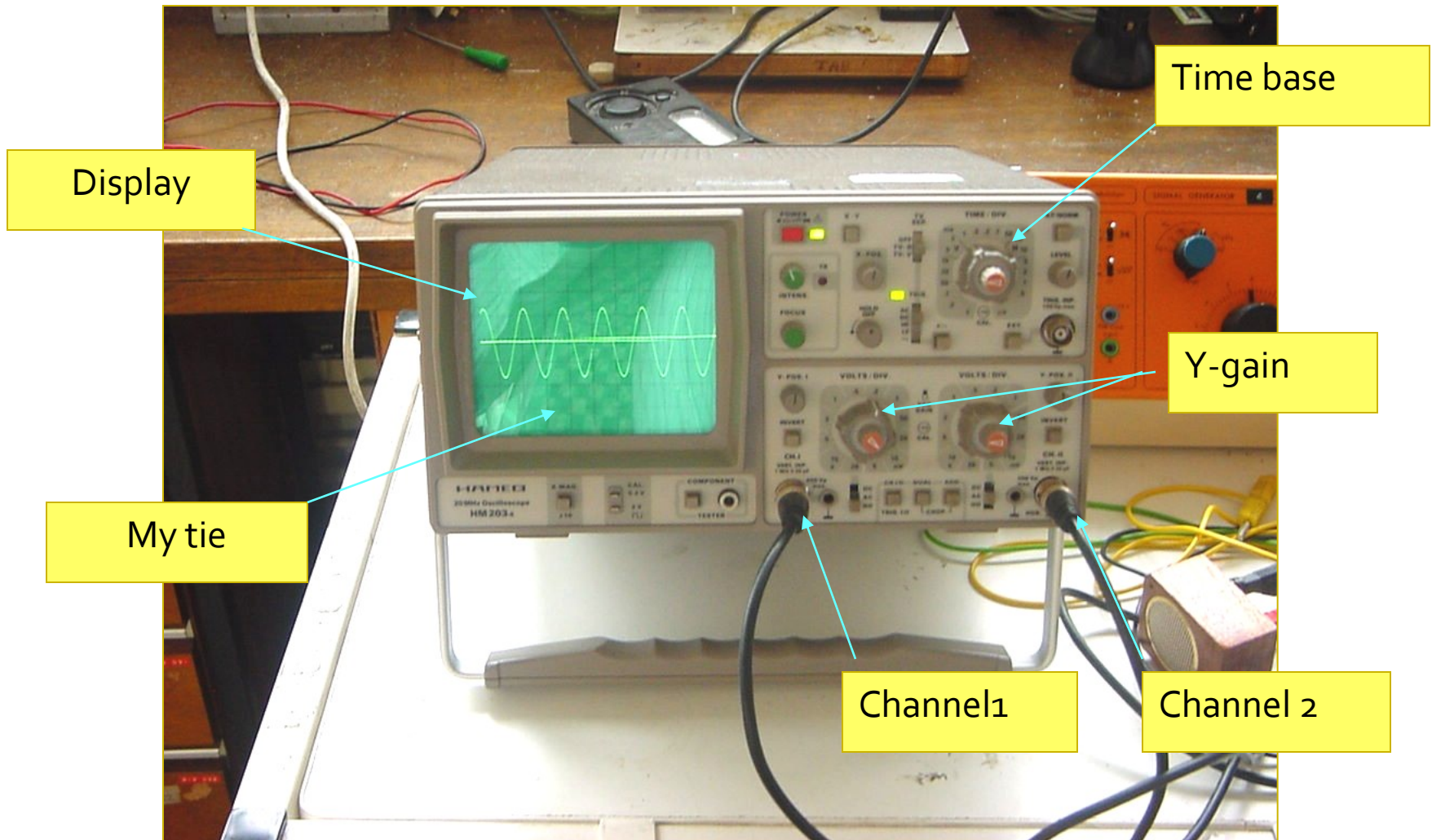
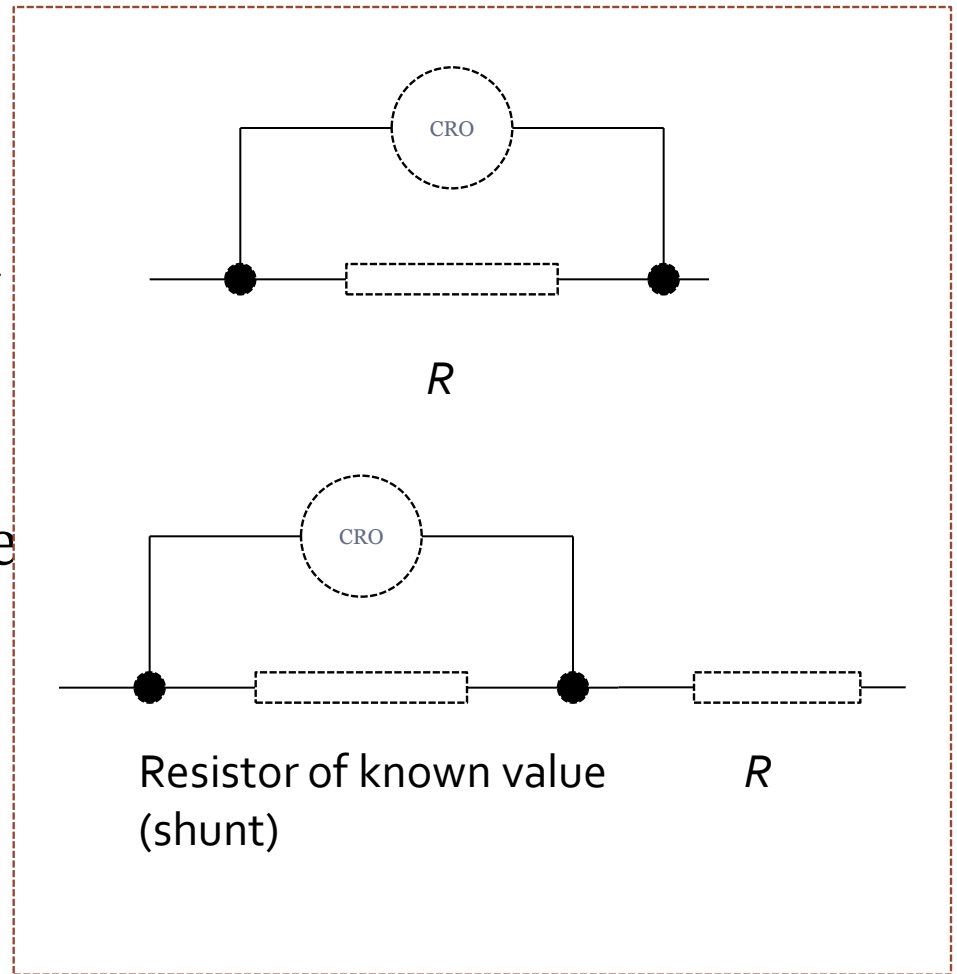


Cathode Ray Oscilloscope (CRO)



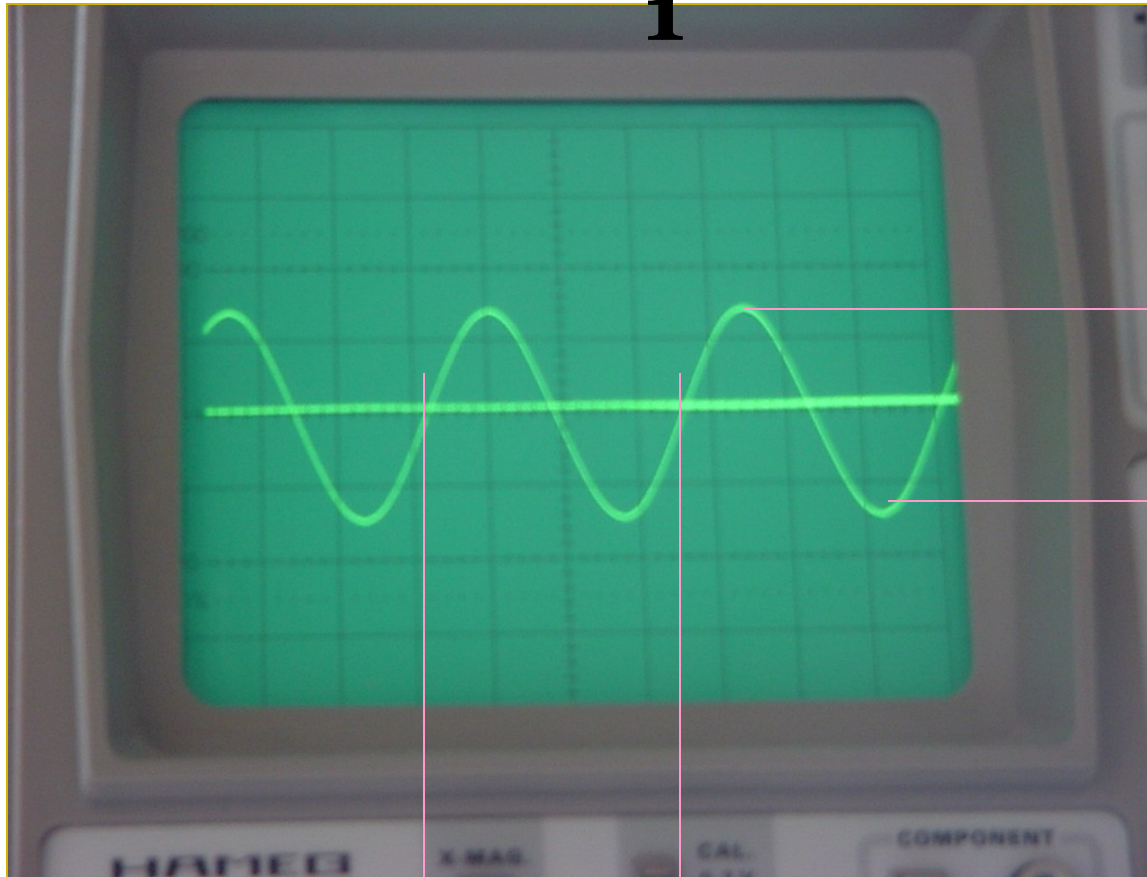
CRO in a Circuit

- It can be used as a voltmeter by connecting it across a component.
- It can be used as an ammeter by measuring the voltage across a resistor of known value. Then use $I = V/R$ to get the current.



Reading the CRO

1

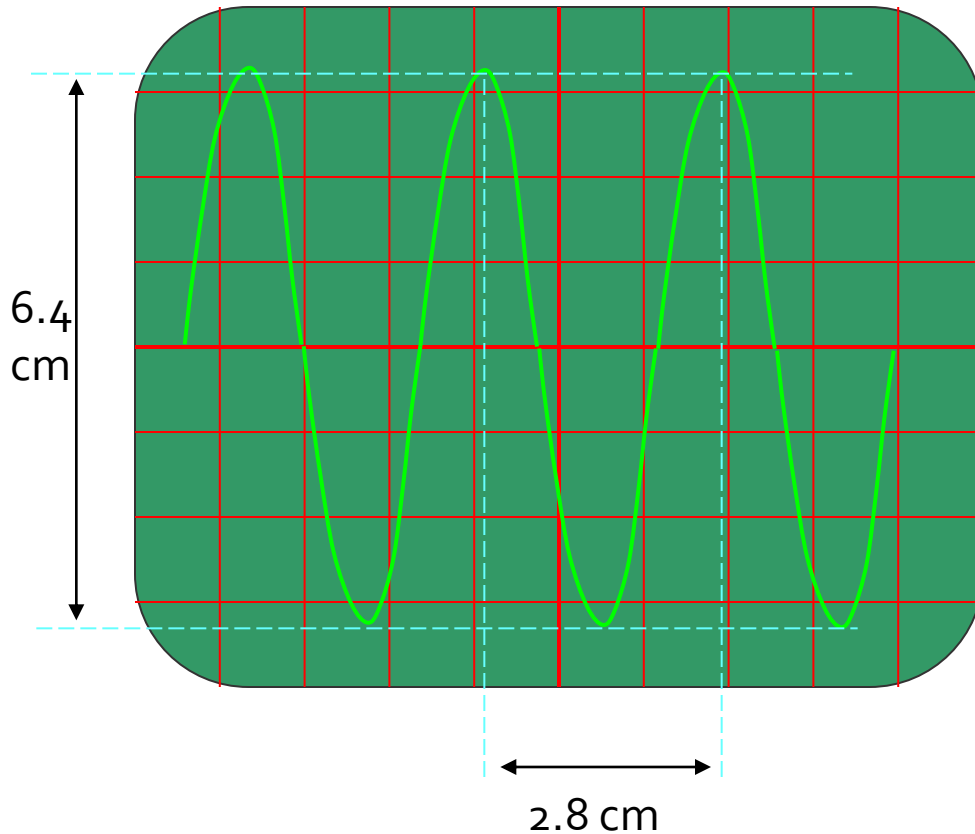


Peak-to-Peak voltage

Time Period (ms)

To get the time period you need to measure this distance and convert it to time by multiplying by the time base setting

Reading the CRO 2



- The total height of the wave from peak to trough is 6.4 cm

$$\Rightarrow V_{pk\ to\ pk} = 12.8\ V$$

$$\Rightarrow V_o = 6.4\ V$$

- 1 cycle occupies 2.8 cm

$$\Rightarrow T = 1.40\ ms = 1.40 \times 10^{-3}\ s$$

$$\Rightarrow \text{Frequency} = 1 \div 1.40 \times 10^{-3}\ s \\ = 714\ \text{Hz}$$

The time base controls are set at 5 ms/cm
The voltage gain is set at 2 V/cm

Summary



- Mains electricity is always AC.
- In Europe it is at a frequency of 50 Hz.
- AC waveforms have peak voltage and RMS voltage.
- $V_{\text{RMS}} = 0.7 V_{\text{Pk}}$
- AC waveforms can be studied with a CRO.