

## LAMPIRAN A

```
#include <EEPROM.h>
#include <DFRobot_PH.h>
DFRobot_PH ph;
#define PH_PIN A0

#define TdsSensorPin A1
#define VREF 5.0
#define SCOUNT 30

int analogBuffer[SCOUNT];
int analogBufferTemp[SCOUNT];
int analogBufferIndex = 0, copyIndex = 0;
float averageVoltage = 0, temperature = 27;
int tdsValue = 0;
float voltage, pHValue;
int Volm;

unsigned long td = 0;

//batas nilai
float bphup = 6;
float bphdown = 7;
int bnutrisi = 600;

//pin ultrasonic
int trigPin = 6;
int echoPin = 7;
//defines variables
long duration, cm;

//Relay
#define r1 8 //pump ph up
#define r2 9 //pump ph down
#define r3 10 //pump nutrisi ab mix
```

```

//waktu awal kerja
unsigned long wphup = 0; //waktu awal pompa ph up
unsigned long wphdown = 0; //waktu awal pompa ph down
unsigned long wN = 0; //waktu awal pompa nutrisi
unsigned long bca = 0;

//bool
bool spN = LOW; //status pompa nutrisi
bool spU = LOW; //status pompa UP
bool spD = LOW; //status pompa Down

void setup()
{
  Serial.begin(9600);
  ph.begin();
  pinMode(TdsSensorPin, INPUT);

  pinMode(trigPin, OUTPUT);
  pinMode(echoPin, INPUT);

  //pin MODE relay
  pinMode(r1, OUTPUT);
  digitalWrite(r1, 1);
  pinMode(r2, OUTPUT);
  digitalWrite(r2, 1);
  pinMode(r3, OUTPUT);
  digitalWrite(r3, 1);
}

void bacasensor() {
  digitalWrite(trigPin, LOW);
  delayMicroseconds(5);
  digitalWrite(trigPin, HIGH);
  delayMicroseconds(10);
  digitalWrite(trigPin, LOW);
  duration = pulseIn(echoPin, HIGH);
  cm = (duration / 2) / 29.1;
  Volm = map(cm, 24,1,1,24);
}

```

```
TDS();  
PH();  
/*  
  Serial.print(cm);  
  Serial.print("cm");  
  Serial.print("\t temperature:");  
  Serial.print(temperature, 1);  
  Serial.print("^C pH:");  
  Serial.print(phValue, 2);  
  Serial.print("\t");  
  Serial.print("TDS Value:");  
  Serial.print(tdsValue, 0);  
  Serial.println("ppm");  
  delay(2000);  
*/
```

```

#include <SoftwareSerial.h>
SoftwareSerial DataSerial(16,17);
#include <ThingierESP32.h>
#include <WiFi.h>

unsigned long previousMillis = 0;
const long interval = 1000;

//variable parsing data
bool parsing = false;
String sData, data[5];

#define USERNAME "ferryar37"
#define DEVICE_ID "Bibitcabai"
#define DEVICE_CREDENTIAL "S_Z?6j9qb1A@ybh#"
ThingierESP32 thing
(USERNAME,DEVICE_ID,DEVICE_CREDENTIAL);

//wifi
#define WIFI_SSID "Armanda"
#define WIFI_PASSWORD "mamasganteng"

//baca data
int cm;
int tdsValue;
float pHValue;

void setup() {
// put your setup code here, to run once:
Serial.begin(9600);
DataSerial.begin(9600);

WiFi.begin(WIFI_SSID, WIFI_PASSWORD);
Serial.print("connect WiFi to");
while (WiFi.status() != WL_CONNECTED)
{

```

```

    Serial.print(".");
    delay(500);
}
    Serial.println(WiFi.localIP());
    Serial.println("konek");

thing.add_wifi(WIFI_SSID,WIFI_PASSWORD);

thing["@#@"] >> [] (pson & out){
out["CM"] = cm;
out["Nutrisi (Ppm)"] = tdsValue;
out[" pH"] = pHValue;
};

}
void loop() {

//baca data dari node mcu
//selama data ada
while (DataSerial.available())
{
    char inChar = DataSerial.read();
    sData += inChar;

    if (inChar == '$') {
        parsing = true;
    }
    if (parsing) {
        int q = 0;
        for (int i = 0; i < sData.length(); i++) {
            if (sData[i] == '#') {
                q++;
                data[q] = "";
            }
            else {
                data[q] += sData[i];
            }
        }
    }
}
}

```

```
Serial.println(data[2].toInt());
Serial.println(data[3].toFloat());
Serial.println(data[4].toInt());
Serial.println();
parsing = false;
sData = "";
}

//persamaan variable dari database kontrol
cm = (data[2].toInt());
phValue = (data[3].toFloat());
tdsValue = (data[4].toInt());
//picu thinger.io
thing.handle();
}

}
```

## LAMPIRAN B

### Program thingger io

```
{
  "description": "Menampilkan nilai ketinggian air, nilai ph, nilai tds",
  "name": "Komunikasi Serial ThingerIO",
  "properties": {
    "columns": 6,
    "row_height": 40
  },
  "tabs": [
    {
      "icon": "fas fa-tachometer-alt",
      "name": "Komunikasi Serial ThingerIO",
      "widgets": [
        {
          "layout": {
            "col": 1,
            "row": 6,
            "sizeX": 2,
            "sizeY": 6
          },
          "panel": {
```

```
"color": "#ffffff",
"subtitle": "Nilai pH Air",
"title": "Nilai pH"
},
"properties": {
"color": "#1E313E",
"gradient": true,
"majorTicks": 10,
"max": 14,
"min": 0,
"plateColor": "#ffffff",
"showValue": true,
"textColor": "#1E313E",
"tickColor": "#000000",
"unit": "pH"
},
"sources": [
{
"color": "#1E313E",
"device": {
"id": "Cabai",
"interval": 5,
```



```
"mapping": "pH",
"resource": "@#@@",
"update": "interval",
"user": "ferryar37"
},
"name": "Default",
"skipCurrent": 1,
"source": "device"
}
],
"type": "donutchart"
},
{
"layout": {
"col": 3,
"row": 0,
"sizeX": 1,
"sizeY": 6
},
"panel": {
"color": "#ffffff",
"subtitle": "Nilai PPM",
```

```
"title": "Nilai Nutrisi"
},
"properties": {
"color": "#1E313E",
"gradient": true,
"max": 1500,
"min": 0,
"unit": "PPM"
},
"sources": [
{
"color": "#1E313E",
"device": {
"id": "Cabai",
"interval": 5,
"mapping": "Nutrisi (Ppm)",
"resource": "@#@@",
"update": "interval",
"user": "ferryar37"
},
"name": "Default",
"skipCurrent": 1,
```

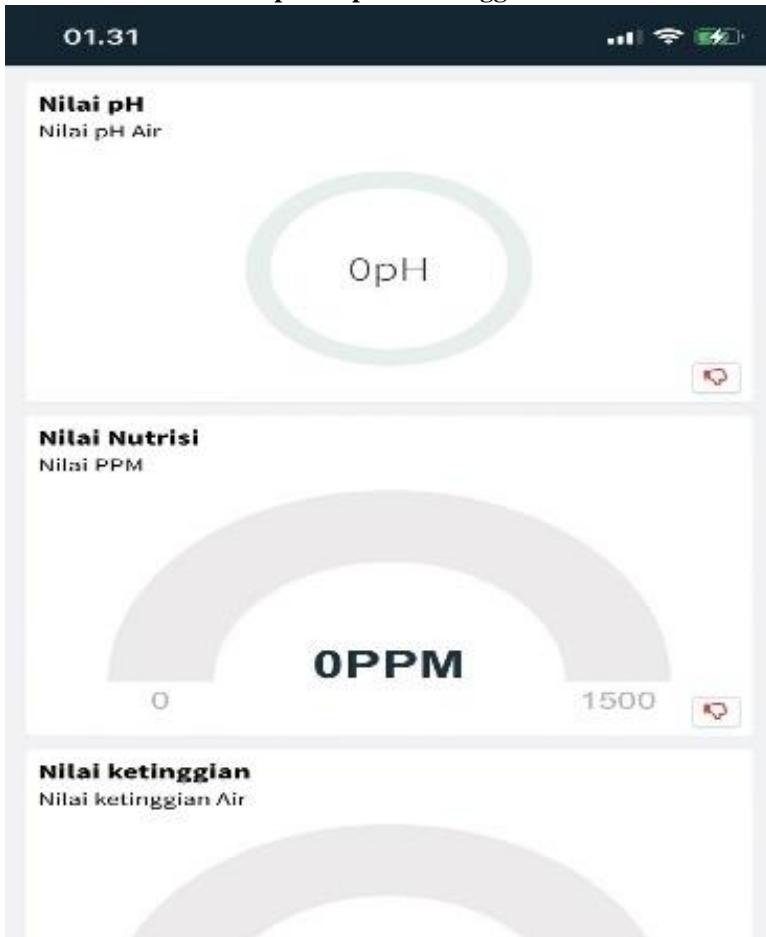
```
"source": "device"
}
],
"type": "gauge"
},
{
"layout": {
"col": 0,
"row": 0,
"sizeX": 2,
"sizeY": 6
},
"panel": {
"color": "#ffffff",
"subtitle": "Nilai ketinggian Air",
"title": "Nilai ketinggian"
},
"properties": {
"color": "#1E313E",
"gradient": true,
"icon": "",
"iconSize": ""
```

```
"majorTicks": 10,  
"mapType": "roadmap",  
"max": 24,  
"min": 0,  
"plateColor": "#ffffff",  
"showClustering": true,  
"showConnected": true,  
"showDisconnected": true,  
"showOptions": false,  
"showSearch": true,  
"showValue": true,  
"textColor": "#1E313E",  
"tickColor": "#000000",  
"unit": "cm"  
},  
"sources": [  
  {  
    "color": "#1E313E",  
    "device": {  
      "id": "Cabai",  
      "interval": 5,  
      "mapping": "CM",
```

```
"resource": "@#@",  
"update": "interval",  
"user": "ferryar37"  
},  
"name": "Default",  
"skipCurrent": 1,  
"source": "device"  
}  
],  
"type": "gauge"  
}  
]  
}  
]  
}
```



**LAMPIRAN C**  
**Tampilan aplikasi thingger io**



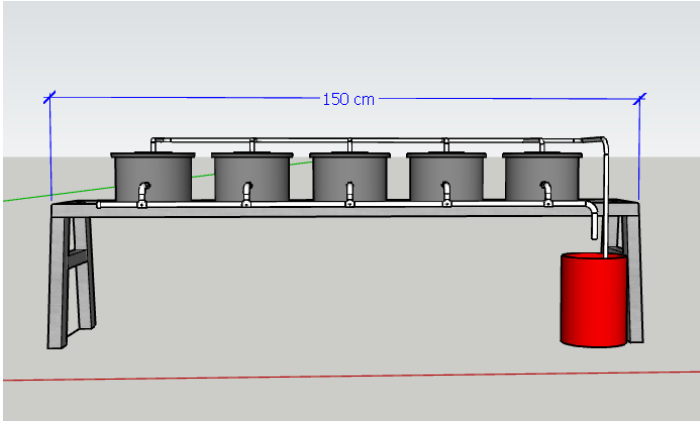




## LAMPIRAN D

### Desain mekanik

#### 1. Tampak depan



#### 2. Tampak samping

