dS Filter Information Sheet

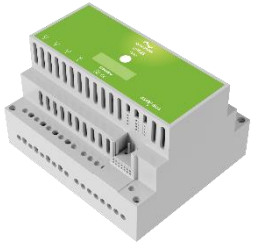
Our power grid is undergoing radical changes. What started with many new types of electric household appliances and digital entertainment technology has now expanded to the advancing of electric vehicles and the increase in renewable energy sources. All those, and more innovations and developments utilize the power grid. This leads to challenges for the digitalSTROM Power Line Communication (PLC). To obtain a seamless communication, the electrical network must stay below a certain level of interference. High power devices such as electric vehicles, solar inverters, inductive stoves etc. can cause a lot of distortions in the power grid. This can lead to communication issues between the digitalSTROM Meters (dSM) and the attached digitalSTROM devices like clamps, relays, etc.

For this purpose, digitalSTROM has developed several types of filters that help to keep the communication stable and reliable.

Cabinet Filters

The digitalSTROM Filter (dSF) is used for filtering out interference from the mains supply lines and to decouple other installations communication signals from the digitalSTROM system. Its main goal is power line conditioning to ensure proper communication. The dSF blocks signal transmission to outside powerline and therefore serves as an additional security and privacy feature.

dSF20



dSF25

Device Filters

In rare cases, high interference pulses are introduced into the 230V network during the operation of electrical devices, so that Power Line Communication can be impaired. For example, with the simultaneous operation of several switched-mode power supplies of large consumers such as induction cookers or electric car charging stations in the immediate vicinity.

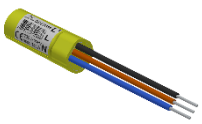
In such cases, the device filter is installed in front of the interfering device and minimizes the impairment of the network by high-frequency interference.

dS-FD230

dS-FD210

dS-FD200-JS

dS-FD200-FS



GE-FD300

digitalSTROM Filter Overview

Product		Purpose	Characteristics	Mounting
	dSF20	- Power line conditioning (ensures proper communication) - System separation (security, privacy) - Single family home	- Passive filtering - LC series notch circuit - f_{co} ~18kHz - 1 phase - 16A	- Cabinet - Before dSM - 2 pitch units
	dSF25	- Power line conditioning - System separation (security, privacy) - Multi (>10) appartement houses	- Active filtering (DSP inside) - Bandpass (10kHz-20kHz) - 3 phase - 16A / phase	- Cabinet - Before dSM - 6 pitch units
	dS-FD210	- Device filter - Shielding dS from outside disturbances - EV chargers	- 2nd order low pass - f_{co} ~ 8kHz - 1 phase - 16A - 150 x 116 x 67 (mm)	- Wall
	dS-FD230	- Device filter - Shielding dS from outside disturbances - EV chargers	- 2nd order low pass - f_{co} ~ 8kHz - 3 phase - 32A - 558 x 378 x 180 (mm)	- Wall
Coming soon **Preliminary information**	dS-FD330	Ultra-compact version; supersedes dS-FD230 (shrunk-down to a size of 25%)	- 2nd order low pass - f_{co} ~ 8kHz - 3 phase - 32A **- 355 x 254 x 111 (mm)**	- Wall
	dS-FD200-JS (CH) dS-FD200-FS (EU)	- Device filter - Shielding dS from outside disturbances - Plug in adapter	- 2nd order low pass - f_{co} ~ 8kHz - 1 phase (cable) - 5A	- Outlet / device
	GE-FD300	- Load filter - Prevents flickering (dipping) and afterglow of LED lamps	- L characteristics - 1 phase (clamp) - 150W (0,65A)	- Flush mount box / clamp

Additional literature:

- https://evreporter.com/harmonic-pollution-and-ev-charging/?fbclid=IwAR2KwGbWnfaxobheQCMu8ealfZ95V7edbz9WxAw8LhhHKc_3rvll57t_Ayk

- https://iopscience.iop.org/article/10.1088/1757-899X/1055/1/012131/pdf?fbclid=IwAR3ZcbXLQbgbX7gqj35EmQFvDrh_3FVHPL44XnWN-PkxiwPgrkTFi0amdmI

- https://www.mdpi.com/2624-6511/5/2/27