



EMC RELATED RECOMMENDATIONS FOR SYSTEM DESIGN ENGINEERS

The conducted noise emission of most ETA power supplies is internally filtered to EN 55022 level B. But, a well-filtered power supply on its own can not guarantee for the compliance of an installation. Below list is focusing on areas which stand in direct relation to the EMI characteristics of a system. We advise the system builder to accurately consider and optimize these EMC sensitive areas.

APPLICABLE METHODS FOR EFFECTIVE EMC IMPROVEMENT:

- Removing or replacing the external input EMI filter, if the power supply itself is already well filtered internally. => Avoid oscillations between two filters stages!
- Winding input-, output-, data- and/or signal leads opposite and counterdirectionally through a ring core reduces common mode HF noise. (Current compensated choke)
- A rod-core choke in the primary earth path may also attenuate common mode noise. The choke must not be bridged by any further grounding point though!
- Isolating power semiconductors from heat sinks and enlarging distances between case and heatsinks remarkably reduces coupling capacities.
- Grounding case and heatsinks.
- Grounding one of the V_{out} lines (PELV)
- Single star-point grounding gives better EMC result than decentral grounding.
- Using well sized, non corrosive and low contact impedance materials for bonding and ground fixations. (Screw, nuts, washers, crimp materials, wire ends and case grounding contact area).
- Designing PWB pattern and geometry with respect to optimized EMC.
- Optimizing the input-, output-, ground-, data- and signal-wiring system by aiming for minimum lead lengths and impedances.
- Twisting data- and/or signal-leads.
- Shielding input-, output-, data- and/or signal-leads.
- Internal shielding of non-conductive apparatus housings with a copper layer.
- Closing, downsizing or shielding gaps and openings in order to break the EMI circuit between environment and the system.
- Shielding and separating sensitive parts from radiating components. Reducing shielding impedance. (Bonding, shielding conductivity)