

LAMPIRAN A

Program Arduino

```
#include <Servo.h>
#include <HX711.h>
#include <LiquidCrystal_I2C.h>

#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <Servo.h>

LiquidCrystal_I2C lcd(0x27, 20, 4);
Servo myservo1; // Membuat objek servo untuk mengontrol motor
servo
Servo myservo2;

#include "HX711.h"
HX711 scale(34, 35); // parameter "gain" is omitted; the default value
128 is used by the library

int pos1 = 0; // Variabel untuk menyimpan posisi servo
int pos2 = 0;

float baut;
float avg;
//driver1
const int in1Pin = 30; //konveyor1
const int in2Pin = 31;
const int enAPin = 4;

//driver2
const int in1Pin2 = 7; //konveyor2
const int in2Pin2 = 8;
const int enAPin2 = 9;
const int in3Pin2 = 10; //konveyor3
const int in4Pin2 = 11;
const int enBPin2 = 12;
const int irSensorPin1 = 48;
```

```

int phase0 = 0;
int phase1 = 0;
int phase2 = 0;
int phase3 = 0;

int pb1 = 46;
int pb2 = 47;

int count1 = 0;
int count2 = 0;
int countTotal = 0;

void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  pinMode(enAPin, OUTPUT); //konveyor1
  pinMode(in1Pin, OUTPUT);
  pinMode(in2Pin, OUTPUT);
  pinMode(enAPin2, OUTPUT); //konveyor2
  pinMode(in1Pin2, OUTPUT);
  pinMode(in2Pin2, OUTPUT);
  pinMode(enBPin2, OUTPUT); //konveyor3
  pinMode(in3Pin2, OUTPUT);
  pinMode(in4Pin2, OUTPUT);
  pinMode(power_window, OUTPUT);
  digitalWrite(power_window, HIGH);
  pinMode(irSensorPin1, INPUT);
  pinMode(pb1, INPUT_PULLUP);
  pinMode(pb2, INPUT_PULLUP);
  Wire.begin();
  lcd.init();
  lcd.backlight();

  myservo1.attach(5);
  myservo2.attach(6); //servo2
  myservo1.write(7);
  myservo2.write(21);

  lcd.clear();
}

```

```

lcd.setCursor(0, 1);
lcd.print(" Waiting for Setup! ");

Serial.println("HX711 Demo");

Serial.println("Before setting up the scale:");
Serial.print("read: \t\t");
Serial.println(scale.read()); // print a raw reading from the ADC

Serial.print("read average: \t\t");
Serial.println(scale.read_average(20)); // print the average of 20
readings from the ADC

Serial.print("get value: \t\t");
Serial.println(scale.get_value(5)); // print the average of 5 readings
from the ADC minus the tare weight (not set yet)

Serial.print("get units: \t\t");
Serial.println(scale.get_units(5), 1); // print the average of 5 readings
from the ADC minus tare weight (not set) divided
// by the SCALE parameter (not set yet)

scale.set_scale(2280.f); // this value is obtained by calibrating the scale
with known weights; see the README for details
scale.tare();

// Awal motor berhenti
digitalWrite(in1Pin, LOW);
digitalWrite(in2Pin, LOW);
digitalWrite(in1Pin2, LOW);
digitalWrite(in2Pin2, LOW);
digitalWrite(in3Pin2, LOW);
digitalWrite(in4Pin2, LOW);

lcd.clear();
lcd.setCursor(0, 1);
lcd.print("  System Ready  ");

delay(3000);

```

```

}

void loop() {
  // put your main code here, to run repeatedly:
  //timbang();
  // proximity1 read

  while (phase0 == 0 && phase1 == 0 && phase2 == 0 && phase3 ==
0) {
    // power window naik turun
    int proximity1 = digitalRead(irSensorPin1);
    Serial.println(proximity1); // proximity1 detect screw
    if (proximity1 == 0 && phase1 == 0) {
      //delay(1000);
      Serial.println("phase 1");
      countTotal = countTotal + 1;
      phase1 = 1;
    }
    Serial.println("power window dan conveyor1 hidup");
    digitalWrite(power_window, LOW);
    digitalWrite(in1Pin, HIGH);
    digitalWrite(in2Pin, LOW);
    analogWrite(enAPin, 55); // kecepatan conveyor1

    avg = scale.get_units();
    proximity1 = digitalRead(irSensorPin1); // proximity1 detect screw
    if (proximity1 == 0 && phase1 == 0) {
      Serial.println("phase 1");
      countTotal = countTotal + 1;
      phase1 = 1;
    }
    int pb1State = digitalRead(pb1);
    int pb2State = digitalRead(pb2);

    if (pb1State == 0) {
      count1 = 0;
      lcd.clear();
    }
    if (proximity1 == 0 && phase1 == 0) {

```

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    Serial.println("phase 1");
    countTotal = countTotal + 1;
    phase1 = 1;
}
if (pb2State == 0) {
    count2 = 0;
    lcd.clear();
}
if (proximity1 == 0 && phase1 == 0) {
    Serial.println("phase 1");
    countTotal = countTotal + 1;
    phase1 = 1;
}
if (pb2State == 0 && pb1State == 0) {
    countTotal = 0;
}
proximity1 = digitalRead(irSensorPin1); // proximity1 detect screw
if (proximity1 == 0 && phase1 == 0) {
    Serial.println("phase 1");
    countTotal = countTotal + 1;
    phase1 = 1;
}
Serial.print("count1 = ");
Serial.println(count1);
Serial.print("count2 = ");
Serial.println(count2);
proximity1 = digitalRead(irSensorPin1); // proximity1 detect screw
if (proximity1 == 0 && phase1 == 0) {
    Serial.println("phase 1");
    countTotal = countTotal + 1;
    phase1 = 1;
}
lcd.setCursor(0, 0);
lcd.print("  Jumlah Screw  ");
lcd.setCursor(0, 1);
lcd.print("  Total Screw = ");
lcd.setCursor(17, 1);
lcd.print(countTotal);
lcd.setCursor(0, 2);

```

```

lcd.print("  screw M3.5 = ");
lcd.setCursor(17, 2);
lcd.print(count1);
proximity1 = digitalRead(irSensorPin1); // proximity1 detect screw
if (proximity1 == 0 && phase1 == 0) {
  Serial.println("phase 1");
  countTotal = countTotal + 1;
  phase1 = 1;
}
lcd.setCursor(0, 3);
lcd.print("  screw M3 = ");
lcd.setCursor(17, 3);
lcd.print(count2);
proximity1 = digitalRead(irSensorPin1); // proximity1 detect screw
if (proximity1 == 0 && phase1 == 0) {
  Serial.println("phase 1");
  countTotal = countTotal + 1;
  phase1 = 1;
}
}
}

if (phase1 == 1) {
  // conveyor1 mati
  phase0 = 1;
  Serial.println("power window dan conveyor1 mati");
  // power window mati
  digitalWrite(power_window, HIGH);
  digitalWrite(in1Pin, LOW);
  digitalWrite(in2Pin, LOW);
  conveyor2();
  conveyor3();
}

if (phase0 == 1) {
  baut = 0;
  scale.power_down(); // put the ADC in sleep mode
  delay(1000);
  scale.power_up();
  lcd.setCursor(0, 0);
}

```

```

lcd.print("  Jumlah Screw  ");
  lcd.setCursor(0, 1);
  lcd.print("  Total Screw = ");
  lcd.setCursor(17, 1);
  lcd.print(countTotal);
  lcd.setCursor(0, 2);
  lcd.print("  screw M3.5 = ");
  lcd.setCursor(17, 2);
  lcd.print(count1);
  lcd.setCursor(0, 3);
  lcd.print("  screw M3 = ");
  lcd.setCursor(17, 3);
  lcd.print(count2);

  if (phase2 == 0 && phase3 == 0) {
    //delay(2000);
    timbang();
  }
  while (baut >= 0.3 && baut <= 0.81 && phase2 == 0) {
    servo1();
  }
  while (baut >= 0.82 && phase3 == 0) {

    servo2();
  }
}

if (phase2 == 1 || phase3 == 1) {
  servo1back();
  servo2back();
  phase0 = 0;
  phase1 = 0;
  phase2 = 0;
  phase3 = 0;
}
//delay(300);
lcd.clear();
}

```

```

void timbang() {
  baut= 0;
  Serial.print("one reading:\t");
  Serial.print(scale.get_units(), 1);
  Serial.print("\t| average:\t");
  avg = scale.get_units(5); // rata rata data loadcell
  Serial.println(avg);
  if (avg > 0.2) {
    avg = scale.get_units(20);
    baut = avg / 2.77;
    Serial.print("\t| baut:\t");
    Serial.println(baut);
    // scale.power_down(); // put the ADC in sleep mode
    // delay(1000);
    // scale.power_up();
  }
}

void servo1() {
  // myservo1.write(45);           // Mengatur servo ke posisi 'pos'
  // delay(750);                   // Menunggu 15ms agar servo mencapai
posisi
  myservo1.write(90);
  Serial.println("servo1");
  count2 = count2 + 1;
  phase2 = 1; //fase ke2
  delay(700);
}

void servo1back() {
  myservo1.write(7); // Mengatur servo ke posisi 'pos'
  delay(1000);      // Menunggu 15ms agar servo mencapai posisi
}

void servo2() {
  // myservo2.write(45);           // Mengatur servo ke posisi 'pos'
  // delay(750);                   // Menunggu 15ms agar servo mencapai
posisi
  myservo2.write(90);
  Serial.println("servo2");
  count1 = count1 + 1;
}

```



```

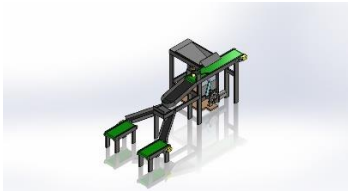
phase3 = 1; //fase ke3
delay(700);
}
void servo2back() {
myservo2.write(21); // Mengatur servo ke posisi 'pos'
delay(1000);      // Menunggu 15ms agar servo mencapai posisi
}

void conveyor2() {
digitalWrite(in1Pin2, HIGH);
digitalWrite(in2Pin2, LOW);
analogWrite(enAPin2, 70);
}

void conveyor3() {
digitalWrite(in3Pin2, HIGH);
digitalWrite(in4Pin2, LOW);
analogWrite(enBPin2, 70);
}

```

LAMPIRAN B
Proses Pembuatan Alat



(Desain Alat di solidworks)



(Perakitan Mekanik)



(Percobaan Rangkaian)



(Perakitan rangkaian)



(Tampak Depan Dari Atas)



(Tampak Samping)

BIODATA PENULIS



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Hobi : Travelling
Motto : Jangan dengarkan apa kata orang,
buktikan bahwa kamu bisa

Riwayat Pendidikan

- SD Negeri 01 Tritih Wetan Tahun 2009-2015
- SMP Muhammadiyah 02 Cilacap Tahun 2015-2018
- SMA Negeri 02 Cilacap Tahun 2018-2021
- Politeknik Negeri Cilacap Tahun 2021-2024
Prodi D3 Teknik Elektronika

Penulis telah mengikuti seminar hasil pada tanggal 23 Agustus 2024 sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A.Md).