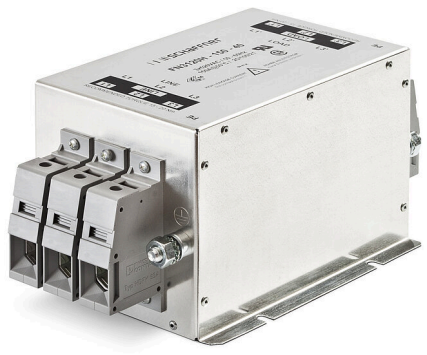
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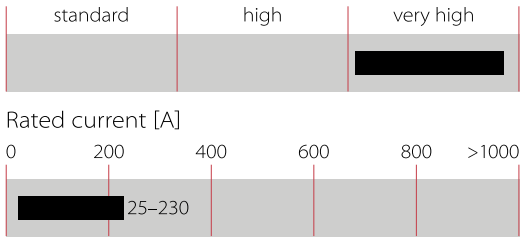
High-Performance EMC/RFI Filter for Drives



- High performance filter for extremely noisy applications
- Significantly improves the reliability and immunity of installations
- Enables compliance with Class B limits even with very long cables

Performance indicators

Attenuation performance



Rated current [A]

Approvals & Compliances

RoHS, cULus, EAC, CSA, UKCA

Features and Benefits

- High-performance filter for mainly indus- trial motor drive applications with extremely high noise levels, providing sufficient interference suppression to achieve Class B even with very long motor cables (e.g. machine tools with up to 12 axes with ~10 to 20 m cables each)
- Broadband attenuation performance and exceptional saturating resistance ensure reliable interference suppression
- FN 3120 operated on the mains input of machines or equipment contributes significantly to the reliability and immunity by offering protection against conducted interference phenomena coming from the environment
- Solid, touch-safe terminal blocks offer sufficient contacting cross section according to the EN 60204-1 installation standard, which is very common for industrial equipment like machine tools
- Compact dimensions and light weight design with good accessibility for automatic and hand tools guarantee a simple time and space-saving installation

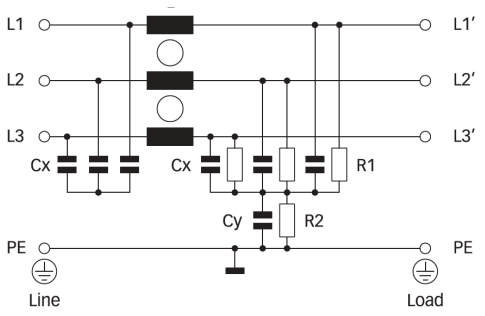
Technical Specifications

Maximum continuous operating voltage	3x520/300 VAC
Nominal operating voltage	480 VAC +10% possible
Rated currents	25 to 230 A @ 50°C
Overload capability	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Operating frequency	DC to 60 Hz
High potential test voltage	P –> E 2750 VDC for 2 sec P –> P 2250 VDC for 2 sec
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Protection category	IP 20
Flammability corresponding to	UL 94 V-0
Design corresponding to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
MTBF (Mil-HB-217F)	>300,000 h @ 50°C/480 V

Typical Applications

Mainly industrial equipment, machinery and machine tools such as printing machines, packaging machines, extruders, wood working machines, milling and drilling machines, laser cutting machines, welding machines, robotics, conveyors, assembly lines, pumps, oil production, chemical and mining industry, etc. The filters are ideal for most motor drive applications and particularly for regenerative drives with suitable line reactor or LCL filter.

Typical electrical schematic



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Filter Selection Table

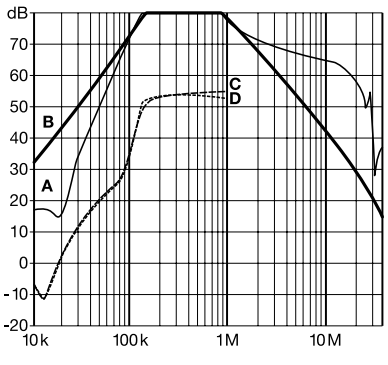
Filter	Rated current @ 50°C (40°C) [A]	Typical drive power rating* [kW]	Leakage current** @ 520 VAC/50 Hz [mA]	Power loss @ 25°C/50 Hz [W]	Input/Output connections	Weight [kg]
FN3120H-25-33	25 (27)	15	10.5	17.1	-33	2.4
FN3120H-50-53	50 (54)	30	10.5	17.5	-53	2.7
FN3120H-80-35	80 (87)	45	10.5	25.9	-35	5.0
FN3120H-110-35	110 (120)	55	10.5	25.4	-35	6.1
FN3120H-150-40	150 (164)	75	10.5	40.5	-40	6.3
FN3120H-230-40	230 (230)	132	10.5	33.5	-40	13.3

* 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.

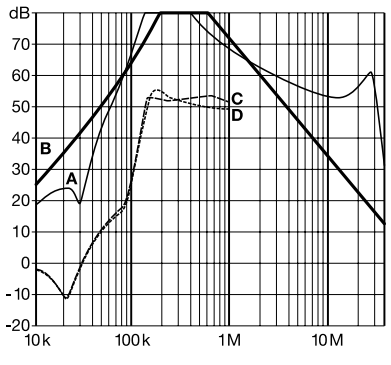
Typical Filter Attenuation

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

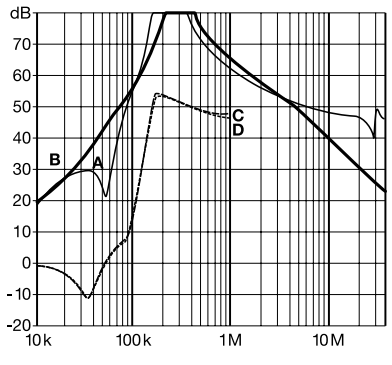
25 A types



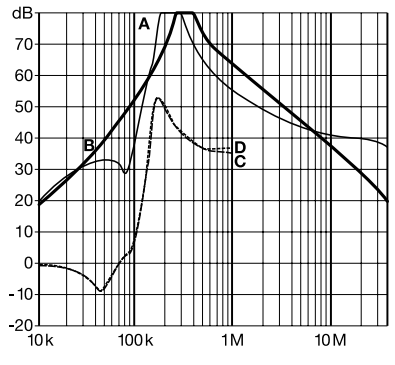
50 to 110 A types



150 A types

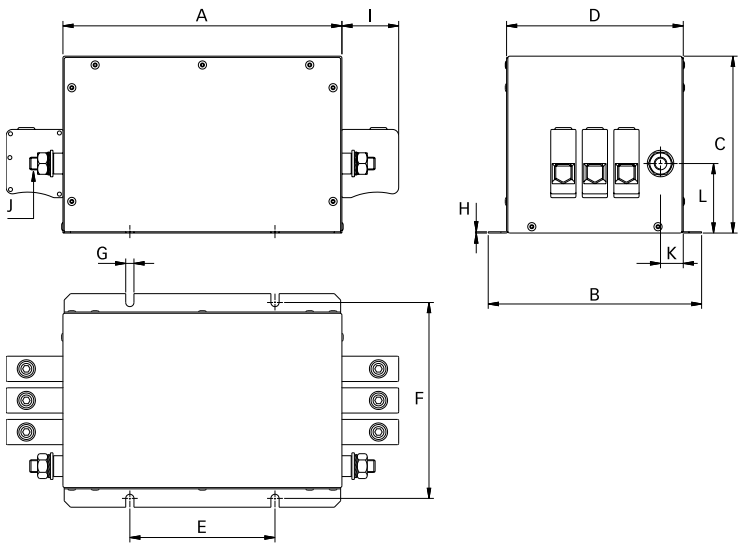


230 A types



Mechanical Data

FN 3120



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Dimensions

	25 A	50 A	80 A	110 A	150 A	230 A
A	214	214	221	221	221	300
B	159	159	169	169	169	168
C	64	64	140	140	140	140
D	129	129	140	140	140	140
E	115	115	115	115	115	165 (82.5/82.5)*
F	145	145	155	155	155	155
G	6.5	6.5	6.5	6.5	6.5	6.5
H	1	1	1	1	1	1
I	25	29.45	45	45	51	51
J	M5	M6	M10	M10	M10	M10
K	21.5	24.5	18	18	13	13
L	26	35	55	55	62	62

* 230 A filters provide 2 additional mounting slots, to do justice to the additional product weight. They are located right in the center of those mounting slots shown in the
drawing above (82.5/82.5 –> 165 mm).

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

Filter Input/Output Connector Cross Sections

	-33 	-35 	-40 	-53 
Solid wire	16 mm^2	50 mm^2	95 mm^2	25 mm^2
Flex wire	10 mm^2	50 mm^2	95 mm^2	16 mm^2
AWG type wire	AWG 6	AWG 1/0	AWG 4/0	AWG 4
Recommended torque	1.5-1.8 Nm	7-8 Nm	17-20 Nm	2.0-2.3 Nm

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

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