

Pressure (150 - 1150 mbar) DT015



The Pressure sensor (150 - 1150 mbar) can be connected to the Nova5000, MultiLogPRO or TriLink data loggers.

The Pressure sensor (150 - 1150 mbar) is an absolute gas pressure sensor. It measures applied external pressure relative to zero pressure reference sealed inside the sensor. The sensor is housed in the Fourier Systems plastic sensor case and its range is 150 - 1150 mbar (0.148 - 1.134 atm or 15 - 115 kPa).

The Pressure sensor is used for various experiments in Biology, Chemistry and Physics. It is furthermore used as an altimeter (measuring the height you are at) and as a barometer for various meteorological measurements.

Typical Experiments

- Investigating the evaporation of water from terrestrial plants - transpiration
- Measuring the photosynthesis rate in water plants
- Measuring the respiration rate of germinating seeds
- Investigating the affect of light on photosynthesis rate
- Investigating the Ideal Gas Law

How it Works

The main sensing unit inside the Pressure sensor is composed of a pressure sensitive membrane, and a flexible resistor attached to it. This flexible resistor changes its resistance when it bends. When the pressure alters, the resistance changes, and according to Ohm's Law so does the voltage drop across it. This voltage is then amplified to a range of 0 - 5 V, accepted by the Analog-Digital converter of the data logger. The pressure is then calculated and recorded in the logger's memory.



Sensor Specification

Range:	150 -1150 mbar
Accuracy:	±1 % over entire range
Resolution (12-bit):	0.25 mbar
Default Sample Rate:	10 samples per second
Response Time (for 90% change in reading):	1 ms
Operating Temperature:	0 - 85 °C

Calibration

The Pressure sensor (150 to 1150 mbar) requires no calibration.

Using the Pressure Sensor with the Nova5000 and MultiLab Software


1. Launch the MultiLab CE software.
2. Connect the Pressure sensor to the Nova5000's sensor input (starting from I/O-1). The sensor is automatically recognized by the MultiLab software.
3. Click **Setup** on the main toolbar and program the data logger's sample rate and number of samples. Click **Run** on the main toolbar to start the measurement.

Using the Pressure Sensor with the MultiLogPRO or TriLink and MultiLab Software


1. Launch the MultiLab software.
2. Connect the Pressure sensor to the data logger's sensor input (starting from I/O-1). The sensor is automatically recognized by the MultiLab software.
3. Click **Setup** on the main toolbar and program the data logger's sample rate and number of samples. Click **Run** on the main toolbar to start the measurement.

Selecting units

MultiLab displays the data in mbar. To change the display to kPa or atmosphere:

1. Click **Setup** on the main toolbar.
2. Click **Properties**  next to the Pressure sensor input.
3. Select the checkbox next to the desired Pressure unit.
4. Click **OK**.

Setting the Current Reading of the Pressure Sensor to Zero

1. Launch the MultiLab software (from either your PC or Nova5000).
2. Connect the Pressure sensor to the data logger's first sensor input I/O-1.
3. The Pressure sensor is automatically recognized by the MultiLab software.
4. Click **Setup** on the main toolbar.
5. Click **Properties**  next to the Pressure sensor input.
6. Click the **Set Zero** tab.
7. Check the box next to **Set the current reading to zero**.
8. Click **OK**.
9. Program the data logger's sample rate and number of samples. Click **Run** on the main toolbar to start the measurement.

An Example of using the Pressure Sensor

Photosynthesis rate in water plant - Elodea

The following graph shows the example for a photosynthesis experiment where the increase of pressure caused by formed oxygen is followed in comparison to the ambient pressure.

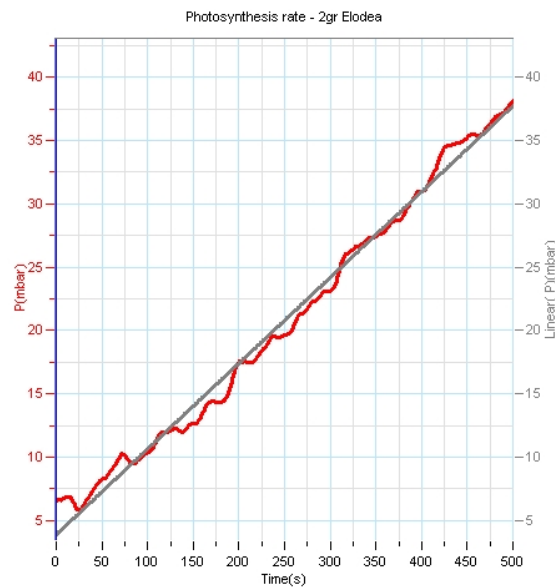


Figure 1: A Photosynthesis experiment performed using the Pressure sensor



Technical Support

Please contact Fourier technical support as follows:

Web: http://www.fourier-sys.com/support_support.html

Email: support@fourier-sys.com

Consult the FAQs before contacting technical support:

http://www.fourier-sys.com/support_faq.html

Copyright and Warranty

All standard Fourier Systems sensors carry a one-year warranty, which states that for a period of twelve months after the date of delivery to you, it will be substantially free from significant defects in materials and workmanship.

This Warranty does not cover breakage of the product caused by misuse or abuse.

This Warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.