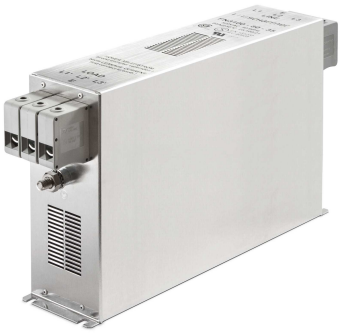
schaffner
shaping electrical power

Bookstyle EMC/EMI Filter for Motor Drives



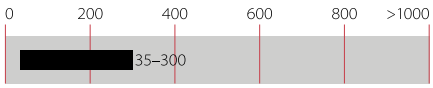
- Exceptional broadband attenuation performance from 10 kHz up to 30 MHz
- Slim and user-friendly book-style design with touch-safe terminal blocks for minimum space and maximum safety
- Enables compliance with Class B limits

Performance indicators

Attenuation performance



Rated current [A]



Approvals

(FN 3100 up to 150 A)

Technical specifications

Maximum continuous operating voltage	3x 520/300 VAC
Operating frequency	DC to 60 Hz
Rated currents	35 to 300 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
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)	>400,000 hours

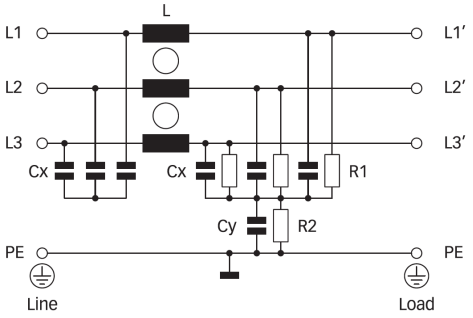
Features and benefits

- High performance filter for mainly industrial motor drive applications with significant interference levels
- Attenuation performance for Class B compliance in applications comprising multiple motor drives (e.g. machine tool with up to 8 driving axes with ~10 to 20 m motor cable each)
- Broadband filter performance with low frequency attenuation down to 10 kHz for reliable suppression of conducted interference
- Slim book-style shape requiring minimum cabinet space and allowing convenient installation right beside the motor drive
- Touch-safe terminal blocks provide unsurpassed electrical safety and contacting cross section according to EN 60204-1 installation standard
- For even better filter specifications, please consider FN 3120 H series from Schaffner

Typical applications

- Conventional motor drives with long motor cables and high interference levels
- Four quadrant motor drives and servo drives with energy regeneration mode (in combination with a suitable line reactor or LCL filter)
- Industrial applications comprising power conversion devices, such as machinery, machine tools and process automation equipment
- Uninterruptible power supplies (UPS)
- Converters for renewable energy generation
- Thyristor drives
- Elevators and cranes

Typical electrical schematic



Filter selection table

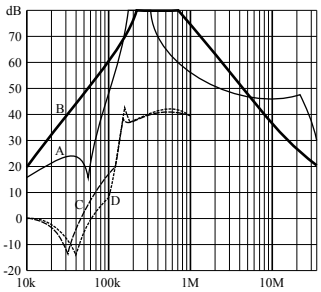
Filter	Rated current @ 50°C (40°C) [A]	Typical drive power rating* [kW]	Leakage current** @ 520 VAC/50 Hz [mA]	Power loss @ 25°C/50 Hz [W]	Input/Output connections		Weight [kg]
FN 3100-35-33	35 (38.4)	22	6.8	11.8	-33		2.3
FN 3100-50-34	50 (54.8)	30	9.3	18.0	-34		3.4
FN 3100-80-35	80 (87.6)	45	10.0	25.9	-35		5.0
FN 3100-110-35	110 (120.5)	55	10.0	32.7	-35		5.4
FN 3100-150-40	150 (164.3)	75	10.0	50.6	-40		8.5
FN 3100-200-40	200 (219)	110	10.0	67.2	-40		9.1
FN 3100-230-40	230 (230)	132	10.0	36.5	-40		9.2
FN 3100-300-99	300 (329)	160	10.0	54.0		-99	11.8

* 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.
** Standardized calculated leakage current acc. IEC60939 under normal operating conditions.

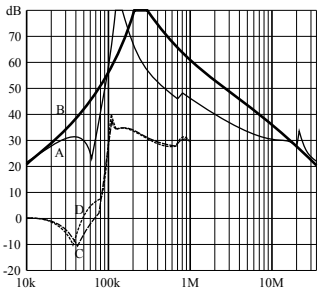
Typical filter attenuation

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

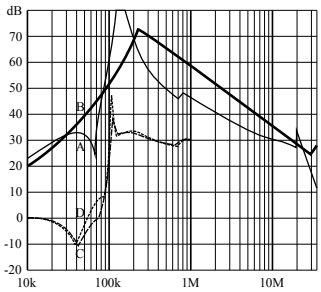
35 to 80 A types



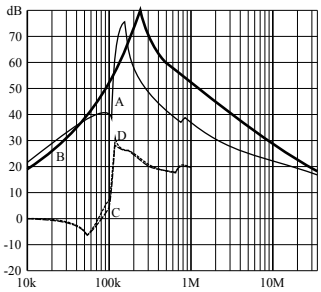
110 and 150 A types



200 A types

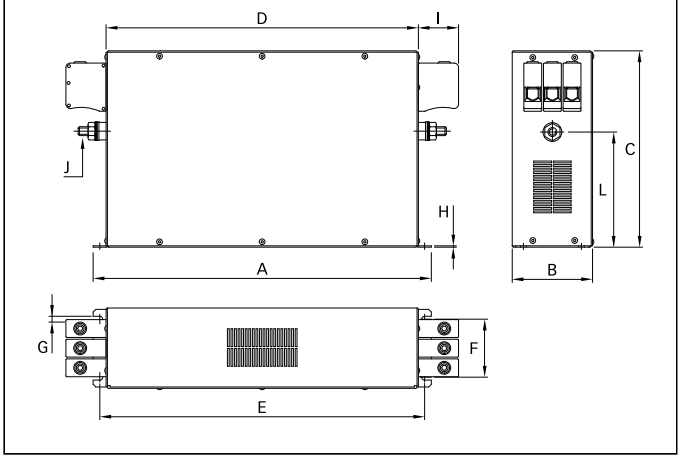


230 and 300 A types

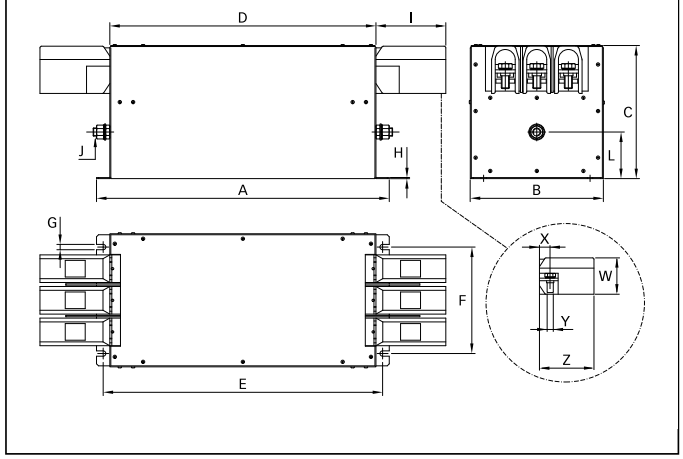


Mechanical data

35 to 230 A types



300 A types



Dimensions

	35 A	50 A	80 A	110 A	150 A	200 A	230 A	300 A
A	335	329	379	379	438	438	438	440
B	60	80	90	90	110	110	110	200
C	150	185	220	220	240	240	240	200
D	305	300	350	350	400	400	400	400
E	320	314	364	364	413	413	413	420
F	35	55	65	65	80	80	80	160
G	6.5	6.5	6.5	6.5	6.5	6.5	6.5	8
H	1	1.5	1.5	1.5	4	4	4	1.5
I	25	39	45	45	51	51	51	105
J	M5	M6	M10	M10	M10	M10	M10	M12
L	93.5	107	129	129	108	108	108	70
W								71.5
X								~22
Y								M12
Y								~105

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	-99
Solid wire	16 mm^2	35 mm^2	50 mm^2	95 mm^2	–
Flex wire	10 mm^2	25 mm^2	50 mm^2	95 mm^2	150 mm^2
AWG type wire	AWG 6	AWG 2	AWG 1/0	AWG 4/0	AWG 6/0
Recommended torque	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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