

AN016 – Industry 4.0 – G3 Power Line Communication MODEM

Abstract

G3 PLC (Power Line Communication) modems are commonly used in industrial applications. These modems transmit and receive low rate bidirectional data from the power line in the frequency band of 10KHz to 500KHz. Typical G3 PLC model is described in Figure 1.

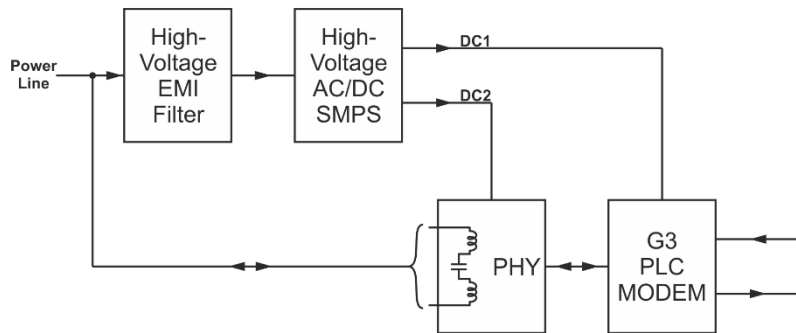


Figure 1

A SMPS (Switch-Mode-Power-Supply) feeds the modem power. A typical switching frequency of the SMPS is in the same frequency band that are used by the modem. An EMI filter is connected between the power line and the SMPS to reduce the noise generated by the SMPS to meet EMI standards and not to “block” the PLC receiver.

Figure 2 describes a G3 PLC model powered by Eta-Bar solution. Since Eta-Bar solution does not generate EMI noise there is no EMI filter at its input. In case that some of the modem or the PHY circuits generate EMI noise it's easy to filter it on the DC level where the voltages are low.

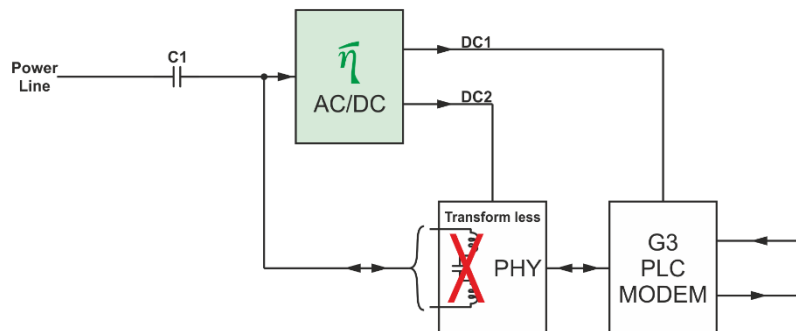


Figure 2

In addition, the PHY circuits can be transform less and can share the same DC blocking capacitor (C1) that feeds Eta-Bar's AC to DC.

Main Features:

- Fewer parts: No High voltage EMI filter; transform less PHY connection
 - Smaller size
 - Lower BOM cost
- Lower power consumption
- Higher reliability