

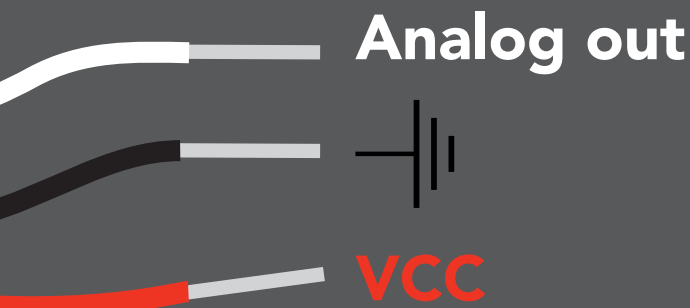
A-100 Analog Pressure Sensor

Reads	Pressure (PSIG)
Range	100 PSIG (689.47 kPa)
Resolution	1mv (.025 psi /0.17 kPa)
Accuracy	<± 0.1 PSI (0.689 kPa)
Connector	Tinned leads
Response Time	< 1ms
Data protocol	Analog voltage
Data format	0.5 VDC – 4.5 VDC
Operating voltage	5 VDC
Durability	IP67



Specifications

Body material	304L Stainless steel
Cable length	0.9 meters (3")
Connector	Tinned leads
Weight	104.6 grams
Threading	1/4 NPT
Sterilization	Chemical only



Sensing area
12mm
(0.47")

64.5mm
(2.5")

Cable Length
0.9m (3')

33.9mm
(1.3")

3.15mm
(0.12")

9.3mm
(0.36")

6mm
(0.2")

1/4" NPT

Ø 5.6mm

Absolute max ratings

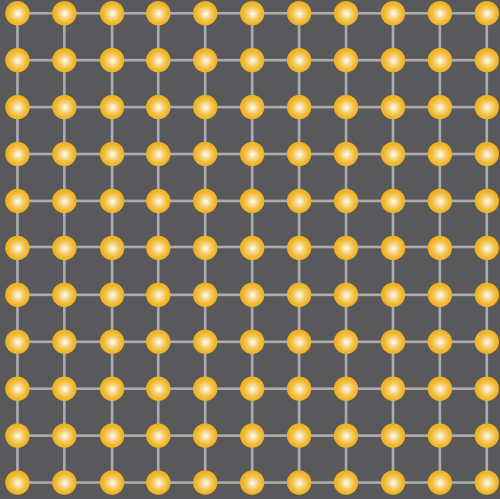
VCC	5.5 VDC
Output current	0.45 mA
Operating temperature	-40°C – 105°C
Proof pressure	300 PSI (2,068 kPa)
Burst pressure	900 PSI (6,205 kPa)

Power consumption

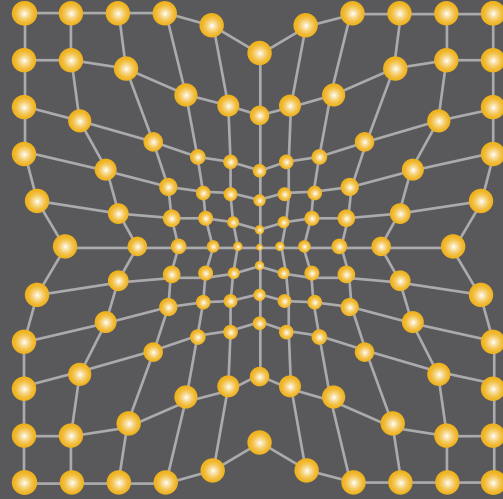
5V **6 mA**

Operating principle

Internally the pressure sensor uses a piezoresistive semiconducting element. The semiconducting element (*a silicon wafer*) changes its resistance in proportion to pressure. As the pressure increases the atomic spacing of the silicon atoms decreases, this in turn lowers the resistance of the silicon wafer.



Atmospheric pressure
1MΩ



10 PSI (68.947 kPa)
500KΩ

An on-board microcontroller monitors the resistance and temperature of the semiconducting element. By combining these two parameters, the microcontroller computes the pressure and convert it into an analog voltage.

Analog Output = 0.5 – 4.5 VDC

Pressure

0 PSI (atmosphere)
20 psi
40 psi
60 psi
80 psi
100 psi

Volts

0.5
1.3
2.1
2.9
3.7
4.5

Voltage to PSI equation

$$\text{PSI} = 25 \times (\text{Volts}) - 12.5$$

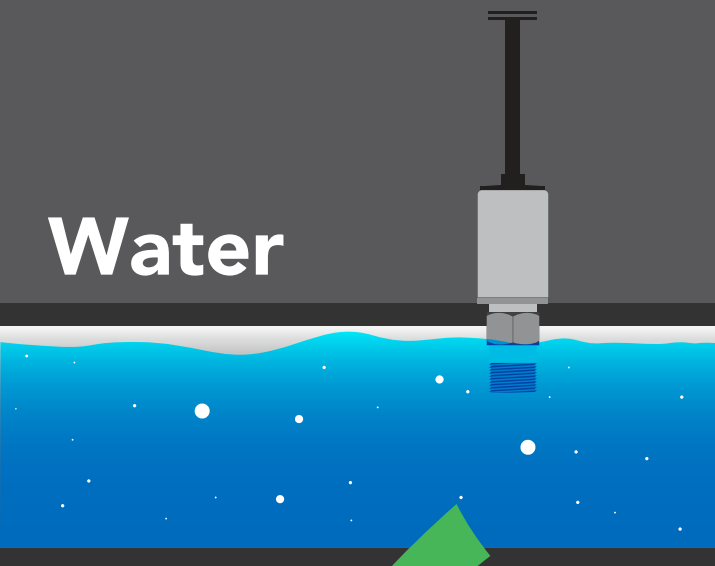
Voltage to kPa equation

$$\text{kPa} = 172.37 \times (\text{Volts}) - 86.185$$

When the sensor is not under any pressure it may read a slight negative pressure. It is common to see negative readings from **-0.1** to **-0.14** This is due to floating point error when the sensor is not under pressure and should be ignored.

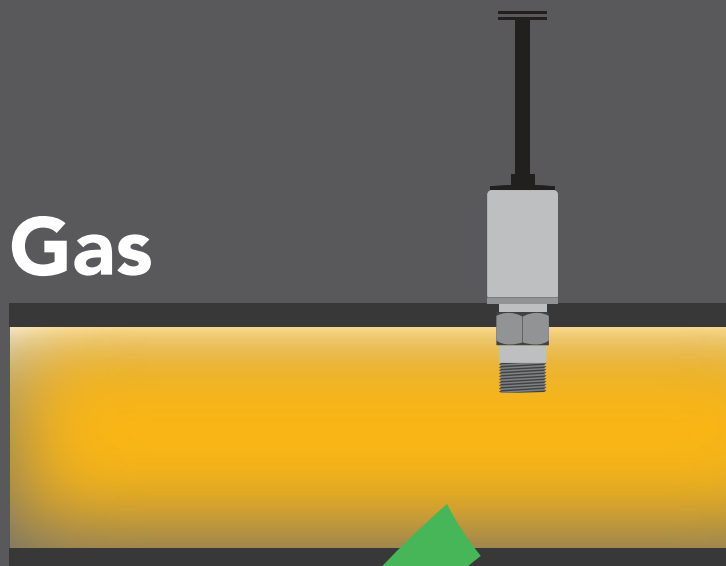
Typical applications

Water



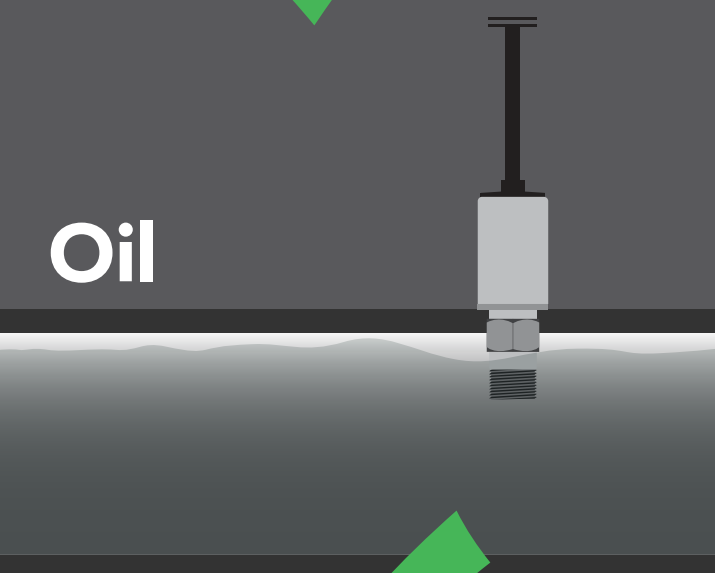
OK

Gas



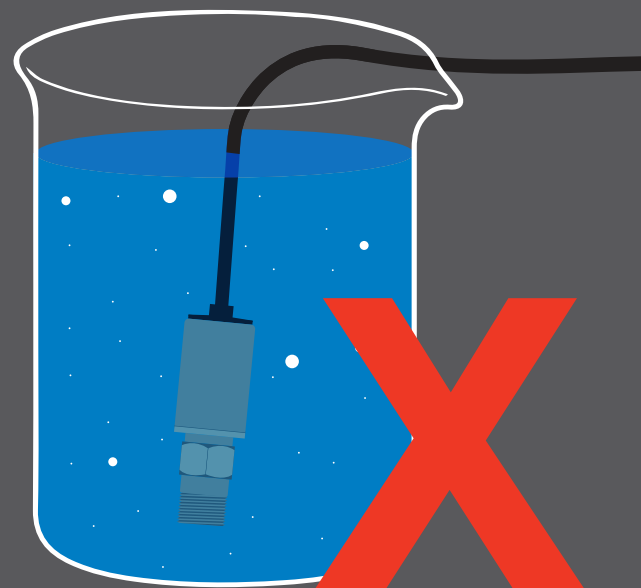
OK

Oil



OK

Submerge



DO NOT submerge