

"Monitoring Sound waves"

Subject: Physics

Sensor: Sound Wave

Overview:

Sound waves are longitudinal waves which consist of particles oscillating in the same plane as the direction that the sound wave is travelling. These waves can be examined using an oscilloscope and a microphone. By using the LogIT DataVision and a Sound Wave sensor, sound waves can be examined and the changes in frequency and amplitude demonstrated easily.

Equipment required: LogIT DataVision

- 1 Sound Wave sensor
- 1 sensor extension cable (optional)
- 1 clamp stand (optional)

Hazards:






Prolonged exposure to high noise levels (e.g. 90dB or more) can result in permanent damage to hearing.

Setup:



1. Connect the Sound Wave sensor to channel 1 of DataVision.
2. You can use a clamp stand to hold the sensors if required.

Method:

1. Switch on DataVision by pressing any button.
2. Use the  arrow to select oscilloscope mode  and press .
3. Check that the time base is set to 200 by pressing the  button. (Use  to return).
4. Whistle into the end of the Sound Wave sensor until a steady standing wave is displayed.
5. By varying the pitch and amplitude of the sound the effect on the displayed standing wave can be monitored.

Results:

The plotted waveform can be used to clearly show the difference between amplitude and pitch of sound waves.

The Wave Form of a Tuning fork can also be looked at. Change the time base to 1 ms/div and hold a vibrating fork near to the sensor and look at the pattern produced.

To analyse the produced wave form press '1' on the numeric keyboard to capture the wave form and then press the 'menu' button and select 'Analyse'. The captured wave form can now be analysed, saved or exported in the same way as standard logged data.

