Neuron Differential Pressure Sensor

The Neuron Differential Pressure sensor measures the differential air pressure between two ports. In addition, it also measures the ambient temperature. The sensor is well suited for HVAC systems and has an embedded magnet for easy installation on magnetic surfaces.

Features

- Integrated long life battery - up to 10 years lifetime
- Built-in magnet for easy and secure fastening on the asset
- Continuous measurement and instant alarm
- Adjustment of parameters such as measurement frequency on request
- Define your own alarm levels in the Neuron app
- Receive alerts as push notifications, emails or SMS
- Easily connect the sensor to the system with the QR-code on the sensor. Ensures immediate and accurate registration in the app on your phone/PC/tablet
- The sensor transmits data to your nearby Neuron Gateway which then again communicates with the Neuron Cloud

Essentials

Measuring Range	+/- 500 Pa, -10 - 85°C	+/- 7500 Pa, -10 - 85°C
Measuring Frequency	Every 30 sec	
Report Frequency	Every 2 min, or immediately after measurement if trigger for critical data transmission is reached	
Expected Operating Time*	Up to 10 years	

**Depends on measurement frequency, amount of critical data transmissions and ambient temperature*

Typical Applications

- HVAC
- Air filters
- Fume Cabinets
- Clean Rooms
- Air Flow

Neuron System Benefits

Sensor - Gateway - Cloud - App

- **Robust sensors**
  Suitable for rough environments
- **Wireless**
  Wireless sensor with integrated battery
- **Long lifetime**
  Typical 10 years battery life
- **Quick installation**
  Wireless, installed and operational in minutes
- **Collect and deliver data**
  Data delivery through API and app
- **Broad offering**
  More than 50 different sensor types available

General Description

The Neuron Differential Pressure sensor can be used to monitor the pressure drop across filters, measure flow in air ducts, or monitor the pressure in HVAC systems.

The Differential Pressure sensor is compact, lightweight and available in different measurement ranges. It has high accuracy and great overpressure and burst pressure at 10 and 300 PSI.

It has a low power consumption and will operate for up to 10 years on its internal battery.

Principle of Operation

The Neuron Differential Pressure sensor uses a ceramic diaphragm as its pressure sensitive element. The pressure is inferred from the piezoresistive effect in the diaphragm. A ceramic material is used in this sensor because of its excellent mechanical and chemical stability, high temperature range and good insulation. It's also less prone to corrosion and erosion.

These sensors have good repeatability and long-term stability which makes them an ideal choice for industrial and HVAC applications.

Every 30 seconds the sensor measures the pressure and if the pressure has changed more than 10/150 Pa since the last transmission, the sensor reports immediately. Otherwise, it reports every 2 minutes.

The symbol ⚠ on the product label refers to this data sheet for important information regarding intended use, requirements for the operating environment etc. If the equipment is used in a manner not specified by El-Watch, the protection provided by the equipment may be impaired.

Technical Specification

Operational Specification

Measuring Range***	+/- 500 Pa, -10 - 85°C	+/- 7500 Pa, -10 - 85°C
Resolution	0.1 Pa, 0.1°C	1 Pa, 0.1°C
Accuracy	+/- 1.25 Pa @ 25°C	+/- 18.75 Pa @ 25°C
Overpressure / Burst Pressure	10 / 300 PSI	
Measuring Frequency*	Every 30 sec	
Report Frequency*	Reports every 2 min. Or immediately if trigger for critical data transmission is reached, see below	
Trigger for Critical Data Transmission*	10 Pa change in measurement	150 Pa change in measurement
Operating Environment	Ambient temperature: -10 - 85 °C Relative humidity: 0-100% Altitude < 2000m above sea level Pollution degree: 3	
Measuring Media	Non-Corrosive Dry Gases Compatible with Ceramic, Silicon, Borosilicate Glass, RTV, Gold, Aluminium and Epoxy.	
IP Grade	IP 67, wet conditions, indoor use	
Radio Frequency	863-870 MHz / 902-928 MHz	
Battery Type	Li-SOCl2, 3.6V	
Expected Operating Time**	Up to 10 years	

* *Adjustable on request*

** *Depends on measurement frequency, amount of critical data transmissions and ambient temperature*

*** *Pressure outside the overpressure range may permanently damage the device.*

Physical Specification

Materials	Polyuretan / Neodymium magnet
Dimensions LxWxH	51x15mm

Ordering Information

Neuron Differential Pressure Sensor	**Europe/The Middle East/Africa** Part number	**North America/Australia/ New Zealand** Part number
+/- 500 Pa	422281	422419
+/- 7500 Pa	422595	422601

The sensor comes with 1 meter silicone tube (4 mm OS/2mm ID) and two 5 mm treaded nozzles to use for connecting tube to for example air ducts.

Regulatory

Certifications	**Directives/Standard**
CE UKCA	RED 2014/53/EU Radio Equipment Regulations 2017
FC Industry Canada	FCC Part 15C
Safety	IEC 61010-1:2010

Installation

Neuron sensors are ready for use out of the box and will start logging data after registering the sensor in the app. Even though Neuron sensors deliver great range and long battery life, following some simple guidelines for mounting of the sensor and gateway can greatly improve signal coverage and lifetime of the sensor.

To ensure optimal antenna performance and signal strength, the sensor should be placed elevated with some distance to fixed objects. Keep in mind that RF-signals are greatly affected by close metallic surfaces.

For sensors with an external antenna, the antenna should be clear off the metallic surface.

You can find all you need to get started with Neuron Sensors at our support site:
support.el-watch.com »

For sensors operating in environments with greatly varying temperatures, care should be taken to avoid putting the sensor in unnecessary stress. Very high or low temperatures will affect the battery life and the signal strength of the sensor. While some sensors must be close to the source of heat or cold, other sensors have external probes which allow the sensor to be placed at a distance.

Fastening

The small, compact blue Neuron sensors are fitted with fastening holes for use with cable ties. The sensors are also delivered with double-sided tape that may be used for fastening of the sensors.

All the black Neuron sensors, like the Neuron IR380 and Neuron Vibration, are fitted with a strong magnet at the back for easy fastening. If there is no magnetic surface, then double-sided tape is a good solution

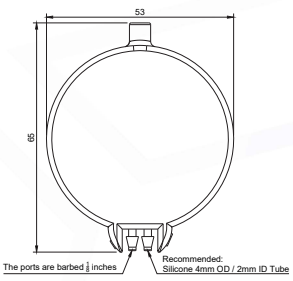
Place elevated with distance to fixed objects

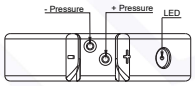
Keep antenna clear off the metallic surface

Sensors with IP21 Enclosure

Sensors with IP67 Enclosure

Dimensions





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Additional information about Neuron sensors, installation, userguides, and more at our support website: support.el-watch.com