

N4

## Input devices

An input device changes some form of energy into electrical energy.

Examples of input devices:

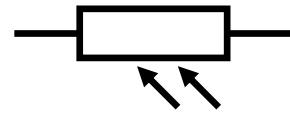
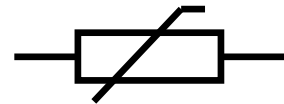
A microphone changes sound energy into electrical energy.

A thermistor is a resistor, the resistance of which varies with temperature. As the temperature increases, the resistance decreases.

An LDR is a light dependant resistor, the resistance of which varies with light level. As the light intensity increases, the resistance decreases.

A switch makes or breaks a circuit depending on the setting.

### Circuit Symbol

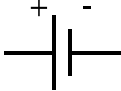
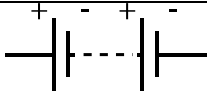
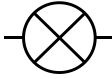

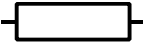
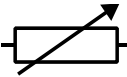


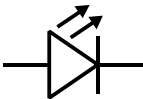




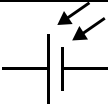
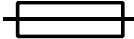

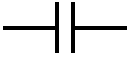
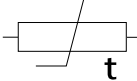

Summary of input condition and resistance:

| Device                   | Condition        | Resistance      |
|--------------------------|------------------|-----------------|
| Thermistor               | Low temperature  | High            |
|                          | High temperature | Low             |
| Light Dependant Resistor | Dark             | High            |
|                          | Light            | Low             |
| Switch                   | Open             | Very, very high |
|                          | Closed           | Low             |

|                             |            |   |
|-----------------------------|------------|---|
| Input of a heating system   | Thermistor | The thermistor will change resistance when the temperature changes    |
| Input of an automatic lamp  | LDR        | The LDR will change resistance when the brightness changes            |
| Input of a lighting circuit | Switch     | The switch will make or break the circuit when the setting is changed |

## Summary of electronic components

| Electronic Component | Symbol  | Function   | Practical Application                              |
|----------------------|---|--|--|
| Cell                 |    | Converts chemical energy into electrical energy                          | Supplies energy to a car battery                   |
| Battery              |    | Converts chemical energy into electrical energy                          | Supplies energy to a torch                         |
| Lamp                 |    | Converts electrical energy into light                                    | Bulb   |
| Switch               |    | To complete a circuit  | Allows a circuit to be switch on or off            |
| Resistor             |    | To limit the current in a circuit  | Changes electrical energy into heat in a toaster   |
| Variable resistor    |  | To vary to current in a circuit.   | To vary the amount of current to a dimmer lamp     |
| Voltmeter            |  | To measure the voltage between two points. (p.d)                         | Measures the voltage through a component           |
| Ammeter              |  | To measure the current flow (charge per second) in a circuit / component | Measures the charge per second through a component |
| LED                  |  | To convert electrical energy into light                                  | To act as a warning light.<br>TV stand by          |
| Motor                |  | To convert electrical energy into kinetic energy                         | To allow the rotation of a washing machine drum    |
| Loudspeaker          |  | To convert electrical energy into kinetic energy - produces sound energy | To listen to music<br>Telephone handset            |

|                   | <b>Symbol</b>   | <b>Function</b>  | <b>Practical Application</b>   |
|-------------------|---|--|--|
| Photovoltaic cell |    | To convert light energy into electrical energy                         | Calculator   |
| Fuse              |    | To limit the current flowing into a circuit                            | Melts and breaks when the flow of current is too high  |
| Diode             |    | To block the flow of current in one direction                          | Will only allow a.c to flow in one direction around a circuit.<br><br>Used in radios and TV to convert radio or TV signals |
| Capacitor         |    | To store electric charge   | Used in timing circuits to produce a time delay.<br>Traffic lights   |
| Thermistor        |   | When its temperature increases its resistance decreases and vice versa | Used as an input device to a central heating system.   |
| LDR               |  | When the light levels on it decrease, its resistance increases.        | Light sensor which switches on a lamp at dusk  |

