

# Differential Pressure Sensor

Sensor for remote detection of an HVAC air filter condition. This device, belonging to the PRO sensor series, includes Aranet Sub-GHz ISM band radio which wirelessly transmits sensor measurements to the Aranet PRO base station.



## Product numbers

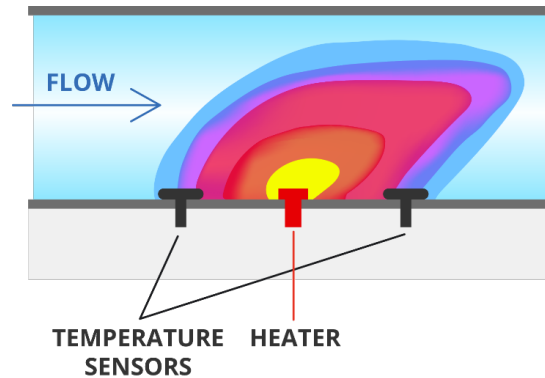
European Union	TDSPDP02
United States	TDSPDPU2
Asia	TDSPDPU2

## Differential pressure measurement performance

Pressure range	±500 Pa	
Resolution	0.02 Pa	
Accuracy	±(0.10 Pa + 3 % of reading)	
Long term drift	0.05 Pa/year	
Response time (99 %)	<1 s	
Temperature	-20–60 °C	-4–140 °F
Calibrated for	Air, N <sub>2</sub>	
Gas compatibility	Air, N <sub>2</sub> , O <sub>2</sub>	

- Accuracy is provided at temperature 25 °C (77 °F) and absolute pressure 966 mbar.
- Long term exposure to high concentrations of O<sub>2</sub> at high temperatures can reduce the product lifetime.

## Differential pressure measurement principle



The differential pressure is measured by thermal sensor elements using a flow-through technology. The image above illustrates the principle embedded in the sensing element: The gas flows through the sensor, linking both sides of the differential pressure measurement. Gas moves from a region of high relative pressure to one of lower relative pressure. A controlled heat flux is applied to the gas through an embedded heating element, while two temperature sensors gauge this heat flow rate. Measuring this flow rate allows for the calculation of the differential pressure.

## General specifications

Ingress protection rating	IP65	
Operating temperature range	-40–60 °C	-4–140 °F
Operating relative humidity range	-40–140 %	
Dimensions	160×90×45 mm	6.3×3.5×1.8 in
Weight (incl. battery)	250 g	9 oz
Enclosure material	Polycarbonate	
Packaging includes	2 pcs AA alkaline battery	

## Aranet radio parameters




Line of sight range	3 km	1.9 mi
Transmitter power	14 dBm	25 mW
Data transmission interval	1, 2, 5 or 10 min	
Data protection	XXTEA encryption	

## Battery lifetime

Measurement interval	Alkaline battery lifetime	Lithium battery lifetime
1 min	3.9 years	5.4 years
2 min	6.8 years	9.8 years
5 min	10 years	>10 years
10 min	10 years	>10 years

- Battery lifetime data has been obtained by mathematical extrapolation and is provided for descriptive purposes only and is not intended to make or imply any guarantee or warranty.
- Battery lifetime tests and calculations performed assuming device is at 20 °C (68 °F) and using *Fujitsu Premium LR6G07* (alkaline) and *Energizer Ultimate Lithium L91* (lithium) AA batteries as reference.
- The operating temperature range may vary based on the battery type used. Generally, the range for alkaline batteries is between -20–50 °C (-4–122 °F), whereas for lithium batteries, it is -20–60 °C (-40–140 °F).

## Compliance information

-  Conformité Européenne
-  Federal Communications Commission (USA)
-  Innovation, Science and Economic Development Canada