

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

Maximum continuous operating voltage	3x 440/250 VAC (FN 351) 3x 520/300 VAC (FN 351H)
Operating frequency	dc to 60 Hz
Rated currents	8 to 280 A @ 40 °C
High potential test voltage	P → E 2600 VDC for 2 sec (FN 351) P → P 1900 VDC for 2 sec (FN 351) P → E 2750 VDC for 2 sec (FN 351H) P → P 2250 VDC for 2 sec (FN 351H)
Protection category	IP20
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 +85 °C (25/085/21) (FN 351) -25 °C to +100 °C (25/100/21) (FN 351H)
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/400V (Mil-HB-217F)	135,000 hours

Approvals



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

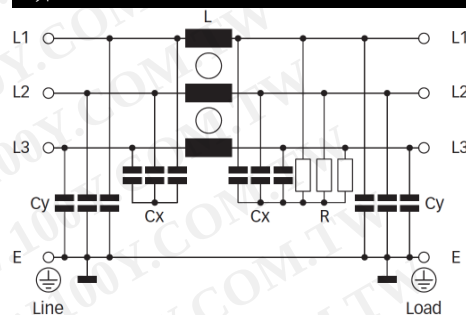
Features and benefits

- 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 successfully 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)	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 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.

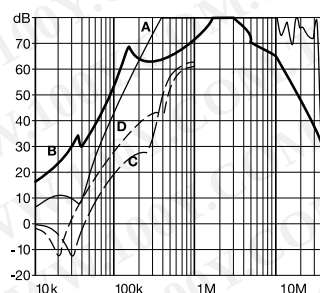
*** Maximum leakage under normal operating conditions (FN 351 at 400 V, FN 351H at 480 V).

Note: if two phases are interrupted, worst case leakage could reach 6 times higher levels.

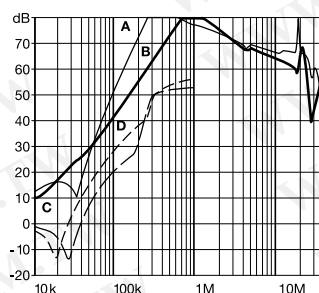
Typical filter attenuation

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

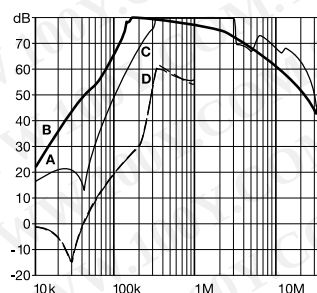
8 A types



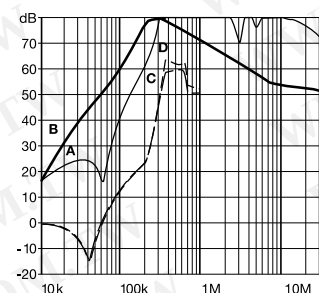
16 A types



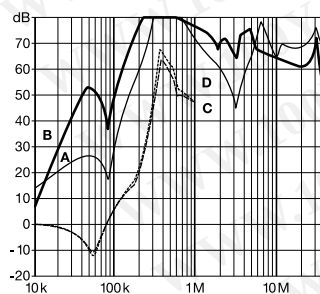
25 A types



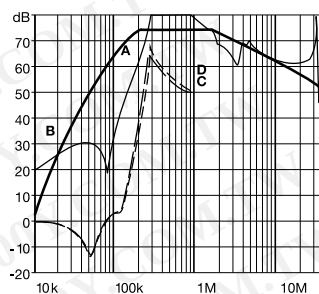
36 and 50 A types



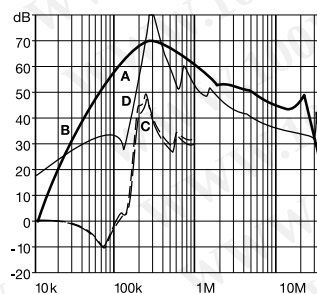
64 A types



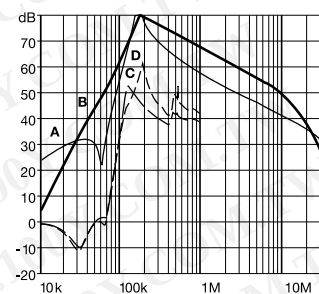
80 and 110 A types



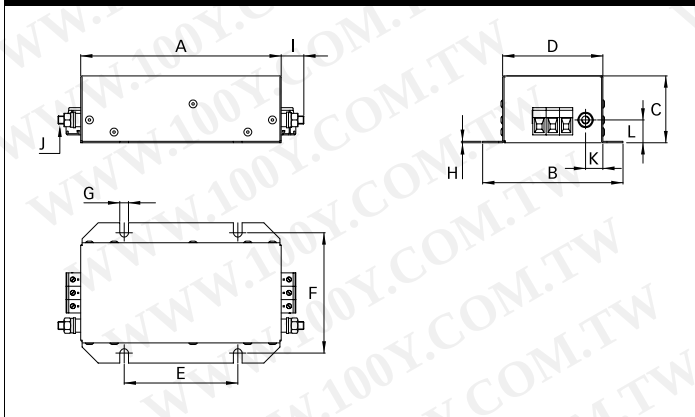
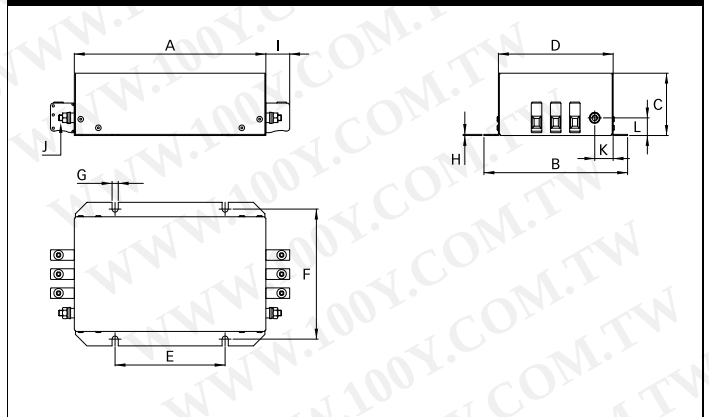
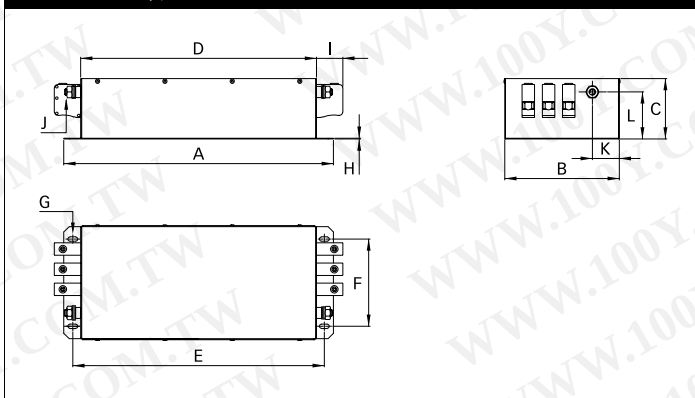
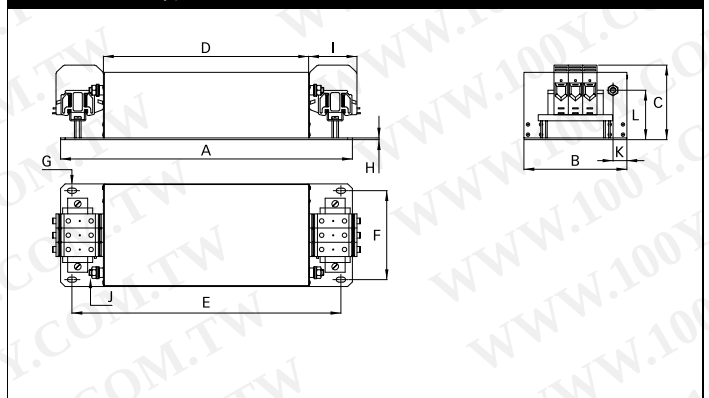
180 A types



280 A types



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Mechanical data**8 and 16 A types****25 to 64 A types****80 and 110 A types****180 and 280 A types**

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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	130	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	85	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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