

1.6 Electronic Systems

Input

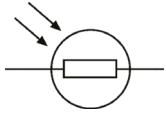
An **input device** is something that transfers an **input signal** to a system. An **input signal** is information that is given to the system by the input device.

Control

A **control device** is something that interprets the input signal and then sends an appropriate instruction to the output device.

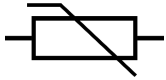
Output

An **output device** is something that responds to the output signal sent from the control device. The **output signal** is a set of instructions that determined by the control device.



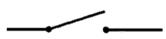
Light Dependant Resistor (LDR)

When light falls on the sensing area of a **Light Dependent Resistor (LDR)** its resistance changes. In the light resistance is low, so electricity flows. In the dark resistance is high, which limits the flow of electricity



Thermistor

A **thermistor** is a temperature-dependent resistor. Its resistance changes due to fluctuations in temperature. When hot resistance is low, so electricity flows. When cold resistance is high, limiting the flow of electricity.



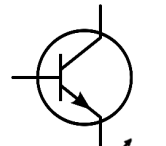
Single-throw Switch

A **single-throw switch** has a button that switches between on and off. It is a simple control device that the user can operate to turn a circuit on or off.



Resistor

A **resistor** is a device that limits the flow of electrical current within a circuit. The bigger the value of a resistor, the more it opposes the current flow. The value of a resistor is given in Ω (ohms) and is often referred to as its 'resistance'



Transistor

A **transistor** acts like a tiny electronic switch with 3 connections. A small voltage at the base connection turns it on and lets a larger current flow into the collector and out of the emitter.



Light Emitting Diode (LED)

A **Light-emitting diode** or **LED** emits light when an electrical current is passed through it. They can come in a variety of different colours and sizes.



Buzzer

A **buzzer** makes a sound. Buzzers can be useful in a sensing device to give people a warning that something needs their attention

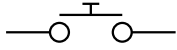
Key Terms:

- Polarity:** a component with both positive and negative connections requiring them to be connected in the correct direction.
- Program:** a set of instructions the system controller has been given to make the electronic do what it is supposed to do.
- Resistance:** an electrical quantity that is a measure of how the device or wire reduces the electric current flow through it.
- Voltage:** the amount of potential electrical force available that could make electricity flow.
- Current:** the amount of electricity that is flowing through a circuit.
- Semi-conductor:** a material that allows electricity to flow under certain conditions. It can be an insulator or conductor.

Component: an individual piece of a circuit.

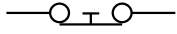
Circuit: individual components are joined by a conductive material so electricity can flow through them and perform a task.

Additional components:



Push to Make

Push to Make switches can be used as a digital input device, found on phones and keyboards
It will produce a **1 (on)** when pressed and a **0 (off)** if released



Push to Break

A **Push to Break (PTB)** switch works the other way round. It will produce a **0 (off)** when pressed and a **1 (on)** if released
PTM and PTB switches are known as a **momentary switches**



Lamp

Produces Light



Speaker

Produces Sound

Schematic Drawing: is a picture that represents the components of a process, device, or other object using standardized symbols and lines. This helps to understand how a **Printed Circuit Board (PCB)** should be laid out.

