

LAMPIRAN

1. Program Mikrokontroler pada Arduino IDE

```
#include <L298N.h>
#include <Wire.h>
const int sensorhujanA = A5;
const int sensorhujanB = A6;
int data_SH;
boolean limitSW_open;
boolean limitSW_close;
int R1 = 41;
int R2 = 31;
int sensorA_Min = 1023; // minimum sensor value
int sensorA_Max = 0; // maximum sensor value
int nilaisensorA = 0;
int MnilaisensorA ;
int sensorB_Min = 1023; // minimum sensor value
int sensorB_Max = 0; // maximum sensor value
int nilaisensorB = 0;
int MnilaisensorB ;
int data;
int datab;
float datavoutA ;
float datavoutB;
int vcc = 5;
int resolusi = 1023;
int cerah;
int lo = 24;
int lc = 25;
int unsigned long ulangi;
int waktu = 3000;
const int EN = 2;
const int IN1 = 26;
const int IN2 = 27;
#include <LiquidCrystal_I2C.h>
#include <Wire.h>
LiquidCrystal_I2C lcd (0x27, 20, 4);
```

```

void setup() {
  Wire.begin();
  Serial.begin(9600);
  while (!Serial)
  {
  }

  pinMode (sensorhujanA, INPUT);
  pinMode (sensorhujanB, INPUT);
  pinMode (lo, INPUT);
  pinMode (lc, INPUT);
  pinMode (EN, OUTPUT);
  pinMode (IN1, OUTPUT);
  pinMode (IN2, OUTPUT);
  pinMode (R1, OUTPUT);
  pinMode (R2, OUTPUT);
  lcd.begin();
  lcd.backlight();
  lcd.setCursor(0, 0);
  lcd.print("T.ELEKTRO--UNTAG SBY");
  lcd.setCursor(0,1);
  lcd.print("Theo Indrabudi .T");
  lcd.setCursor(0,2);
  lcd.print("1451700066");
  }

void loop() {
  limitSW_open = digitalRead (lo);
  limitSW_close = digitalRead (lc);
  relay2();
  relay1();
  ReadSensor();
  kanopitutup1();
  kanopitutup2();
  kanopitutup3();
  kanopibuka();

  }

```

```

void ReadSensor (){
unsigned long Currentmillis = millis();
if ((Currentmillis - ulangi) > waktu){
ulang = Currentmillis ;
nilaisensorA = analogRead(sensorhujanA);
MnilaisensorA = map(nilaisensorA,sensorA_Min, sensorA_Max, 0,1023);
nilaisensorB = analogRead(sensorhujanB);
MnilaisensorB = map(nilaisensorB,sensorB_Min, sensorB_Max, 0,1023);
Serial.println( "dataMAP");
Serial.println( MnilaisensorA);
Serial.println(MnilaisensorB);
data = ( MnilaisensorA + MnilaisensorB )/ 2;
data_SH = data ;
Serial.println( data_SH);
Serial.println( "dataReal");
Serial.println( nilaisensorA);
Serial.println(nilaisensorB);
datab = ( nilaisensorA + nilaisensorB )/ 2;
Serial.println(datab);
}
}

void kanopitutup1(){
if (data_SH > 20 && data_SH < 365 && limitSW_close == LOW) {
digitalWrite (IN1, HIGH);
digitalWrite (IN2,LOW);
analogWrite (EN,128);
lcd.setCursor(0, 3);
lcd.print("Hujan Gerimis");
}
else{
digitalWrite (IN1, LOW);
digitalWrite (IN2,LOW);
analogWrite (EN, 0 );
}
}
}

```

```

void kanopitutup2(){
if (data_SH > 366 && data_SH < 634 && limitSW_close == LOW) {
    digitalWrite (IN1, HIGH);
    digitalWrite (IN2,LOW);
    analogWrite (EN,191);
    lcd.setCursor(0, 3);
    lcd.print("Hujan Sedang");
}
    else{
        digitalWrite (IN1, LOW);
        digitalWrite (IN2,LOW);
        analogWrite (EN, 0 );
    }
}
void kanopitutup3(){
if (data_SH > 634 && limitSW_close == LOW) {
    digitalWrite (IN1, HIGH);
    digitalWrite (IN2,LOW);
    analogWrite (EN,255);
    lcd.setCursor(0, 3);
    lcd.print("Hujan Deras");
}
    else{
        digitalWrite (IN1, LOW);
        digitalWrite (IN2,LOW);
        analogWrite (EN, 0 );
    }
}
void kanopibuka(){
if (data_SH >= 0 && data_SH < 17 && limitSW_open == LOW) {
    digitalWrite (IN2, HIGH);
    digitalWrite (IN1,LOW);
    analogWrite (EN,128);
    lcd.setCursor(0, 3);
    lcd.print("Tidak Hujan");
}
    else {
        digitalWrite (IN2, LOW);
        digitalWrite (IN1,LOW);
        analogWrite (EN, 0 );
    }
}
}

```

```
void relay1(){
  if ( limitSW_open == HIGH ){
    digitalWrite (R1,HIGH);
  }
  else {
    digitalWrite (R1,LOW);
  }
}
void relay2(){
  if ( limitSW_close == HIGH ){
    digitalWrite (R2,HIGH);
  }
  else {
    digitalWrite (R2,LOW);
  }
}
```

2. Gambar Hasil Akhir Prototype Atap Kanopi Otomatis

