

emission control, ltd.

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Maximize the Effectiveness of your EMI Filter

Many times when a filter selection is based solely on insertion loss, the attained result is a lower level of performance at a higher cost. The extremely high insertion loss numbers can rarely be achieved in an actual installation as compared to the data sheet measurements made under laboratory test conditions. Select a filter based on both the application and the EMI specification to be met. To gain maximum benefit, pay attention to the installation of the filter by following these guidelines:

Maintain a RF ground

Mount the filter as closely as possible to the EMI source. The filter and the EMI source must be mounted on a common ground plane in order for the filter to bypass the EMI currents to ground and return them to the source. It is imperative that this ground connection be a low impedance at RF frequencies. Grounding the filter case to the source equipment through a two foot length of 12 ga. wire is totally inadequate. Mounting both within inches of each other on a common metal plate or chassis will ensure adequate grounding well into the 30 MHz. range. If the filter has to be mounted in a separate enclosure, then the two enclosures must be connected together through a short section of rigid metal conduit through which the wiring is run. In this case we are relying on the conduit to provide the low impedance ground connection.

Isolate the Line and Load Wiring

Do not, under any circumstances, run both the LINE and LOAD wiring thru a common conduit or cable harness. The resulting inductive and capacitive coupling will deteriorate the filter's performance. Keep the LINE and LOAD wires of the filter separated as far as possible from each other and route this wiring as closely as possible to the chassis or ground plane to maintain isolation.

Guard Against Radiated Noise

Long wire runs carrying EMI currents will act as antennas radiating the noise to nearby circuitry. If these signals are picked up by the wiring before the filter; it will appear that the filter is not adequately removing the conducted EMI. In fact, what we are seeing are the effects of the radiated EMI. In the case of variable speed motor drives, the wiring between the drive and the motor can be the source of interference well into the AM radio band. If a special output filter is not used at the drive to lower the emissions, then these lines must be shielded. Shielding can be accomplished most inexpensively by running the wires in solid metal conduit. Shielded power cable can also be used but at considerably more cost. Because of its poor shielding effectiveness, do not use flexible metal conduit, not even for short runs.

Emission Control, Ltd. is dedicated to providing "EMC Solutions for Conducted EMI". Since 1984, we have been focused on the design and manufacturing of the highest quality and most effective line of EMI filters available. We have no other objectives.

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If you have a special product or application, which requires EMI filtering; we can supply our experience and expertise early in your planning, so as to achieve the most efficient and cost effective filter solution. Our in-house test facilities are available to guarantee your product will meet the applicable emission standards. We maintain a complete quality control system from design, through all phases of production, and to final delivery. We remain committed to our goal of providing a defect free product on which you can depend.

Whether you require a standard catalog filter, a modified standard, a full custom designed unit, or a short delivery cycle; we are determined to provide the individual level of service needed to meet your satisfaction.