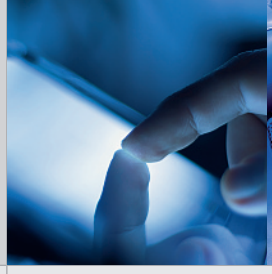
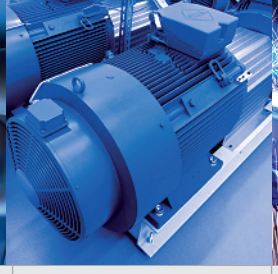
November 2016

Short Form Catalog
EMC/EMI Components and Power Quality Filters

SCHAFFNER
shaping electrical power


Typical applications	EDP & office	Drives & controls	Process automation	Elevators & cranes	Consumer
	– PCs – Printers – PC periphery – Fax machines – Copy machines – Monitors – Plotters – Mainframe computers	– AC & DC motor drives – SCR drives – Servo drives – Regenerative drives – Rectifiers (AC-DC) – Converters (AC-AC, DC-DC) – Inverters (DC-AC) – Battery chargers	– Robotics – Conveyors – Assembly lines – Control units – Mining industry – Chemical industry – Oil production – Metal processing	– Elevators for people and goods – Escalators – Cranes – Lifts – Hoists – Dumbwaiters	– Amplifiers video, TV, – Receivers, – Laundry r – Tumblers – Cooking e – Induction – Exercise m – Coffee ma
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EMC/EMI chokes 	EV/EH series (page 10) RD series (page 10) RN series (page 10) RB series (page 10)	RD series (page 10) RI series (page 10) RB series (page 10)	RD series (page 10)	RD series (page 10)	EV/EH seri RD series RN series
Pulse transformers 	IT series (page 11)	IT series (page 11)		IT series (page 11)	

This illustration only contains a few typical products and applications. Schaffner is also active in numerous other industry segments.
Most standard components can be customized to meet special requirements.






r goods s, audio, screens , decoders machines equipment heaters machines achines	Medical – X-ray equipment – CAT scanners – Defilibrators – Laboratory equipment – Analyzers – Measurement devices – MRI, MSI, EEG, ECG – Test equipment – Hospitals	Building automation – HVAC – Security systems – Control units – Pumps – Self-ballasted lighting equipment – Autom. window shades – Water treatment – Office buildings	Power & energy – SMPS, UPS – DC/DC converters – Gen-sets – Wind turbines – Fuel cells – Gas turbines – UPS – PV systems	Telecom & datacom – Base stations for GSM, UMTS, GPRS – Power line communications – Network technology – Servers – Telephone installations – Broadcast installations – Data centers	Machinery – Machine tools – Printing machines – Packaging machines – Extruders – Wood working mach. – Milling/drilling mach. – Laser cutting machines – Welding machines – Grinding machines
	FN 3420 (page 1) FN 3430 (page 1)	FN 3410/11 (page 1) FN 3412/13 (page 1) FN 3416/18 (page 1) FN 3420 (page 1) FN 3430 (page 1) FN 3440/41 (page 1) FN 3450/51 (page 1) FN 3452/53 (page 1)	FN 3420 (page 1) FN 3430 (page 1) Customized reactor and filter solutions for (re-newable) energy production and feeding power into the network	FN 3420 (page 1) FN 3430 (page 1)	FN 3410/11 (page 1) FN 3412/13 (page 1) FN 3416/18 (page 1) FN 3420 (page 1) FN 3440/41 (page 1) FN 3450/51 (page 1) FN 3452/53 (page 1) RWK 212 (page 6)
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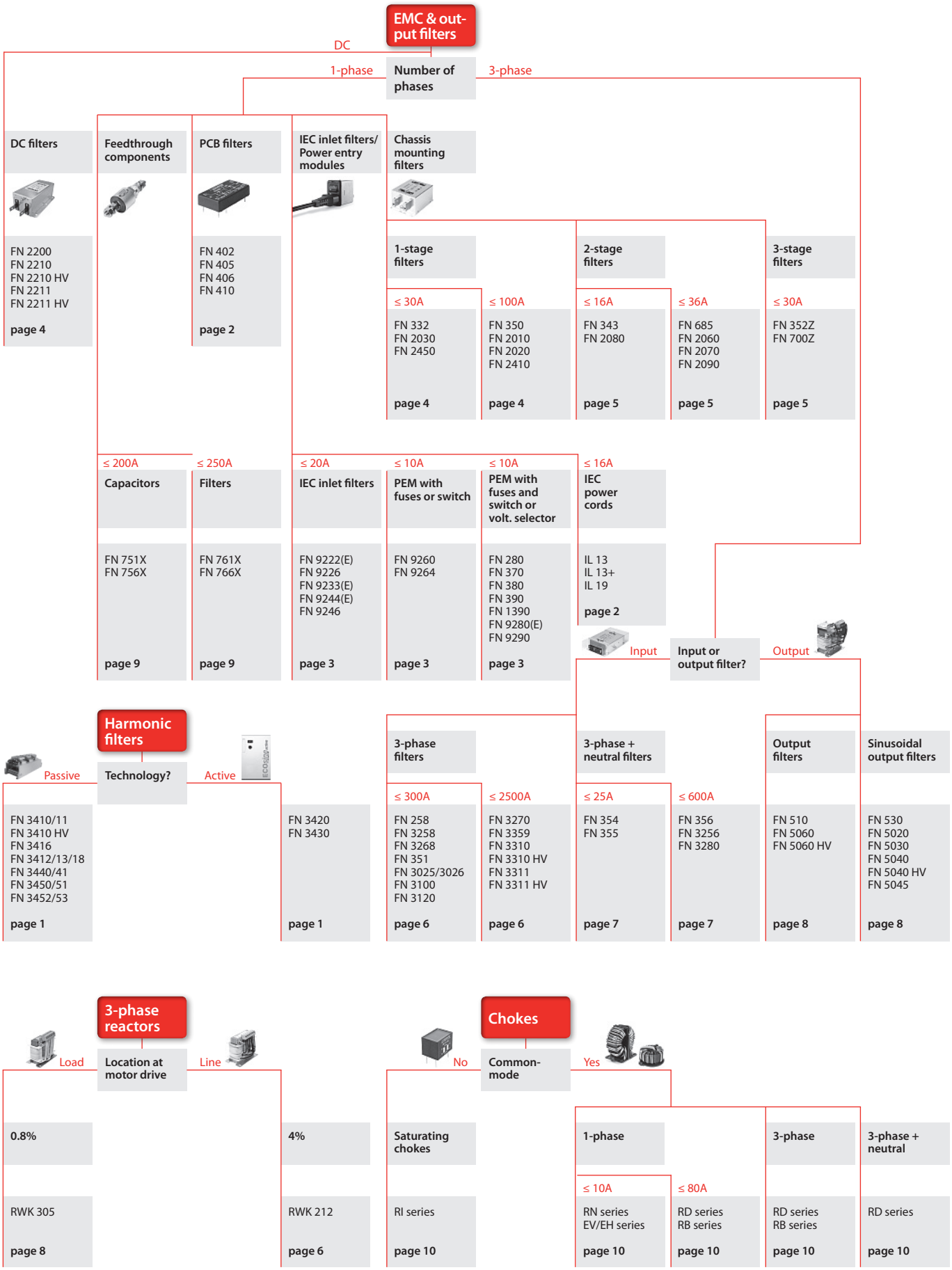
es (page 10) (page 10) (page 10)	EV/EH series (page 10) RD series (page 10) RN series (page 10) RB series (page 10)	EV/EH series (page 10) RD series (page 10) RI series (page 10) RN series (page 10) RB series (page 10)	EV/EH series (page 10) RD series (page 10) RN series (page 10) RB series (page 10)	EV/EH series (page 10) RN series (page 10) RB series (page 10)	RD series (page 10) RB series (page 10)
	IT series (page 11)	IT series (page 11)	IT series (page 11)	IT series (page 11)	

Product selection chart



To define your proper solution competent assistance and more detailed product specifications can be obtained by your local partner within Schaffner's global network.

Active and passive harmonic filters.

Harmonic filters help to obtain compliance with international standards like e.g. IEEE 519-1992 or EN 61000-3-12, and with local utility codes. They reduce electrical and thermal stress upon the electrical infrastructure, eliminate the risk of harmonics-related reliability problems, and support long-term energy efficiency and cost savings. Ecosine passive filters are the industry standard for 6-pulse rectifiers and non-regenerative motor drives to achieve the often specified level of < 5% THID. Ecosine active harmonic filters provide latest generation digital technology. With a response time of less than 300 µs an efficient harmonics mitigation, power factor correction, and load balancing is achieved in real time.

	Filter family	Approvals *	Nom. voltage	Rated power [kW/HP] / Mitigation current [A] (0 – 100 – 200 – 300 – 400 – 500)	Features: For 50 Hz grids	For 60 Hz grids	For 6-pulse diode rectifiers without L_{dc}	For 6-pulse diode rectifiers with L_{dc}	For 6-pulse SCR rectifiers	THID < 5%	Power factor correction	Load balancing	3-phase/3-wire	3-phase/4-wire	Typical applications: AC motor drives	DC motor drives/welding	HVAC + building technology	Industry	Water/wastewater	Mixed (complex) loads
NEW	FN 3440		380–415 VAC	1.1 – 200 kW	■		■		■ [1]	■			■		■	■	■	■	■	
NEW	FN 3441		380–415 VAC	1.1 – 200 kW	■			■		■			■		■		■	■	■	
NEW	FN 3450		440–500 VAC	1.1 – 250 kW	■		■		■ [1]	■			■		■	■	■	■	■	
NEW	FN 3451		440–500 VAC	1.1 – 250 kW	■			■		■			■		■		■	■	■	
	FN 3410		380–500 VAC	200 – 400 kW	■			■		■			■		■		■	■	■	
	FN 3411		380–500 VAC	200 – 400 kW	■				■				■			■	■	■	■	
	FN 3410 HV		690 VAC	7.5 – 250 kW	■		■ [2]	■ [3]		■			■		■		■	■	■	
	FN 3416		200–500 VAC	2.5 – 200 kW	■		■	■	■				■		■	■	■	■	■	
NEW	FN 3452		440–480 VAC	1.5 – 300 HP		■	■		■ [1]	■			■		■	■	■	■	■	
NEW	FN 3453		440–480 VAC	1.5 – 300 HP		■		■		■			■		■		■	■	■	
	FN 3412		380–480 VAC	300 – 500 HP		■		■		■			■		■		■	■	■	
	FN 3413		380–480 VAC	300 – 500 HP		■			■				■			■	■	■	■	
	FN 3418		200–480 VAC	2.5 – 250 HP		■	■	■	■				■		■	■	■	■	■	
	FN 3420 (active)		200–480 VAC	30 – 300 A	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■
	FN 3420 (active)		500–690 VAC	200 A	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■
	FN 3430 (active)		200–415 VAC	30 – 300 A	■	■	■	■	■	■	■	■		■	■	■	■	■	■	■

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

[1] 5% THID is not guaranteed when FN 3440, FN 3450 and FN 3452 filters are applied to SCRs

[2] With and up to 45 A filters

[3] 60 A–320 A filters

PCB filters. Very compact EMI suppression components can directly be mounted on printed circuit boards of low-power office, medical, telecom and IT equipment, DC/DC converters and power supplies etc. Ideal low cost solution for manufacturers who have planned for EMC compliance throughout the equipment design process already.

Approvals *

Attenuation performance
Rated current [A]
standard | high | very high
0 3 6 9 12 15

Filter family	Max. voltage	1-stage filter circuit	2-stage filter circuit	For DC applications only	PCB mounting	With metal case	Low profile	Small footprint	Automotive	DC/DC converters	IT and telecom applications	Building automation	Power supplies	Medical devices	Office automation equipment	General applications	Consumer electronics
FN 402	250 VAC	■			■		■			■			■	■	■	■	■
FN 405	250 VAC	■			■		■			■			■		■	■	■
FN 406	250 VAC	■			■	■		■			■	■	■	■	■		■
FN 410	250 VAC		■		■	■	■			■	■	■	■		■		■

FN 402: 0.5 – 6.5
FN 405: 0.5 – 10
FN 406: 0.5 – 8.4
FN 410: 0.5 – 6

Power cords with locking systems for IEC inlet filters. Guarding against accidental disconnection of all electrical appliances with an IEC inlet, no exchange or modification of the IEC inlet or IEC inlet filter is needed. An easy retrofit for all electronic equipment and devices is possible.

Approvals *

● standard length
× on request

Power cord family	Max. voltage	6 ft	2 m	3 m	9 ft	12 ft	5 m	10 m	C14 line side plug IEC C14 male, straight	C20 line side plug IEC C20, male, straight	EU1 line side plug CEE7/VII, right angled	US1 line side plug NEMA5-15, straight	US2 line side plug NEMA5-15, straight hospital grade	UK1 line side plug BS1363, right angled, fused 5A	CH1 line side plug SEV1011, straight	JP1 line side plug JIS8303, straight	Data centers	Industrial equipment	Medical, in-vitro diagnostic devices	Broadcasting stations	Mobile applications
IL 13	250 VAC	●	●	×	●	●	×	×	■		■	■	■	■	■	■	■	■	■	■	■
IL 13+ **	250 VAC																■	■	■	■	■
IL 19	250 VAC		●							■	■	■		■							

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.
** Rewireable – offering total flexibility when assembling cables.

IEC inlet filters / Power entry modules.

All the advantages of IEC connector, EMC/EMI filter, fuses, switch and voltage selector combined in a powerful compact all-in-one solution. Ideal for computers, monitors and office equipment like printers and copy machines.

Approvals *

Attenuation performance

Rated current [A]

standard | high | very high

0 4 8 12 16 20

Filter family	Max. voltage	With earth line choke	For fuse(s)	With switch (1-pole)	With switch (2-pole)	With voltage selector	For PCB mounting	Snap-in version	Extra wide mounting	IT equipment	Medical equipment	Switch-mode power supplies	Office equipment	Prof. audio, TV, VCR	Telecommunication	Light industrial equipment	General purpose
FN 9222 FN 9222E	250 VAC	■						■	■	■	■	■	■	■	■	■	■
FN 9226	250 VAC						■			■	■		■	■	■		■
FN 9233 FN 9233E	250 VAC	■						■	■	■	■	■	■	■	■	■	■
FN 9244 FN 9244E	250 VAC	■						■	■	■	■	■	■	■	■	■	
FN 9246	250 VAC										■	■	■	■	■	■	
FN 9260	250 VAC		■					■			■		■	■	■		■
FN 9264	250 VAC				■			■		■	■	■	■	■	■	■	■
FN 9280 FN 9280E	250 VAC	■	■		■			■		■	■		■	■	■	■	■
FN 9290	250 VAC		■		■			■		■	■	■	■	■	■	■	
FN 280	250 VAC		■		■			■		■	■		■	■	■	■	■
FN 370	250 VAC		■			■		■		■	■		■	■	■		■
FN 380	250 VAC		■		■			■		■	■		■	■	■		■
FN 390 FN 1390	250 VAC	■	■		■	■				■	■		■	■	■	■	■

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

Single-phase and DC filters.

Single-phase filters for chassis or DIN-rail mounting are key for EMC compliance of higher power office equipment and low to medium power industrial applications. A broad selection of electrical and mechanical features allows a specific choice and deployment for countless applications. DC filters are specifically optimized for applications with DC supply like e.g. PV inverters.

Approvals *	Filter family	Max. voltage	Attenuation performance / Rated current [A] (standard / high / very high; 0 20 40 60 80 100)	Features: 1-stage filter circuit	2-stage filter circuit	3-stage filter circuit	For DC applications	With overvoltage protection	Low frequency attenuation	High frequency attenuation	Choice of connection style	DIN-rail mounting	Typical applications: Power supplies, SMPS	Medical equipment	Single-phase motor drives	Control unit in machine tools	PV inverters	Office, test & measure. equip.	General purpose
	FN 332	250 VAC	1–10	■				■											■
	FN 350	250 VAC	8 – 55	■									■		■			■	
	FN 2010	250 VAC	1 – 60	■							■			■					■
	FN 2020	250 VAC	1 – 60	■							■			■				■	■
	FN 2030	250 VAC	1 – 30	■				■	■	■	■			■				■	■
	FN 2200	1200 VDC	25 – 2300	■			■		■	■			■				■		■
	FN 2210 FN 2211	1000 VDC	250–2300	■			■		■	■			■				■		■
NEW	**FN 2210 HV FN 2211 HV**	**1500 VDC**	250–2300	■			■		■	■			■				■		■
	FN 2410	250 VAC 520 VAC (H)	8 – 100	■					■				■		■				
	FN 2412	250 VAC 520 VAC (H)	8 – 45	■					■			■	■		■	■			
	FN 2450	250 VAC	1 – 20	■					■	■			■	■				■	■

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

Filter family	Approvals *	Max. voltage	Attenuation performance / Rated current [A] (standard, high, very high; 0 20 40 60 80 100)	Features: 1-stage filter circuit	2-stage filter circuit	3-stage filter circuit	With earth line choke	With overvoltage protection	Low frequency attenuation	High frequency attenuation	Choice of connection style	TEMPEST protection	Typical applications: Power supplies, SMPS	Medical equipment	Single-phase motor drives	Control unit in machine tools	Interception protection	Office, test & measure. equip.	General purpose
FN 343 		250 VAC	1–10		■		■											■	■
FN 2060 		250 VAC	1 30		■						■		■	■				■	■
FN 2070 		250 VAC	1 36		■					■	■		■	■	■			■	
FN 2080 		250 VAC	1 16		■				■		■		■	■	■				
FN 2090 		250 VAC	1 30		■			■	■	■	■		■	■	■				
FN 700Z 		250 VAC	6 20			■		■	■	■		■	■	■			■	■	

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

Three-phase filters and line reactors.

EMC/EMI filter solutions for industrial applications like motor drives and machine tools. Furthermore, these types of filters are also suitable for mainframe computer systems, large uninterruptible power supplies, medical equipment, wind turbine power stations and a vast array of other three-phase power electronics. Line reactors, also operated on the line side of power drive systems, efficiently protect inverter electronics and DC link capacitors from inrush, peak and short-circuit currents. Additionally, low-frequency interference and harmonics are reduced significantly.

Approvals *			Attenuation performance / Rated current [A]	Features												Typical applications					
Filter family		Max. voltage	standard / high / very high 0 200 400 600 800 >1000	Multi-stage filter circuit	Safety connector blocks	Busbar connection	Optional protective covers	Standard protective covers	Offering EMC compliance	Low leakage current	Less commutation notches	Inrush current limitation	Harmonics reduction	4% impedance	Inverters, servo drives	Energy regeneration drives	Machinery, machine tools	Industrial automation	General purpose	Power and energy
FN 258		480 VAC 690 VAC (HV)	7 – 250	■	■				■	■					■		■	■	■	
FN 351		440 VAC 520 VAC (H)	8 – 280		■				■						■			■	■	
FN 3025		520 VAC	10–50		■			■	■	■					■			■	■	
FN 3026		520 VAC	10–50		■			■	■	■					■			■	■	
FN 3100		520 VAC	35 – 300		■				■						■	■	■	■		■
FN 3120		520 VAC (H)	25 – 230		■				■						■	■	■	■		■
FN 3258		480 VAC 520 VAC (H)	7 – 180		■				■						■		■	■	■	
FN 3268		520 VAC	7 – 180		■				■	■					■		■	■	■	
FN 3270		520 VAC	10 – 1000		■	■	■		■						■		■	■	■	■
FN 3310 FN 3311		520 VAC	250 – 2300			■			■						■		■	■	■	■
NEW FN 3310 HV FN 3311 HV		690 VAC	250 – 2300			■			■						■		■	■	■	■
FN 3359		520 VAC 690 VAC (HV)	150 – 2500	■		■	■		■						■	■	■	■		■
RWK 212		500 VAC	4 – 1100		■	■					■	■	■	■	■		■	■	■	

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

Three-phase and neutral line filters.

Three-phase and neutral line filters are a compact solution for the interference suppression on the mains input of cabinets and control units of equipment, ranging from industrial applications like machine tools to sensitive medical installations. These typically involve separate and often insufficiently filtered frequency inverters and SMPS, causing current imbalance and significant interference problems. As individual elements they may be interference-suppressed already. The conjunction of several switching components in the same cabinet and a non-EMC conscious cabling will rise the demand for an additional EMC/EMI filter on the mains input of the whole installation. Many times this is the only way to get the CE mark for the cabinet in accordance with the EMC directive.

Approvals *		Max. voltage	Attenuation performance / Rated current [A] (standard / high / very high; 0 120 240 360 480 600)	Features								Typical applications							
Filter family				1-stage filter circuit	2-stage filter circuit	Safety connector blocks	Faston connectors	Offering EMC compliance	For asymmetrical loads	Broadband attenuation	Very low leakage current	For entire systems, install.	Machinery, machine tools	Industrial automation	Power supplies	Medical equipment	For high frequency appl.	High power office equipment	General purpose
FN 354		440 VAC	4–25		■		■	■		■					■	■	■	■	■
FN 355		440 VAC	3–20	■			■	■			■					■		■	■
FN 356		440 VAC	16–150	■		■		■	■			■		■	■				
FN 3256		520 VAC (H)	8–160	■		■		■	■			■	■	■	■			■	■
FN 3280		520 VAC (H)	8–600		■	■		■	■	■		■	■	■	■				

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

Output filters and load reactors.

Output components for motor protection and the improvement of system reliability, availability and functionality. Deployed at the output side of frequency inverters, these filters ensure reliable operation by avoiding expensive downtimes of installations, manufacturing plants, machinery and a vast array of other industrial and domestic motor drive applications due to premature motor damage. An appropriate output solution will even allow the deployment of unshielded motor cables, the use of multiple motors in parallel on the same drive or the retrofit of modern drives in existing installations with old motors and unshielded cabling.

Approvals *		Typical motor power [kW] / Rated current [A]	Features											Typ. applications				
Filter family	Max. voltage	0 60 120 180 240 300 / 0 200 400 600 800 >1000	dv/dt restriction	Overvoltage restriction	Motor temperature reduction	Red. acoustic motor noise	Sym. sinusoidal output signal	Asym. sinusoidal output signal	Eliminat. of bearing damage	Replaces cable shields	Connection to DC link required	Improves overall EMC	Reduces equipment downtime	Motor drives	Servo drives, torque motors	High-speed motor applications	Appl. with long unshield. cabl.	Retrofit of motor drives
FN 510	520 VAC	1.5–30 / 4–66	■	■	■							■	■	■	■			
FN 530	520 VAC	1.5–7.5 / 4–16	■	■	■	■	■	■	■	■	■	■	■	■			■	■
FN 5020	500 VAC	11 55 / 25–120	■	■	■	■	■					■	■	■		■		
FN 5030**	500 VAC	11 55 / 25–120			■	■		■	■	■	■	■	■	■		■	■	■
FN 5040	500 VAC	1.1 630 / 4.5 1200	■	■	■	■	■					■	■	■				■
FN 5040 HV	690 VAC	7.5 1200 / 13 1320	■	■	■	■	■					■	■	■				■
FN 5045	500 VAC	1.1 630 / 4.5 1200	■	■	■	■	■					■	■	■				■
FN 5060	500 VAC	5 630 / 12 1100	■	■	■							■	■	■	■			
NEW FN 5060 HV	690 VAC	7.5 1000 / 16 1200	■	■	■							■	■	■	■			
RWK 305	500 VAC	1.5 630 / 4 1100	■		■							■	■	■	■			

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

** Additional output filter module to be operated in conjunction with FN 5040/45 or FN 5020.

Feedthrough components. Interference suppression up into the GHz range for high-tech applications such as IT, telecom, server and networking equipment.

Approvals *

Capacitance [nF]
Rated current [A]
Attenuation performance

Feedthrough capacitors		Max. voltage	0 1000 2000 3000 4000 5000 0 50 100 150 200 250	Features: AC capacitors	DC capacitors	AC filters	DC filters	Very high performance	Y2 capacitor class	Y4 capacitor class	Typical applications: Medical equipment	Professional power supplies	Power electronic equipment	Telecommunication	Scientific equipment	Test and measurement equip.	Security systems	IT, server and network
FN 7510		300 VAC	2.2–47 nF; 10–100 A	■					■		■	■	■	■	■	■		
FN 7511		300 VAC	4.7–220 nF; 10–200 A	■					■		■	■	■	■	■	■		■
FN 7512		300 VAC	47–100 nF; 16–63 A	■					■		■	■	■	■	■	■	■	■
FN 7513		300 VAC	100 nF; 16 A	■					■		■	■	■	■	■	■	■	■
FN 7560		130 VDC	10–100 nF; 10–200 A		■					■	■	■	■	■	■	■		
FN 7561		130 VDC	47–470 nF; 63–200 A		■					■	■	■	■	■	■	■		■
FN 7562		130 VDC	100–1000 nF; 16–200 A		■					■	■	■	■	■	■	■	■	■
FN 7563		130 VDC	470–4700 nF; 16–200 A		■			■		■	■	■	■	■	■	■	■	■

Feedthrough filters — standard | high | very high

FN 7611		300 VAC	10–250 A			■			■		■	■	■	■	■	■		■
FN 7612		300 VAC	10–100 A			■		■	■		■	■	■	■	■	■	■	■
FN 7660		130 VDC	10–200 A				■			■	■	■	■	■	■	■		■
FN 7661		130 VDC	10–200 A				■	■		■	■	■	■	■	■	■	■	■

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

EMC/EMI chokes.

An extensive selection of discrete EMC/EMI chokes with various inductance and current ratings allows optimized circuitry for EMC compliance to be designed easily and economically.

Choke family	Approvals *	Max. voltage	Inductance value [mH] / Rated current [A] (0 20 40 60 80 100 / 0 30 60 90 120 150)	Features: For common-mode noise	Saturating chokes	Single-choke	Dual-choke	Triple-choke	Quad-choke	PCB mounting	With flying leads	Typical applications: Frequency converters, UPS	Medical equipment	Traction systems	DC/DC or AC/DC converters	Switch-mode power supplies	Home electronics, TV, balasts	Battery chargers	Heaters, air conditioners
RD 5000 series		600 VAC 850 VDC	1–10 6–16	■			■	■		■		■		■					
RD 6000 series		600 VAC 850 VDC	1.5 15 6–16	■			■	■			■	■		■					
RD 7000 series		600 VAC 850 VDC	0.2 25 6 36	■			■	■	■		■	■		■					
RD 8000 series		600 VAC 850 VDC	0.2–12 16 64	■			■	■	■		■	■		■					
NEW RN series		300 VAC 300 VDC	0.4 100 0.3–10	■			■			■		■	■			■	■	■	■
EV/EH series		250 VAC	0.5 90 0.3–5	■			■			■		■	■			■	■	■	■
RI series		500 VAC	1.5 25		■	■	■			■	■	■		■	■	■			
RB series		600 VAC 1000 VDC	0.2 3 16 50 (80)**	■			■	■		■		■	■	■	■	■		■	■

* Products evaluated by one or more of the above certification agencies. For details please consult the detailed data sheet.

** forced cooling

Pulse transformers. They provide a proper galvanic separation between gate drive circuitry and high voltage path in IGBT, thyristor, triac, power MOSFET and DC/DC converter circuits.

Pulse transformer	Nominal voltage	Voltage-time area [Vµs] / Ignition current [A] (0 1000 2000 3000 4000 5000 / 0 0.6 1.2 1.8 2.4 3)	Features: 1:1	1:1:1	2:1	2:1:1	3:1	3:1:1	PCB	Faston	Galvanic separation	Typical applications: Thyristors, triac and IGBTs	Driving power MOSFETs	Line coupling transformers	DC/DC converters	Power supplies	Home automation systems	Monitoring systems
IT 155/237 	500 VAC	500–1100 / 0.1–0.25	■						■		■	■	■		■	■	■	■
IT 245/255/258 	750 VAC	250–500 / 0.1–1	■						■		■	■	■		■	■	■	■
IT 239 	1000 VAC	350 / 0.25	■						■		■	■	■			■		
IT 370 	1000 VAC	4000 / 0.1–1	■						■		■	■	■			■		
IT 364 	3000 VAC	5000 / 0.1–3	■							■	■	■	■					
IT 213 	380 VAC	450 / 0.25		■					■		■	■	■	■	■	■	■	■
IT 312/313 	380 VAC	450–1200 / 0.25–1		■					■		■		■	■	■	■	■	■
IT 143/233/242 IT 243/253 	500 VAC	180–800 / 0.025–0.25		■					■		■	■	■	■	■	■		■
IT 246/248 	750 VAC	200–350 / 0.1–0.25			■				■		■	■	■		■	■		■
IT 249 	500 VAC	350 / 0.25				■			■		■	■	■	■	■	■	■	■
IT 260 	500 VAC	200 / 0.1					■		■		■		■	■	■	■	■	■
IT 314 	380 VAC	500 / 0.25–1						■	■		■		■	■	■	■	■	■
IT 234/244 IT 154 	500 VAC	200–600 / 0.1–0.25						■	■		■		■	■	■	■	■	■

EMC Support

EMI measurement and EMC engineering services.

In addition to offering one of the world's most comprehensive ranges of standard filter products, Schaffner offers the full complement of measurement and engineering services, along with customized product development, to support equipment manufacturers and users.

EMC/EMI testing. Schaffner operates the most sophisticated EMC test facilities available anywhere today with extensive investment in specialized test equipment and application engineering teams. As a global provider these services are distributed at several locations throughout the world.

Service available at these locations include:

- open field testing
- harmonics instrumentation for current and voltage up to the 50th harmonic
- emission and immunity tests according to European and international standards (EN, IEC, FCC, CISPR)

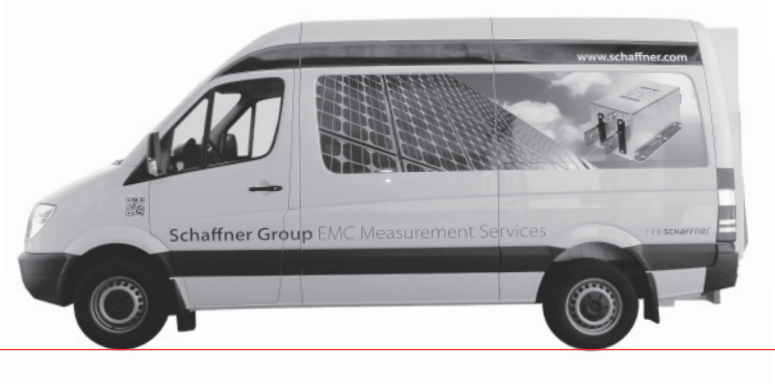
Additional services available at the accredited testing facility in Switzerland:

- 500 kW full load test set-up for motor drives
- safety testing and environmental simulation for passive components for electromagnetic interference suppression according to European, international and North American standards

Engineering services. Schaffner has the world's most engineering experience in solving EMC problems. In addition to testing and measuring services, Schaffner can provide the expert engineering support to help you bring your equipment to market quickly and efficiently.

Services available include:

- custom filter design – to optimize filter performance and solve space, layout, mounting or connection problems
- circuit and equipment design – advising on circuit and equipment or enclosure design to overcome EMC problems
- turnkey component design and build



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