

# Ultrasonic Distance Meter

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## Introduction

The Ultrasonic Distance Meter is a device that measures the distance of objects using ultrasonic sensors. The system works by emitting ultrasonic waves and measuring the time taken for the waves to reflect back after hitting an object.

## System Overview

The primary components of the system include an ultrasonic sensor, a microcontroller (like Arduino), and an LCD display. The ultrasonic sensor emits a pulse and detects the echo to calculate the distance.

## Block Diagram

## Code Snippet

The following code is used to interface the ultrasonic sensor with an LCD:

```
#include <LiquidCrystal.h>
LiquidCrystal lcd(12, 11, 5, 4, 3, 2);
const int trigPin = 9;
const int echoPin = 10;

void setup() {
    lcd.begin(16, 2);
    pinMode(trigPin, OUTPUT);
    pinMode(echoPin, INPUT);
}

void loop() {
    digitalWrite(trigPin, LOW);
```

```
    delay(2);  
    digitalWrite(trigPin , HIGH);  
    delay(10);  
    digitalWrite(trigPin , LOW);  
    long duration = pulseIn(echoPin , HIGH);  
    int distance = duration * 0.034 / 2;  
    lcd.print("Distance:~");  
    lcd.print(distance);  
    lcd.print("~cm");  
    delay(1000);  
}
```

## Output

## Conclusion

The Ultrasonic Distance Meter effectively measures distance using ultrasonic technology. This project demonstrates the application of sensors in practical scenarios, integrating both hardware and software components.