



Power Up Your Business with our

EMC / EMI FILTERS



Battery Storage



Vending machines



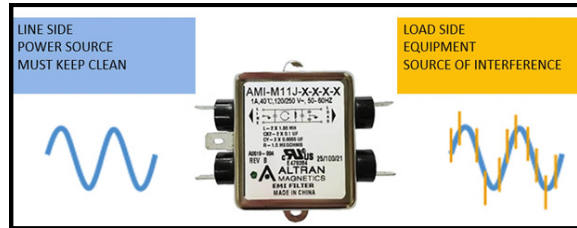
Heat Pumps

WHY EMC / EMI FILTERS?

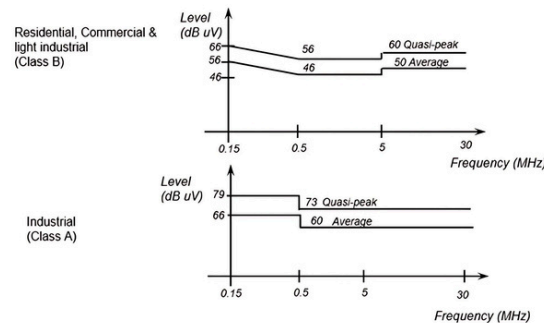
Introduction:

EMC (Electro-Magnetic Compatibility) is a way of describing how pieces of electrical and electronic equipment interact with each other when they act as either sources or receivers of EMI (Electro-Magnetic Interference).

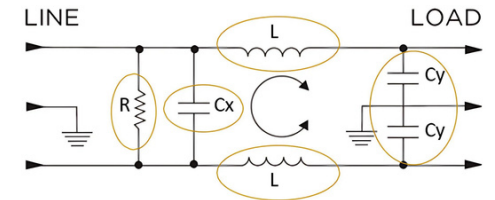
RFI (Radio-Frequency Interference) is one of the main types of EMI. It can be Radiated or Conducted. EMI filters will reduce EMI/RFI emissions mostly conducted but also radiated allowing systems and products to comply with global EMC requirements set and enforced by authorities such as FCC in USA and EMC Directive in Europe.



Various EMC standards around the world are now harmonized, especially for commercial applications. Below sets of limits are used frequently by test houses to establish whether a product passes EMC Conducted Emissions testing. This is the test often confirms the need for EMI filters.



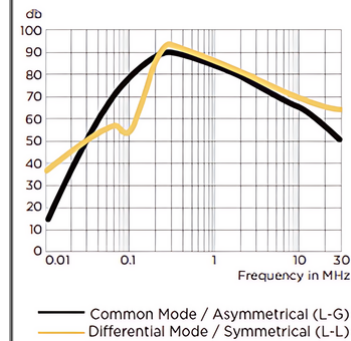
EMI filters typical Circuit Diagram



- **L:** The inductors reduce Common Mode noise, while the leakage inductance also helps reduce Differential Mode noise
- **Cy:** The line-to-ground capacitors shunt or bypass high-frequency common mode noise to ground
- **Cx:** The line-to-line capacitors neutralize out-of-phase high-frequency differential normal mode noise
- **R:** The input resistor discharges the capacitors when the power is turned off

EMI filters main features and specifications

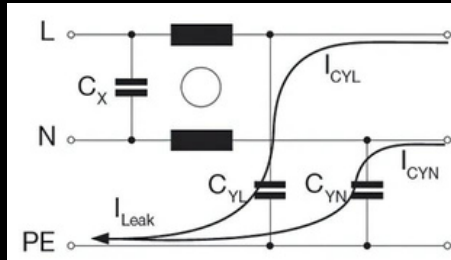
Voltage Rating, Current Rating (@ specified Ambient Temperature, number of Phases and operating mains frequency range are key requirement of any electrical component. The main feature of any EMI filter is its "Performance" (also known as "Attenuation" or "Insertion Loss") in the specified frequency range.



In this example, attenuation is given from 10kHz to 30MHz. The values at 100kHz is 80dB Common Mode and 55dB Differential Mode. These are two types of interferences and filters may need to reduce both types in a system. This data is measured according to CISPR 17 for all filters from different manufacturers to allow comparisons between different models and manufacturers. The actual performance can be different in real installations depending on load and source impedances.

Earth Leakage Current

Earth Leakage Current is another key specification and often linked to performance. The capacitors to ground (Cy) are mostly responsible for increased levels of Earth Leakage Currents in the systems. Depending on applications, there may be limits on the value of Earth Leakage introduced by addition of EMI filters to a system. Majority of medical applications and hospital equipment require almost zero Leakage from a filter. This makes the design of EMI Filters for medical applications more challenging since Cy capacitors are omitted. Typical Earth Leakage values are from 0 to 30mA. If exceeded, the Ground Fault Interrupter (GFI) or Residual Current Devices (RCD) in the electrical system would trip.



WARNING
HIGH LEAKAGE CURRENT.
 Earth connection essential before connecting supply.

Filters with High Leakage Currents must have warning on the labels!

AGENCY APPROVALS

Considering EMI Filters are used in host equipment exported globally, most customers expect EMI filters to bear the major agency approval markings to make the process of marketing their products easier. Here are some of the markings often seen and required:



EMI/RFI Filters Product types

• Power Entry Filters

- 250VAC 50-60Hz
- 1A - 20A current ratings
- Various Mounting Styles
- Multiple Terminal Choices
- Custom Versions available



• Single Phase Filters

- 250VAC 50-60Hz
- 1A - 125A current ratings
- Chassis Mount
- Multiple Terminal Choices
- Choice of performance



• Three Phase Filters

- Up to 760 VAC, 50-60Hz
- Up to 2500A current ratings
- Chassis Mount
- Multiple Terminal Choices
- 3 or 4 Line options with Neutral



• DC Filters

- Up to 1500 VDC
- Up to 1600A current ratings
- Ideal for Renewable Energy applications
- Designed for EV chargers
- Custom version available



• Facility Filters

- Up to 250VAC for single-phase, 440/250VAC for three-phase
- Current ratings from 16A to 200A
- Ideal for shielded rooms, chambers, and cabinets
- Designed for high corrosion resistance
- Custom versions available



**"We Design. We Build.
 We Deliver."**



EV Chargers

Medical

Food Processing



Casino style gaming

Fitness equipment

Audio/Video equipment

At Altran Magnetics, LLC, we pride ourselves on being a premier global supplier with over 12,000 standard products designed for industries such as Automotive, EV, Energy Storage Systems, Medical, HVAC, and more.

With over 30 years of R&D and filter manufacturing expertise, our team delivers innovative solutions that combine market knowledge with superior engineering. We are committed to offering high-quality products at competitive prices, ensuring reliability and efficiency across all sales channels. Our ISO-certified manufacturing facilities and global support network enable us to provide rapid custom solutions and unrivaled lead times. Discover the Altran advantage—where cost-effective solutions meet uncompromising quality.

Address: 1741 Industrial Drive, No. 14 Sterling, IL 61081

Tel: 815-632-3150

Fax: 815-632-3449

E: sales@altranmagnetics.com

W: www.altranmagnetics.com