SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NAAC – UGC with 'A' Grade

Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE NAME :19EE603 IoT for Electrical Engineers

III YEAR /VI SEMESTER

Unit 2-Sensors

Electrostatic Transducer

Applications of Electrostatic Transducer

- High-End Audio Systems
- Public Address Systems
- Headphones and Earphones
- Telecommunication Devices
- Medical Devices
- Gaming and Virtual Reality (VR) Systems
- Automotive Audio Systems
- Public Entertainment Venues
- Custom Installations
- Military and Aerospace Applications

What is Electrostatic Transducer???

Electrostatic Transducer

- An electrostatic transducer comprising a vibrating plate or electret diaphragm which has a monocharge on its surface and including a pair of back electrodes clamping the electret there between and including an electrically conductive electrostatic shield covering the back electrodes so as to increase the fidelity and life of the transducer.
- Electrostatic transducers are made up of a fixed electrode and a movable electrode, charged electrostatically in opposite polarity; motion of the movable electrode changes the capacitance between the electrodes and thereby makes the applied voltage change in proportion to the amplitude of the electrode's motion.

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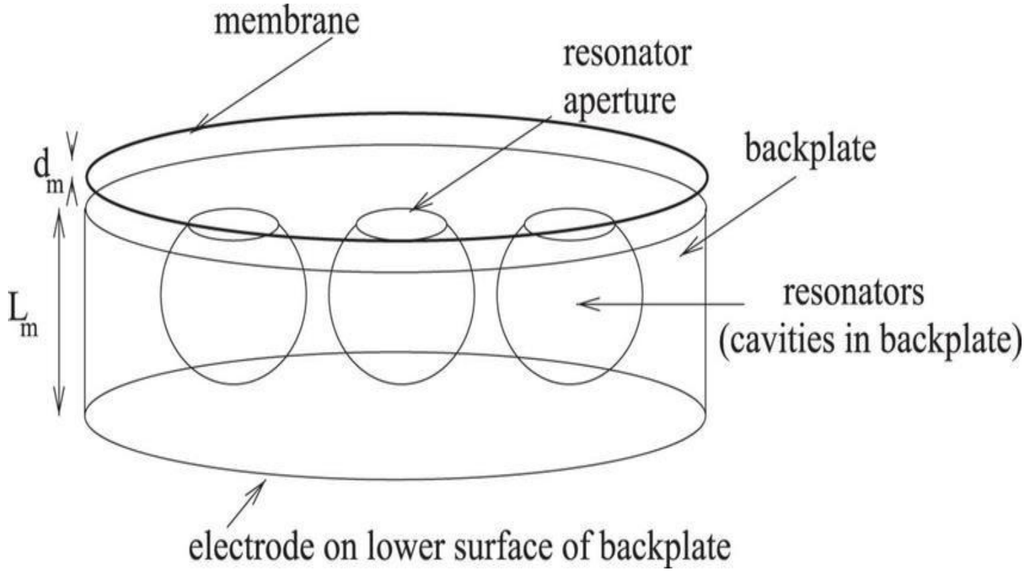


WHAT IS THE DIFFERENCE BETWEEN PIEZOELECTRIC AND ELECTROSTATIC TRANSDUCER?

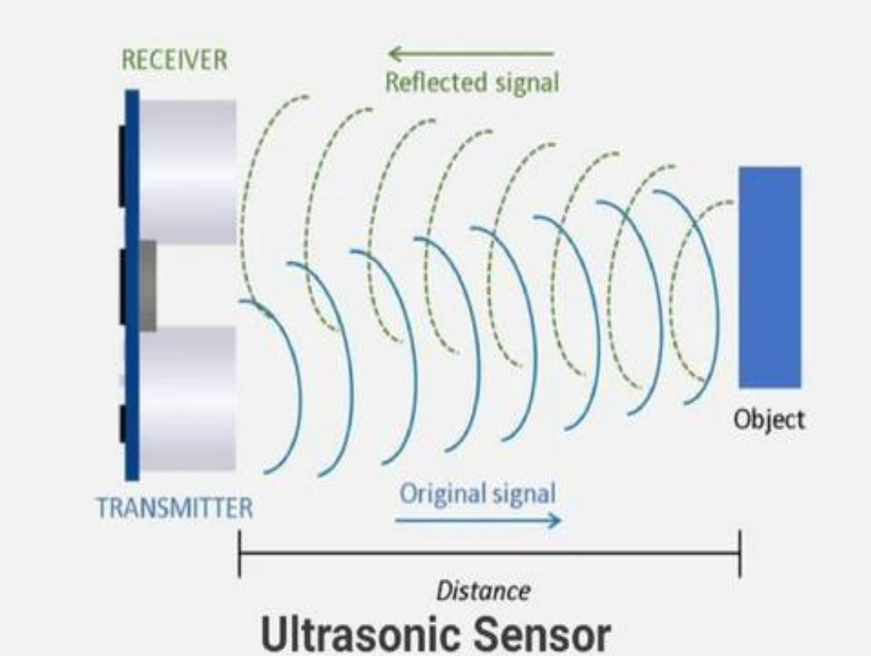
- The main difference between the two is that piezoelectric transducers use a ceramic material whereas electrostatic transducers contain a thin metal membrane. While their materials differ, they both rely on the piezoelectric effect in order to function.

WHAT IS ULTRASONIC SENSOR?

Ultrasonic sensors are electronic devices that calculate the target's distance by emission of ultrasonic sound waves and convert those waves into electrical signals. The speed of emitted ultrasonic waves traveling speed is faster than the audible sound.

WORKING PRINCIPLE

Ultrasonic sensor working principle is either similar to sonar or radar which evaluates the target/object attributes by understanding the received echoes from sound/radio waves correspondingly. These sensors produce high-frequency sound waves and analyze the echo which is received from the sensor. The sensors measure the time interval between transmitted and received echoes so that the distance to the target is known.



Assessment

Where can be the ultrasonic sensor used??

References

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- Patranabis, D., “Sensors and Transducers”, PHI Learning Private Limited, New Delhi, 3rd Edition, 2009.
- Raj Kamal, “Internet of Things: Architecture and Design Principles”, McGraw Hill Education (India) Private Limited, Chennai, 2017.
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