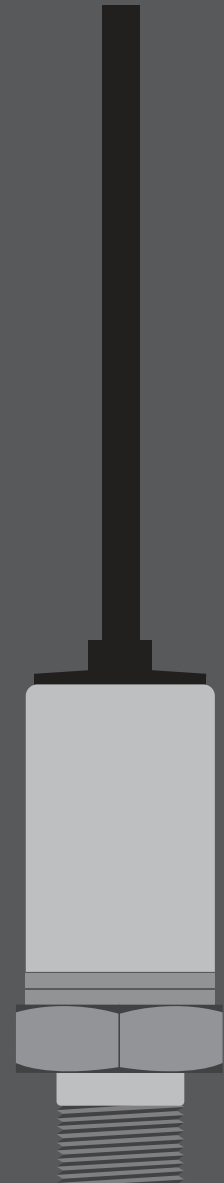


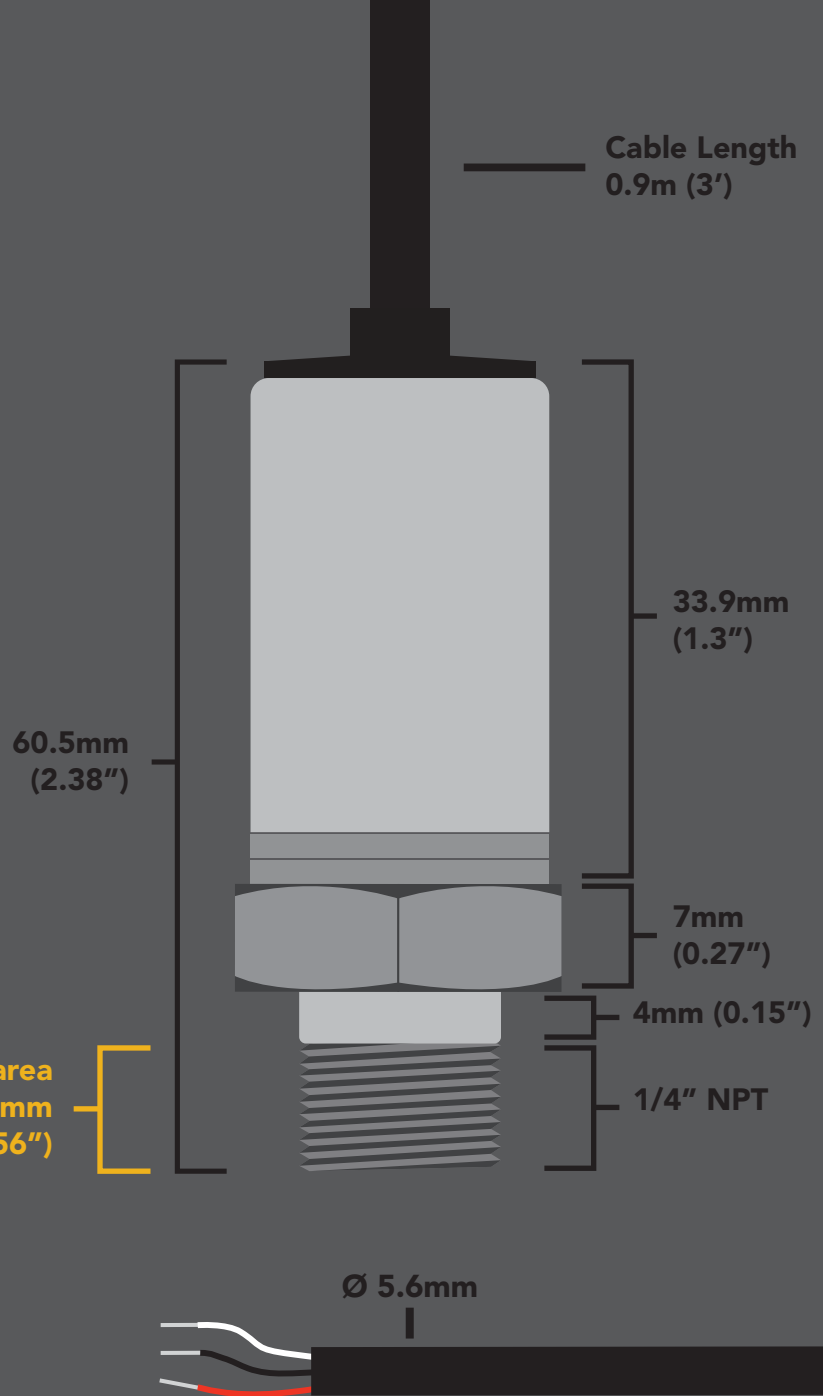
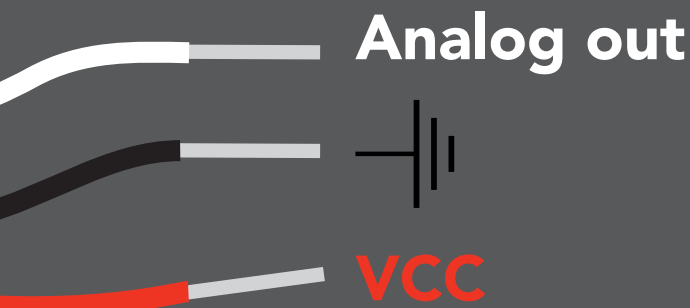
A-10 Analog Pressure Sensor

Reads	Pressure (PSIG)
Range	10 PSIG (68.947 kPa)
Resolution	1mv (.0025 PSI /0.017 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



Absolute max ratings

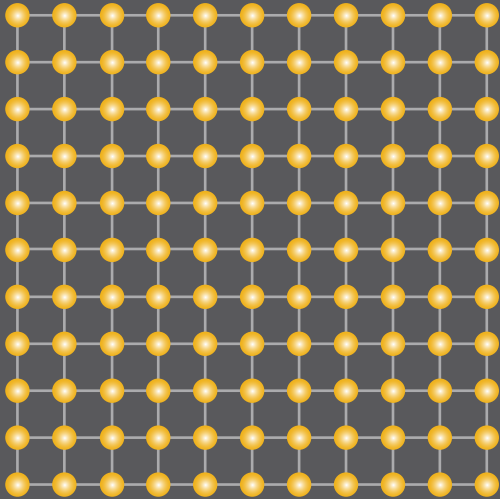
VCC	5.5 VDC
Output current	0.45 mA
Operating temperature	-40°C – 105°C
Proof pressure	30 PSI (206 kPa)
Burst pressure	300 PSI (2,068 kPa)

Power consumption

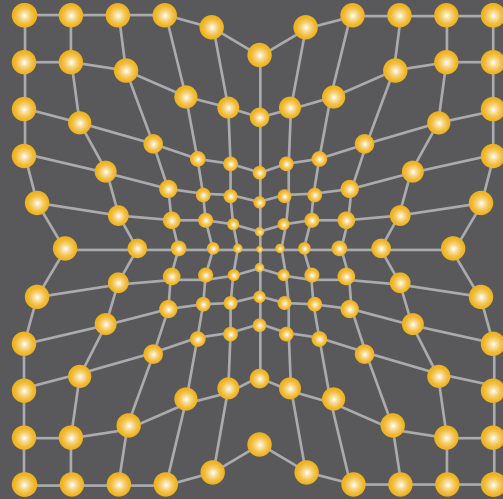
5V **6 mA**

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)
2 psi
4 psi
6 psi
8 psi
10 psi

Volts

0.5
1.3
2.1
2.9
3.7
4.5

Voltage to PSI equation

$$\text{PSI} = 2.5 \times (\text{Volts}) - 1.25$$

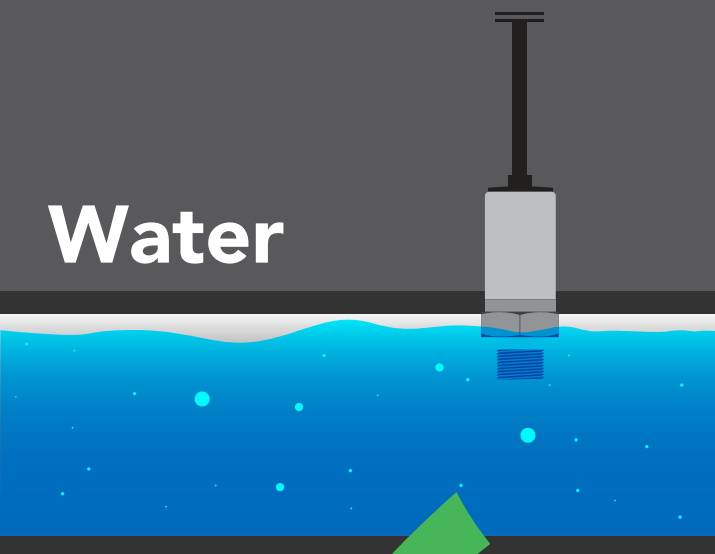
Voltage to kPa equation

$$\text{kPa} = 17.237 \times (\text{Volts}) - 8.6185$$

When the sensor is not under any pressure it may read a slight negative pressure. It is common to see negative readings from **-0.01** to **-0.04**. This is due to floating point error when the sensor is not under pressure and should be ignored.

Typical applications

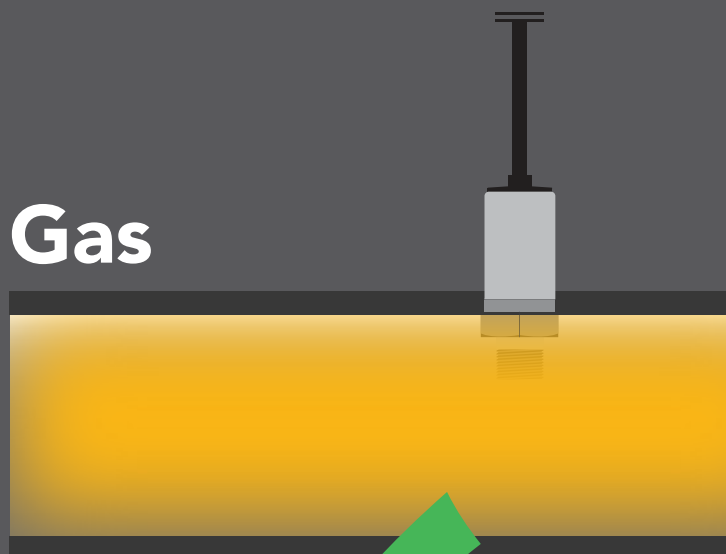
Water



OK



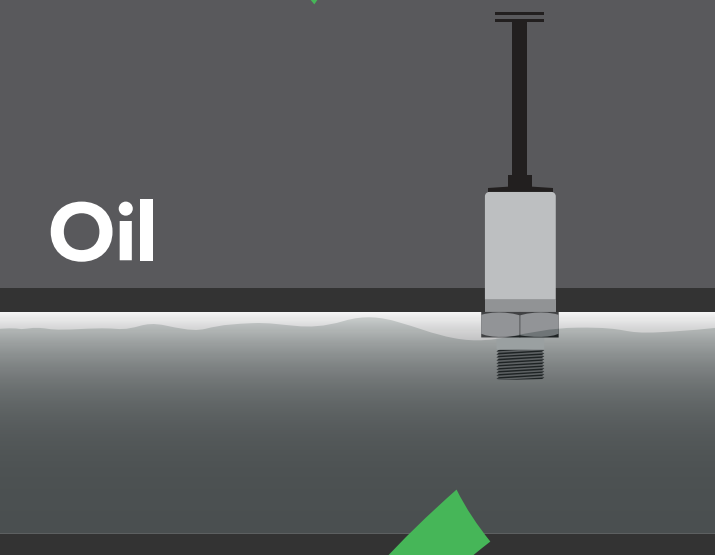
Gas



OK



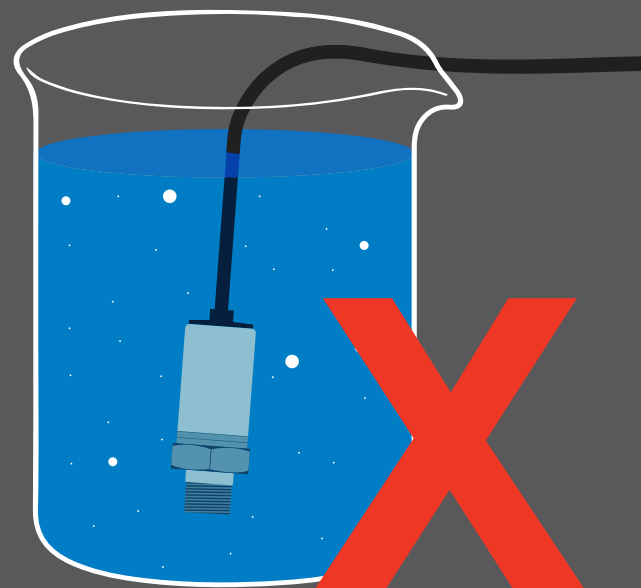
Oil



OK



Submerge



DO NOT submerge