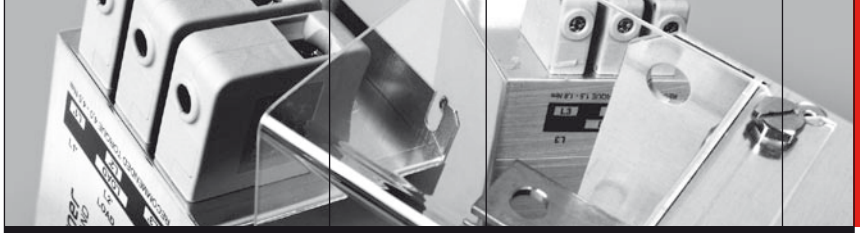


3-phase filters
FN 3100

EMC/RFI filter for regenerative motor drives

schaffner
energy efficiency and reliability

- **Exceptional broadband attenuation performance from 10kHz up to 30MHz**
- **Equally suitable for conventional and regenerative motor drives (latter with additional line reactor only)**
- **Slim and user-friendly book-style design with touch-safe terminal blocks for minimum space and maximum safety**
- **Enables compliance with Class B limits**

Approvals

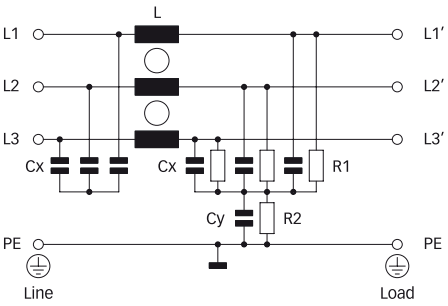
FN 3100 up to 150A

RoHS 2002/95/EC

Technical specifications

Maximum continuous operating voltage:	3x 520/300VAC
Operating frequency:	dc to 60Hz
Rated currents:	35 to 300A @ 50°C
High potential test voltage:	P –> E 2750VDC for 2 sec
	P –> P 2250VDC for 2 sec
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 +100°C (25/100/21)
Flammability corresponding to:	UL 94V-2 or better
Design corresponding to:	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF @ 50°C/400V (Mil-HB-217F):	>400,000 hours

Typical electrical schematic



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 20m motor cable each).
- Broadband filter performance with low frequency attenuation down to 10kHz for reliable suppression of conducted interference in applications with regenerative motor drives.
- 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 3120H 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)
- 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

Filter selection table

Filter	Rated current @ 50°C (40°C) [A]	Typical drive power rating* [kW]	Leakage current** @ 400VAC/50Hz [mA]	Power loss @ 25°C/50Hz [W]	Input/Output connections	Weight [kg]
FN 3100-35-33	35 (38.4)	22	48.9	11.8	-33	2.3
FN 3100-50-34	50 (54.8)	30	66.1	18.0	-34	3.4
FN 3100-80-35	80 (87.6)	45	71.5	25.9	-35	5.3
FN 3100-110-35	110 (120.5)	55	71.5	32.7	-35	5.4
FN 3100-150-40	150 (164.3)	75	71.5	50.6	-40	8.5
FN 3100-200-40	200 (219)	110	71.5	67.2	-40	9.1
FN 3100-230-40	230 (230)	132	71.5	36.5	-40	9.2
FN 3100-300-99	300 (329)	160	71.5	54.0	-99	11.8

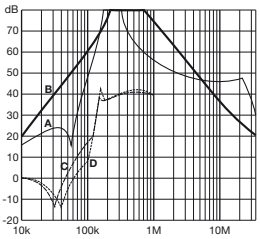
* Calculated at rated current, 480VAC and cos phi = 0.8. The exact value depends upon the efficiency of the drive, the motor and the entire application.

** Maximum leakage under normal operating conditions. Note: if two phases are interrupted, worst case leakage could reach 5.3 times higher levels.

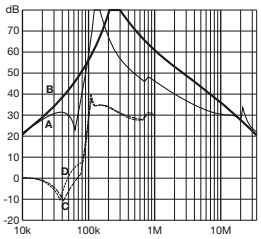
Typical filter attenuation

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

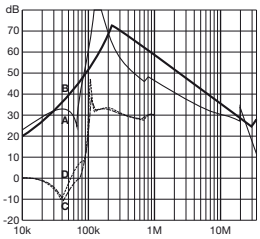
35 to 80A types



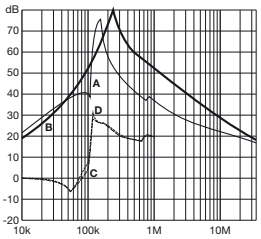
110 and 150A types



200A types

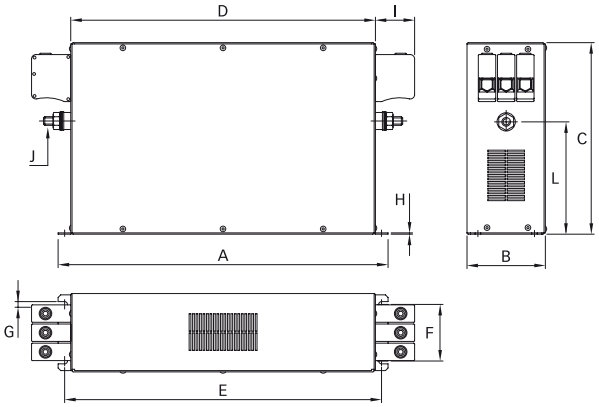


230 and 300A types

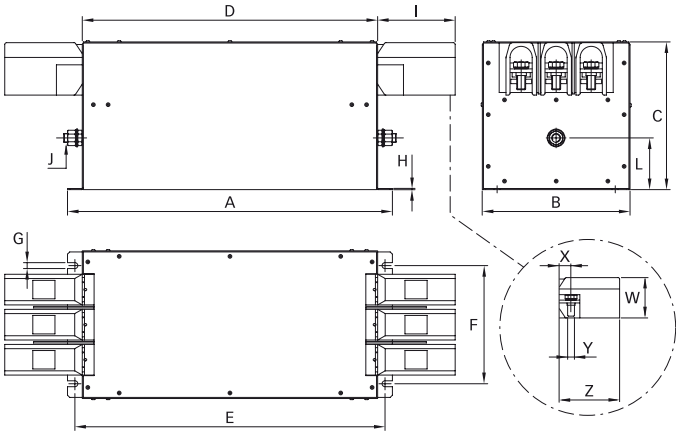


Mechanical data

35 to 230A types



300A types



Dimensions

	35A	50A	80A	110A	150A	200A	230A	300A
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	50	50	50	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
Z								~105

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

Filter input/output connector cross sections

	-33	-34	-35	-40	-99
Solid wire	16mm²	35mm²	50mm²	95mm²	–
Flex wire	10mm²	25mm²	50mm²	95mm²	150mm²
AWG type wire	AWG 6	AWG 2	AWG 1/0	AWG 4/0	AWG 6/0
Recommended torque	1.5 - 1.8Nm	4.0 - 4.5Nm	7 - 8Nm	17 - 20Nm	27 - 30Nm

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