

Spirometer (Breathing) DT037A

(for EcoLog XL)



The Spirometer sensor is a breathing sensor which allows students to conduct experiments in physiology. Based on air speed, the Spirometer calculates the airflow rate and lung capacity of the user who is breathing into the sensor. By default, the results are shown in liters per minute.

The Spirometer sensor consists of Fourier's sensor case with a unique breath sensor tube and removable single-use plastic nozzle.

Typical Experiments

- Investigate the lung capacity of athletes versus non-athletes
- Conduct respiratory experiments

How it Works

The Spirometer sensor is based on an extremely sensitive pressure sensor and a unique breath sensor tube. Inside this tube is a small disc, narrowing the middle of the tube. When air travels through the tube, pressure is created on one side of the disc and a vacuum on the other side. The pressure sensor senses this pressure and subsequently the output voltage changes. The Analog-Digital converter of the logger translates the voltage to the proper results accordingly. Note that when air travels through the tube in the opposite direction, the sensor will measure a negative value.

Sensor Specification

Range:	± 315 L/min
Accuracy:	±8 % over entire range
Resolution:	0.64 L/min
Default Sample Rate:	10 samples per second

Equipment List DT037A

Spirometer DT037

Single-use plastic nozzle for Spirometer DT031


Calibration

The Spirometer sensor requires no calibration.

Safety


For hygienic reasons do not share the single-use plastic nozzle for the Spirometer.

Using the Spirometer Sensor with EcoLog XL and EcoLab Software

1. Connect EcoLog XL to the computer.
2. Connect the Spirometer sensor to the EcoLog XL's sensor input (starting from I/O-1). The sensor is automatically recognized by the EcoLab software.
3. If EcoLog XL is running in one of its stand-alone modes, press the **Stop**  button on the EcoLog XL front panel.
4. Launch EcoLab.
5. In the **Setup** window deactivate the internal sensors by clicking the button next to the sensors' icon and program the EcoLog XL's sample rate and the recording time.


To begin online recording

1. Click **Run**  on the main toolbar.


- EcoLab automatically opens a graph window displaying the data in real-time, plotting it on the graph as it is recorded.
- You can stop recording at any time by clicking **Stop**  on the toolbar.

To conduct remote recording

For remote logging it is necessary to send the setting to EcoLog XL before disconnecting from the computer.



- In the Setup window deactivate the internal sensors by clicking the button next to the sensors' icon and program the EcoLog XL's sample rate and the recording time.
- Click **Send Setup**  on the main tool bar, wait until you will see the following message on the EcoLog XL screen:

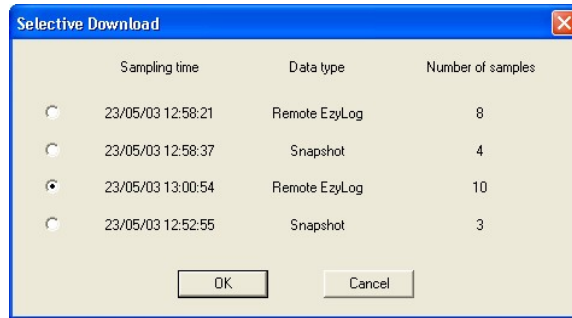
Remote logging
Waiting for Go

- Disconnect the EcoLog XL from the computer, place the EcoLog XL at the desired recording location and press the **Go**  button on the EcoLog XL front panel.

To download data that was recorded offline

EcoLog XL always stores the last four experiments. To download data that was recorded offline, or while EcoLog XL was not connected to the computer:

- Connect the EcoLog XL to the computer and if EcoLog XL is collecting data, click **Stop**  to end collecting and to return to the main menu.
- Launch EcoLab.
- Click **Download**  on the main toolbar to open the **Selective Download** dialog:



The dialog contains details of the stored experiments: the starting time and date, the logging mode and the number of samples taken.

4. Click an option to select the experiment you wish to download, and then click **OK**. This will start the Post-experiment Data Transfer communication mode. Once the transfer is complete, the data will be displayed automatically in the graph window and in the table window.

An Example of using the Spirometer Sensor

The following graph is the airflow rate of breath using the Spirometer sensor.

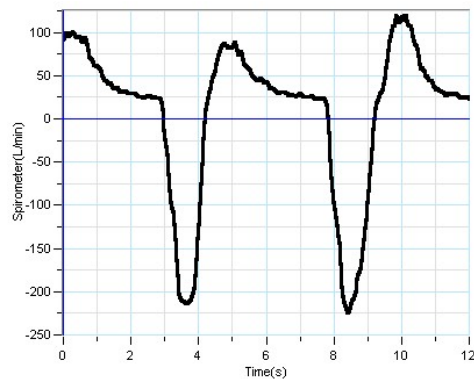


Figure 1: A breath measurement



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.