

BSW Series

Solid state pressure switch with analog output

FEATURES

- 0...70 mbar to 0...10 bar
- Differential, gage and absolute pressure options
- Adjustable threshold point
- Adjustable hysteresis
- 1 - 5 V analog output
- Low side and high side switching output
- LED status indicator
- Long term stability 0.1 % / year



SERVICE

Pressure inlet: Non-corrosive, non-ionic pressure media, such as dry air and dry gases.

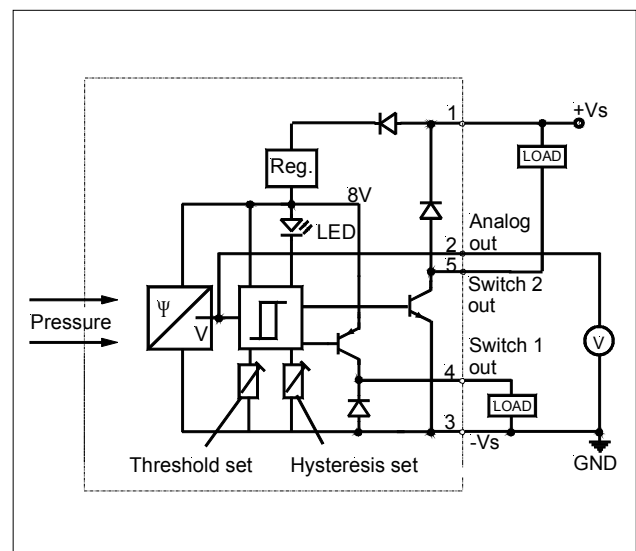
Scale:  1 cm
1 inch

SPECIFICATIONS

Maximum ratings

Supply voltage	11 to 30 V
Output current	
Analog output	20 mA
Switching output 1 (pnp)	100 mA
Switching output 2 (npn)	300 mA
Temperature limits	
Storage	-55 to 100°C
Operating	-40 to 85°C
Compensated	0 to 70°C
Proof pressure ¹	
BSWM...	1.4 bar
BSW001... to BSW005...	2 x rated press.
BSW010...	1.5 x rated press.

ELECTRICAL BLOCK DIAGRAM



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PERFORMANCE CHARACTERISTICS (unless otherwise noted $V_s = 15\text{ V}$, $t_{\text{amb}} = 25^\circ\text{C}$)

Characteristics	Min.	Typ.	Max.	Unit
Operating pressure (differential/gage) ²	0		70	mbar
BSWM070D...	0		350	
BSWM350D...	0			
BSW001D...	0		1	
BSW002D...	0		2	
BSW005D...	0		5	
BSW010D...	0		10	
Operating pressure (absolute) ³	0		1	bar
BSW001A...	0		1	
BSW002A...	0		2	
BSW005A...	0		5	

ANALOG OUTPUT

Zero pressure offset	0.8	1.0	1.2	V
Full scale output	4.8	5.0	5.2	
Full scale span ⁴		4.0		
Non-linearity and hysteresis (BSL) ⁵		0.2	1.0	%FSO
Thermal effects (0 - 70°C) ⁶				
Combined offset and span	BSWM070D...	±0.04	±0.20	%FSO/°C
	BSWM350D...	±0.03	±0.15	
	all others	±0.02	±0.10	
Long term stability ⁷		0.1		%FSO

SWITCHING OUTPUT

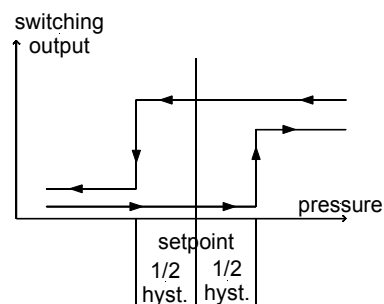
Switching output 1	pnp, open collector, load switched to ground			
Switching output 2	npn, open collector, load switched to +Vs			
Output voltage (high) Switching output 1	7	7.5		V
Output voltage (low) Switching output 2		0.5	1.2	
Status indication	red LED			
Threshold point setting ⁸	20		100	%
Hysteresis setting ⁸	1		10	
Switching frequency			1	kHz
Switch point repeatability		0.2		%FSO

Specification notes:

- Proof pressure is the maximum pressure which may be applied without causing damage to the sensing element.
- The output signal of all BSW...D-PCB is proportional to the pressure applied to port P2, relative to port P1, e.g. the output signal increases when vacuum is applied to port P1 relative to port P2.
- The output signal of all BSW...A-PCB is proportional to the absolute pressure applied to port P1.
- Span is the algebraic difference between the output at full scale pressure and offset.
- Non-linearity refers to the **Best Straight Line** fit measured for offset, full scale and 1/2 full scale pressure.
- Temperature shift tested and guaranteed at 70°C relative to 25°C. All specs are shown relative to 25°C.
- Difference in output/switch point at any pressure within the operating pressure range and temperature within 0 - 70°C after:
 - 1000 temperature cycles, 0 - 70°C
 - 1 million pressure cycles 0 bar to full scale pressure
- Hysteresis setting has a direct influence on the switching points when the pressure increases or decreases.
The switching points can be calculated as follows:

Output going active (LED on)
when pressure exceeds SET POINT + hysteresis/2

Output going inactive (LED off)
when pressure falls below SET POINT - hysteresis/2

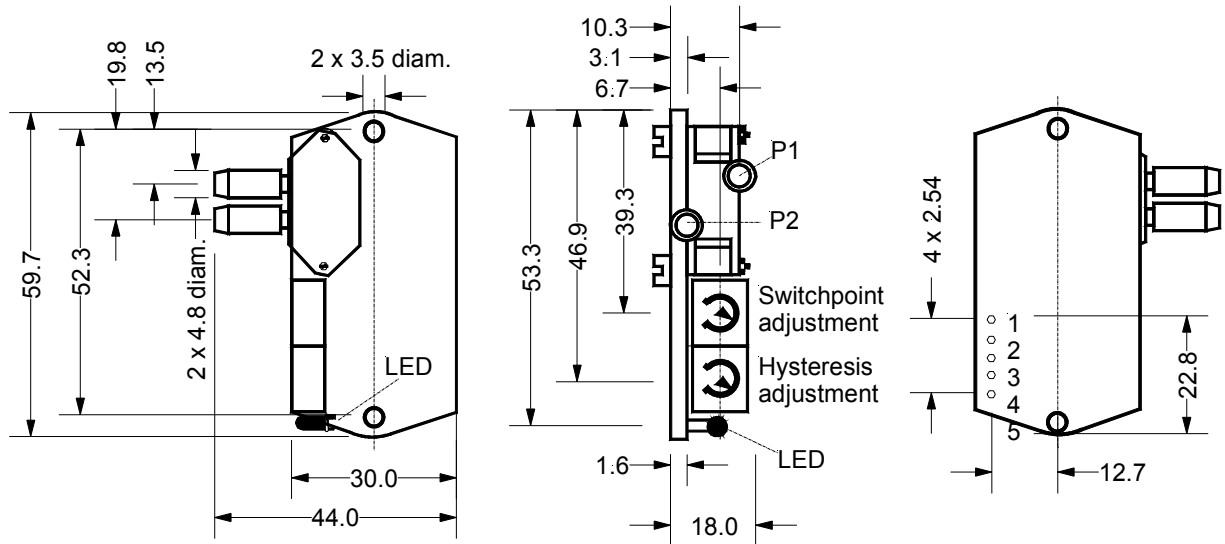


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PHYSICAL DIMENSIONS

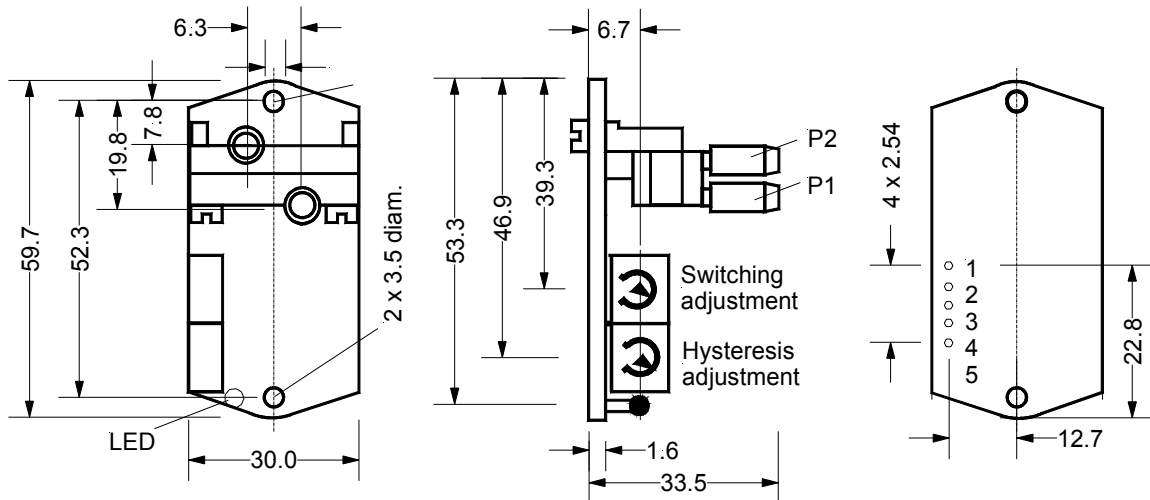
BSW...V-PCB



mass: 18 g

dimensions in mm

BSW...H-PCB



mass: 21 g

dimensions in mm

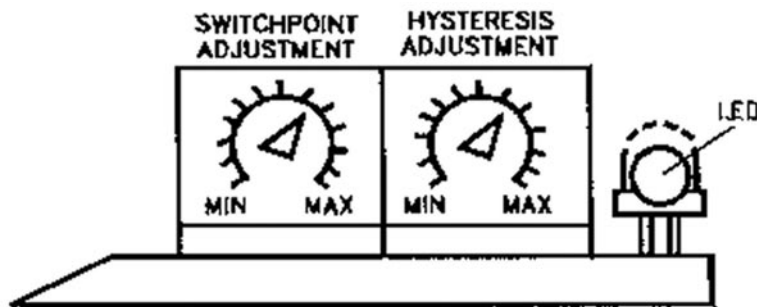
Pin connection

Pin	Connection
1	+Vs
2	Vout (analog)
3	-Vs (GND)
4	Switch 1 (out)
5	Switch 2 (out)

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HYSTERESIS AND SWITCH POINT SETTING



Function	Change per scale unit
Hysteresis	≈ 0.9 %FS
Switching point	≈ 7.3 %FS

ORDERING INFORMATION

Pressure range	Part number	
	Side facing ports	Top facing ports
Differential/Gage devices 0 - 70 mbar 0 - 350 mbar 0 - 1 bar 0 - 2 bar 0 - 5 bar 0 - 10 bar	BSWM070DV-PCB BSWM350DV-PCB BSW001DV-PCB BSW002DV-PCB BSW005DV-PCB BSW010DV-PCB	BSWM070DH-PCB BSWM350DH-PCB BSW001DH-PCB BSW002DH-PCB BSW005DH-PCB BSW010DH-PCB
Absolute devices 0 - 1 bar 0 - 2 bar 0 - 5 bar	BSW001AV-PCB BSW002AV-PCB BSW005AV-PCB	BSW001AH-PCB BSW002AH-PCB BSW005AH-PCB

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