

3-phase + neutral line filters FN 356

General purpose three-phase + neutral line filter

SCHAFNER
safety for electronic systems



- Three-phase + neutral line filter for general four-wire filtering tasks
- Choice of connection style
- Low operating leakage current
- Compliant with IEC 60950
- Suitable to meet EN 55011/14/22

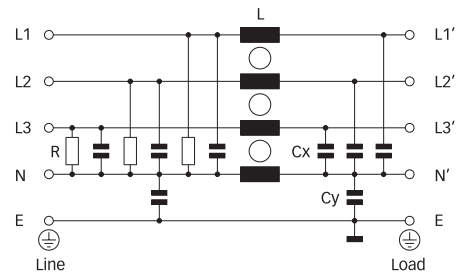
Approvals



Technical specifications

Maximum continuous operating voltage:	3x 440/250VAC
Operating frequency:	dc to 60Hz
Rated currents:	16 to 150A @ 40°C
High potential test voltage:	P → E 2000VAC for 2 sec P → P 1900VDC for 2 sec
Protection category:	IP20 (filters with connectors -29, -33, -34) IP00 (filters with connectors -06, -24, -28)
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, EN 133200
MTBF @ 40°C/400V (Mil-HB-217F):	220,000 hours

Typical electrical schematic






Features and benefits

- FN 356 represents the industry standard filter solutions for EMC compliance on three-phases and the neutral conductor, providing high attenuation of both symmetrical and asymmetrical interference.
- Choice of connection style is offered for an application-specific filter selection.
- Solid, touch-safe terminal blocks (-29, -33, -34 versions) offer a generous contacting cross section and contribute to overall safety (IP20).
- Used as a mains input filter, FN 356 filters increase the conducted immunity and thus contribute to system reliability.
- Design compliance with IEC60950 provides additional application flexibility.

Typical applications

- General purpose four-wire filtering
- Mainframe computer systems
- High power office equipment
- UPS
- Installations comprising automation equipment

Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 400VAC/50Hz	Power loss @ 25°C/50Hz	Input/Output connections			Weight
	[A]	[mA]	[W]				[kg]
FN 356-16-...	16 (18.4)	0.43	7.0	-06		-29	1.2
FN 356-25-...	25 (28.8)	0.43	10.1		-24	-33	1.5
FN 356-36-...	36 (41.5)	0.43	10.9		-24	-33	1.6
FN 356-50-...	50 (57.7)	0.43	15.8		-24	-33	2.3
FN 356-100-...	100 (115.0)	1.33	24.0		-28	-34	5.9
FN 356-150-28	150 (172.5)	8.00	45.9		-28		8.1

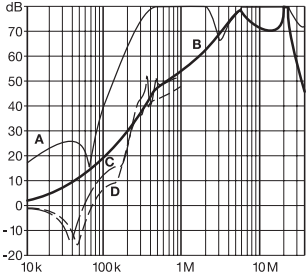
* To compile a complete part number, please replace the -.. with the required I/O connection style.

** Maximum leakage under normal operating conditions, based on the assumption, that all three phases and the neutral conductor are connected to the supply and the consumer. In this case, the current will mainly return through the neutral line, not as earth leakage.

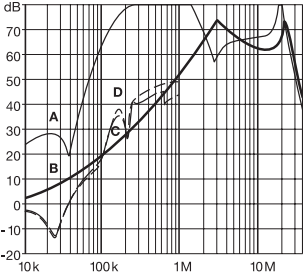
Typical filter attenuation

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

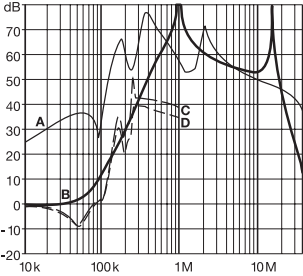
16A types



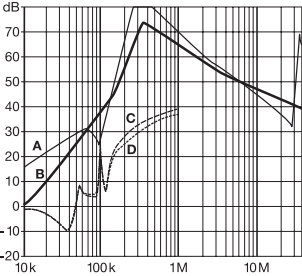
25 to 50A types



100A types

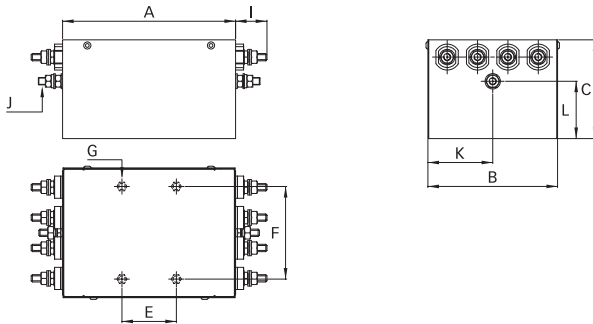


150A types

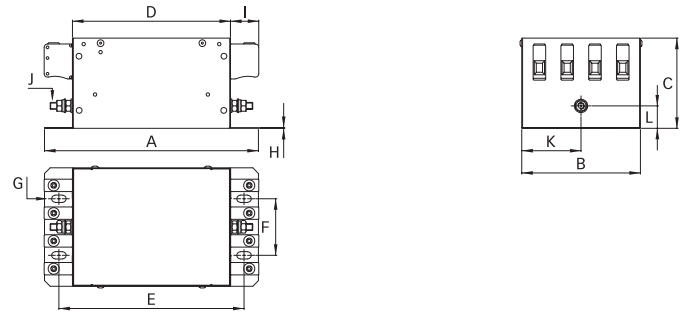


Mechanical data

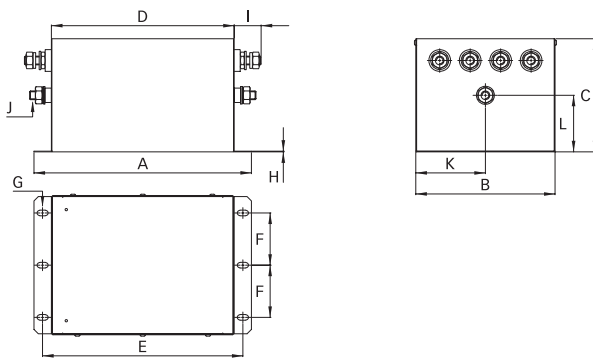
16 to 50A types (-06, -24)



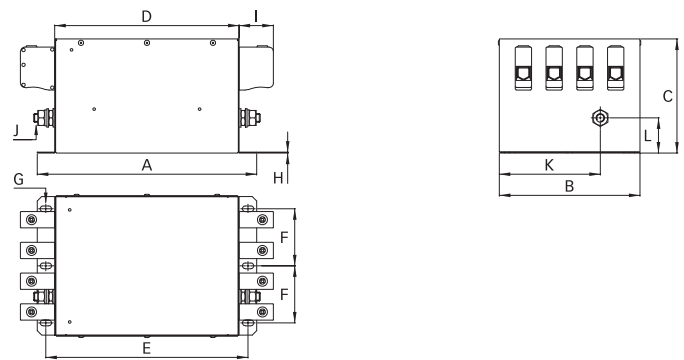
16 to 50A types (-29, -33)



100 and 150A types (-28)



100A type (-34)



Note: in favour of a better readability, connectors and earth studs are not shown in the horizontal projection.

Dimensions

	16A (-06)	16A (-29)	25A (-24)	25A (-33)	36A (-24)	36A (-33)	50A (-24)	50A (-33)	100A (-28)	100A (-34)	150A
A	149	189.5	140	189.5	140	189.5	143.25	192	250	249.6	340
B*	104	105	105	105	105	105	122	122	160	160	160
C	50	80	80	80	80	80	102	102	130	130	130
D		140		140		140		142.5	210	210	300
E	44 ±0.3	165.5	44 ±0.3	165.5	44 ±0.3	165.5	44 ±0.3	168	232	230	320
F	75 ±0.3	80	75 ±0.3	50	75 ±0.3	50	75 ±0.3	98	60	65	60
G	M5 x 7	13 x 6.5	M5 x 7	13 x 6.5	M5 x 7	13 x 6.5	M5 x 7	13 x 6.5	13 x 6.5	13 x 6.5	13 x 6.5
H		0.7		0.7		0.7		0.7	1	1	1
I	11	10.9	25.4	25	25.4	25	25.4	25	31	39	31
J	6.3 x 0.8	M6	M6	M6	M6	M6	M6	M6	M10	M10	M10
K	52	82	52.5	52.5	52.5	52.5	61	61	80	116	80
L	22.5	25	46.5	20	46.5	20	68.5	35	65	40	65

* Rivets exceed this dimension by max. 1.3mm on each side.

All dimensions in mm; 1 inch = 25.4mm

Tolerances according: ISO 2768 / EN 22768

Filter input/output connector cross sections

	-06 (6.3 x 0.8mm)	-24 (M6)	-28 (M10)	-29	-33	-34
Solid wire	n/a	n/a	n/a	6mm ²	16mm ²	35mm ²
Flex wire	n/a	n/a	n/a	4mm ²	10mm ²	25mm ²
AWG type wire	n/a	n/a	n/a	AWG 10	AWG 6	AWG 2
Recommended torque	n/a	3.5 - 4.0Nm	17 - 18Nm	0.6 - 0.8Nm	1.5 - 1.8Nm	4.0 - 4.5Nm

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

Your local partner: To find your local partner within Schaffner's global network, please go to www.schaffner.com

October 2006