

Order Code : 20213547.1.5

Name : Apparatus to verify interference, diffraction and velocity of sounds



Specifications:

The measurements of many physical parameters such as ultrasonic distance, positioning, liquid flow, elastic modulus of materials, and gas temperature transient changes, involve sound velocity. This apparatus is specially designed to observe standing waves and resonance phenomenon of interference, measure the speed and wavelength of sound in air, observe double-slit interference and diffraction of sound, and observe the interference of original wave and reflected wave. Through the experiments, students can have a better understanding of the fundamentals of acoustic wave and related experimental methods.

This apparatus is designed with the following characteristics:

1. An ultrasonic sensor with strong anti-interference capability to ensure high performance operation.
2. Ultrasonic receiver in connection to a rotating device to measure rotational angles.
3. A reflective plate to conduct interference experiment between reflected wave and original wave.

Experimental Contents

1. Generate and receive ultrasound.
2. Measure sound velocity in air using phase and resonance interference methods.
3. Study interference of reflected & original sound wave, i.e. sound wave "Lloyd mirror" experiment.
4. Observe and measure double-slit interference and single-slit diffraction of sound wave.

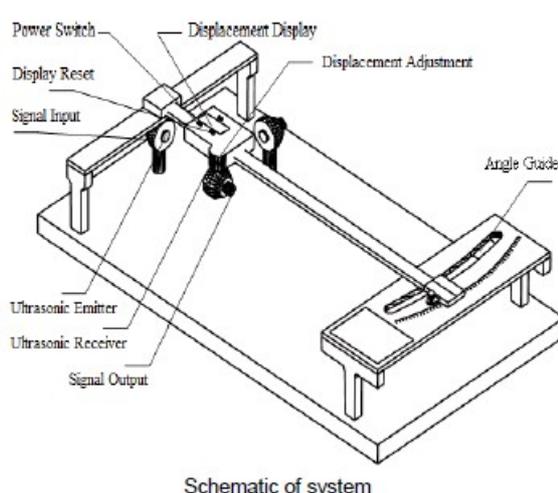
Parts and Specifications

Sine wave signal generator:	Frequency range: 38 ~ 42 kHz; resolution: 1 Hz
Ultrasonic transducer	Piezo-ceramic chip; oscillation frequency: 40.1 ± 0.4 kHz
Vernier caliper	Range: 0 ~ 200 mm; accuracy: 0.02 mm
Ultrasonic receiver	Rotational range: $-90^\circ \sim 90^\circ$; unilateral scale: $0^\circ \sim 20^\circ$; division: 1°
Measurement accuracy	<2% for phase method

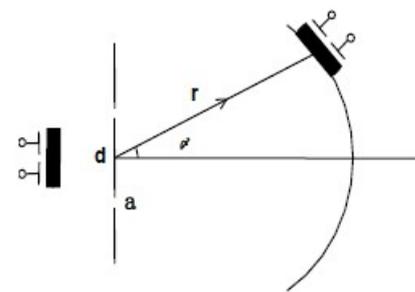
Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.

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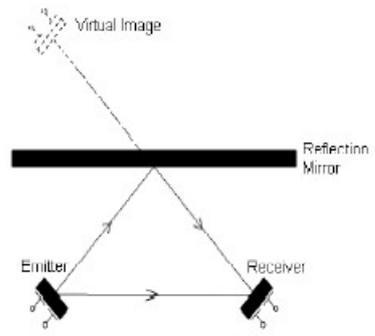
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Schematic of system



Double-slit interference



Interference by Lloyd mirror

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