# THE RMS VALUE

**DEFINITION**

The **RMS value** (Root Mean Square value) in an AC electric circuit is a measure of the **effective or equivalent DC value** of an alternating current (or voltage).

It is the value of a DC current (or voltage) that would produce the same amount of heat in a resistor as the AC current (or voltage) over a complete cycle.

**How is the RMS Value Calculated?**

Example... For a pure **sinusoidal AC waveform**, the RMS voltage ( or current ) is :

$$V_{\text{RMS}} = \frac{V_{\text{peak}}}{\sqrt{2}}$$    Or  Vrms = Vpeak  x  0.707

**Why is the RMS Value Important?**

The RMS value is crucial because:

1.  It provides a meaningful way to compare AC and DC quantities in terms of their energy-delivering capacity.

2.  Electrical devices like heaters, motors, and other loads respond to the effective power delivered, which depends on the RMS value of the AC supply.