

Sensors and actuators

Sensors

A **sensor** is an object capable of **detecting physical or chemical quantities** and transforming them **into electrical signals**.

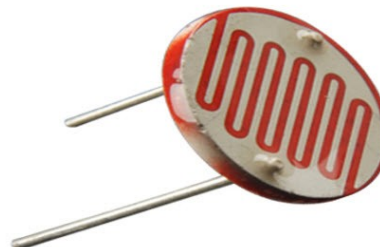
Depending on the type of the electrical signal produced they can be **DIGITAL, ANALOG or DATA**.

- **DIGITAL:** a digital sensor only has two possible states, ed, ON/OFF, 1/0, High/Low. E.g: An electronic pushbutton sensor with two



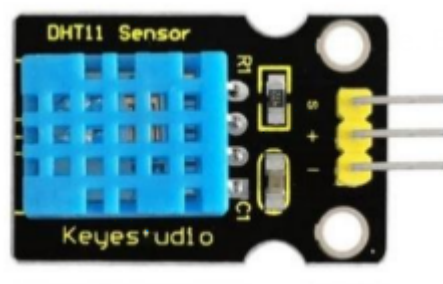
possible states: pushed or not pushed.

- **ANALOG:** This sensor can provide a range of values normally a variable voltage or current value, depending on the signal detected. ie of its



resistance with an increment of light detected.

- **DATA:** the sensor offers its information through



DHT11

sensor measures temperature and humidity.

There are

lots of different sensors. To get further information click on [here](#).

Actuators

An **actuator** is any device capable of **performing actions** in the physical world that we **can control** from a processor board (like Arduino)

Depending on the type of action produced they can be:

- **LIGHT**: The most common is the **normal LED**, but there is also RGB LED's, neopixel lightsaber, laser or LCD displays

Light Actuators



LED



RGB Led



Neopixel LED



LCD Display

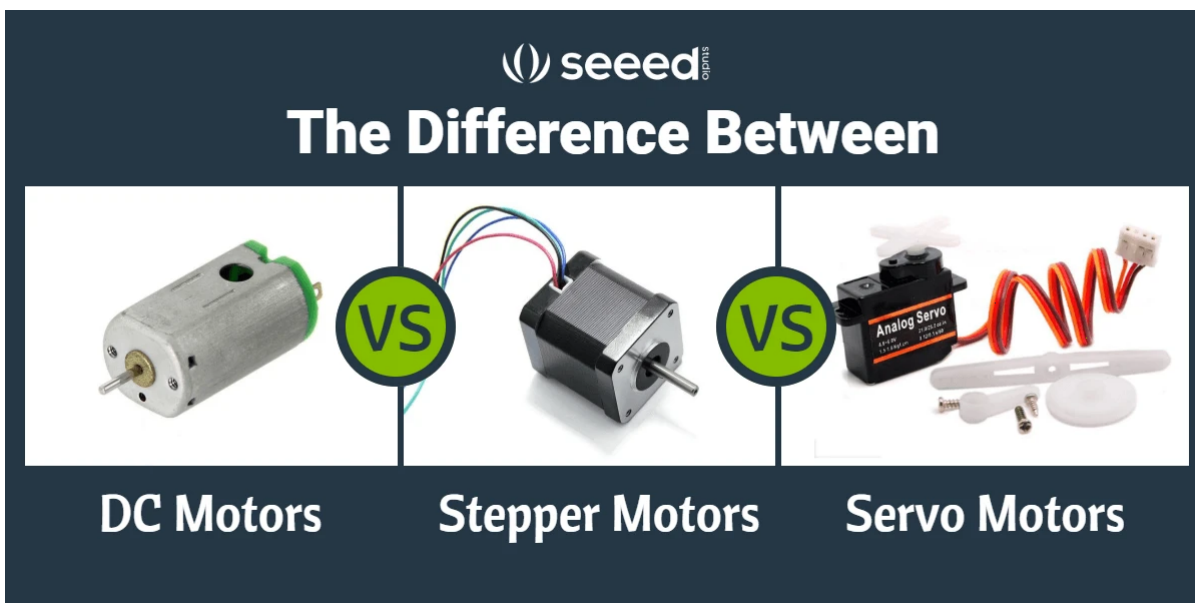


Laser LED

- **SOUND**: There are active and passive **buzzers**. Active buzzers play a tone of a frequency determined when they receive a digital "1" whereas a passive buzzer only plays the wave that receives.

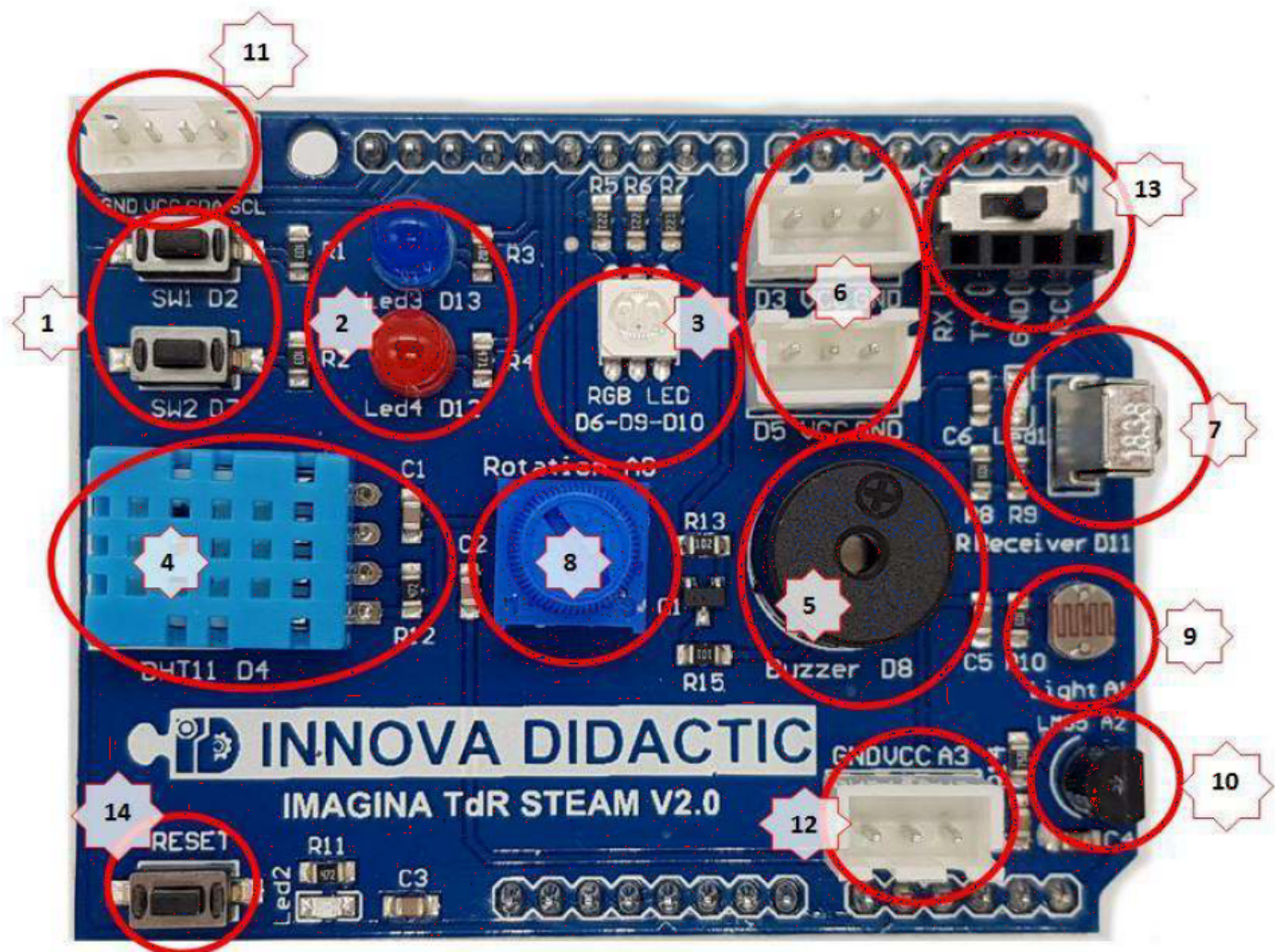


- **MOTION:** There are different types of motors depending on their properties. They usually need auxiliary elements to be controlled by processor boards, because of the voltage they require.



Imagina TDR Steam shield

We will use in our projects one shield called **Imagina TDR Steam** which is integrable into Arduino UNO, with a multitude of integrated sensors and actuators.



	Sensor/Actuator/Module
1	Two pushbuttons (SW1, SW2)
2	Two LEDs (Blue Led3 and Red Led4)
3	Led RGB
4	DHT11 Temperature and Humidity Sensor
5	Buzzer
6	Two digital outputs/inputs
7	Infrared receiver module (IR)
8	Rotary potentiometer module

9	Light sensor (LDR)
10	Temperature sensor (LM35)
11	I2C Interface
12	Analogic input
13	Bluetooth and Wifi connection
14	Reset button

Revision #9
Created 13 January 2024 17:32:52 by Ana López Floría
Updated 14 May 2024 20:19:49 by Ana López Floría