



Abstract

An ultrasonic transducer is a device that will convert current into ultrasound which will be transmitted at a specific frequency (in this case 40KHz as the human ear can only hear up to around 20KHz) the device can silently transmit a sound signal to detect a certain obstacle to rebound off of that obstacle to be received by the transceiver for analysis. These devices come in handy within many fields such as medicine for ultrasound scans, used in parking sensors for cars where the signal will detect other cars to avoid collision. It can also be used in factories where automated systems.

Hypothesis

The question behind this report is whether a distance measurement device (in this case similar to a tape measure) can be created using ultrasound with transducers and then the time taken for receipt can be converted into a specific unit of measurement. Research will be taken out in the specific subjects needed to aid the project and the final creation of the prototype.

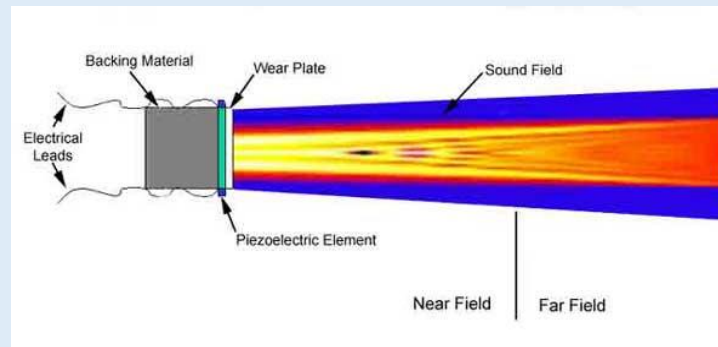
Aims and Objectives

The aim of this project is to create a working prototype of a distance measurement system which will include the following applications:

- Ultrasonic transducers to oscillate a 40KHz ultrasound signal to be able to bounce off of an obstacle and be received in a transceiver.
- Display which will demonstrate the distance in units such as centimetres and millimetres and display on an LCD screen.



[2]



[1]

A brief explanation of the use of an ultrasonic transducer showing how the ultrasound is executed.

Methodology

The device will include many different components to allow the correct uses that will be added to a board throughout the project these are as follows:

- PIC Microcontroller to allow complex coding for the signal to be transmitted and the calculations for the display
- Ultrasonic Transmitter/Transceiver for the ultrasound signal
- LCD Display to produce the distance that has been measured.