

AN015 - Reduced EMI Filter

Abstract

Most SMPSs (Switch-Mode-Power-Supply) require an EMI (Electro-Magnetic-Interference) filter to meet standards.

There are two main topologies to connect an EMI filter in an AC to DC SMPS.

- The first one is to connect the EMI filter between the mains and the AC to DC converter, as shown in Figure 1.

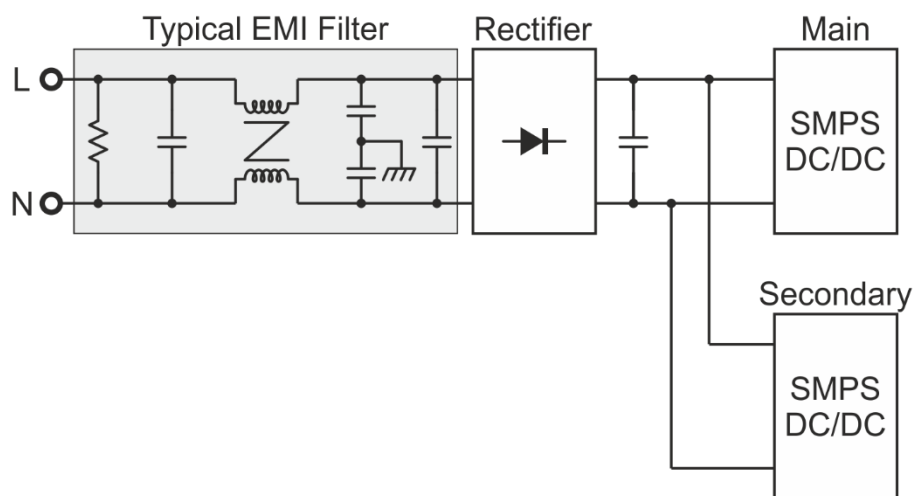


Figure 1

- The second one is to connect the EMI filter between the AC to DC converter as shown in Figure 2.

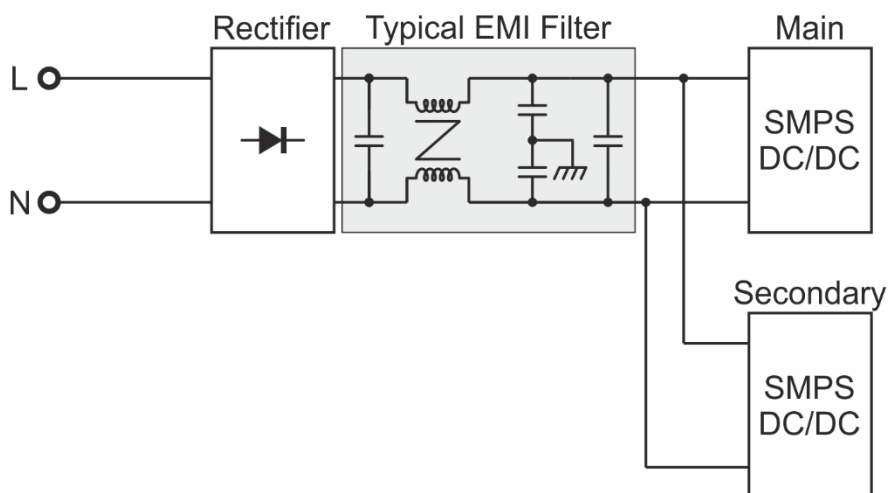


Figure 2

The first topology is suitable for all power ranges of the AC to DC converter. In addition to the EMI filter, safety regulations require a bleeder resistor to discharge the EMI filter capacitors. A typical bleeder resistor dissipates hundreds of milli-watts continuously and increases the standby power loss.

Figure 3 describes an implementation of Eta-Bar's technology as a secondary power supply, corresponding to the first topology (Figure 1).

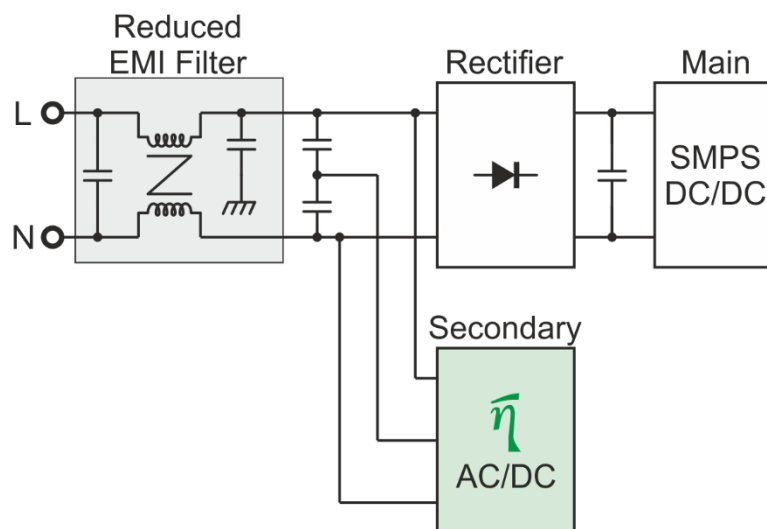


Figure 3

Beyond its other advantages, Eta-Bar's technology enables to reduce the number of EMI filter elements, while maintaining the same performance. In addition, since Eta-Bar's technology includes an automatic bleeder resistor, it reduces the total standby power of the appliance.

Figure 4 describes an implementation of Eta-Bar's technology as a secondary power supply, corresponding to the second topology (Figure 2).

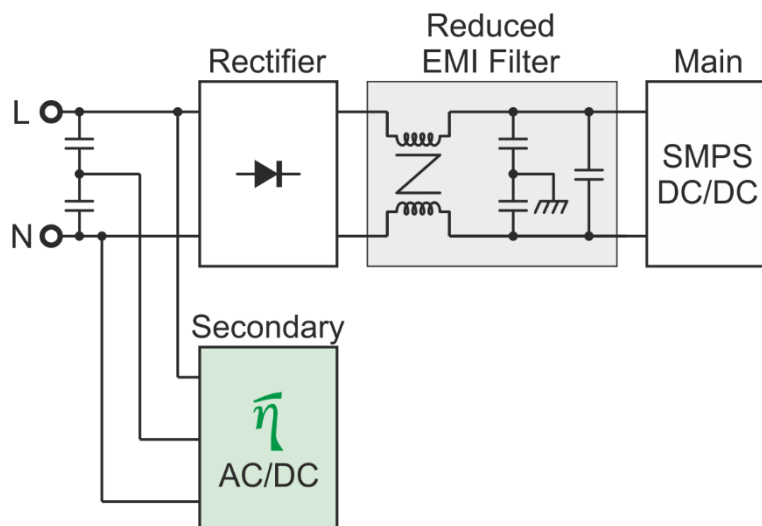


Figure 4

Beyond its other advantages, Eta-Bar's technology enables to reduce the number of EMI filter elements, while maintaining the same performance.