSR-1125 8...	PSR-1225 8...	R25 = G 1 N25 = 1" NPT		
22-38.6	21-36	DN 32	160	PSR-1132 B...	PSR-1232 B...	R32 = G 1 ¼ N32 = 1 ¼" NPT		
34.8-64.2	34-62.3	DN 40	300	PSR-1140 B...	PSR-1240 B...	R40 = G 1 ½ N40 = 1 ½" NPT		



Special switch. ranges <sup>1)</sup>		Nominal size	Q <sub>max</sub> l/min water	Model <sup>3)</sup>		Connection	Contact	Cable length
Rising flow rate l/min water	Falling flow rate l/min water			Material brass	Material st. steel			
4.7-6.5	3.4-6.1	DN 8	30	PSR-1108 2...	PSR-1208 2...	R08 = G ¼ N08 = ¼" NPT	R = N/O contact (standard CE) C = N/O contact (cCSAus) U = Changeover contact (standard CE) D = Changeover contact (cCSAus)	<b>PVC cable</b> 1 = 1.5 m (standard) 2 = 2.0 m <sup>2)</sup> 4 = 3.0 m <sup>2)</sup> 6 = 4.0 m <sup>2)</sup> 8 = 5.0 m <sup>2)</sup> P = PVC cable, special length <sup>3)</sup> S = silicone cable <sup>3) 4)</sup> G = yellow PUR cable <sup>3) 4)</sup>
5.7-7.7	4.5-7.6	DN 8	30	PSR-1108 1...	PSR-1208 1...	R10 = G ¾ N10 = ¾" NPT		
5.5-7.1	4.4-6.9	DN 10	40	PSR-1110 2...	PSR-1210 2...	R15 = G ½ N15 = ½" NPT		
6.6-8.7	5.6-8.5	DN 10	40	PSR-1110 1...	PSR-1210 1...	R20 = G ¾ N20 = ¾" NPT		
8.3-10.7	7.0-10.3	DN 15	45	PSR-1115 2...	PSR-1215 2...	R25 = G 1 N25 = 1" NPT		
9.2-12.4	8.0-11.8	DN 15	45	PSR-1115 1...	PSR-1215 1...			
17.8-24.9	14.9-23.3	DN 20	80	PSR-1120 5...	PSR-1220 5...			
20.4-30.0	16.3-28.3	DN 20	80	PSR-1120 4...	PSR-1220 4...			
34.6-48.3	30.6-46.7	DN 20	80	PSR-1120 1...	PSR-1220 1...			
17.7-26.8	12.8-24.7	DN 25	130	PSR-1125 7...	PSR-1225 7...			
26.0-36.3	21.4-34.1	DN 25	130	PSR-1125 5...	PSR-1225 5...			
29.8-42.8	24.7-40.9	DN 25	130	PSR-1125 4...	PSR-1225 4...			
47.6-67.2	43.9-64.9	DN 25	130	PSR-1125 1...	PSR-1225 1...			



Standard switch. ranges <sup>1)</sup>		for pipes with diameter [mm]	Q <sub>max</sub> m <sup>3</sup> /h water	Model <sup>3)</sup>		Connection	Contact	Cable length
Rising flow rate l/min water	Falling flow rate l/min water			Material brass	Material st. steel			
68-90	61-83	50	30	PSE-1149 8...	PSE-1249 8...	R15 = G ½ N15 = ½" NPT	R = N/O contact (standard CE) C = N/O contact (cCSAus)	<b>PVC cable</b> 1 = 1.5 m (standard) 2 = 2.0 m <sup>2)</sup> 4 = 3.0 m <sup>2)</sup> 6 = 4.0 m <sup>2)</sup> 8 = 5.0 m <sup>2)</sup> P = PVC cable, special length <sup>3)</sup>
183-250	170-233	80	100					
320-400	300-383	100	150					
700-917	667-900	150	200					
50-62	43-58	50	30	PSE-1152 0...	PSE-1252 0...	R15 = G ½ N15 = ½" NPT	U = Changeover contact (standard CE)	S = silicone cable <sup>3) 4)</sup>
155-183	143-167	80	100					
217-267	200-250	100	150					
558-600	517-592	150	200					
92-113	70-103	100	150	PSE-1114 9...	PSE-1214 9...	R15 = G ½ N15 = ½" NPT	D = Changeover contact (cCSAus)	G = yellow PUR cable <sup>3) 4)</sup>
200-283	167-233	150	200					
383-533	333-467	200	200					

<sup>1)</sup> Listed values are valid only for horizontal installation <sup>2)</sup> Only for N/O contact »R« and »C«  
<sup>3)</sup> Length as described <sup>4)</sup> Only for N/O contact »R«



Paddle Flow Monitor Model PSR/PSE

Order Details ATEX- and IECEx Version (Example: PSR-2208 3 R08 R 1 H)



Standard switch. ranges <sup>1)</sup>		Nominal size	Q <sub>max</sub> l/min water	Model		Connection	Contact	Cable length	Special version
Rising flow rate l/min water	Falling flow rate l/min water			Material brass	Material st. steel				
2.3-4.7	1.6-4.6	DN 8	30	PSR-2108 3...	PSR-2208 3...	R08 = G ¼ N08 = ¼" NPT	R = N/O contact (ATEX, IECEX)  U = Changeover contact (ATEX, IECEX)	PVC cable 1 = 1.5 m (standard)  P = PVC cable, special length <sup>2)</sup>	without= standard (not for PSx-22...)  H = temperature of medium +110°C (only for PSx-22...), marking acc. to certificate
2.8-6.0	2.3-5.5	DN 10	40	PSR-2110 3...	PSR-2210 3...	R10 = G ¾ N10 = ¾" NPT			
2.5-6.4	1.9-6.3	DN 15	45	PSR-2115 3...	PSR-2215 3...	R15 = G ½ N15 = ½" NPT			
7.7-13.4	5.9-13.0	DN 20	80	PSR-2120 6...	PSR-2220 6...	R20 = G ¾ N20 = ¾" NPT			
7.4-18.2	7.3-17.2	DN 25	130	PSR-2125 8...	PSR-2225 8...	R25 = G 1 N25 = 1" NPT			
19.7-36.8	20.0-32.4	DN 32	160	PSR-2132 B...	PSR-2232 B...	R32 = G 1 ¼ N32 = 1 ¼" NPT			
23.1-57.9	23.5-53.1	DN 40	300	PSR-2140 B...	PSR-2240 B...	R40 = G 1 ½ N40 = 1 ½" NPT			



Standard switch. ranges <sup>1)</sup>		Nominal size	Q <sub>max</sub> l/min water	Model		Connection	Contact	Cable length	Special version
Rising flow rate l/min water	Falling flow rate l/min water			Material brass	Material st. steel				
4.7-6.5	3.4-6.1	DN 8	30	PSR-2108 2...	PSR-2208 2...	R08 = G ¼ N08 = ¼" NPT	R = N/O contact (ATEX, IECEX)  U = Changeover contact (ATEX, IECEX)	PVC cable 1 = 1.5 m (standard)  P = PVC cable, special length <sup>2)</sup>	without= standard (not for PSx-22...)  H = temperature of medium +110°C (only for PSx-22...), marking acc. to certificate
5.7-7.7	4.5-7.6	DN 8	30	PSR-2108 1...	PSR-2208 1...	R08 = G ¼ N08 = ¼" NPT			
5.5-7.1	4.4-6.9	DN 10	40	PSR-2110 2...	PSR-2210 2...	R10 = G ¾ N10 = ¾" NPT			
6.6-8.7	5.6-8.5	DN 10	40	PSR-2110 1...	PSR-2210 1...	R10 = G ¾ N10 = ¾" NPT			
8.3-10.7	7.0-10.3	DN 15	45	PSR-2115 2...	PSR-2215 2...	R15 = G ½ N15 = ½" NPT			
9.2-12.4	8.0-11.8	DN 15	45	PSR-2115 1...	PSR-2215 1...	R15 = G ½ N15 = ½" NPT			
17.8-24.9	14.9-23.3	DN 20	80	PSR-2120 5...	PSR-2220 5...	R20 = G ¾ N20 = ¾" NPT			
20.4-30.0	16.3-28.3	DN 20	80	PSR-2120 4...	PSR-2220 4...	R20 = G ¾ N20 = ¾" NPT			
34.6-48.3	30.6-46.7	DN 20	80	PSR-2120 1...	PSR-2220 1...	R20 = G ¾ N20 = ¾" NPT			
17.7-26.8	12.8-24.7	DN 25	130	PSR-2125 7...	PSR-2225 7...	R25 = G 1 N25 = 1" NPT			
26.0-36.3	21.4-34.1	DN 25	130	PSR-2125 5...	PSR-2225 5...	R25 = G 1 N25 = 1" NPT			
29.8-42.8	24.7-40.9	DN 25	130	PSR-2125 4...	PSR-2225 4...	R25 = G 1 N25 = 1" NPT			
47.6-67.2	43.9-64.9	DN 25	130	PSR-2125 1...	PSR-2225 1...	R25 = G 1 N25 = 1" NPT			



Standard switch. ranges <sup>1)</sup>		for pipes with diameter [mm]	Q <sub>max</sub> m³/h water	Model		Connection	Contact	Cable length	Special version
Rising flow rate l/min water	Falling flow rate l/min water			Material brass	Material st. steel				
68-90	61-83	50	30	PSE-2149 8...	PSE-2249 8...	R15 = G ½ N15 = ½" NPT	R = N/O contact (ATEX, IECEX)  U = Changeover contact (ATEX, IECEX)	PVC cable 1 = 1.5 m (standard)  P = PVC cable, special length <sup>2)</sup>	without= standard (not for PSx-22...)  H = temperature of medium +110°C (only for PSx-22...), marking acc. to certificate
183-250	170-233	80	100						
320-400	300-383	100	150						
700-917	667-900	150	200	PSE-2152 0...	PSE-2252 0...	R15 = G ½ N15 = ½" NPT			
50-62	43-58	50	30						
155-183	143-167	80	100						
217-267	200-250	100	150	PSE-2114 9...	PSE-2214 9...	R15 = G ½ N15 = ½" NPT			
558-600	517-592	150	200						
92-113	70-103	100	150						
200-283	167-233	150	200						
383-533	333-467	200	200						

<sup>1)</sup> Listed values are valid only for horizontal installation    <sup>2)</sup> Length as described

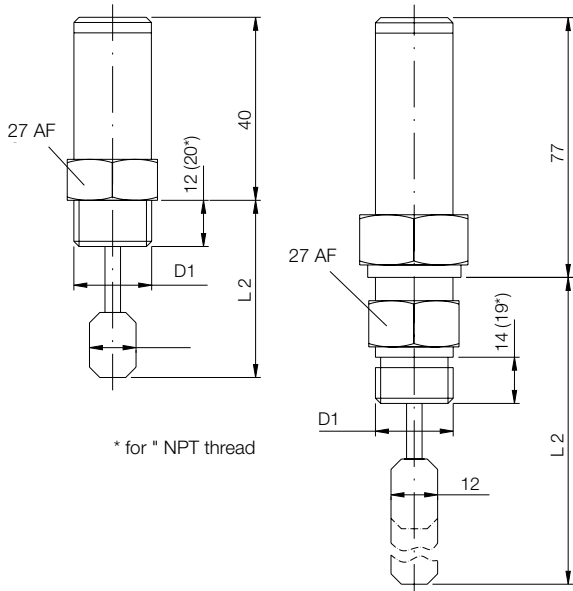


**Dimensions [mm]**

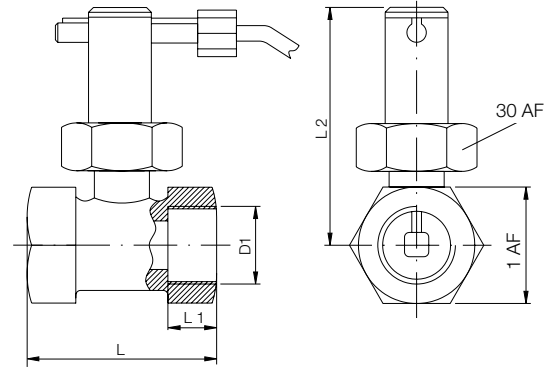
Model: PSE-...49

Model: PSE-...52  
PSE-...14

Model: PSR



\* for " NPT thread



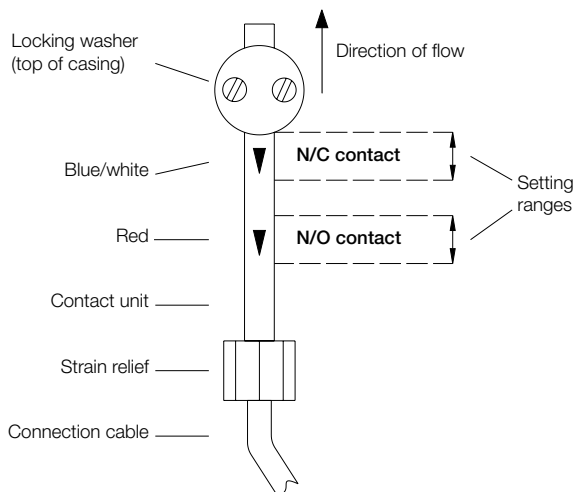
Model	D1	L <sub>2</sub> [mm]
PSE-...498 R...	R 1/2	51
PSE-...520 R...	R 1/2	72
PSE-...149 R...	R 1/2	130
PSE-...498 N...	1/2" NPT	59
PSE-...520 N...	1/2" NPT	72
PSE-...149 N...	1/2" NPT	130

Model	D1	L [mm]	L <sub>1</sub> [mm]	L <sub>2</sub> [mm]	1 AF
PSR-..08	G 1/4	50	10	80	27
PSR-..10	G 3/8	50	10	80	27
PSR-..15	G 1/2	50	10	80	27
PSR-..20	G 3/4	52	15	81.5	32
PSR-..25	G 1	56	15	84	39
PSR-..32	G 1 1/4	50	15	112	46
PSR-..40	G 1 1/2	50	15	119	55

**Switching point setting**

To set the switching point loosen the locking washer at the top of the casing and move the contact unit. A blue, white/red arrow located on the contact unit serves as an adjustment aid.

The front edge of the locking washer serves as adjustment mark.



**N/O contact**

The switching volume can be adjusted at the red arrow. The minimum switching values specified in the table are set by moving the contact unit in the flow direction. The maximum switching values given in the table are set by moving the contact unit against the direction of flow.

**N/C contact**

The switching volume can be adjusted at the blue (white) arrow. The minimum switching values specified in the table are set by moving the contact unit in the flow direction. The maximum switching values given in the table are set by moving the contact unit against the direction of flow. Firmly tighten locking washer again when settings have been made.