

LAMPIRAN

A. Source Code

Lampiran 1. 1 Source Code

```
#include <WiFi.h> #include
<HTTPClient.h> #include
<ESP32Servo.h> #include
<DHT.h> #include
<Wire.h>

#include <Adafruit_INA219.h>
#include <EEPROM.h> #include
<time.h>

// ===== PIN SETUP =====

const int pirLuarPin = 14;
const int pirDalamPin = 12;
const int servoPin = 13;
const int ldrPin = 34;
const int mq6Pin = 35;
const int buzzerPin = 26;
const int relayKipas = 23;
#define DHTPIN 27 #define
DHTTYPE DHT11

// ===== OBJEK =====

Servo myServo;
DHT dht(DHTPIN, DHTTYPE);
Adafruit_INA219 ina219;

// ===== WIFI =====

const char* ssid = "INTAN";
const char* password = "Intanyuli09";
const char* serverName = "http://10.241.96.85/SMARTHOME/insert_data.php";

// ===== VARIABEL =====a

bool servoOpened = false;
unsigned long servoOpenTime = 0; const
unsigned long servoDelay = 3000;

bool buzzerActive = false;
```

```

const char* ntpServer = "pool.ntp.org";
const long  gmtOffset_sec = 25200;
const int daylightOffset_sec = 0;

int lastCheckedDay = -1;

void      setup()      {
    Serial.begin(115200);

    pinMode(pirLuarPin, INPUT);
    pinMode(pirDalamPin, INPUT);
    pinMode(buzzerPin, OUTPUT);
    pinMode(relayKipas, OUTPUT);
    digitalWrite(buzzerPin, LOW);
    digitalWrite(relayKipas, LOW);
    myServo.attach(servoPin);
    myServo.write(80);

    dht.begin();
    ina219.begin();
    EEPROM.begin(512);

    EEPROM.get(addrEnergi, totalEnergi_Wh);
    EEPROM.get(addrBiaya, totalBiaya);
    lastWattTime = millis();

    WiFi.begin(ssid, password);

    while (WiFi.status() != WL_CONNECTED) { delay(500);
        Serial.print(".");
    }
    Serial.println("\nWiFi Terhubung!");
    configTime(gmtOffset_sec, daylightOffset_sec, ntpServer);
}

void cekDanResetBulanan() {
    struct tm timeinfo;

    if (!getLocalTime(&timeinfo)) return;

    int dayNow = timeinfo.tm_mday;

    if (dayNow == 1 && lastCheckedDay != 1) {
        totalEnergi_Wh = 0.0;
        totalBiaya = 0.0;
    }
}

```

```

if ((motionLuar == HIGH || motionDalam == HIGH) && !servoOpened) {
    myServo.write(0);

    servoOpened = true;
    servoOpenTime = millis();
}

if (servoOpened && millis() - servoOpenTime >= servoDelay) { myServo.write(80);
    servoOpened = false;
}

int nilaiLDR = analogRead(ldrPin);
int cahaya = map(nilaiLDR, 4095, 0, 0, 100);
cahaya = constrain(cahaya, 0, 100);
String cahayaStatus = cahaya >= 80 ? "Terang" : (cahaya >= 30 ? "Redup" : "Gelap");

int gasValue = analogRead(mq6Pin);
bool gasBerbahaya = gasValue > 3000;
String gasStatus = gasBerbahaya ? "Berbahaya" : "Aman";

float suhu = dht.readTemperature();
float kelembapan = dht.readHumidity();

String suhuStatus = isnan(suhu) ? "Error" : (suhu < 25 ? "Dingin" : (suhu <= 30 ?
"Hangat" : "Panas"));

String kelembapanStatus = isnan(kelembapan) ? "Error" : (kelembapan < 40 ?
"Kering" : (kelembapan <= 70 ? "Lembap" : "Basah"));

digitalWrite(relayKipas, (suhu > 30 || gasBerbahaya) ? LOW : HIGH);

// Buzzer aktif
if (gasBerbahaya && !buzzerActive) {
    buzzerActive = true;

    buzzerCount = 0;
    lastBuzzTime = millis();
}

if (buzzerActive) {
    if (millis() - lastBuzzTime >= buzzInterval) {
        lastBuzzTime = millis();
    }
}

```

```

float energi_Wh = daya_W
* deltaJam; totalEnergi_Wh
+= energi_Wh;
totalBiaya = (totalEnergi_Wh / 1000.0) * tarifPerKwh;

EEPROM.put(addrEnergi,
totalEnergi_Wh);
EEPROM.put(addrBiaya,
totalBiaya);
EEPROM.commit();

// Debug Serial
Serial.println("==== STATUS SENSOR =====");
Serial.printf("Gas: %d → %s\n", gasValue, gasStatus.c_str());
Serial.printf("Suhu: %.2f°C → %s\n", suhu,
suhuStatus.c_str()); Serial.printf("Kelembapan:
%.2f%% → %s\n", kelembapan, kelembapanStatus.c_str());
Serial.printf("Cahaya: %d → %s\n", cahaya,
cahayaStatus.c_str()); Serial.printf("Daya: %.2f W\n",
daya_W);
Serial.printf("Energi: %.3f kWh\n", totalEnergi_Wh /
1000.0); Serial.printf("Biaya: Rp %.2f\n", totalBiaya);
Serial.println("-----");

if (WiFi.status() ==
WL_CONNECTED) {
  HTTPClient http;
  http.begin(serverName);
  http.addHeader("Content-Type", "application/x-www-form-urlencoded");

  String postData =
    "gas_value=" +
    String(gasValue) +
    "&gas_status=" +
    gasStatus + "&suhu=" +
    + String(suhu) +
    "&suhu_status=" +
    suhuStatus +
    "&kelembapan=" +
    String(kelembapan) +
    "&kelembapan_status=" +
    kelembapanStatus +
    "&cahaya=" + String(cahaya) +
    "&cahaya_status=" +
    cahayaStatus + "&daya_watt=" +
    + String(daya_W, 2) +
    "&energi_kwh=" + String(totalEnergi_Wh
/ 1000.0, 3) + "&biaya_rp=" +
    String(totalBiaya, 3);

  int httpResponseCode =
  http.POST(postData); if

```

```
(httpResponseCode  
> 0) {  
    Serial.println(" ✓  
    + Data berhasil  
    dikirim");  
} else {  
    Serial.print("+ Gagal kirim  
    data. Kode: ");  
    Serial.println(httpResponseC  
    ode);  
}  
http.end();  
}  
  
cekDan  
ResetBu  
lanan();  
delay(10  
00);  
}
```

B. Surat Keterangan dan hasil Turnitin

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