

# Aphirak Thitinaruemit

## อชิระ



### Interrest topic:

Internet of things (IOTs),  
Unmanned Aerial Vehicles (UAVs),  
Circuit Design

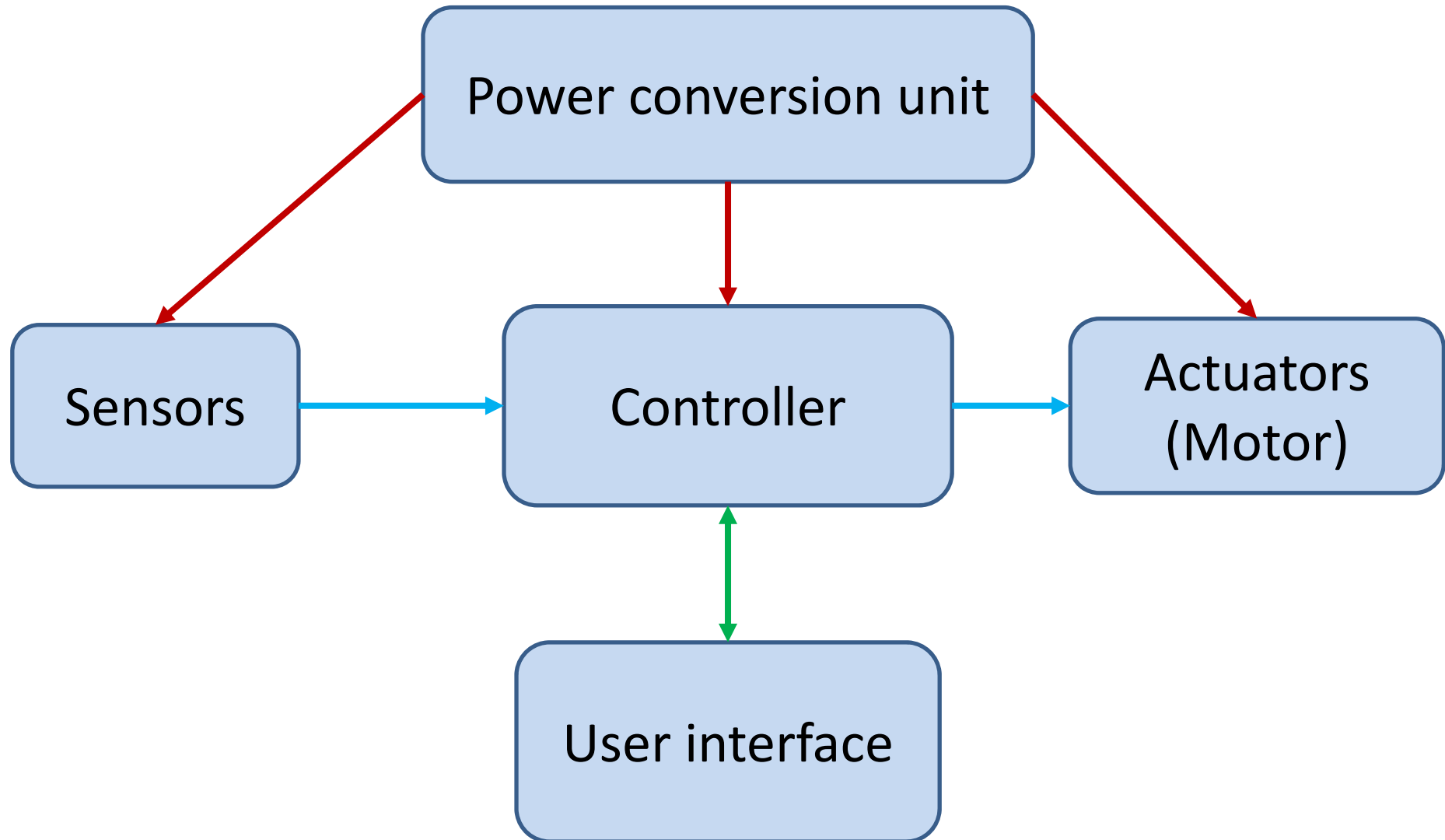




# Contents

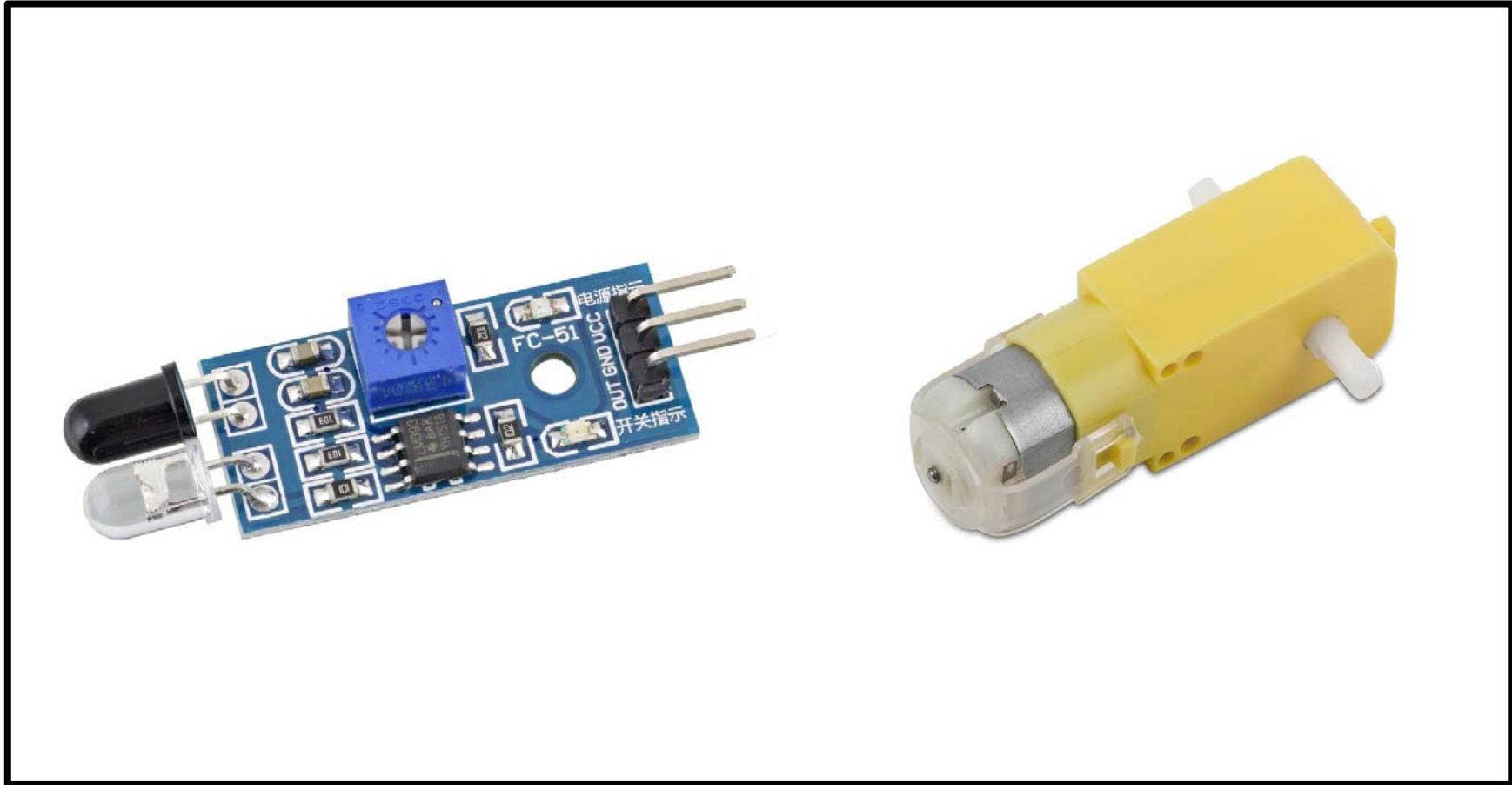
1. Robotic Platform
2. Microcontroller for Robots
3. **Sensors & Motors**
4. Controlling Robot
5. Tools
6. Assembling a Robot

# Key Components



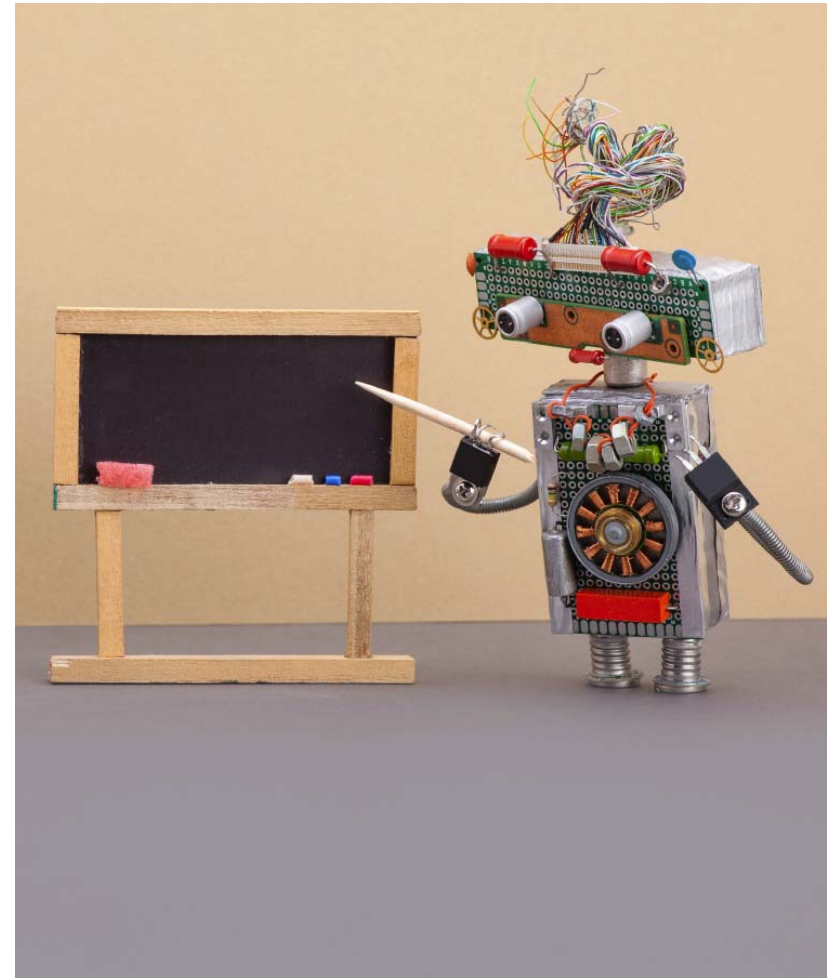
# Chapter 3

## Sensors & Motors



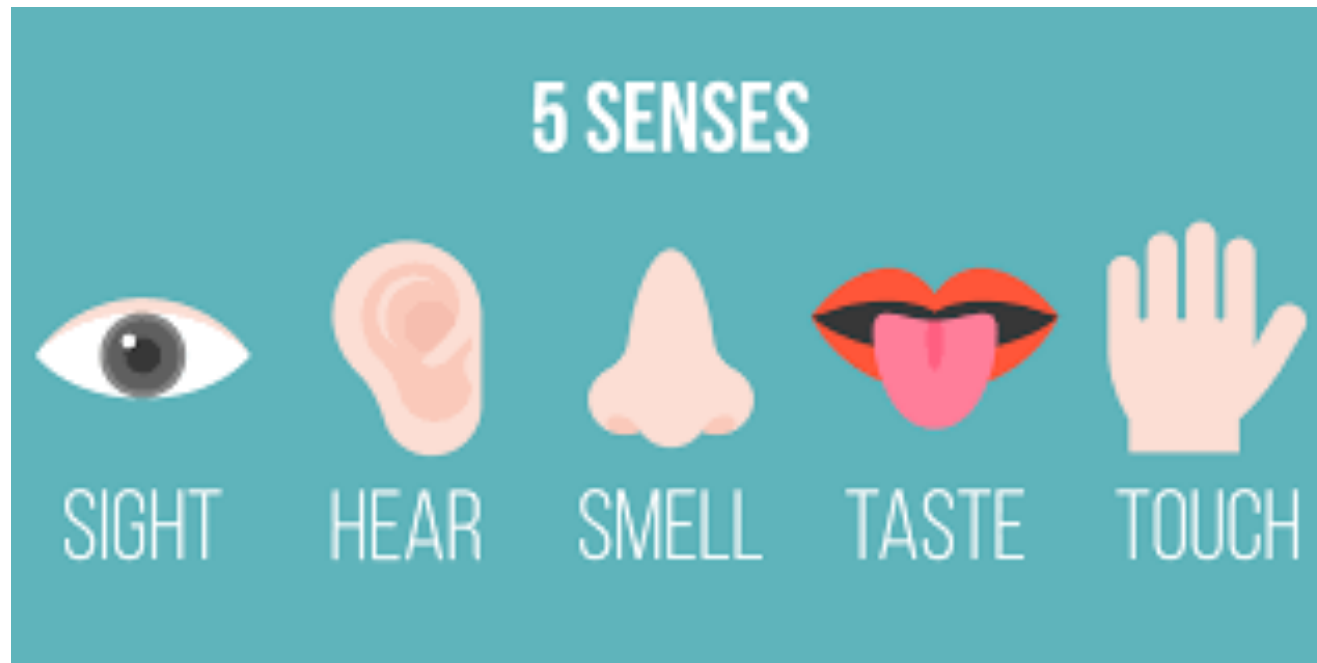
# Topics

1. Human Senses
2. Robot Sensors
3. Different Types of Sensors
4. DC Motor



# Human Senses

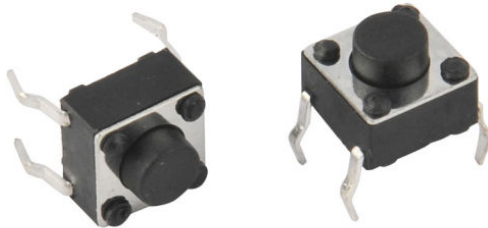
Human senses : sight, hear, smell, taste, and touch provide us vital information to function and survive



# Robot Sensors

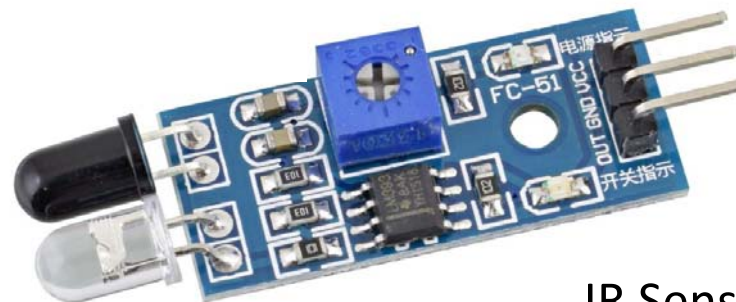
Robot sensors : measure robot configuration/condition and its environment and send such information to controller as electronic signals

Micro Switch



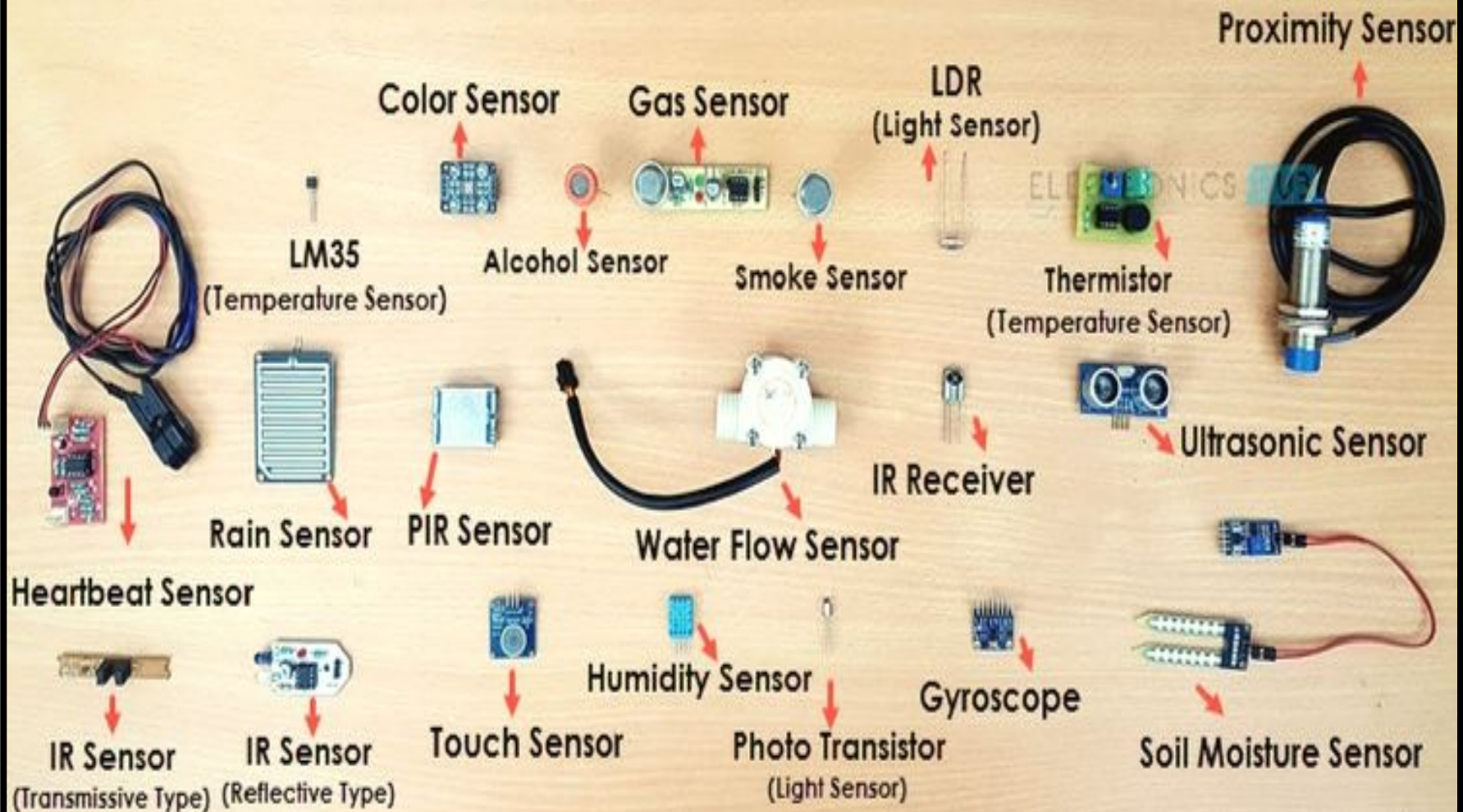
LED

(Light-Emitting Diode)



IR Sensor

# DIFFERENT TYPES OF SENSORS





# Different Types of Sensors

1. Temperature/Humidity Sensors
2. Motion Sensors
3. Force Sensors
4. Level Sensors
5. Pressure Sensors
6. Flow Sensors



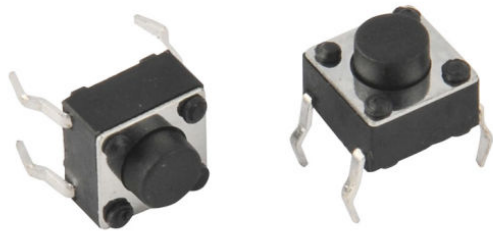
## 2. Motion Sensors



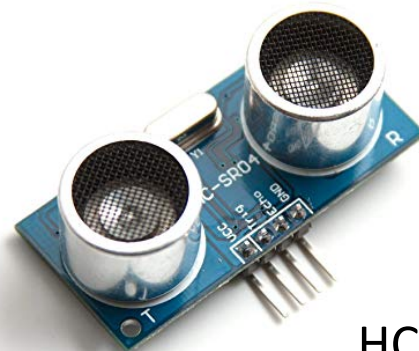
IR Sensor



HC-SR505



Micro Switch

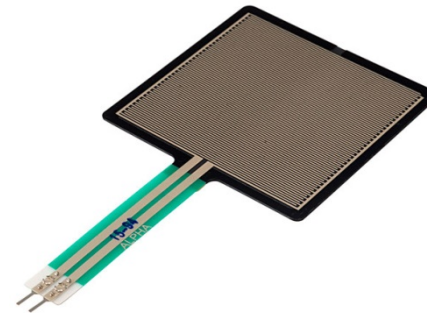


HC-SR04 (Ultrasonic)

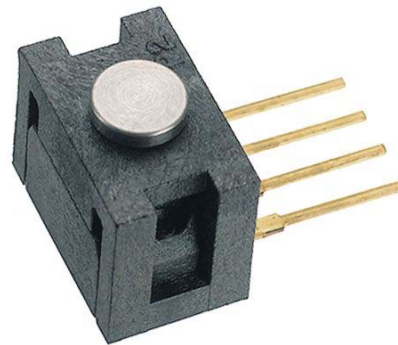
### 3. Force Sensors



FSR402



FSR406



FSG15N1A

## 4. Level Sensors



Water Level Float Switch



FS-IR02



Water Level Sensor

## 5. Pressure Sensors



Water Pressure Sensor

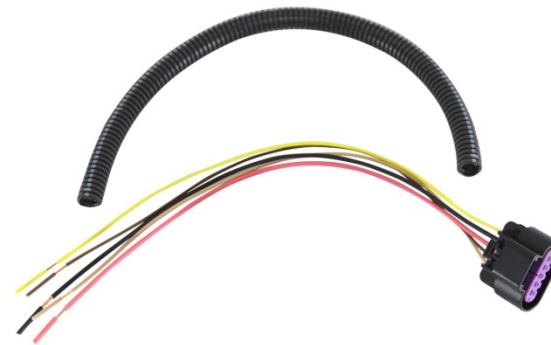


MP3115A2

## 6. Flow Sensors

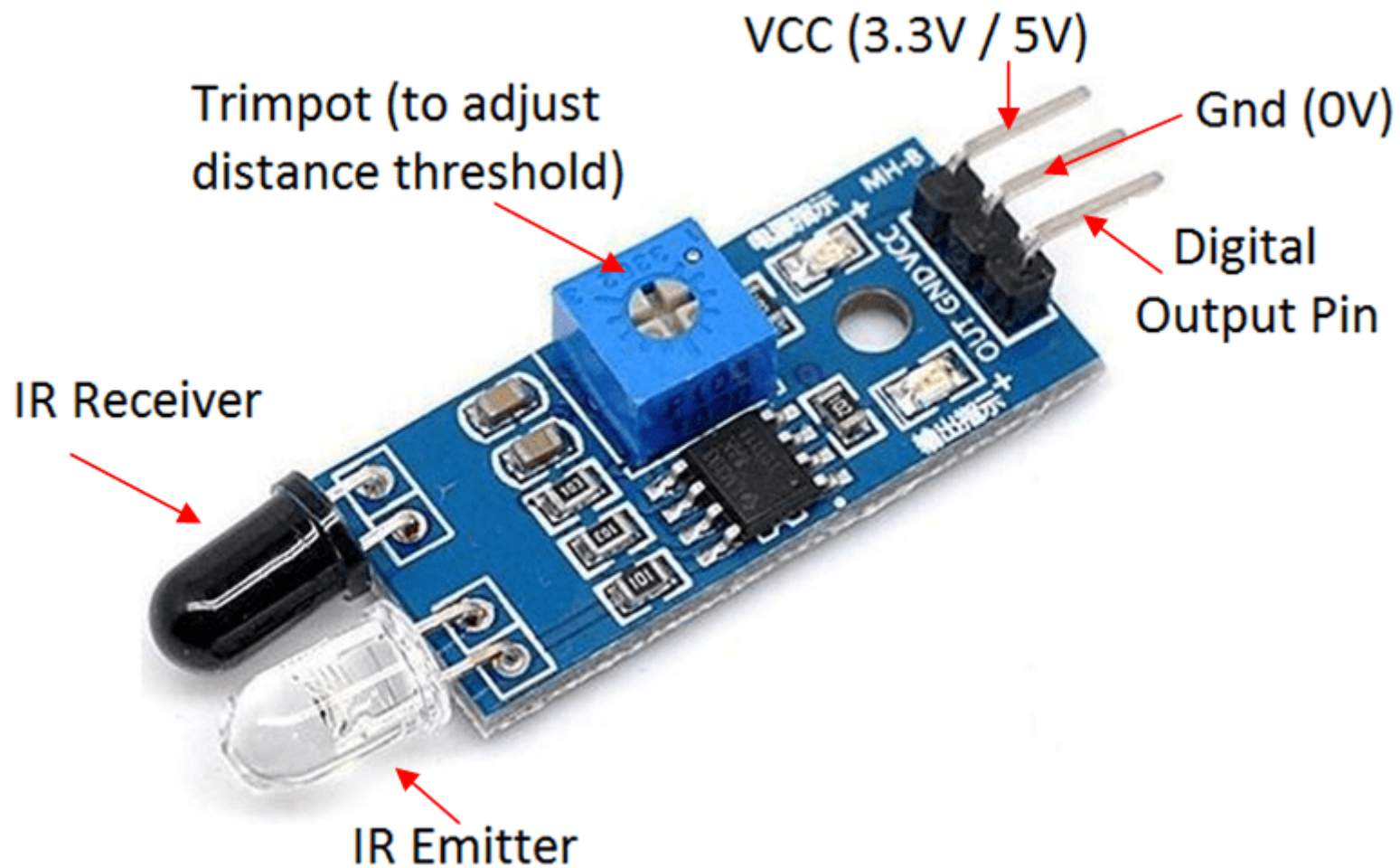


Water Flow Sensor



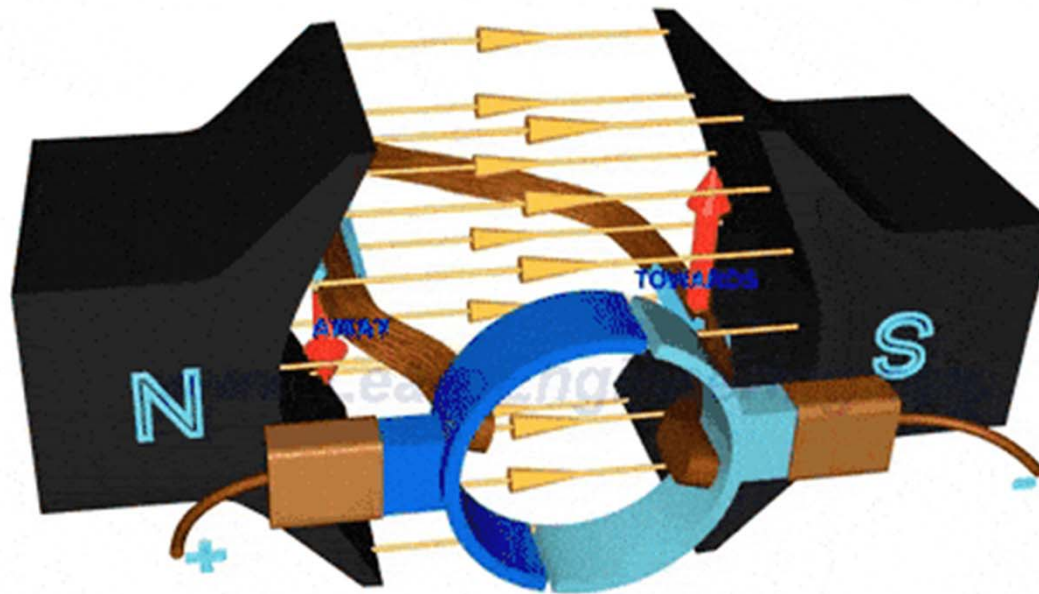
Mass Air Flow Sensor

IR sensor  
(Infrared sensor)



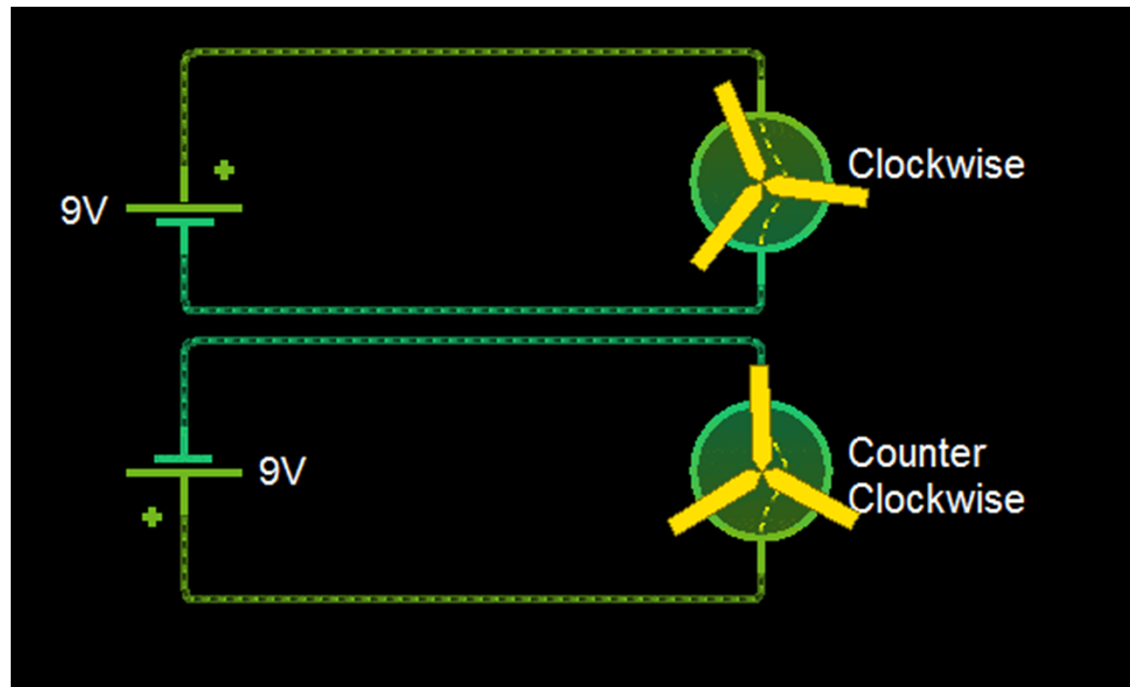


# DC Motor (Direct Current Motor)



<https://gfycat.com/gifs/search/dc+motor>

## Clockwise and Counter Clockwise



<https://technobyte.org/arduino-dc-motor-single-multiple-motors-interface-code>

**The End of Chapter**  
Thank you!

