

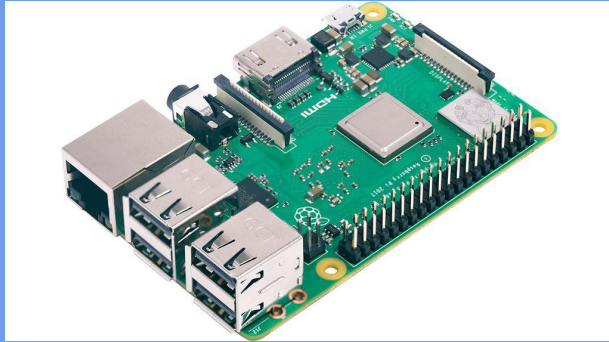
# Stepper motor rotation control with humidity sensor

## Used devices:

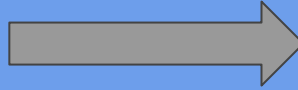
- Scanner-modul
- Raspberry Pi 3
- BME280 Humidity sensor
- A4988 Stepper motor driver board

# System diagram

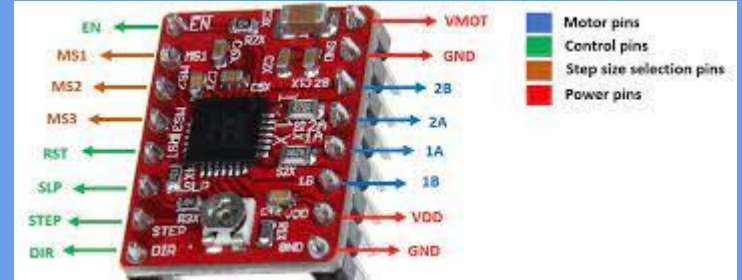
Raspberry Pi 3



GPIO 23, 24



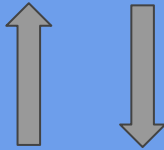
A4988 Stepper Driver



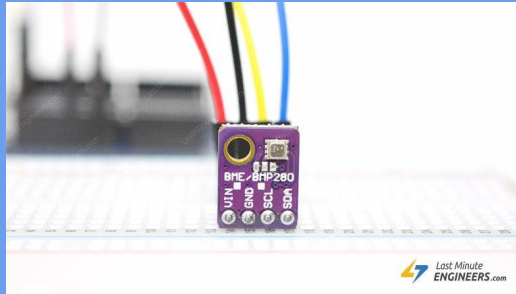
Scanner



BME280



I2C Communication



Vapor



# Humidity sensor BME280

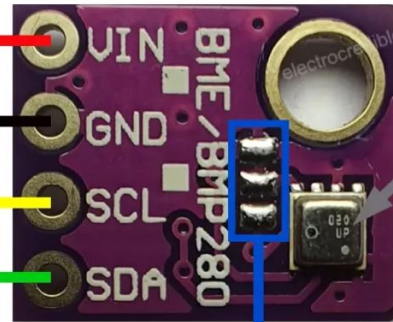
Connects To:-

POSITIVE OF  
POWER SUPPLY

GROUND OF  
POWER SUPPLY

SERIAL CLOCK PIN

SERIAL DATA PIN



I2C Address Selection  
Solder Points

BME280 SENSOR

Electrocredible.com

I2C (Inter-Integrated Circuit) uses only two bidirectional lines:

- serial data line (SDA)
- serial clock line (SCL)

# Raspberry Pi-3



BME  
280

Alternate Function	Pinout		Alternate Function
	3.3V PWR	1	2 5V PWR
I2C1 SDA	GPIO 2	3	4 5V PWR
I2C1 SCL	GPIO 3	5	6 GND
	GPIO 4	7	8 UART0 TX
	GND	9	10 UART0 RX
	GPIO 17	11	12 GPIO 18
	GPIO 27	13	14 GND
	GPIO 22	15	16 GPIO 23
	3.3V PWR	17	18 GPIO 24
SPI0 MOSI	GPIO 10	19	20 GND
SPI0 MISO	GPIO 9	21	22 GPIO 25
SPI0 SCLK	GPIO 11	23	24 GPIO 8
	GND	25	26 GPIO 7
	Reserved	27	28 Reserved
	GPIO 5	29	30 GND
	GPIO 6	31	32 GPIO 12
	GPIO 13	33	34 GND
SPI1 MISO	GPIO 19	35	36 GPIO 16
	GPIO 26	37	38 GPIO 20
	GND	39	40 GPIO 21
			SPI0 CS0
			SPI0 CS1
			SPI1 CS0
			SPI1 MOSI
			SPI1 SCLK

General purpose  
input-output

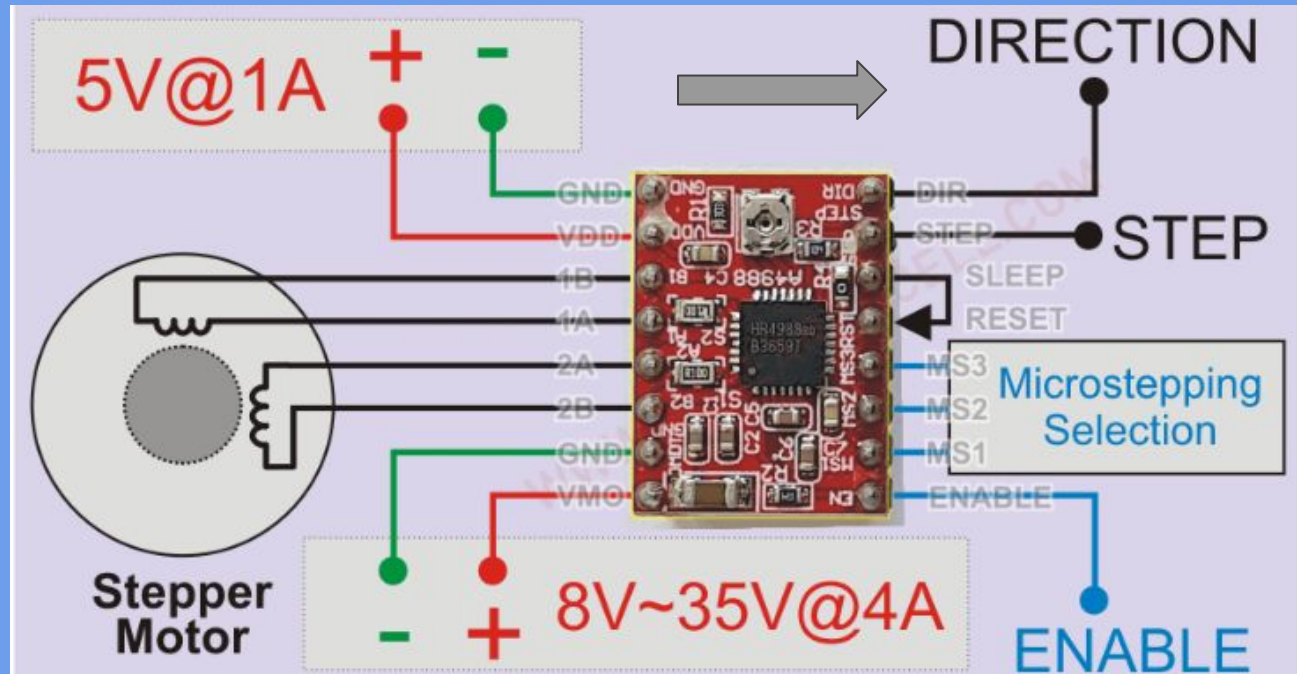
# Direction and humidity functions

```
def check_direction(humidity):  
    if humidity < 50:  
        direction = 'left'  
    else:  
        direction = 'right'  
    return direction  
  
def direction_switch(direction):  
    if direction == 'left':  
        gpio.output(23, True)  
  
    elif direction == 'right':  
        gpio.output(23, False)
```

**This source code  
implemented in  
python.**



# A4988 IC pinout Stepper motor connections



**A4988 Pins and Circuit Diagram**  
[www.researchcell.com](http://www.researchcell.com)

# Stepper motor working animation

