

# 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

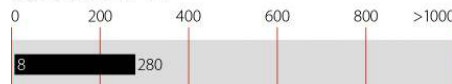


### Performance indicators

Attenuation performance



Rated current [A]



### 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

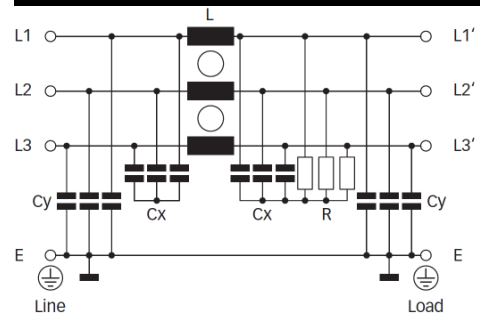
### Technical specifications

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



### 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 [kg]
	[A]	[kW]	[mA]	[W]			
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.

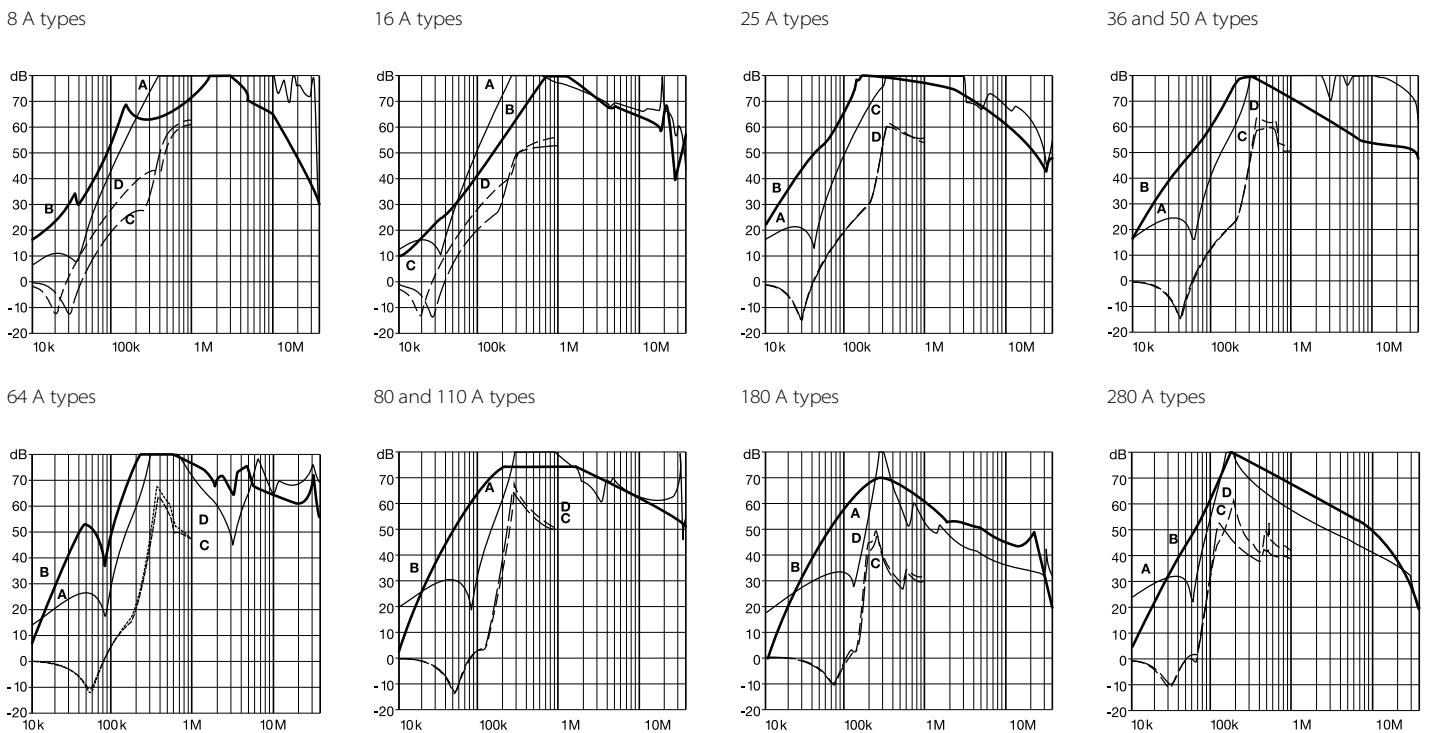
\*\* Calculated at rated current, 400 VAC (FN 351)/480VAC (FN 351H) and cos phi = 0.8. The exact value depends upon the efficiency of the drive, the motor and the entire application.

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

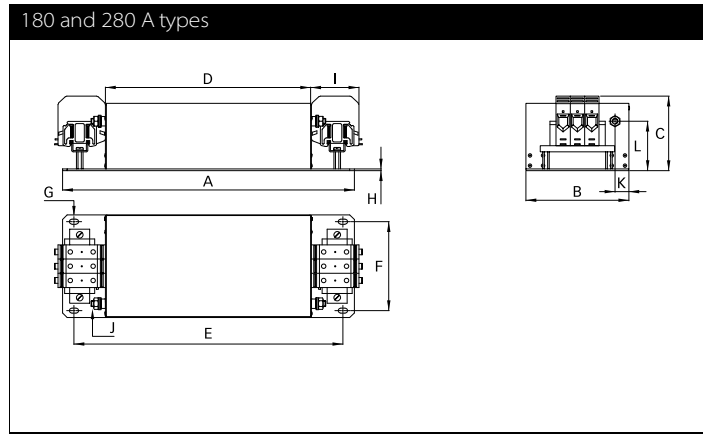
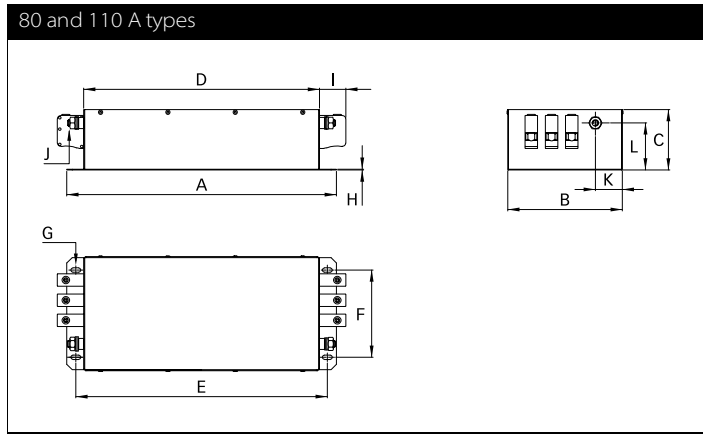
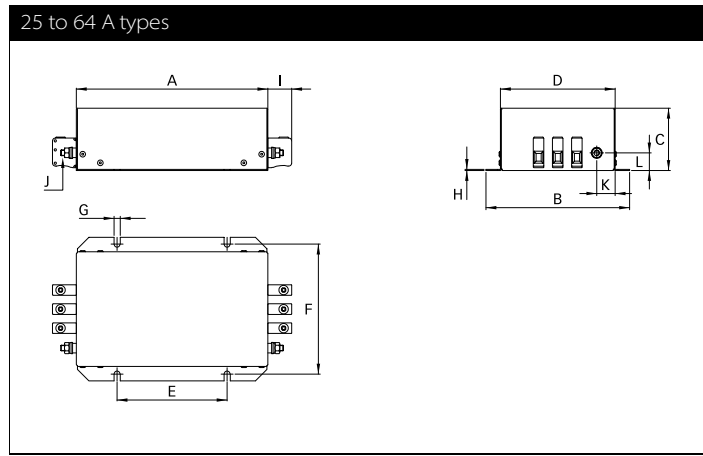
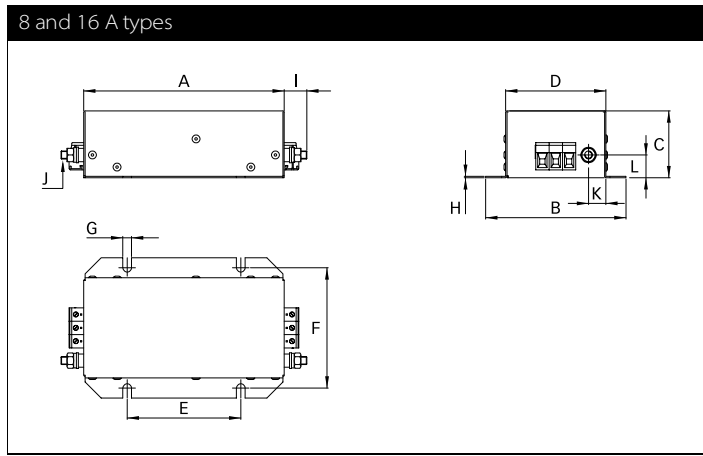
Note: if two phases are interrupted, worst case leakage could reach 6 times higher levels.

### 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



### Mechanical data









## 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
<b>A</b>	180	200	200	200	200	200	200	200	200	400	400	510	700
<b>B</b>	115	150	150	150	150	150	150	150	150	170	170	180	260
<b>C</b>	60	65	65	65	65	65	65	65	80	90	90	133	155
<b>D</b>	85	120	120	120	120	120	120	120	120	350	350	360	530
<b>E</b>	115	115	115	115	115	115	115	115	115	373	373	470	660
<b>F</b>	100	136	136	136	136	136	136	136	136	130	130	156	220
<b>G</b>	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
<b>H</b>	1	1	1	1	1	1	1	1	1	1	1	4	4
<b>I</b>	17	17	17	25	25	25	39	25	39	39	45	83	110
<b>J</b>	M6	M6	M6	M6	M6	M6	M6	M6	M6	M10	M10	M10	M10
<b>K</b>	13	19.25	19.25	19.25	19.25	19.25	18.75	19.25	18.75	40	40	25	30
<b>L</b>	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
						
<b>Solid wire</b>	6 mm <sup>2</sup>	16 mm <sup>2</sup>	35 mm <sup>2</sup>	50 mm <sup>2</sup>	95 mm <sup>2</sup>	150 mm <sup>2</sup>
<b>Flex wire</b>	4 mm <sup>2</sup>	10 mm <sup>2</sup>	25 mm <sup>2</sup>	50 mm <sup>2</sup>	95 mm <sup>2</sup>	150 mm <sup>2</sup>
<b>AWG type wire</b>	AWG 10	AWG 6	AWG 2	AWG 1/0	AWG 4/0	AWG 6/0
<b>Recommended torque</b>	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](http://www.schaffner.com) to find more details on filter connectors.



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