

Three-Phase Filters FN 3120

High-end EMC/RFI Filter for Conventional and Regenerative Drives

SCHAFNER
energy efficiency and reliability



- High performance filter for extremely noisy applications
- Ideal for the latest regenerative drives (with additional line-impedance)
- Significantly improves the reliability and immunity of installations
- Enables compliance with class B limits even with very long cables

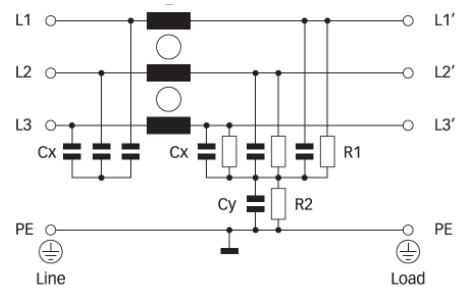
Approvals



Technical specifications

Design corresponding to :	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939
Flammability corresponding to:	UL 94V-2 or better
High potential test voltage :	P → E 2750VDC for 2 sec P → P 2250VDC for 2 sec
Maximum continuous operating voltage :	3x 520/300VAC (480VAC +10% possible)
MTBF @ 50 °C/400V (Mil-HB-217F) :	>300,000 hours
Operating frequency:	dc to 60Hz
Overload capability :	4x rated current at switch on, 1.5x rated current for 1 minute, once per hour
Protection category :	IP20
Rated currents :	25 to 230 A @ 50 °C
Temperature range (operation and storage) :	-25 °C to +100 °C (25/100/21)

Typical electrical schematic



Features and benefits

- High-performance filter for mainly industrial 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 20m cables each).
- Broadband attenuation performance and exceptional saturating resistance ensure reliable interference suppression also in applications with regenerative drives (with an additional line impedance).
- 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.

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.

Filter selection table

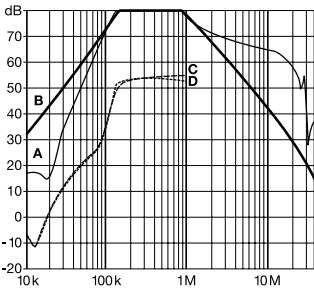
Filter	Rated current @ 50°C (40°C)	Typical drive power rating*	Leakage current** @ 480VAC/50Hz	Power loss @ 25°C/50Hz	Input/Output connections	Weight
	[A]	[kW]	[mA]	[W]		[kg]
FN 3120H-25-33	25 (27)	15	97.9	17.1	-33	2.4
FN 3120H-50-53	50 (54)	30	97.9	17.5	-53	2.7
FN 3120H-80-35	80 (87)	45	97.9	25.9	-35	5.0
FN 3120H-110-35	110 (120)	55	97.9	25.4	-35	6.1
FN 3120H-150-40	150 (164)	75	97.9	40.5	-40	6.3
FN 3120H-230-40	230 (230)	132	97.9	33.5	-40	13.3

* 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 5.4 times higher levels.

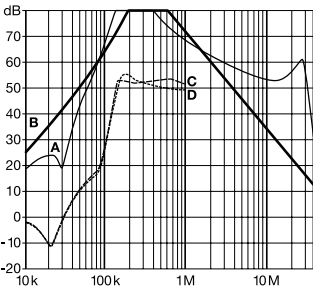
Typical filter attenuation

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

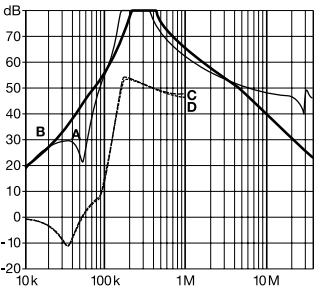
25A types



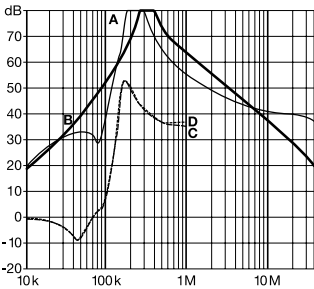
50 to 110A types



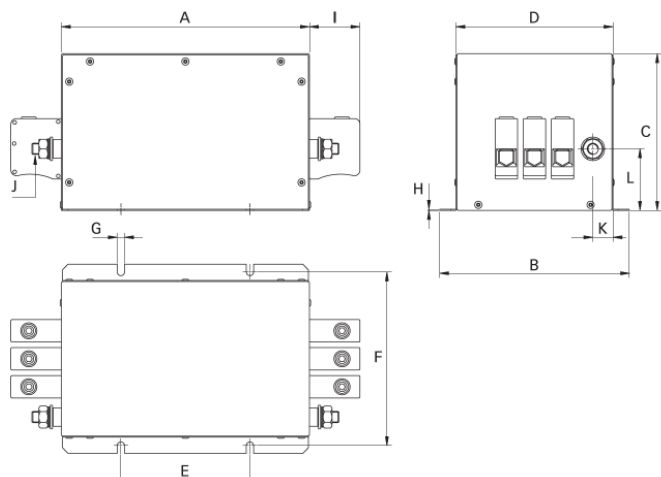
150A types



230A types



Mechanical data



Dimensions

	25A	50A	80A	110A	150A	230A
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

* 230A 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 → 165mm).

All dimensions in mm; 1 inch = 25.4mm

Tolerances according: ISO 2768-m / EN 22768-m

Filter input/output connector cross sections

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

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

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