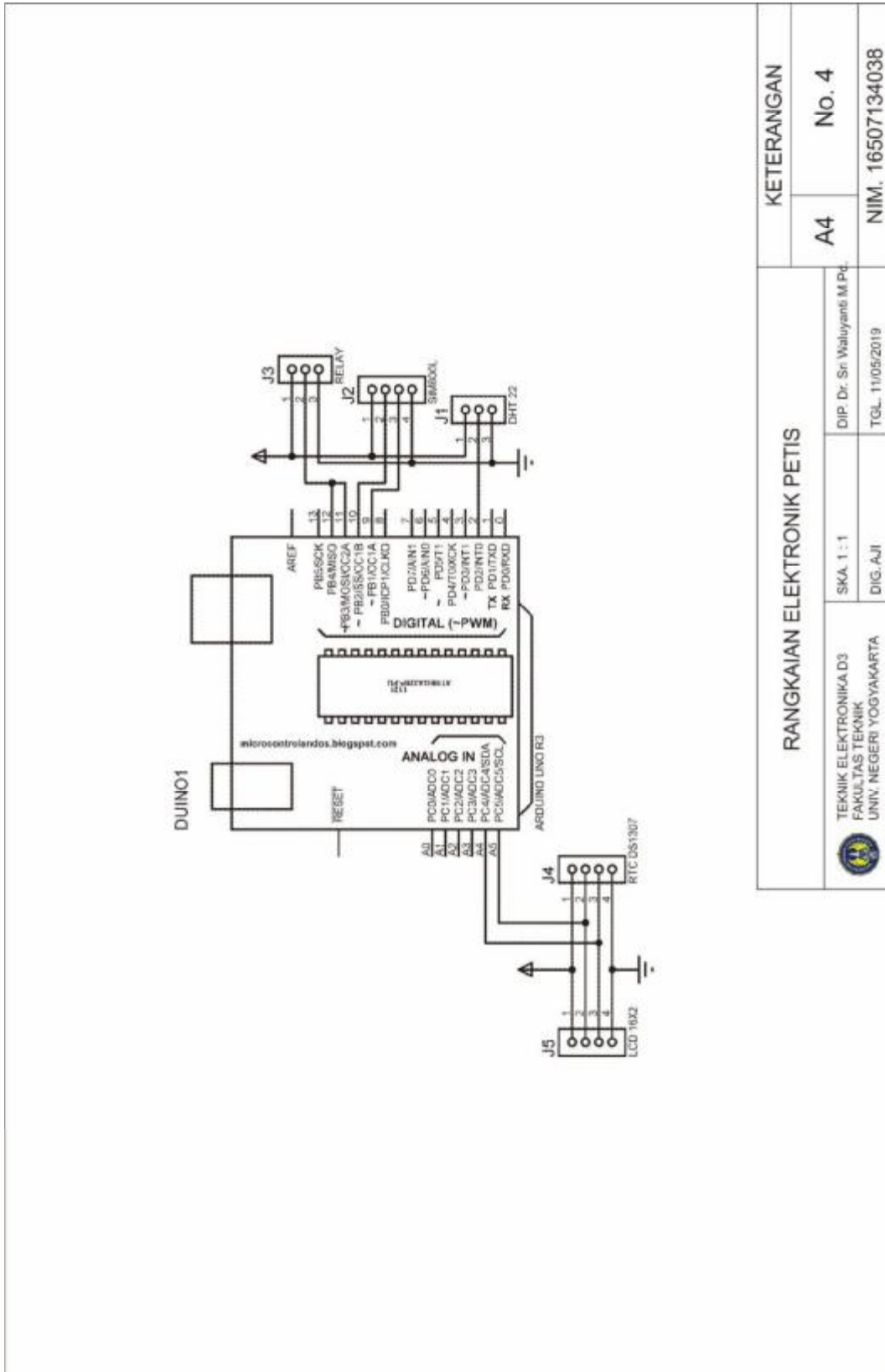


Lampiran 1. Skema



RANGKAIAN ELEKTRONIK PETIS		KETERANGAN	
		A4	No. 4
 TEKNIK ELEKTRONIKA D3 FAKULTAS TEKNIK UNIV. NEGERI YOGYAKARTA	SKA. 1 : 1	DIP. Dr. Sri Waiyanti M.Pd.	
	DIG. Aji	TGL. 11/05/2019	
		NIM. 16507134038	

Lampiran 2. Part List

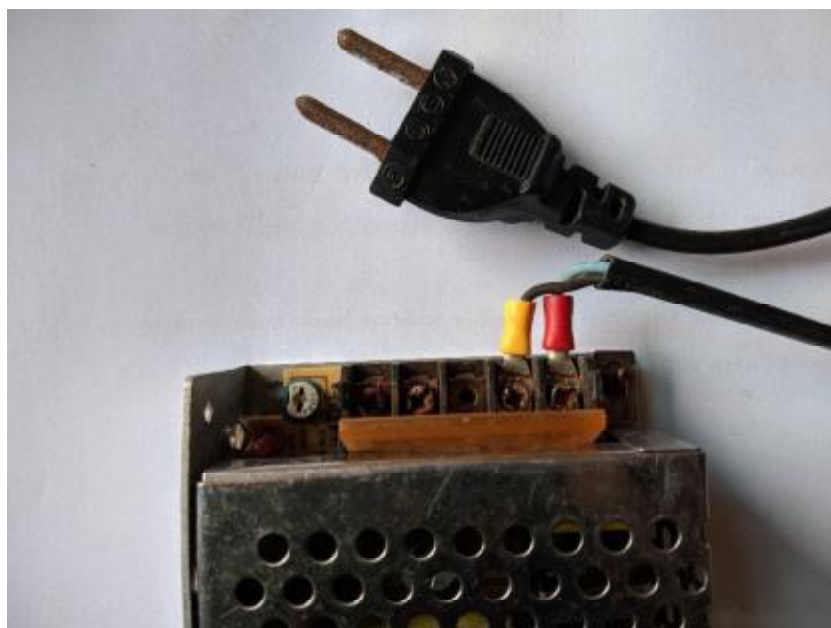
No	Komponen
1	Sensor DHT22
2	RTC DS1307
3	Relay 5V
4	SIM 800L
5	Arduino UNO
6	Pompa 12V
7	Mist Sprayer

Lampiran 3. Cara Penggunaan

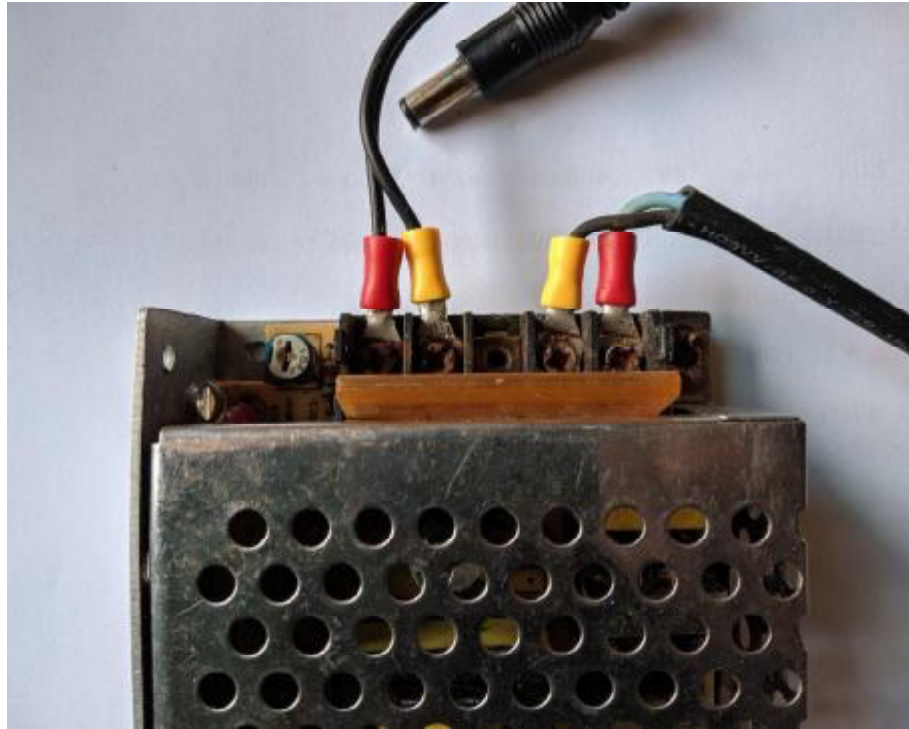
1. Hubungkan antenna dan sensor DHT22



2. Hubungkan kabel Sumber 220 VAC ke PSU



3. Hubungkan kabel sumber 12V arduino UNO ke PSU



4. Hubungkan V+ PSU dengan COM relay dan V- PSU dengan V- pompa



5. Hubungkan NC relay ke V+ pompa



6. Hubungkan kontrol dengan sumber 12V



7. Hubungkan PSU dengan sumber 220VAC



8. Tunggu hingga sensor mendeteksi suhu dan kelembaban



9. Pastikan sensor dapat mendeteksi suhu dan kelembaban



10. Pastikan data suhu dan kelembaban dapat diakses melalui aplikasi android



Lampiran 4. Foto Alat



Lampiran 5. List Program

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x3F,16,2);

#include <Wire.h>
#include "RTCLib.h"
RTC_DS1307 rtc;
char daysOfTheWeek[7][12] = {"Minggu", "Senin", "Selasa", "Rabu",
"Kamis", "Jumat", "Sabtu"};

#include "SoftwareSerial.h"
SoftwareSerial Serial1(10, 9); // RX, TX

#define TINY_GSM_MODEM_SIM800
#include <TinyGsmClient.h>
#include <ThingertinyGSM.h>
#define USERNAME "Aji_Nugroo"
#define DEVICE_ID "PETIS_IOT"
#define DEVICE_CREDENTIAL "petis123"

// use your own APN config
#define APN_NAME "3gprs"
#define APN_USER "3gprs"
#define APN_PSWD "3gprs"
#define CARD_PIN ""
ThingertinyGSM thing(USERNAME, DEVICE_ID,
DEVICE_CREDENTIAL, Serial1);

#include <DHT.h>
#define DHTPIN 2
#define DHTTYPE DHT22
DHT dht(DHTPIN, DHTTYPE);

float kelembaban, suhu;
int led = 0;

void setup() {
  dht.begin();
  Serial1.begin(57600);
  Serial.begin(57600);
  thing.setAPN(APN_NAME, APN_USER, APN_PSWD);

  lcd.begin();
  lcd.setCursor(0, 0);
  lcd.print("MENDETEKSI");
  lcd.setCursor(0, 1);
  lcd.print("SUHU&KELEMBABAN");
```

```

delay(1000);
lcd.clear();
rtc.adjust(DateTime(F(__DATE__), F(__TIME__)));
pinMode(11,OUTPUT);
pinMode(12,OUTPUT);

thing["dht11"] >> [](pson& out){
    out["suhu"] = dht.readTemperature();
    out["kelembaban"] = dht.readHumidity();
    out["led"] = led;
};
thing["pompaT"] << digitalPin(12);
}

void loop() {
    dht22();
    lcd16();
    jam();
    pompa();
    thing.handle();
}

void dht22() {
    kelembaban = dht.readHumidity();
    suhu = dht.readTemperature();
}

void lcd16 () {
    //menampilkan nilai kelembaban pada LCD
    lcd.setCursor(0, 0); //
    lcd.print("Kelembaban: ");
    lcd.print((int) kelembaban);
    lcd.print("%");
    //menampilkan nilai suhu pada LCD
    lcd.setCursor(0, 1);
    lcd.print("Suhu: ");
    lcd.print((int) suhu);
    lcd.print((char)223);
    lcd.print("C ");
}

void pompa (){
    if (suhu > 27 || kelembaban < 80){
        digitalWrite(11,HIGH);
        led = 1;
    }
    else {
        digitalWrite(11,LOW);
        led = 0;
    }
}
}

```

```

void jam (){
  DateTime now = rtc.now();
  Serial.print(now.year(), DEC);
  Serial.print('/');
  Serial.print(now.month(), DEC);
  Serial.print('/');
  Serial.print(now.day(), DEC);
  Serial.print(" (");
  Serial.print(daysOfTheWeek[now.dayOfTheWeek()]);
  Serial.print(") ");
  Serial.print(now.hour(), DEC);
  Serial.print(':');
  Serial.print(now.minute(), DEC);
  Serial.print(':');
  Serial.print(now.second(), DEC);
  Serial.println();

  if (now.hour() == 7){
    digitalWrite(11,HIGH);
    led = 1;
    delay(180000);
    digitalWrite(11,LOW);
    led = 0;
  }
  if (now.hour() == 10){
    digitalWrite(11,HIGH);
    led = 1;
    delay(180000);
    digitalWrite(11,LOW);
    led = 0;
  }
  if (now.hour() == 14){
    digitalWrite(11,HIGH);
    led = 1;
    delay(180000);
    digitalWrite(11,LOW);
    led = 0;
  }
  if (now.hour() == 16){
    digitalWrite(11,HIGH);
    led = 1;
    delay(180000);
    digitalWrite(11,LOW);
    led = 0;
  }
}
}

```

Aosong Electronics Co.,Ltd

Your specialist in innovating humidity & temperature sensors

1. Feature & Application:

- * Full range temperature compensated
- * Relative humidity and temperature measurement
- * Calibrated digital signal
- * Outstanding long-term stability
- * Extra components not needed
- * Long transmission distance
- * Low power consumption
- * 4 pins packaged and fully interchangeable

2. Description:

DHT22 output calibrated digital signal. It utilizes exclusive digital-signal-collecting-technique and humidity sensing technology, assuring its reliability and stability. Its sensing elements is connected with 8-bit single-chip computer.

Every sensor of this model is temperature compensated and calibrated in accurate calibration chamber and the calibration-coefficient is saved in type of programme in OTP memory, when the sensor is detecting, it will cite coefficient from memory.

Small size & low consumption & long transmission distance(20m) enable DHT22 to be suited in all kinds of harsh application occasions.

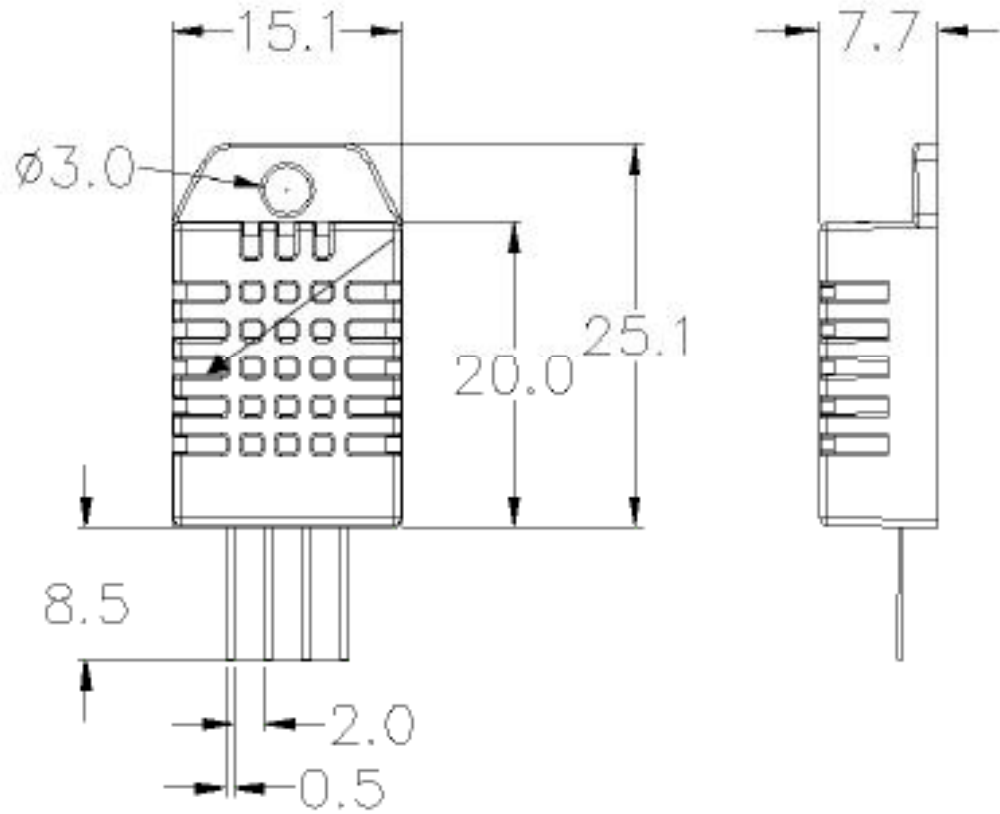
Single-row packaged with four pins, making the connection very convenient.

3. Technical Specification:

Model	DHT22
Power supply	3.3-6V DC
Output signal	digital signal via single-bus
Sensing element	Polymer capacitor
Operating range	humidity 0-100%RH; temperature -40~80Celsius
Accuracy	humidity +2%RH(Max +5%RH); temperature <+-0.5Celsius
Resolution or sensitivity	humidity 0.1%RH; temperature 0.1Celsius
Repeatability	humidity +-1%RH; temperature +-0.2Celsius
Humidity hysteresis	+0.3%RH
Long-term Stability	+0.5%RH/year
Sensing period	Average: 2s
Interchangeability	fully interchangeable
Dimensions	small size 14*18*5.5mm; big size 22*28*5mm

Aosong Electronics Co.,Ltd

Your specialist in innovating humidity & temperature sensors



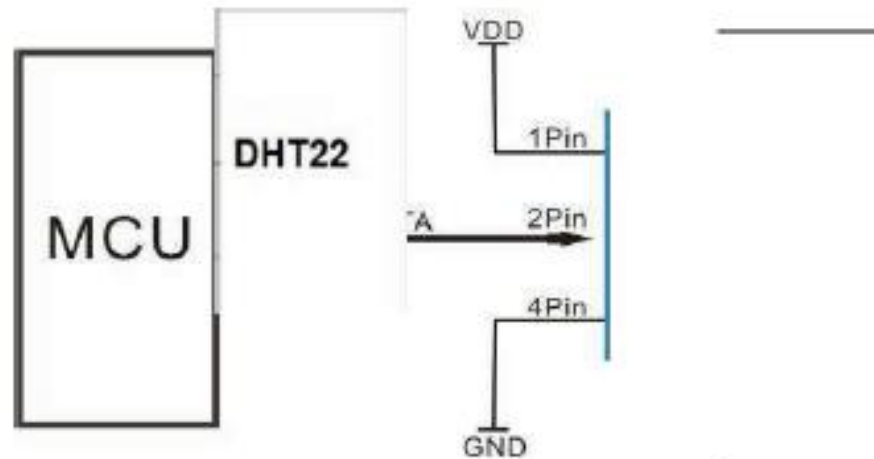
Pin sequence number: 1 2 3 4 (from left to right direction).

Pin	Function
1	VDD—power supply
2	DATA—signal
3	NULL
4	GND

Aosong Electronics Co.,Ltd

Your specialist in innovating humidity & temperature sensors

5. Electrical connection diagram:



3Pin---NC, AM2302 is another name for DHT22

6. Operating specifications:

(1) Power and Pins

Power's voltage should be 3.3-6V DC. When power is supplied to sensor, don't send any instruction to the sensor within one second to pass unstable status. One capacitor valued 100nF can be added between VDD and GND for wave filtering.

(2) Communication and signal

Single-bus data is used for communication between MCU and DHT22, it costs 5mS for single time communication.

Data is comprised of integral and decimal part, the following is the formula for data.

DHT22 send out higher data bit firstly!

DATA=8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data+8 bit check-sum
If the data transmission is right, check-sum should be the last 8 bit of "8 bit integral RH data+8 bit decimal RH data+8 bit integral T data+8 bit decimal T data".

When MCU send start signal, DHT22 change from low-power-consumption-mode to running-mode. When MCU finishes sending the start signal, DHT22 will send response signal of 40-bit data that reflect the relative humidity

5

Thomas Liu (Business Manager)