

Overige Componenten

Documentatie over diverse elektronica componenten

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 - HC-SR501 Bewegingssensor
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 - AMS1117 Spanningsregelaar
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Bewegungssensoren

HC-SR501 Bewegungssensor

HC-SR501-front.jpgHC-SR501-back.jpg

Pin Configuration

Pin Number	Pin Name	Description
1	Vcc	Input voltage is +5V for typical applications. Can range from 4.5V- 12V
2	High/Low Ouput (Dout)	Digital pulse high (3.3V) when triggered (motion detected) digital low(0V) when idle(no motion detected)
3	Ground	Connected to ground of circuit

HC-SR501-pinout.jpg

PIR Sensor Features

- Wide range on input voltage varying from 4.V to 12V (+5V recommended)
- Output voltage is High/Low (3.3V TTL)
- Can distinguish between object movement and human movement
- Has to operating modes – Repeatable(H) and Non- Repeatable(H)
- Cover distance of about 120° and 7 meters
- Low power consumption of 65mA
- Operating temperature from -20° to +80° Celsius

How to use PIR Motion Sensor

The PIR sensor stands for Passive Infrared sensor. It is a low cost sensor which can detect the presence of Human beings or animals. This sensor has three output pins Vcc, Output and Ground as shown in the pin diagram above. Since the output pin is 3.3V TTL logic it can be used with any platforms like Arduino, Raspberry, PIC, ARM, 8051 etc..

The module can be powered from voltage 4.5V to 20V but, typically 5V is used. Once the module is powered allow the module to calibrate itself for few minutes, 2 minutes is a well settled time. Then observe the output on the output pin. Before we analyse the output we need to know that there are two operating modes in this sensor such as Repeatable(H) and Non- Repeatable(L) and mode. The Repeatable mode is the default mode.

The output of the sensor can be set by shorting any two pins on the left of the module as shown below. You can also notice two orange colour potentiometers that can be used to set the sensitivity and time which will be explained further below.

Repeatable(H) mode

In Repeatable(H) mode the output pin Dout will go high (3.3V) when a person is detected within range and goes low after a particular time (time is set by “Off time control” potentiometer). In this mode the output pin will go high irrespective of whether the person is still present inside the range or has left the area. The sensitivity can be set using the “sensitivity control” potentiometer

Non- Repeatable(L) mode

In “l” mode the output pin Dout will go high (3.3V) when a person is detected within range and will stay high as long as he/she stays within the limit of the Sensors range. Once the person has left the area the pin will go low after the particular time which can be set using the potentiometer. The sensitivity can be set using the “sensitivity control” potentiometer

There are two important materials present in the sensor one is the pyroelectric crystal which can detect the heat signatures from a living organism (humans/animals) and the other is a Fresnel lenses which can widen the range of the sensor. Yes the white colour things is just a lense that is used to widen the range of the sensor, if you remove the lense you can find the Pyroelectric sensor inside it covered inside a protective metal casing as shown above.

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Spanningsregelaars

AMS1117 Spanningsregelaar

afbeelding.png

Pin Configuration

Pin Number	Pin Name	Description
1	Adjust/Ground	This pins adjusts the output voltage, if it is a fixed voltage regulator it acts as ground
2	Output Voltage (Vout)	The regulated output voltage set by the adjust pin can be obtained from this pin
3	Input Voltage (Vin)	The input voltage

Features

- Fixed/Adjustable 3-terminal Linear voltage regulator
- Low Drop-Out (LDO) Voltage regulator
- Fixed Voltage type: 1.5V, 1.8V, 2.5V, 2.85V, 3.3V and 5V
- Variable Voltage range: 1.25V to 13.8V
- Output current is 1000mA
- Maximum Drop-out Voltage: 1.3V
- In-built Current Limiting and thermal protection.
- Operating junction temperature is 125°C
- Available in SOT-223, TO-252 and SO-8 Package

AMS1117-schema.png

AMS1117-module.jpg

Applications

- Used for Positive voltage regulations
- Variable power supply
- Current limiting circuits
- Reverse polarity circuits
- Commonly used in Desktop PC, DVD and other consumer products
- Used in motor control circuits

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Temperatuur sensoren

DHT22 temperatuur en vochtigheid sensor

DHT22-Sensor-Pinout.png

Pin Identification and Configuration

No:	Pin Name	Description
For DHT22 Sensor		
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 DHT22 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

DHT22-pcb.jpg

DHT22 Specifications

- Operating Voltage: 3.5V to 5.5V
- Operating current: 0.3mA (measuring) 60uA (standby)
- Output: Serial data
- Temperature Range: -40°C to 80°C
- Humidity Range: 0% to 100%
- Resolution: Temperature and Humidity both are 16-bit
- Accuracy: ±0.5°C and ±1%

DS18B20 temperatuur sensor

DS18B20-pinout.jpg

DS18B20-ESP8266.jpg

DS18B20-Circuit-Diagram.png

DS18B20 Sensor Specifications

- Programmable Digital Temperature Sensor
- Communicates using 1-Wire method
- Operating voltage: 3V to 5V
- Temperature Range: -55°C to +125°C
- Accuracy: $\pm 0.5^{\circ}\text{C}$
- Output Resolution: 9-bit to 12-bit (programmable)
- Unique 64-bit address enables multiplexing
- Conversion time: 750ms at 12-bit
- Programmable alarm options
- Available as To-92, SOP and even as a waterproof sensor

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Webshops

Domotica en Elektronica webshops

- [AliExpress](#)
- [Banggood](#)
- [Bits & Parts](#)
- [DomoticX](#)
- [Ebay - TechcrunchFR](#)
- [Ebay - Dir-Arduino](#)
- [Gadgetbouw.nl](#)
- [HobbyElectronica](#)
- [Opencircuit](#)
- [Vanallesenmeer](#)