Relative Pressure Sensor, ±1000 hPa 1000548

Instruction sheet

10/15 Hh

1. Safety instructions

- To avoid permanent damage to the internal semiconductor sensor, the maximum permitted relative pressure of 4000 hPa must never be exceeded.

Only suitable for use with non-corrosive gases such as air, helium or nitrogen.

- Do not allow the sensor element to come into contact with water.

2. Description

Relative pressure sensor with a measurement range up to 1000 hPa, suitable for measuring the pressure on the piston of the transparent Stirling engine 1002594 (for a pV diagram).

For two-port measurement using the sensor, hose connections are provided for two inputs.

The sensor box is designed to be detected automatically by the 3B NET*log*™ unit.

3. Equipment supplied

1 Sensor box

1 MiniDIN 8-pin connector cable, 60 cm long

1 Silicone hose, internal diameter 2 mm, 1 m long

4. Technical data

Measurement range:	± 1000 hPa
Sensor type:	Semiconductor sensor
Accuracy:	± 1 %
Resolution:	± 100 hPa
Connections:	2 hose connections, 4.8 mm diameter

5. Instructions

- Cut the silicone hose into sections of the required length.
- Using the lengths of hose, make the pressure connections between the sensor box and the Stirling engine.
- Note the “positive” and “negative” labelling of the hose connections - connect the hoses correctly according to the effective direction of the pressure.
- During the experiment, check that no elastic expansion of the hose is occurring – this can cause the pressure reading to be lower than the correct value.

6. Application

Measurement of the pressure difference in the transparent Stirling engine and analysis of the data using 3B NET*lab*™.

7. Sample experiment

Recording operating pressures in Stirling engine U10050 while it is in motion

Apparatus required:

1 3B NET*log*™ @ 230 V 1000540

or

1 3B NET*log*™ @ 115 V 1000539

1 3B NET*lab*™ program 1000544

1 Relative pressure sensor, ±1000 hPa 1000548

1 Transparent Stirling engine 1002594

- Set up the experiment as shown in fig. 1.
- Connect the relative pressure sensor to the 3B NET*log*™ unit and wait for the sensor to be detected.
- Using a suitable length of silicone hose, make a pressure connection between the “positive” hose connection of the sensor box and the hose connection of the Stirling engine.
- Allow the engine to heat up and, after a few minutes, set it running.
- Open the application program (template) for the experiment with the ±1000 hPa relative pressure sensor on the 3B NET*lab*™ unit.
  - Measure the pressures.
  - Evaluate the curve resulting from the measurements (fig. 2).

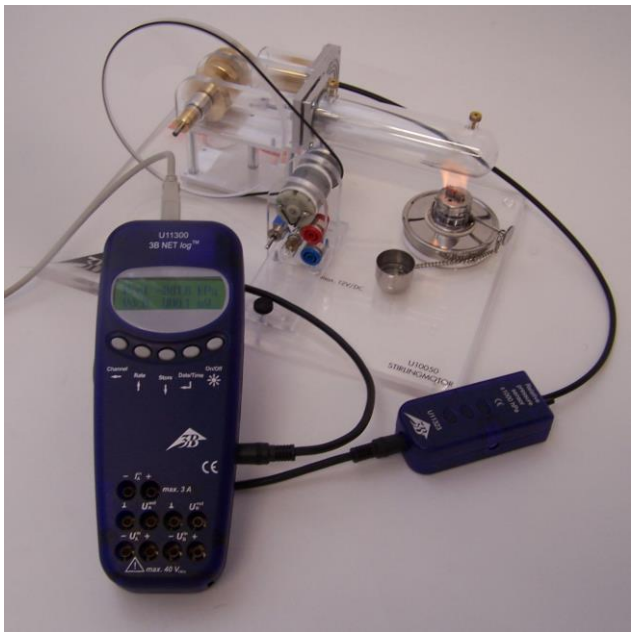

Fig. 1 Experiment set-up for recording operating pressures in Stirling engine 1002594 while in motion

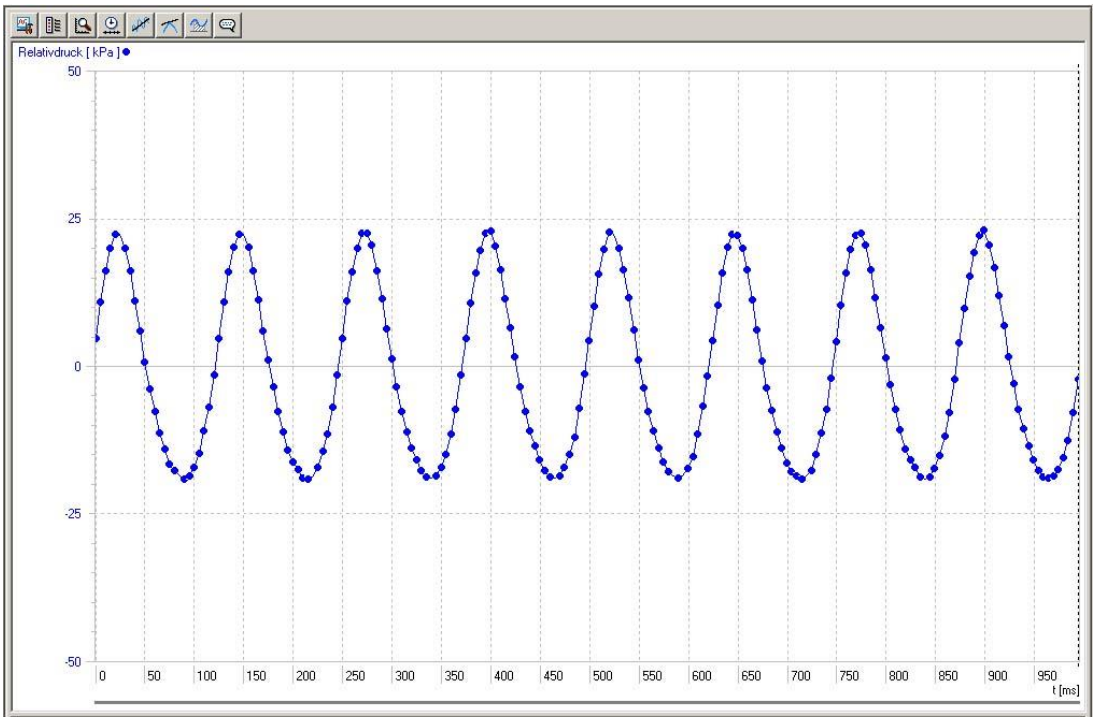

Fig. 2 Trace of pressure in Stirling engine 1002594