HDF Filters

Dampening Network

Rantec recommends adding an R-C dampening network to the output of the HDF EMI Filter series, with the exception of the HDF-DC500 which employs an internal dampening network. This is particularly important if the system requirements dictate that the system meet the low frequency conducted susceptibility requirements of MIL-STD-461 (CS01, CS101). See Figure 1 for implementation of the dampening network.

Under normal operating conditions, there will be very little power dissipation in the resistor and very little RMS current in the capacitor of the dampening network. However, during the low frequency conducted susceptibility input line conditions specified in MIL-STD-461, the power dissipated in the resistor and the RMS current in the capacitor will both be much higher than under normal operating conditions. A chassis-mounted resistor with a high power rating and a high RMS-current rated capacitor are therefore recommended. See Table 1 for recommended parts used in the dampening networks in conjunction with the respective HDF filters.

Filter	Resistor Value	Resistor p/n	Capacitor Value	Capacitor p/n
HDF-22	0.182 Ω	Dale p/n RER75FR182R	1500uF/80V	Cornell Dubilier p/n MLP152M080EK1A
HDF-25	0.182 Ω	Dale p/n RER75FR182R	1500uF/80V	Cornell Dubilier p/n MLP152M080EK1A
HDF-32	23.7 Ω	Dale p/n RER75F23R7R	5uF/400V	Electrocube p/n 935B1E505F
HDF-35	20 Ω	Dale p/n RER75F20R0R	8uF/400V	Electrocube p/n 935B1E205F (4x in parallel)
HDF-AC	26.7 Ω	Dale p/n RER75F26R7R	2uF/400V	Electrocube p/n 935B1E205F
HDF-DC500	Not Needed	N/A	Not Needed	N/A
HDRF	Not Needed	N/A	Not Needed	N/A

Table 1

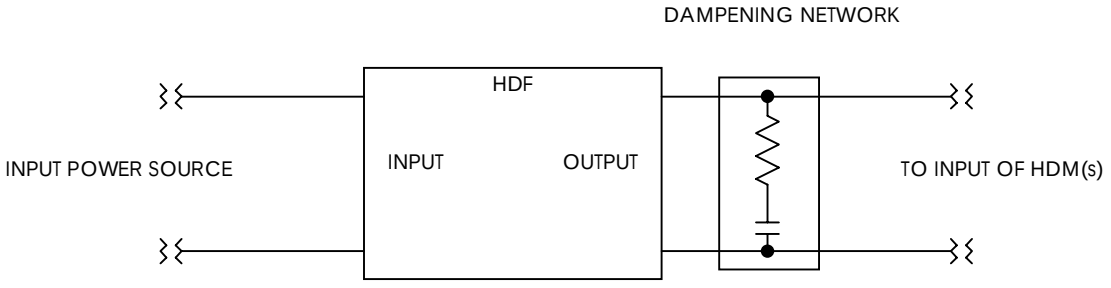

Figure 1

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Grounding and Heat Sinking

Although the power dissipation in Rantec's HDF series filters is quite low, Rantec recommends mounting the HDF filters to an electrically conductive ground plane, such as the system heat sink or chassis wall. This ensures that common-mode emissions have a low impedance to ground through the common-mode capacitors within the HDF filter.

Rantec also recommends that the HDF filter be connected as close to the input connector as possible. This will limit the possibility of the filtered input power lines from picking up radiated system noise. If it is not feasible to mount the HDF filter close to the input connector, Rantec recommends twisting the input leads together or running them in parallel planes within a Printed Wiring Board. The conductors should also employ a chassis ground shield. For example, if employing wires for the conductors, then the wires should have a chassis ground shield around them. If employing a Printed Wiring Board for the conductors, then the signals should be run in parallel planes of the PWB "sandwiched" between chassis ground layers on either side of the signals. For example, layer 1 might be a chassis ground layer, layers 2 and 3 are the input power conductors, and layer 4 is another chassis ground layer.

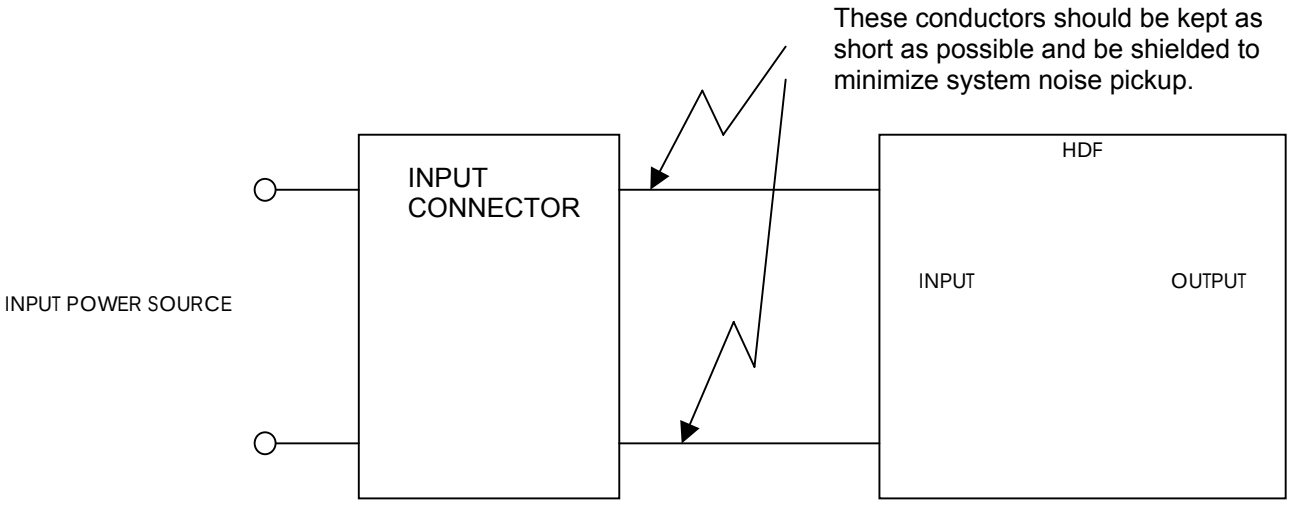

Figure 2

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