

Lampiran A

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#include <ESP8266WiFi.h>
#include "ACS712.h"
#include <LiquidCrystal_I2C.h>

const int sensorPin = D4; // Pin untuk sensor rpm
volatile int pulseCount = 0;
unsigned long oldTime = 0;
float speed = 0;

LiquidCrystal_I2C lcd(0x27, 20, 4);

const int pinBLDC1 = D5;
const int pinBLDC2 = D6;
const int pinREM1 = D7;
const int pinREM2 = D8;
int Conter = 0;
int hitung = 0;
int nilai;
int nilaiR;

const int sensorPinarus = A0;
// Define the number of samples to take for smoothing
const int numSamples = 50;
// Define the voltage at the middle point (when no current flows) for a
5V system
const float zeroCurrentVoltage = 2.5;
// Sensitivity for ACS712 5A (185 mV/A)
const float sensitivity = 0.185;

void IRAM_ATTR countPulse() {
    pulseCount++;
}

void setup() {
    Serial.begin(9600);
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lcd.init();
lcd.backlight();
pinMode(D3, OUTPUT);
pinMode(D4, INPUT);
pinMode(D6, INPUT_PULLUP); //pin sensor rpm
pinMode(D5, OUTPUT);
pinMode(pinBLDC1, INPUT);
pinMode(pinBLDC2, INPUT);
pinMode(pinREM1, INPUT);
pinMode(pinREM2, INPUT);
pinMode(sensorPin, INPUT_PULLUP);
// Attach interrupt untuk menghitung pulsa
attachInterrupt(digitalPinToInterrupt(sensorPin), countPulse,
FALLING);

}

void loop() {
kontrol();
TampilanLCD();
RPM();
Arus();
BLDC();
REM();
}

void TampilanLCD(){ // tampilan pada lcd
lcd.setCursor(0, 0);
lcd.print("KONTROL REM MAGNETIK");
lcd.setCursor(3, 1);
lcd.print("ARUS");
lcd.setCursor(13, 1);
lcd.print("RPM");
}

void RPM(){ // rpm

unsigned long currentTime = millis();
unsigned long elapsedTime = currentTime - oldTime;

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if (elapsedTime >= 1000) { // Hitung kecepatan setiap detik
    detachInterrupt(digitalPinToInterrupt(sensorPin));

    // Menghitung kecepatan (misalnya rotasi per menit, RPM)
    speed = (pulseCount / (elapsedTime / 1000.0)) * 60.0; // Kalibrasi
    sesuai dengan jumlah lubang pada disk atau objek

    // Reset penghitungan
    pulseCount = 0;
    oldTime = currentTime;

    // Tampilkan kecepatan di Serial Monitor
    Serial.print("Kecepatan: ");
    Serial.print(speed);
    Serial.println(" RPM");
    lcd.setCursor(12, 2);
    lcd.print(speed);
    if (speed <= 0){
        lcd.setCursor(12,2);
        lcd.print(" 0 ");
    }

    attachInterrupt(digitalPinToInterrupt(sensorPin), countPulse,
    FALLING);
    }
    delay(500);
}

void Arus(){
    // Variable to hold the sum of analog readings
    long sensorValueSum = 0;

    // Take multiple readings to smooth out the noise
    for (int i = 0; i < numSamples; i++) {
        sensorValueSum += analogRead(sensorPinarus);
        delay(1);
    }
}

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// Calculate the average sensor value
float averageSensorValue = sensorValueSum / numSamples;

// Convert the average analog reading to voltage
float voltage = averageSensorValue * (5.0 / 1024.0);

// Calculate the current in Amperes
float current = (voltage - zeroCurrentVoltage) / sensitivity;

// Print the current value to the serial monitor
Serial.print("Current: ");
Serial.print(current);
Serial.println(" A");

// Wait for a short time before taking the next reading
delay(500);
}
void kontrol(){
  analogWrite(D0, nilai);//value dari push button
  Serial.print("Value Motor= ");
  Serial.println(nilai);
  delay(100);
  analogWrite(D3, nilaiR);//value dari push button
  Serial.print("Value Rem= ");
  Serial.println(nilaiR);
  delay(100);

  lcd.setCursor(3,2);
  lcd.print(arus);
  lcd.print("A");
  Serial.print("Arus: ");
  Serial.print(arus);
  Serial.println(" A");
  delay(500);
}

void BLDC(){
  if( digitalRead(pinBLDC2)){
    Conter--;

```

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    nilai = Conter * 25;
    delay(250);
    Serial.print("value BLDC = ");
    Serial.println(Conter);
    Serial.println(nilai);
}

if( digitalRead(pinBLDC1)){
    Conter++;
    nilai = Conter * 25;
    delay(250);
    Serial.print("value BLDC = ");
    Serial.println(Conter);
    Serial.println(nilai);
}
lcd.setCursor(1, 3);
lcd.print("BLDC= ");
lcd.setCursor(7, 3);
lcd.print(nilai);
if(nilai <=0){
    lcd.setCursor(7,3);
    lcd.print(" 0 ");
}

}

void REM(){
    if( digitalRead(pinREM2)){
        hitung--;
        nilaiR = hitung * 25;
        delay(250);
        Serial.print("value REM = ");
        Serial.println(hitung);
        Serial.println(nilaiR);
    }
}

if( digitalRead(pinREM1)){
    hitung++;
    nilaiR = hitung * 25;

```

```
delay(250);
Serial.print("value REM = ");
Serial.println(hitung);
Serial.println(nilaiR);
}
lcd.setCursor(11, 3);
lcd.print(" REM= ");
lcd.setCursor(17, 3);
lcd.print(nilaiR);
if(nilaiR <=0){
lcd.setCursor(17,3);
lcd.print(" 0 ");
}
}
```

Lampiran B
Dokumentasi



Tampilan pada LCD

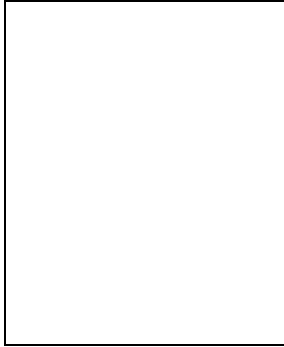


Tampak keseluruhan alat



Tampak samping pada alat

BIODATA PENULIS



Nama : Alifiyah Khoerunnisa
Tempat/Tanggal lahir : Banyumas, 18 Februari 2003
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Banyumas.
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Hobi : Membaca Novel
Motto : Lembah manah lan andhap asor

Riwayat Pendidikan

- SD Negeri Lebeng Tahun 2009-2015
- SMP Negeri 2 Sumpiuh Tahun 2015-2018
- SMK Giripuro Sumpiuh Tahun 2018-2021
- Politeknik Negeri Cilacap Tahun 2021-2024
Prodi D3 Teknik Elektronika