

Electronic Regulator for Two-wire AC Switch

Abstract

5 This document discloses an electronic device which can be used as a helper circuit, henceforth electronic regulator, to a two-wire AC (Alternating Current) switch circuit that is fitted to a conventional wall-switch recess where only two-wires, the active wire and the AC load wire, is available (i.e. there is no neutral wire). The said electronic regulator is connected in parallel to the AC load (e.g. a lamp load, fluorescent tube) and its purpose
10 is to channel current away from the AC load when the two-wire AC switch is 'off' and channel current into the AC load when the two-wire AC switch is 'on'. Consequently, when the two-wire AC switch is 'off', a small current I_{small} , which needs to be continuously supplied to the two-wire AC switch to power its electronics, flows through the electronic regulator rather than the AC load, thereby guaranteeing that AC load does
15 not partially turn 'on'. In addition, when the two-wire AC switch is 'on', the electronic regulator changes state automatically so that almost all of the AC current flows into the AC load to ensure the AC load turns 'on' and operates as expected. Novelty associated with the said electronic regulator circuit lies with its inventive electronic design circuitry that creates a high impedance state automatically when the two-wire AC switch is 'on',
20 and contrastingly, creates a low impedance state automatically when the two-wire AC switch is 'off'. Another novelty in the disclosed art is the inventive use of switch-mode technology enabling highly power efficient switch-mode harvesting of DC (Direct Current) energy for the said electronic regulator to power its own control logic circuitry.

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Figure 4



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