Short Form Components

Filters, Chokes, Feedthrough Components
& Pulse Transformers

Filter, Drosseln, Durchführungskomponenten
& Impulstransformatoren

Filtres, Selfs, Composants de Traversée
& Transformateurs d'impulsion

SCHAFFNER
COMPONENTS

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Product selection chart

Chokes

Current compensated ?

No

Rod-cored chokes
- RF-Series p. 9

Saturating chokes
- RI-Series p. 9

Yes

1-phase
- ≤ 10A
  - RN-Series p. 9
  - EV/EH-Series p. 9
- ≤ 64A
  - RD-Series p. 9

3-phase
- RD-Series p. 9

3-phase + neutral
- RD-Series p. 9

3-phase reactors

Line
- 4 %
  - RWK 212 -Series p. 6
  - RWK 312 -Series p. 6
- 2 %
  - RWK 213 -Series p. 6

Load
- 0.8 %
  - RWK 305 -Series p. 8

Filters

Number of phases ?

1-phase

PCB-filters
- FN 401 p. 2
- FN 402 p. 2
- FN 405 p. 2
- FN 406 p. 2
- FN 409 p. 2
- FN 410 p. 2

IEC-inlets

Power Entry Modules
- FN 321 p. 3
- FN 329 p. 3
- FN 9222 p. 3
- FN 9226 p. 3
- FN 9246 p. 3

P.E.M. with fuses
- FN 9260 p. 3

P.E.M. with fuses and switch or volt. selector
- FN 280 p. 3
- FN 370 p. 3
- FN 380 p. 3
- FN 390 p. 3
- FN 1390 p. 3

Chassis-mounting

1-stage filters
- ≤ 30A
  - FN 332 p. 4
  - FN 610 p. 4
  - FN 2310 p. 4
  - FN 2330 p. 4
  - FN 2340 p. 4
  - FN 9675 p. 4
- ≤ 100A
  - FN 350 p. 4
  - FN 612 p. 4
  - FN 2010 p. 4
  - FN 2020 p. 4

2-stage filters
- ≤ 16A
  - FN 343 p. 5
  - FN 670 p. 5
  - FN 680 p. 5
  - FN 2080 p. 5
  - FN 2350 p. 5
  - FN 2360 p. 5
  - FN 2415 p. 5
- ≤ 36A
  - FN 660 p. 5
  - FN 685 p. 5
  - FN 2060 p. 5
  - FN 2070 p. 5
  - FN 2320 p. 5

3-stage filters
- FN 352Z p. 5
- FN 700Z p. 5

Feedthrough components

Capacitors
- FN 751X p. 1
- FN 756X p. 1

Filters
- FN 761X p. 1
- FN 766X p. 1

3-phase

Input or output filter ?

Input

Output

Input & Output
- FN 5100 p. 8

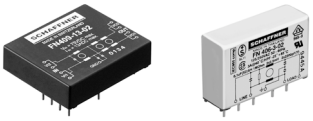
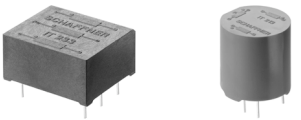
3-phase
- ≤ 2500A
  - FN 3270 p. 6
  - FN 3275 p. 6
  - FN 3359 p. 6
- ≤ 300A
  - FN 258 p. 6
  - FN 3258 p. 6
  - FN 351 p. 6
  - FN 3100/ FN 3110 p. 6
  - FN 3120 p. 6
  - FN 3400 p. 6

3-phase + neutral
- ≤ 25A
  - FN 354 p. 7
  - FN 355 p. 7
- ≤ 160A
  - FN 256 p. 7
  - FN 356 p. 7
  - FN 3256 p. 7
  - FN 3280 p. 7

Output filter
- FN 510 p. 8

Sinusoidal output filters
- FN 520 p. 8
- FN 530 p. 8
- FN 5010 p. 8
- FN 5011 p. 8
- FN 5020 p. 8
- FN 5030 p. 8

Did you find a solution? Competent assistance with your component selection as well as more detailed product specifications can be obtained by every Schaffner office, representative or www.schaffner.com. All components featured in this brochure can be customised on request in order to meet special application requirements.

Applications / Products	Automotive	EDP & Office	Drives & Controls	Process Automation	Elevators & Cranes
	Application Examples: - hybrid vehicles - fuel-cell vehicles - dc/dc converters for the 42V supply - chargers for electric vehicles - emitters & receivers for sensors etc.	**Application Examples:** - PC's - printers - PC periphery - fax machines - copy machines - monitors - plotters - mainframe computers	**Application Examples:** - frequency inverters - current converters - servo drives - inverters for energy regeneration - ac/dc converters - solar converters - thyristor controllers	**Application Examples:** - robotics - conveyors - assembly lines - pumps - control units - mining industry - chemical industy - oil production	**Application Examples:** - elevators for people and goods - escalators - cranes - lifts
Feedthroughs	customized feedthrough solutions for automotive applications	FN 756x (page 1) FN 766x (page 1)		FN 751x (page 1) FN 761x (page 1)	
PCB-filters 	customized PCB-filters for automotive applica-tions	FN 401 (page 2) FN 402 (page 2) FN 405 (page 2) FN 406 (page 2) FN 410 (page 2)			
IEC-inlet filters		FN 9222 (page 3) FN 9226 (page 3) FN 9260 (page 3) FN 280 (page 3) FN 390 (page 3)			
1-phase filters	custom designs for alternative automotive technologies	FN 343 (page 5) FN 6xx (page 4/5) FN 2020 (page 4) FN 2060 (page 5) FN 23x0 (page 4/5)	FN 350 (page 4) FN 2070 (page 5) FN 2080 (page 5) FN 967x (page 4)	FN 350 (page 4) FN 2070 (page 5) FN 2080 (page 5) FN 2415 (page 5)	FN 670 (page 5) FN 680 (page 5) FN 685 (page 5) FN 2070 (page 5) FN 2080 (page 5)
3-phase filters		FN 3258 (page 6)	FN 351 (page 6) FN 3100 (page 6) FN (3)258 (page 6) FN 3270 (page 6) FN 3359 (page 6)	FN 3100 (page 6) FN 3120 (page 6) FN (3)258 (page 6) FN 3275 (page 6) FN 3359 (page 6)	FN 258 (page 6) FN 3100 (page 6) FN 3258 (page 6)
3-phase + neutral filters		FN 256 (page 7) FN 354 (page 7) FN 355 (page 7) FN 3256 (page 7)	FN 256 (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)	
Output components			RWK 305 (page 8) FN 5x0 (page 8) FN 50xx (page 8) FN 5100 (page 8)	RWK 305 (page 8) FN 510 (page 8) FN 5010 (page 8) FN 5020 (page 8) FN 5030 (page 8)	RWK 305 (page 8) FN 510 (page 8) FN 520 (page 8) FN 5010 (page 8)
Line-reactors & harmonics filters	customized reactor solutions for alternative automotive technolo-gies	FN 3400 (page 6)	RWK 212 (page 6) RWK 213 (page 6) RWK 312 (page 6) FN 3400 (page 6)	RWK 212 (page 6) RWK 312 (page 6) FN 3400 (page 6)	RWK 212 (page 6) RWK 312 (page 6) FN 3400 (page 6)
RFI suppression chokes	RN (page 9) custom chokes	EV/EH (page 9) RD (page 9) RF (page 9) RN (page 9)	RD (page 9) RF (page 9) RI (page 9)	RD (page 9)	RD (page 9)
Pulse transformers 	customized transducer solutions for alternative automotive technolo-gies	IT-series (page 10/11)	IT-series (page 10/11)		

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. Please contact your local Schaffner office for more information and support.

Consumer Goods	Medical	Military	Building Automation	Power Generation & Supply	Telecom	Machinery
Application Examples: - amplifyers, audio & video, TV, screens - receivers & decoders - laundry machines - tumblers - cooking equipment - induction heater - exercise machines - coffee machines	**Application Examples:** - X-ray - CAT scanners - defilibrators - laboratory equipment - analysers - measurement devices - MRI, MSI, EEG, ECG - test equipment	**Application Examples:** - security systems - surveillance - communication equipment - aircraft, ships, tanks, submarines - radar systems - navigation systems	**Application Examples:** - heating - ventilation - air conditioning - security systems - control units - pumps - self-ballasted lighting equipment	**Application Examples:** - SMPS & UPS - dc/dc converters - gen-sets - wind turbines - solar panels - fuel cells - gas turbines - power factor control	**Application Examples:** - base stations for GSM, UMTS, GRPS - power line communications - network technology - servers - telephone installations - broadcast installations	**Application Examples:** - machine tools - printing machines - packaging machines - extruders - wood working mach. - milling/drilling mach. - laser cutting machines - welding machines - grinding machines
	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 756x (page 1) FN 761x (page 1) FN 766x (page 1)	FN 751x (page 1) FN 761x (page 1)
FN 401 (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 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)	
FN 32x (page 3) FN 9222 (page 3) FN 9260 (page 3) FN 280 (page 3) FN 3x0 (page 3)	FN 329B (page 3) FN 9222B (page 3) FN 9246B (page 3) FN 9260B (page 3) FN 280B (page 3)	customized filter solutions with military connectors	FN 9246 (page 3)	FN 922x (page 3) FN 9246 (page 3) FN 9260 (page 3) FN 280 (page 3) FN 3x0 (page 3)	FN 9246 (page 3)	
FN 332 (page 4) FN 420 (page 4) FN 6xx (page 4/5) FN 20x0 (page 4/5) FN 23x0 (page 4/5)	FN 332 (page 4) FN 20x0B (page 4/5) FN 2360 (page 5) FN 700Z (page 5)	FN 352Z (page 5) FN 700Z (page 5)	FN 350 (page 4) FN 660 (page 5) FN 670 (page 5) FN 2060 (page 5) FN 2070 (page 5)	FN 660 (page 5) FN 670 (page 5) FN 2060 (page 5) FN 2070 (page 5) FN 967x (page 4)	FN 700Z (page 5) FN 6020 customized single-phase telecom filters	FN 350 (page 4) FN 2070 (page 5) FN 2080 (page 5) FN 2415 (page 5)
FN 3258 (page 6)	FN 258P (page 6) FN 258L (page 6)	FN (3)258 (page 6) FN 3359 (page 6)	FN 351 (page 6) FN (3)258 (page 6)	FN (3)258 (page 6) FN 3100 (page 6) FN 3120 (page 6) FN 3359 (page 6)	FN 6030 customized three-phase telecom filters	FN 3100 (page 6) FN 3120 (page 6) FN (3)258 (page 6) FN 3275 (page 6) FN 3359 (page 6)
FN 256 (page 7) FN 354 (page 7) FN 355 (page 7)	FN 256 (page 7) FN 354 (page 7) FN 355 (page 7)	FN 354 (page 7)	FN 256 (page 7) FN 3256 (page 7)	FN 256 (page 7) FN 356 (page 7) FN 3256 (page 7) FN 3280 (page 7)	FN 256 (page 7) FN 354 (page 7)	FN 356 (page 7) FN 3256 (page 7) FN 3280 (page 7)
		RWK 305 (page 8) FN 510 (page 8) FN 520 (page 8) FN 530 (page 8)	RWK 305 (page 8) FN 510 (page 8) FN 5010 (page 8) FN 5100 (page 8)	customized reactor and filter solutions for (alternative) energy production and feeding power into the network		RWK 305 (page 8) FN 510 (page 8)
FN 3400 (page 6)	FN 3400 (page 6)	RWK 212 (page 6) RWK 312 (page 6)	FN 3400 (page 6)	customized reactor and filter solutions for (alternative) energy production and feeding power into the network		RWK 212 (page 6) RWK 213 (page 6) RWK 312 (page 6) FN 3400 (page 6)
EV/EH (page 9) RD (page 9) RF (page 9) RN (page 9)	EV/EH (page 9) RD (page 9) RN (page 9)	RD (page 9) RN (page 9) RF (page 9)	EV/EH (page 9) RD (page 9) RI (page 9) RN (page 9)	EV/EH (page 9) RD (page 9) RF (page 9) RN (page 9)	EV/EH (page 9) RN (page 9)	RD (page 9)
	IT-series (page 10/11)	IT-series (page 10/11)	IT-series (page 10/11)	IT-series (page 10/11)	IT-series (page 10/11)	

Feedthrough capacitors and filters

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] / Current rating [A]	Features: AC capacitors	DC capacitors	AC filters	DC filters	Very high performance	Y2 capacitor class	Y4 capacitor class		Typical applications: Medical equipment	Professional power supply	Power electronic equipment	Telecommunication	Military (radar, communic.)	Aeronautic	Security systems	IT, server and network
FN 7510	300VAC	2.2 - 100 / 10 - 250	✓					✓			✓	✓	✓	✓	✓			
FN 7511	300VAC	4.7 - 220 / 10 - 250	✓					✓			✓	✓	✓	✓	✓			✓
FN 7512	300VAC	33 - 470 / 16 - 250	✓					✓			✓	✓	✓	✓	✓		✓	✓
FN 7513	300VAC	47 - 1000 / 16 - 250	✓				✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
FN 7560	130VDC	10 - 1000 / 10 - 250		✓					✓		✓	✓	✓	✓	✓			
FN 7561	130VDC	47 - 3300 / 16 - 250		✓					✓		✓	✓	✓	✓	✓	✓		✓
FN 7562	130VDC	100 - 1000 / 16 - 200		✓					✓		✓	✓	✓	✓		✓	✓	✓
FN 7563	130VDC	470 - 4700 / 16 - 200		✓			✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
Feedthrough filters		standard / high / very high; Attenuation performance																
FN 7610	300VAC	10 - 250			✓			✓			✓	✓	✓	✓				
FN 7611	300VAC	10 - 250			✓			✓			✓	✓	✓	✓				✓
FN 7612	300VAC	10 - 250			✓		✓	✓			✓	✓	✓	✓	✓	✓	✓	✓
FN 7660	130VDC	10 - 200				✓			✓		✓	✓	✓	✓				✓
FN 7661	130VDC	10 - 200				✓			✓		✓	✓	✓	✓	✓	✓	✓	✓

PCB filters

Very compact EMI suppression components can directly be equipped 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.

EN133200
IEC60939

standard high very high

Attenuation performance
Current rating [A]

0 3 6 9 12 15

Filter family	Max. voltage	Features							Typical applications							
		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 401	250VAC	✓			✓		✓						✓		✓	✓	✓
FN 402	250VAC	✓			✓		✓			✓			✓	✓	✓	✓	✓
FN 405	250VAC	✓			✓		✓			✓			✓		✓	✓	✓
FN 406	250VAC	✓			✓	✓		✓			✓	✓	✓	✓	✓		✓
FN 409	75VDC		✓	✓	✓		✓		✓	✓	✓		✓				
FN 410	250VAC		✓		✓	✓	✓			✓	✓	✓	✓		✓		✓

IEC-inlet filters

All the advantages of IEC-connector, 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.

EN133200
IEC60939

standard high very high

Attenuation performance
Current rating [A]

0 4 8 12 16 20

Filter family	Max. voltage	With earth line choke	For fuse(s)	With switch	With voltage selector	IEC 950-compliant	For PCB mounting	Snap-in version		IT-equipment	Medical equipment	Switch mode power supply	Office equipment	Prof. Audio/TV/VCR	Telecommunication	Light industrial equipment	General purpose
		Features								Typical applications							
FN 321	250VAC					✓				✓		✓	✓	✓		✓	
FN 329	250VAC	✓				✓				✓	✓		✓	✓	✓		
FN 9222	250VAC					✓		✓		✓	✓	✓	✓	✓	✓	✓	✓
FN 9226	250VAC					✓	✓			✓	✓		✓	✓	✓		✓
FN 9246	250VAC					✓					✓	✓	✓	✓	✓	✓	
FN 9260	250VAC		✓			✓		✓			✓		✓	✓	✓		✓
FN 280	250VAC		✓	✓		✓		✓		✓	✓		✓	✓	✓	✓	✓
FN 370	250VAC		✓		✓	✓		✓		✓	✓		✓	✓	✓		✓
FN 380	250VAC		✓	✓		✓		✓		✓	✓		✓	✓	✓		✓
FN 390	250VAC	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓	✓	✓
FN 1390	250VAC	✓	✓	✓	✓	✓				✓	✓		✓	✓	✓	✓	

Single-phase filters for chassis mounting

Single-phase filters for chassis 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.

EN133200
IEC60939

standard — high — very high

Attenuation performance
Current rating [A]

0 20 40 60 80 100

Filter family	Max. voltage	1-stage filter circuit	2-stage filter circuit	3-stage filter circuit	With earth line choke	With over voltage protection	Low frequency attenuation	High frequency attenuation	Choice of connection style	NEMP, TEMPEST protection	Power supplies / SMPS	Medical equipment	Single-phase motor drives	Control lines in machine tools	Military applications	Office, test & measure. eq.	General purpose / appl.
		Features									Typical applications						
FN 332	250VAC	✓				✓			✓			✓					✓
FN 350	250VAC	✓									✓		✓			✓	
FN 420	250VAC	✓															✓
FN 610	250VAC	✓							✓			✓					✓
FN 612	250VAC	✓										✓				✓	✓
FN 2010	250VAC	✓							✓			✓					✓
FN 2020	250VAC	✓							✓			✓				✓	✓
FN 2310	250VAC	✓														✓	✓
FN 2330	250VAC	✓														✓	✓
FN 2340	250VAC	✓															✓
FN 9675/76	250VAC	✓									✓		✓			✓	

EN133200
IEC60939

standard high very high

Attenuation performance
Current rating [A]

0 20 40 60 80 100

Filter family	Max. voltage	1-stage filter circuit	2-stage filter circuit	3-stage filter circuit	With earth line choke	With over voltage protection	Low frequency attenuation	High frequency attenuation	Choice of connection style	NEMP, TEMPEST protection	Power supplies / SMPS	Medical equipment	Single-phase motor drives	Control lines in machine tools	Military applications	Office, test & measure. eq.	General purpose / appl.
		Features									Typical applications						
FN 343	250VAC		✓		✓				✓							✓	✓
FN 660	250VAC		✓						✓		✓	✓				✓	✓
FN 670	250VAC		✓					✓	✓		✓		✓			✓	
FN 680	250VAC		✓				✓		✓		✓		✓			✓	
FN 685	250VAC		✓				✓		✓		✓		✓				
FN 2060	250VAC		✓						✓		✓	✓				✓	✓
FN 2070	250VAC		✓					✓	✓		✓	✓	✓			✓	
FN 2080	250VAC		✓				✓		✓		✓	✓	✓				
FN 2320	250VAC		✓													✓	✓
FN 2350	250VAC		✓													✓	✓
FN 2360	250VAC		✓								✓	✓				✓	✓
FN 2415	250VAC		✓										✓	✓			
FN 352Z	250VAC			✓		✓		✓			✓				✓	✓	
FN 700Z	250VAC			✓		✓	✓	✓		✓	✓	✓			✓	✓	

Three-phase filters and line-reactors

EMC 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 appliances.
Line-reactors and harmonics filters, 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.

EN133200
IEC60939

standard — high — very high

Attenuation performance
Current rating [A]

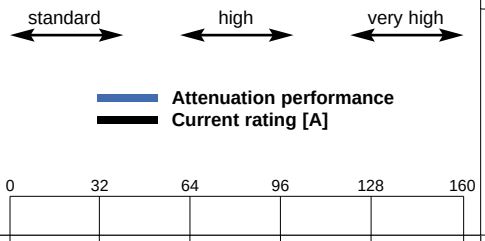
0 — 200 — 400 — 600 — 800 — >1000

Filter family	Max. voltage	Multi-stage filter circuit	Safety connector blocks	Busbar connection	Optional protective covers	Offering EMC compliance	Less commutation notches	Form factor improvement	Inrush current limitation	Harmonics reduction	4% impedance	2% impedance	Inverters & servo drives	Energy regeneration units	Machinery / machine tools	Industrial automation	General purpose
		Features											**Typ. applications**				
FN 258	480VAC 690VAC (HV)	✓	✓			✓							✓		✓	✓	✓
FN 351	440VAC 520VAC (H)		✓			✓							✓			✓	✓
FN 3100/10	520VAC (3100) 480VAC (3110)		✓			✓							✓	✓	✓	✓	
FN 3120	520VAC (H)		✓			✓							✓	✓	✓	✓	
FN 3258	480VAC 520VAC (H)		✓			✓							✓			✓	✓
FN 3270	520VAC (H)		✓	✓	✓	✓							✓			✓	✓
FN 3275	520VAC (H)		✓	✓	✓	✓									✓	✓	✓
FN 3359	520VAC 690VAC (HV)	✓		✓	✓	✓							✓	✓	✓	✓	
FN 3400	480VAC	✓	✓			✓	✓	✓	✓	✓	✓		✓		✓	✓	✓
RWK 212/312	500VAC		✓	✓			✓	✓	✓	✓	✓		✓		✓	✓	✓
RWK 213	500VAC		✓	✓			✓	✓	✓	✓		✓	✓		✓	✓	✓

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-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.

EN133200
IEC60939



Filter family	Max. voltage	Features								Typical applications							
		1-stage filter circuit	2-stage filter circuit	Safety connector blocks	Fast-on connectors	Offering EMC compliance	For asymmetrical loads	Broadband attenuation	Very low leakage current	For entire systems / install.	Machinery / machine tools	Industrial automation	Power supply	Medical equipment	For high frequency appl.	High power office equipment	General purpose
FN 256	480VAC 520VAC (H)	✓				✓	✓			✓			✓	✓		✓	✓
FN 354	440VAC		✓		✓	✓		✓					✓	✓	✓	✓	✓
FN 355	440VAC	✓			✓	✓			✓					✓		✓	✓
FN 356	440VAC	✓		✓		✓	✓			✓		✓	✓				
FN 3256	520VAC (H)	✓		✓		✓	✓			✓	✓	✓	✓			✓	✓
FN 3280	520VAC (H)		✓	✓		✓	✓	✓		✓	✓	✓	✓				

Output filters and load-reactors for motor drives

Output components for motor protection and the improvement of system reliability, availability and functionality. Deployed at the output side of frequency inverters, these types ensure reliable operation by avoiding expensive down-times 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.

Filter family	Max. voltage	Motor power [kW] / Current rating [A]	Features											Typ. applications				
			dv/dt restriction	Over-voltage restriction	Motor temperature reduction	Red. acoustic motor noise	Sym. sinusoidal output signal	Asym. sinusoidal output sig.	Input & output combi filter	Eliminat. of bearing damage	Use of unshielded cables	Connection to dc-link required	Improves overall EMC	Frequency inverter appl.	Servo drives & torque motors	High-speed motor appl.	Appl. with long unshield. cabl.	Retrofit of motor drives
FN 510	520VAC	1.5 - 30 / 4 - 66	✓	✓	✓								✓	✓	✓			
FN 520	520VAC	1.5 - 7.5 / 4 - 16	✓	✓	✓	✓	✓						✓	✓				
FN 530	520VAC	1.5 - 7.5 / 4 - 16	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓			✓	✓
FN 5010/11	440VAC 690VAC (HV)	0.75 – 300 / 2.5 – 610	✓	✓	✓	✓	✓						✓	✓				
FN 5020	500VAC	11 – 55 / 25 - 120	✓	✓	✓	✓	✓						✓	✓		✓		
FN 5030*	500VAC	11 – 55 / 25 - 120			✓	✓		✓		✓	✓	✓	✓	✓		✓	✓	✓
FN 5100	480VAC	2.2 – 45 / 6 - 100	✓	✓	✓				✓		✓		✓	✓	✓		✓	✓
RWK 305	500VAC	0.75 – 1000 / 2 – 2300	✓		✓								✓	✓	✓			

* additional output filter module to be operated in conjunction with FN 5010 or FN 5020

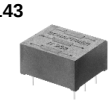
RFI suppression chokes

An extensive selection of discrete RFI suppression chokes allows optimized circuitry for EMC compliance to be designed easily and economically.

Choke family	Max. voltage	Inductance value [mH] / Current rating [A]	Features									Typical applications						
			For common mode noise	For differential mode noise	Saturating chokes	Single choke	Dual choke	Triple choke	Quad choke	PCB mounting	With flying leads	Frequency converter / UPS	Medical equipment	Traction systems	DC/DC AC/DC-converters	SMPS	Home electronics TV, balasts	Battery chargers
RD-Series (5000)	600VAC 850VDC	1 10 / 6 - 16	✓				✓	✓		✓		✓		✓				
(6000)	600VAC 850VDC	1.5 15 / 6 - 16	✓				✓	✓			✓	✓		✓				
(7000)	600VAC 850VDC	0.2 25 / 6 36	✓				✓	✓	✓		✓	✓		✓				
(8000)	600VAC 850VDC	0.2 12 / 16 64	✓				✓	✓	✓		✓	✓		✓				
RN-Series	250VAC	0.7 100 / 0.3 - 10	✓				✓			✓		✓	✓			✓	✓	✓
EV/EH-Series (E_20)	250VAC	0.82 33 / 0.3 - 2	✓				✓			✓		✓	✓			✓	✓	✓
(E_24)	250VAC	0.5 44 / 0.5 - 4	✓				✓			✓		✓	✓			✓	✓	✓
(E_28)	250VAC	1.1 36 / 1 - 5	✓				✓			✓		✓	✓			✓	✓	✓
(E_35)	250VAC	3.6 90 / 1 - 5	✓				✓			✓		✓	✓			✓	✓	✓
RF-Series (51-101)	380VAC 500VDC	0.1 - 2.4 / 4 150		✓		✓					✓	✓	✓					
(211)	380VAC 500VDC	0.15 - 3.8 / 2 - 10		✓		✓				✓		✓	✓					
RI-Series	500VDC	1.5 25			✓	✓	✓			✓	✓	✓		✓	✓	✓		

Pulse transformers

Providing a proper galvanic separation in IGBT-, thyristor-, triac-, power MOSFET- and dc/dc converter-circuits.

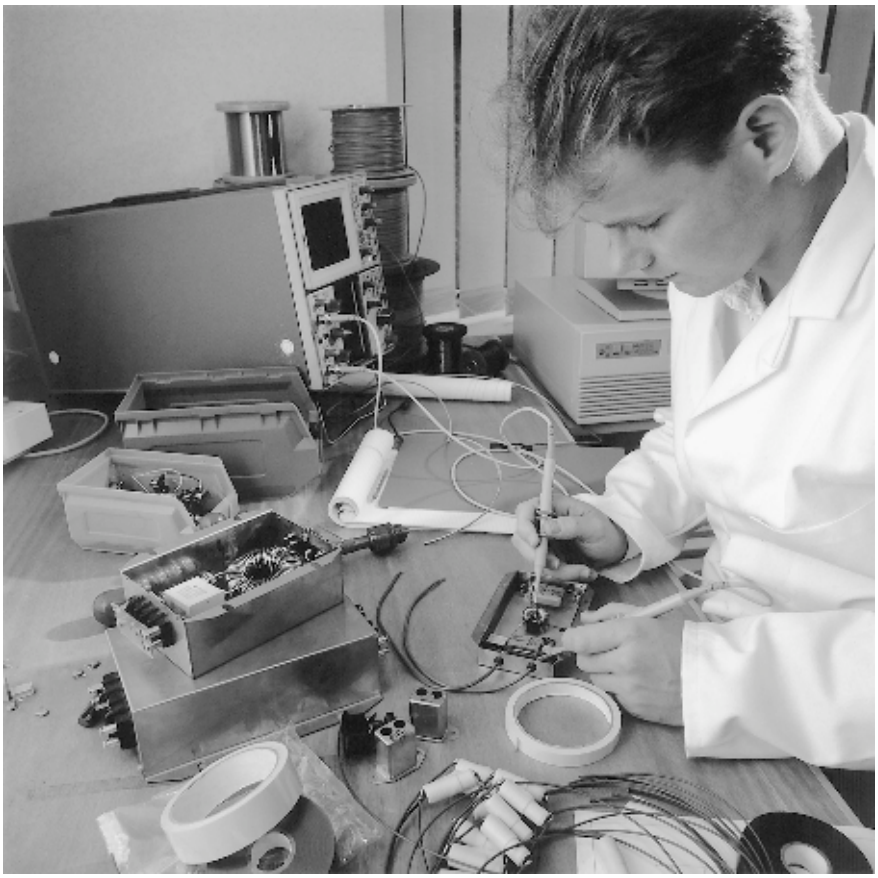
Pulse transformer	Nom. voltage	Voltage-time area [Vµs] / Ignition current [A]	Features									Typical applications						
			1 : 1	1 : 1 : 1	2 : 1	2 : 1 : 1	3 : 1	3 : 1 : 1	PCB	Faston	Galvanic separation	Thyristors, triac and IGBT's	Driving power-MOSFET's	Line coupling transformers	DC/DC converters	Power supplies	Home automation systems	Monitoring systems
IT155	500VAC	500 / 0.1	✓								✓				✓		✓	✓
IT237	500VAC	1100 / 0.25	✓						✓		✓	✓	✓		✓	✓	✓	✓
IT245	750VAC	500 / 0.1	✓						✓		✓	✓	✓		✓	✓	✓	✓
IT255	750VAC	250 / 0.25	✓						✓		✓	✓	✓		✓	✓	✓	✓
IT258	750VAC	250 / 1	✓						✓		✓	✓	✓		✓	✓	✓	✓
IT239	1000VAC	350 / 0.25	✓						✓		✓	✓	✓			✓		
IT370	1000VAC	4000 / 1	✓						✓		✓	✓	✓			✓		
IT364	3000VAC	5000 / 3	✓							✓	✓	✓	✓					
IT213	380VAC	450 / 0.25		✓					✓		✓	✓	✓	✓	✓	✓	✓	✓
IT312	380VAC	1200 / 0.25		✓					✓		✓		✓	✓	✓	✓	✓	✓
IT313	380VAC	450 / 1		✓					✓		✓		✓	✓	✓	✓	✓	✓
IT143 	500VAC	800 / 0.025		✓					✓		✓	✓	✓	✓	✓	✓		✓
IT153	500VAC	600 / 0.1		✓					✓		✓	✓	✓	✓	✓	✓		✓

Pulse transformer	Nom. voltage	Voltage-time area [Vµs] / Ignition current [A]	Features									Typical applications						
			1 : 1	1 : 1 : 1	2 : 1	2 : 1 : 1	3 : 1	3 : 1 : 1	PCB	Faston	Galvanic separation	Thyristors, triac and IGBT's	Driving power-MOSFET's	Line coupling transformers	DC/DC converters	Power supplies	Home automation systems	Monitoring systems
IT233	500VAC	300 / 0.25		✓					✓		✓	✓	✓	✓	✓	✓		✓
IT242	500VAC	250 / 0.1		✓					✓		✓	✓	✓	✓	✓	✓		✓
IT243	500VAC	250 / 0.1		✓					✓		✓	✓	✓	✓	✓	✓		✓
IT253	500VAC	180 / 0.25		✓					✓		✓	✓	✓	✓	✓	✓		✓
IT246	750VAC	200 / 0.1			✓				✓		✓	✓	✓		✓	✓		✓
IT248	750VAC	350 / 0.25			✓				✓		✓	✓	✓		✓	✓		✓
IT362	1000VAC	3500 / 3			✓					✓	✓	✓	✓		✓	✓		
IT249	500VAC	330 / 0.25				✓			✓		✓	✓	✓	✓	✓	✓	✓	✓
IT332	380VAC	1200 / 1					✓		✓		✓		✓	✓	✓	✓	✓	✓
IT260	500VAC	200 / 0.1					✓		✓		✓		✓	✓	✓	✓	✓	✓
IT314	380VAC	500 / 0.25 / 1						✓	✓		✓		✓	✓	✓	✓	✓	✓
IT154	500VAC	600 / 0.1						✓	✓		✓		✓	✓	✓	✓	✓	✓
IT234	500VAC	300 / 0.25						✓	✓		✓		✓	✓	✓	✓	✓	✓
IT244	500VAC	200 / 0.1						✓	✓		✓		✓	✓	✓	✓	✓	✓

EMC measurement and engineering services

Expert EMC Support

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



EMC testing

Schaffner operates the most sophisticated EMC test facilities available anywhere today - with extensive investment in screened rooms, specialized test equipment and application engineering teams - distributed at seven locations throughout the world. Service available at these locations include:

- semi-anechoic chamber and open field testing
- harmonics instrumentation for current and voltage to the 49th harmonic
- emission and immunity tests according to European and international standards (EN, IEC, FCC, CISPR, Mil)

Additional services available at the accredited testing facility in Switzerland:

- full load test set-up for motordrives
- 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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