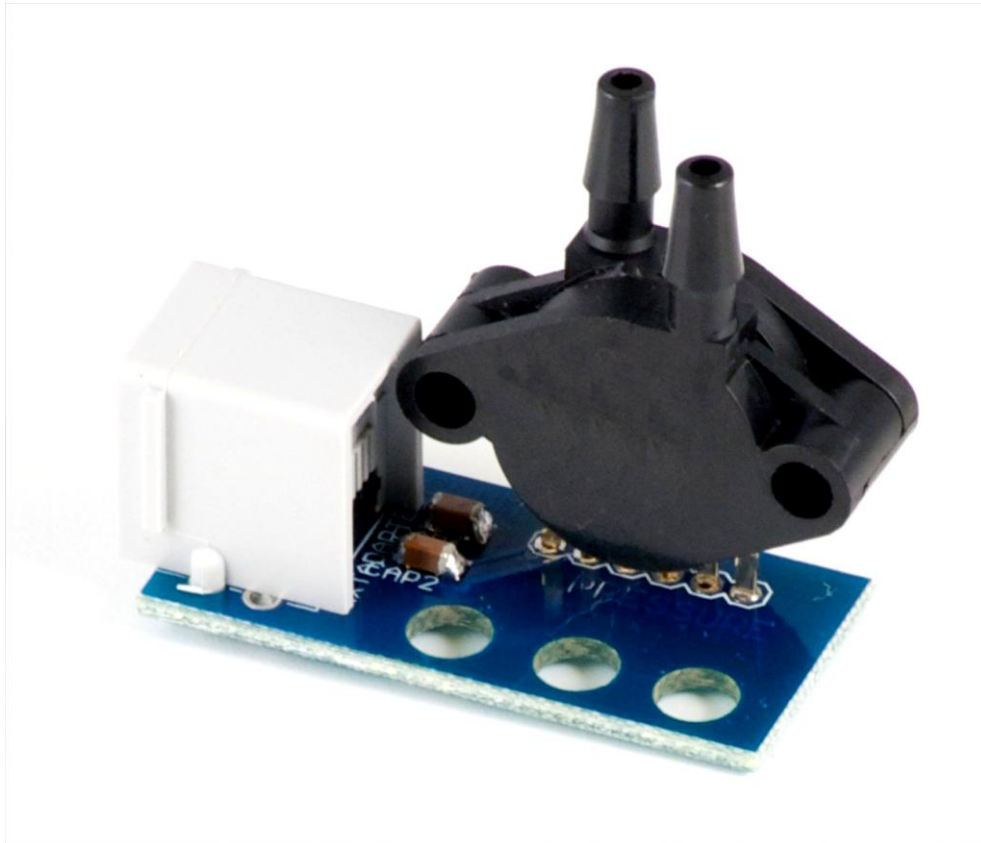


Руководства по использованию и примеры кода можно найти по ссылке:  
<http://www.dexterindustries.com/download.html#dLight>

## dPressure Sensors for LEGO MINDSTORMS NXT

The dPressure 500: Vacuum to 500 kPa (70 PSI)



- Pressure sensor for LEGO® MINDSTORMS® NXT.
- Plugs directly into your NXT sensor ports.
- Adapter for LEGO Pneumatic kits included.
- Widest pressure range: 250 kPa (30 PSI) or 500 kPa (70 PSI).
- Easily incorporated into datalogging experiments in chemistry, physics, and engineering.

### Detailed Description

The dPressure is a pressure sensor for the LEGO® MINDSTORMS® NXT system capable of measuring up to 250 kPa (30 psi) and 500 kPa (70 psi) of pressure and gauge vacuum. The sensor comes with an adapter for LEGO Pneumatic lines.

The sensor is easy to use: it plugs directly into the NXT and users can be up and reading pressures in seconds.

These pressure sensors can easily be incorporated into chemistry, engineering, and environmental experiments with NXT-G and Labview.

### Technical Specifications:

The dPressure sensor comes in two versions:

- The dPressure 250: Vacuum to 250 kPa (30 PSI)
- The dPressure 500: Vacuum to 500 kPa (70 PSI)

Both sensors measure differential pressure and have 1/8" ports.

These analog sensors can measure down to 0.25 kPa (0.04 PSI) in pressure change and has a response time of 1 ms.



## dPressure Sensor Manual

- **dPressure 250** – The dPressure 250 is a pressure sensor capable of measuring up to 250 kPa (30 psi) of pressure and gauge vacuum. The sensor can be attached directly to the Lego Mindstorms NXT. The sensor is easy to use and users can be up and reading pressures in seconds.
- **dPressure 500** – The dPressure 500 is a pressure sensor, similar to the dPressure 250, capable of measuring up to 500 kPa (70 psi) of pressure and gauge vacuum.

## Getting Started

### Safety:

High pressures can be dangerous! Precautions should be taken. Wear safety goggles. Never use pressurized systems without adult supervision. Never use the sensor or any parts at pressures outside of their specified pressure tolerances.

Determine the Maximum Pressure:

First, check to see what model of dPressure sensor you received. The model can be determined by the circles next to the



capacitors on the printed circuit board of the sensor. The model's maximum pressure should be checked on the PCB. Operating the sensor above the maximum specified pressure can seriously and permanently damage the sensor. Do not use the sensor outside the specified pressure limit.

Select and Install the Correct Software:

After determining the maximum pressure of your sensor you should go to the Dexter Industries website ([www.dexterindustries.com](http://www.dexterindustries.com)) and download the zip file for your specific sensor. Save to your computer, unzip the file, and install on your NXT software.

To install in NXT-G, go to "Tools" and select "Block Import and Export Wizard". Select the directory the files were unzipped in. Import the relevant file.

## Hardware Setup



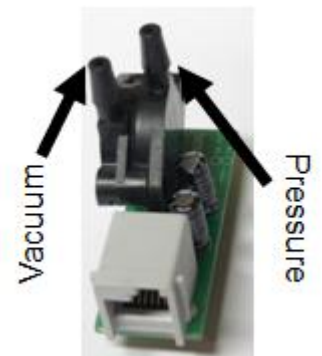
Connect with the Mindstorms NXT:

Connect the pressure sensor to one of the NXT data ports. No adapters necessary.

Secure the Sensor:

Using the Technic brick under the sensor, attach the sensor to your robot, laboratory setup, or other device. For non-Lego attachments, an easy way to attach the sensor is with zip ties through the brick holes.

Secure tubing to the Sensor:



Gauge Pressure: The pressure-port on the sensor is the port on the capacitor-side of the plastic.

Gauge Vacuum: The vacuum-port on the sensor is the port opposite the capacitor-side of the sensor.

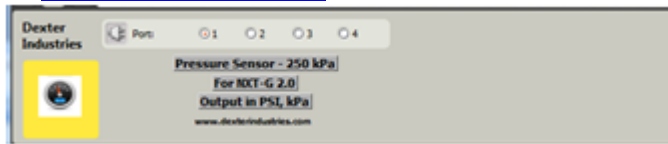
For both ports, the 1/8" ID tubing can be used to connect with the sensor. For Lego-Pneumatic applications an adapter is enclosed. For pressures over 15 PSI, we recommend you place a small hose clamp over the area where the hose overlaps with the port.

## Using the NXT-G Block: 3 Easy Steps



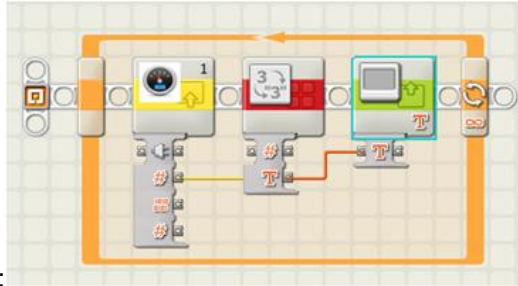
Drag the Block From the Palette into Position:

In NXT-G, select the appropriate "dPressure" block and drag it out onto the work area of your screen.



Specify the port the dPressure is plugged into:

In the block dialogue box at the bottom of the screen, specify which sensor port the sensor is plugged into. In the example to the right, the dPressure is plugged into port 1.



Link the dPressure sensor to other blocks:

Click on the brick to drop the wiring menu down. Four options are offered: a port specification (to automatically set the port the block reads from), data output in PSI, raw sensor data, and data output in kilopascals (kPa). In the example to the right, we've placed the dPressure in a continuous loop that reads pressure and puts the value, in PSI, onto the screen.

## Other Links and Examples:

- Software: [LabVIEW LEGO MINDSTORMS Software](#)
- Software: [Datalogging](#)
- Testing: [How accurate is the dPressure?](#)
- Project: