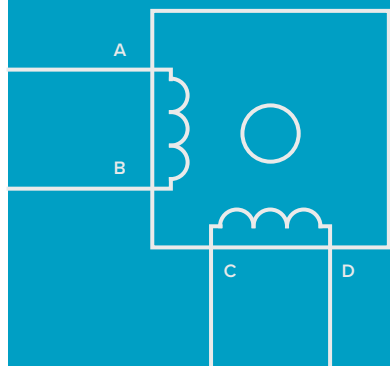




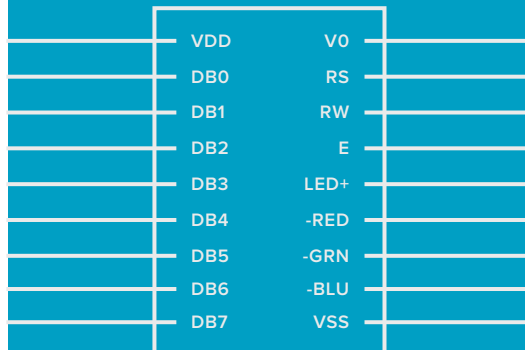
# Output

Stepper Motor



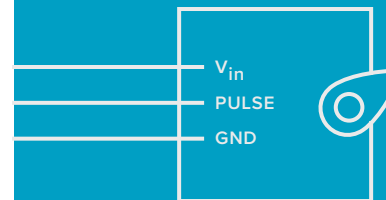
# Output

LCD Display Module



# Output

Servo Motor



## Stepper Motor



movement

- ⚡ Electrical connector to power motor and receive movement instructions from Arduino.
- ↻ Output shaft can rotate with motor continuously in either direction

Learn more: [n-f-c.xyz/p/4004](https://n-f-c.xyz/p/4004)

## LCD Display Module



visual

Displays two rows and sixteen columns of numbers, letters, and other characters, each one drawn using a small grid of squares.

Learn more: [n-f-c.xyz/p/4001](https://n-f-c.xyz/p/4001)

## Servo Motor



movement

- ⚡ Electrical connector powers motor and receives movement instructions from Arduino.
- ↻ Motor output shaft (can rotate one half turn)

Learn more: [n-f-c.xyz/p/1896](https://n-f-c.xyz/p/1896)



## Output

Remote



## Output

Active Buzzer



## Output

Passive Buzzer



### Remote



light

Sends out brief infrared light pulses when its buttons are pushed. These can be read by the Infrared Receiver.

Learn more: [n-f-c.xyz/p/4006](https://n-f-c.xyz/p/4006)

### Active Buzzer



sound

Makes a high-pitched beeping sound when powered with a steady (direct current) power source.

Learn more: [n-f-c.xyz/p/0496](https://n-f-c.xyz/p/0496)

### Passive Buzzer



sound

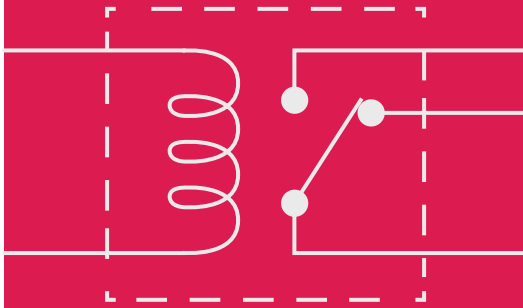
Makes variable-pitch beeping, driven by the frequency of a changing (alternating current) power source connected to it.

Learn more: [n-f-c.xyz/p/0498](https://n-f-c.xyz/p/0498)



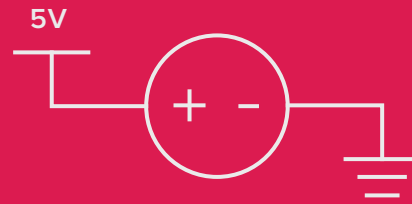
## Power

5V Relay



## Power

Breadboard Power Supply



## Power

Resistor



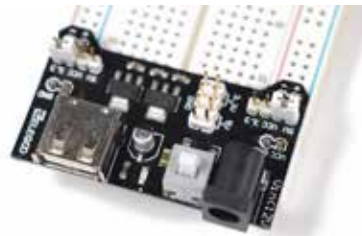
### 5V Relay



Controls turning on and off high voltages and currents, using a small amount of electricity.

Learn more: [n-f-c.xyz/p/0502](https://n-f-c.xyz/p/0502)

### Breadboard Power Supply



Supplies power to a breadboard, available to be used by electronic components plugged into it.

Learn more: [n-f-c.xyz/p/4003](https://n-f-c.xyz/p/4003)

### Resistor



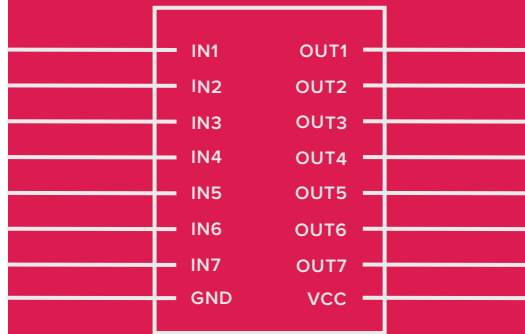
Resists the flow of electricity through it. The particular resistance of each resistor can be decoded from the colored bands printed on it.

Learn more: [n-f-c.xyz/c/resistor](https://n-f-c.xyz/c/resistor)



# Power

## Stepper Motor Driver



## Stepper Motor Driver



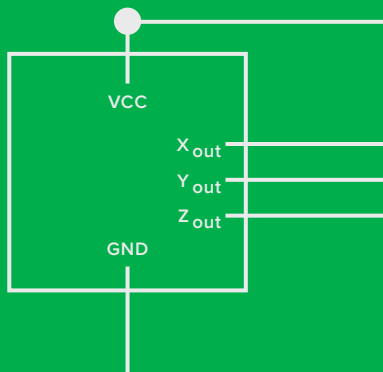
Receives motion instructions from the Arduino, and provides power to the Stepper Motor.

Learn more: [n-f-c.xyz/p/4005](https://n-f-c.xyz/p/4005)



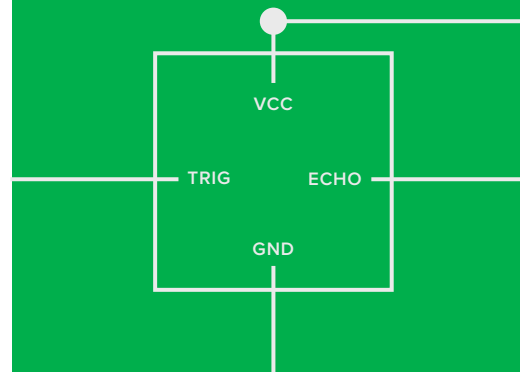
## Input

### 3-Axis Accelerometer



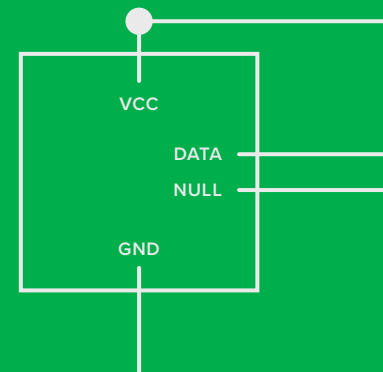
## Input

### Ultrasonic Ranger



## Input

### Temperature & Humidity Sensor



### 3-Axis Accelerometer



acceleration, orientation

Continuous Signal

Senses acceleration in X, Y, and Z axes; used to detect motion and orientation.



Learn more: [n-f-c.xyz/p/0368](https://n-f-c.xyz/p/0368)

### Ultrasonic Ranger



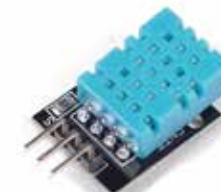
proximity

Continuous Signal

 Transmitter sends sound pulses.  
 Receiver listens for their echoes. Time elapsed in between is used to measure distance to an object.

Learn more: [n-f-c.xyz/p/0572](https://n-f-c.xyz/p/0572)

### Temperature & Humidity Sensor



temperature, humidity

Continuous Signal

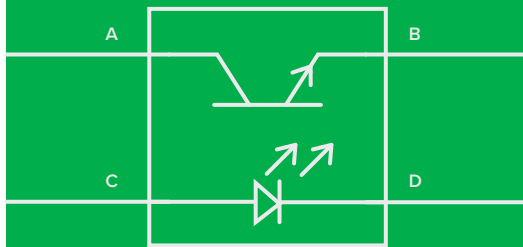
Measures temperatures (0°C–50°C) and humidity levels (20%–90%).

Learn more: [n-f-c.xyz/p/0268](https://n-f-c.xyz/p/0268)



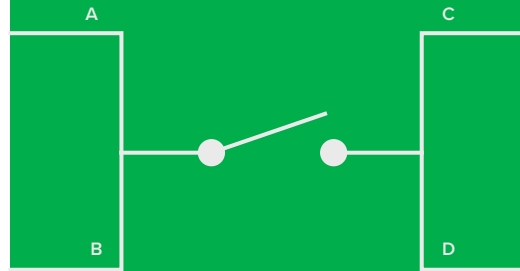
## Input

### Optical Proximity Sensor



## Input

### Tactile Switch Button



## Input

### Push Button



### Optical Proximity Sensor



proximity

Continuous Signal

- Transmitter sends out infrared light
- Receiver detects the brightness of the reflection, which indicates distance to the reflecting surface.

Learn more: [n-f-c.xyz/p/0236](https://n-f-c.xyz/p/0236)

### Tactile Switch Button



position

Binary Signal

Makes an electrical connection when pressed.

Learn more: [n-f-c.xyz/p/0356](https://n-f-c.xyz/p/0356)

### Push Button



position

Binary Signal

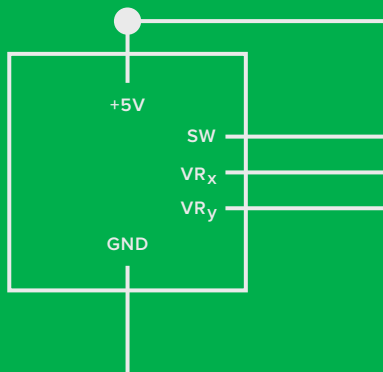
Makes an electrical connection when pressed.

Learn more: [n-f-c.xyz/p/2461](https://n-f-c.xyz/p/2461)



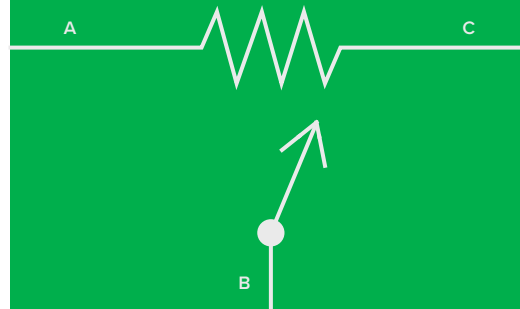
## Input

### Joystick Button



## Input

### Potentiometer

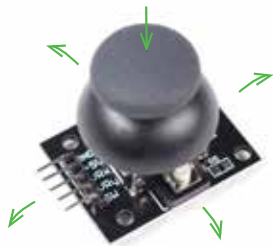


## Input

### Tilt Switch



### Joystick Button



movement, position

Continuous & Binary Signal  
Senses up/down and left/right movement of a thumb-sized joystick. Also can be clicked like a button.

Learn more: [n-f-c.xyz/p/0372](https://n-f-c.xyz/p/0372)

### Potentiometer

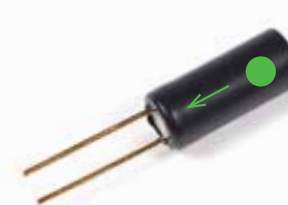


movement

Continuous Signal  
Rotating the input shaft changes the electrical resistance read by an Arduino. Often used as a knob.

Learn more: [n-f-c.xyz/p/0390](https://n-f-c.xyz/p/0390)

### Tilt Switch



movement

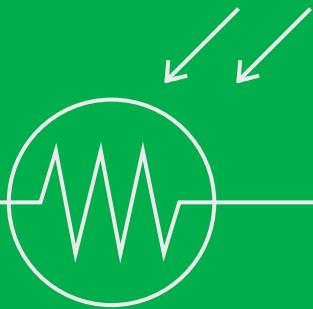
Binary Signal  
A small metal ball rolls inside the can, and the electrical switch opens or closes based on its position. Detects coarse orientation.

Learn more: [n-f-c.xyz/p/0272](https://n-f-c.xyz/p/0272)



## Input

Photoresistor



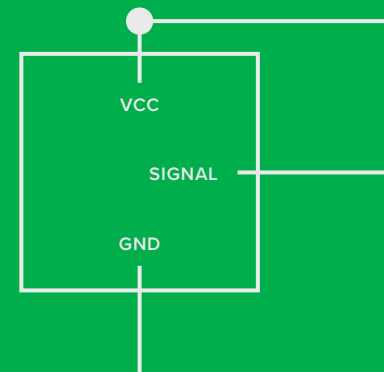
## Input

Thermistor



## Input

Infrared Receiver



Photoresistor



light

Continuous Signal

The amount of light hitting the surface of the photoresistor changes the electrical resistance between its legs. Used to detect light levels.

Learn more: [n-f-c.xyz/p/0260](https://n-f-c.xyz/p/0260)

Thermistor



temperature

Continuous Signal

The electrical resistance between the legs changes based on the device's temperature. Used as a thermometer.

Learn more: [n-f-c.xyz/p/0270](https://n-f-c.xyz/p/0270)

Infrared Receiver



light

Continuous Signal

Senses infrared light, often used for reading a remote control's signals.

Learn more: [n-f-c.xyz/p/0251](https://n-f-c.xyz/p/0251)





## Connection

Jumper Wire



## Connection

Breadboard



## Connection

Uno Compatible  
Breadboard Shield

### Jumper Wire



Connects components electrically.  
Designed to work with a  
breadboard.

Learn more: [n-f-c.xyz/c/wire](https://n-f-c.xyz/c/wire)

### Breadboard



Allows for easy assembly and  
disassembly of electrical circuits.

Learn more: [n-f-c.xyz/c/breadboard](https://n-f-c.xyz/c/breadboard)

### Uno Compatible Breadboard Shield



Provides a convenient, compact  
area for a breadboard circuit  
directly plugged in to the top of the  
Arduino Uno.

Learn more: [n-f-c.xyz/p/4002](https://n-f-c.xyz/p/4002)

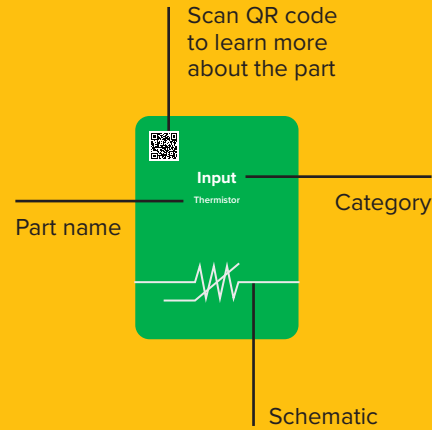


# Controller

Arduino Uno

# Guide

## Electronic Part Cards



# Arduino Uno

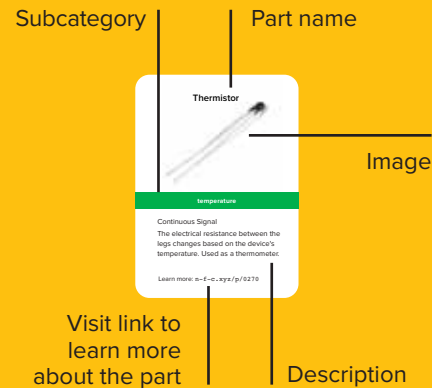


The Arduino gets instructions from a computer and follows them as long as it has power. It can be an input, output, or both.

Learn more: [n-f-c.xyz/p/1000](https://n-f-c.xyz/p/1000)

# Guide

## Electronic Part Cards





## Power

Diode



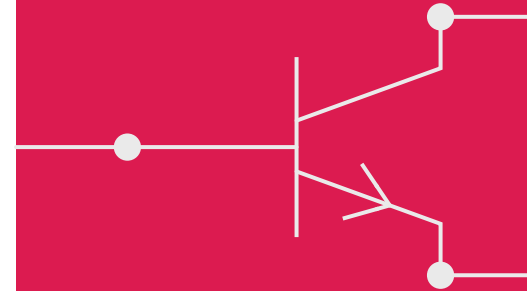
## Power

9V Battery with  
Barrel Jack Clip



## Power

Transistor



### Diode



Allows electricity to flow through it in only one direction. Often used with DC motors to prevent reverse currents from damaging components.

Learn more: [n-f-c.xyz/p/4007](https://n-f-c.xyz/p/4007)

### 9V Battery with Barrel Jack Clip



Provides 9 volts of steady (direct current) electricity. The battery can power the Arduino through the barrel jack clip.

Learn more: [n-f-c.xyz/p/0892](https://n-f-c.xyz/p/0892)

### Transistor



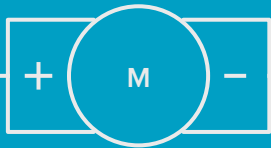
An electrical switch that allows you to turn on and off high voltages and currents, using a small amount of electricity.

Learn more: [n-f-c.xyz/c/transistor](https://n-f-c.xyz/c/transistor)



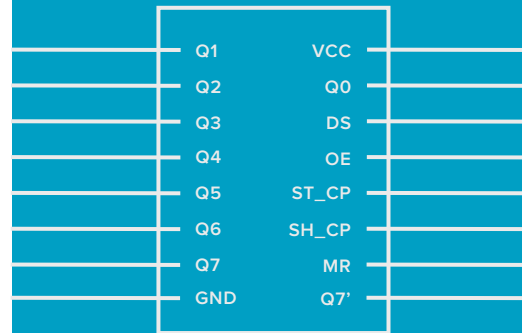
## Output

Pancake Vibration Motor



## Output

Shift Register



## Output

Light Emitting Diode (LED)



### Pancake Vibration Motor



movement

Vibrates quickly when powered. Usually used as a simple tactile signal. Operates at 5V.

Learn more: [n-f-c.xyz/p/0450](https://n-f-c.xyz/p/0450)

### Shift Register



power

Has three inputs and eight outputs: allows the Arduino to control many outputs at once without as many pins as it would otherwise need.

Learn more: [n-f-c.xyz/p/4008](https://n-f-c.xyz/p/4008)

### Light Emitting Diode (LED)



Illuminates when power flows through. It is a diode, so only allows power to flow in one direction.

Learn more: [n-f-c.xyz/p/0894](https://n-f-c.xyz/p/0894)