How to Specify CleanSweep® AC EMI Filter

OnFILTER' CleanSweep® AC EMI filters provide superior EMI suppression on power lines and ground in actual applications. Plug-and-play construction assures quick problem-free integration. Because CleanSweep® filters come in different configurations, proper selection is critical. This Application Note provides basic guidance on how to properly select the best configuration of CleanSweep® filter for your applications.

Basic Configurations

CleanSweep® filters come in three basic series - AF, AL and AP - which differ in their maximum current capacity - see table to the right. Consider the biggest load you may be using with the filter.

AP Series	AL Series	AF Series
3A	10A	13A...30A
100...250VAC	100...250VAC	100...250VAC

Outlet and Voltage

Within each series filters differ by the type of outlet. CleanSweep® filters come with the power cable, except for the models with terminal block connections.

The type of a plug on the cable is identical to the type of the outlet on the filter itself. Choose type of the outlet/plug carefully - once the filter has been shipped change of the outlet is not possible. If in doubt, take a picture of your existing outlet and email it to us at info@onfilter.com - we will help you with identifying its type. Ordering information on the second page of CleanSweep® filter brochures provides graphic illustration of the available outlet types.

We strongly discourage use of outlet adapters because of safety concerns. To the right is a photo of damaged outlet adapter. Current through this adapter was below its printed current limit, however the damage is obvious.

Even though CleanSweep® filters internally are designed for voltages up to 250VAC, the actual voltage rating of specific model will be defined by the rating of its particular outlet. For example, a filter equipped with U.S.- type NEMA5-15 outlet will be rated to up to 125VAC, while the same series filter with NEMA6-15 outlet will be rated at 250VAC.

Damaged outlet adapter. Choose correct type of outlet instead of using adapters.

Current Rating

Each CleanSweep® filter is equipped with a circuit breaker preventing safety violations by trying to draw higher current than the maximum rating of the filter. Maximum current rating of the filter is in part defined by the rating of the type of its outlet. For example, an AF series filter equipped with a U.K.-type outlet will be rated only up to 13A while the same series filter with a NEMA6-20 outlet will be rated at 20A.

Some models of CleanSweep® filters, such as AP and AL series, are designed for lower maximum currents than the rating of the outlet and are equipped with the corresponding circuit breaker.

Important Current Rating Consideration

We recommend to have current rating of your load to be no more than 75% of maximum current rating of CleanSweep® filter. Listed current rating of load equipment is often "typical" or average rather than maximum. Unspecified peak or inrush currents could be significantly higher. If the "typical" current of your load is too close to the max. rating of the filter the circuit breaker of the filter may trigger on peak and disconnect power to your equipment.

Multiple Loads

Sometimes it is tempting to use one filter for several loads. Even though it may work within the maximum current limits, a note of caution: filters attenuate noise only between their inputs and outputs. They will not provide any attenuation between the loads connected in parallel to the same filter output. For example, using one filter for several loads may work well for a setup with several low-noise instruments to isolate them from the power line noise, but it won't work well when a soldering iron and an electric screwdriver are connected in parallel - transient signals from the screwdriver will get to soldering iron' tip without any attenuation.

General-Purpose vs. Medical Grade vs. Consumer Grade Filters

Unless you have special applications such as use of filter in a medical or in a residential environment, specify general-purpose filters. Contrary to perceived notion that a medical-grade filter would perform better than a general-purpose one, it is just the opposite. Medical and consumer applications require ultra-low leakage current which leads to reduced common-mode attenuation. In addition, medical applications impose enhanced reliability requirements on cables and interconnects increasing filter's cost without improving noise suppression. General-purpose grade filters provide the best price/performance combination.

Application	Filter Grade
Clinic/Hospital	Medical
Residential	Consumer
All others	General

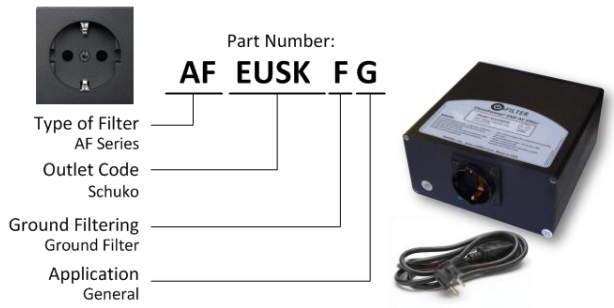
Warning: OnFILTER' products are not intended for use in life critical applications where failure of a product may result in injury or death. Even medical-grade filters should not be used in such life critical applications.

Ground Filtering

CleanSweep® filters uniquely provide filtering not only in power lines but also in ground. Specify ground filtering option for most applications for best performance. There are few applications, however, where ground filtering offers no benefits, such as where input AC ground and load ground are connected together outside the filter - this way the ground filtering will be bypassed and ineffective. One example would be some server or instrument rack.

Example of Ordering

The model on the right is AF series with ground filtering for general application with German type Schuko outlet rated 250VAC 16A. This is model **AFEUSKFG** and it is rated 250VAC 16A.



Other Options

Please contact us for other options which include:

- Different outlet types not listed in the brochures
- Mounting flanges
- Marine applications (DNV certified)

Contact us with any questions or for help with a non-standard configuration.