Output filters
FN 520

Sine wave output filter for motor drives

SCHAFFNER
energy efficiency and reliability

- **Smoothing of PWM drive output voltage**
- **Efficient motor protection**
- **Increase of motor service life**
- **Reduction of audible motor noise**
- **Reduction of parasitic losses**
- **Improvement of system reliability**

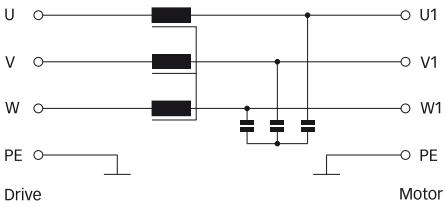
Approvals

RoHS 2002/95/EC

Technical specifications

Nominal operating voltage:	3x 500/288VAC
Motor frequency:	0 to 200Hz
Switching frequency:	6 to 20kHz
Rated currents:	4 to 16A @ 40°C
Motor cable length:	200m max.
Voltage drop:	≤10V @ 50Hz
Residual ripple voltage:	<5%
High potential test voltage:	P –> E 2500VDC for 2 sec
	P –> P 1100VDC for 2 sec
Protection category:	IP20
Overload capability:	1.4x rated current for 1 minute, every 15 minutes
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 @ 40°C/400V (Mil-HB-217F):	>100,000 hours

Typical electrical schematic



Features and benefits

- Conversion of the PWM output signal (symmetrical voltage components) of motor drives into a smooth sine wave with low residual ripple.
- Elimination of premature motor damage caused by high dv/dt, overvoltages, motor overheating and eddy current losses.
- Significantly increased service life of electric motors.
- Reduction of the pulse load of motor drive IGBTs and the parasitic losses on long shielded motor cables.
- Reduction of audible motor noise.
- Less interference propagation towards neighboring equipment or lines.
- IP20 housing and touch-safe terminals contribute to overall equipment safety.

Typical applications

- Motor drive applications with medium to long motor cables
- Pumps
- Conveyors
- HVAC applications
- Elevators
- General automation tasks
- Applications with multiple motors in parallel

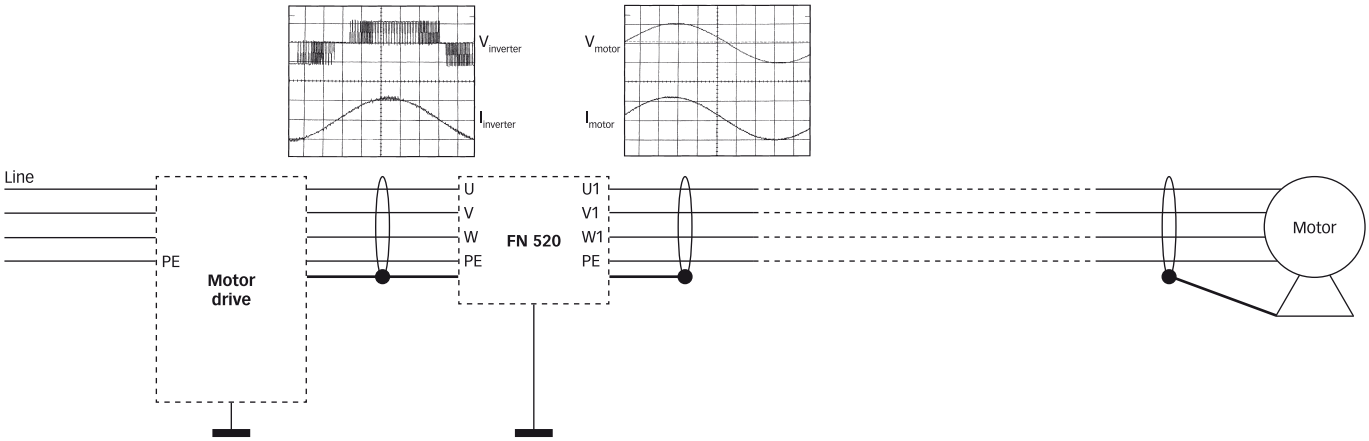
Filter selection table

Filter	Rated current @ 40ºC [A]	Typical motor power rating* [kW]	Typical power loss** [W]	Input/Output connections	Weight [kg]
FN 520-4-29	4	1.5	13	-29	8
FN 520-8-29	8	3.0	25	-29	11
FN 520-12-29	12	5.5	42	-29	15
FN 520-16-33	16	7.5	33	-33	18

* General purpose four-pole (1500r/min) AC induction motor rated 400V/50Hz.

** Exact value depends upon the motor cable type and length, switching frequency, motor frequency and further stray parameters within the system.

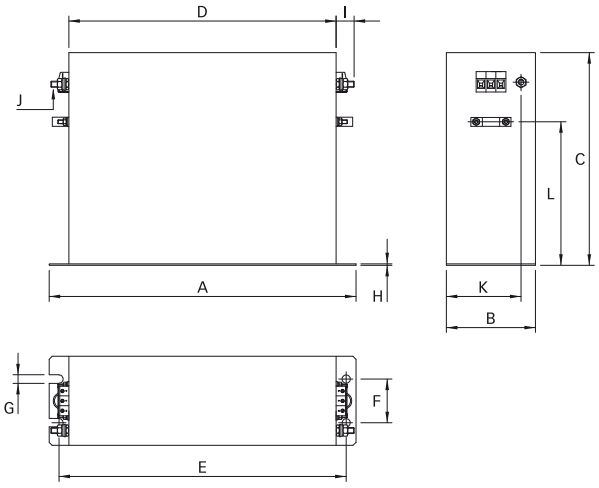
Typical block schematic



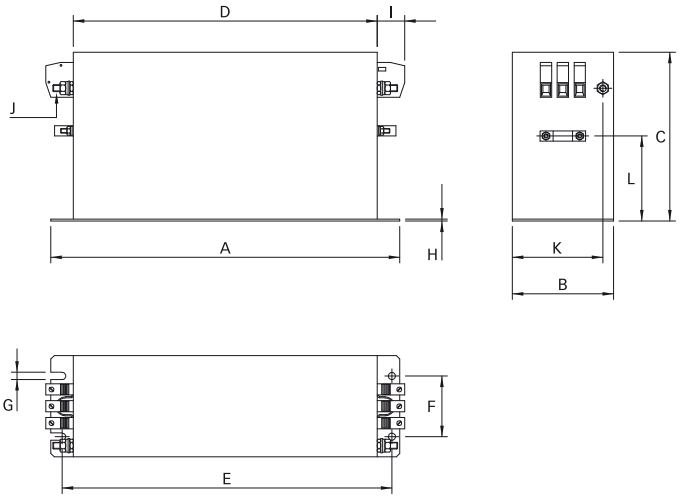
For additional information please ask for FN 520 installation instructions and the Schaffner application note „Output Filters for Use with Frequency Inverters in Motor Drive Applications“.

Mechanical data

4 to 12A types



16A types



Dimensions

	4A	8A	12A	16A
A	310	310	310	300
B	90	90	90	145
C	150	180	215	190
D	270	270	270	260
E	293	293	290	280
F	44	44	44	105
G	6.5	6.5	8.7	8.7
H	1.5	1.5	1.5	2.3
I	19	19	19	25
J	M6	M6	M6	M6
K	75	75	75	112.5
L	80	110	145	100

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

Filter input/output connector cross sections

	-29	-33
Solid wire	6mm²	16mm²
Flex wire	4mm²	10mm²
AWG type wire	AWG 10	AWG 6
Recommended torque	0.6 - 0.8Nm	1.5 - 1.8Nm

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

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