Model 301B
Mono-Block Ceramic Pressure Sensors

Description

The 301B is piesoresistive pressure sensor based on ceramics. By means of thick film technology, the bridge circuit is directly printed at the back of a ceramic pressure diaphragm. Thanks to excellent corrosion resistance, the other side of the diaphragm can be exposed to measured media without any additional protection. And this sensor is widely used in HVAC applications.

As the 301B is made from one piece of Al2O3 ceramics (mono-block structure), it possesses a rigid structure and can be mounted directly in a case by using an O-ring or to a metal fitting.

The sensor has the standard diameter of 18mm and are temperature compensated. There are also various options of output signal available on request.

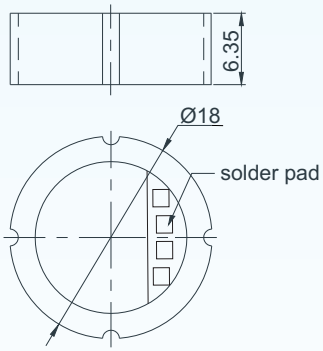
Features

- excellent corrosion resistance
- various output options: 2mV/V,
  10%~90%Vc ratiometric,
  I^2C, SPI, ZACwire
- pressure ranges: 4bar, ..., 400bar
- excellent resistance to shock and vibration
- easy mounting

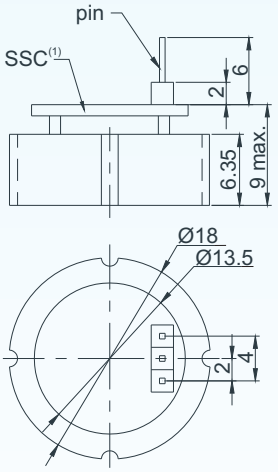
Applications

- automotive industry
- HAVC systems
- liquid level control
- process control systems
- pneumatic and hydraulic controls
- biomedical instrumentation

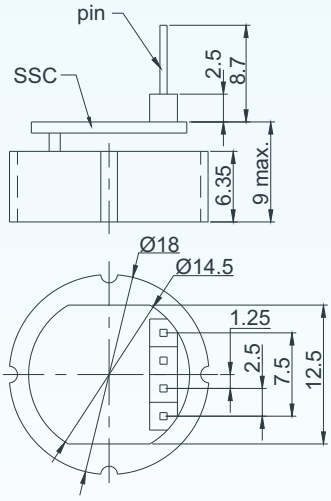
Dimensions



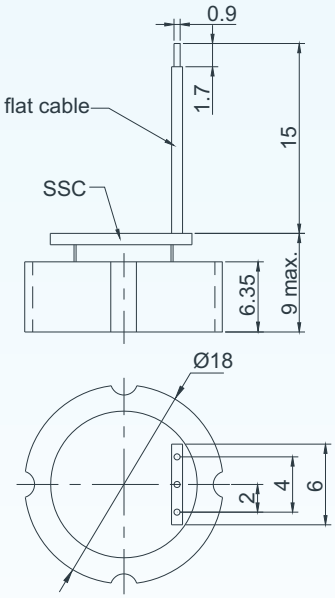
Sensor with 4 Solder Pads



Sensor with 3 Pins



Sensor with 4 Pins



Sensor with Flat Cable

Notes: (1) "SSC" refers to the sensor signal conditioner.
(2) All dimensions are in mm.

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Technical Data

Parameters		Units	Specifications	Notes
pressure medium			compatible with pressure diaphragm	
measuring ranges		bar	0~4, ~5, ~10, ~16, ~20, ~25, ~30, ~40, ~50, ~100, ~160, ~200, ~250, ~300, ~400	1
pressure references			gauge	
proof pressure		%fs	200	2
burst pressure		%fs	400	
output signal	standard	mV/V	⩾ 2, output sensitivity	3
	option		10%~90%Vs ratiometric, I^2C, SPI, ZACwire	4
excitation for mV output		Vdc	3, ..., 15	
power supply (Vs) for option outputs		Vdc	3, ..., 5	
load resistance for voltage output		kΩ	> 5	
zero offset		mV	⩽ ±0.5	
accuracy		%fs	±0.5	5
long-term stability		%fs/year	⩽ ±0.3	
bridge resistance		kΩ	11 ±20%	
insulation resistance		MΩ	⩾ 200 @50Vdc	
compensated temperature range		°C	0 ~ 70	
operating temperature range		°C	-40 ~ +135	
storage temperature range		°C	-40 ~ +135	
temperature coefficient of zero offset		%fso/°C	⩽ ±0.03	6 & 7
temperature coefficient of span		%fso/°C	⩽ -0.01	6
life time		cycles	10^8	
response time		ms	⩽ 1	8
electrical interface			4 solder pads (only for mV output)	
			3 or 4 colored PVC flying wires, length = 100mm	9
			3 or 4 pins	9
			3-conductor flat cable, 15mm (available for ratiometric output)	9
pressure diaphragm			ceramic (96% Al_2O_3)	
net weight		gram	~3	

General conditions for measurements: media temp. = 25°C ±1°C, ambient temp. = 25°C ±1°C.

Notes:
1. For customized pressure ranges, consult BCM.
2. “fs” means full scale and refers to the maximum working pressure or rated pressure.
3. output sensitivity = full scale output / excitation voltage.
4. A PCB board will be attached to the sensor.
5. Accuracy = sqrt(non-linearity^2 + hysteresis^2 + repeatability^2).
6. Calculated as a rate of output change between 0°C and 70°C, and normalized by the output at 25°C.
7. ⩽ ±0.05%fso/°C in case of no temperature compensation.
8. Response time for a 0 bar to fs step change, 10% to 90% rise time of leading edge.
9. 4 contacts for millivolt output and for I^2C and SPI output; 3 contacts for ratiometric and ZACwire output.

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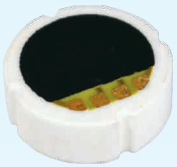
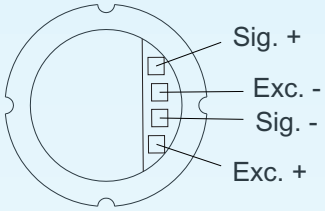
Electrical Interface

Solder Pads (SP)

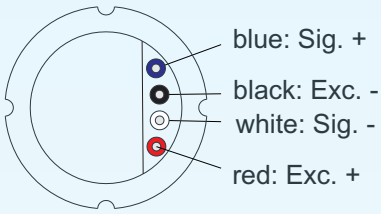


millivolt output

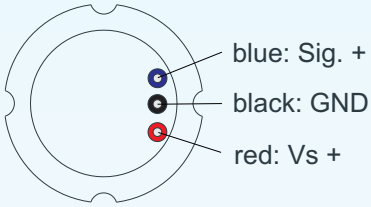


Flying Wires (FW)

millivolt output

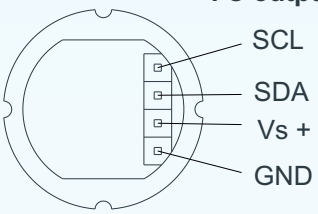


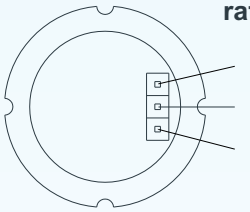
ratiometric output



Pins (PI)

I²C output

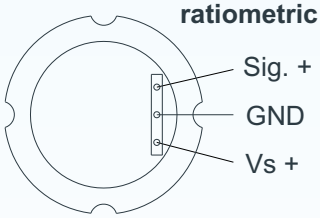




ratiometric output	ZACwire output
Sig. +	Vs +
GND	GND
Vs +	Sig.

Flat Cable (FC)

ratiometric output



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Ordering Information

position (pos.) 1: model

301B

pos. 2: pressure ranges and references

4bar	G	25bar	G	160bar	G	G: gauge pressure
5bar	G	30bar	G	200bar	G	
10bar	G	40bar	G	250bar	G	
16bar	G	50bar	G	300bar	G	
20bar	G	100bar	G	400bar	G	

Note: In case of the conditioned output signal, indicate both min. and max. measuring pressure, e.g., 0/10bar.

pos. 3: output signal

2mV/V (standard)
10%/90%Vs = 10%~90%Vs ratiometric
I2C
SPI
ZACwire

pos. 4: temperature compensation

T1 = 0~70 °C
NT = no temperature compensation, only applicable on condition of both 2mV/V output signal and bulk purchasing.

pos. 5: electrical interface

SP: 4 solder pads (standard but only for mV output)
FW: 3 or 4 (#) colored PVC flying wires, length = 100mm (##)
PI: 3 or 4 (#) pins
FC: 3-conductor flat cable, length = 15mm (##) (available for ratiometric output)
#: The specific number of conductor refers to note 8 of Technical Data.
##: Wire length can be customized on request.

pos. 6: customized specifications

"(*)" is necessary only if any customized parameter is required, otherwise it is neglectable.

pos.1	pos. 2	pos. 3	pos. 4	pos. 5	pos. 6

Examples of Ordering Code

- standard sensor:

  301B-25barG-2mV/V-T1-SP

- customized sensor:

  301B-0/60barG-10%/90%Vs-T1-FW(200mm)-(*)

  (*): Customized pressure range = 0~60barG.
  Customized flying wire length = 200mm.

The listed dimensions, specifications, and ordering information are subject to change without prior notice.

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