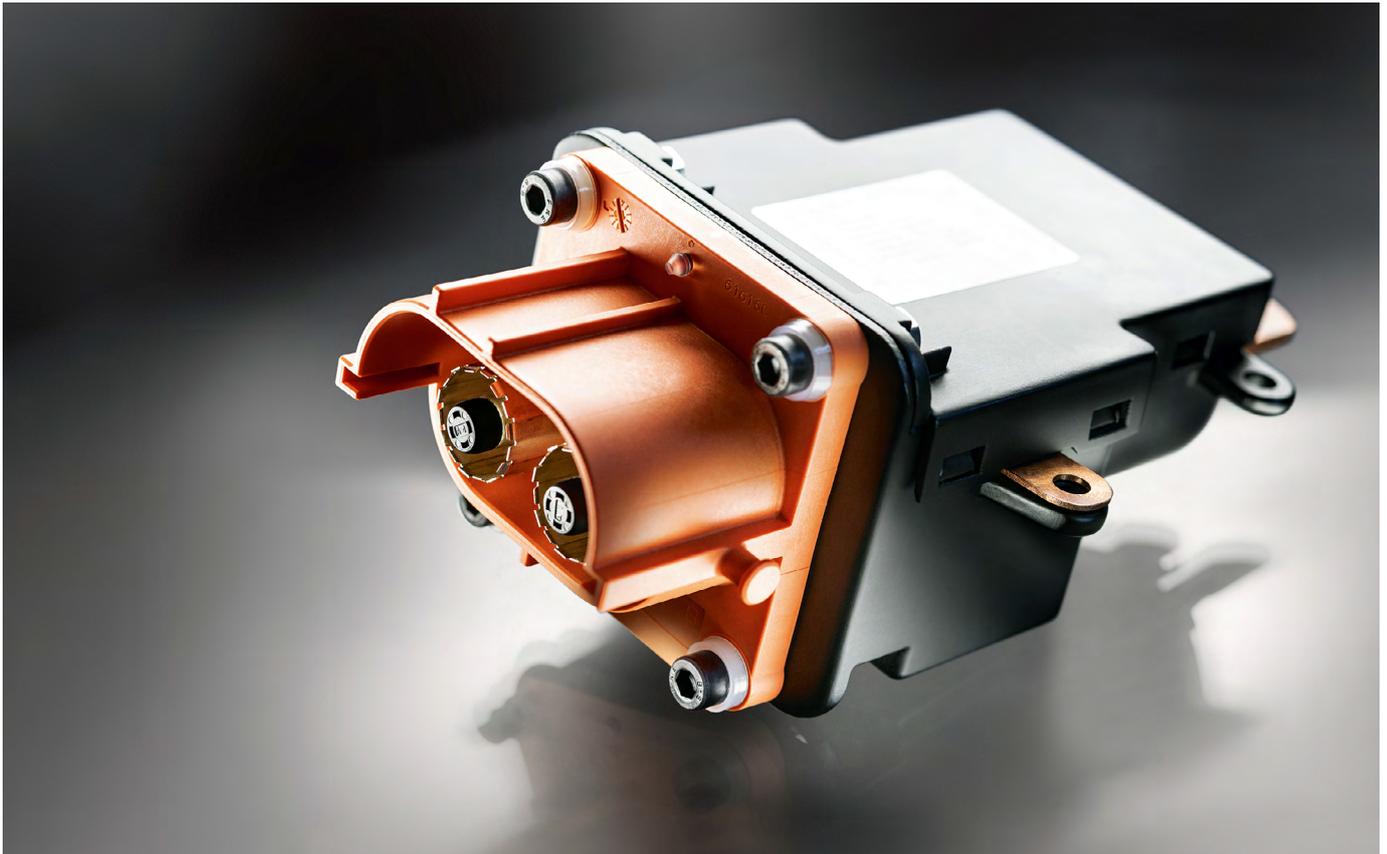


Rolling Jamming Transmitters

The future undoubtedly belongs to electromobility. However, the automotive industry as the technology driver par excellence still has a few hurdles to overcome. These include electromagnetic compatibility, which has hardly been a topic so far.



SCHURTER FPAB: Automotive-Filter for the highest demands

The social and political pressure to reduce CO₂ emissions is an ideal catalyst for the successful and rapid spread of electric vehicles. There is no doubt that the number and importance of electric vehicles will one day exceed that of conventional combustion engines. But even they are not exempt from technical problems that still must be solved. The question of the availability and ecologically justifiable degradability of the raw materials for the batteries could be mentioned here or, to the same extent, the inadequate charging infrastructure to date ([White Paper EV Charging](#) [1]).

Electromagnetic Compatibility

One topic, which is hardly addressed in the news today, is that of electromagnetic compatibility. Where a current flows, an electromagnetic field is created. And,

electricity is omnipresent in electric vehicles. Components for the powertrain, in particular, are sources of unwanted electromagnetic emissions. Possible adverse effects on other electronic systems, possibly safety relevant (both onboard and off-board) - not to mention the vehicle occupants - must be avoided to the extent possible.

Magnetics of magnitude

Due to the very high currents occurring in electric vehicles, manufacturers are confronted with ultra high magnetic field. This is where the high-voltage on-board network with 400 VDC to 1000 VDC meets the 12 VDC network. The currents in the vehicle can reach up to 500 A. The main source of interference is usually the inverter that drives the motor. However, there are many other sensitive systems

that both emit interference and react poorly to such interference. The battery management system, for example, which serves to monitor, regulate and protect the battery packs. Or, the entire on-board electronics with all its electronic helpers, to whom we sometimes entrust our own lives (ABS, ESP, etc.). Electric vehicles are packed with highly integrated, high clocked electronics.

Experts who are committed to electromagnetic compatibility – measurement technology manufacturers, EMC service providers, test laboratories, material developers and automotive suppliers – expect the resulting interference potential from electromagnetic fields due to the increasing number and concentration of electronic modules in cars projected to double every two years.

And, another point should be mentioned:

In an electric vehicle there are always adults, children or animals. The potentially negative influence of electromagnetic radiation on these living things may be of controversy, but it is nonetheless indisputably present. Think of an adult with a pacemaker.

What's to be done?

There are many ways and means to protect against electromagnetic interference. The layout of the cabling, its shielding, etc., for example, can be very complex. Rather than attempt to list or define what would be an application specific approach, we suggest narrowing the scope to the use of external EMC filters. But what do such filters do? Using passive components (chokes and capacitors), the undesirable interference signals are attenuated many times over in their intensity, so that their damaging effect does not occur.

Automotive = highest demands

In contrast to some industrial or medical filters, for example, the requirements in the automotive sector are much tougher. Such a filter must be particularly robust. Robust against vibrations, impacts and shocks; Robust against large temperature fluctuations when leaving the heated garage in the morning in winter. But it

must also be light and compact in order to use as little space as possible, while at the same time minimizing added weight to the vehicle

SCHURTER FPAB

Exactly tailored to these needs is the latest filter series FPAB, which - as usual at SCHURTER - can be fully customized. This single-stage filter places a high value on robustness, impermeability to dust and moisture. Thanks to the use of a well-sealed connector from Tyco, which is popular in the automotive industry, it is particularly lightweight and used universally. All connections are screwed to withstand even the most stubborn vibrations.

IATF 16949: experienced partner

SCHURTER is certified according to IATF16949 and serves a large number of customers with fuses which have been tested according to AEC-Q200 ([White paper AEC-Q200](#) ^[2]) for various applications (battery management, climate control, engine related electronics for diesel/petrol engines and many more). Millions and millions of fuses to protect against overcurrent and overtemperature ([Thermal Protection](#) ^[3]) are in use worldwide. The close networking with

international automotive organizations and the industry itself make SCHURTER a competent partner for all questions concerning the protection of electronics in automotive engineering ([Automotive](#) ^[4]). In addition, SCHURTER has a competence center for EMC solutions, which has been developing tailor-made solutions for industrial and medical applications for decades.

Test us. We would also be pleased to demonstrate our EMC competence to you on site ([EMC-Service](#) ^[5]).

About SCHURTER

SCHURTER continues to be a progressive innovator and manufacturer of electronic and electrical components worldwide. Our products ensure safe and clean supply of power, while making equipment easy to use.

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References / Document Downloads

[1]: <https://www.schurter.com/data/download/3522344>

[2]: <https://www.schurter.com/data/download/2356161>

[3]: <https://www.schurter.com/thermal-protection>

[4]: <https://www.schurter.com/automotive>

[5]: https://www.schurter.com/emc_service