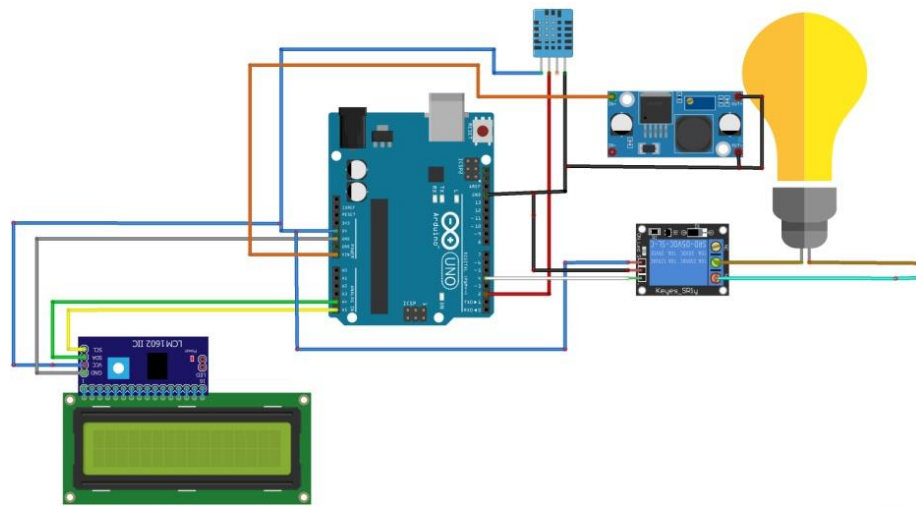


**LAMPIRAN**

## Prototipe Rangkaian Sistem



## Coding Konfigurasi Arduino UNO

```
#include "DHT.h"
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27, 16, 2);// sda scl pin

#define DHTPIN 8
#define DHTTYPE DHT11
#define relay 4
#define kipas 5

DHT dht(DHTPIN, DHTTYPE);

void setup() {
  lcd.init();
  lcd.backlight();

  Serial.begin(9600);
  dht.begin();
```

```
pinMode (relay,OUTPUT);
pinMode (kipas,OUTPUT);
lcd.setCursor(0,0);
lcd.print("Monitoring");
lcd.setCursor(0,1);
lcd.print("Ruang Gabah");
delay(2500);
lcd.clear();

}

void loop()
{
float t = dht.readTemperature(); //suhu
float h = dht.readHumidity(); //kelembaban

if (isnan(t) || isnan(h)) {
Serial.println("no sensor");
return;
}

Serial.print("Suhu : ");
Serial.print(t);
Serial.print(" *C");
Serial.print("Kelembaban: ");
Serial.print(h);
Serial.println(" %");
delay(1500);

lcd.setCursor(0,0);
lcd.print("Suhu : ");
```

```
lcd.print(t);  
lcd.print(" *C ");  
lcd.setCursor(0,1);  
lcd.print("Lembab : ");  
lcd.print(h);  
lcd.print(" &");  
  
if (t<38){  
    digitalWrite(relay,LOW);  
    digitalWrite(kipas,HIGH);  
}  
else {  
    digitalWrite(relay,HIGH);  
    digitalWrite(kipas,LOW);  
}  
}
```



### **Arduino UNO (USA ONLY)**

Arduino UNO are the ideal successor of the UNO, updated with the latest technologies. It recognises gestures, and features a six-axis accelerometer and gyroscope. Control your projects with yourphone over Bluetooth connectivity!

#### **Overview**

A learning and development board that delivers the performance and low-power consumption of the [Intel® Curie™](#) Module with the simplicity of Arduino at an entry-level price. It keeps the same robust form factor and peripheral list of the UNO with the addition of onboard Bluetooth LE capabilities and a 6-axis accelerometer/gyro to help you easily expand your creativity into the connected world. .

The module contains two tiny cores, an x86 (Quark) and a [32-bit ARC](#) architecture core, both clocked at 32MHz. The Intel toolchain compiles your Arduino sketches optimally across both cores to accomplish the most demanding tasks.

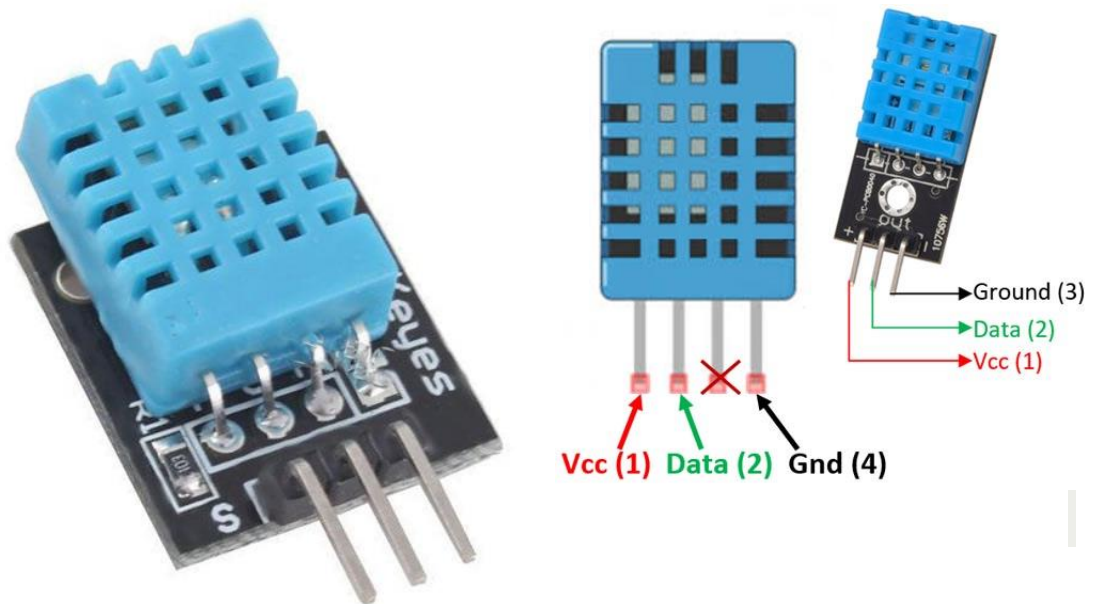
The Real-Time Operating Systems (RTOS) and framework developed by Intel is scheduled to be open sourced in March 2016. Until then, it's not possible to interface with it directly; only the Arduino core can do it via

static mailboxes, so it can only accomplish a predefined list of tasks (interface with PC using USB, program the sketch into flash, expose Bluetooth LE functionality to sketch, perform

Microcontroller	Intel Curie
Operating Voltage	3.3V (5V tolerant I/O)
Input voltage (recommended)	1-12V
Input Voltage (limit)	7-20V
Digital I/O Pins	14 (of which 4 provide PWM output)
PWM Digital I/O Pins	4
Analog Input Pins	6
DC Current per I/O Pin	4 mA
Flash Memory	196 kB
SRAM	24 kB
Clock Speed	32MHz
Features	Bluetooth LE, 6-axis accelerometer/gyro
Length	68.6 mm
Width	53.4 mm

# DHT11–Temperature and Humidity

## Sensor



The DHT11 is a commonly used Temperature and humidity sensor that comes with a dedicated NTC to measure temperature and an 8-bit microcontroller to output the values of temperature and humidity as serial data.

### DHT11 Pinout Configuration

No:	Pin Name	Description
For Sensor	DHT11	
1	Vcc	Power supply 3.5V to 5.5V
2	Data	Outputs both Temperature and Humidity through serial Data

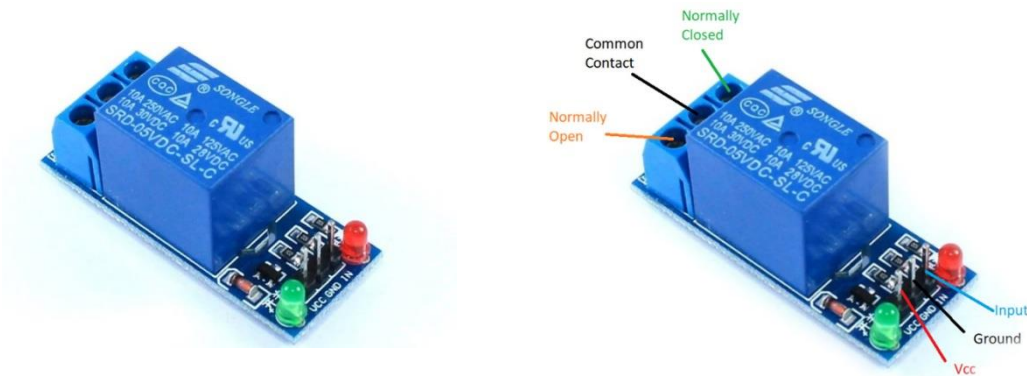
3	NC	No Connection and hence not used
4	Ground	Connected to the ground of the circuit
For DHT11 Sensor module		
1	Vcc	Power supply 3.5V to 5.5V
2	Data	Outputs both Temperature and Humidity through serial Data
3	Ground	Connected to the ground of the circuit

#### DHT11 Specifications

- Operating Voltage: 3.5V to 5.5V
- Operating current: 0.3mA (measuring) 60uA (standby)
- Output: Serial data
- Temperature Range: 0°C to 50°C
- Humidity Range: 20% to 90%
- Resolution: Temperature and Humidity both are 16-bit
- Accuracy:  $\pm 1^\circ\text{C}$  and  $\pm 1\%$



## 5V Single-Channel Relay Module



### 5V Single-Channel Relay Module

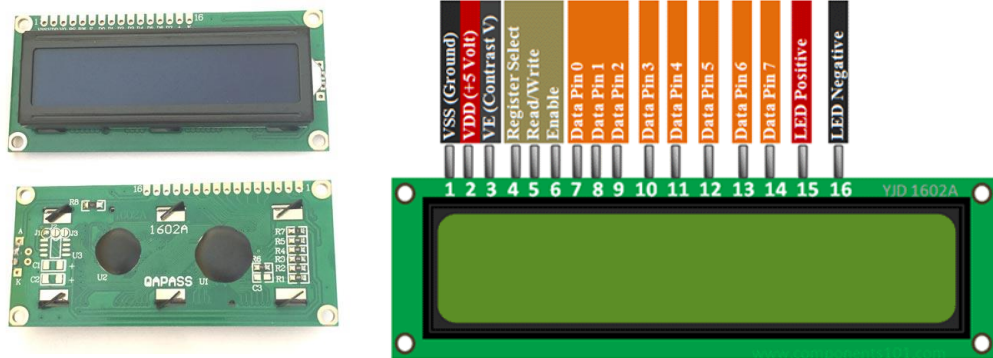
### Single-Channel Relay Module Pinout

Relay is an electromechanical device that uses an electric current to open or close the contacts of a switch. The single-channel relay module is much more than just a plain relay, it comprises of components that make switching and connection easier and act as indicators to show if the module is powered and if the relay is active or not.

#### Single-Channel Relay Module Specifications

- Supply voltage – 3.75V to 6V
- Quiescent current: 2mA
- Current when the relay is active: ~70mA
- Relay maximum contact voltage – 250VAC or 30VDC
- Relay maximum current – 10A

## 16x2 LCD Module



### 16x2 LCD Module

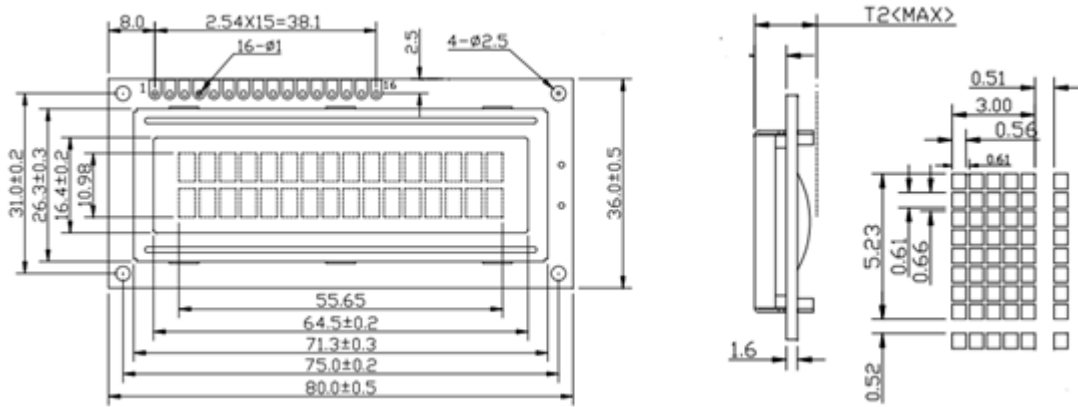
#### 16x2 LCD Module Pinout

16x2 LCD modules are very commonly used in most embedded projects, the reason being its cheap price, availability, programmer friendly and available educational resources.

#### HD44780 LCD Features and Technical Specifications

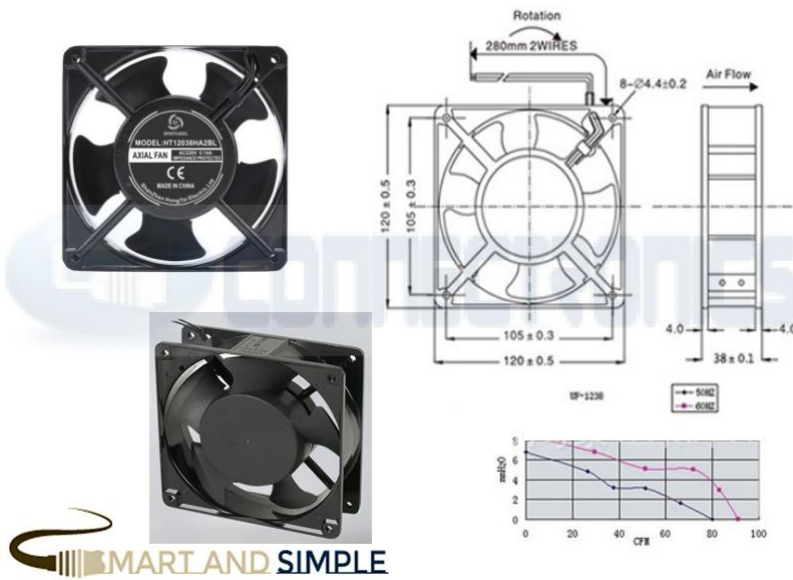
- Operating Voltage is 4.7V to 5.3V
- Current consumption is 1mA without backlight
- Alphanumeric LCD display module, meaning can display alphabets and numbers
- Consists of two rows and each row can print 16 characters.
- Each character is build by a 5×8 pixel box
- Can work on both 8-bit and 4-bit mode
- It can also display any custom generated characters
- Available in Green and Blue Backlight

2D Model of 16x2 LCD module



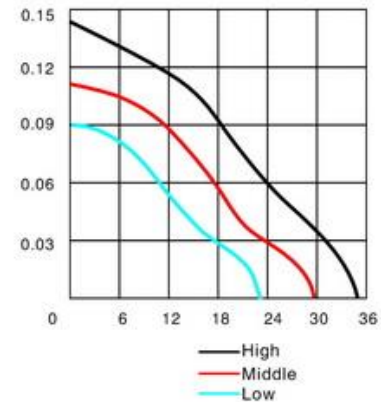
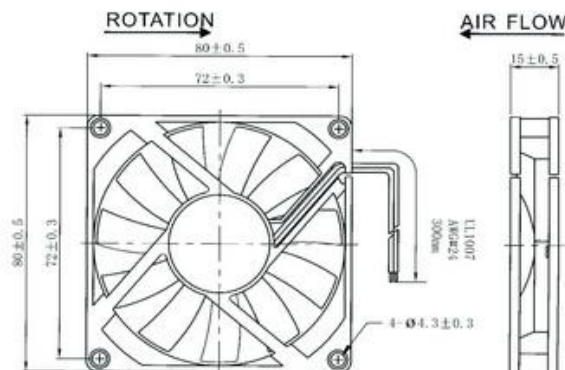
**COMPONENTS** 101

**MLX90412-L: 20 W Low Noise Single-coil Fan and Pump Driver for Automotive**



Parameter	Value
Model type	EC-6025HH12C
Input power (max speed)	4.6W
Voltage DC	12V
Overall size (casing)	120 mm x 120 mm
Fan speed	6000
Air flow at max fan speed	31.81 CFM

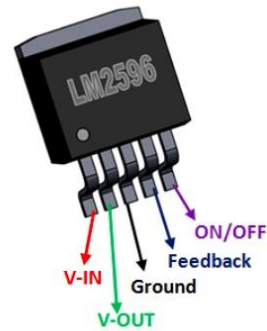
尺寸	Size: 80 × 80 × 15mm
马达	Motor : Brushless DC, auto restart Impedance & polarity protected
风叶外壳	Impeller& Frame:Glassfiber reinforced thermoplastic PBT UL94V-0
绝缘	Insulation Resistance:Min.10M at DC 500V
耐压	Dielectric Strength: 500VAC/1 sec. Max. Leakage 500 micro amp
温度范围	Permissible Temp. Range: Ball bearing -20°C~+75°C Sleeve Bearing -10°C~+50°C
安规认证	Safety:UL>CUL>CE
寿命	Life Expectancy at 40°C: Ball Bearing 50000 hr. Sleeve Bearing 30000 hr.



Model (型号)	Rated Voltage (VDC) (额定电压)	Startup Voltage (VDC) (启动电压)	Current Amp (A) (电流)	Speed (rpm) (转速)	Air Flow (CFM) (风量)	Static Pressure (Inch-H2O) (风压)	Noise Level (dB-A) (噪音)	Weight (g) (重量)
YM0508PHS(B)1	5.00	3.00	0.32	2500	29.17	0.11	28	54.00
YM0508PHS(B)2	5.00	3.00	0.28	2200	26.15	0.10	26	54.00
YM0508PHS(B)3	5.00	3.00	0.16	2000	23.33	0.09	22	54.00
YM1208PHS(B)1	12.00	5.00	0.24	3000	35.00	0.14	33	54.00
YM1208PHS(B)2	12.00	5.00	0.16	2500	29.17	0.11	28	54.00
YM1208PHS(B)3	12.00	5.00	0.08	2000	23.33	0.09	22	54.00
YM2408PHS(B)1	24.00	10.00	0.10	3000	35.00	0.14	33	54.00
YM2408PHS(B)2	24.00	10.00	0.08	2500	29.17	0.11	28	54.00
YM2408PHS(B)3	24.00	10.00	0.06	2000	23.33	0.09	22	54.00

# COMPONENTS 101

## LM2596 3A Step Down Voltage Switching Regulator



### LM2596 Switching Regulator

#### LM2596 Pinout

The **LM2596** is a commonly used popular **step-down switching regulator IC**. The adjustable version can take in input voltage from 4.5V to 40V and convert it to variable voltage sourcing upto of 3A of continues current. Because of its high current capability is commonly used in power modules to power/control heavy loads.

#### Pin Description

Pin Number	Pin Name	Description
1	V-IN	Input voltage that is to be regulated
2	V-OUT	Stepped down Regulated output Voltage

3	Ground	Connected to system ground
4	Feedback	Sets the output voltage using divider network using output voltage feedback
5	ON/OFF	Enable pin, should be grounded for normal operation

### Features

3A Step Down Voltage Regulator IC

Available as 3.3V regulator, 5V Regulator, 12V Regulator and Variable regulator

Input Supply Voltage: 4.5V to 40V

Minimum Output Voltage: 3.16V

Continuous Output Current: 3A

Peak Output Current: 6.9A

Switching Frequency: 150KHz

Available in To-220 and To-263 Package

The **LM2596** is of many types. The adjustable version **LM2596-ADJ** is the most commonly used and hence we will discuss only about that in this article. The *Complete Technical Details can be found at the datasheet given at the end of this page.*