

## Absolute Pressure Sensor 1000546

### Instruction Sheet

10/15 Hh



#### 1. Safety instructions

- To avoid permanent damage to the built-in semiconductor sensor, never exceed the maximum threshold pressure of 1000 kPa.
- Suitable only for non-corrosive gases such as air, helium and nitrogen.
- Do not allow the sensor element to come into contact with water.

#### 2. Description

The absolute pressure sensor with its extensive measurement range is particularly suitable for experiments to demonstrate Boyle's law and for measuring the piston pressure (PV diagram) in a Stirling engine. In addition, the absolute pressure sensor can also be used to record and measure the production of oxygen during photosynthesis and for transpiration experiments in a closed system.

Two-port measurement procedure for the pressure sensor: nozzle 1 is connected to the external pressure via a connecting nipple, and nozzle 2 is connected to a sealed reference vacuum.

The sensor box is automatically recognised via the interface.

#### 3. Equipment supplied

- 1 Sensor box
- 1 8-pin mini DIN connection lead, length: 60 cm
- 1 Silicone tube, inner dia.: 2 mm, length: 1 m
- 1 Plastic syringe 20ml

#### 4. Technical data

Measurement range: 0 to 250 kPa  
Sensor type: Semiconductor sensor  
Accuracy:  $\pm 1\%$   
Resolution: 0.1 Pa  
Connections: Serrated nozzle 4.8 mm dia.

#### 5. Operation

- Use the full length of the silicone tube or shorten it to the length desired.
- Use the silicone tube to connect the pressure source to the nozzle of the sensor.

- During the experiment, the elasticity of the tube should be taken into account – this could possibly lead to an error in readings.

## 6. Sample experiment

### 6.1 Measuring the absolute pressure in relation to the volume (Boyle's law)

Apparatus required:

1	3B NET/log @230 V	1000540
or		
1	3B NET/log @115 V	1000539
1	Absolute pressure sensor	1000546

- Set-up the experiment according to Fig. 1.
- Fit the plastic syringe with an approx. 2-cm long hose.
- Fill the syringe with 20 ml of ordinary air.



Fig. 1: Measuring the absolute pressure in relation to the volume

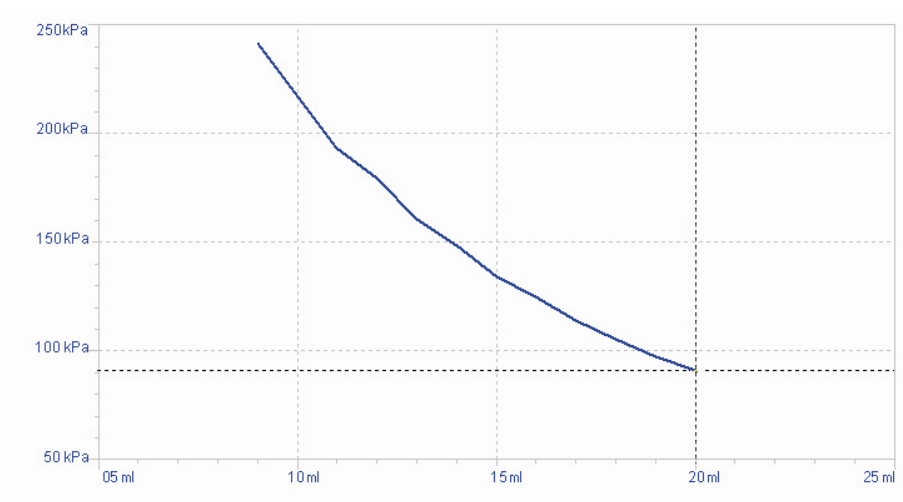


Fig. 2: Pressure against volume

- Push the free end of the silicone tube onto the nozzle of the pressure sensor.
- CAUTION: as far as possible, do not alter the volume in the syringe!
- Connect the absolute pressure sensor to the 3B NET/log™ interface and wait for the interface to recognise the sensor.
- The first reading appears on the interface display.
- In the 3B NET/ab™ software's manual mode, enter the readings for the volume by hand in steps of 1 ml at a time.
- Plot the graph of the characteristic.