

General Purpose AC/DC EMI Filter



- Rated currents from 1 to 60 A
- High differential-mode attenuation
- Optional medical version (B type)
- Optional safety version (A type)



Performance indicators

Attenuation performance



Rated current [A]



Technical specifications

Rated voltage*	250 VAC, 50/60 Hz; 250 VDC
Operating frequency	DC to 400 Hz
Rated currents	1 to 60 A @ 40°C max.
High potential test voltage	P → N 760 VAC for 2 sec (1 to 20 A types) P → PE 2500 VAC for 2 sec (B types) P → PE 2000 VAC for 2 sec P → N 1100 VDC for 2 sec (30 and 60 A types)
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Certified to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 40°C/230 V (Mil-HB-217F)	1,250,000 hours 1,750,000 hours (B types)

*maximum RMS operating voltage at rated frequency or the maximum DC operating voltage

Approvals



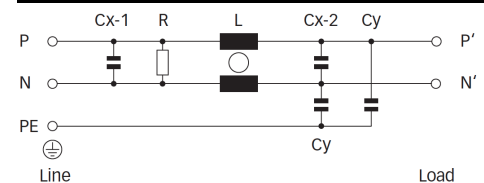
Features and benefits

- FN 2020 filters are designed for easy and fast chassis mounting
- FN 2020 filters are also available as B versions without Y-capacitors for medical applications as well as A version with low capacitance for safety critical applications with necessity for low leakage currents
- All filters provide a general purpose conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- FN 2020 filters can be used to cover a broad range of usage and they offer a good size/amperage ratio
- FN 2020 filters are also available as two-stage filters (FN 2060, FN 2070 series) for more noisy environment
- Various terminal options allow you to select the desired connection style

Typical applications

- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Medical equipment
- Office automation equipment
- Datacom equipment

Typical electrical schematic



Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)	Inductance L	Capacitance		Resistance R	Input/Output connections			Weight [g]
				Cx	Cy					
	[A]	[mA]	[mH]	[μF]	[nF]	[kΩ]				
FN 2020-1-..	1 (1.15)	0.66 (0.38)	12	0.15	4.7	1000	-06	-07		80
FN 2020-3-..	3 (3.45)	0.66 (0.38)	2.5	0.15	4.7	1000	-06	-07		80
FN 2020-6-..	6 (6.9)	0.66 (0.38)	1	0.15	4.7	1000	-06	-07		80
FN 2020-10-..	10 (11.5)	0.66 (0.38)	0.8	0.15	4.7	1000	-06	-07		85
FN 2020-12-..	12 (13.8)	0.66 (0.38)	0.7	0.15	4.7	1000	-06	-07		85
FN 2020-16-..	16 (18.4)	0.66 (0.38)	0.65	0.15	4.7	1000	-06	-07		140
FN 2020-20-..	20 (23)	0.66 (0.38)	0.6	0.15	4.7	1000	-06		-08	210
FN 2020-30-08	30 (34.5)	0.79 (0.45)	0.67	0.47	10	470			-08	470
FN 2020-60-24	60 (69)	0.79 (0.45)	1	1.5	10	220			-24	1100
FN 2020A-1-..	1 (1.15)	0.07 (0.04)	12	0.15	0.47	1000	-06	-07		80
FN 2020A-3-..	3 (3.45)	0.07 (0.04)	2.5	0.15	0.47	1000	-06	-07		80
FN 2020A-6-..	6 (6.9)	0.07 (0.04)	1	0.15	0.47	1000	-06	-07		80
FN 2020A-10-..	10 (11.5)	0.07 (0.04)	0.8	0.15	0.47	1000	-06	-07		85
FN 2020A-12-..	12 (13.8)	0.07 (0.04)	0.7	0.15	0.47	1000	-06	-07		85
FN 2020A-16-..	16 (18.4)	0.07 (0.04)	0.65	0.15	0.47	1000	-06	-07		140
FN 2020A-20-..	20 (23)	0.07 (0.04)	0.6	0.15	0.47	1000	-06		-08	210
FN 2020A-30-08	30 (34.5)	0.07 (0.04)	0.67	0.47	0.47	470			-08	470
FN 2020A-60-24	60 (69)	0.07 (0.04)	1	1.5	0.47	220			-24	1100
FN 2020B-1-..	1 (1.15)	0.00	12	0.15		1000	-06	-07		80
FN 2020B-3-..	3 (3.45)	0.00	2.5	0.15		1000	-06	-07		80
FN 2020B-6-..	6 (6.9)	0.00	1	0.15		1000	-06	-07		80
FN 2020B-10-..	10 (11.5)	0.00	0.8	0.15		1000	-06	-07		85
FN 2020B-12-..	12 (13.8)	0.00	0.7	0.15		1000	-06	-07		85
FN 2020B-16-..	16 (18.4)	0.00	0.65	0.15		1000	-06	-07		140
FN 2020B-20-..	20 (23)	0.00	0.6	0.15		1000	-06		-08	210
FN 2020B-30-08	30 (34.5)	0.00	0.67	0.47		470			-08	470
FN 2020B-60-24	60 (69)	0.00	1	1.5		220			-24	1100

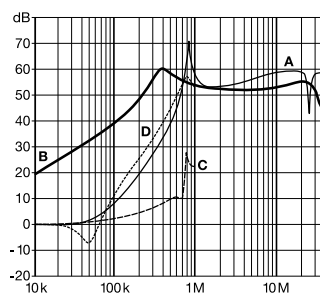
* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2020-30-08, FN 2020B-10-06).

** Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level. Leakage current for DC application is 0 mA;

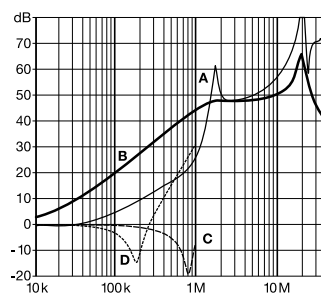
Typical filter attenuation

Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

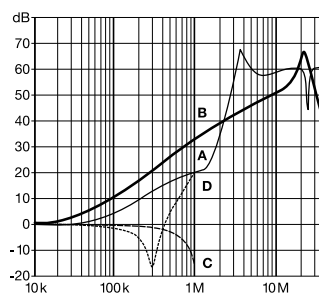
1 and 3 A types



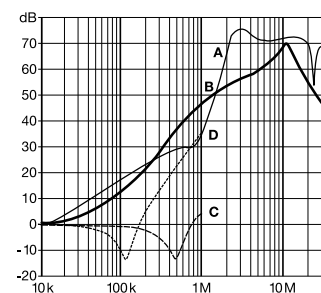
6 to 12 A types



16 and 20 A types

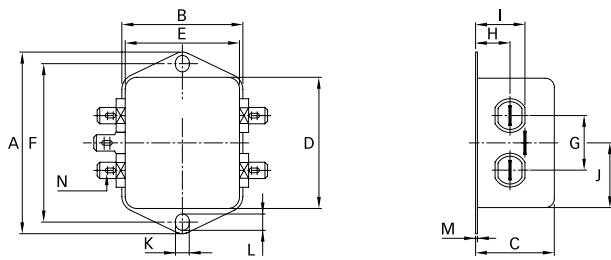


30 and 60 A types

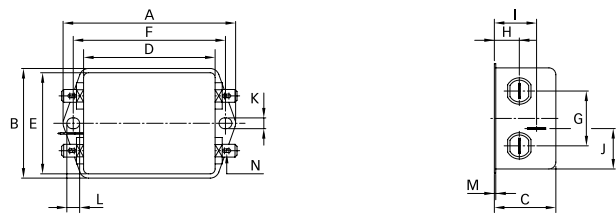


Mechanical data

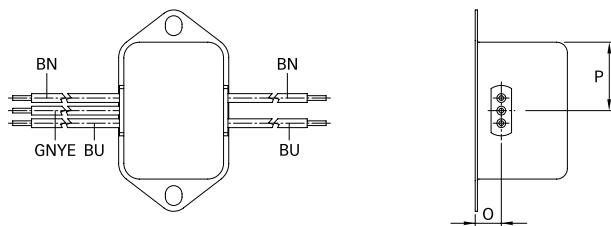
Connection style -06, 1 to 12 A types



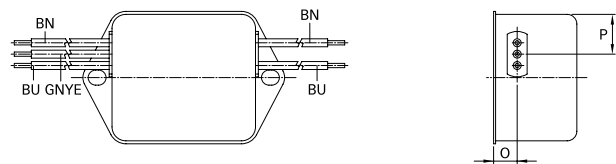
Connection style -06, 16 and 20 A types



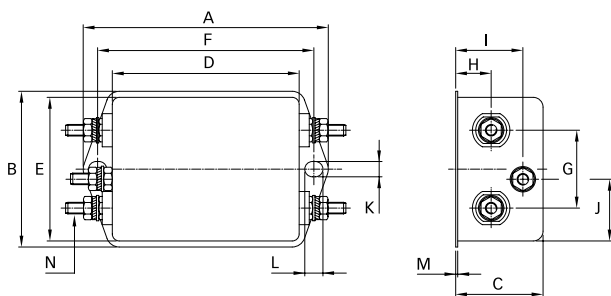
Connection style -07, 1 to 12 A types (same dimensions as style -06)



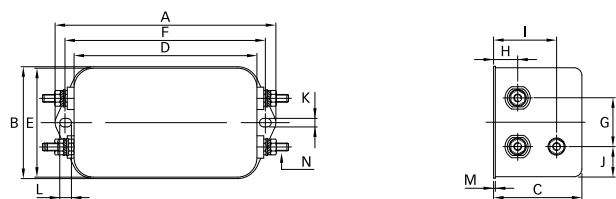
Connection style -07, 16 A types (same dimensions as style -06)



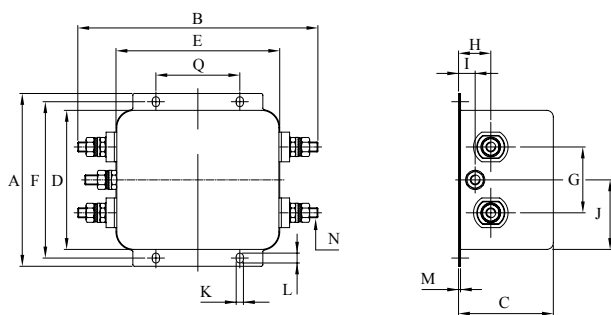
Connection style -08, 20 A types



Connection style -08, 30 A types



Connection style -24



Dimensions

	1 A	3 A	6 A	10 A	12 A	16 A	20 A	30 A	60 A	Tolerances
A	64	64	64	64	64	71	85	113.5 ±1	105 ±1	±0.5
B	35	35	35	35	35	46.6	54	57.5 ±1	145.9 ±1	±0.5
C	29.3	29.3	29.3	29.3	29.3	29.3	30.3	45.4 ±1	57.6 ±1	±0.5
D	43.5	43.5	43.5	43.5	43.5	50.5	64.8	94 ±1	84.5 ±1	±0.5
E	32.5	32.5	32.5	32.5	32.5	44.5	49.8	56	99.5	±0.5
F	54	54	54	54	54	61	75	103	95	±0.3
G	21	21	21	21	21	21	27	25	40	±0.2
H	9.3	9.3	9.3	9.3	9.3	10.8	12.3	12.4	19.6	±0.5
I	15.3	15.3	15.3	15.3	15.3	19.3	20.8	32.4	10.1	±0.5
J	21.8	21.8	21.8	21.8	21.8	20.1	19.9	15.5	42.25	±0.5
K	5.3	5.3	5.3	5.3	5.3	5.3	5.3	4.4	4.4	
L	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6	6	
M	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.9	1.2	
Connection style -06										
N	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8			
Connection style -07										
O	8.3	8.3	8.3	8.3	8.3	8.3				±0.5
P	21.8	21.8	21.8	21.8	21.8	14				±0.5
AWG type wire	AWG 20	AWG 20	AWG 18	AWG 18	AWG 16	AWG 16				
Wire length	140	140	140	140	140	140				+5
Connection style -08										
N							M4	M4		
Recommended torque (Nm)							1.2 - 1.3	1.2 - 1.3		
Connection style -24										
N									M6	
Q									51	±0.2
Recommended torque (Nm)									3.5 - 4	

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Please visit www.schaffner.com to find more details on filter connections.

Multi-stage General Purpose AC/DC EMI Filter



- Rated currents from 1 to 30 A
- High differential and common-mode attenuation
- Optional medical versions (B type)
- Optional safety versions (A type)



Performance indicators

Attenuation performance



Technical specifications

Rated voltage*	250 VAC, 50/60 Hz; 250 VDC
Operating frequency	DC to 400 Hz
Rated currents	1 to 30 A @ 40°C max.
High potential test voltage	P → PE 2000 VAC for 2 sec P → PE 2500 VAC for 2 sec (B types) P → N 1100 VDC for 2 sec
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Certified to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 40°C/230 V (Mil-HB-217F)	1,650,000 hours (B types) 950,000 hours

*maximum RMS operating voltage at rated frequency or the maximum DC operating voltage

Approvals



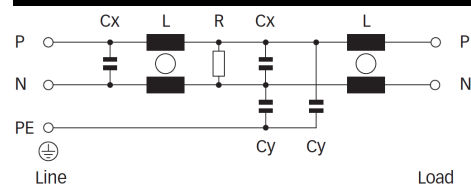
Features and benefits

- FN 2060 two-stage filters are designed for easy and fast chassis mounting
- FN 2060 filters are also available as B versions without Y-capacitors for medical applications as well as A version with low capacitance for safety critical applications with necessity for low leakage currents
- All filters provide a high conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- FN 2060 two-stage filters are designed for noisy applications requiring good differential and common-mode attenuation
- FN 2060 filters are also available as single-stage filters (FN 2010 series)
- Various terminal options allow you to select the desired connection style

Typical applications

- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Building automation
- Industrial applications
- Machinery
- Medical equipment
- Electronic data processing equipment
- Office automation and datacom equipment
- Various noisy applications requiring good filter performance

Typical electrical schematic



Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)	Inductance L	Capacitance		Resistance R	Input/Output connections			Weight [g]
				Cx	Cy					
	[A]	[mA]	[mH]	[μF]	[nF]	[kΩ]				
FN 2060-1-..	1 (1.2)	0.66 (0.38)	12	0.22	4.7	1000	-06	-07		120
FN 2060-3-..	3 (3.5)	0.66 (0.38)	2.5	0.22	4.7	1000	-06	-07		120
FN 2060-6-..	6 (6.9)	0.66 (0.38)	0.97	0.22	4.7	1000	-06	-07		120
FN 2060-10-..	10 (11.5)	0.66 (0.38)	0.8	0.47	4.7	470	-06	-07		190
FN 2060-12-..	12 (13.8)	0.66 (0.38)	0.58	0.47	4.7	470	-06	-07		190
FN 2060-16-..	16 (18.4)	0.66 (0.38)	0.65	0.33	4.7	1000	-06	-07	-08	260
FN 2060-20-..	20 (23)	0.66 (0.38)	0.6	1	4.7	220	-06		-08	480
FN 2060-30-08	30 (34.5)	0.79 (0.45)	0.6	1	10	220			-08	950
FN 2060A-1-..	1 (1.2)	0.07 (0.04)	12	0.22	0.47	1000	-06	-07		120
FN 2060A-3-..	3 (3.5)	0.07 (0.04)	2.5	0.22	0.47	1000	-06	-07		120
FN 2060A-6-..	6 (6.9)	0.07 (0.04)	0.97	0.22	0.47	1000	-06	-07		120
FN 2060A-10-..	10 (11.5)	0.07 (0.04)	0.8	0.47	0.47	470	-06	-07		190
FN 2060A-12-..	12 (13.8)	0.07 (0.04)	0.58	0.47	0.47	470	-06	-07		190
FN 2060A-16-..	16 (18.4)	0.07 (0.04)	0.65	0.33	0.47	1000	-06	-07	-08	260
FN 2060A-20-..	20 (23)	0.07 (0.04)	0.6	1	0.47	220	-06		-08	480
FN 2060A-30-08	30 (34.5)	0.07 (0.04)	0.6	1	0.47	220			-08	950
FN 2060B-1-..	1 (1.2)	0.00	12	0.22		1000	-06	-07		120
FN 2060B-3-..	3 (3.5)	0.00	2.5	0.22		1000	-06	-07		120
FN 2060B-6-..	6 (6.9)	0.00	0.97	0.22		1000	-06	-07		120
FN 2060B-10-..	10 (11.5)	0.00	0.8	0.47		470	-06	-07		190
FN 2060B-12-..	12 (13.8)	0.00	0.58	0.47		470	-06	-07		190
FN 2060B-16-..	16 (18.4)	0.00	0.65	0.33		1000	-06	-07	-08	260
FN 2060B-20-..	20 (23)	0.00	0.6	1		220	-06		-08	480
FN 2060B-30-08	30 (34.5)	0.00	0.6	1		220			-08	950

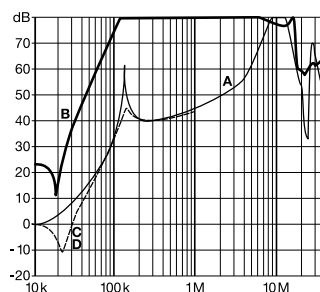
* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2060-30-08, FN 2060B-10-06).

** Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level. Leakage current for DC application is 0 mA;

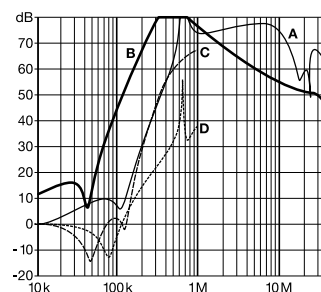
Typical filter attenuation

dPer CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

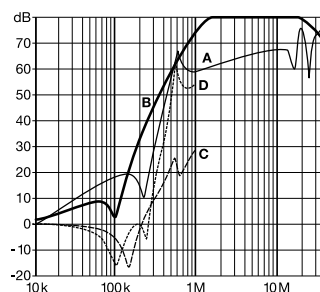
1 A types



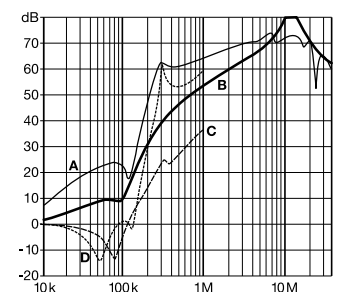
3 to 12 A types



16 A types

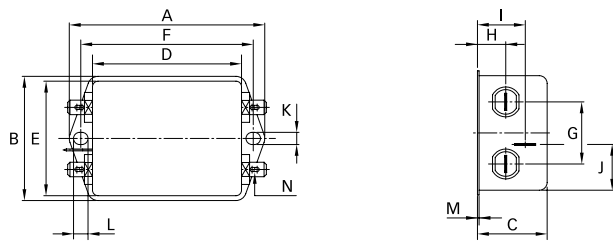


20 and 30 A types

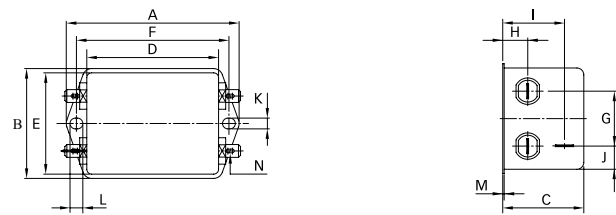


Mechanical data

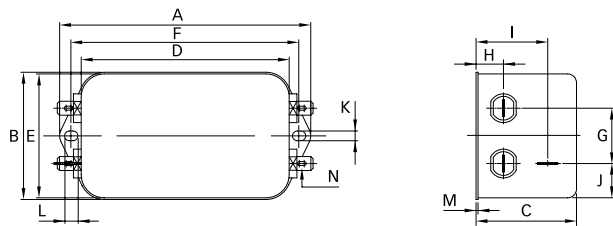
Connection style -06, 1 to 12 A types



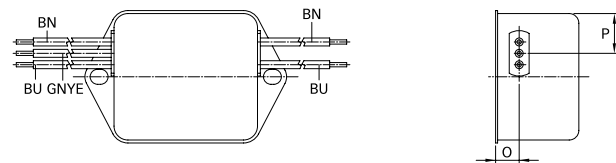
Connection style -06, 16 A types



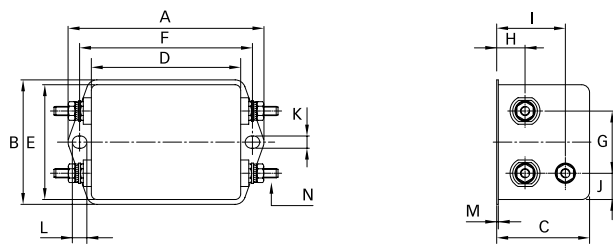
Connection style -06, 20 A types



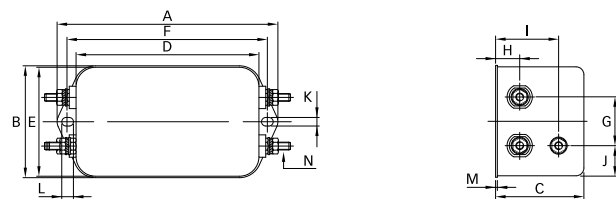
Connection style -07, 1 to 16 A types (same dimensions as style -06)



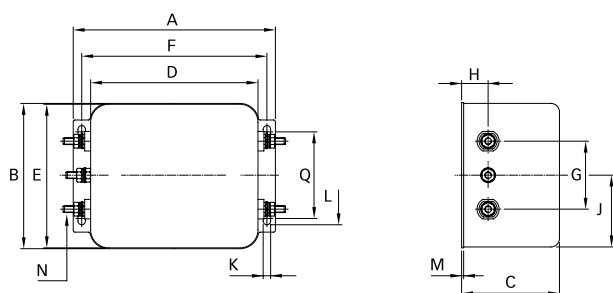
Connection style -08, 16 A types



Connection style -08, 20 A types



Connection style -08, 30 A types



	1 A	3 A	6 A	10 A	12 A	16 A	20 A	30 A	Tolerances
A	71	71	71	85	85	85	113.5 ±1	119 ±1	±0.5
B	46.6	46.6	46.6	54	54	54	57.5 ±1	85.5 ±1	±0.5
C	29.3	29.3	29.3	30.3	30.3	40.3	45.4 ±1	57.6 ±1	±0.5
D	50.5	50.5	50.5	64.8	64.8	64.8	94 ±1	98.5 ±1	±0.5
E	44.5	44.5	44.5	49.8	49.8	49.8	56	84.5	±0.5
F	61	61	61	75	75	75	103	109	±0.3
G	21	21	21	27	27	27	25	40	±0.2
H	10.8	10.8	10.8	12.3	12.3	12.3	12.4	15.6	±0.5
I	19.3	19.3	19.3	20.8	20.8	29.8	32.4		±0.5
J	20.1	20.1	20.1	19.9	19.9	11.4	15.5	42.25	±0.5
K	5.3	5.3	5.3	5.3	5.3	5.3	4.4	4.4	
L	6.3	6.3	6.3	6.3	6.3	6.3	6	7.4	
M	0.7	0.7	0.7	0.7	0.7	0.7	0.9	1.2	
Connection style -06									
N	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	
Connection style -07									
O	8.3	8.3	8.3	8.3	8.3	8.3			±0.5
P	14	14	14	14.9	14.9	14.9			
AWG type wire	AWG 20	AWG 20	AWG 18	AWG 18	AWG 16	AWG 16			
Wire length	140	140	140	140	140	140			+5
Connection style -08									
N						M4	M4	M4	
Q								51	±0.2
Recommended torque (Nm)						1.2 - 1.3	1.2 - 1.3	1.2 - 1.3	

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Please visit www.schaffner.com to find more details on filter connections.

Multi-stage Performance AC/DC EMI Filter



- Rated currents from 1 to 36 A
- High differential and common-mode attenuation
- High frequency attenuation
- Optional medical versions (B type)
- Optional safety versions (A type)



Performance indicators

Attenuation performance



Technical specifications

Rated voltage*	250 VAC, 50/60 Hz; 250 VDC
Operating frequency	DC to 400 Hz
Rated currents	1 to 36 A @ 40°C max.
High potential test voltage	P → PE 2000 VAC for 2 sec P → PE 2500 VAC for 2 sec (B types) P → N 1100 VDC for 2 sec
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Certified to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 40°C/230 V (Mil-HB-217F)	1,550,000 hours 1,600,000 hours (B types)

*maximum RMS operating voltage at rated frequency or the maximum DC operating voltage

Approvals



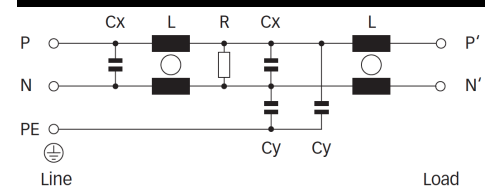
Features and benefits

- FN 2070 two-stage filters are designed for easy and fast chassis mounting
- FN 2070 filters are also available as B versions without Y-capacitors for medical applications as well as A version with low capacitance for safety critical applications with necessity for low leakage currents
- All filters provide a high conducted attenuation performance, based on chokes with high saturation resistance and excellent thermal behavior
- FN 2070 two-stage filters are designed for high frequency attenuation
- FN 2070 filters are also available as single-stage filters (FN 2030 series)
- FN 2070 filters are also available with differential mode choke (FN 2080 series)
- Various terminal options allow you to select the desired connection style

Typical applications

- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Building automation
- Industrial applications
- Machinery
- Medical equipment
- Electronic data processing equipment
- Office automation and datacom equipment
- Various noisy applications requiring good filter performance
- Single Phase Motor Drives

Typical electrical schematic



Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)	Inductance L	Capacitance		Resistance R	Input/Output connections			Weight [g]
				Cx	Cy					
	[A]	[mA]	[mH]	[μF]	[nF]	[kΩ]				
FN 2070-1-..	1 (1.2)	0.66 (0.38)	22	0.33	4.7	1000	-06	-07		190
FN 2070-3-..	3 (3.5)	0.66 (0.38)	9.8	0.47	4.7	470	-06	-07		250
FN 2070-6-..	6 (6.9)	0.66 (0.38)	7.8	1	4.7	220	-06	-07		450
FN 2070-10-..	10 (11.5)	0.66 (0.38)	4.5	1	4.7	220	-06	-07		670
FN 2070-12-..	12 (13.8)	0.66 (0.38)	3.25	1	4.7	220	-06	-07		670
FN 2070-16-..	16 (18.4)	0.66 (0.38)	2.8	1	4.7	220	-06	-07	-08	1000
FN 2070-25-08	25 (28.8)	0.66 (0.38)	2	2.2	4.7	220			-08	760
FN 2070-36-08	36 (41.4)	0.66 (0.38)	1.23	2.2	4.7	220			-08	790
FN 2070 A-1-..	1 (1.2)	0.07 (0.04)	22	0.33	0.47	1000	-06	-07		190
FN 2070 A-3-..	3 (3.5)	0.07 (0.04)	9.8	0.47	0.47	470	-06	-07		250
FN 2070 A-6-..	6 (6.9)	0.07 (0.04)	7.8	1	0.47	220	-06	-07		450
FN 2070 A-10-..	10 (11.5)	0.07 (0.04)	4.5	1	0.47	220	-06	-07		670
FN 2070 A-12-..	12 (13.8)	0.07 (0.04)	3.25	1	0.47	220	-06	-07		670
FN 2070 A-16-..	16 (18.4)	0.07 (0.04)	2.8	1	0.47	220	-06	-07	-08	1000
FN 2070 A-25-08	25 (28.8)	0.07 (0.04)	2	2.2	0.47	220			-08	760
FN 2070 A-36-08	36 (41.4)	0.07 (0.04)	1.23	2.2	0.47	220			-08	790
FN 2070 B-1-..	1 (1.2)	0.00	22	0.33		1000	-06	-07		190
FN 2070 B-3-..	3 (3.5)	0.00	9.8	0.47		470	-06	-07		250
FN 2070 B-6-..	6 (6.9)	0.00	7.8	1		220	-06	-07		450
FN 2070 B-10-..	10 (11.5)	0.00	4.5	1		220	-06	-07		670
FN 2070 B-12-..	12 (13.8)	0.00	3.25	1		220	-06	-07		670
FN 2070 B-16-..	16 (18.4)	0.00	2.8	1		220	-06	-07	-08	1000
FN 2070 B-25-08	25 (28.8)	0.00	2	2.2		220			-08	760
FN 2070 B-36-08	36 (41.4)	0.00	1.23	2.2		220			-08	790
Enhanced performance										
FN 2070 M-1-06	1 (1.2)	3.69 (2.13)	22	0.33	47	1000	-06			170
FN 2070 M-3-06	3 (3.5)	3.69 (2.13)	9.8	0.47	47	470	-06			250
FN 2070 M-6-06	6 (6.9)	3.69 (2.13)	7.8	1	47	220	-06			450
FN 2070 M-10-06	10 (11.5)	3.69 (2.13)	4.5	1	47	220	-06			670
FN 2070 M-12-06	12 (13.8)	3.69 (2.13)	3.25	1	47	220	-06			670
FN 2070 M-16-..	16 (18.4)	3.69 (2.13)	2.8	1	47	220	-06		-08	1000
FN 2070 M-25-08	25 (28.8)	3.69 (2.13)	2	2.2	47	220			-08	750
FN 2070 L-36-08	36 (41.4)	2.59 (1.49)	1.23	2.2	33	220			-08	790

* To compile a complete part number, please replace the .. with the required I/O connection style (e.g. FN 2070-25-08, FN 2070B-10-06).

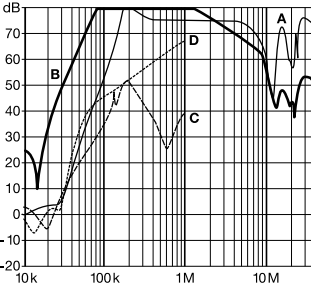
** Maximum leakage under usual AC operating conditions (acc. IEC 60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level. Leakage current for DC application is 0 mA;

Typical filter attenuation

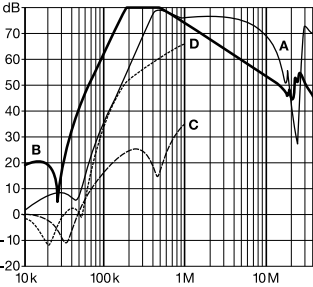
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

Standard Types

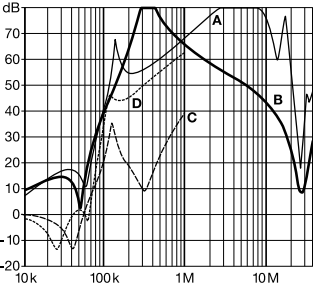
1 A types



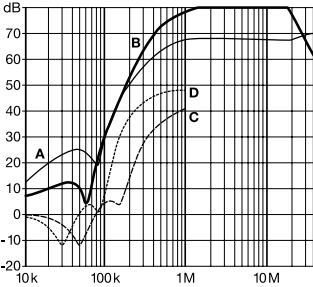
3 A to 12 A types



16 A types

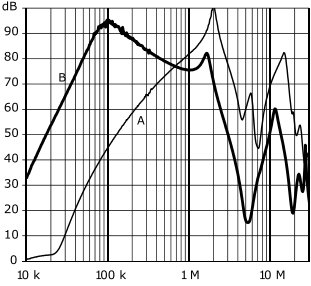


25 and 36 A types

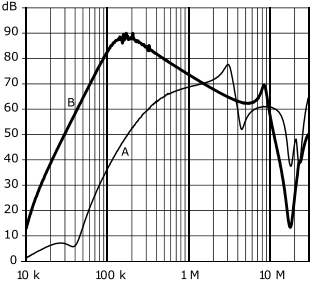


Enhanced Performance Types

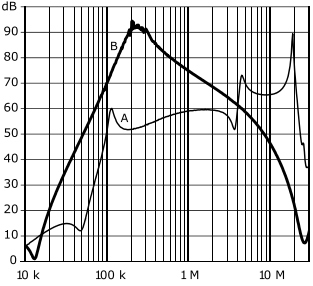
1 A types



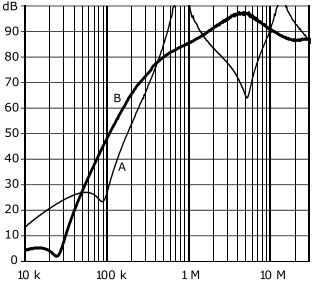
3 A to 12 A Types



16 A Types

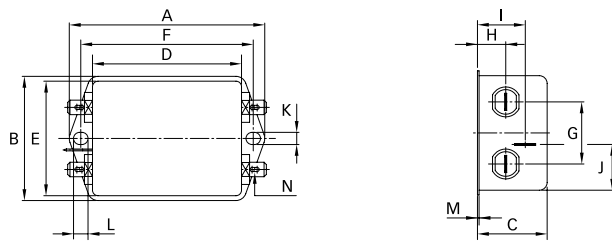


25 A and 36 A Types

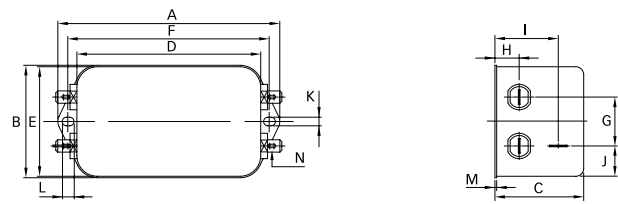


Mechanical data

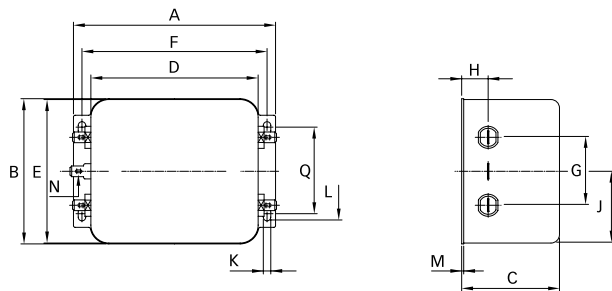
Connection style -06, 1 and 3 A types



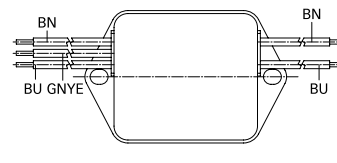
Connection style -06, 6 to 12 A types



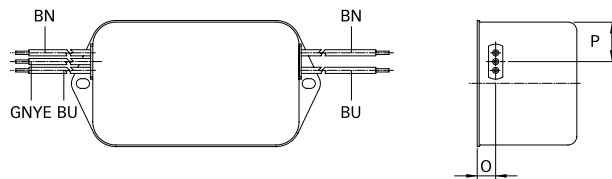
Connection style -06, 16 A types



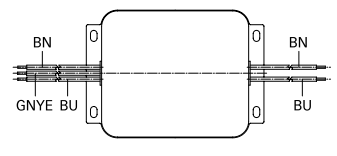
Connection style -07, 1 and 3 A types (same dimensions as style -06)



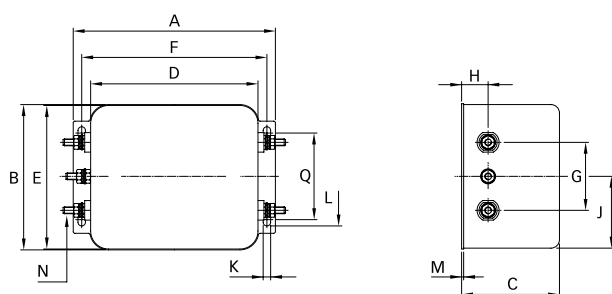
Connection style -07, 6 to 12 A types (same dimensions as style -06)



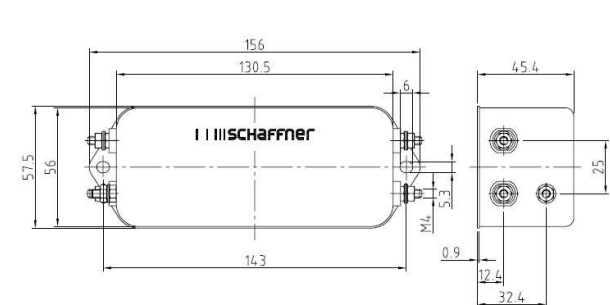
Connection style -07, 16 A types (same dimensions as style -06)



Connection style -08, 16 A types



Connection style -08, 25 and 36 A types



Dimensions

	1 A	3 A	6 A	10 A	12 A	16 A	25 A	36 A	Tolerances
A	85 ±0.5	85 ±0.5	113.5	156	156	119	156	156	±1
B	54 ±0.5	54 ±0.5	57.5	57.5	57.5	85.5	57.5	57.5	±1
C	30.3 ±0.5	40.3 ±0.5	45.4	45.4	45.4	57.6	45.4	45.4	±1
D	64.8 ±0.5	64.8 ±0.5	94	130.5	130.5	98.5	130.5	130.5	±1
E	49.8	49.8	56	56	56	84.5	56	56	±0.5
F	75	75	103	143	143	109	143	143	±0.3
G	27	27	25	25	25	40	25	25	±0.2
H	12.3	12.3	12.4	12.4	12.4	15.6	12.4	12.4	±0.5
I	20.8	29.8	32.4	32.5	32.5		32.5	32.5	±0.5
J	19.9	11.4	15.5	15.5	15.5	42.25	15.5	15.5	±0.5
K	5.3	5.3	4.4	5.3	5.3	4.4	5.3	5.3	
L	6.3	6.3	6	6	6	7.4	6	6	
M	0.7	0.7	0.9	1	1	1.2	1	1	
Connection style -06									
N	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8			
Connection style -07									
O	8.3	8.3	8.4	8.4	8.4	8.6			±0.5
P	14.9	14.9	18	18	18	42.25			±0.5
AWG type wire	AWG 20	AWG 20	AWG 18	AWG 18	AWG 16	AWG 16			
Wire length	140	140	140	140	140	140			+5
Connection style -08									
N						M4	M4	M4	
Q						51			±0.2
Recommended torque (Nm)						1.2 - 1.3	1.2 - 1.3	1.2 - 1.3	

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Please visit www.schaffner.com to find more details on filter connectors.

Compact Line Filter for Industrial Machinery/Equipment



- Compact, space-saving design, optimized for industrial machinery
- Combines high attenuation performance with low leakage current
- Performance according to the machine tool standard EN 50370-1
- Increases also the immunity if operated directly on the mains input

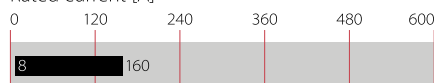


Performance indicators

Attenuation performance



Rated current [A]



Technical specifications

Maximum continuous operating voltage	3x 520/300 VAC (480 VAC +10% possible)
Operating frequency	DC to 60 Hz
Rated currents	8 to 160 A @ 50°C
High potential test voltage	P → E 3000 VDC for 2 sec P → P 2250 VDC for 2 sec
Protection category	IP 20
Overload capability	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/400 V (Mil-HB-217F)	>410,000 hours

Approvals



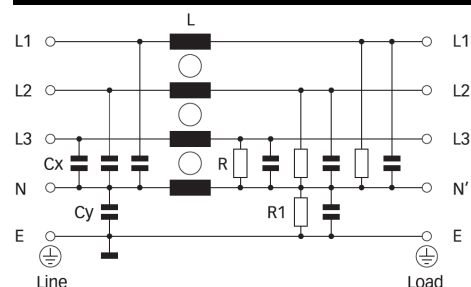
Features and benefits

- An extremely compact and light weight filter design with a „cubic“ shape, requiring minimum mounting space and thus taking the constructional conditions on the mains input of machinery into account
- Simple and time-saving installation with good accessibility for automatic and hand tools
- Solid, touch-safe terminal blocks offering sufficient contacting cross section according to the EN 60204-1 installation standard, which is very common in industrial applications
- As a mains input filter for three phases and neutral line, FN 3256 ensures the compliance with the new product family standard for machine tools in mainly industrial environments EN 50370-1. Further, its use will also increase the conducted immunity of the entire installation significantly
- FN 3256 provides the attenuation performance to meet the requirements of various machine tools with up to 8 driving axes with ~10 m of motor cable each
- For easy selection and application, the filter current ratings are aligned with common fuse values

Typical applications

Mainly industrial equipment, machinery, machine tools and diverse process automation systems with three-phase and neutral electricity supply. Further, these filters are suitable for power supplies, high-power efficient equipment and further applications, where efficient interference suppression on three phases and the neutral line is required and where space is critical. Because of the very low leakage current, FN 3256 can even be used for some medical devices.

Typical electrical schematic



Filter selection table

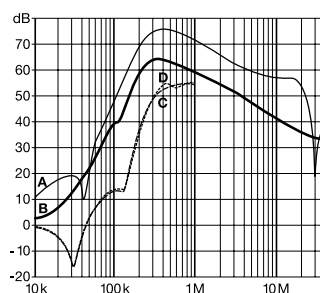
Filter	Rated current @ 50°C (40°C)	Leakage current* @ 480 VAC/50 Hz	Power loss @ 25°C/50 Hz	Input/Output connections	Weight
	[A]	[mA]	[W]		[kg]
FN 3256 H-8-29	8 (8.8)	<1	2.7	-29	0.6
FN 3256 H-16-29	16 (17.5)	<1	5.0	-29	0.7
FN 3256 H-25-33	25 (27)	<1	9.8	-33	1.1
FN 3256 H-36-33	36 (39)	<1	11.3	-33	1.2
FN 3256 H-64-34	64 (70)	<1	17.2	-34	2.3
FN 3256 H-80-35	80 (88)	<1	14.5	-35	3.5
FN 3256 H-120-35	120 (131)	<1	25.0	-35	4.7
FN 3256 H-160-40	160 (175)	<1	26.9	-40	5.7

* Maximum leakage under normal operating conditions, based on the assumption that all three phases and the neutral conductor are connected to the supply and the consumer. In this case, the current will mainly return through the neutral line, not as earth leakage.

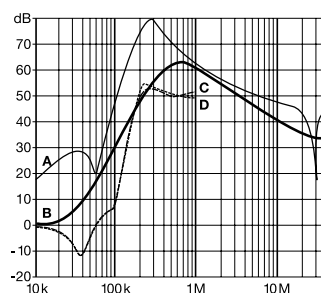
Typical filter attenuation

Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

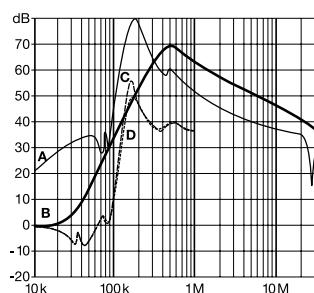
8 to 36 A types



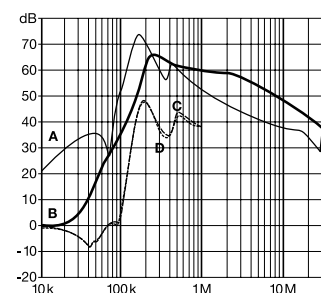
64 and 80 A types



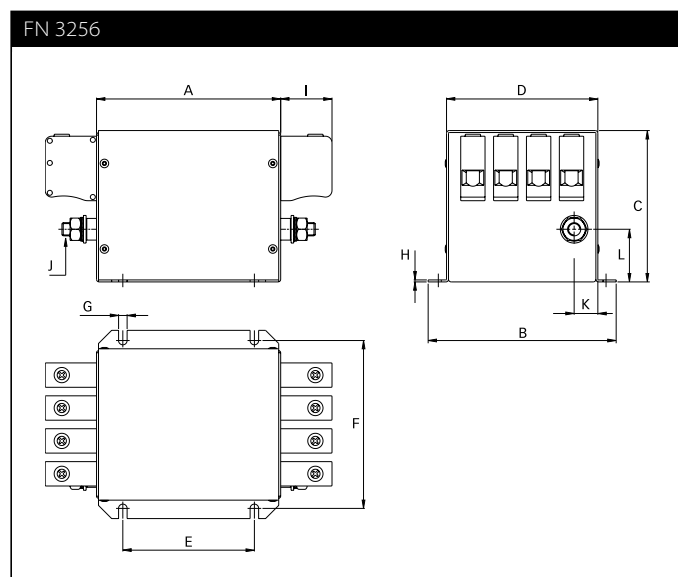
120 A types



160 A types



Mechanical data



Dimensions

	8 A	16 A	25 A	36 A	64 A	80 A	120 A	160 A
A	110	110	130	130	140	170	210	200
B	110	110	118	118	143	163	170	190
C	70	70	85	85	115	125	125	130
D	82	82	90	90	115	135	140	160
E	70	70	90	90	100	120	160	150
F	94.5	94.5	102.5	102.5	127.5	147.5	153.5	173.5
G	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
H	1	1	1	1	1.5	1.5	1.5	1.5
I	10.9	10.9	25	25	39	45	45	51
J	M6	M6	M6	M6	M10	M10	M10	M10
K	12	12	12	12	18	18	17.5	16.5
L	33	33	40	40	40	35	44	55

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Filter input/output connector cross sections

	-29	-33	-34	-35	-40
					
Solid wire	6 mm ²	16 mm ²	35 mm ²	50 mm ²	95 mm ²
Flex wire	4 mm ²	10 mm ²	25 mm ²	50 mm ²	95 mm ²
AWG type wire	AWG 10	AWG 6	AWG 2	AWG 1/0	AWG 4/0
Recommended torque	0.6-0.8 Nm	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	17-20 Nm

Please visit www.schaffner.com to find more details on filter connectors.

Ultra-compact EMC/RFI Filter for Motor Drives Applications



- New: solid safety connector blocks available for the whole range
- Exceptional attenuation performance from 150 kHz to 30 MHz
- Excellent saturation resistance up to 50 m cable length
- Most compact and slim filter design in its class

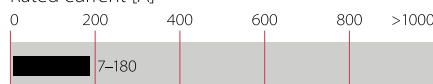


Performance indicators

Attenuation performance



Rated current [A]



Technical specifications

Maximum continuous operating voltage	3x 480/277 VAC (FN 3258) 3x 520/300 VAC (FN 3258 H)
Operating frequency	DC to 60 Hz
Rated currents	7 to 180 A @ 50°C
High potential test voltage	P → E 2650 VDC for 2 sec P → P 2100 VDC for 2 sec
Protection category	IP 20
Overload capability	1.5x rated current for 1 minute, once per hour 4x rated current at switch on,
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/400 V (Mil-HB-217F)	300,000 hours

Approvals



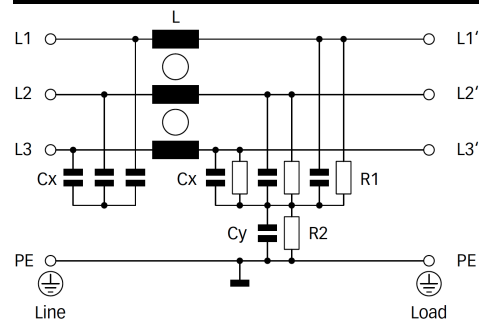
Features and benefits

- The extremely compact and slim filter design allows a trouble-free installation even where the available mounting space is minimal
- With new additional filter types providing safety terminal blocks, the most preferred connection style can be chosen fast and easy. This helps to stay in line with the electrical connection concept of a given application
- FN 3258 filters ensure compliance with Class A limits according to EN 55011 up to 50 m cable length and beyond. Further they can contribute significantly to meet conducted emission limits according to Class B
- Filter operation on the mains input side of consumers increases their reliability and conducted immunity significant
- Chokes with exceptional saturation resistance and excellent thermal behavior are a vital part of FN 3258 design. Thus, all filters retain the expected filter performance even in very noisy applications and under full load conditions

Typical applications

- Three-phase variable speed motor drives, servo drives, inverters and converters
- Applications comprising energy conversion devices like machines or process automation equipment
- HVAC equipment, elevators, power supplies, UPS and further three-phase applications

Typical electrical schematic



Filter selection table

Filter	Rated current @ 50°C (40°C) [A]	Typical drive power rating* [kW]	Leakage current** @ 400 VAC/50 Hz [mA]	Power loss @ 25°C/50 Hz [W]	Input/Output connections 	Weight [kg]
FN 3258-7-44	7 (7.7)	4	33.0	3.8	-44	0.5
FN 3258-16-44	16 (17.5)	7.5	33.0	6.1	-44	0.8
FN 3258-30-33	30 (32.9)	15	33.0	11.8	-33	1.2
FN 3258-42-33	42 (46.0)	22	33.0	15.7	-33	1.4
FN 3258-55-34	55 (60.2)	30	33.0	25.9	-34	2.0
FN 3258-75-34	75 (82.2)	37	33.0	32.2	-34	2.7
FN 3258-100-35	100 (109.5)	55	33.0	34.5	-35	4.3
FN 3258-130-35	130 (142.4)	75	33.0	43.1	-35	4.5
FN 3258-180-40	180 (197.1)	90	33.0	58.3	-40	6.0
FN 3258 H-7-44	7 (7.7)	4	33.0	3.8	-44	0.5
FN 3258 H-16-44	16 (17.5)	7.5	33.0	6.1	-44	0.8
FN 3258 H-30-33	30 (32.9)	18.5	33.0	11.8	-33	1.2
FN 3258 H-42-33	42 (46.0)	22	33.0	15.7	-33	1.4
FN 3258 H-55-34	55 (60.2)	37	33.0	25.9	-34	2.0
FN 3258 H-75-34	75 (82.2)	45	33.0	32.2	-34	2.7
FN 3258 H-100-35	100 (109.5)	55	33.0	34.5	-35	4.3
FN 3258 H-130-35	130 (142.4)	75	33.0	43.1	-35	4.5
FN 3258 H-180-40	180 (197.1)	110	33.0	58.3	-40	6.0

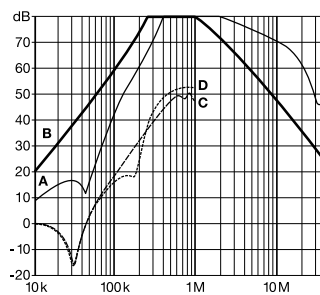
* Calculated at rated current, 440 VAC (FN 3258)/480 VAC (FN 3258 H) and $\cos \phi=0.8$. The exact value depends upon the efficiency of the drive, the motor and the entire application.

** Maximum leakage under normal operating conditions. Note: if two phases are interrupted, worst case leakage could reach 5.4 times higher levels.

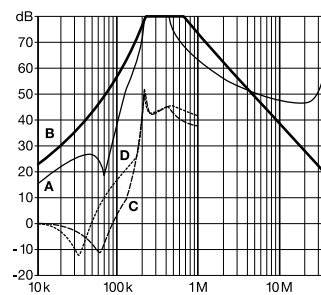
Typical filter attenuation

Per CISPR 17; A=50/50 sym; B=50/50 asym; C=0.1/100 sym; D=100/0.1 sym

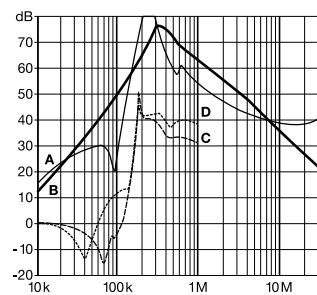
7 to 42 A types



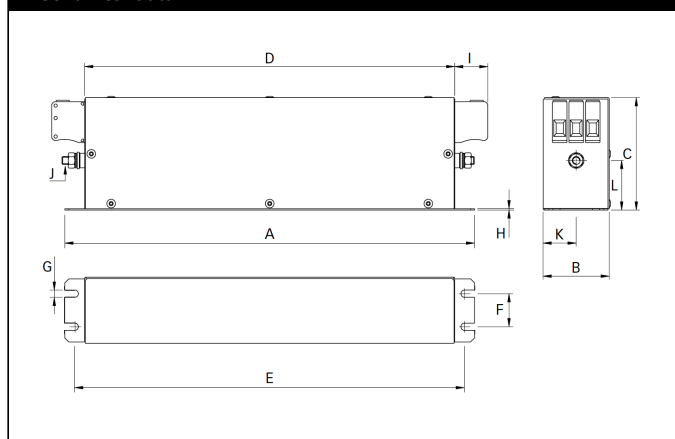
55 to 100 A types



130 and 180 A types



Mechanical data



Note: in favour of a better readability, connectors and earth studs are not shown in the horizontal projection.

Dimensions

	7 A	16 A	30 A	42 A	55 A	75 A	100 A	130 A	180 A
A	190	250	270	310	250	270	270	270	380
B	40	45	50	50	85	80	90	90	120
C	70	70	85	85	90	135	150	150	170
D	160	220	240	280	220	240	240	240	350
E	180	235	255	295	235	255	255	255	365
F	20	25	30	30	60	60	65	65	102
G	4.5	5.4	5.4	5.4	5.4	6.5	6.5	6.5	6.5
H	1	1	1	1	1	1.5	1.5	1.5	1.5
I	22	22	25	25	39	39	45	45	51
J	M5	M5	M5	M6	M6	M6	M10	M10	M10
K	20	22.5	25	25	42.5	40	45	45	60
L2	29.5	29.5	39.5	37.5	26.5	70.5	64	64	47

All dimensions in mm; 1 inch = 25.4 mm

Tolerances according: ISO 2768-m/EN 22768-m

Filter input/output connector cross sections

	-33	-34	-35	-40	-44
Solid wire	16 mm ²	35 mm ²	50 mm ²	95 mm ²	10 mm ²
Flex wire	10 mm ²	25 mm ²	50 mm ²	95 mm ²	6 mm ²
AWG type wire	AWG 6	AWG 2	AWG 1/0	AWG 4/0	AWG 8
Recommended torque	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	17-20 Nm	1.5-1.8 Nm

Please visit www.schaffner.com to find more details on filter connectors.

EMC/EMI Filter for Installations with Residual Current Device (RCD)



- Full functionality with RCDs according to IEC 61008 and new VDE 0664-110*
- Compatible with 30 mA RCDs up to 30 m motor cable for electric shock protection according to IEC 61008
- Compatible with 300 mA RCDs up to 100 m motor cable for fire protection according to IEC 60364-4-42 (VDE 0100-482)

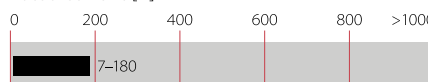


Performance indicators

Attenuation performance



Rated current [A]



Approvals



Features and benefits

- Innovative low-leakage current filter with same smallest dimensions as FN 3258
- Significant reduction of leakage and ground currents caused by long motor cables
- Prevents unwanted fault shut-downs from RCDs in machines and process automation equipment
- Patented filter design avoiding early saturation and ringing effects
- Excellent attenuation compliant with: C1 limits EN 61800-3 with 30 meter motor cable and 30 mA RCD (electric shock protection)**
- C2 limits EN 61800-3 with 100 meter motor cable and 300 mA RCD (fire protection)

Technical specifications

Maximum continuous operating voltage	3x 520/300 VAC
Operating frequency	DC to 60 Hz
Rated currents	7 to 180 A @ 50°C
High potential test voltage	P → E 2650 VDC for 2 sec P → P 2100 VDC for 2 sec
Protection category	IP 20
Overload capability	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/400 V (Mil-HB-217F)	>300,000 hours

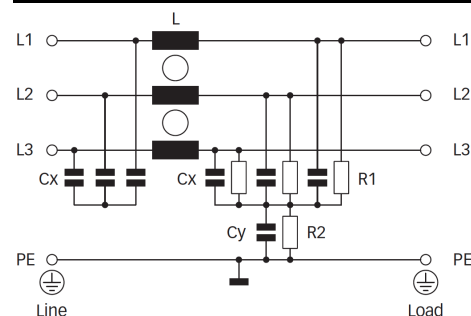
* If supply voltage is contaminated with harmonics according to IEC 61000-2-4, class 2, where odd-numbered multiplies of three are limited to 30%.

** Filter types 7 A up to 42 A: C1, 30 m, 30 mA; 55 A: C2, 30 m, 30 mA; 75 A up to 180 A: C2, 100 m, 300 mA

Typical applications

- Three-phase variable speed drives (VSD), servo drives, and inverters
- Machinery and process automation equipment
- Building automation, HVAC equipment, pumps, ventilation, and elevators
- Conveyors, handling and storage systems, and cranes
- Machine tools, wood working machines, and printing machines

Typical electrical schematic



Filter selection table

Filter	Rated current @ 50°C (40°C)	Typical drive power rating*	Leakage current** @ 400 VAC/50 Hz	Power loss @ 25°C/50 Hz	Input/Output connections	Weight
	[A]	[kW]	[mA]	[W]		[kg]
FN 3268-7-44	7 (7.7)	4	4.5	4.5	-44	0.5
FN 3268-16-44	16 (17.5)	7.5	4.7	6.1	-44	0.8
FN 3268-30-33	30 (32.9)	18.5	4.6	13.5	-33	1.2
FN 3268-42-33	42 (46.0)	22	4.6	17.4	-33	1.4
FN 3268-55-34	55 (60.2)	37	4.7	18.1	-34	2.2
FN 3268-75-34	75 (82.2)	45	7.8	25.3	-34	2.9
FN 3268-100-35	100 (109.5)	55	20.5	30.0	-35	4.1
FN 3268-130-35	130 (142.4)	75	30.4	38.0	-35	4.6
FN 3268-180-40	180 (197.1)	110	37.0	48.6	-40	6.0

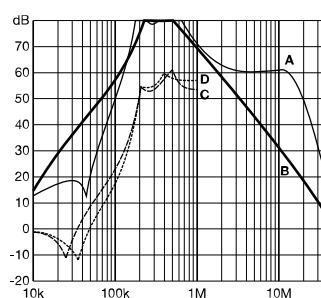
* Calculated at rated current, 440 VAC and $\cos \phi=0.8$. The exact value depends upon the efficiency of the drive, the motor and the entire application.

** Maximum leakage under normal operating conditions. Note: if two phases are interrupted, worst case leakage could reach 5.4 times higher levels.

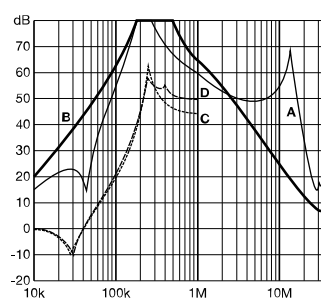
Typical filter attenuation

Per CISPR 17; A=50 Ω /50 Ω sym; B=50 Ω /50 Ω asym; C=0.1 Ω /100 Ω sym; D=100 Ω /0.1 Ω sym

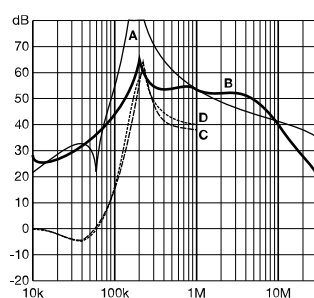
7 to 42 A types



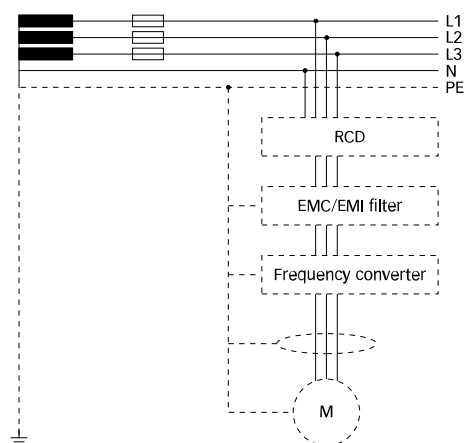
55 to 100 A types



130 and 180 A types



Installation



Typical installation with RCD, EMC/EMI filter and motor drive system

RCD

Please note that for electrical devices with 6-pulse rectifiers at line input, like three-phase motor drives, a RCD type B or B+ is required. RCD with time delay are needed to prevent unwanted fault trip at switch on or voltage spikes. These RCD types B with time delay have often an added letter "S" or "K", please ask the supplier for correct type. Caution: Please validate system with chosen RCD to guarantee functionality.

EMC/EMI filter FN 3268

Filter types from 7 to 55 A are designed to be compatible with 30 mA RCDs according to IEC 61008 and new VDE 0664-110 standards. Filters from 75 up to 180 A are designed to be compatible with 300 mA RCDs. Install the filter as close as possible at line side of the motor drive. Regarding correct EMC installation, please refer to the EMC installation guide in the manual from motor drive supplier.

Motor drive

Please set the PWM pulse pattern of the variable speed motor drive fixed to 4 kHz. Other pulse patterns cause higher leakage currents. Filter designs with other pulse pattern than 4 kHz are possible upon request.

Motor cable length

Motor cable length should not exceed 30 meters for 7 up to 55 A filter types to fulfill class C1 of recommended standard EN 61800-3. For 75 up to 180 A filters, cable length should not exceed 100 meters to fulfill class C2.

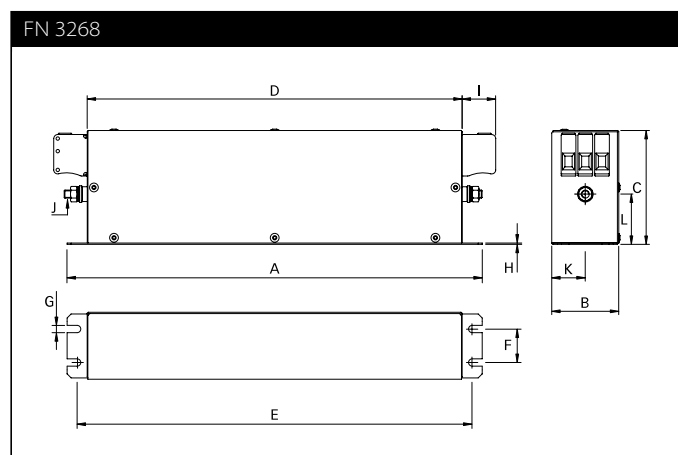
Internal EMC/EMI components

Please disconnect all internal Y-capacitors (internal EMC/EMI filters) in the motor drive, because these capacitors cause additional leakage currents.

Harmonics on line voltage

High voltage harmonics can create additional system leakage currents. FN 3268 filters are tested under following conditions: Supply voltage is contaminated with harmonics according to IEC 61000-2-4, class 2, where odd-numbered multiples of three are limited to 30%.

Mechanical data



Note: in favour of a better readability, connectors and earth studs are not shown in the horizontal projection.

Dimensions

	7 A	16 A	30 A	42 A	55 A	75 A	100 A	130 A	180 A
A	190	250	270	310	250	270	270	270	380
B	40	45	50	50	85	80	90	90	120
C	70	70	85	85	90	135	150	150	170
D	160	220	240	280	220	240	240	240	350
E	180	235	255	295	235	255	255	255	365
F	20	25	30	30	60	60	65	65	102
G	4.5	5.4	5.4	5.4	5.4	6.5	6.5	6.5	6.5
H	1	1	1	1	1	1.5	1.5	1.5	1.5
I	22	22	25	25	39	39	45	45	51
J	M5	M5	M5	M6	M6	M6	M10	M10	M10
K	20	22.5	25	25	42.5	40	45	45	60
L	29.5	29.5	39.5	37.5	26.5	70.5	64	64	47

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Filter input/output connector cross sections

	-33	-34	-35	-40	-44
Solid wire	16 mm ²	35 mm ²	50 mm ²	95 mm ²	10 mm ²
Flex wire	10 mm ²	25 mm ²	50 mm ²	95 mm ²	6 mm ²
AWG type wire	AWG 6	AWG 2	AWG 1/0	AWG 4/0	AWG 8
Recommended torque	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	17-20 Nm	1.5-1.8 Nm

Please visit www.schaffner.com to find more details on filter connectors.

Compact EMC/RFI Filter for Industrial Motor Drive Applications

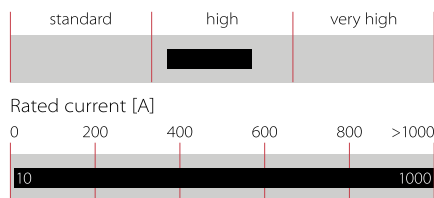


- Very compact and light weight design requiring minimum space
- Easy, time-saving installation and contacting
- Protective covers as optional accessory available
- Attenuation performance according to EN 61800-3/A11



Performance indicators

Attenuation performance



Technical specifications

Maximum continuous operating voltage	3x 520/300 VAC (480 VAC +10% possible)
Operating frequency	DC to 60 Hz
Rated currents	10 to 1000 A @ 50°C
High potential test voltage	P → E 2750 VDC for 2 sec P → P 2250 VDC for 2 sec
Protection category	IP 20 (10 to 100 A) IP 00 (150 to 1000 A)
Overload capability	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/400 V (Mil-HB-217F)	>320,000 hours

Approvals



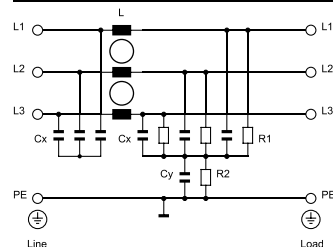
Features and benefits

- An extremely compact and light weight filter design requiring minimum mounting space in installations and cabinets
- Simple and time-saving installation with good accessibility for automatic and hand tools
- Solid, touch-safe terminal blocks, for all filters from 10 to 100 A, offering sufficient contacting cross section according to the EN 60204-1 installation standard
- Optionally available transparent protective covers for all filters with busbars from 150 to 1000 A, to protect the installer, operator or inspector from accidental touching of live conductors. They can easily be retrofitted even if the filter is already installed and connected
- These EMC filters provide the attenuation performance needed to fulfill EN 61800-3/A11
- Guaranteed filter performance under fullload operating conditions
- 15 different filter models allow the specific choice and deployment for most industrial applications

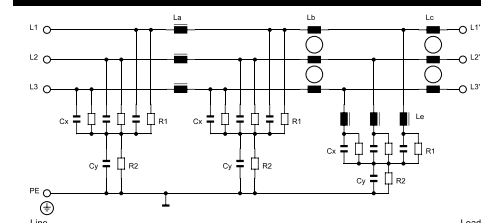
Typical applications

- Variable speed electrical power drive systems/motor drives for mainly industrial purpose
- Various industrial applications comprising frequency inverters, motor drives and servo drives

Typical electrical schematic (up to 100 A)



Typical electrical schematic (>100 A)



Filter selection table

Filter	Rated current @ 50°C (40°C)	Typical drive power rating*	Leakage current** @ 480 VAC/50 Hz	Power loss @ 25°C/50 Hz	Input/Output connections		Weight	Protective covers***
	[A]	[kW]	[mA]	[W]			[kg]	Order code
FN 3270 H-10-44	10 (11)	5.5	26.4	2.4	-44		0.4	
FN 3270 H-20-44	20 (22)	11	26.4	4.1	-44		0.5	
FN 3270 H-35-33	35 (38)	22	29.4	6.8	-33		0.7	
FN 3270 H-50-34	50 (55)	30	29.4	12.8	-34		1.2	
FN 3270 H-65-34	65 (71)	37	29.4	13.5	-34		1.3	
FN 3270 H-80-35	80 (88)	45	29.4	13.5	-35		2.2	
FN 3270 H-100-35	100 (110)	55	29.4	17.1	-35		2.6	
FN 3270 H-150-99	150 (164)	75	59.5	7.5		-99	6.1	801916
FN 3270 H-200-99	200 (219)	110	59.5	13.2		-99	6.1	801916
FN 3270 H-250-99	250 (274)	132	59.5	20.6		-99	6.1	801916
FN 3270 H-320-99	320 (350)	160	59.5	12.2		-99	7.2	801916
FN 3270 H-400-99	400 (438)	220	59.5	19.2		-99	7.2	801916
FN 3270 H-600-99	600 (657)	315	59.5	35.6		-99	7.7	801916
FN 3270 H-800-99	800 (876)	400	59.5	51.8		-99	15.8	806275
FN 3270 H-1000-99	1000 (1095)	560	59.5	81.0		-99	15.8	806275

* Calculated at rated current, 480 VAC and $\cos \phi=0.8$. The exact value depends upon the efficiency of the drive, the motor and the entire application.

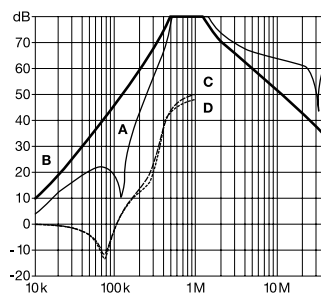
** Maximum leakage under normal operating conditions. Note: if two phases are interrupted, worst case leakage could reach 5.2 times higher levels.

*** Please contact your local Schaffner partner to order the optional protective covers with the order code in the table above.

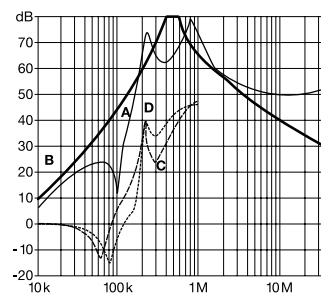
Typical filter attenuation

Per CISPR 17; A=50 Ω /50 Ω sym; B=50 Ω /50 Ω asym; C=0.1 Ω /100 Ω sym; D=100 Ω /0.1 Ω sym

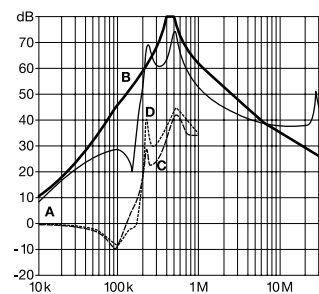
10 and 20 A types



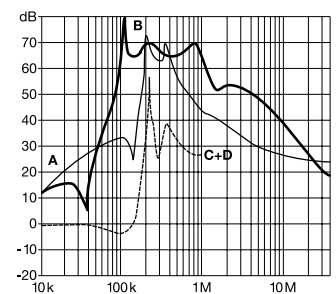
35 to 65 A types



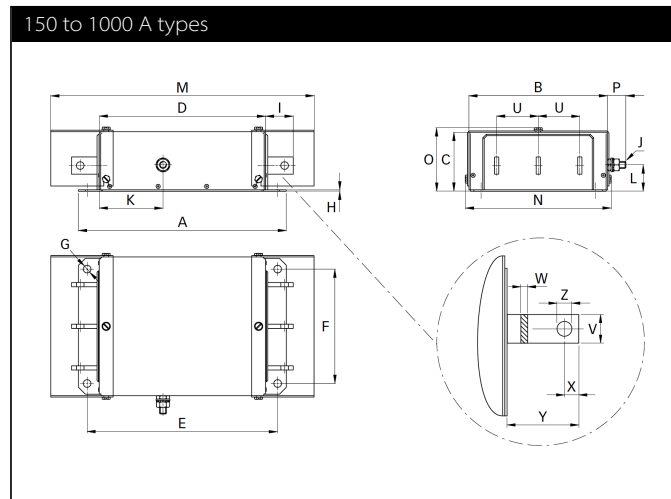
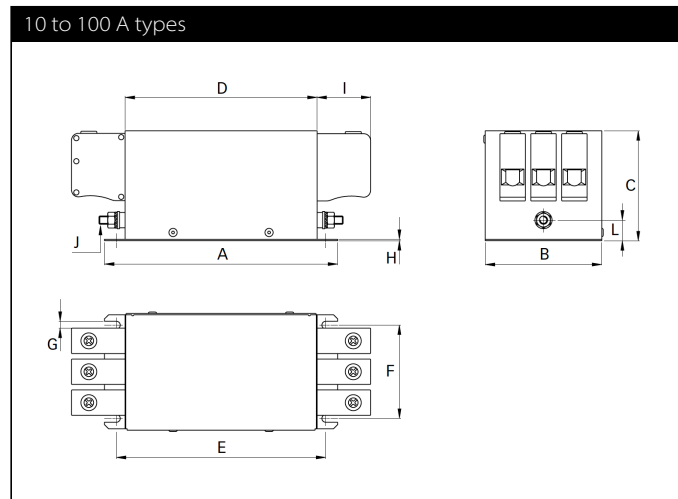
80 and 100 A types



150 to 1000 A types



Mechanical data



Dimensions

	10 A	20 A	35 A	50 A	65 A	80 A	100 A	150 A	200 A	250 A	320 A	400 A	600 A	800 A	1000 A
A	150	150	160	170	170	200	230	300	300	300	300	300	300	370	370
B	58	58	70	85	85	95	95	200	200	200	200	200	200	190	190
C	58	58	68	80	80	90	90	86	86	86	86	86	86	125	125
D	120	120	130	140	140	170	200	240	240	240	240	240	240	310	310
E	132.5	132.5	142.5	152.5	152.5	182.5	212.5	275	275	275	275	275	275	345	345
F	42	42	50	65	65	75	75	165	165	165	165	165	165	155	155
G	4.5	4.5	5.5	5.5	5.5	5.5	5.5	Ø11	Ø11	Ø11	Ø11	Ø11	Ø11	Ø11	Ø11
H	1	1	1	1	1	1.5	1.5	2	2	2	2	2	2	3	3
I	22	22	25	39	39	45	45	40	40	40	40	40	40	50	50
J	M4	M4	M5	M6	M6	M8	M8	M10	M10	M10	M10	M10	M10	M12	M12
K								92	92	92	92	92	92	138	138
L	20.5	20.5	20	15	15	16	16	37	37	37	37	37	37	67	67
M								380	380	380	380	380	380	610	610
N								211	211	211	211	211	211	201	201
O								93	93	93	93	93	93	132	132
P								26.5	26.5	26.5	26.5	26.5	26.5	29	29
U								60	60	60	60	60	60	60	60
V								20	20	20	25	25	25	40	40
W								3	3	3	6	6	8	8	8
X								10	10	10	12.5	12.5	12.5	20	20
Y								37	37	37	37	37	37	47	47
Z								Ø9	Ø9	Ø9	Ø11	Ø11	Ø11	Ø13.5	Ø13.5

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according: ISO 2768-m/EN 22768-m

Filter input/output connector cross sections

	-33	-34	-35	-44
Solid wire	16 mm ²	35 mm ²	50 mm ²	10 mm ²
Flex wire	10 mm ²	25 mm ²	50 mm ²	6 mm ²
AWG type wire	AWG 6	AWG 2	AWG 1/0	AWG 8
Recommended torque	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	1.5-1.8 Nm

Please visit www.schaffner.com to find more details on filter connectors.

High-end Line Filter for Machinery/Equipment

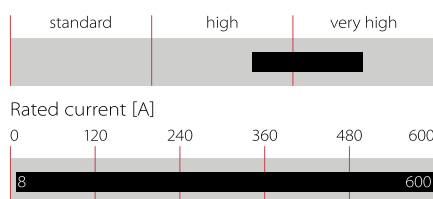


- Now available up to 600 A
- Compact, space-saving design, optimized for industrial machinery
- Combines exceptional attenuation with low leakage current
- Suitable for machines in mixed/domestic environments (Class A/B)
- Increases also the immunity if operated directly on the mains input



Performance indicators

Attenuation performance



Technical specifications

Maximum continuous operating voltage	3x 520/300 VAC (480 VAC + 10% possible)
Operating frequency	DC to 60 Hz
Rated currents	8 to 600 A @ 50°C
High potential test voltage	P → E 2750 VDC for 2 sec P → P 2250 VDC for 2 sec
Protection category	IP 20 (8 to 200 A types) IP 00 (300 to 600 A types)
Overload capability	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Flammability corresponding to	UL 94 V-2 or better
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/400 V (Mil-HB-217F)	>360,000 hours

Approvals



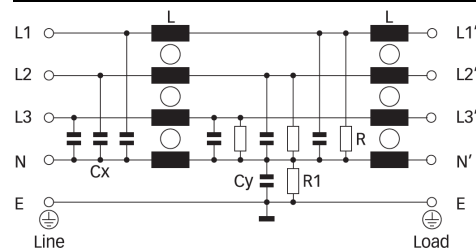
Features and benefits

- A compact and light weight filter design with a „cubic“ shape, requiring minimum mounting space and thus taking the constructional conditions on the mains input of machinery into account
- Simple and time-saving installation with good accessibility for automatic and hand tools
- Solid, touch-safe terminal blocks (8 to 200 A types) offering sufficient contacting cross section according to the EN 60204-1 installation standard, which is very common in industrial applications
- As a mains input filter for three phases and neutral line, FN 3280 provides enough performance to ensure EMC compliance of machinery in mixed (Class A) or even domestic (Class B) environments. Further, its use will also increase the immunity of the entire installation significantly
- FN 3280 provides the attenuation performance needed to meet the requirements of various machine tools with up to 12 driving axes and ~10 to 20 m of motor cable each
- For easy selection and application, the filter current ratings are aligned with common fuse values

Typical applications

Mainly industrial equipment, machinery, machine tools and diverse process automation systems with three-phase and neutral electricity supply. Due to the outstanding attenuation performance, FN 3280 is also the first choice for noisy power supplies, renewable energy applications, highpower office equipment and further three-phase and neutral devices. Because of the relatively low leakage current, FN 3280 may even be used for some medical devices.

Typical electrical schematic



Filter selection table

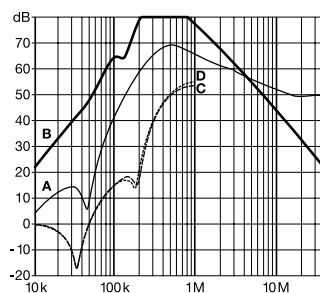
Filter	Rated current @ 50°C (40°C)	Leakage current* @ 480 VAC/50 Hz	Power loss @ 25°C/50 Hz	Input/Output connections		Weight
	[A]	[mA]	[W]			[kg]
FN 3280 H-8-29	8 (8.8)	<1	2.7	-29		0.8
FN 3280 H-16-29	16 (17.5)	<1	6.0	-29		0.8
FN 3280 H-25-33	25 (27)	<1	11.6	-33		1.3
FN 3280 H-36-33	36 (39)	<1	14.8	-33		1.6
FN 3280 H-64-34	64 (70)	<1	18.4	-34		2.7
FN 3280 H-80-35	80 (88)	<1	18.9	-35		4.1
FN 3280 H-120-35	120 (131)	<1	28.5	-35		5.9
FN 3280 H-160-40	160 (175)	<1	30.7	-40		7.9
FN 3280 H-200-40	200 (219)	<1	46.8	-40		8.5
FN 3280 H-300-99	300 (328)	<1	20.3		-99	10.0
FN 3280 H-400-99	400 (438)	<1	36.0		-99	10.0
FN 3280 H-600-99	600 (657)	<1	64.8		-99	11.0

* Maximum leakage under normal operating conditions, based on the assumption that all three phases and the neutral conductor are connected to the supply and the consumer. In this case, the current will mainly return through the neutral line, not as earth leakage.

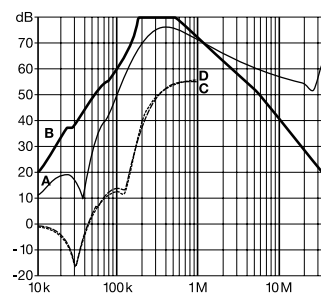
Typical filter attenuation

Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym; C=0.1 Ω/100 Ω sym; D=100 Ω/0.1 Ω sym

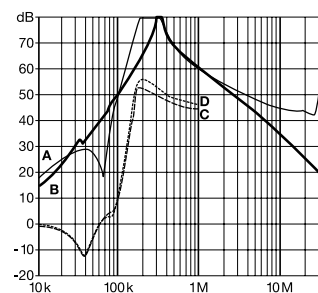
8 and 16 A types



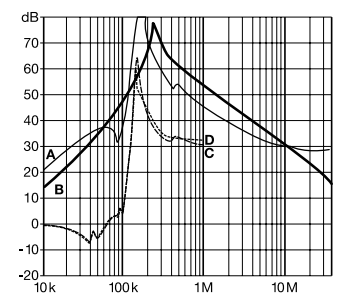
25 and 36 A types



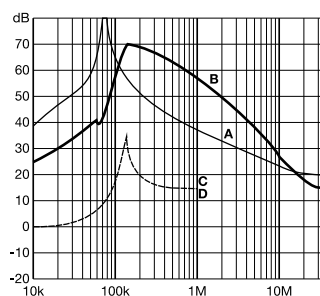
64 to 120 A types



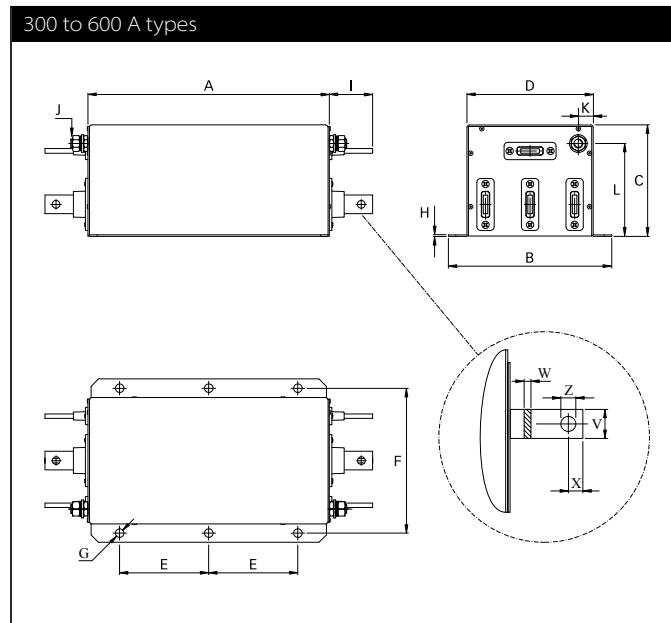
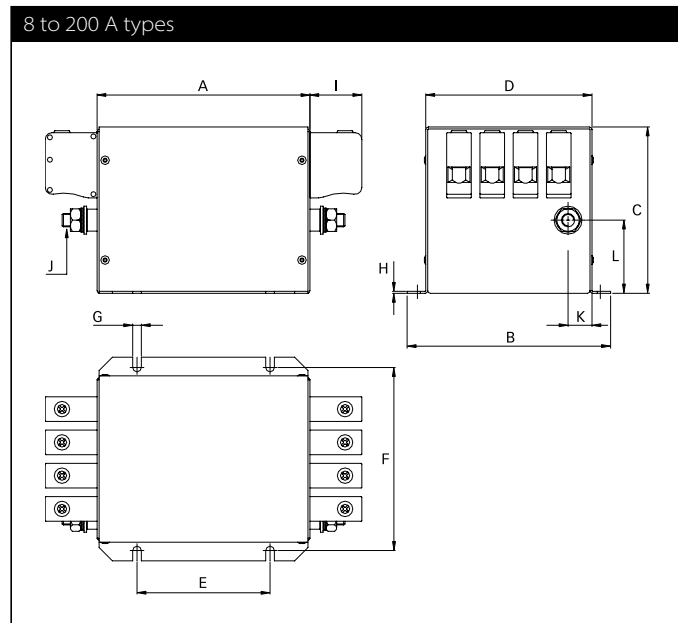
160 and 200 A types



300 to 600 A types



Mechanical data



Dimensions

	8 A	16 A	25 A	36 A	64 A	80 A	120 A	160 A	200 A	300 A	400 A	600 A
A	120	120	130	130	160	230	250	280	280	325	325	325
B	143	143	153	153	153	163	170	170	170	220	220	220
C	80	80	115	115	125	125	140	170	170	150	150	150
D	115	115	125	125	125	135	140	140	140	170	170	170
E	80	80	90	90	100	120	200	230	230	120	120	120
F	127.5	127.5	137.5	137.5	137.5	147.5	153.5	153.5	153.5	195	195	195
G	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	12	12	12
H	1	1	1	1	1.5	1.5	1.5	1.5	1.5	2	2	2
I	10.9	10.9	25	25	39	45	45	51	51	58	58	58
J	M6	M6	M6	M6	M10	M10	M10	M10	M10	M12	M12	M12
K	12	12	12	12	18	18	17.5	17.5	17.5	20	20	20
L	33	33	50	50	55	45	55	55	55	125	125	125
V										25	25	25
W										6	6	8
X										15	15	15
Z										Ø10.5	Ø10.5	Ø10.5

All dimensions in mm; 1 inch = 25.4 mm
Tolerances according to ISO 2768-m/EN 22768-m

Filter input/output connector cross sections

	-29	-33	-34	-35	-40
Solid wire	6 mm ²	16 mm ²	35 mm ²	50 mm ²	95 mm ²
Flex wire	4 mm ²	10 mm ²	25 mm ²	50 mm ²	95 mm ²
AWG type wire	AWG 10	AWG 6	AWG 2	AWG 1/0	AWG 4/0
Recommended torque	0.6-0.8 Nm	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	17-20 Nm

Please visit www.schaffner.com to find more details on filter connectors.