

AN007 - IOT (remote controlled) Dimmable LED Bulb

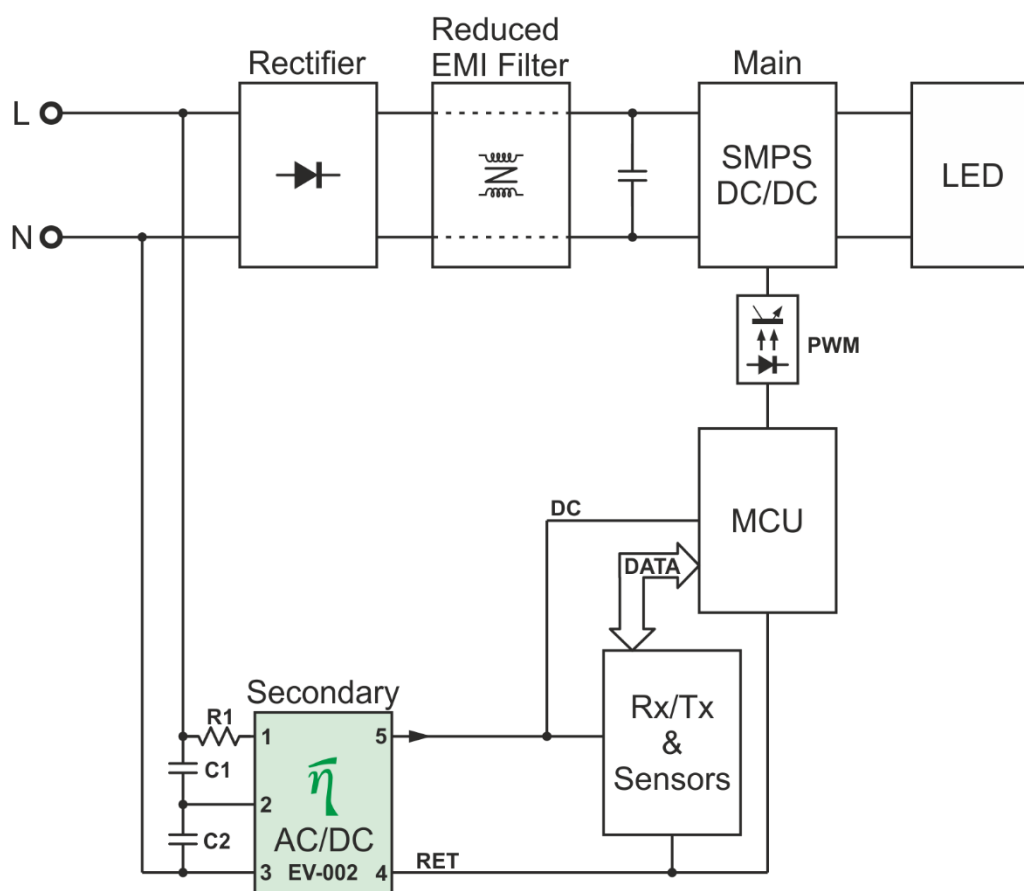
Abstract

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 the 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 consumed by the secondary SMPS itself, resulting in an overall high standby power.

Eta-Bar's EV-002 is an AC to DC secondary power supply. Its main features are: **Zero-Standby***, non-isolated, high efficiency, inductor-less AC to DC converter with regulated DC output. The EV-002 operates during all operation modes (OFF mode and ON mode). However, its main contribution to energy saving is during the OFF mode, when minimal power consumption is required.

With EV-002, the number of elements in the EMI (Electro-Magnetic-Interference) filter can be reduced, resulting in a 'Reduced EMI filter'**.

EV-002 operates in wide temperature range and wide AC input voltage range.



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

** See AN015 - Reduced EMI Filter

Main Features:

- Topology : Capacitive power supply,
Non-Isolated power supply.
- Input voltage range : Range A: 85 to 140 VAC ; 50 to 60 Hz
Range B:185 to 265 VAC ; 50 to 60 Hz
- Series capacitor(C1): Less than 0.33 uF for input voltage range A
Less than 0.15 uF for input voltage range B
- DC output: : 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
- Efficiency : >85% (Condition: at nominal output)
- Standby power : less than 5 mWatt
- EMI filters : Reduced EMI filter (see AN015 - Reduced EMI Filter)