

Electronics & Magnetism

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FYS01a: Physics 1a

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1 Fundamental Quantities

1.1 Charge

Charge is measured in Coulomb (C). In equations, it's often symbolised with q_n .

1.2 Potential Difference

Potential Difference (alternatively *Voltage*) is the difference in the amount of energy that a charge carrier has between 2 points.

1.3 Flow

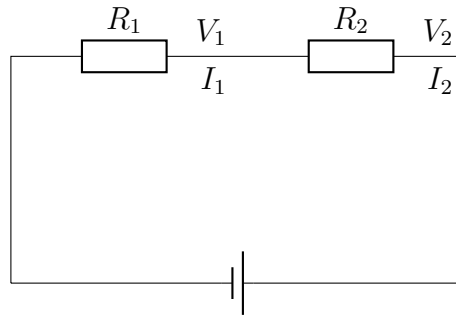
Flow (alternatively *Amperage*), measured in A (*Ampères*), but in equations denoted as I is the amount of charge moving through a certain cross-section per unit of time.

$$I = C \text{ s}^{-1}$$

2 Circuits & Quantities

The structure of a circuit affects how the *Voltage* , *Resistance*, & *Amperage* behaves.

2.1 Circuits in series



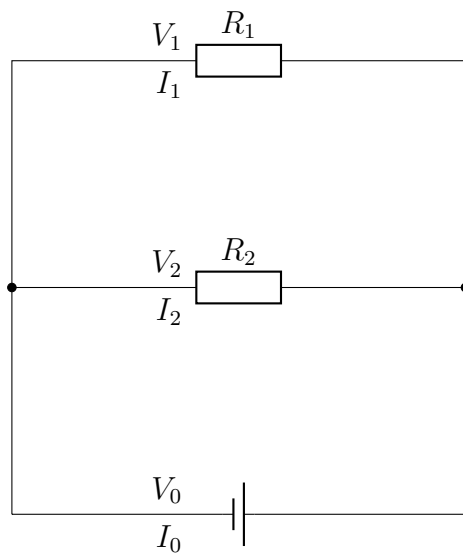
For a circuit connected in series it is true that:

$$R = \sum_{k=1}^n R_n$$

$$I = I_1 = I_2 \cdots I_n$$

$$V = \sum_{k=1}^n V_n$$

2.2 Circuits in parallel



For a circuit connected in parallel it is true that:

$$\frac{1}{R} = \sum_{k=1}^n \frac{1}{R_n}$$

$$I = \sum_{k=1}^n I_n$$

$$V = V_1 = V_2 \cdots V_n$$