

Velocity of sound switches

Introduction

This equipment is designed for the direct measurement of the velocity of sound in air using a pair of microphones and a timer able to measure to 1ms. Two independent electronic switch circuits start the timer when a pulse of sound is received by the built in microphone and stop it when the sound reaches a second microphone placed a known distance from the first.

Operation

Using the 10m lead provided, connect the auxiliary microphone to the sockets marked MICROPHONE on the switch unit.

Place this microphone in a suitable position as far as possible from the switch unit with the microphone face aimed at the sound source. Measure and record the distance between the two microphones.

Connect the sockets marked OUTPUT to a suitable timing device with a resolution of 1millisecond or better. Switch on the switch unit and reset the timer to zero.

Generate a single, sharp pulse of sound e.g. by a single clap of the hands or slap on the bench with a ruler. This should be done near to the switch unit. (NB The experiment will work more effectively and with more repeatable results with the loudest sound).

The timer will now be displaying a time equal to the period taken for the generated sound to travel between the microphones. Knowing this and the distance between the microphones it is possible to easily calculate the velocity of sound in air.

In some instances, with the timer connected to the switch unit, spurious operation of the timer may occur. This is due to the inherent sensitivity of the switch unit electronics to background noise.

Battery

A 9V battery of the 6LR61 (PP3) type is required to operate the instrument. Access to the battery compartment is obtained by removal of the four screws on the back panel which secure the battery compartment cover. When fitting the battery, care should be taken to ensure correct polarity.

Contents

This kit contains:

- 1 Switch Unit
- 1 Microphone
- 1 10m lead terminated with 4mm plugs