LAMPIRAN

Lampiran - 1 *Listing* Program

```
#include <WiFi.h>
#include <WiFiClientSecure.h>
#include <UniversalTelegramBot.h>
#include <ArduinoJson.h>

// Replace with your network credentials
const char* ssid = "POCO_X3_GT";
const char* password = "12345678";
//User Name = Syahril026
#define BOTtoken "8174795622:AAGU-skLPe5t4J_7jmGgQ4NbPzifhpWnZpg"
#define CHAT_ID "5908902189"
WiFiClientSecure client;
UniversalTelegramBot myBot(BOTtoken, client);
#include <DHT.h>
#define DHTPIN 13
#define DHTTYPE DHT22
DHT dht(DHTPIN, DHTTYPE);
#include <Wire.h>
#include <BH1750.h>
BH1750 lightMeter;
```

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27,16,2);
#define R1 4
#define R2 5
#define SHujan 23
#define ISR 33
bool changeState = false;
bool state;
String stJendela;
String myData, stCuaca;
unsigned long previousMillis = 0;
const long interval = 1500;
void IRAM_ATTR Notifikasi(){ changeState = true; }
void setup(){
 Serial.begin(9600);
 Wire.begin();
 lightMeter.begin();
 dht.begin();
 lcd.init(); lcd.backlight();
 pinMode(SHujan, INPUT);
 pinMode(ISR, INPUT);
 pinMode(R1, OUTPUT);
 pinMode(R2, OUTPUT);
 digitalWrite(R1,HIGH);
```

```
 digitalWrite(R2,HIGH);
 attachInterrupt(ISR, Notifikasi, CHANGE);
 Serial.println(F("BH1750and DHT22 Test begin"));
 WiFi.mode(WIFI_STA);
 WiFi.begin(ssid, password);
 //Add root certificate for api.telegram.org
 client.setCACert(TELEGRAM_CERTIFICATE_ROOT);
 while (WiFi.status() != WL_CONNECTED) {
  delay(1000);
  Serial.println("Connecting to WiFi..");
 }
 Serial.print("\nTerkoneksi ke: ");
 Serial.println(WiFi.localIP()); //Local IP Address
 Serial.println();
 delay(5000);
}
void loop() {
 float lux = lightMeter.readLightLevel();
 Serial.print("Light: ");
 Serial.print(lux);
 Serial.println(" lx");
 float h = dht.readHumidity();
 float t = dht.readTemperature();
 // Check if any reads failed and exit early (to try again).
```

```
if (isnan(h) || isnan(t)) {
  Serial.println(F("Failed to read from DHT sensor!"));
  return;
}
Serial.println("Humidity: "+String(h)+" %");
Serial.println("Temperature: "+String(t)+" °C");
lcd.setCursor(0,0); lcd.print("Suhu : ");
lcd.print(t,0); lcd.print(" ");
lcd.print((char)223); lcd.print("C  ");
if(digitalRead(SHujan)) { lcd.print("TH"); stCuaca="Tidak Hujan ";}
else { lcd.print("HJ"); stCuaca="Sedang Hujan "; }
lcd.setCursor(0,1); lcd.print("Lux :        ");
lcd.setCursor(6,1); lcd.print(lux,0); lcd.print(" lx");
if(lux>50.0) {
   if(!digitalRead(SHujan)) tutupJendela();
   else bukaJendela();
}
if(lux<=50.0) tutupJendela();
myData= "Jendela "+ stJendela+ "\r\n"+
       "Lux = "+ String(lux,0)+" lx\r\n"+
       "Suhu = "+ String(t,1)+"  °C\r\n"+
       "Cuaca " + stCuaca + "\r\n";
if (changeState)  kirimPesan();
delay(1000);
```

```
}
void tutupJendela() {
  digitalWrite(R1,LOW); digitalWrite(R2,HIGH);
  stJendela="Tertutup ";
  Serial.println("Jendela Tertutup ");
  Serial.println();
}
void bukaJendela() {
  digitalWrite(R1,HIGH); digitalWrite(R2,LOW);
  stJendela="Terbuka ";
  Serial.println("Jendela Terbuka ");
  Serial.println();
}
void kirimPesan() {
  unsigned long currentMillis = millis();
  if(currentMillis - previousMillis >= interval) {
    previousMillis = currentMillis;
    changeState = false;
    //Send notification
    myBot.sendMessage(CHAT_ID, myData, "");
  }
  delay(10000);
}
```

Lampiran - 2 Data *Sheet* Sensor cahaya

ROHM

Technical Note

Ambient Light Sensor IC Series

Digital 16bit Serial Output Type Ambient Light Sensor IC

BH1750FVI

No.11046EDT01

●Descriptions

BH1750FVI is an digital Ambient Light Sensor IC for I²C bus interface. This IC is the most suitable to obtain the ambient light data for adjusting LCD and Keypad backlight power of Mobile phone. It is possible to detect wide range at High resolution. (1 - 65535 lx).

●Features

1) I²C bus Interface (H / L Mode Support)
2) Spectral responsibility is approximately human eye response
3) Illuminance to Digital Converter
4) Wide range and High resolution. (1 - 65535 lx)
5) Low Current by power down function
6) 50Hz / 60Hz Light noise reject-function
7) 1.8V Logic input interface
8) No need any external parts
9) Light source dependency is little. (ex. Incandescent Lamp, Fluorescent Lamp, Halogen Lamp, White LED, Sun Light)
10) It is possible to select 2 type of I²C slave-address.
11) Adjustable measurement result for influence of optical window (It is possible to detect min. 0.11 lx, max. 100000 lx by using this function.)
12) Small measurement variation (+/- 20%)
13) The influence of infrared is very small.

●Applications

Mobile phone, LCD TV, NOTE PC, Portable game machine, Digital camera, Digital video camera, PDA, LCD display

●Absolute Maximum Ratings

Parameter	Symbol	Ratings	Units
Supply Voltage	Vmax	4.5	V
Operating Temperature	Topr	-40~85	℃
Storage Temperature	Tstg	-40~100	℃
SDA Sink Current	Imax	7	mA
Power Dissipation	Pd	260※	mW

※ 70mm × 70mm × 1.6mm glass epoxy board. Derating in done at 3.47mW/℃ for operating above Ta=25℃.

●Operating Conditions

Parameter	Symbol	Ratings			Units
		Min.	Typ.	Max.	
VCC Voltage	Vcc	2.4	3.0	3.6	V
I²C Reference Voltage	VDVI	1.65	-	VCC	V

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Lampiran - 3 Data *Sheet* Sensor Suhu

3. Typical Application (Figure 1)

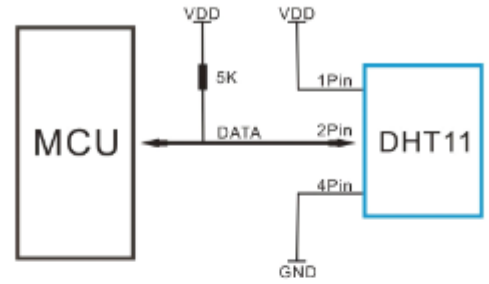


Figure 1 Typical Application

Note: 3Pin – Null; MCU = Micro-computer Unite or single chip Computer

When the connecting cable is shorter than 20 metres, a 5K pull-up resistor is recommended; when the connecting cable is longer than 20 metres, choose a appropriate pull-up resistor as needed.

4. Power and Pin

DHT11's power supply is 3-5.5V DC. When power is supplied to the sensor, do not send any instruction to the sensor in within one second in order to pass the unstable status. One capacitor valued 100nF can be added between VDD and GND for power filtering.

5. Communication Process: Serial Interface (Single-Wire Two-Way)

Single-bus data format is used for communication and synchronization between MCU and DHT11 sensor. One communication process is about 4ms.

Data consists of decimal and integral parts. A complete data transmission is 40bit, and the sensor sends higher data bit first.
Data format: 8bit integral RH data + 8bit decimal RH data + 8bit integral T data + 8bit decimal T data + 8bit check sum. If the data transmission is right, the check-sum should be the last 8bit of "8bit integral RH data + 8bit decimal RH data + 8bit integral T data + 8bit decimal T data".

Lampiran - 4 Data *Sheet* Sensor Hujan

450W/650W/1000W Modular Power **MP series**

SPECIFICATION

■ 1 SLOT Single output (150W) MS-150

OUTPUT (MS-150)	OUTPUT VOLTAGE CODE	MS-150A	MS-150B	MS-150C	MS-150D	MS-150E	MS-150F	MS-150G	MS-150H	MS-150I	MS-150J	MS-150K
	DC VOLTAGE	2V	3.3V	5V	7.5V	12V	15V	18V	24V	27V	33V	48V
	RATED CURRENT	25A	25A	25A	18A	13A	10A	8.5A	6.5A	5.8A	4.7A	3.2A
	CURRENT RANGE	0 ~ 25A	0 ~ 25A	0 ~ 25A	0 ~ 18A	0 ~ 13A	0 ~ 10A	0 ~ 8.5A	0 ~ 6.5A	0 ~ 5.8A	0 ~ 4.7A	0 ~ 3.2A
	PEAK LOAD Note.4	30A	30A	30A	20.7A	15A	11.5A	9.8A	7.5A	6.7A	5.4A	3.68A
	RATED POWER	50W	82.5W	125W	135W	156W	150W	153W	156W	156.6W	155.1W	153.6W
	RIPPLE & NOISE (max.) Note.2	50mVp-p	80mVp-p	80mVp-p	100mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	250mVp-p	250mVp-p
	VOLTAGE ADJ. RANGE	1.8 ~ 2.8V	2.6 ~ 4V	4 ~ 6V	6 ~ 9V	9 ~ 13.2V	13.2 ~ 16.8V	16.8 ~ 20V	20 ~ 26.4V	25 ~ 31V	30 ~ 40V	40 ~ 53V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.3%	±0.3%	±0.3%	±0.2%	±0.2%	±0.2%	±0.2%
	LOAD REGULATION	±2.0%	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load										
PROTECTION	OVER LOAD	121 ~ 150% rated output power			116 ~ 150% rated output power							
		Protection type : Constant current limiting, recovers automatically after fault condition is removed										
	OVER VOLTAGE	2.7 ~ 4V	4.1 ~ 5V	6.1 ~ 7.5V	9.1 ~ 11.2V	13.3 ~ 18V	16.9 ~ 22V	20.1 ~ 26V	26.5 ~ 35V	31.1 ~ 39V	40.1 ~ 48V	53.1 ~ 60V
		Protection type : Shut down o/p voltage, re-power on to recover										
FUNCTION	REMOTE INHIBIT CONTROL	RC+/RC-: 0 ~ 0.8V or OPEN, POWER ON RC+/RC-: 4 ~ 12V POWER OFF										

■ 2 SLOT Single output (300W) MS-300

OUTPUT (MS-300)	OUTPUT VOLTAGE CODE	MS-300-3A	MS-300-3B	MS-300-3C	MS-300-3D	MS-300-3E	MS-300-3F	MS-300-3G	MS-300-3H	MS-300-3I	MS-300-3J	MS-300-3K
	DC VOLTAGE	2V	3.3V	5V	7.5V	12V	15V	18V	24V	27V	33V	48V
	RATED CURRENT	50A	50A	50A	40A	25A	20A	16.7A	12.5A	11.2A	9.1A	6.3A
	CURRENT RANGE	0 ~ 50A	0 ~ 50A	0 ~ 50A	0 ~ 40A	0 ~ 25A	0 ~ 20A	0 ~ 16.7A	0 ~ 12.5A	0 ~ 11.2A	0 ~ 9.1A	0 ~ 6.3A
	PEAK LOAD Note.4	57.5A	57.5A	57.5A	46A	29A	23A	19.2A	14.4A	12.9A	10.5A	7.2A
	RATED POWER	100W	165W	250W	300W	300W	300W	300.6W	300W	302.4W	300.3W	302.4W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	80mVp-p	100mVp-p	150mVp-p	150mVp-p	150mVp-p	150mVp-p	200mVp-p	250mVp-p	300mVp-p
	VOLTAGE ADJ. RANGE	1.8 ~ 2.8V	2.6 ~ 4V	4 ~ 6V	6 ~ 9V	9 ~ 13.2V	13.2 ~ 16.8V	16.8 ~ 20V	20 ~ 26.4V	25 ~ 31V	30 ~ 40V	40 ~ 53V
	VOLTAGE TOLERANCE Note.3	±3.0%	±2.0%	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.5%	±0.5%	±0.3%	±0.3%	±0.3%	±0.2%	±0.2%	±0.2%	±0.2%
	LOAD REGULATION	±2.0%	±1.0%	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±1.0%	±1.0%	±1.0%	±1.0%
	SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load										
PROTECTION	OVER LOAD	116 ~ 150% rated output power										
		Protection type : Constant current limiting, recovers automatically after fault condition is removed										
	OVER VOLTAGE	3 ~ 4V	4.1 ~ 5V	6.1 ~ 7.5V	9.1 ~ 11.2V	13.3 ~ 18V	16.9 ~ 22V	20.1 ~ 26V	26.5 ~ 35V	31.1 ~ 39V	40.1 ~ 48V	53.1 ~ 60V
		Protection type : Shut down o/p voltage, re-power on to recover										
FUNCTION	REMOTE INHIBIT CONTROL	RC+/RC-: 0 ~ 0.8V or OPEN, POWER ON RC+/RC-: 4 ~ 12V POWER OFF										

■ 1 SLOT Single output (75W) MS-75

OUTPUT (MS-75)	OUTPUT VOLTAGE CODE	MS-75L	MS-75M	MS-75N	MS-75O	MS-75P	MS-75Q
	DC VOLTAGE	3.3V	5V	12V	15V	24V	48V
	RATED CURRENT	15A	15A	6.3A	5A	3.2A	1.6A
	CURRENT RANGE	0 ~ 15A	0 ~ 15A	0 ~ 6.3A	0 ~ 5A	0 ~ 3.2A	0 ~ 1.6A
	PEAK LOAD Note.4	17.3A	17.3A	7.3A	5.8A	3.7A	1.8A
	RATED POWER	49.5W	75W	75.6W	75W	76.8W	76.8W
	RIPPLE & NOISE (max.) Note.2	80mVp-p	80mVp-p	150mVp-p	150mVp-p	150mVp-p	250mVp-p
	VOLTAGE ADJ. RANGE	2.6 ~ 4V	4 ~ 6V	9 ~ 13.2V	13.2 ~ 16.8V	20 ~ 26.4V	40 ~ 53V
	VOLTAGE TOLERANCE Note.3	±2.0%	±2.0%	±1.0%	±1.0%	±1.0%	±1.0%
	LINE REGULATION	±0.5%	±0.5%	±0.3%	±0.3%	±0.2%	±0.2%
	LOAD REGULATION	±1.0%	±1.0%	±0.5%	±0.5%	±0.5%	±0.5%
	SETUP, RISE, HOLD TIME	1500ms, 50ms, 20ms at full load					
PROTECTION	OVER LOAD	116 ~ 150% rated output power					
		Protection type : Constant current limiting, recovers automatically after fault condition is removed					
	OVER VOLTAGE	4.1 ~ 5V	6.1 ~ 7.5V	13.3 ~ 18V	16.9 ~ 22V	26.5 ~ 35V	53.1 ~ 60V
		Protection type : Shut down o/p voltage, re-power on to recover					
FUNCTION	REMOTE INHIBIT CONTROL	RC+/RC-: 0 ~ 0.8V or OPEN, POWER ON RC+/RC-: 4 ~ 12V POWER OFF					

Lampiran - 5 Dokumentasi Pekerjaan Alat









Lampiran - 6 Dokumentasi Pengambilan Data

