PAK, PAS, PH1, PM1
Реле давления
GHM MESSTECHNIK

Технические характеристики

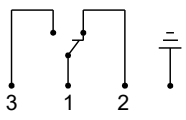
Pressure Switch PAK

- **Repeability**
- **Adjustable switch point**
- **Change over contact**
- **Plug DIN 43650-A / ISO 4400**

Characteristics

Mechanical pressure switch in which a membrane is pre-tensioned by a spring. An adjustment knob permits the setting of the switch point. The setting can be fixed with hexagon socket screw.

Technical Data

Switch	Mechanical switch
Process connection	Female thread $G^1/_4$
Switching range	-0,85..+16 bar see table “Ranges”
Hysteresis	See graph “Hysteresis”
Tolerance	±2 % at RT relative to the full scale value
Pressure resistance	PS 20 bar
Media temperature	-10..+80 °C (Viton 0..100°C)
Ambient temperature	-10..+80 °C
Media	Water, oil, gases
Switching frequency	maximum 100 cycles/min.
Wiring	Plug DIN 43650-A / ISO 4400 Change over No. 0.342 
Switching voltage switching current (maximum values)	Plug DIN 43650-A / ISO 4400 Resistive load 3 A at 24 V DC, 6 A at 250V AC Inductive load 1 A at 24 V DC, 1 A at 250 V AC
Protection class	Plug DIN 43650-A / ISO 44001 1 - PE connection
Ingress protection	IP 65
Electrical connection	Plug DIN 43650-A/ISO 4400
Materials	Housing: Zinc die casting, Adjustment knob: aluminium (powder coated)

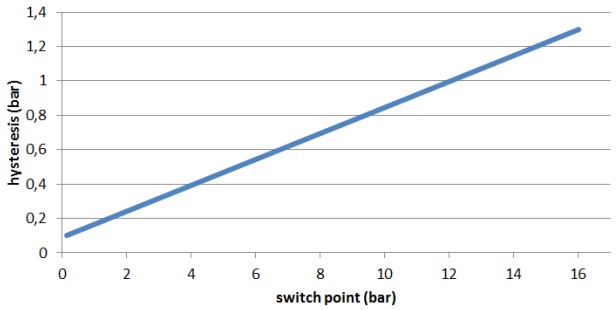
Material Sealing /membrane	NBR or EPDM or Viton
Weight	0,29 kg
Installation location	Any mounting position, hydraulic connection to bottom is not advisable.

Ranges

Switching range bar (rel.)	Type
-0,85..-0,15	PAK-001Z...
+0,20..+ 2,00	PAK-002Z...
+0,50..+ 8,00	PAK-008Z...
+1,00..+16,00	PAK-016Z...

Hysteresis

The vacuum-switch range -0,85..-0,15 bar requires a minimum Δ-P of 0,2 bar.

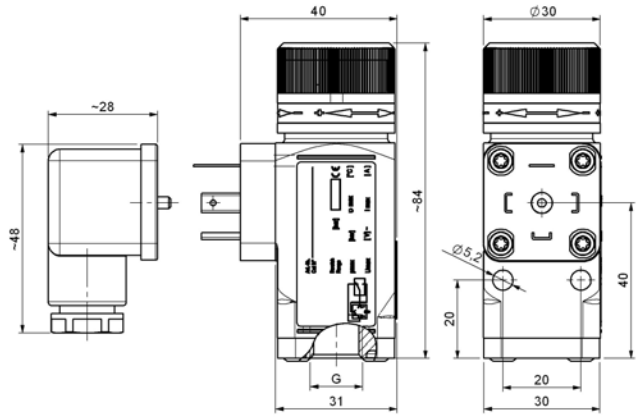


Product information

PAK

Dimensions

DIN 43650-A/ISO 4400



Handling and operation

Notes

- If the medium is dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- Check resistance to aggressive media, no DI water.

Torques and thread lengths of the fluid connection:
Thread length 11 mm, tightening torque 20 Nm -25
.

Adjustment

- Turning the adjusting knob to the left for a larger value, turning to the right for a smaller value. After setting the knob can be fixed with a hexagon socket screw by using the supplied key.

Ordering code

	1.	2.	3.	4.	5.	6.
PAK -		**Z**	**008G**	**0**	**B**	

1.	**Switching range**	
	001	-0.85..-0,15 bar
	002	+0.20..+ 2.00 bar
	008	+0.50..+ 8.00 bar
	016	+1.00..+16.00 bar
2.	**Connection material**	
	Z	Zinc die casting
3.	**Connection size**	
	008G	Female thread G 1/4
4.	**Rotatable**	
	0	Fixed
5.	**Electrical connection**	
	B	Plug DIN 43650-A / ISO 4400
6.	**Sealing /membrane**	
	N	NBR
	E	EPDM
	V	Viton

Options

- Factory setting of the switch point on falling or rising pressure.

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PAS

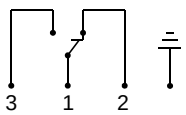
Pressure switch PAS

- **Repeatability**
- **Adjustable switch point**
- **Change over contact**
- **Plug DIN 43650-A / ISO 4400**

Characteristics

Mechanical pressure switch in which a piston is pre-tensioned by a spring. An adjustment knob permits the setting of the switch point. The setting can be fixed with hexagon socket screw.

Technical Data

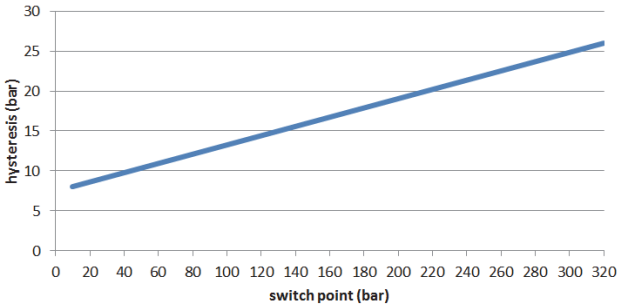
Switch	Mechanical switch	
Process connection	Male thread	G1/4A flexible
		M10×1 flexible
	Female thread	G1/4 flexible
	Flange	DIN ISO 163873
Switching range	10..320 bar see table “Ranges”	
Hysteresis	see graph “Hysteresis”	
Tolerance	±2 % at RT relative to the full scale value	
Pressure resistance	PS 350 bar	
Media temperature	-20..+80 °C (Viton 0..100°C)	
Ambient temperature	-20..+80 °C	
Media	self-lubricating fluid such as hydraulic oil, lubricating oil, light fuel oil and neutral fluids such as water and some gases.	
Switching frequency	maximum 100 cycles/min.	
Wiring	Plug DIN 43650-A / ISO 4400 Changeover No. 0.342	
Switching voltage switching current (maximum values)	Resistive load 4 A at 24 V DC, 6 A at 250V AC Inductive load 1 A at 24 V DC, 2 A at 250 V AC	
Protection class	1 – PE – connection	
Ingress protection	IP 65	
Electr. connection	Plug DIN 43650-A / ISO 4400	

Materials	Housing: Zinc die casting, Adjustment knob: aluminium (powder coated)
Material Sealing	Static: NBR or EPDM or Viton Dynamic: PTFE
Weight	0,325 kg
Installation location	Any mounting position, hydraulic connection to bottom is not advisable.

Ranges

Switching range bar (rel.)	**Type**
10 - 30	PAS-030Z...
10 - 80	PAS-080Z...
10 - 120	PAS-120Z...
10 - 160	PAS-160Z...
20 - 200	PAS-200Z...
20 - 250	PAS-250Z...
30 - 320	PAS-320Z...

Hysteresis



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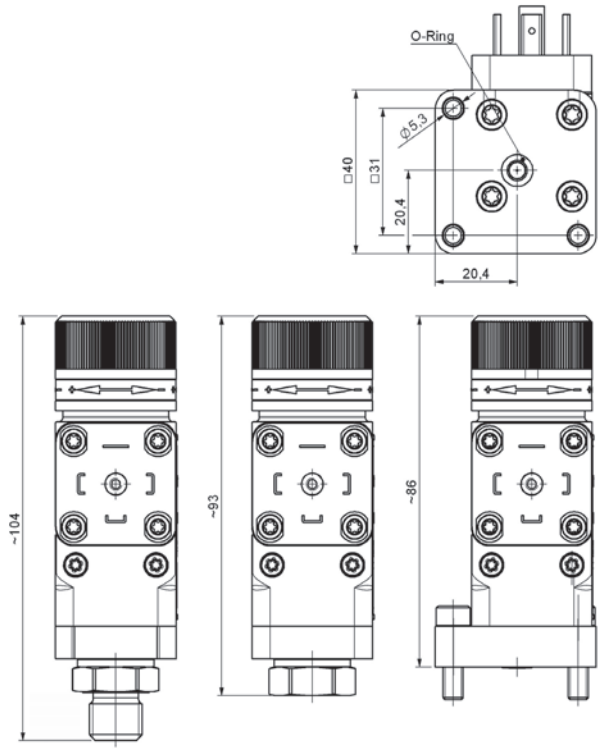
PAS

Dimensions



Male thread rotatable

Female thread rotatable

Flange DIN ISO 16873

Odering code

PAS - 1. [ ] 2. [Z] 3. [ ] 4. [ ] 5. [ ] 6. [ ]

1.	**Switching range**			
	030	10 - 30 bar		
	080	10 - 80 bar		
	120	10 - 120 bar		
	160	10 - 160 bar		
	200	20 - 200 bar		
	250	20 - 250 bar		
	320	30 - 320 bar		
2.	**Connection material**			
	Z	Zinc die casting		
3.	**Connection size**			
	008G	Female thread	$G^1/_4$	
	008A	Male thread	$G^1/_4$ A	
	031F	Flange	DIN ISO 163873	
	011A	Male thread	M10×1	
	012H	Male thread	NPT $^1/_4$	
4.	**Rotatable (connection pressure site)**			
	0	Fixed		●
	1	Rotatable		● ● ● ●
5.	**Electrical connection**			
	B	For plug DIN 43650-A / ISO 4400		
6.	**Sealing**			
	N	Dynamic	NBR	
	E		EPDM	
	V		Viton	

Options

- Factory setting of the switch point on falling or rising pressure.

Handling and operation

Notes

- If the medium is dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- Check resistance to aggressive media, no DI water.

Torques and thread lengths of the fluid connection:
G1/4A, G1/4, R1/4, NPT1/4: 20-25 Nm,11 mm
M10×1: 15-20 Nm, 10 mm
Flange: 6-8 Nm, 3 washer M5

Adjustment

- Turning the adjusting knob to the left for a larger value, turning to the right for a smaller value. After setting the knob can be fixed with a hexagon socket screw by using the supplied key.

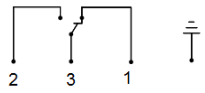
Pressure Switch PH1

- **Adjustable switch point**
- **Adjustable hysteresis**
- **Change over contact**
- **Plug DIN 43650-A**
- **Lateral cable exit**

Characteristics

Mechanical pressure controller in which a membrane or piston is pre tensioned by a spring. Two adjustment screws permits the setting of the switch point and the hysteresis.

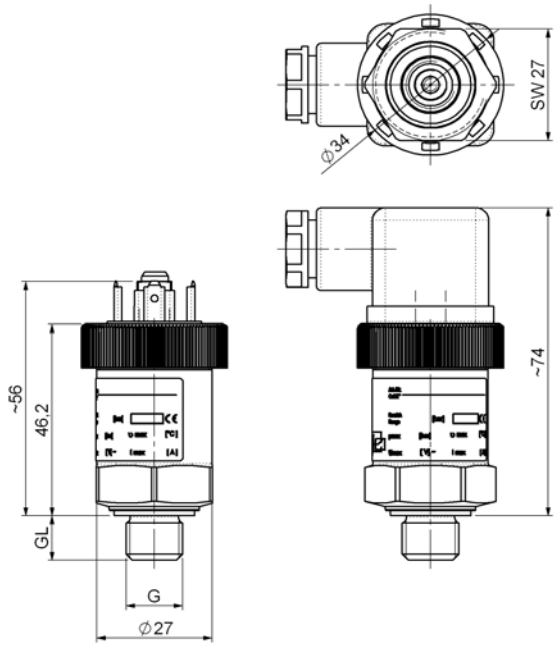
Technische Daten

Switch	Mechanical switch	
Process connection	Male thread R1/4, G1/8, G1/4, 1/4NPT, 1/8NPT, M10x1	
Switching range	-0,85..320 bar	for details see table "Ranges"
Pressure resistance	PS 20bar/PS 60 bar/ PS 350 bar	
Tolerance	± 2% at RT relative to full scale value	
Hysteresis	Adjustable, see diagram „Hysteresis“	
Media temperature	-20..+80°C (Viton 0..100°C)	
Ambient temperature	-20..+80°C	
Media	water, oils, gases	
Wiring	Change over No. 0.467 	
Switching voltage	Max. 250 VAC	
Switching current	Max. 4 A (2 A inductive)	
Protection class	1 – PE connection	
Ingress protection	IP 65	
Electrical connection	Plug DIN 43650-A/ ISO 4400 with screw clamp in the plug	
Materials medium-contact	Diaphragm type NBR or EPDM or Viton. Piston type: PTFE with NBR or EPDM or Viton steel, zinc coated or stainless steel (1.4305)	
Non-medium-contact materials	PA 6.6, NBR	
Weight	0,15kg	
Installation location	installation location as desired	

Ranges

Switching Range bar (rel.)	Type	**Pressure resistance PS** bar	**Functional principle**
- 0,85 ..-0,15	001	20	Diaphragm
0,2 .. 2	002	60	
0,5 .. 8	008		
1 .. 16	016		
10 .. 30	030	350	Piston
10 .. 80	080		
10 .. 120	120		
10 .. 160	160		
20 .. 200	200		
20 .. 250	250		
30 .. 320	320		

Dimensions



Handling and operation

Notes

- If the medium is dirty, install a filter
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- Check resistance to aggressive media, no DI water.
- Supplied with mating plug.

Torques and thread lengths of the fluid connections

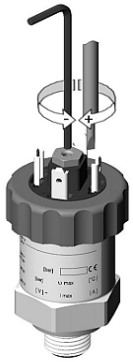
R 1/4, G 1/4, 1/4NPT	20-25 Nm	12 mm
G 1/8,1/8NPT, M10×1	15-20 Nm	10 mm

Product information

PH1

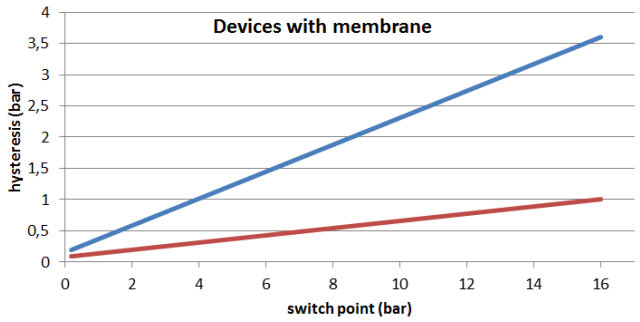
Adjustment

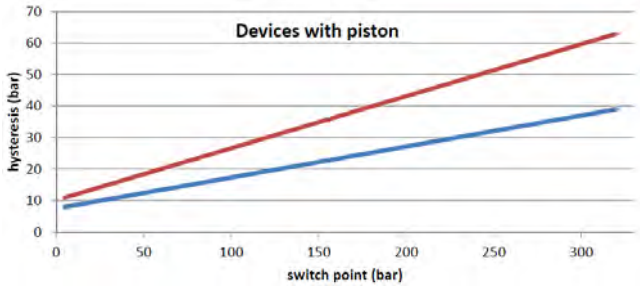
- Loosen the plug and set the desired switching value using a hex wrench (size 2, screw centered). Then adjust the hysteresis using a longitudinal slot screwdriver 2,5x0,4 (screw laterally).
  Turn to right increases the value.
  Then attach the plug back onto the device and tighten the screw.



Hysteresis

The diagram indicates possible adjustments of the hysteresis in relation to the switch point (idealized representation). Thus, for example for the piston type at a switch point 130 bar, it can be set a hysteresis between 20 bar and 32 bar.
The vacuum-switch range -0,85..-0,15 bar requires a minimum Δ-P of 0,2 bar.





Ordering code

PH1 - [1.] [2.] [3.] [4.] [5.] [6.]

1.	**Switching range**	
	001	- 0,85 ..-0,15 bar
	002	0,2 .. 2 bar
	008	0,5 .. 8 bar
	016	1 .. 16 bar
	030	10 .. 30 bar
	080	10 .. 80 bar
	120	10 .. 120 bar
	160	10 .. 160 bar
	200	20 .. 200 bar
	250	20 .. 250 bar
	320	30 .. 320 bar
2.	**Connection material**	
	K	Stainless steel
	S	Steel, zinc coated
3.	**Connection size**	
	004A	G 1/8A
	008H	R 1/4
	008A	G 1/4A
	009H	NPT1/8 no stainless steel
	011A	M10x1 no stainless steel
	012H	NPT1/4
4.	**Rotatable**	
	0	Fixed
5.	**Electrical connection**	
	B	Plug DIN 43650-A
6.	**Sealing / diaphragm**	
	N	NBR
	E	EPDM
	V	Viton

Options

- Factory setting of the switch point and hysteresis on falling or rising pressure.

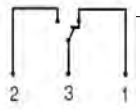
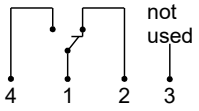
Pressure Switch PM1

- **Adjustable switch point**
- **Change over contact**
- **Flat plug 6.3×0.8 with rubber protection cap or**
- **Circular plug M12×1**

Characteristics

Mechanical pressure controller in which a membrane or piston is pre-tensioned by a spring. The adjustment screws permits the setting of the switch point.

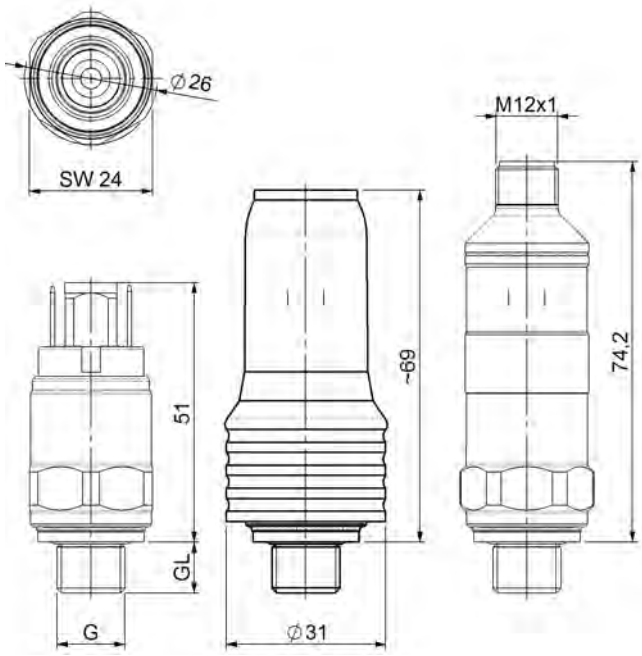
Technische Daten

Switch	Mechanical switch	
Process connection	Male thread R 1/8, G1/8, G1/4, 1/4NPT, 1/8NPT, M10×1	
Switching range	-0,85..320 bar	for details see table "Ranges"
Pressure resistance	PS 20bar/PS 60 bar/ PS 350 bar	
Tolerance	± 2% at RT relative to full scale value	
Hysteresis	See diagram „Hysteresis“	
Media temperature	-20..+80°C (Viton 0..+100°C)	
Ambient temperature	-20..+80°C	
Media	Water, oils, gases	
Wiring	Flat plug 6,3×0,8 Change over Nr. 0.466  Circular plug M12×1, 4-pin Change over Nr. 0.463 	
Switching voltage	Max. 48VAC/DC	
Switching current	Max. 2 A (1 A inductive)	
Ingress protection	Flat plug: IP 00 with rubber protection cap: IP 54 Circular plug M12×1: IP67 (with mating plug)	
Electrical connection	Flat plug 6,3×0,8 or Circular plug M12×1, 4-pin	
Materials medium-contact	Diaphragm type NBR or EPDM or Viton. Piston type: PTFE with NBR or EPDM or Viton steel, zinc coated or stainless steel (1.4305)	
Non-medium-contact materials	PA 6.6, NBR, Rubber	
Weight	0,10 kg	
Installation location	installation location as desired	

Ranges

Switching Range bar (rel.)	Type	**Pressure resistance PS** bar	**Functional principle**
- 0,85 ..-0,15	001	20	Diaphragm
0,2 .. 2	002	60	
0,5 .. 8	008		
1 .. 16	016		
10 .. 30	030	350	Piston
10 .. 80	080		
10 .. 120	120		
10 .. 160	160		
20 .. 200	200		
20 .. 250	250		
30 .. 320	320		

Dimensions



Handling and operation

Notes

- If the medium is dirty, install a filter.
- It must be ensured that the values given for voltage, current, and power are not exceeded.
- Check resistance to aggressive media, no DI water.
- Flat plug version 6,3×0,8 supplied with rubber cap.

Product information

PM1

Torques and thread lengths of the fluid connections

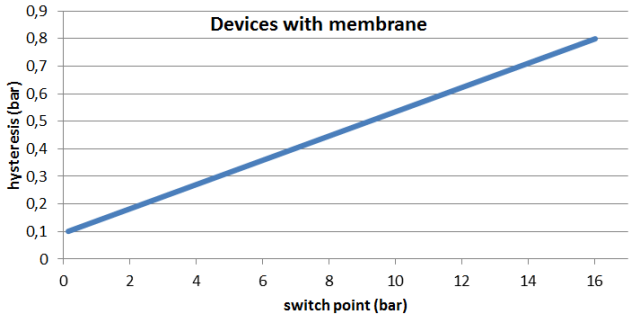
R 1/4, G 1/4, 1/4NPT	20-25 Nm	12 mm
R 1/8, G 1/8,1/8NPT, M10×1	15-20 Nm	10 mm

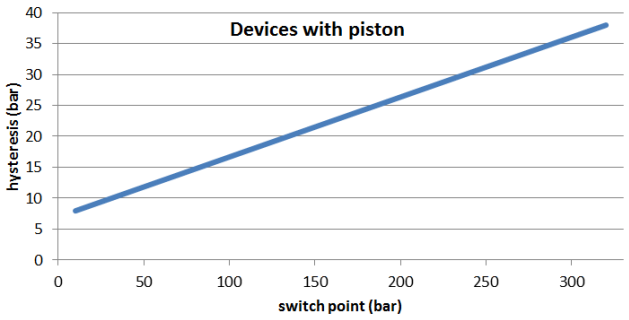
Adjustment

- Set the desired switching value using a hex wrench (size 2). Turn to right increases the value.
- M12x1: The adjustment is done in the factory.

Hysteresis

The diagram shows the hysteresis in relation to the switch point (idealized representation).
The vacuum-switch range -0,85..-0,15 bar requires a minimum Δ-P of 0,2 bar.





Ordering code

PM1 - 1. 2. 3. 4. 5. 6.

1.	**Switching range**	
	001	- 0,85 ..-0,15 bar
	002	0,2 .. 2 bar
	008	0,5 .. 8 bar
	016	1 .. 16 bar
	030	10 .. 30 bar
	080	10 .. 80 bar
	120	10 .. 120 bar
	160	10 .. 160 bar
	200	20 .. 200 bar
	250	20 .. 250 bar
	320	30 .. 320 bar
2.	**Connection material**	
	S	Steel, zinc coated
	K	Stainless steel
3.	**Connection size**	
	004A	G 1/8A
	004H	R 1/8A
	008A	G 1/4A
	009H	NPT1/8
	011A	M10×1 (no stainless steel)
	012H	NPT1/4
4.	**Rotatable**	
	0	Fixed
5.	**Electrical connection**	
	U	Flat plug 6.3×0,8
	S	Circular plug M12×1*
6.	**Sealing / diaphragm**	
	N	NBR
	E	EPDM
	V	Viton

*only with adjustment ex factory

Options

- Factory setting of the switch point on falling or rising pressure.