SEN2092 Spirometer Sensor

PowerLab Sensors Series

Description

The PowerLab Sensors Spirometer employs a pressure sensor that converts the differential pressure across a restriction into an electronic signal. It is used to demonstrate air flow rates and respiratory measurements in humans. The ergonomic handle and lightweight design ensure comfort even over long periods of recording.

Operation

Air flowing through the Fleisch element in the spirometer housing creates a pressure difference on either side of the element. A larger airflow creates a greater difference. This pressure difference is measured by a differential pressure sensor, which produces an analog voltage proportional to the air flow rate. A 30 Hz low-pass filter is applied in software to the signal from the spirometer.

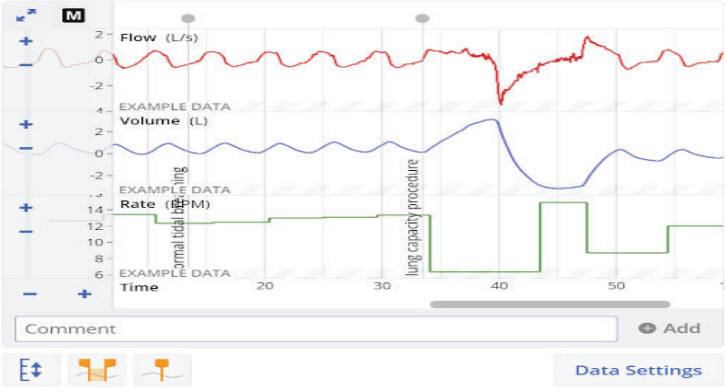
To use the Spirometer Sensor, plug the sensor into the USB port of a laptop or desktop computer with a Windows or Mac operating system. Alternatively, plug the sensor into a USB hub connected to that computer. A green LED on the connector housing indicates the transducer is receiving power and is ready for use.

The PowerLab Sensors Spirometer also comes with a bracket for the handle to slide into, which allows attachment to exercise bikes, bars, or other equipment for hands-free use.

Application

The PowerLab Sensors Spirometer is suitable for differential pressure measurements of dry non-corrosive gases, such as air flow and pulmonary function measurements.

Typical Data



Typical flow and volume during normal and forced expiration.

Caution

Read “Statement of Intended Use” on our website.
The Spirometer’s differential pressure sensor is movement sensitive. For consistent recordings, always keep the device in the same orientation. Movement may result in unwanted artifacts.

Cleaning and Care

Undo the clips and disassemble the spirometer. Start by disconnecting the electronics in the orange and black housing and place this aside. Gently clean the electronics housing with a disinfectant wipe. Ensure that excessive amounts of liquid disinfectant are not used on the connector housing. Do not immerse this piece.

Next, disconnect the front housing, the gray tubes, the rubber gaskets and the Fleisch element, followed by the handle. Immerse these components completely in a pan containing warm soapy water or a 5% bleach solution for 5-10 minutes. Periodically, agitate the components while they are submerged in the cleaning solution; swish them back and forth in the cleaning solution for 10-15 seconds every minute. Rinse the lumen of the tubing and crevices of each component with deionized water, then set on paper towels to dry completely before reassembly.

To dry the components more rapidly, use a can of compressed air to blow away any moisture, or a hair dryer to remove any final moisture.

Specifications

Max. flow rate:	±1000 L/min (±16.7 L/s)
Dead space:	103 mL
Sample rate:	1000 Hz
Flow resolution:	0.05 L/min
Response time:	1 ms
Warm up time:	~15 minutes
Flow bore:	Internal: 27.5mm, External: 31.0 mm to 30.0 mm (tapered)
Dimensions (excl. cable):	175 mm (L) x 60 mm (W) x 180 mm (H)
Weight:	310 g
Cable Length:	1800 mm (5.9”)

All specifications were tested at the time of printing and are subject to change.

Ordering Information

SEN2092 Spirometer Sensor

For use with:
Laptop or desktop computer with Windows and Mac operating system

WARRANTY: 1 year as per ADInstruments warranty terms for PowerLab Sensors.