

AN002 - IOT (remote controlled) Dimmable Low Power LED bulb (up to 4watts)

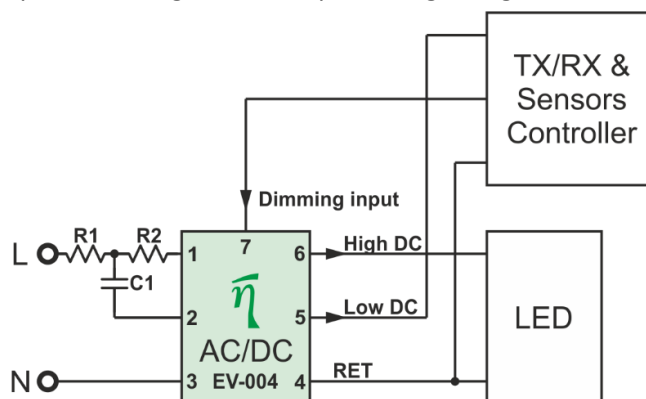
Abstract

Typical IOT LED bulbs use two SMPSs (Switch-Mode-Power-Supply). The first is the main power supply which converts the mains voltage to DC current. The second is a secondary power supply which powers the control and communication circuitry. During ON mode, both power supplies operate and during OFF mode, only the secondary power supply operates. Thus, during the OFF mode, the bulb continues to consume power. The power consumption by the control and communication circuitry is low. However, most of the power consumed during the OFF mode is caused by the secondary SMPS itself, which results in high standby power.

Eta-Bar's EV-004 is an AC to DC converter for low power dimmable LED bulb (up to 4 watt). Its main features are: Zero-Standby*, non-isolated, high efficiency, inductor-less AC to DC converter with two regulated DC outputs:

- Main output (current or voltage) for the LED operation (high DC) with dimming capabilities
- Low voltage output for the operation of the communication and its control circuits

EV-004 operates in wide temperature range and AC input voltage range.



Main Features:

- Topology : Capacitive power supply, non-isolated power supply
- Input voltage range : 85 to 140 VAC ; 50 to 60 Hz
185 to 265 VAC ; 50 to 60 Hz
- DC output:
 - Low DC : Regulated voltage: adjustable 0.7 to 5 V DC
Output current capabilities:
 - Peak current: up to 500 mA for less than 500 mSec
 - Average current: up to 5 mA
 - High DC : Regulated voltage: adjustable low DC output to 70 V DC
Regulated current: adjustable 1 mA to 60 mA DC
- LED dimming : Dimming capabilities
- Efficiency : >85% (Condition: at nominal output)
- Standby power : less than 5 mWatt (Conditions: $R1 < 1\Omega$)
- EMI filters : Not required

*Zero-Standby - According to the IEC 62301 Clause 4.5 regards measurements of less than 5 mW as zero power