

AN010 - Output Controlled Smart Energy Meter

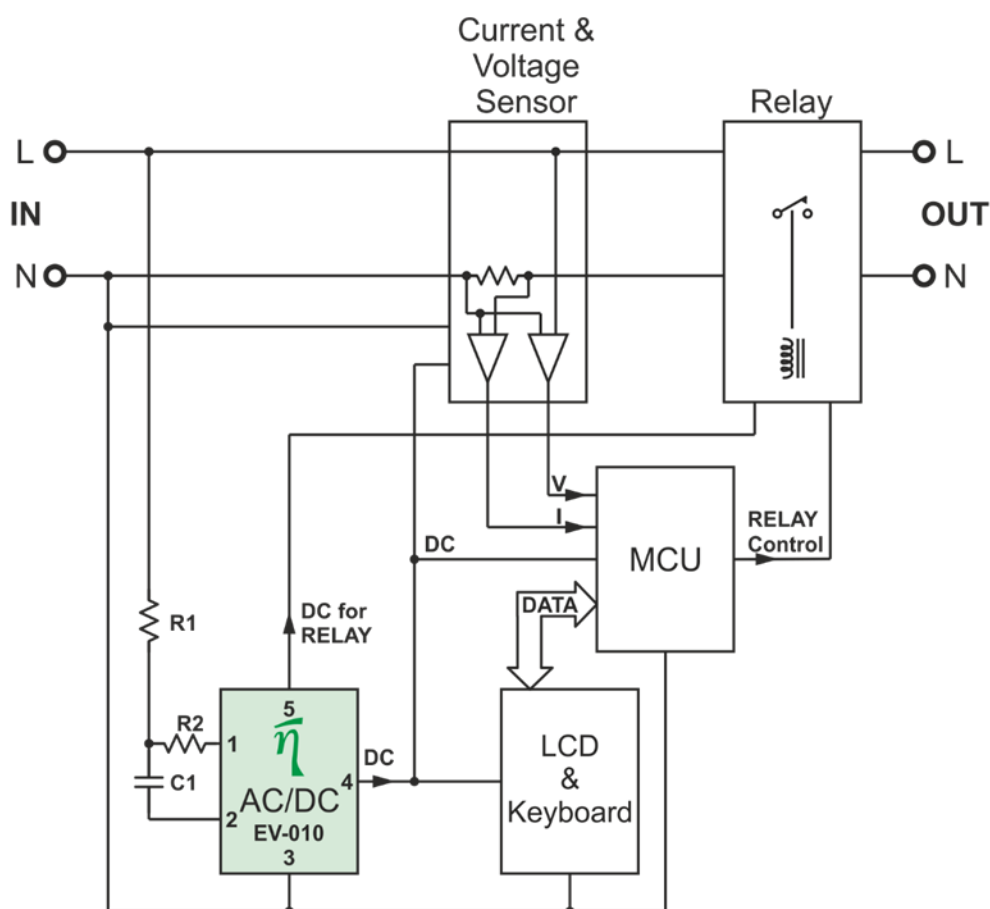
Abstract

Output Controlled Smart Energy meters require a non-isolated power supply with common ground for the input and the output. These devices have two main power consumption modes. Most of the time the device is in the first mode (data collection mode), in which the power consumption is low. The second mode is the Internet connection mode, in which the power consumption is higher. A typical power supply for these devices is an AC to DC SMPS (Switch-Mode-Power Supply) capable of driving the second mode. During the first mode, most of the power is consumed by the SMPS itself, resulting in high standby power.

Since SMPS generates noise an EMI (Electro-Magnetic-Interference) filter is required.

Eta-Bar's EV-010 is an AC to DC power supply for output controlled Smart Energy meters. Its main features are: **Zero-Standby***, non-isolated common ground for the input & output, high efficiency, inductor-less AC to DC converter with two DC outputs:

- DC output voltage capable of driving high-power demand during the Internet connection periods
- DC for relay. This output reduces the relay power consumption by providing the "pickup" voltage level during the "release" to "hold" relay transition and the "hold" voltage level during the steady state ON mode of the relay



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

EV-010 does not requires any EMI (Electro-Magnetic-Interference) filter.

EV-010 operates in wide temperature range and wide AC input voltage range.

Main Features:

- Topology : Capacitive power supply (inductor-less),
Non-isolated power supply,
Common ground for the input and output.
- Input voltage range : 85 to 265 VAC ; 50 to 60 Hz
- DC outputs:
 - 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
 - DC for relay: Pickup voltage range : adjustable from DC output to 50 V DC
Hold voltage range : adjustable from DC output to 50 V DC
Pickup max current : 100 mA
Hold max current : 10 mA
- Standby power : less than 5 mWatt (Conditions: $R_1 < 1\Omega$)
- EMI filters : Not required