

LAMPIRAN

Lampiran 1 : Program Arduino

```
#include <Wire.h>

#include <LiquidCrystal_I2C.h>

#include <PZEM004Tv30.h>

#include "WiFi.h"

#include <OneWire.h>

#include <DallasTemperature.h>

//2 5 15

#define max_arus 3 // untuk menentukan arus maksimal dari alat

#define BUILTIN_LED 2

#define pin_relay1 13

#define pin_relay2 27

#define pin_relay3 14

#define ONE_WIRE_BUS 2

#define pin_speed1 26

#define pin_speed2 25

#define pin_speed3 33

#define pin_buzzer 5

#define pi 3.14

#define period 5000

#define radio 80 // Distance from center windmill to outer cup (mm)
```

```
#define jml_celah 2 // jumlah celah sensor

#define DEBOUNCE_TIME 50

#define relay1_on digitalWrite(pin_relay1,LOW)
#define relay1_off digitalWrite(pin_relay1,HIGH)

#define relay2_on digitalWrite(pin_relay2,LOW)
#define relay2_off digitalWrite(pin_relay2,HIGH)

#define relay3_on digitalWrite(pin_relay3,LOW)
#define relay3_off digitalWrite(pin_relay3,HIGH)

LiquidCrystal_I2C lcd(0x3F, 20, 4);
PZEM004Tv30 pzem_r(&Serial2);

// Setup a oneWire instance to communicate with any OneWire devices (not just
Maxim/Dallas temperature ICs)

OneWire oneWire(ONE_WIRE_BUS);

// Pass our oneWire reference to Dallas Temperature.

DallasTemperature sensors(&oneWire);

#define led_on digitalWrite(BUILTIN_LED,HIGH)
```

```
#define led_off digitalWrite(BUILTIN_LED,LOW)
```

```
const char * ssid = "Kecepatandaya";
```

```
const char * password = "kecepatandaya";
```

```
const char* host = "speed.monitoringonline.net";
```

```
const int httpPort = 80;
```

```
WiFiClient client;
```

```
long last_millis;
```

```
String data_bt;
```

```
bool flag_wifi;
```

```
int cahaya;
```

```
float suhu,kelembaban;
```

```
String wifi,last_logic,logic_R2,logic_R1,logic_R3,logic_R4;
```

```
float vr = 0;
```

```
float ir;
```

```
float freq;
```

```
float pf_r;
```

```
float energy;
```

```
float power;
```

```
unsigned int RPM1 = 0; // Revolutions per minute
```

```
unsigned int RPM2 = 0; // Revolutions per minute

unsigned int RPM3 = 0; // Revolutions per minute

long counter;

volatile uint32_t DebounceTimer = 0;

long last_millis_send;

void IRAM_ATTR buttonpressed() {
  if ( millis() - DEBOUNCE_TIME >= DebounceTimer ) {
    DebounceTimer = millis();
    counter += 1;
  }
}

void setup() {
  lcd.begin();
  sensors.begin();
  Serial.begin(9600);
  Serial2.begin(9600);

  pinMode(pin_relay1,OUTPUT);

  pinMode(pin_relay2,OUTPUT);

  pinMode(pin_relay3,OUTPUT);

  pinMode(pin_buzzer,OUTPUT);
```

```
digitalWrite(pin_buzzer,LOW);

relay_off();

pinMode(BUILTIN_LED, OUTPUT);

digitalWrite(BUILTIN_LED, LOW);

Serial.print("Connecting...");

WiFi.mode(WIFI_STA);
WiFi.begin(ssid, password);

led_off;

lcd.setCursor(0,0);
lcd.print("Connecting...");
lcd.setCursor(0,1);
lcd.print(ssid);

int aa=0;

long last_mil=millis();

while (WiFi.status() != WL_CONNECTED) {

    if ((millis()-last_mil)>20000){
```

```
    last_mil=0;

    aa=1;

    break;

}

delay(100);

led_on;

delay(100);

led_off;

delay(100);

}

lcd.clear();

if (aa==0){

    lcd.setCursor(0,0);

    lcd.print("WiFi connected!");

    lcd.setCursor(0,1);

    lcd.print(WiFi.localIP());

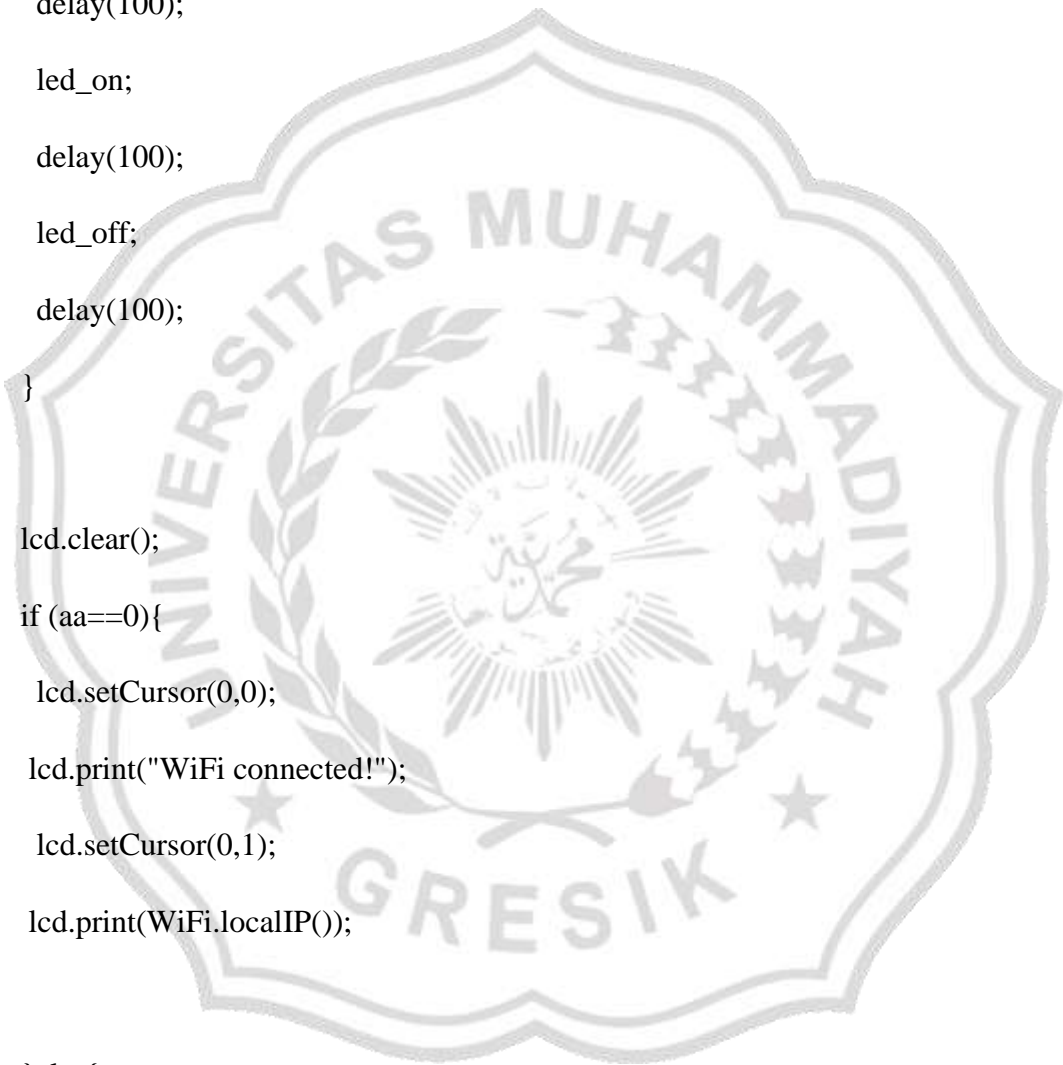
}

else{

    lcd.setCursor(0,0);

    lcd.print("WiFi Error!");

    lcd.setCursor(0,1);
```



```
lcd.print("Check Connection !!");

}

delay(3000);

lcd.clear();

digitalWrite(BUILTIN_LED, HIGH);

Serial.println(WiFi.localIP());

lcd.setCursor(0,0);

lcd.print(" SMART RELAY ");

lcd.setCursor(0,1);

lcd.print(" V1 ");

delay(3000);

pinMode(pin_speed1, INPUT_PULLUP);

pinMode(pin_speed2, INPUT_PULLUP);

pinMode(pin_speed3, INPUT_PULLUP);

}

int tampilan;

int koneksi_ulang;

void loop() {

    baca_pzem();
```

```
if (ir > 0.7){ // untuk menentukan arus maksimal dari alat

    lcd.clear();

    lcd.setCursor(0,0);

    lcd.print(" ARUS OVERLOAD !");

    lcd.setCursor(0,1);

    lcd.print("RESTART TO SETUP");

    relay1_off;

    relay2_off;

    relay3_off;

    while(1){

        digitalWrite(pin_buzzer,HIGH);

        delay(100);

        digitalWrite(pin_buzzer,LOW);

        delay(100);

    }

}

sensors.requestTemperatures(); // Send the command to get temperatures

suhu = sensors.getTempCByIndex(0);

if (WiFi.status() == WL_CONNECTED){
```



```
wifi="Connect";  
  
delay(100);  
  
led_on;  
  
delay(100);  
  
led_off;  
  
delay(100);  
  
}else{  
    wifi="Disconnect";  
    delay(100);  
    led_on;  
    delay(100);  
    led_off;  
    delay(100);  
}  
  
if ((millis()-last_millis)>2000){  
    tampilan++;  
    if (wifi=="Disconnect"){  
        koneksi_ulang++;  
    }  
    last_millis=millis();  
}
```



```
}  
  
if (koneksi_ulang>10){  
    WiFi.mode(WIFI_STA);  
    WiFi.begin(ssid, password);  
    long last_mil=millis();  
    while (WiFi.status() != WL_CONNECTED) {  
        if ((millis()-last_mil)>10000){  
            break;  
        }  
        delay(100);  
        led_on;  
        delay(100);  
        led_off;  
        delay(100);  
        koneksi_ulang=0;  
    }  
}
```

```
read_sensor1();
```

```
read_sensor2();
```

```
read_sensor3();
```

```
if ((millis()-last_millis_send)>5000){
```

```
String logic = "Speed1="+String(RPM1)+"&Speed2="+String(RPM2)+
```

```
"&Speed3="+String(RPM3)+"&Daya="+String(power);
```

```
String respons = send("/php/update.php?" + logic);
```

```
Serial.println("Respons Logic =" + respons);
```

```
last_millis_send=millis();
```

```
}
```

```
lcd.setCursor(0,0);
```

```
lcd.print("P:"+String(power)+"|V:"+String((int)vr)+"|I:"+String(ir)+" ");
```

```
lcd.setCursor(0,1);
```

```
lcd.print("Speed1:"+String(RPM1)+"RPM ");
```

```
    lcd.setCursor(0,2);
```

```
lcd.print("Speed2:"+String(RPM2)+"RPM ");
```

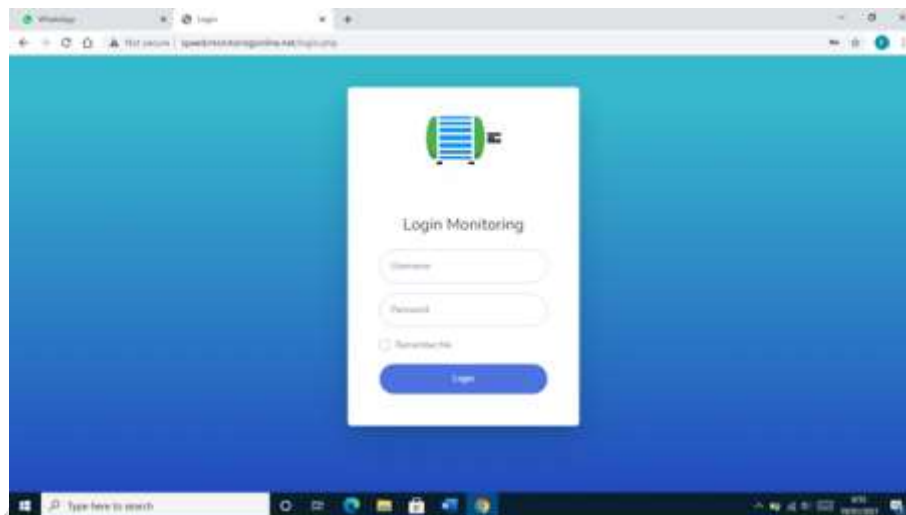
```
    lcd.setCursor(0,3);
```

```
lcd.print("Speed3:"+String(RPM3)+"RPM ");
```

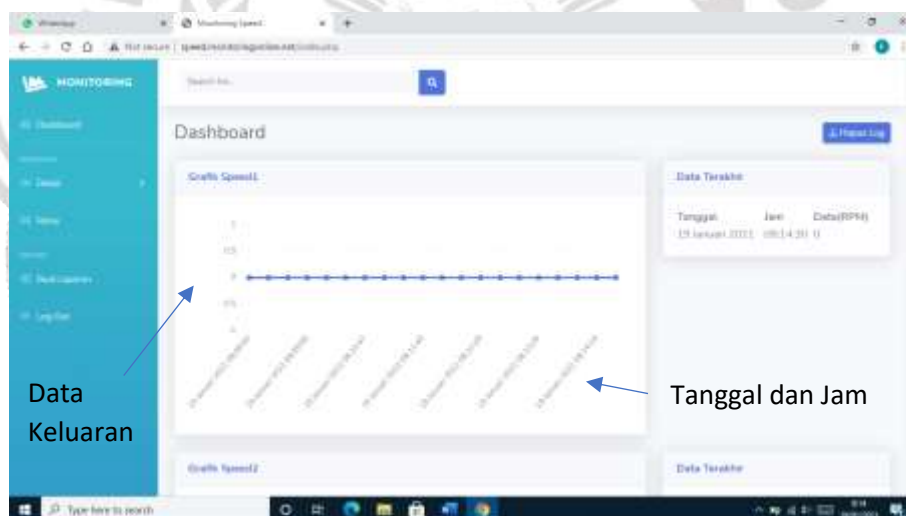
```
}
```

Lampiran 2 : Data Pengukuran Alat Monitoring

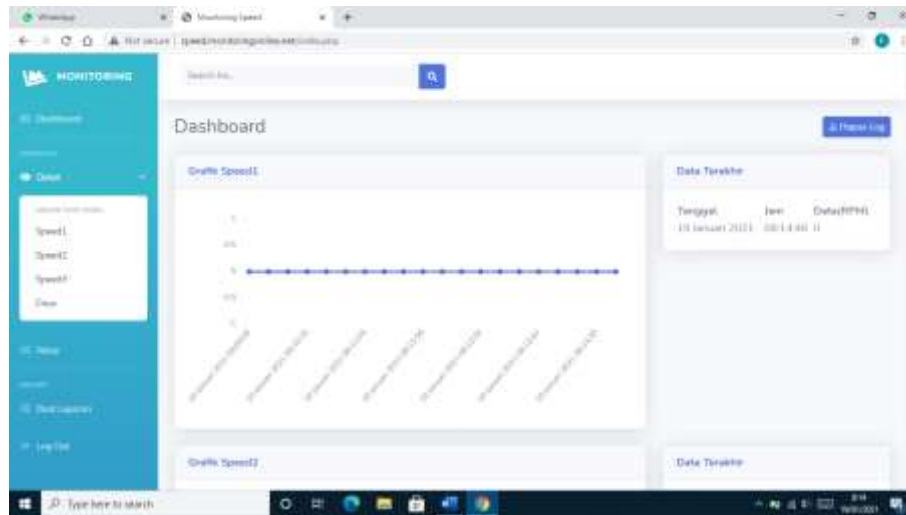
Menu Log In



Menu Dashboard



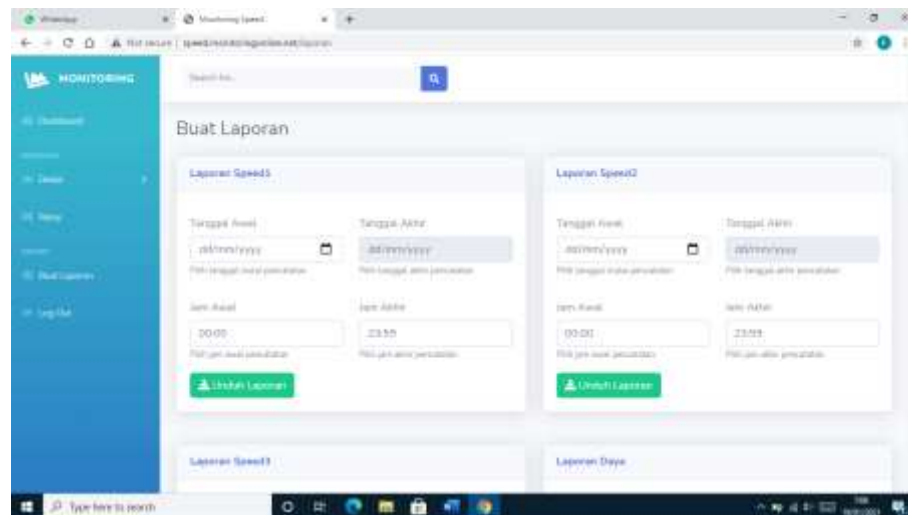
Menu Detail



Menu Relay

The screenshot shows a web browser window with the URL `http://localhost:8080/monitoring-speed/relay`. The page is titled "Monitoring Speed" and features a sidebar menu with options like "Dashboard", "Data", "Relay", "Status Laporan", and "Log File". The main content area is titled "Ubah Kondisi Relay" and contains three panels for "Relay 1", "Relay 2", and "Relay 3". Each panel shows the relay's current status (e.g., "Relay : OFF") and a dropdown menu for "Ubah Kondisi" with "ON" selected. Below each dropdown is a green button labeled "Simpan perubahan".

Menu Buat Laporan dan Hapus Log



Laporan Speed1

Tanggal : 19 Januari 2021 sampai 19 Januari 2021

Jam : 08.30:00 sampai 08.40:00

Tabel Speed1

Nomor	Tanggal	Jam	Data
1	19 Januari 2021	08:30:08	900
2	19 Januari 2021	08:30:24	900
3	19 Januari 2021	08:30:40	888
4	19 Januari 2021	08:31:01	900
5	19 Januari 2021	08:31:17	900
6	19 Januari 2021	08:31:34	900
7	19 Januari 2021	08:31:50	900
8	19 Januari 2021	08:32:06	900
9	19 Januari 2021	08:32:22	900
10	19 Januari 2021	08:32:38	900
11	19 Januari 2021	08:32:59	900

Laporan Speed2

Tanggal : 19 Januari 2021 sampai 19 Januari 2021

Jam : 08.30:00 sampai 08.40:00

Tabel Speed2

Nomor	Tanggal	Jam	Data
1	19 Januari 2021	08:30:08	900
2	19 Januari 2021	08:30:24	900
3	19 Januari 2021	08:30:40	900
4	19 Januari 2021	08:31:01	900
5	19 Januari 2021	08:31:17	888
6	19 Januari 2021	08:31:34	900
7	19 Januari 2021	08:31:50	900
8	19 Januari 2021	08:32:06	900
9	19 Januari 2021	08:32:22	912
10	19 Januari 2021	08:32:38	900
11	19 Januari 2021	08:32:59	900

Laporan Speed3

Tanggal : 19 Januari 2021 sampai 19 Januari 2021

Jam : 08.30:00 sampai 08.40:00

Tabel Speed3

Nomor	Tanggal	Jam	Data
1	19 Januari 2021	08:30:08	876
2	19 Januari 2021	08:30:24	888
3	19 Januari 2021	08:30:40	888
4	19 Januari 2021	08:31:01	888
5	19 Januari 2021	08:31:17	888
6	19 Januari 2021	08:31:34	888
7	19 Januari 2021	08:31:50	876
8	19 Januari 2021	08:32:06	888
9	19 Januari 2021	08:32:22	888
10	19 Januari 2021	08:32:38	888
11	19 Januari 2021	08:32:59	888

Laporan Daya

Tanggal : 19 Januari 2021 sampai 19 Januari 2021

Jam : 08.30:00 sampai 08.40:00

Tabel Daya

Nomor	Tanggal	Jam	Data
1	19 Januari 2021	08:30:08	143.20
2	19 Januari 2021	08:30:24	142.70
3	19 Januari 2021	08:30:40	142.80
4	19 Januari 2021	08:31:01	143.30
5	19 Januari 2021	08:31:17	143.20
6	19 Januari 2021	08:31:34	143.20
7	19 Januari 2021	08:31:50	142.50
8	19 Januari 2021	08:32:06	142.80
9	19 Januari 2021	08:32:22	143.10
10	19 Januari 2021	08:32:38	142.80
11	19 Januari 2021	08:32:59	142.90

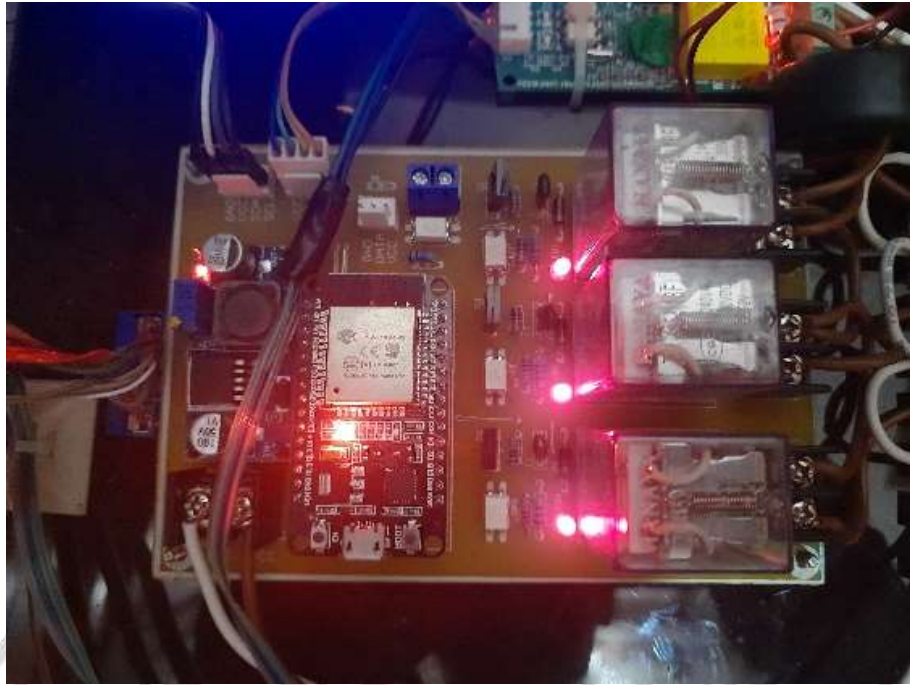
Lampiran 3 : Foto Pengujian Alat Monitoring













Lampiran 4 : Daftar Riwayat Hidup



A. BIODATA DIRI

1. Nama Lengkap : Mokhtar Fahrur Rozi
2. Tempat, Tanggal Lahir : Gresik, 04 Juni 1997
3. Jenis Kelamin : Laki - Laki
4. Kewarganegaraan : Indonesia
5. Tinggi, Berat badan : 168, 55 Kg
6. Golongan Darah : -
7. Agama : Islam
8. Status : Lajang/Belum Menikah
9. Alamat : JL. Veteran 9F1 No.02 RT:04 / RW:02
Kec.Kebomas Kab.Gresik
10. No Handphone : 083832725542
11. Email : fahrurr1997@gmail.com

B. RIWAYAT PENDIDIKAN

1. 2002 – 2004 : TK DHARMA WANITA PERSATUAN
INDRO
2. 2004 – 2010 : SD NEGERI INDRO
3. 2010 – 2013 : MTS NU TRATE GRESIK
4. 2013 – 2016 : SMK PGRI 1 GRESIK
5. 2016 – 2021 : UNIVERSITAS MUHAMMADIYAH
GRESIK

