

AN010

Mounting of PBM230 digital pressure sensor

1 Introduction

This is a brief guideline of mounting PBM230 in water resistant application.

2 Mounting example

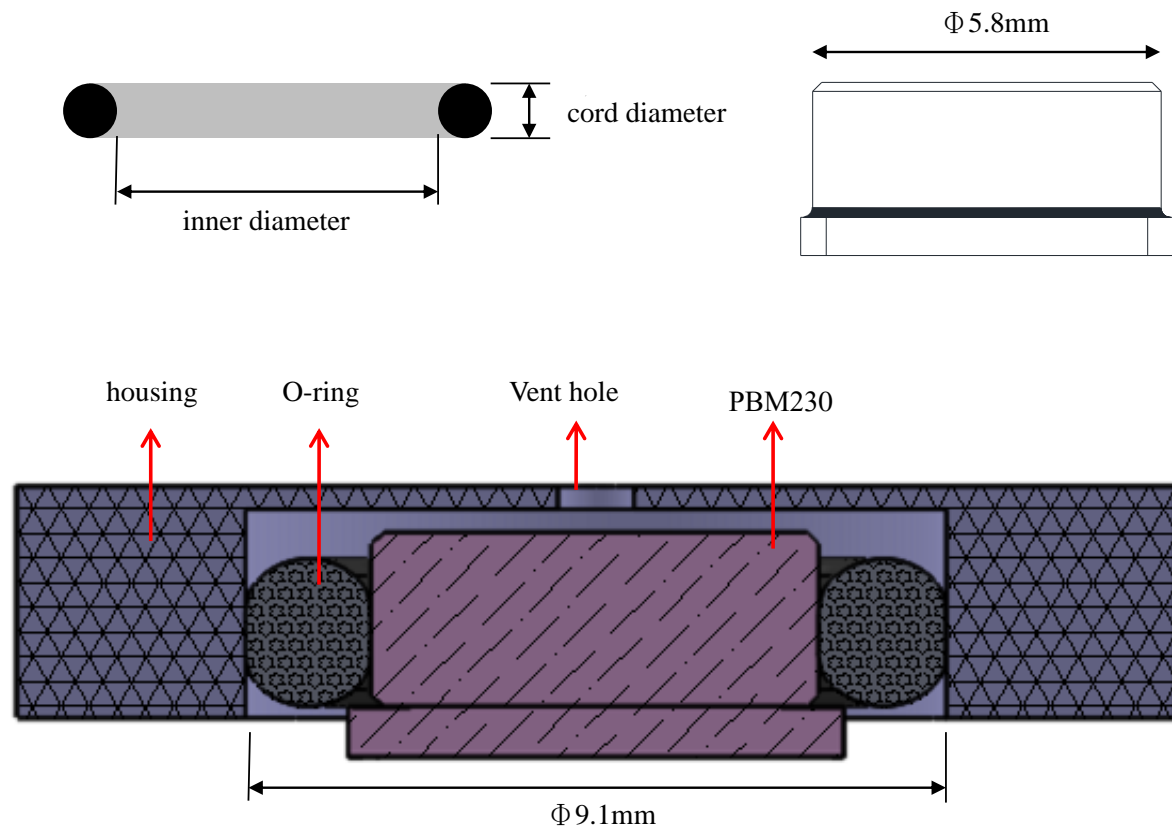
For water resistant application, this is a common method to using an o-ring sealing between pressure sensor and product housing. There is an example to show how to do it as following.

This example is just a guideline for mounting pressure sensor. Sensor users have to do detailed tests to verify their design according to specific application conditions.

O-ring spec: JIS B 2401 P6, inner diameter (I.D.) 5.8mm, cross-section (C.S.) 1.9mm

O-ring material: NBR

O-ring grease: PFPE (DuPont Krytox)



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3 Design reference of water resistant

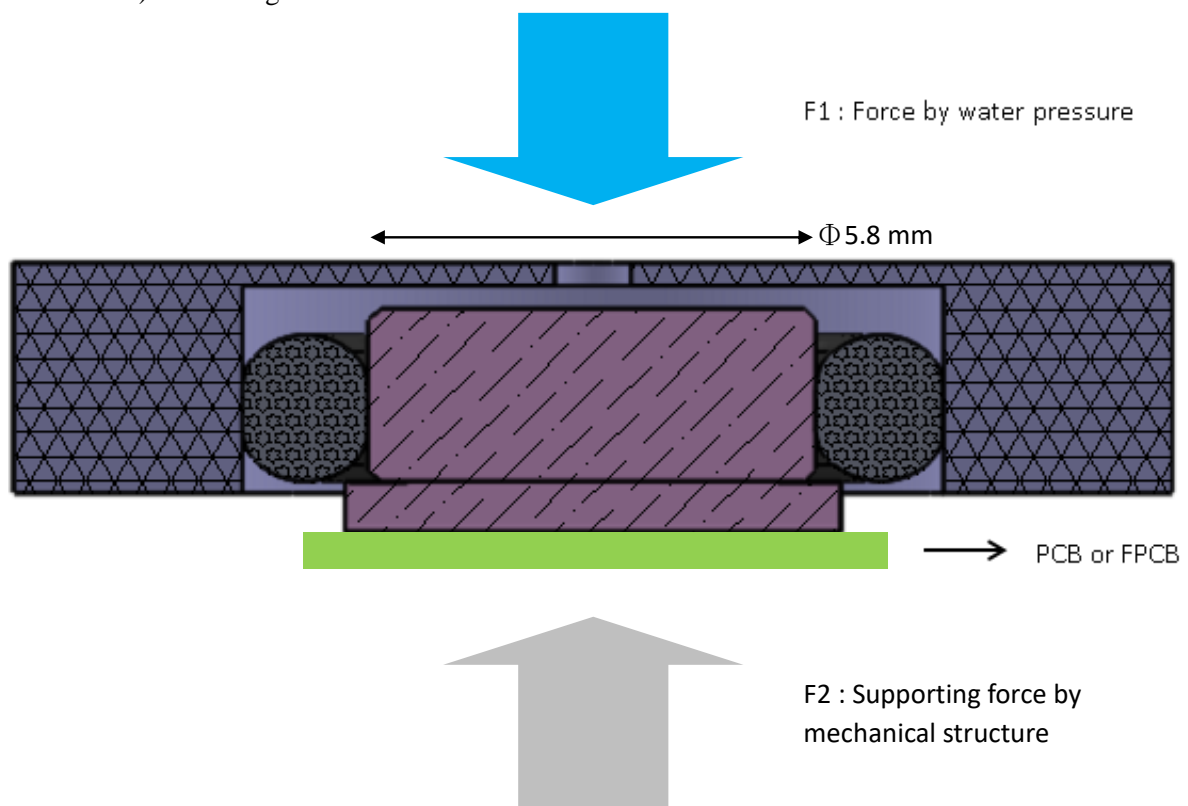
Concerning PBM230 used in underwater application, the force by water pressure could push the sensor back. Consequently, there should be a supporting force by mechanical structure to keep from moving backward.

Supporting force have to be greater than the force by water pressure. Here is an example of calculating the force by water pressure in 100m depth of water:

The pressure by 10m water depth is equal to 1kgf/cm^2 .

The area of PBM230 exposed to water is $(0.29\text{cm} \times 0.29\text{cm} \times 3.1416 = 0.2642\text{ cm}^2)$.

$F1 = \text{water pressure} \times \text{exposed area of sensor} = 100/10 \times 1\text{kgf/cm}^2 \times (0.29\text{cm} \times 0.29\text{cm} \times 3.1416) = 2.642\text{ kgf}$



4 Document history and modification

Rev.	Description	Date
0.1	First edition (Preliminary)	2016/11/25
0.2	Added: Design reference of water resistant, page 2	2021/6/15

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