schaffner
energy efficiency and reliability

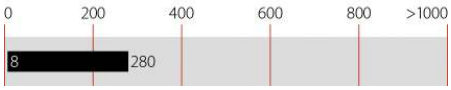
General Purpose EMC Filter

- EMC solution for industrial inverters and motor drives
- Rated currents from 8 to 280 A
- Selectable voltage level of 440 V and 520 V
- High differential and common-mode attenuation
- Compliant with IEC 60950

Performance indicators

Attenuation performance

Rated current [A]



Technical specifications

Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
Flammability corresponding to	UL 94 V-2 or better
High potential test voltage	P –> E 2600 VDC for 2 sec (FN 351) P –> P 2250 VDC for 2 sec (FN 351H) P –> E 2750 VDC for 2 sec (FN 351H) P –> P 1900 VDC for 2 sec (FN 351)
Maximum continuous operating voltage	3x 440/250 VAC (FN 351) 3x 520/300 VAC (FN 351H)
MTBF @ 40°C/400V (Mil-HB-217F)	135,000 hours
Operating frequency	dc to 60 Hz
Overload capability	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Protection category	IP20
Rated currents	8 to 280 A @ 40 °C
Temperature range (operation and storage)	-25 °C to +85 °C (25/085/21) (FN 351) -25 °C to +100 °C (25/100/21) (FN 351H)

Approvals

FN 351 up to 110 A FN 351H up to 110 A

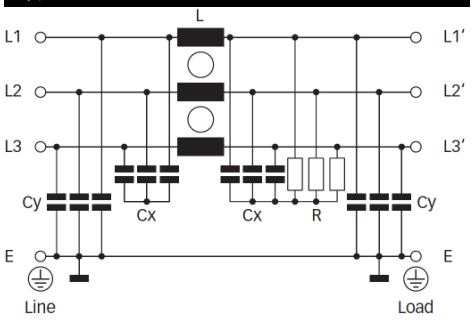
Features and benefits

- Broad range of power ratings for fast and convenient filter selection
- Available as 440 VAC (FN 351) and 520 VAC (FN 351H) versions for network-specific applications
- FN 351 filters provide a broadband common and differential-mode attenuation performance, which remains available also when high interference levels are present
- Solid, touch-safe filter terminals contribute to overall equipment safety and make the filters compliant with IEC 60950
- Introduced as one of the very first motor drive EMC filters in the market, FN 351 has been widely imitated and has success- fully proven its function over more than 10 years

Typical applications

- Three-phase motor drives
- Inverters and converters
- Industrial automation equipment
- UPS
- SMPS
- General purpose three-phase filtering

Typical electrical schematic



Filter selection table

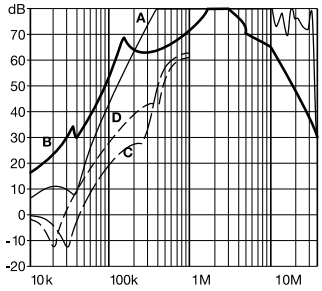
Filter*	Rated current @ 40 °C (25 °C) [A]	Typical drive power rating** [kW]	Leakage current*** @ 400 VAC/50 Hz [mA]	Power loss @ 25 °C/50 Hz [W]	Input/Output connections		Weight [kg]
FN 351-8-29	8 (9.2)	3	1.9	7	-29		0.8
FN 351-16-29	16 (18.5)	5.5	1.9	8	-29		1.3
FN 351-25-33	25 (28.9)	11	28.0	8	-33		1.4
FN 351-36-33	36 (41.6)	15	28.0	9	-33		1.5
FN 351-50-..	50 (57.7)	22	29.5	11	-33	-34	1.6
FN 351-64-..	64 (73.9)	30	29.5	15	-33	-34	1.7
FN 351-80-34	80 (92.3)	37	31.8	23	-34		5.6
FN 351-110-35	110 (127)	55	31.8	25	-35		5.8
FN 351-180-36	180 (208)	90	29.6	49	-36		13.0
FN 351-280-37	280 (323)	132	35.7	70	-37		28.0
FN 351H-8-29	8 (9.2)	4	2.3	7	-29		1.1
FN 351H-16-29	16 (18.5)	7.5	2.3	8	-29		1.3
FN 351H-25-33	25 (28.9)	15	32.7	8	-33		1.4
FN 351H-36-33	36 (41.6)	18.5	32.7	9	-33		1.5
FN 351H-50-..	50 (57.7)	30	32.7	11	-33	-34	1.6
FN 351H-64-33	64 (73.9)	37	32.7	15	-33		1.7
FN 351H-80-34	80 (92.3)	45	38.0	23	-34		5.6
FN 351H-110-35	110 (127)	75	38.0	25	-35		5.8
FN 351H-180-36	180 (208)	110	35.6	49	-36		13.0
FN 351H-280-37	280 (323)	160	42.9	70	-37		28.0

* To compile a complete part number, please replace the -.. with the required I/O connection style.
** Calculated at rated current, 400 VAC (FN 351)/480VAC (FN 351H) 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 (FN 351 at 400 V, FN 351H at 480 V).
Note: if two phases are interrupted, worst case leakage could reach 6 times higher levels.

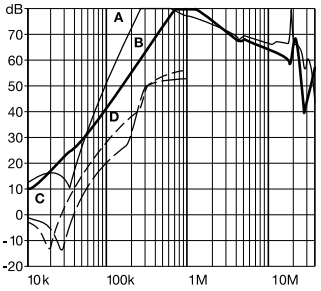
Typical filter attenuation

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

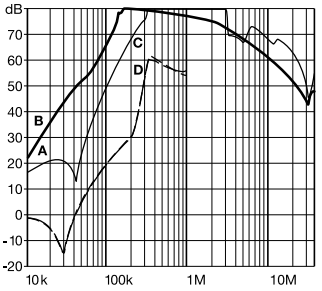
8 A types



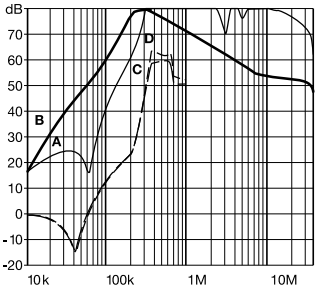
16 A types



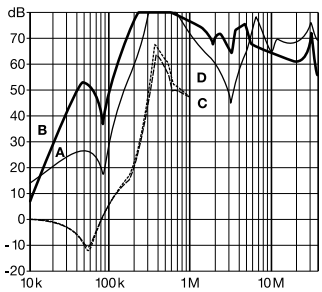
25 A types



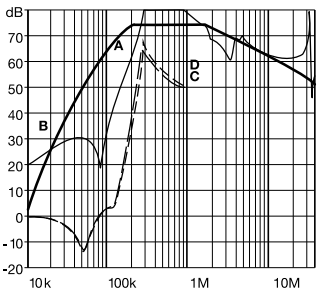
36 and 50 A types



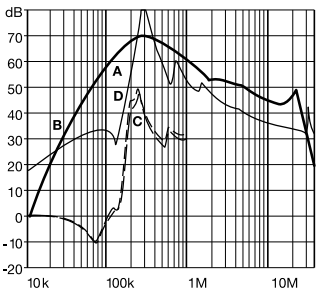
64 A types



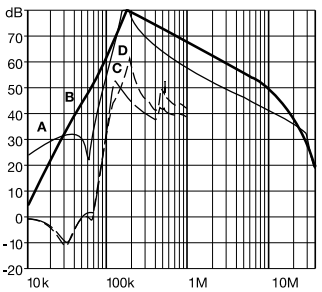
80 and 110 A types



180 A types

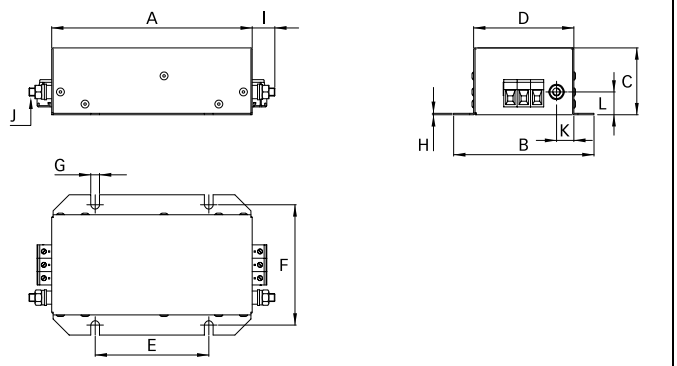


280 A types

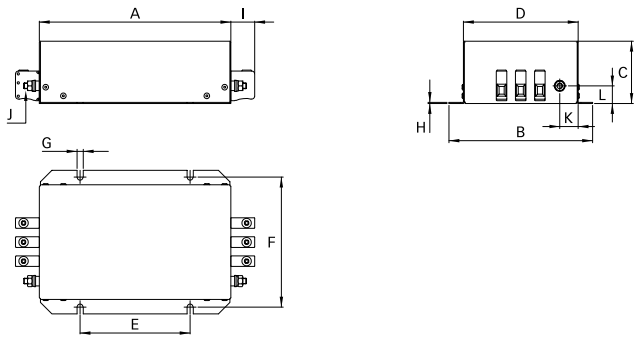


Mechanical data

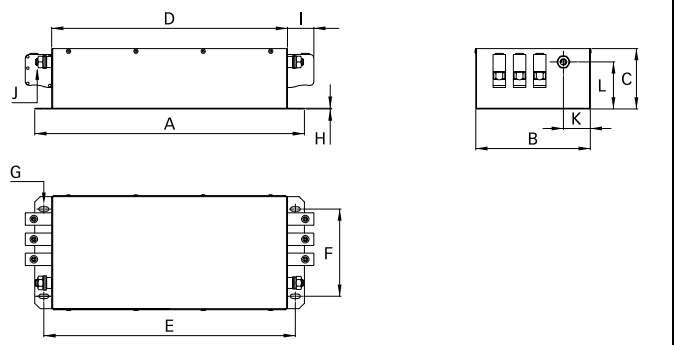
8 and 16 A types



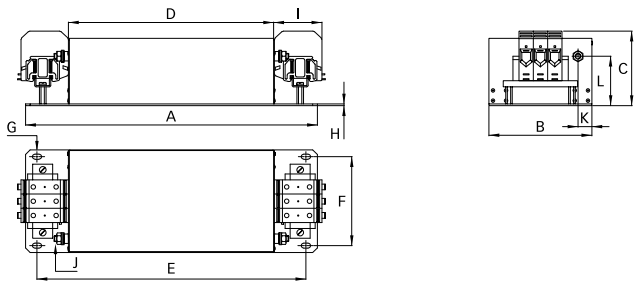
25 to 64 A types



80 and 110 A types



180 and 280 A types



Dimensions

	8 A	8 A (-H)	16 A	25 A	36 A	50 A (-33)	50 A (-34)	64 A (-33)	64 A (-34)	80 A	110 A	180 A	280 A
A	180	200	200	200	200	200	200	200	200	400	400	510	700
B	115	150	150	150	150	150	150	150	150	170	170	180	260
C	60	65	65	65	65	65	65	65	80	90	90	133	155
D	85	120	120	120	120	120	120	120	120	350	350	360	530
E	115	115	115	115	115	115	115	115	115	373	373	470	660
F	100	136	136	136	136	136	136	136	136	130	130	156	220
G	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	15 x 6.5	15 x 6.5	16 x 9	16 x 9
H	1	1	1	1	1	1	1	1	1	1	1	4	4
I	17	17	17	25	25	25	39	25	39	39	45	83	110
J	M6	M6	M6	M6	M6	M6	M6	M6	M6	M10	M10	M10	M10
K	13	19.25	19.25	19.25	19.25	19.25	18.75	19.25	18.75	40	40	25	30
L	17	17	17	18.4	18.4	18.4	17	18.4	17	70	70	85	100

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	-36	-37
						
Solid wire	6 mm^2	16 mm^2	35 mm^2	50 mm^2	95 mm^2	150 mm^2
Flex wire	4 mm^2	10 mm^2	25 mm^2	50 mm^2	95 mm^2	150 mm^2
AWG type wire	AWG 10	AWG 6	AWG 2	AWG 1/0	AWG 4/0	AWG 6/0
Recommended torque	0.6-0.8 Nm	1.5-1.8 Nm	4.0-4.5 Nm	7-8 Nm	17-20 Nm	27-30 Nm

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

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