

# Effects of Daylight Harvesting on Electronic Lighting Control

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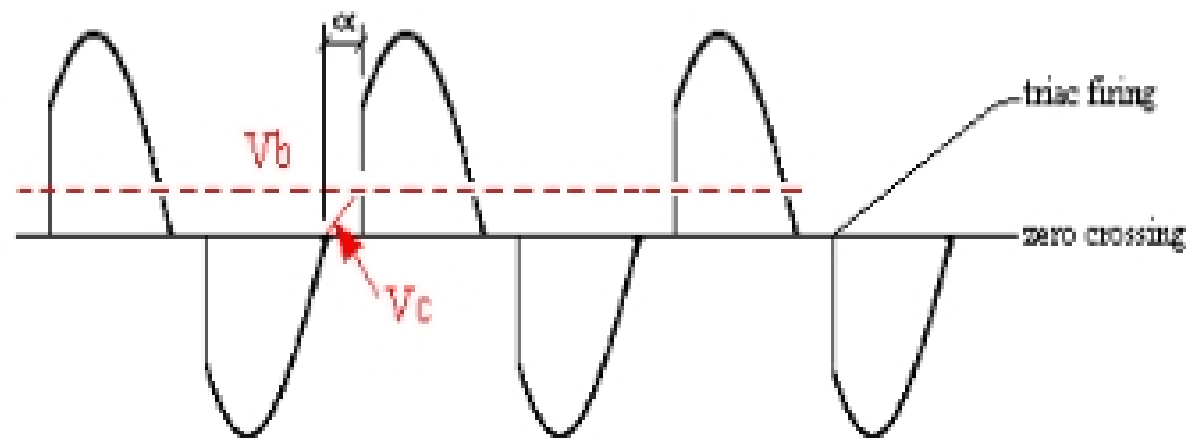
# Triac Dimming

## Zero-crossing

A dimmer controls the power to the load through a solid state switch or triac. The triac is synchronized to the AC line through signals obtained at zero crossings

## Triac-firing

The zero crossing signals are then used to fire the triac to give the correct dimmed waveform



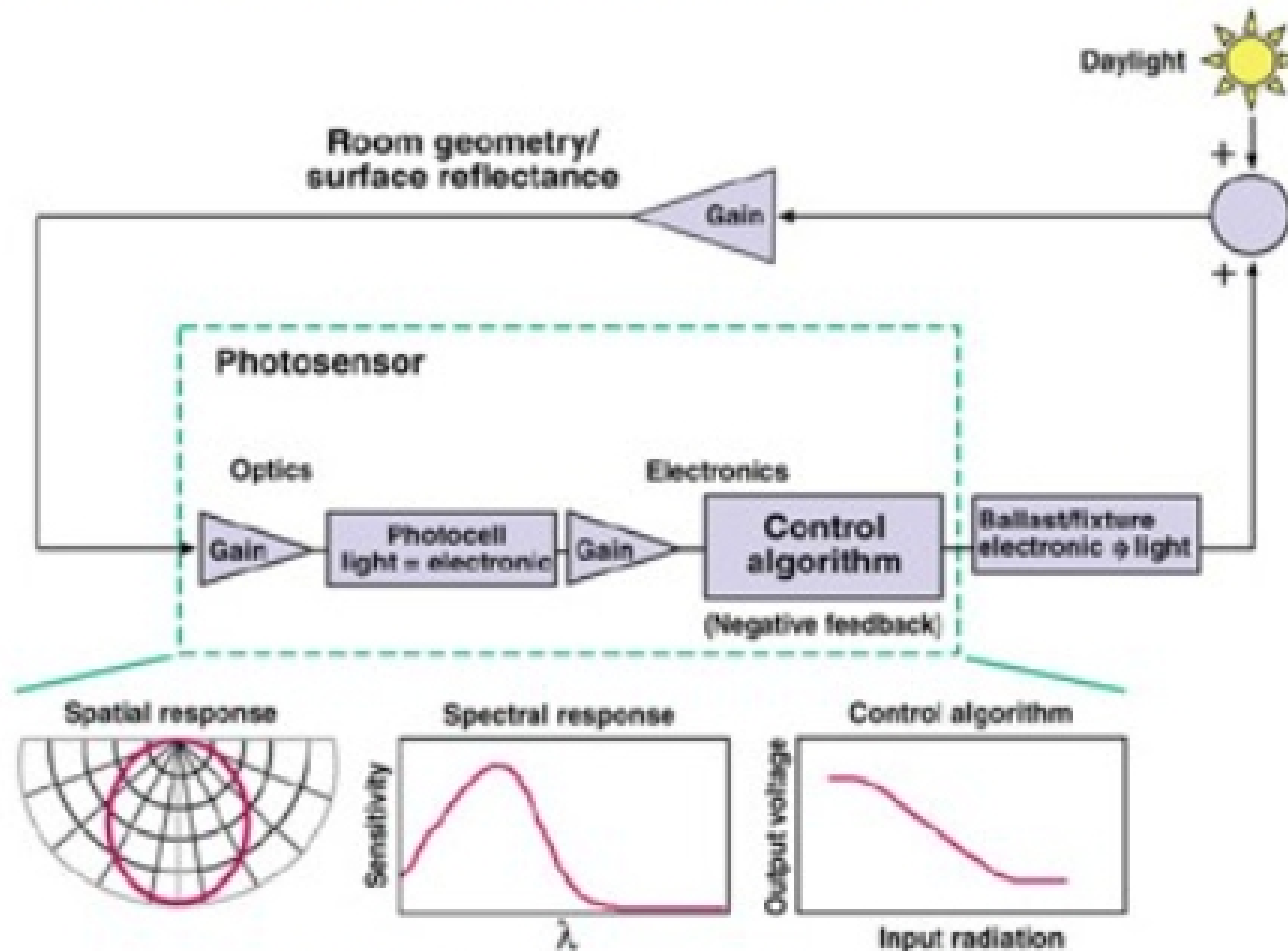
$$\frac{V_b}{V_m} = \frac{\sin(\alpha - \theta) + e^{\left[\frac{-\alpha}{\omega CR}\right]} \sin\theta}{\sqrt{1 + \omega^2 C^2 R^2}}$$

where  $\theta = \tan^{-1}(\omega CR)$

$V_c$  is the capacitor voltage

$V_b$  is the breakover voltage

# Daylight Harvesting System



[10] Closed-Loop Lighting Control System Diagram