

LAMPIRAN

Lampiran 1 program alat

```
#include <L298N.h>

bool aktif = 0;
bool a, b, c, d, e, f, g, h;

#define led_ind A5
#define mot1 6
#define EN 11
#define mot2 7
#define mot3 5
#define mot4 4
#define mot5 3
#define mot6 2

#define inf1 A4
#define inf2 12
#define inf3 13
#define inf4 A0
#define lim1 10
#define lim2 9
#define lim3 8

#define pb A1

int seq;

void setup() {
    // put your setup code here, to run once:
    Serial.begin(9600);
    pinMode(pb, INPUT_PULLUP);
    pinMode(inf1, INPUT_PULLUP);
    pinMode(inf2, INPUT_PULLUP);
    pinMode(inf3, INPUT_PULLUP);
    pinMode(inf4, INPUT_PULLUP);
    pinMode(lim1, INPUT_PULLUP);
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pinMode(lim2, INPUT_PULLUP);
pinMode(lim3, INPUT_PULLUP);

pinMode(led_ind, OUTPUT);
pinMode(mot1, OUTPUT);
pinMode(EN, OUTPUT);
pinMode(mot2, OUTPUT);
pinMode(mot3, OUTPUT);
pinMode(mot4, OUTPUT);
pinMode(mot5, OUTPUT);
pinMode(mot6, OUTPUT);

digitalWrite(mot2, 0);
digitalWrite(mot3, HIGH);
digitalWrite(mot4, HIGH);
digitalWrite(mot5, HIGH);
digitalWrite(mot6, HIGH);
digitalWrite(mot1, 0);
seq = 0;
}

void loop() {
  // PUSH BUTTON
  if ((digitalRead(pb) == 0) && (a == 0)) {
    aktif = !aktif;
    if (aktif == 0) {
      digitalWrite(mot2, LOW);
      digitalWrite(mot3, HIGH);
      digitalWrite(mot4, HIGH);
      digitalWrite(mot5, HIGH);
      digitalWrite(mot6, HIGH);
      digitalWrite(mot1, LOW);
      analogWrite(EN, 0);
    }
  }
}

```

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    seq = 0;
}
a = 1;
}

if ((digitalRead(pb) == 1)) {
    a = 0;
}

//IR1
digitalWrite(led_ind, aktif);
if (aktif == 1) {
    if ((seq == 0) && (digitalRead(inf1) == 0)) {
        digitalWrite(mot1, HIGH);
        analogWrite(EN, 100);
        digitalWrite(mot2, LOW);
        digitalWrite(mot3, HIGH);
        digitalWrite(mot4, HIGH);
        digitalWrite(mot5, HIGH);
        digitalWrite(mot6, HIGH);
        Serial.println("mendeteksi adonan");
        seq = 1;
    } else if ((seq != 0) && (digitalRead(inf1) == 1)) {
        digitalWrite(mot1, LOW);
        analogWrite(EN, 0);
        digitalWrite(mot2, LOW);
        digitalWrite(mot3, HIGH);
        digitalWrite(mot4, HIGH);
        digitalWrite(mot5, HIGH);
        digitalWrite(mot6, HIGH);
        Serial.println("tidak mendeteksi adonan");
        seq = 0;
    }
}

```

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//IR2
if ((seq == 1) && (digitalRead(inf2) == 0)) {
    digitalWrite(mot1, LOW);
    analogWrite(EN, 0);
    digitalWrite(mot3, LOW);
    digitalWrite(mot4, HIGH);
    digitalWrite(mot5, HIGH);
    digitalWrite(mot6, HIGH);
    seq = 2;
    digitalWrite(mot2, HIGH);
    delay(500);
    digitalWrite(mot2, LOW);
}

//IR3
if ((seq == 2) && (digitalRead(inf3) == 0)) {
    digitalWrite(mot1, LOW);
    analogWrite(EN, 0);
    digitalWrite(mot2, LOW);
    digitalWrite(mot3, HIGH);
    digitalWrite(mot4, LOW);
    digitalWrite(mot5, HIGH);
    digitalWrite(mot6, HIGH);
    seq = 3;
}

//LS1
if ((seq == 3) && (digitalRead(lim1) == 0)) {
    delay(500);
    seq = 4;
}

if ((seq == 4) && (digitalRead(lim1) == 1)) {
    delay(500);
    seq = 5;
}

```

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if ((seq == 5) && (digitalRead(lim1) == 0)) {
    digitalWrite(mot1, HIGH);
    analogWrite(EN, 100);
    digitalWrite(mot2, LOW);
    digitalWrite(mot3, HIGH);
    digitalWrite(mot4, HIGH);
    digitalWrite(mot5, HIGH);
    digitalWrite(mot6, HIGH);
    seq = 6;
}

//IR4
if ((seq == 6) && (digitalRead(inf4) == 0)) {
    digitalWrite(mot1, LOW);
    analogWrite(EN, 0);
    delay(200);
    digitalWrite(mot2, LOW);
    digitalWrite(mot3, HIGH);
    digitalWrite(mot4, HIGH);
    digitalWrite(mot5, LOW);
    digitalWrite(mot6, HIGH);
    seq = 7;
}

//LS2
if ((seq == 7) && (digitalRead(lim2) == 0)) {
    delay(500);
    seq = 8;
}

if ((seq == 8) && (digitalRead(lim2) == 1)) {
    delay(500);
    seq = 9;
}

if ((seq == 9) && (digitalRead(lim2) == 0)) {

```

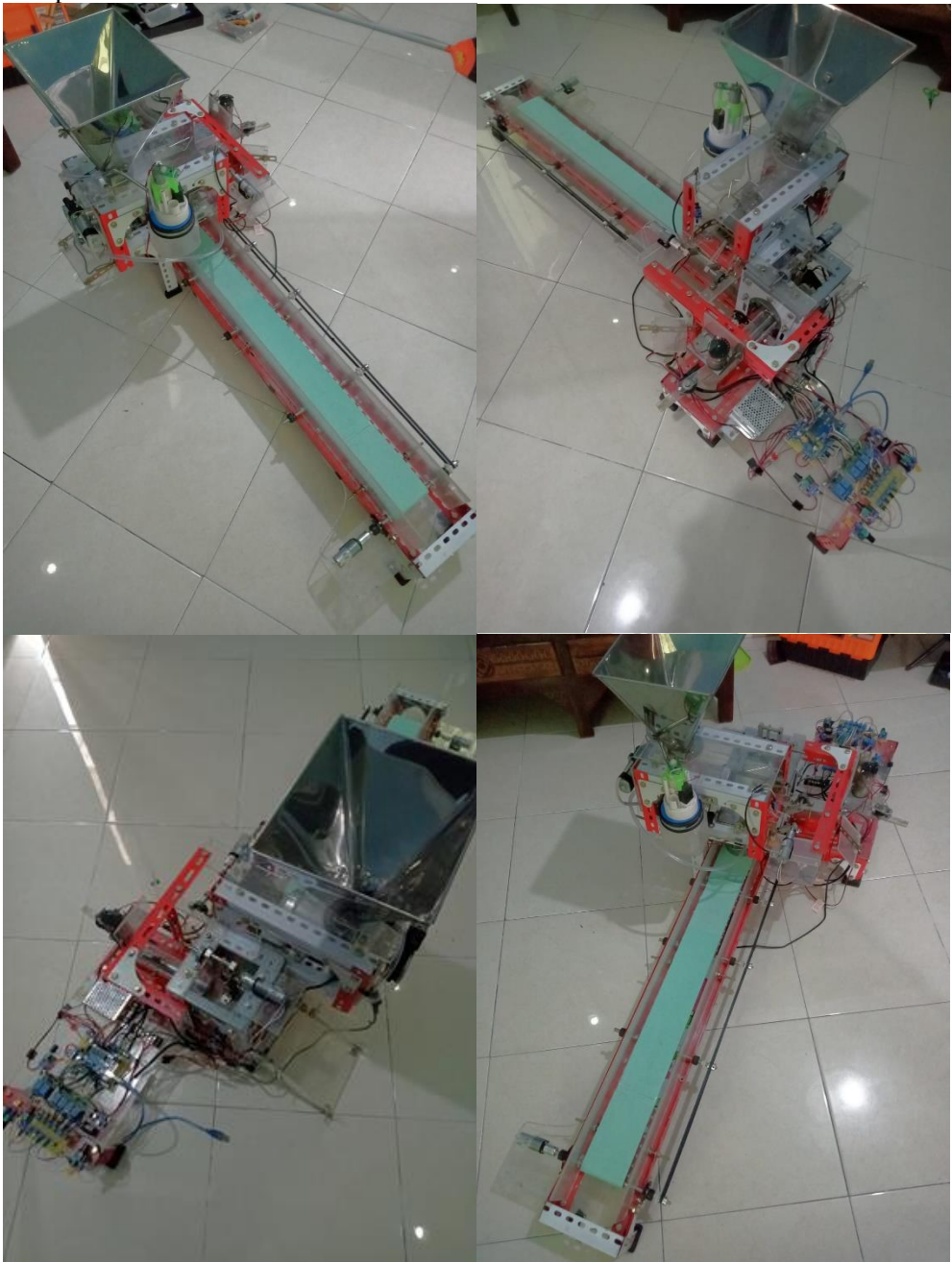
```

digitalWrite(mot1, LOW);
analogWrite(EN, 0);
digitalWrite(mot2, LOW);
digitalWrite(mot3, HIGH);
digitalWrite(mot4, HIGH);
digitalWrite(mot5, HIGH);
delay(200);
digitalWrite(mot6, LOW);
seq = 10;
}
//LS3
if ((seq == 10) && (digitalRead(lim3) == 0)) {
    delay(500);
    seq = 11;
}
if ((seq == 11) && (digitalRead(lim3) == 1)) {
    delay(500);
    seq = 12;
}

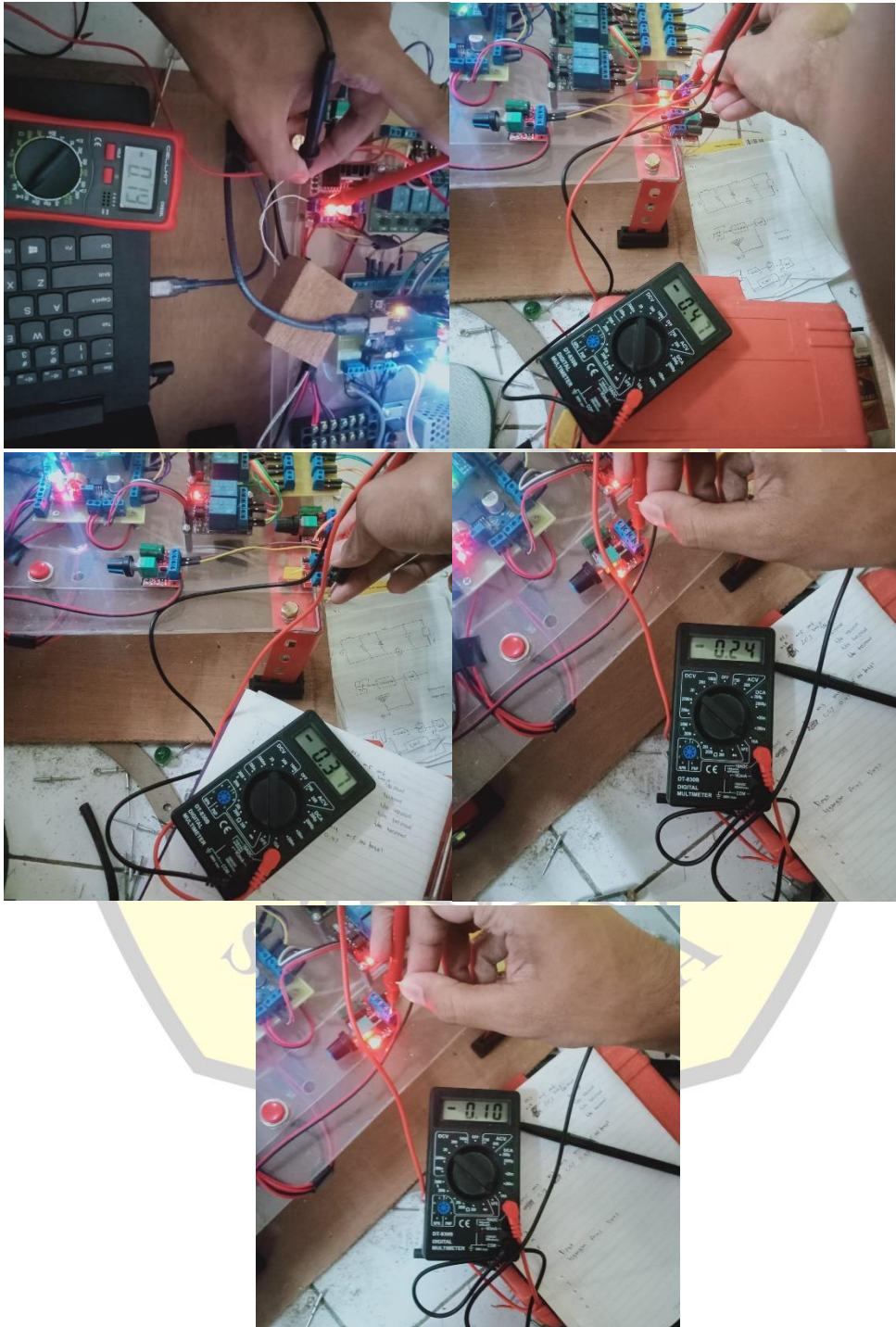
if ((seq == 12) && (digitalRead(lim3) == 0)) {
    digitalWrite(mot1, HIGH);
    analogWrite(EN, 100);
    digitalWrite(mot2, LOW);
    digitalWrite(mot3, HIGH);
    digitalWrite(mot4, HIGH);
    digitalWrite(mot5, HIGH);
    digitalWrite(mot6, HIGH);
    seq = 0;
}
}
}

```

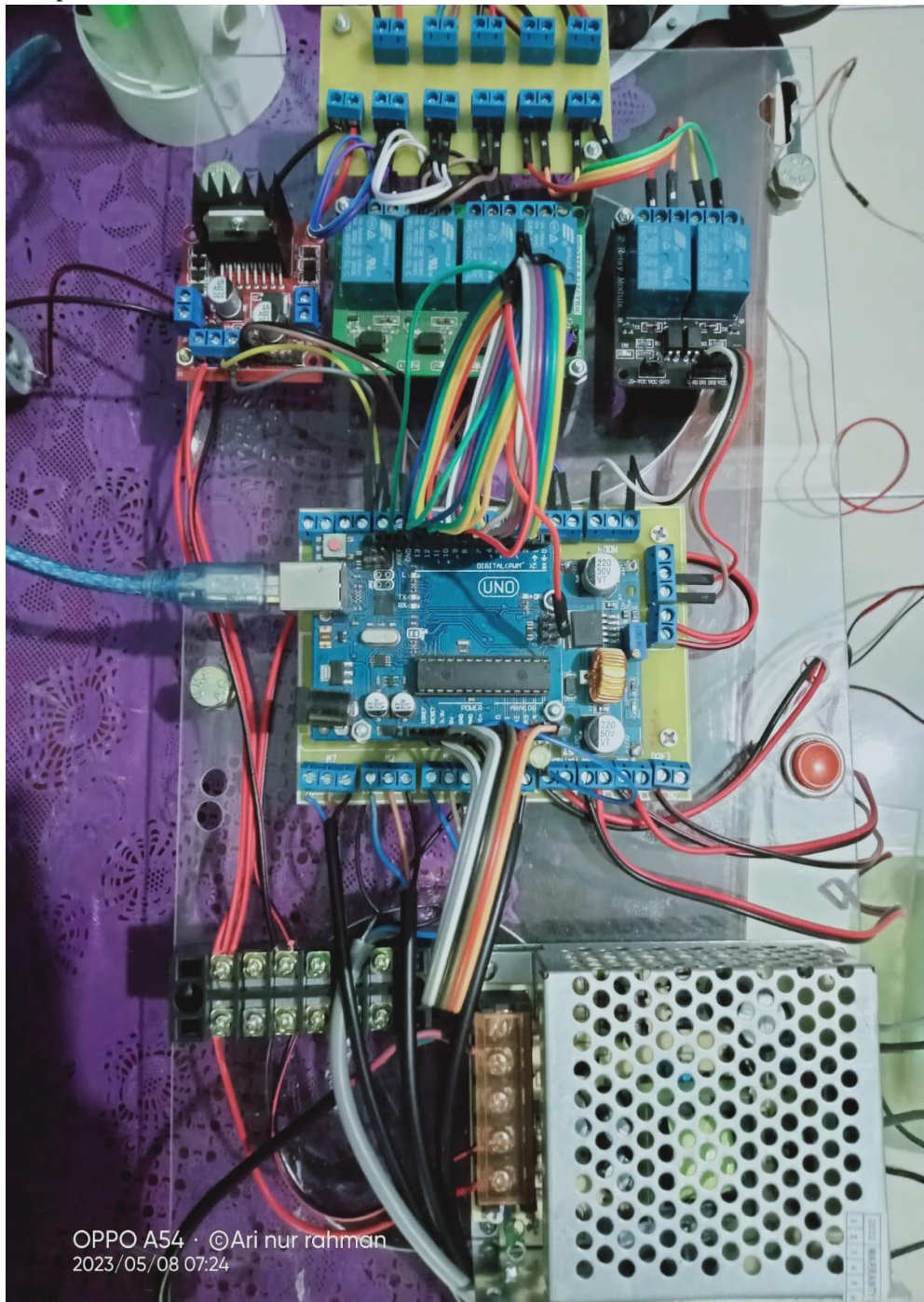
Lampiran 2 Gambar Alat



Lampiran 3 Pengujian Arus



Lampiran 4 Gambar Kelistrikan Alat



Lampiran 4. Datasheet Motor DC JGA25-370



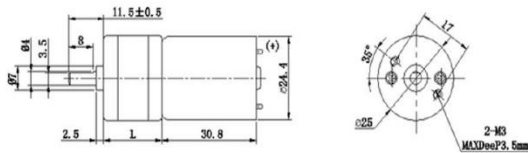
JGA25-370 Geared Motor

SKU 114090046

Specification:

Voltage V	No-load		Maximum efficiency pointed				Blockage	
	speed r/min	electric current A	speed r/min	electric current A	Torque Kg.cm	Power W	Torque Kg.cm	electric current A
6	190	0.2	133	0.5	0.75	1.1	4.0	2.1
12	350	0.1	245	0.65	1.4	2.4	5.2	2.2

size:



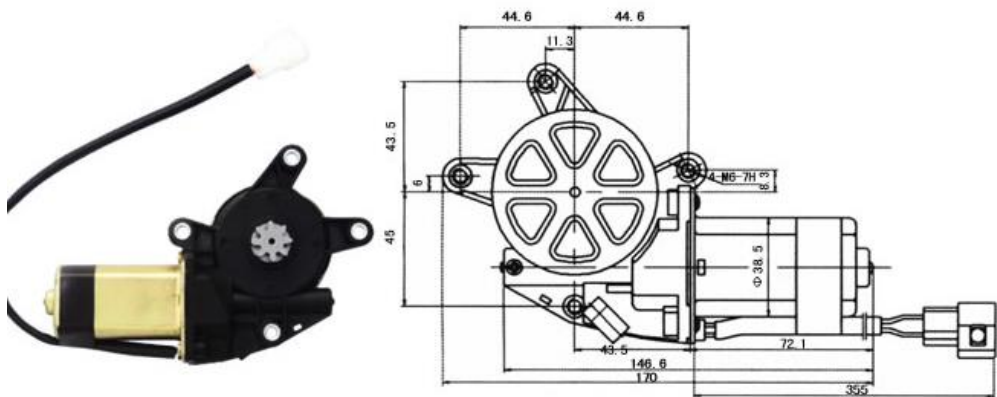
L=21

Part List

1 x JGA25-370 Geared Motor

Lampiran 5 Datasheet Motor Power Window

Power Window Motor **YB037001A** L/R



SPECIFICATION

Voltage Rating (V)	No Load		Load Rating			Locked Torque (Kg.f. cm)	Locked Current (A)
	Speed (r. p. m)	Current (A)	Torque (Kg.f. cm)	Speed (r. p. m)	Current (A)		
12	85±25	≤3	30	70±20	≤7	85±25	≤20

