

## DAFTAR RIWAYAT HIDUP



Penulis dilahirkan di Kebumen pada tanggal 4 Juni 1994, sebagai anak kedua dari tiga bersaudara dari pasangan Bapak Dalmiri dan Ibu Kasini. Pendidikan formal penulis di mulai dari pendidikan Sekolah Dasar (SD) diselesaikan di SDN 2 Surejan pada tahun 2006, Sekolah Menengah Pertama (SMP) di Madrasah Tsanawiyah Negeri Kaleng pada tahun 2009, dan Sekolah Menengah Akhir (SMA) di SMK N 1 Puring pada tahun 2012. Mulai tahun 2016, penulis terdaftar sebagai mahasiswa Jurusan Teknik Informatika Fakultas Teknik Universitas Sangga Buana YPKP. Pada Semester 6 penulis melaksanakan kerja praktik di Kecamatan Cilengkrang. Pada saat kerja praktik penulis membuat laporan tentang Sistem Penunjang Keputusan Kelayakan Izin Mendirikan Bangunan Berbasis Web dengan mengambil studi kasus di Kecamatan Cilengkrang.



**KARTU BIMBINGAN SKRIPSI  
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<b>JUDUL</b>	Pemanfaatan Teknologi <i>Internet of Things</i> Untuk Monitoring Tambak Udang Vaname Berbasis <i>Smartphone</i> Android Menggunakan NodeMcu Wemos D1 mini



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**Pembimbing**

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## LAMPIRAN

### 1. SENSOR PH SEN0161

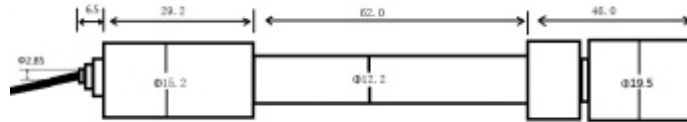


#### **Analog pH Meter Kit SKU: SEN0169**

#### **Introduction**

Need to measure water quality and other parameters but haven't got any low cost pH meter? Find it difficult to use with Arduino? Here comes an analog pH meter, specially designed for Arduino controllers and has built-in simple, convenient and practical connection and features. It has an LED which works as the Power Indicator, a BNC connector and PH2.0 sensor interface. You can just connect the pH sensor with BNC connector, and plug the PH2.0 interface into any analog input on Arduino controller to read pH value easily.

## Specification



### SEN0161 dimension

- Module Power: 5.00V
- Circuit Board Size: 43mm×32mm
- pH Measuring Range: 0-14
- Measuring Temperature: 0-60 JH
- Accuracy:  $\pm 0.1$ pH (25 JH)
- Response Time:  $\leq 1$ min
- pH Sensor with BNC Connector
- PH2.0 Interface ( 3 foot patch )
- Gain Adjustment Potentiometer
- Power Indicator LED

### Precautions

- Before and after use of the pH electrode every time, you need to use (pure)water to clean it.
- The electrode plug should be kept clean and dry in case of short circuit.
- **Preservation: Electrode reference preservation solution is the 3N KCL solution.**
- Measurement should be avoided staggered pollution between solutions, so as not to affect the accuracy of measurement.
- Electrode blub or sand core is defiled which will make PTS decline, slow response. So, it should be based on the characteristics of the pollutant, adapted to the cleaning solution, the electrode performance recovery.

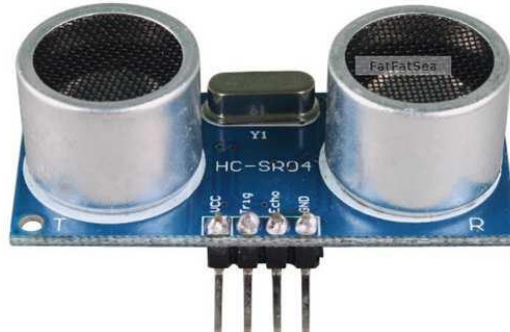
- Electrode when in use, the ceramic sand core and liquid outlet rubber ring should be removed, in order to make salt bridge solution to maintain a certain velocity.

### pH Electrode Characteristics

The output of pH electrode is Millivolts, and the pH value of the relationship is shown as follows (25 JI):

<b>VOLTAGE (mV)</b>	<b>pH value</b>	<b>VOLTAGE (mV)</b>	<b>pH value</b>
414.12	0.00	-414.12	14.00
354.96	1.00	-354.96	13.00
295.80	2.00	-295.80	12.00
236.64	3.00	-236.64	11.00
177.48	4.00	-177.48	10.00
118.32	5.00	-118.32	9.00
59.16	6.00	-59.16	8.00
0.00	7.00	0.00	7.00

## 2. Sensor Ultrasonic HC-SR04



### Product features:

Ultrasonic ranging module HC - SR04 provides 2cm - 400cm non-contact measurement function, the ranging accuracy can reach to 3mm. The modules includes ultrasonic transmitters, receiver and control circuit. The basic principle of work:

- Using IO trigger for at least 10us high level signal,
- The Module automatically sends eight 40 kHz and detect whether there is a pulse signal back.
- IF the signal back, through high level , time of high output IO duration is the time from sending ultrasonic to returning.

Test distance = (high level time×velocity of sound (340M/S) / 2,

### Wire connecting direct as following:

- 5V Supply
- Trigger Pulse Input
- Echo Pulse Output
- 0V Ground

**Electric Parameter**

Working Voltage	DC 5 V
Working Current	15mA
Working Frequency	40Hz
Max Range	4m
Min Range	2cm
MeasuringAngle	15 degree
Trigger Input Signal	10uS TTL pulse
Echo Output Signal	Input TTL lever signal and the range in proportion
Dimension	45*20*15mm

### 3. Sensor Suhu DS18B20



PRELIMINARY

DS18B20

## Programmable Resolution 1-Wire<sup>®</sup> Digital Thermometer

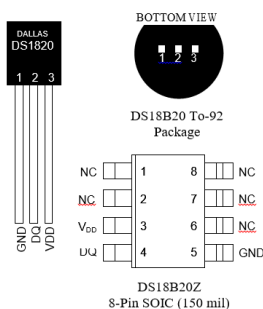
[www.dalsemi.com](http://www.dalsemi.com)

### Feature:

Unique 1-Wire interface requires only one port pin for communication multidrop capability simplifies distributed temperature sensing applications Requires no external component can be powered from data line. Power supply range is 3.0V to 5.5V zero standby power required Measures temperatures from  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$ . Fahrenheit equivalent is  $-67^{\circ}\text{F}$  to  $+257^{\circ}\text{F} \pm 0.5^{\circ}\text{C}$  accuracy from  $-10^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$  thermometer resolution is programmable from 9 to 12 bits converts 12-bit temperature to digital word in 750 ms (max)

User-definable, nonvolatile temperature alarm settings alarm search command identifies and addresses devices whose temperature is outside of programmed limits (temperature alarm condition) applications include thermostatic controls, industrial systems, consumer products, thermometers, or any thermally sensitive system.

### PIN ASSIGNMENT





## PIN DESCRIPTION

GND – Ground

DQ – Data in/out

V<sub>DD</sub> – Power Supply Voltage

NC – No Connect

## DESCRIPTION

The DS18B20 Digital Thermometer provides 9 to 12-bit (configurable) temperature readings which indicate the temperature of the device.

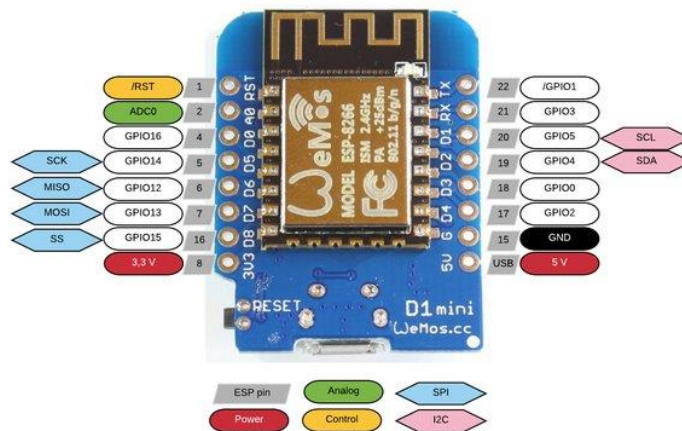
Information is sent to/from the DS18B20 over a 1-Wire interface, so that only one wire (and ground) needs to be connected from a central microprocessor to a DS18B20. Power for reading, writing, and performing temperature conversions can be derived from the data line itself with no need for an external power source.

Because each DS18B20 contains a unique silicon serial number, multiple DS18B20s can exist on the same 1-Wire bus. This allows for placing temperature sensors in many different places. Applications where this feature is useful include HVAC environmental controls, sensing temperatures inside buildings, equipment or machinery, and process monitoring and control.

## DETAIL PIN DESCRIPTION

PIN 8PIN SOIC	PIN TO92	SYMBOL	DESCRIPTION
5	1	GND	Ground.
4	2	DQ	<b>Data Input/Output pin.</b> For 1-Wire operation: Open
3	3	V <sub>DD</sub>	<b>Optional V<sub>DD</sub> pin.</b> See “Parasite Power” section for details of

#### 4. Wemos D1 Mini



#### Features

- 11 digital IO, interrupt/pwm/I2C/one-wire supported(except D0)
- 1 analog input(3.2V max input)
- a Micro USB connection
- Compatible with MicroPython, Arduino, nodemcu

#### Technical Space

<b>Microcontroller</b>	ESP-8266EX
<b>Betriebsspannung</b>	3.3V
<b>Eingangsspannung (USB)</b>	5V
<b>Digital E/A Pins</b>	11
<b>Analog Eingangs Pins</b>	1(Max input: 3.2V)
<b>Flash Memory</b>	4M bytes
<b>Clock Speed</b>	80MHz/160MHz
<b>CPU</b>	32-bit
<b>Länge</b>	34.2mm
<b>Breite</b>	25.6mm
<b>Gewicht</b>	10g

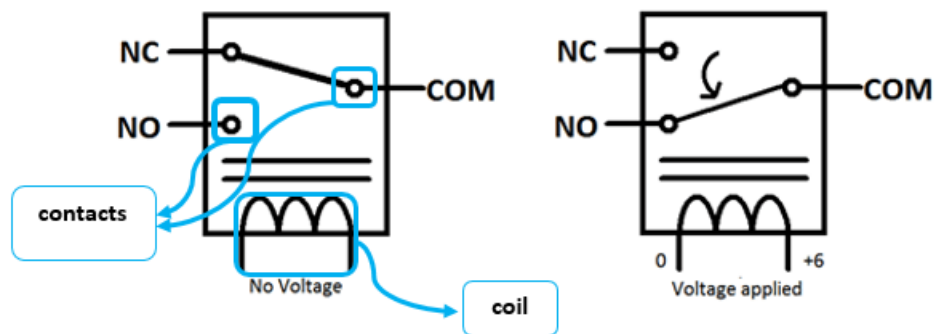
**Pin**

<b>Pin</b>	<b>Function</b>	<b>ESP-8266 Pin</b>
TX	TXD	TXD
RX	RXD	RXD
A0	Analog input, max 3.2V	A0
D0	IO	GPIO16
D1	IO, SCL	GPIO5
D2	IO, SDA	GPIO4
D3	IO, 10k Pull-up	GPIO0
D4	IO, 10k Pull-up, BUILTIN_LED	GPIO2
D5	IO, SCK	GPIO14
D6	IO, MISO	GPIO12
D7	IO, MOSI	GPIO13
D8	IO, 10k Pull-down, SS	GPIO15
G	Ground	GND
5V	5V	-
3V3	3.3V	3.3V
RST	Reset	RST

## 5. Relay 5v 1 Channel

### Relay Working Idea

Relays consist of three pins normally open pin , normally closed pin, common pin and coil. When coil powerd on magntic field is generated the contacts connected to each other



### Relay Modules 1 Channel Features

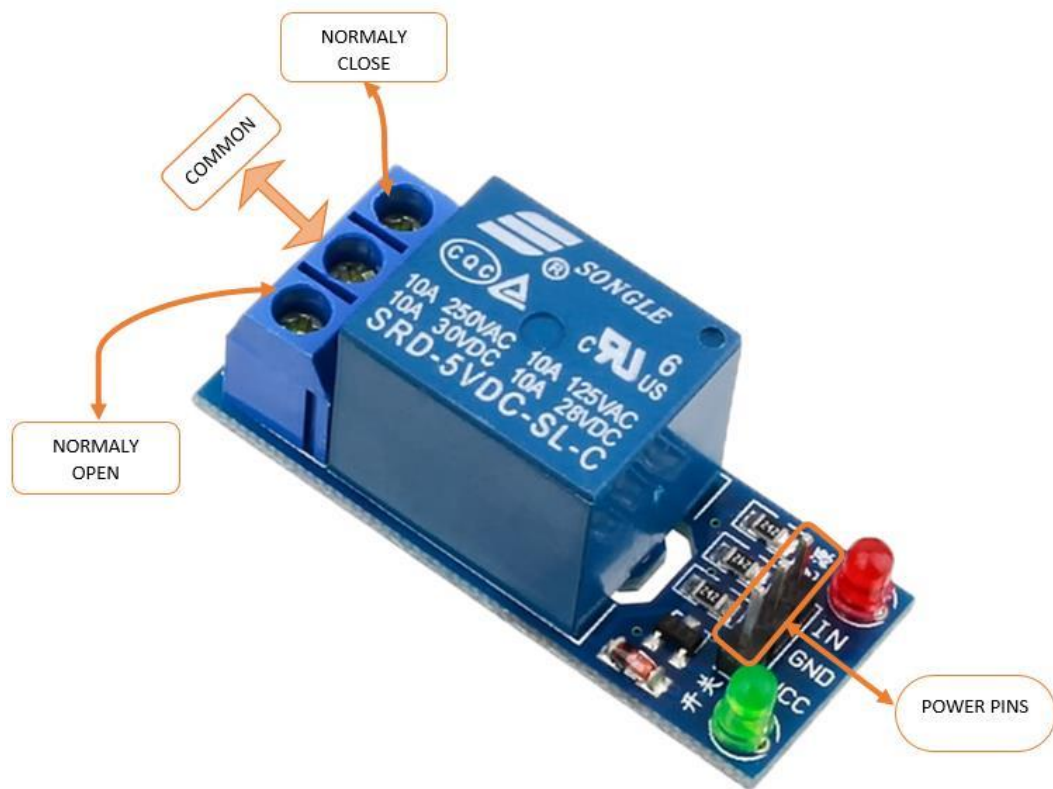
Contact current 10A and 250V AC or 30V DC.

- Each channel has indication LED.
- Coil voltage 12V per channel.
- Kit operating voltage 5-12 V
- Input signal 3-5 V for each channel.
- Three pins for normally open and closed for each channel.

### How To Connect Relay Module With Arduino

As shown in relay working idea it depends on magnetic field generated from the coil so there is power isolation between the coil and the switching pins so coils can be easily powered from Arduino by connecting VCC and GND bins from Arduino

kit to the relay module kit after that we choose Arduino output pins depending on the number of relays needed in project designed and set these pins to output and make it out high (5 V) to control the coil that allow controlling of switching process.



**NOTE :** whatever was the relay channels number the pinconfiguration is the same for every channel except the power pins (VCC and GND) are for the board itself. The input signal (IN) pin for every relay.

## 6. Pompa Air

Pompa air adalah alat yang digunakan untuk memindahkan cairan atau fluida dari suatu tempat ke tempat lain melalui saluran pipa atau selang dengan menggunakan aliran listrik untuk mendorong udara yang dipindahkan dengan cara menaikkan tekanan cairan tersebut.

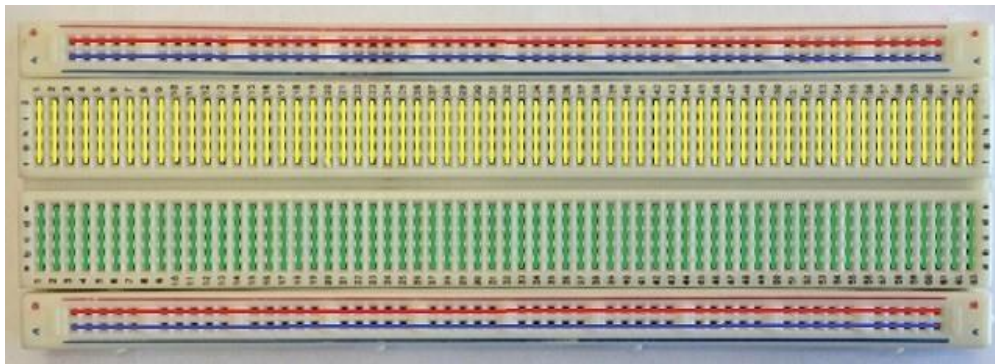


Tegangan	4V-12V
Diameter Motor	27mm
Panjang Pompa Air	52mm
Lubang Pembuangan	4mm
Berat	147g

Untuk informasi lebih lanjut, dapat mengunjungi situs berikut [https://media.digikey.com/pdf/Data%20Sheets/Seeed%20Technology/108990019\\_Web.pdf](https://media.digikey.com/pdf/Data%20Sheets/Seeed%20Technology/108990019_Web.pdf).

## 7. Breadboard

Breadboard adalah papan plastik dengan sekumpulan lubang kecil dan digunakan untuk membangun dan menguji sirkuit. Ini memiliki lubang pada mereka yang terhubung secara internal dalam pola tertentu seperti yang ditunjukkan pada gambar di bawah ini. Lubang-lubang yang terhubung melalui garis hijau menunjukkan bahwa mereka terhubung secara internal. Garis Merah menunjukkan Daya, yang biasanya dihubungkan ke rel daya. Garis Biru menunjukkan Ground, yang biasanya dihubungkan ke ground sirkuit. IC seperti Penghitung Dekade dapat ditempatkan di papan tempat memotong roti tengah untuk berbagi delapan pin pertama ke garis kuning dan delapan pin ke-2 ke garis hijau.



Berikut adalah beberapa fitur dan spesifikasi dari *breadboard* :

- 2 Jalur Distribusi, 200 titik ikat
- 630 titik ikat di area IC / sirkuit
- Plastik ABS dengan legenda warna
- Dimensi: 6,5 \* 4,4 \* 0,3 inci
- Gaya Lubang / Pitch: Lubang kawat persegi (2.54mm)
- Suhu Distorsi panas ABS: 84 ° C (183 ° F)
- Peringkat: 300/3 hingga 5Amps
- Resistensi Isolasi: 500MΩ / DC500V
- Tegangan Tahan: 1.000V AC / 1 menit
- Ukuran Kawat Penyisipan: 21 hingga 26 kawat AWG

Untuk informasi lebih lanjut, dapat mengunjungi situs berikut

<https://components101.com/misc/breadboard-connections-uses-guide>.

## 8. Battery 9 Volt



### Specifications

Chemical System	: Zinc-Manganese Dioxide( $Zn/MnO_2$ ) No added mercury or cadium
Designation	: ANSI 1604A, IEC-6LF22 or 6LR61
Niminal Voltage	: 9.0 Volts
Operating Temp	: $-18^{\circ}C$ to $55^{\circ}C$
Typical Weight	: 45 grams
Typical Volume	: 21 cubic centimeters
Shelf Life	: 5 Years at $21^{\circ}C$
Terminal	: Miniature Snap

## 9. PowerBank





### Spesifikasi

Dimensi Produk	: 147,8 x 73,9 x 15,3 mm
Kapasitas Baterai	: 37 Wh, 3,7 V (10.000 mAh)
Port Input	: Micro USB / USB-C
Input	: 5 V/ 2,6 A, 9 V/2,1 A, 12V/1,5 A (MAX 18 W)
Waktu Pengisian	: 4 jam dengan pengisian daya 9V/2A atau 12V/1,5A 6 jam dengan pengisian daya 5V/2A
Jenis Baterai	: Baterai Polimer lithium
Kapasitas Terukur	: 5.500 mAh (5,1 V/2,6 A)
Port Output	: USB-A x 2
Output	: USB-A x 1,5 V/2,6 A, 9 V/2,1 A, 12 V/1.5 A (MAKS 18 W) USB-B x 2 : 5,1 V/2,6 A