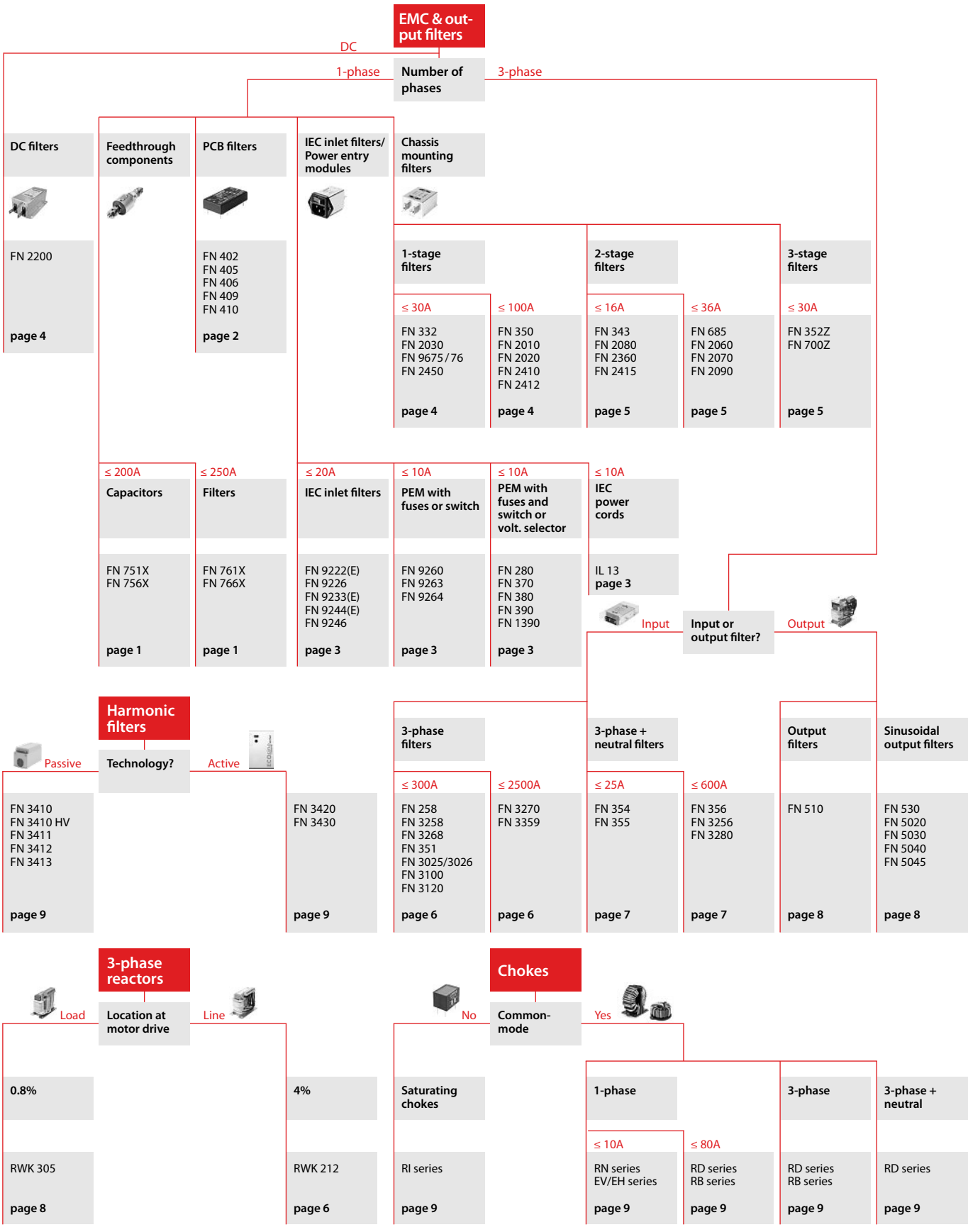
2012

Short Form Catalog
EMC/EMI Components and Power Quality Filters

SCHAFFNER
energy efficiency and reliability

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.

Typical applications	Transportation – Rail vehicles – Locomotives – Electric car propulsion – Diesel-electric ship propulsion	EDP & office – PCs – Printers – PC periphery – Fax machines – Copy machines – Monitors – Plotters – Mainframe computers	Drives & controls – AC & DC motor drives – SCR drives – Servo drives – Regenerative drives – Rectifiers (AC-DC) – Converters (AC-AC, DC-DC) – Inverters (DC-AC) – Battery chargers	Process automation – Robotics – Conveyors – Assembly lines – Control units – Mining industry – Chemical industry – Oil production – Metal processing	Elevators & cranes – Elevators for people and goods – Escalators – Cranes – Lifts – Hoists – Dumbwaiters	Consumer goods – Amplifiers, audio, video, TV, screens – Receivers, decoders – Laundry machines – Tumblers – Cooking equipment – Induction heaters – Exercise machines – Coffee machines	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
Feedthrough components 	Customized feed-through solutions for auto-motive applications	FN 756x (page 1) FN 766x (page 1)	FN 756x (page 1) FN 766x (page 1)	FN 751x (page 1) FN 761x (page 1)			FN 751x (page 1) FN 756x (page 1) FN 761x (page 1) FN 766x (page 1)		FN 751x (page 1) FN 756x (page 1) FN 761x (page 1) FN 766x (page 1)	FN 751x (page 1) FN 756x (page 1) FN 761x (page 1) FN 766x (page 1)	FN 751x (page 1) FN 761x (page 1)
PCB filters 	Customized PCB filters for automotive appli-cations	FN 402 (page 2) FN 405 (page 2) FN 406 (page 2) FN 410 (page 2)				FN 402 (page 2) FN 405 (page 2) FN 406 (page 2) FN 410 (page 2)	FN 402B (page 2) FN 406B (page 2)	FN 406 (page 2) FN 410 (page 2)	FN 402 (page 2) FN 405 (page 2) FN 406 (page 2) FN 409 (page 2) FN 410 (page 2)	FN 409 (page 2)	
IEC inlet filters and Power entry modules 		FN 280 (page 3) FN 390 (page 3) FN 9222(E) (page 3) FN 9233(E) (page 3) FN 9244(E) (page 3) FN 9263 (page 3) FN 9264 (page 3) IL 13 (page 3)				FN 280 (page 3) FN 3x0 (page 3) FN 9222(E) (page 3) FN 9233(E) (page 3) FN 9260 (page 3) FN 9263 (page 3) IL 13 (page 3)	FN 280B (page 3) FN 9222(E)B (page 3) FN 9233(E)B (page 3) FN 9244(E)B (page 3) FN 9246B (page 3) FN 9260B (page 3) FN 9264 (page 3) IL 13 (page 3)	FN 9246 (page 3)	FN 280 (page 3) FN 3x0 (page 3) FN 9222(E) (page 3) FN 9233(E) (page 3) FN 9244(E) (page 3) FN 926x (page 3)	FN 9246 (page 3)	
Single-phase filters and DC filters 	Custom designs for elec-tric car propulsion	FN 343 (page 5) FN 20x0 (page 4/5)	FN 350 (page 4) FN 2070 (page 5) FN 2080 (page 5) FN 2090 (page 5) FN 241x (page 4/5) FN 2200 (page 4)	FN 350 (page 4) FN 2070 (page 5) FN 2080 (page 5) FN 2090 (page 5) FN 241x (page 4/5)	FN 685 (page 5) FN 2070 (page 5) FN 2080 (page 5) FN 241x (page 4/5)	FN 332 (page 4) FN 20x0 (page 4/5)	FN 332 (page 4) FN 20x0B (page 4/5) FN 2360 (page 5) FN 700Z (page 5)	FN 350 (page 4) FN 2060 (page 5) FN 2070 (page 5) FN 2090 (page 5)	FN 2030 (page 4) FN 2060 (page 5) FN 2070 (page 5) FN 2090 (page 5) FN 2200 (page 4)	FN 700Z (page 5) Customized single-phase telecom filters	FN 350 (page 4) FN 2070 (page 5) FN 2080 (page 5) FN 2410 (page 4) FN 2412 (page 4) FN 2415 (page 5)
Three-phase filters 		FN 3025/26 (page 6) FN 3258 (page 6) FN 3268 (page 6)	FN 258 (page 6) FN 3025/26 (page 6) FN 3100 (page 6) FN 3258 (page 6) FN 3268 (page 6) FN 3270 (page 6) FN 3359 (page 6)	FN 258 (page 6) FN 3025/26 (page 6) FN 31xx (page 6) FN 3258 (page 6) FN 3268 (page 6) FN 3270 (page 6) FN 3359 (page 6)	FN 258 (page 6) FN 3100 (page 6) FN 3258 (page 6) FN 3268 (page 6)	FN 3258 (page 6) FN 3268 (page 6) FN 3025 (page 6) FN 3026 (page 6)	FN 258P (page 6) FN 258L (page 6) FN 3025/26 (page 6) FN 3268 (page 6)	FN 258 (page 6) FN 351 (page 6) FN 3025/26 (page 6) FN 3258 (page 6) FN 3268 (page 6)	FN 258 (page 6) FN 3025/26 (page 6) FN 3100 (page 6) FN 3120 (page 6) FN 3258 (page 6) FN 3268 (page 6) FN 3359 (page 6)	Customized three-phase telecom filters	FN 258 (page 6) FN 3100 (page 6) FN 3120 (page 6) FN 3258 (page 6) FN 3268 (page 6) FN 3270 (page 6) FN 3359 (page 6)
Three-phase and neutral line filters 		FN 354 (page 7) FN 355 (page 7) FN 3256 (page 7)	FN 356 (page 7) FN 3256 (page 7) FN 3280 (page 7)	FN 356 (page 7) FN 3256 (page 7) FN 3280 (page 7)		FN 354 (page 7) FN 355 (page 7)	FN 354 (page 7) FN 355 (page 7)	FN 3256 (page 7)	FN 356 (page 7) FN 3256 (page 7) FN 3280 (page 7)	FN 354 (page 7)	FN 356 (page 7) FN 3256 (page 7) FN 3280 (page 7)
Output filters and load reactors 	Customized magnetics for rail vehicles and ship propulsion		FN 5x0 (page 8) FN 5020 (page 8) FN 5030 (page 8) FN 5040 (page 8) FN 5045 (page 8) RWK 305 (page 8)	FN 510 (page 8) FN 5020 (page 8) FN 5030 (page 8) FN 5040 (page 8) FN 5045 (page 8) RWK 305 (page 8)	FN 510 (page 8) FN 5040 (page 8) FN 5045 (page 8) RWK 305 (page 8)			FN 510 (page 8) FN 5040 (page 8) FN 5045 (page 8) RWK 305 (page 8)	Customized reactor and filter solutions for (renewable) energy production and feeding power into the network		FN 510 (page 8) FN 5040 (page 8) FN 5045 (page 8) RWK 305 (page 8)
Line reactors and harmonic filters 	Customized magnetics for rail vehicles and ship propulsion		FN 3410/11 (page 9) FN 3412/13 (page 9) RWK 212 (page 6)	FN 3410/11 (page 9) FN 3412/13 (page 9) FN 3420 (page 9) RWK 212 (page 6)	FN 3410/11 (page 9) FN 3412/13 (page 9) FN 3420 (page 9) RWK 212 (page 6)		FN 3420 (page 9) FN 3430 (page 9)	FN 3410/11 (page 9) FN 3412/13 (page 9) FN 3420 (page 9) FN 3430 (page 9)	FN 3420 (page 9) FN 3430 (page 9) Customized reactor and filter solutions for (renewable) energy production and feeding power into the network	FN 3420 (page 9) FN 3430 (page 9)	FN 3410/11 (page 9) FN 3412/13 (page 9) FN 3420 (page 9) RWK 212 (page 6)
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 series (page 10) RD series (page 10) RN 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) 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)
Pulse transformers 		IT series (page 11)	IT series (page 11)		IT series (page 11)		IT series (page 11)	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.

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

Feedthrough capacitors	Max. voltage	Capacitance [nF] / Rated current [A] / Attenuation performance (0 1000 2000 3000 4000 5000 / 0 50 100 150 200 250)	AC capacitors	DC capacitors	AC filters	DC filters	Very high performance	Y2 capacitor class	Y4 capacitor class	Medical equipment	Professional power supplies	Power electronic equipment	Telecommunication	Military (radar, communic.)	Aeronautic	Security systems	IT, server and network
FN 7510	300 VAC	2.2 - 47 / 10 – 100	■					■		■	■	■	■	■			
FN 7511	300 VAC	4.7 - 220 / 10 – 200	■					■		■	■	■	■	■			■
FN 7512	300 VAC	47 - 100 / 16 – 63	■					■		■	■	■	■	■		■	■
FN 7513	300 VAC	100 / 16	■					■		■	■	■	■	■	■	■	■
FN 7560	130 VDC	10 - 100 / 10 – 200		■					■	■	■	■	■	■			
FN 7561	130 VDC	47 - 470 / 63 – 200		■					■	■	■	■	■	■			■
FN 7562	130 VDC	100 - 1000 / 16 – 200		■					■	■	■	■	■		■	■	■
FN 7563	130 VDC	470 – 4700 / 16 – 200		■			■		■	■	■	■	■	■	■	■	■
Feedthrough filters		standard / high / very high															
FN 7611	300 VAC	10 – 250			■			■		■	■	■	■				■
FN 7612	300 VAC	10 – 100			■		■	■		■	■	■	■	■	■	■	■
FN 7660	130 VDC	10 – 200				■			■	■	■	■	■				■
FN 7661	130 VDC	10 – 200				■	■		■	■	■	■	■	■	■	■	■

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

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]	Features							Typical applications								
Filter family	Max. voltage	standard / high / very high 0 3 6 9 12 15	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	0.5 – 6.5	■			■		■			■			■	■	■	■	■
FN 405 	250 VAC	0.5 – 10	■			■		■			■			■		■	■	■
FN 406 	250 VAC	0.5 – 8.4	■			■	■		■			■	■	■	■	■		■
FN 409 	75 VDC	3 – 13		■	■	■		■		■	■	■		■				
FN 410 	250 VAC	0.5 – 6		■		■	■	■			■	■	■	■		■		■

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

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.

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

Approvals *	Filter family	Max. voltage	Attenuation performance / Rated current [A] (standard, high, very high; 0 4 8 12 16 20)	Features: 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	Typical applications: IT equipment	Medical equipment	Switch-mode power supplies	Office equipment	Prof. audio, TV, VCR	Telecommunication	Light industrial equipment	General purpose
	FN 9222	250 VAC	1 – 20							■	■	■	■	■	■	■	■	■	■
	FN 9222E	250 VAC	1 – 15	■						■	■	■	■	■	■	■	■	■	■
	FN 9226	250 VAC	1 – 10						■			■	■		■	■	■		■
	FN 9233	250 VAC	1 – 15							■	■	■	■	■	■	■	■	■	■
	FN 9233E	250 VAC	1 – 15	■						■	■	■	■	■	■	■	■	■	
	FN 9244	250 VAC	1 15							■	■	■	■	■	■	■	■	■	
	FN 9244E	250 VAC	1 15	■						■	■	■	■	■	■	■	■	■	
	FN 9246	250 VAC	1 – 20										■	■	■	■	■	■	
	FN 9260	250 VAC	1 – 10		■					■			■		■	■	■		■
	FN 9263	250 VAC	1 – 10			■				■				■	■	■	■	■	■
NEW	FN 9264	250 VAC	1 – 10				■					■	■	■	■	■	■	■	■
	FN 280	250 VAC	1 – 10		■		■			■		■	■		■	■	■	■	■
	FN 370	250 VAC	2 – 6		■			■		■		■	■		■	■	■		■
	FN 380	250 VAC	2 – 6		■		■			■		■	■		■	■	■		■
	FN 390 FN 1390	250 VAC	1 – 10	■	■		■	■				■	■		■	■	■	■	■
NEW	IL 13	250 VAC	1 – 10									■	■	■	■	■	■	■	■

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 *		Max. voltage	Attenuation performance / Rated current [A] (standard / high / very high; 0 20 40 60 80 100)	Features									Typical applications						
Filter family				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	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 2410		250 VAC 520 VAC (H)	8 – 100	■					■				■		■				
FN 2412		250 VAC 520 VAC (H)	8 – 45	■					■			■	■		■	■			
FN 2450		250 VAC	1 – 20	■					■	■			■	■				■	■
FN 9675/76		250 VAC	3 – 16	■									■		■			■	

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

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	With earth line choke	With overvoltage protection	Low frequency attenuation	High frequency attenuation	Choice of connection style	NEMP, TEMPEST protection	Typical applications: Power supplies, SMPS	Medical equipment	Single-phase motor drives	Control unit in machine tools	Military applications	Office, test & measure. equip.	General purpose
	FN 343 	250 VAC	1 - 10		■		■											■	■
	FN 685 	250 VAC	10 36		■				■		■		■		■				
	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 2360 	250 VAC	3 - 6		■								■	■				■	■
	FN 2415 	250 VAC	6 - 16		■										■	■			
	FN 352Z 	250 VAC	6 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
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		■				■						■			■	■
NEW FN 3268 	520 VAC	7 – 180		■				■	■					■		■	■	■
FN 3270 	520 VAC (H)	10 – 1000		■	■	■		■						■		■	■	■
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 * (FN 5040/45)	Max. voltage	Typical motor power [kW] / Rated current [A] (0 60 120 180 240 300 / 0 200 400 600 800 >1000)	Features: 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	Typ. applications: 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			■	■		■	■	■	■	■	■	■		■	■	■
NEW FN 5040	500 VAC	1.1 630 / 4.5 1200	■	■	■	■	■					■	■	■				■
NEW FN 5045	500 VAC	1.1 630 / 4.5 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.

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 the 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™ advanced 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 300µs an efficient harmonics mitigation, power factor correction, and load balancing is achieved in real time.

Approvals *		Rated power [kW/HP] / Corrective current [A]	Features							Typical applications								
Filter family	Nom. voltage	0 100 200 300 400 500	For 50Hz grids	For 60Hz grids	THID <5%	Power factor correction	Load balancing	3-phase / 3-wire	3-phase / 4-wire	For 6-pulse diode rectifiers	For 6-pulse SCR rectifiers	AC Motor drives	DC Motor drives	Welding machines	HVAC installations	Building power distribution	Semiconductor industry	Water / wastewater treatment
FN 3410	380 - 500 VAC	4 – 400kW	■		■			■		■		■			■			■
NEW FN 3410 HV	690 VAC	7.5 – 250kW	■		■			■		■		■			■			■
FN 3411	380 - 500 VAC	4 – 400kW	■					■			■	■	■					■
FN 3412	380 - 480 VAC	5 – 500HP		■	■			■		■		■			■			■
FN 3413	380 - 480 VAC	5 – 500HP		■				■			■	■	■					■
FN 3420 (active)	380 - 480 VAC	30 – 300	■	■	■	■	■	■		■	■	■	■	■	■	■	■	■
FN 3430 (active)	380 - 415 VAC	30 – 300	■	■	■	■	■		■	■	■				■	■	■	

Note: filters FNxx11xx and FNxx13xx are available on request.
Note: power ratings marked with hatchings are in preparation.

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.

Approvals *		Inductance value [mH] / Rated current [A]	Features								Typical applications							
Choke family	Max. voltage	0 20 40 60 80 100 / 0 30 60 90 120 150	For common-mode noise	Saturating chokes	Single-choke	Dual-choke	Triple-choke	Quad-choke	PCB mounting	With flying leads	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	■			■	■	■		■	■		■					
RN series	250 VAC	0.7 100 / 0.3 - 10	■			■			■		■	■			■	■	■	■
EV/EH 20 series	250 VAC	0.82 33 / 0.3 - 2	■			■			■		■	■			■	■	■	■
EV/EH 24 series	250 VAC	0.5 44 / 0.5 - 4	■			■			■		■	■			■	■	■	■
EV/EH 28 series	250 VAC	1.1 36 / 1 - 5	■			■			■		■	■			■	■	■	■
EV/EH 35 series	250 VAC	3.6 90 / 1 - 5	■			■			■		■	■			■	■	■	■
RI series	500 VDC	1.5 25		■	■	■			■	■	■		■	■	■			
NEW 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 Vµs; 0.1 - 0.25 A	■						■		■	■	■		■	■	■	■
IT 245/255/258 	750 VAC	250 - 500 Vµs; 0.1 – 1 A	■						■		■	■	■		■	■	■	■
IT 239 	1000 VAC	350 Vµs; 0.25 A	■						■		■	■	■			■		
IT 370 	1000 VAC	4000 Vµs; 1 A	■						■		■	■	■			■		
IT 364 	3000 VAC	5000 Vµs; 3 A	■							■	■	■	■					
IT 213 	380 VAC	450 Vµs; 0.25 A		■					■		■	■	■	■	■	■	■	■
IT 312/313 	380 VAC	450 – 1200 Vµs; 0.25 – 1 A		■					■		■		■	■	■	■	■	■
IT 143/233/242 IT 243/253 	500 VAC	180 - 800 Vµs; 0.025 - 0.25 A		■					■		■	■	■	■	■	■		■
IT 246/248 	750 VAC	200 - 350 Vµs; 0.1 - 0.25 A			■				■		■	■	■		■	■		■
IT 249 	500 VAC	350 Vµs; 0.25 A				■			■		■	■	■	■	■	■	■	■
IT 260 	500 VAC	200 Vµs; 0.1 A					■		■		■		■	■	■	■	■	■
IT 314 	380 VAC	500 Vµs; 0.25 – 1 A						■	■		■		■	■	■	■	■	■
IT 234/244 IT 154 	500 VAC	200 - 600 Vµs; 0.1 - 0.25 A						■	■		■		■	■	■	■	■	■

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- turnkey component design and build

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Order Nr. 609346 Merkur Druck AG
February 2012

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02/2012 EN

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