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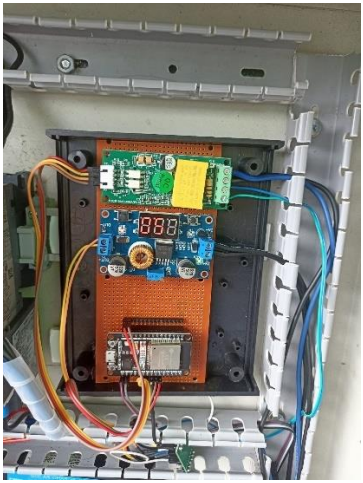
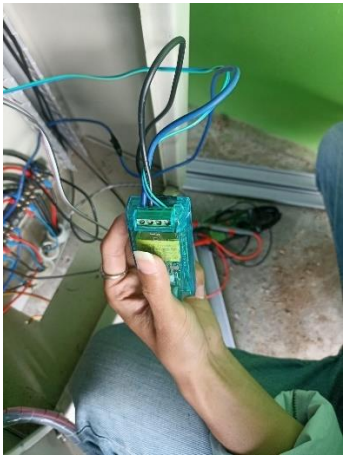
LAMPIRAN A





LAMPIRAN B

```
#include <PZEM004Tv30.h>
#include <Wire.h>
#include <LiquidCrystal_I2C.h>
#include <WiFi.h>
#include <HX711_ADC.h>

#if !defined(PZEM_RX_PIN) && !defined(PZEM_TX_PIN)
#define PZEM_RX_PIN 16
#define PZEM_TX_PIN 17
#endif
#if !defined(PZEM_SERIAL)
#define PZEM_SERIAL Serial0
#endif
#if defined(ESP32)
PZEM004Tv30 pzem(PZEM_SERIAL, PZEM_RX_PIN,
PZEM_TX_PIN);
#elif defined(ESP8266)
#else
PZEM004Tv30 pzem(PZEM_SERIAL);
#endif

#define BLYNK_PRINT Serial

#define BLYNK_TEMPLATE_ID "TMPL6aiHVCwqg"
#define BLYNK_TEMPLATE_NAME "monitoring alat"
#define BLYNK_AUTH_TOKEN
"83K7WgEe_3dE6iiRIfpJAJ4XMfSX0_55"
#define BLYNK_PRINT Serial

#include <WiFi.h>
#include <WiFiClient.h>
#include <BlynkSimpleEsp32.h>

char auth[] = BLYNK_AUTH_TOKEN;
char ssid[] = "12345678";
char pass[] = "pancasila";
```

```
LiquidCrystal_I2C lcd(0x27, 20, 4);
float voltage, current, power, energy, frequency, pf;

unsigned long timeShow = 0;

const int HX711_dout = 18; //Pin untuk modul load
const int HX711_sck = 19;//mcu > HX711 sck pin modul load
const int sensorPin = 5;  // Pin untuk sensor rpm

volatile int pulseCount = 0;
unsigned long oldTime = 0;
float speed = 0;
float timbang;

HX711_ADC LoadCell(HX711_dout, HX711_sck);
const int calVal_eepromAdress = 0;
unsigned long t = 0;

void IRAM_ATTR countPulse() {
  pulseCount++;
}

void setup() {
  Blynk.begin(auth, ssid, pass);
    Serial.begin(9600);
    lcd.init();
  lcd.backlight();

    LoadCell.begin();
  float calibrationValue;
  calibrationValue = 127.50;
#if defined(ESP8266)|| defined(ESP32)
#endif
  unsigned long stabilizingtime = 2000;
  boolean _tare = true;
  LoadCell.start(stabilizingtime, _tare);
  if (LoadCell.getTareTimeoutFlag()) {
```

```
   Serial.println("Timeout, check MCU>HX711 wiring and pin
designations");
   while (1);
  }
  else {
   LoadCell.setCalFactor(calibrationValue);
   Serial.println("Startup is complete");
  }

}

void loop() {
  tampilan();
  Blynk.run();

  Load();
  rpm();

  voltage = pzem.voltage();
  current = pzem.current();
  power = pzem.power();
  energy = pzem.energy();
  frequency = pzem.frequency();
  pf = pzem.pf();


    if (isnan(voltage)) {
   Serial.println("Error reading voltage");
  } if (isnan(current)) {
   Serial.println("Error reading current");
  } if (isnan(power)) {
   Serial.println("Error reading power");
  } if (isnan(energy)) {
   Serial.println("Error reading energy");
  } if (isnan(frequency)) {
   Serial.println("Error reading frequency");
  } if (isnan(pf)) {
   Serial.println("Error reading power factor");
  } else {
```

```
    // Print the values to the Serial console
    Serial.print("Voltage:      ");                    Serial.print(voltage);
Serial.println("V");
    Serial.print("Current: ");     Serial.print(current);     Serial.println("A");
    Serial.print("Power: ");      Serial.print(power);      Serial.println("W");
    Serial.print("Energy:     ");                  Serial.print(energy,    3);
Serial.println("kWh");
    Serial.print("Frequency:     ");          Serial.print(frequency,     1);
Serial.println("Hz");
    Serial.print("PF: ");          Serial.println(pf);
   delay(2000);
  }
    Serial.println();
    delay(500);

Blynk.virtualWrite(V1,voltage);
Blynk.virtualWrite(V2,current);
Blynk.virtualWrite(V3,power);

}
void tampilan(){
  // tampilan tegangan
lcd.setCursor(0, 0);
lcd.print("V = ");
lcd.setCursor(4, 0);
lcd.print(voltage);
lcd.setCursor(9, 0);
lcd.print("V");
// tampilan arus
lcd.setCursor(0, 1);
lcd.print("A = ");
lcd.setCursor(4, 1);
lcd.print(current);
lcd.setCursor(9, 1);
lcd.print("A");
  // tampilan daya
lcd.setCursor(10, 0);
lcd.print(" P = ");
lcd.setCursor(14, 0);
```

```
lcd.print(power);
lcd.setCursor(19, 0);
lcd.print("W");
  // tampilan Frekuensi
lcd.setCursor(10, 1);
lcd.print(" F = ");
lcd.setCursor(14, 1);
lcd.print(frequency);
lcd.setCursor(19, 1);
lcd.print("Hz");
}
void Load(){
    static boolean newDataReady = 0;
  const int serialPrintInterval = 0;
  if (newDataReady) {
    if (millis() > t + serialPrintInterval) {
      timbang = LoadCell.getData() /1000;
      Serial.print("Load_cell output val: ");
      Serial.println(timbang);
      newDataReady = 0;
      t = millis();
    }
  }

 if (Serial.available() > 0) {
    char inByte = Serial.read();
    if (inByte == 't') LoadCell.tareNoDelay();
  }

  // check if last tare operation is complete:
  if (LoadCell.getTareStatus() == true) {
    Serial.println("Tare complete");
  }
 Blynk.virtualWrite(V0, timbang);
delay(500);

    lcd.setCursor(14, 2);
    lcd.print("RPM");
    lcd.setCursor(12, 3);
```

```
    lcd.print(timbang);
    if (speed <= 0){
      lcd.setCursor(12, 3);
      lcd.print("  0     ");
    }
}

void rpm(){
  unsigned long currentTime = millis();
  unsigned long elapsedTime = currentTime - oldTime;

  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: ");

    lcd.setCursor(4, 2);
    lcd.print("RPM");
    lcd.setCursor(2, 3);
    lcd.print(speed);
    if (speed <= 0){
      lcd.setCursor(2, 3);
      lcd.print("  0     ");
    }
    attachInterrupt(digitalPinToInterrupt(sensorPin),          countPulse,
FALLING);
  }
 Blynk.virtualWrite(V4, speed);
  delay(500);
}
```

BIODATA PENULIS

Nama	:	Akmal Nur Hidayat
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Email	:	Akmalnur922@gmail.com
Telepon/HP	:	087839912765
Hobi	:	Olahraga dan Mengaji
Motto	:	Ojo kuminter mundak keblinger, ojo cidro mundak ciloko

- SD Negeri Tritih Kulon 11 : Tahun 2009-2015
- SMP Negeri 6 Cilacap : Tahun 2015-2018
- SMK Boedi Oetomo 1 Cilacap : Tahun 2018-2021
- Politeknik Negeri Cilacap Prodi D3 Teknik Listrik : Tahun 2021-2024

Penulis telah mengikuti sidang Tugas akhir pada tanggal 12 Agustus 2024 sebagai salah satu persyaratan untuk memperoleh gelar Ahli Madya (A.Md.)