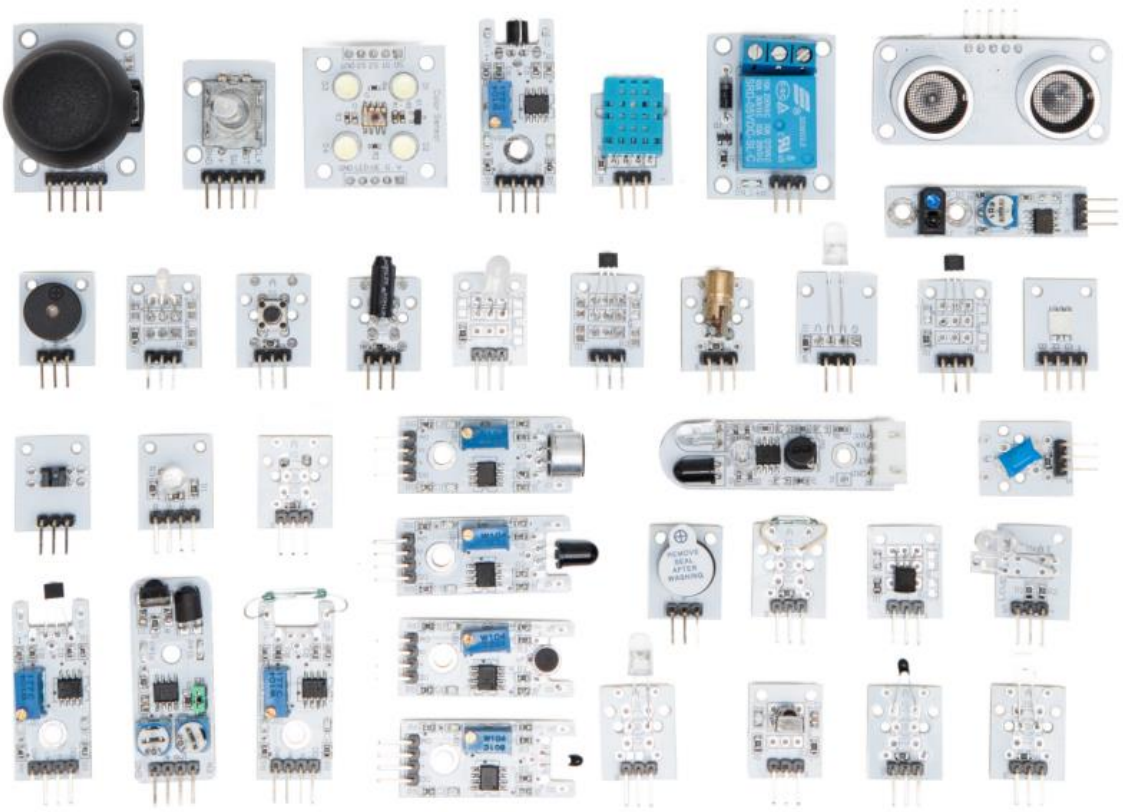
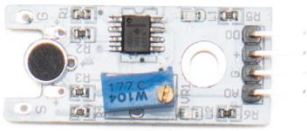
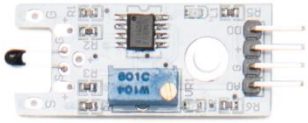
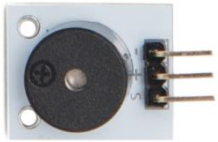
Playknowlogy

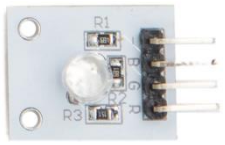
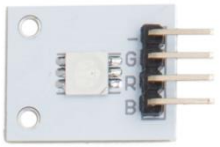
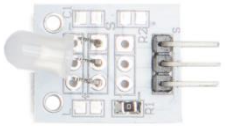
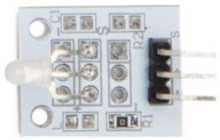
Large Sensor Kit

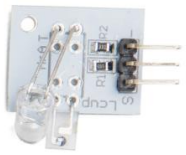
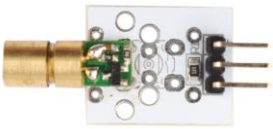
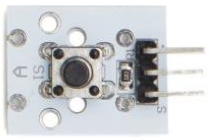
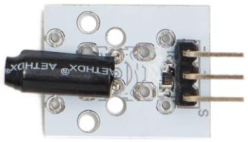


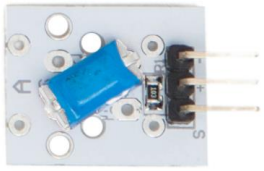
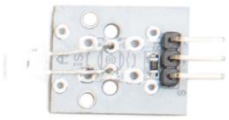
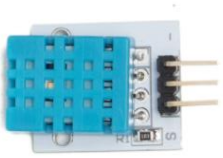
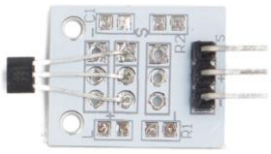
Module List

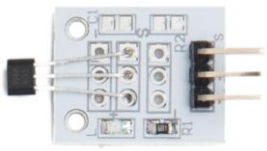
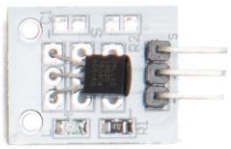
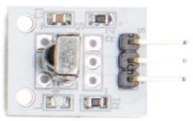
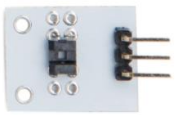
	Name	Quantity	Picture
1	Joystick Module	1	
2	5V Relay Module	1	
3	Large microphone module	1	
4	Small Microphone Module	1	
5	Line Tracking Module	1	
6	Obstacle Avoidance Sensor	1	

7	Flame Sensor Module	1	
8	Linear Magnetic Hall Sensor	1	
9	Touch Sensor	1	
10	Digital Temperature Sensor	1	
11	Active Buzzer Module	1	
12	Passive Buzzer Module	1	

13	RGB LED Module	1	
14	RGB SMD Module	1	
15	Two Color LED Module(5mm)	1	
16	Two Color LED Module(3mm)	1	
17	Reed Switch Module	1	
18	Mini Reed Switch Module	1	

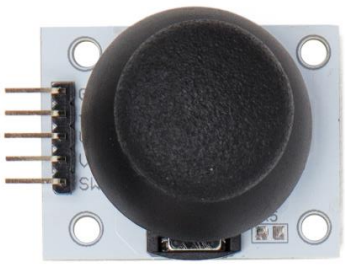
19	Pulse sensor	1	
20	Seven Color Flashing	1	
21	Laser Module	1	
22	Button Switch Module	1	
23	Vibration Shock Module	1	
24	Rotary Encode Module	1	

25	Light seeking sensor	2	
26	Dual ultrasonic sensor module	1	
27	Tilt Switch Sensor	1	
28	Light Dependent Resistor Module	1	
29	Temperature &Humidity Module	1	
30	Hall Effect Sensor	1	

31	Class Hall Magnetic Sensor	1	
32	DS18B20 Temp Sensor	1	
33	Analog Temperature Sensor	1	
34	5 mm IR LED	1	
35	IR Receiver Module	1	
36	Optical Broken Module	1	

37	Hit Sensor Module	1	
38	TCS 3200 color sensor	1	

Module 1: Joystick module



Specifications:

- Two analog pin(X, Y axis), one digital pin(button).
- Input voltage: 5V
- Output voltage: 2.5V
- Size: 37*25*32mm
- Weight: 15g

PinOut

Pin	Description
Gnd	Ground
+5v	Power
VRX	X axis analog signal input
VRY	Y axis analog signal input
SW	Button key, value is 0 or 1

Module 2: 5V Relay Module

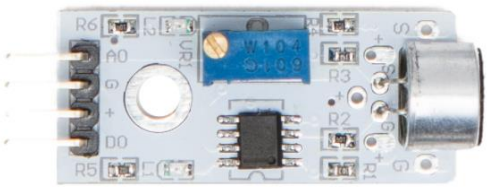
specifications:

- Number of I/O Channels: 1
- Type: Digital
- Switching capacity available by 10A in spite of small size design for high density P.C. board mounting technique.
- Control signal: TTL level
- Max. Allowable Voltage: 250VAC/110VDC
- Max. Allowable Power Force: From C(800VAC/240W), From A(1200VA/300W)
- UL,CUL,TUV recognized.
- Indication LED for Relay's Status

Pinout

Pin Name	Description
"+"	Power(5V DC)
"-"	Gnd
"S"	Signal pin, connected with Arduino
"NO"	Normally Open Connection
"NC"	Normally Closed Connection
"C"(middle pin)	Common Connection, which is connected to the power for the load.

Module 3． Large Microphone Module



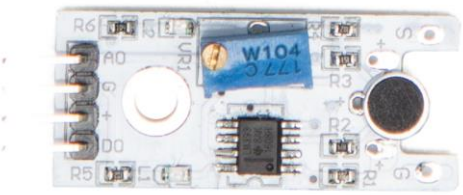
Specification

- Voltage:5V/3.3V
- ST1146
- Electronic microphone (It’s different from module4)
- mounting screw hole 3mm
- 5V DC power supply
- analog output
- threshold level output flip
- highly sensitive microphone.
- power indicator light
- light comparator output
- Weight: 4g
- Frequency Response range:50Hz～20kHz
- Impedance：2.2K ohm
- Sensitivity：48~66dB
- polar pattern：Universal
- Operating temperature: -40 to 85 degrees celsius
- Operating humidity: <90%
- Storage temperature: -40 to 85degrees celsius
- Storage humidity: <75%
- product size: 44*15*10mm

Pinout

Pin	Description
A0	Analog signal output pin
G	Ground
+	Power(5V/3.3V)
D0	Digital signal output pin

Module 4： Small microphone module



Specification

- Voltage:5V/3.3V
- mounting screw hole 3mm
- 5V DC power supply
- analog output
- threshold level output flip
- high sensitive microphone.
- power indicator light
- light comparator output
- Weight: 4g
- Frequency Response range:50Hz～20kHz
- Impedance： 2.2K ohm
- Sensitivity： 48~66dB
- polar pattern： Universal
- Operating temperature: -40 to 85 degrees celsius
- Operating humidity: <90%
- Storage temperature: -40 to 85 degrees celsius
- Storage humidity: <75%
- product size: 40*15*10mm

Pinout

Pin	Description
A0	Analog signal output pin
G	Ground
+	Power(5V/3.3V)
D0	Digital signal output pin

Module 5: Line tracking module

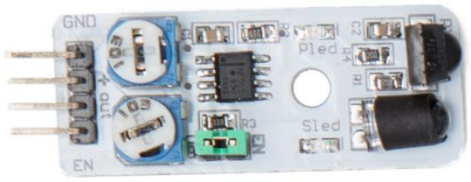
Specification:

- Voltage: 3.3V to 5V
- Operating current: 20mA @ 5V
- Operating temperature range: 0°C ~ + 50°C
- Output signal: TTL Level
- Black for LOW output, White for HIGH output
- Size:28x10mm

Pinout

Pin	Description
S	Digital output pin, black is Low, white is High
V+	Power(5V DC)
G	Ground

Module 6: Obstacle Avoidance Sensor



Specification:

- Working voltage: DC 3.3V-5V
- Working current: ≥ 20mA
- Operating temperature: -10 ℃ - +50 ℃
- detection distance :2-40cm
- IO Interface: 4-wire interfaces (- / + / S / EN)
- Output signal: TTL level (low level there is an obstacle, no obstacle high)
- Adjustment: adjust multi-turn resistance
- Effective angle: 35 °
- Size: 28mm × 23mm
- Weight Size: 9g

Pinout

Pin	Description
“+”	Power(3.3V~5V DC)
Gnd	ground
out	Signal pin
EN	Enable pin that Low level works, usually useless

Module 7: Flame Sensor Module

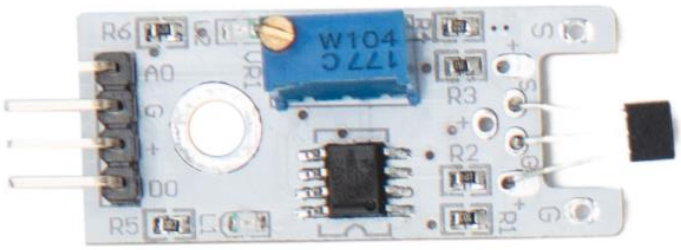
Specification

- Operation voltage: 5V for analog, 3.3V for digital
- Both digital and analog output pin
- Adjustable sensitive
- Detect IR wavelength: 760nm~1100nm
- Size: 30*15mm
- Weight: 8g
- Effective angle: 60 °

Pinout

Pin	Description
A0	Analog output pin, real-time output voltage signal on thermal resistance
D0	Digital output pin, output Low or High signal when the temperature reaches a certain threshold
+	Power(5V for analog, 3.3V for digital)
G	Ground

Module 8： Linear Magnetic Hall Sensor



Specification

- Operation voltage: 5V
- 4Pin
- Size:25*12mm
- Weight: 4g
- Analog and digital output

Pinout

Pin	Description
A0	Analog output pin, real-time output voltage signal
G	Ground
+	Power
D0	Digital signal pin

Module 9：Touch Sensor

Specification

- Operation voltage: 5V
- Both digital and analog output pin
- Adjustable sensitive
- Size: 30*15mm
- Weight: 8g

Pinout

Pin	Description
A0	Analog output pin, real-time output voltage signal(usually useless)
D0	Digital output pin, output Low or High signal when the human body touch it
+	Power(5V for analog, 3.3V for digital)
G	Ground

Module 10: Digital Temperature Sensor

Feature	Value
Model No.	NTC-MF52 3950
Temperature Range	-55℃~+125℃
Accuracy	+/- 0.5℃

Pinout

Pin	Description
A0	Analog signal output pin
D0	Digital signal output pin
G	Gnd
"+"	Vcc(reference voltage:5V DC)

Temperature convert Formula

Here we use Steinhart–Hart equation to calculate the corresponding temperature. The equation is

$$\frac{1}{T} = A + B\ln(R) + C[\ln(R)]^3,$$

where:

T is the temperature (in Kelvins)

R is the resistance at T (in ohms)

A, B, and *C* are the Steinhart–Hart coefficients which vary depending on the type and model of thermistor and the temperature range of interest. (The most general form of the applied equation contains a [ln(R)]^2 term, but this is frequently neglected because it is typically much smaller than the other coefficients).

Note: For this module, the recommended coefficients of A,B,C are

A equals 0.001129148;
B equals 0.000234125;
C equals 0.0000000876741;

More, similar products have a little bit different A,B,C coefficients , which depends on your environmental temperature. If the recommended coefficients are not accurate enough, you'd better amend the A,B,C coefficients by Thermistor Calculator tool.

Module 11: Active Buzzer Module

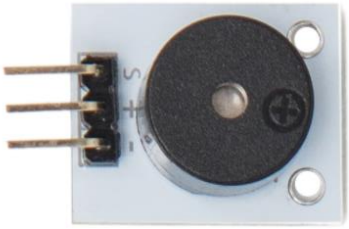
Specification

Operation voltage: 3.3V/5V
Size: 25*15*12mm
Weight: 6g

Pinout

Pin	Description
S	Signal input pin, which can be driven by DC signal and square wave signal
+	Power(3.3V/5V), you may not see this mark on the board, it's the middle pin
-	Ground

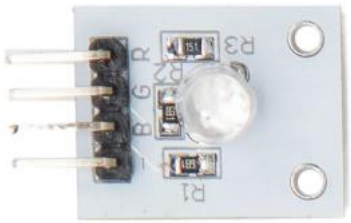
Module 12: Passive Buzzer Module



Pinout

Pin	Description
S	Signal input pin, which can be driven by square wave signal
+	Power(3.3V/5V), you may not see this mark on the board, it's the middle pin
-	Ground

Module 13 : RGB LED Module



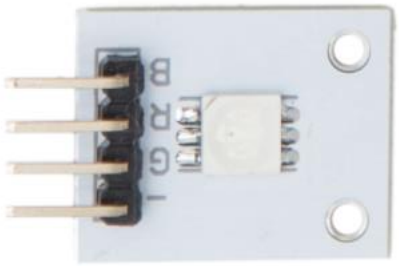
Specification

- Red Vf: 1.8 to 2.1V
- Green Vf: 3.0 to 3.2V
- Blue Vf: 3.0 to 3.2V
- Red color: 620-625 nm
- Green color: 520-525 nm
- Blue color: 465-470 nm
- Red brightness @ ~20mA: 600-800 mcd
- Blue brightness @ ~20mA: 800-1000 mcd
- Green brightness @ ~20mA: 1500-2000mcd

Pinout

Pin Name	Description
“R”	Red light, PWM
“G”	Green light, PWM
“B”	Blue light, PWM
“-”	Ground

Module 14 : RGB SMD LED Module



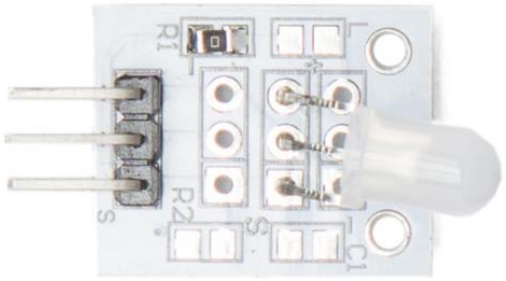
Specification

- Red Vf: 1.8 to 2.1V
- Green Vf: 3.0 to 3.2V
- Blue Vf: 3.0 to 3.2V
- Red color: 620-625 nm
- Green color: 520-525 nm
- Blue color: 465-470 nm
- Red brightness @ ~20mA: 600-800 mcd
- Blue brightness @ ~20mA: 800-1000 mcd
- Green brightness @ ~20mA: 1500-2000mcd

Pinout

Pin Name	Description
“R”	Red light, PWM
“G”	Green light, PWM
“B”	Blue light, PWM
“-”	Ground

Module 15: Two Color LED Module(5mm)



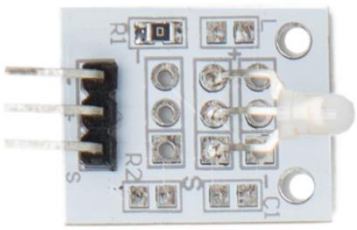
Specification:

- Color: Green + Red
- Diameter: 5mm
- Case Color: None
- Package Type: Diffusion
- Voltage (V): G :2.3-2 .6 V; R :1.9-2 .2 V
- Using current (MA): 20
- Viewing angle: 150
- Wavelength (NM): 571 +625
- Luminous intensity (MCD) :20-40; 60-80
- Stent type: long-legged

Pinout

Pin	Description
S	Red color pin
Middle pin	Green color pin
-	Ground

Module 16: Two Color LED Module(3mm)



Specification:

- Color: Green + Red
- Diameter: 3mm
- Case Color: None
- Package Type: Diffusion
- Voltage (V) :2.0-2 .5
- Using a current (MA): 10
- Viewing angle: 150
- Wavelength (NM): 571 +644
- Luminous intensity (MCD) :20-40; 40-80
- Stent type: long-legged

Pinout

Pin	Description
S	Red color pin
Middle pin	Green color pin
-	Ground

Module 17： Reed Switch Module

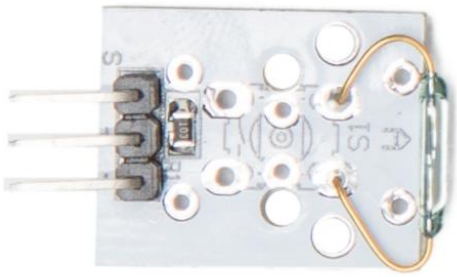
Specification

- Operation voltage: 5V
- Both digital and analog output pin
- Adjustable sensitive
- Size: 30*15mm
- Weight: 8g

Pinout

Pin	Description
A0	Analog output pin, real-time output voltage signal
D0	Digital output pin, output Low or High signal when there current or magnetic exists
+	Power
G	Ground

Module 18： Mini Reed Switch Module



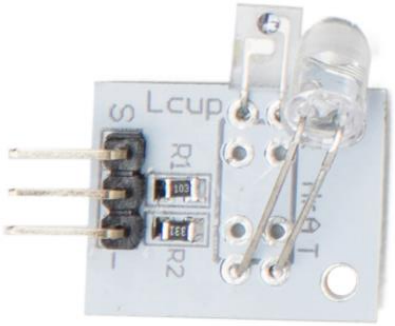
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*15*6mm
- Weight: 2g

Pinout

Pin	Description
D0	Digital output pin, output Low or High signal when there current or magnetic exists
+(middle pin)	Power
-	Ground

Module 19： Pulse sensor



Specification

- Operation voltage: 5V
- 3 pin
- Size: 30*15mm
- Weight: 2g

Pinout

Pin	Description
A0	Analog output pin, real-time output voltage signal
+(middle pin)	Power
-	Ground

Module 20: Seven-Color flashing Module

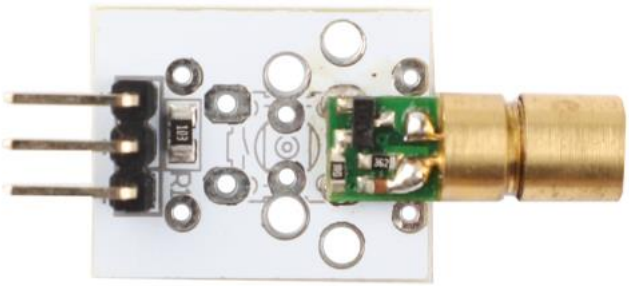
Specification:

- Color: colorful
- Diameter: 3mm
- Shape: Round LED 5mm DIP type
- Lens type: white mist
- Standard Forward Voltage :3.0-4 .5 V

Pinout

Pin	Description
S	color pin
Middle pin	color pin
-	Ground

Module 21：Laser Module(ST1172)



Do not look direct into the beam!

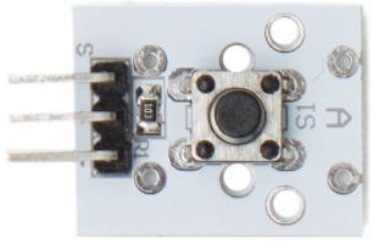
Specification:

- Operation voltage: 5V
- 3Pinout
- Wavelength:650nm
- Light color: Red
- Size:32*20*30mm
- Weight: 20g
- Class 3B

Pinout

Pin Name	Description
“-”	Gnd
“S”	Signal pin(input)
“+”	Power(5V DC)

Module 22: Button switch Module



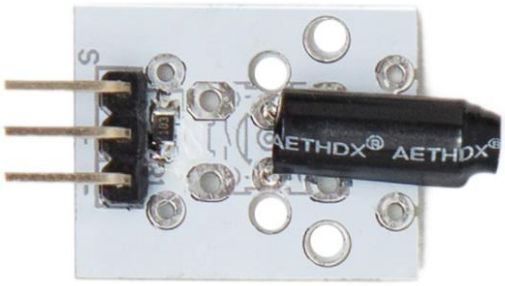
Specification:

- Color: black
- Voltage:5V DC
- 3 Pins

Pinout

Pin	Description
S	Output pin
Middle pin	Power (5V DC)
-	Ground

Module 23: Vibration Shock module



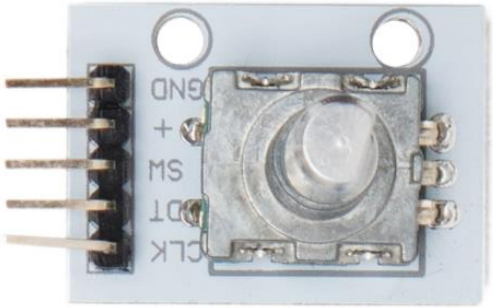
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*15*16mm
- Weight: 2g

Pinout

Pin	Description
S	If the sensor detect a jolt, this pin output low level signal
+(middle pin)	Power
-	Ground

Module 24: Rotary Encode Module



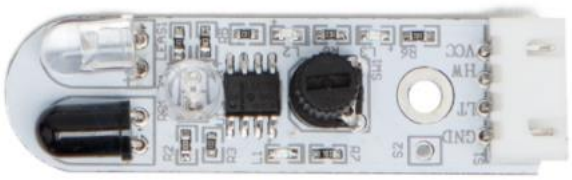
Specification

- Operation voltage: 5V
- 5Pinout
- Size:32*20*30mm
- Weight: 20g

Pinout

Pin	Description
CLK	Encoder A
DT	Encoder B
SW	Switch button
+	Power(5V DC)
Gnd	Ground

Module 25: Light seeking sensor



Specification

- Detection distance: 2~70cm
- Power supply: 3.3V~5V
- Power supply: 3.3V~5V
- Infrared output signal: Digital
- Infrared output signal: Digital

Infrared output signal: Digital

Pinout

Pin	Description
GND	Ground
LT	Output analogy value of light intensity
VCC	Power
HW	Output digital value of infrared obstacle sensor

Module 26: Dual ultrasonic sensor module

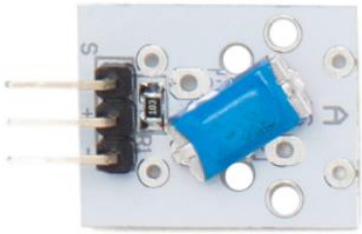
Features:

- HC-SR04
- Power Supply :+5V DC
- Quiescent Current : <2mA
- Working Current: 15mA
- Effectual Angle: <15°
- Ranging Distance : 2cm – 400 cm/1" - 13ft
- Resolution : 0.3 cm
- Measuring Angle: 30 degree
- Trigger Input Pulse width: 10uS

Pinout

Pin Name	Description
“Vcc”	Power (5V DC)
“Trig”	Trigger the transmit signal
“Echo”	Echo the received echo signal
“Gnd”	Gnd

Module 27: Tilt Switch Sensor



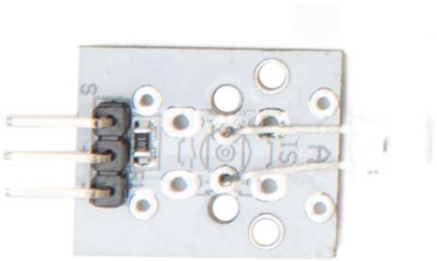
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*15mm
- Weight: 8g

Pinout

Pin	Description
S	If the sensor detect a tilt, this pin output low or high level signal
+(middle pin)	Power
-	Ground

Module 28：Light Dependent Resistor Module



Also called photoresistor module

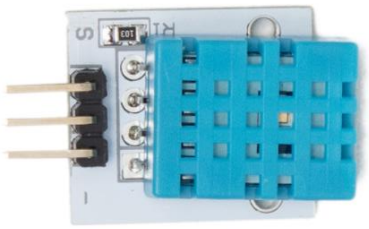
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*15mm
- Weight: 8g

Pinout

Pin	Description
S	Analog output pin, real-time output voltage signal
+(middle pin)	Power
-	Ground

Module 29: Temperature and Humidity Module

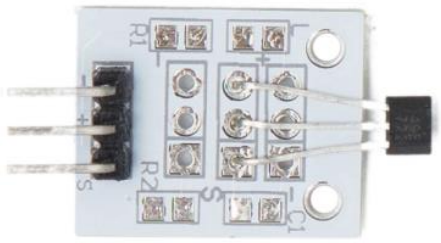


Feature	Value
Model No.	DTH11
Voltage	5V DC
Temperature Range	0~50℃
Humidity Range	20~90%
Accuracy	+/- 0.2℃, +/- 5%

Pinout

Pin	Description
“S”	Analog output pin, real-time output voltage signal
“-”	Gnd
“+”	Vcc(reference voltage:5V DC)

Module 30：Hall Effect Sensor



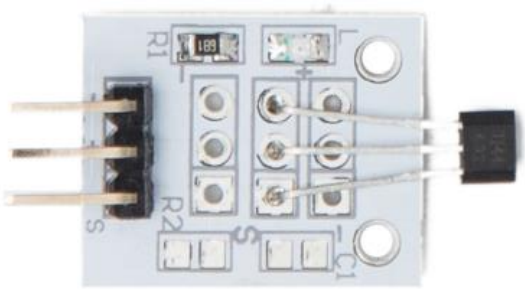
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*12mm
- Weight: 8g

Pinout

Pin	Description
S	Analog output pin, real-time output voltage signal
+(middle pin)	Power
-	Ground

Module 31：Class Hall Magnetic Sensor



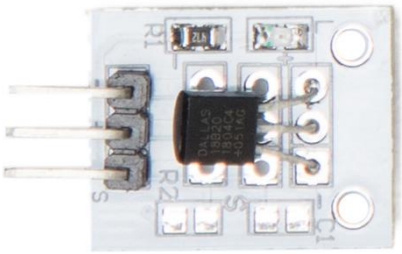
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*12mm
- Weight: 8g

Pinout

Pin	Description
S	Digital signal output pin, real-time output voltage signal
+(middle pin)	Power
-	Ground

Module 32:DS18B20 Temperature Sensor



1． Introduction

This module is temperature sensor with chipDS18B20, It's different from other NTC-MF523950 temperature sensor(ST1147) or LM35 temperature sensor(SE039).

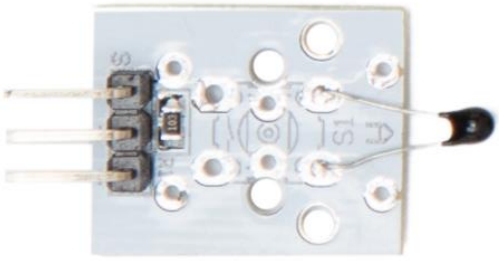
The Module's feature as below:

Feature	Value
Chip	DS18B20
Temperature Range	-55℃~+125℃
Accuracy	+/- 0.5℃
Supply voltage	5V DC

2.Pinout

Pin	Description
S	Signal pin
+(middle pin)	Power(reference voltage:5V DC)
-	Ground

Module 33: Analog Temperature Sensor



1．Introduction

A thermistor is a type of resistor whose resistance is dependent on temperature, more so than in standard resistors. The word is a portmanteau of thermal and resistor. Thermistors are widely used as inrush current limiter, temperature sensors (NTC type typically), self-resetting overcurrent protectors, and self-regulating heating elements.

The Module's feature as below:

Feature	Value
Model No.	NTC-MF52 3950
Temperature Range	-55℃~+125℃
Accuracy	+/- 0.5℃
Pull-up resistor	10KΩ

2.Pinout

Pin	Description
"S"	Signal pin
"-"	Gnd
"+"	Vcc(reference voltage:5V DC)

Temperature convert Formula

Here we use Steinhart–Hart equation to calculate the corresponding temperature. The equation is

$$\frac{1}{T} = A + B\ln(R) + C[\ln(R)]^3,$$

where:

T is the temperature (in Kelvins)

R is the resistance at T (in ohms)

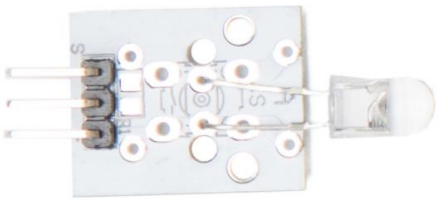
A, B, and *C* are the Steinhart–Hart coefficients which vary depending on the type and model of thermistor and the temperature range of interest. (The most general form of the applied equation contains a [ln(R)]^2 term, but this is frequently neglected because it is typically much smaller than the other coefficients).

Note: For this module, the recommended coefficients of A,B,C are

A equals 0.001129148;
B equals 0.000234125;
C equals 0.0000000876741;

More, similar products has a little bit different A,B,C coefficients , which depends on your environmental temperature. If the recommended coefficients are not accurate enough, you'd better amend the A,B,C coefficients by Thermistor Calculator tool.

Module 34: 5 mm IR LED



This module is usually used together with the IR receiver Module.

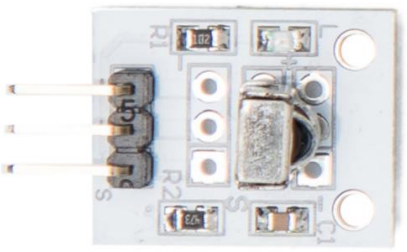
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*12mm
- Weight: 8g

Pinout

Pin	Description
S	Digital signal input pin, if this pin detect a HIGH signal, this module transmit infrared light
+(middle pin)	Power
-	Ground

Module 35: IR Receiver Module



This module usually used together with the IR transmit Module.

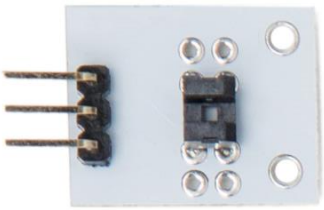
Specification

- Operation voltage: 5V
- 3Pin
- Size:25*12mm
- Weight: 8g

Pinout

Pin	Description
S	Digital signal input pin, used to read the value of infrared light.
+(middle pin)	Power
-	Ground

Module 36: Optical Broken Module



This module is also known as a photo-interrupter

Specification

- Operation voltage: 5V
- 3Pin
- Size:28*15mm
- Weight: 10g

Pinout

Pin	Description
S	Digital signal input pin, if it detect a shelter, it output High level.
+(middle pin)	Power
-	Ground

Module 37: Hit Sensor Module

This module is also known as knock switch.

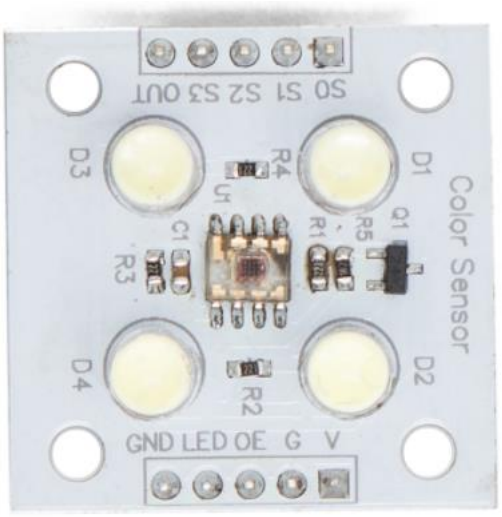
Specification

- Operation voltage: 5V
- 3Pin
- Size:28*15mm
- Weight: 10g

Pinout

Pin	Description
S	Digital signal input pin, if it detect a knock, it output High level.
+(middle pin)	Power
-	Ground

Module 38: TCS 3200 color sensor



TCS3200 Color Sensor is a complete color detector, including a TAOS TCS3200 RGB sensor chip and 4 white LEDs

Specification

□ Single-Supply Operation (2.7V to 5.5V)
- High-Resolution Conversion of Light Intensity to Frequency
- Programmable Color and Full-Scale Output Frequency
- Power Down Feature
- Communicates Directly to Microcontroller
- S0~S1: Output frequency scaling selection inputs
- S2~S3: Photodiode type selection inputs
- OUT Pin: Output frequency
- Support LED lamp light supplement control
- Size: 28.4x28.4mm

Pinout

Pin	Description
GND	Power ground
OUT	Output frequency (fo).
S0	Output frequency scaling selection inputs.
S1	Output frequency scaling selection inputs.
S2	Photodiode type selection inputs
S3	Photodiode type selection inputs
Vcc	Power supply 5V/DC