

Passive Filters

Passive Filter Systems in sheet steel cabinets



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LSFC-P4

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Passive Filter Systems in sheet steel cabinets for low voltage networks heavily contaminated with harmonics but with a relatively low reactive power demand. Customized filter circuits with intelligent control systems are a reliable means of reducing current and voltage harmonics and offer an excellent cost-benefit ratio.

Passive Filter Systems for low voltage networks heavily contaminated with harmonics but needing relatively little reactive power.

- Power range up to 460 A_{rms} per cabinet unit
- Modular construction in freestanding sheet steel cabinet
- LKT power capacitors with dry design and fourfold safety features
- Highly linear filter reactors
- Tuning frequency (detuning factor) individually adjustable for specific network
- Control and self-monitoring system individually configurable via harmonic voltage and filter current, making measurement by external current transformer unnecessary
- Permanent network monitoring by continuous network analysis
- Complete system ready to install

The essential differences between a conventional Power Factor Correction System and a Passive Filter System:

Power Factor Correction System (detuning factor 7 % to 14 %):

- Installation where a large reactive power demand exists but
- Harmonic levels are 'normal' (as per EN 50160 or EN 61000-2-4, Class 2)
- Stages switched in and out depending on power factor ($\cos \varphi$)

Passive Filter System (adjusted detuning factor):

- Installation where harmonic levels are 'high' (as per EN 61000-2-4, Class 3 or higher) but
- Reactive power demand is low
- Stages switched in and out depending on voltage and current harmonic levels

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Design and operating principle:

The power circuit of the Passive Filter System consists of power capacitors in series with highly linear filter reactors, the power rating and series resonant frequency of the individual filter circuit stages being carefully adjusted and monitored to suit the characteristics of the particular network.

The system includes the following components:

- Self-healing LKT-type power capacitors with low-loss dielectric – made from segmented metallised polypropylene film – overpressure disconnection, solder-free design and PCB-free filler material;
- LKT series with discharge resistors to EN 60831-1 and -2 / IEC 60831-1 and -2
- Heavy duty capacitor contactors with precharging contacts
- Highly linear filter reactors with thermal trip switch
- Fuse links, 3-pole, size NH00
- Control terminal strip with control circuit fuse and thermal trip contact
- EM-PQ 2300 Power Quality Analyzer as intelligent control unit
- Thermostat-controlled electric cooling fan or natural ventilation

The capacitor stages are switched in by the control unit according to appropriate voltage parameters, such as:

- The levels of individual harmonics or
- The THDv (geometric sum of all voltage harmonics)

The capacitor stages are switched out according to current parameters measured in the filter system, such as:

- The levels of individual harmonics or
- The THDi (geometric sum of all current harmonics)

The control unit is also able to monitor the network for compliance with the relevant power quality standards and send an alarm signal via an Ethernet interface if the monitored parameters go beyond set limits!

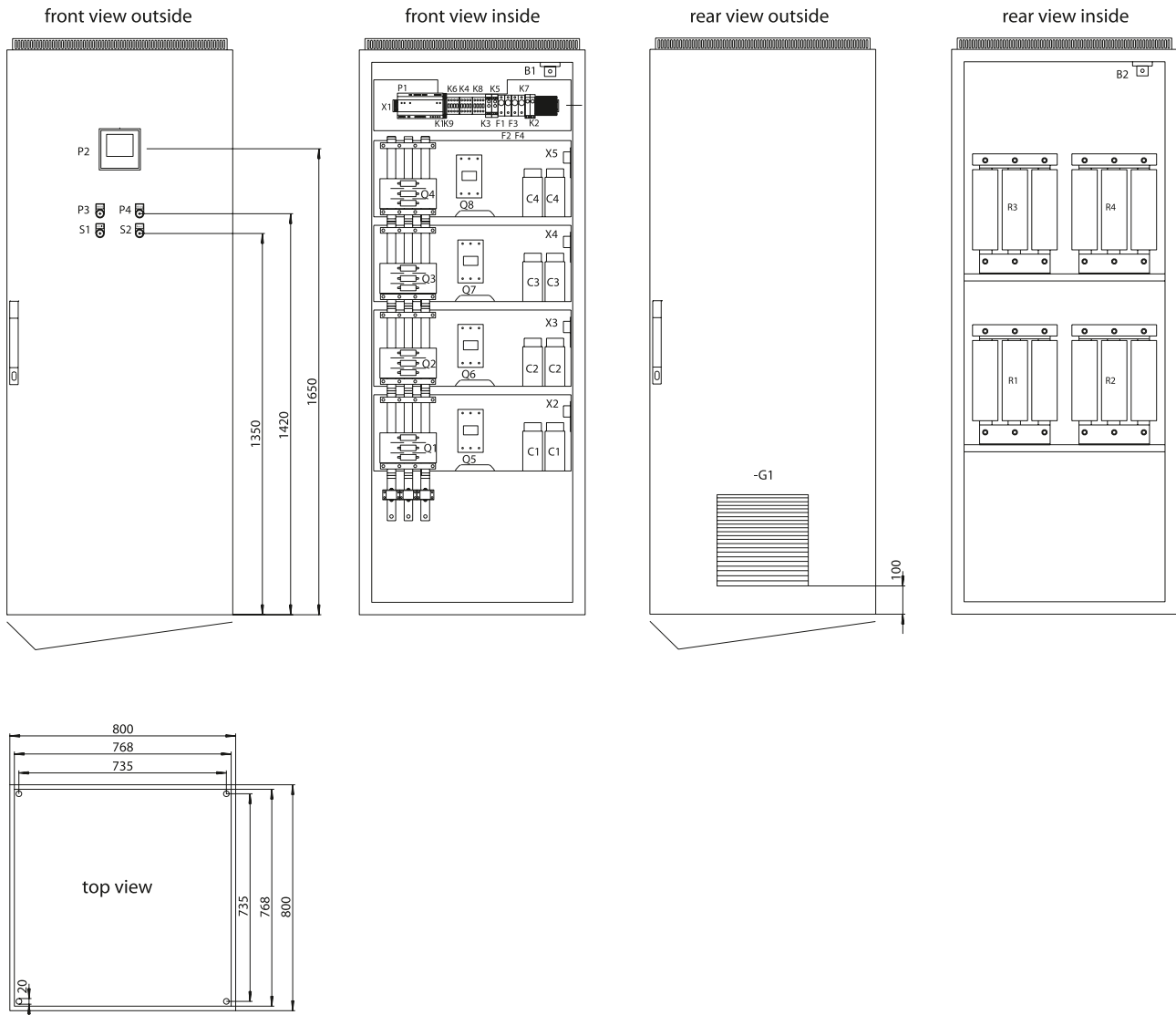
Options:

- Power capacitors with up to 909 V overvoltage capacity (continuous)
- Design with modules tuned for several different harmonics – with interlock circuit and monitoring for reliable operation of the complete system
- Compensation circuits for the identification and monitoring of unbalance
- Automatic resonance detuning
- Installation possible in a wide variety of cabinet systems

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Dimensions



All dimensions in mm