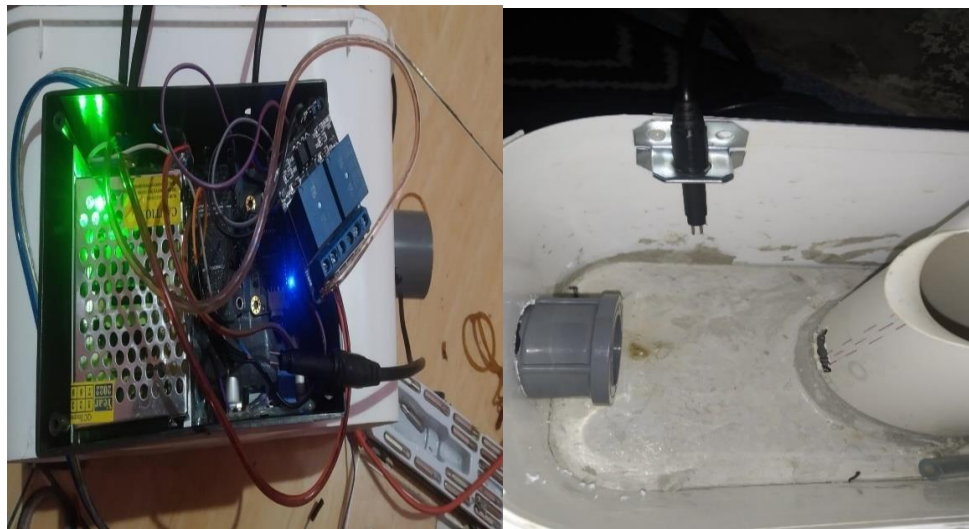


## LAMPIRAN



Gambar 4. 9 Alat Hidroponik Vertical Farming



```
coding | Arduino 1.8.13
File Edit Serial Tools Help

coding
#include <WiFiClient.h>
#include <ESP8266WiFi.h>
//
#include <ESP8266WiFiClient.h>
//
#include <ESP8266.h>
#include <GravityTDS.h>
#define TdsSensorPin A0
GravityTDS gravityTds;

float temperature = 25, tdsValue = 0;
const char ssid = "Model Roko 4";
const char password = "luareng21";
String serverName = "http://192.168.43.22/vertikal_farming/data/connect.php";
String apiKeyValue = "spnAT5Ab37F9s";
int motor_pin = D2;

void connectToWifi(const char *ssid, const char *pass)
{
  Serial.println("WiFi: Connecting to SS 'm', ssid);
  WiFi.mode(WIFI_STA);
  WiFi.begin(ssid, pass);
  while (WiFi.status() != WL_CONNECTED)
  {
    delay(500);
    Serial.print(".");
  }
  Serial.println("WiFi: Connected to SS 'm', ssid);
}

12:02:05.869 -> HTTP Response code: 200
12:02:06.847 ->
12:02:07.852 -> httpRequestData: api_key=spnAT5Ab37F9s&temperature=645.14
12:02:08.098 -> HTTP Response code: 200
12:02:09.113 ->
12:02:09.113 -> 846ppm
12:02:10.093 -> httpRequestData: api_key=spnAT5Ab37F9s&temperature=645.94
12:02:10.405 -> HTTP Response code: 200
12:02:11.417 ->
12:02:11.417 -> 846ppm
12:02:12.410 -> httpRequestData: api_key=spnAT5Ab37F9s&temperature=645.14
12:02:12.402 -> HTTP Response code: 200
12:02:13.643 ->
12:02:13.643 -> 846ppm
Autoscroll Show timestamp Newline 115200 baud Clear output
```

Gambar 4. 10 Rangkaian Sensor TDS

**Gambar 4. 11 kalibrasi Sensor TDS pada Arduino**



**Gambar 4. 12 Modul Relay**



**Gambar 4. 13 Pompa Air 12Volt**

**Tabel 3. 10 Hasil Pengujian Sensor TDS**

<b>No</b>	<b>Hari/jam</b>	<b>Pengujian pada sensor TDS</b>	<b>Hasil pengujian nutrisi air</b>
<b>1.</b>	<b>Senin-06-02-2023</b>	Hidup	110ppm
<b>2.</b>	<b>Senin-06-02-2023</b>	Hidup	101ppm
<b>3.</b>	<b>Selasa-07-02-2023</b>	Hidup	752ppm
<b>4.</b>	<b>Rabu-08-02-2023</b>	Hidup	712ppm
<b>5.</b>	<b>Kamis-09-02-2023</b>	Hidup	672ppm
<b>6.</b>	<b>Jumat-10-02-2023</b>	Hidup	632ppm
<b>7.</b>	<b>Senin-13-02-2023</b>	Hidup	512ppm
<b>8.</b>	<b>Selasa-14-02-2023</b>	Hidup	731ppm
<b>9.</b>	<b>Rabu-15-02-2023</b>	Hidup	691ppm
<b>10.</b>	<b>Kamis-16-02-2023</b>	Hidup	651ppm

**Tabel 3. 11 Hasil Pengujian Relay**

<b>No</b>	<b>Hari/Tanggal</b>	<b>Relay</b>
<b>1.</b>	<b>Senin-06-02-2023</b>	Off
<b>2.</b>	<b>Senin-06-02-2023</b>	Off
<b>3.</b>	<b>Selasa-07-02-2023</b>	On
<b>4.</b>	<b>Rabu-08-02-2023</b>	On
<b>5.</b>	<b>Kamis-09-02-2023</b>	On
<b>6.</b>	<b>Jumat-10-02-2023</b>	On
<b>7.</b>	<b>Senin-13-02-2023</b>	Off
<b>8.</b>	<b>Selasa-14-02-2023</b>	On
<b>9.</b>	<b>Rabu-15-02-2023</b>	On
<b>10.</b>	<b>Kamis-16-02-2023</b>	On

No	Hari/Tanggal	Pompa
1.	Senin-06-02-2023	Off
2.	Senin-06-02-2023	Off
3.	Selasa-07-02-2023	On
4.	Rabu-08-02-2023	On
5.	Kamis-09-02-2023	On
6.	Jumat-10-02-2023	On
7.	Senin-13-02-2023	Off
8.	Selasa-14-02-2023	On
9.	Rabu-15-02-2023	On
10.	Kamis-16-02-2023	On

**Tabel 3. 12 Hasil Pengujian Pompa**

**Tabel 3. 13 Table Hasil Pengujian keseluruhan**

No	Hari/Tanggal	Sensor TDS (nutrisi air)	Relay	Pompa
1.	Senin-06-02-2023	110ppm	Off	Off
2.	Senin-06-02-2023	101ppm	Off	Off
3.	Selasa-07-02-2023	752ppm	On	Hidup
4.	Rabu-08-02-2023	712ppm	On	Hidup
5.	Kamis-09-02-2023	672ppm	On	Hidup
6.	Jumat-10-02-2023	632ppm	On	Hidup
7.	Senin-13-02-2023	512ppm	Off	Off
8.	Selasa-14-02-2023	731ppm	On	Hidup
9.	Rabu-15-02-2023	691ppm	On	Hidup
10.	Kamis-16-02-2023	651ppm	On	Hidup

## Lampiran koding

```
#include <WiFiClient.h>
#include <ESP8266WiFi.h>
#include <ESP8266HTTPClient.h>
//
#include <EEPROM.h>
#include "GravityTDS.h"
#define TdsSensorPin A0
GravityTDS gravityTds;

float temperature = 25, tdsValue = 0;
const char* ssid = "Redmi Note 4";
const char* password = "kureng27";
String serverName = "http://192.168.43.158/vertikal_farming/data/connect.php";
String apiKeyValue = "tPmAT5Ab3j7F9";
//motor dc pin
int motor_dc = D2;

void connectToWifi(const char *ssid, const char *pass)
{
  Serial.printf("[WiFi] : Connecting to %s \n", ssid);
  WiFi.mode(WIFI_STA);
  WiFi.begin(ssid, pass);
  while (WiFi.status() != WL_CONNECTED)
  {
    delay(500);
    Serial.print(".");
  }
  Serial.printf("[WiFi] : Connected to %s \n", ssid);
  Serial.print("[WiFi] : IP ");
  Serial.println(WiFi.localIP());
}

void setup()
{
  Serial.begin(115200);
  WiFi.begin(ssid, password);
  connectToWifi(ssid, password);
  gravityTds.setPin(TdsSensorPin);
  gravityTds.setAref(3.3); //reference voltage on ADC, default 5.0V on Arduino UNO
  gravityTds.setAdcRange(1023); //1024 for 10bit ADC;4096 for 12bit ADC
  gravityTds.begin(); //initialization
  digitalWrite(motor_dc, LOW);
}
```

```

}

void loop()
{
  //temperature = readTemperature(); //add your temperature sensor and read it
  gravityTds.setTemperature(temperature); // set the temperature and execute temperature
  compensation
  gravityTds.update(); //sample and calculate
  tdsValue = gravityTds.getTdsValue(); // then get the value
  Serial.print(tdsValue, 0);
  Serial.println("ppm");
  delay(1000);
  if (tdsValue < 150) {
    digitalWrite(motor_dc, HIGH);
    Serial.println("+");
  }
  else if (tdsValue > 150){
    digitalWrite(motor_dc, LOW);
    Serial.println("-");
  }
  //koding upload ke web TDS
  else if ((WiFi.status() == WL_CONNECTED)) {
    WiFiClient client;
    HTTPClient http; // Your Domain name with URL path or IP address with path
    http.begin(client, serverName);
    http.addHeader("Content-Type", "application/x-www-form-urlencoded");

    // Prepare your HTTP POST request data
    String httpRequestData = "api_key=" + apiKeyValue + "&temperature=" + tdsValue;
    Serial.print("httpRequestData: ");
    Serial.println(httpRequestData);
    int httpResponseCode = http.POST(httpRequestData);
    if (httpResponseCode > 0) {
      Serial.print("HTTP Response code: ");
      Serial.println(httpResponseCode);
    }
    else {
      Serial.print("Error code: ");
      Serial.println(httpResponseCode);
    }
    http.end();
    delay(1000);
  }
}

```