

General Purpose AC/DC EMI Filter with High Attenuation Performance



- Rated currents from 1 to 30 A
- High performance filter attenuation
- High differential-mode attenuation
- Optional medical versions (B type)
- Optional safety versions (A type)
- Optional enhanced performance versions
- Optional overvoltage protection (Z type)



Performance indicators

Attenuation performance



Rated current [A]



Approvals



Features and benefits

- FN 2030 filters are designed for easy and fast chassis mounting
- The FN 2030 filters are also available as B versions with no Y-capacitors for medical applications as well as A versions with low capacitance for safety critical applications with a requirement for low leakage currents
- FN 2030 filters offer an optimized filter range for high performance AC and DC applications, in same compact size (M, N1 types)
- All filters provide an exceptional conducted attenuation performance, based on chokes with high permeable core material and excellent thermal behavior
- The higher inductivity versus amperage offers increased attenuation performance with same form factor compared to FN 2010 and FN 2020 filter series
- All FN 2030 filters can be delivered with optional surge pulse protection (Z type).
- Various terminal options allow you to select the desired connection style

Technical specifications

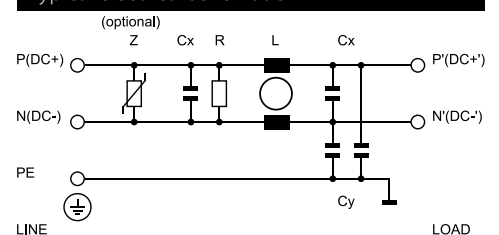
Rated voltage*	250 VAC, 50/60 Hz; 250 VDC
Operating frequency	DC to 400 Hz
Rated currents	1 to 30 A @ 40°C max.
High potential test voltage	P → PE 2000 VAC for 2 sec (equiv. cap <88 nF) P → PE 2550 VDC for 2 sec (equiv. cap >88 nF) P → PE 2500 VAC for 2 sec (B types) P → N 1100 VDC for 2 sec
Temperature range (operation and storage)	-25°C to +100°C (25/100/21)
Certified to	UL 1283, CSA 22.2 No. 8 1986, IEC/EN 60939 (applies to AC and DC applications)
Flammability corresponding to	UL 94 V-2 or better
Surge pulse protection (Z type)	Helps compliance to IEC61000-4-5 (Differential Mode only)
MTBF @ 40°C/230 V (Mil-HB-217F)	2,200,000 hours (1 to 10 A types) 1,200,000 hours (12 to 30 A types)

*maximum RMS operating voltage at rated frequency or the maximum DC operating voltage

Typical application

- Electrical and electronic equipment
- Consumer goods
- Household equipment
- Medical equipment
- Electronic data processing equipment
- Office automation and datacom equipment
- Various noisy applications requiring high filter performance

Typical electrical schematic



Filter selection table

Filter*	Rated current @ 40°C (25°C)	Leakage current** @ 250 VAC/50 Hz (@ 120 VAC/60 Hz)	Inductance L	Capacitance		Resistance R	Input/Output connections			Weight [g]
				Cx	Cy					
	[A]	[mA]	[mH]	[µF]	[nF]	[kΩ]				
FN 2030-1-..	1 (1.1)	0.31 (0.18)	20	0.22	2.2	1000	-06	-07		58
FN 2030-3-..	3 (3.4)	0.47 (0.27)	14	0.33	3.3	1000	-06	-07		87
FN 2030-4-..	4 (4.5)	0.47 (0.27)	14	0.33	3.3	1000	-06	-07		92
FN 2030-6-..	6 (6.7)	0.66 (0.38)	8	0.47	4.7	680	-06	-07		100
FN 2030-8-..	8 (8.9)	0.66 (0.38)	8	0.47	4.7	680	-06	-07		170
FN 2030-10-..	10 (11.2)	0.66 (0.38)	8	0.47	4.7	680	-06	-07		196
FN 2030-12-..	12 (13.4)	0.79 (0.45)	4	1.0	10	330	-06	-07		185
FN 2030-16-..	16 (17.9)	0.79 (0.45)	4	1.0	10	330	-06	-07		225
FN 2030-20-..	20 (22.4)	0.79 (0.45)	4	1.0	10	330	-06		-08	285
FN 2030-30-08	30 (33.5)	0.79 (0.45)	2	1.0	10	330			-08	326
FN 2030 A-1-..	1 (1.1)	0.07 (0.04)	20	0.22	0.47	1000	-06	-07		58
FN 2030 A-3-..	3 (3.4)	0.07 (0.04)	14	0.33	0.47	1000	-06	-07		87
FN 2030 A-4-..	4 (4.5)	0.07 (0.04)	14	0.33	0.47	1000	-06	-07		92
FN 2030 A-6-..	6 (6.7)	0.07 (0.04)	8	0.47	0.47	680	-06	-07		100
FN 2030 A-8-..	8 (8.9)	0.07 (0.04)	8	0.47	0.47	680	-06	-07		170
FN 2030 A-10-..	10 (11.2)	0.07 (0.04)	8	0.47	0.47	680	-06	-07		196
FN 2030 A-12-..	12 (13.4)	0.07 (0.04)	4	1.0	0.47	330	-06	-07		185
FN 2030 A-16-..	16 (17.9)	0.07 (0.04)	4	1.0	0.47	330	-06	-07		225
FN 2030 A-20-..	20 (22.4)	0.07 (0.04)	4	1.0	0.47	330	-06		-08	285
FN 2030 A-30-08	30 (33.5)	0.07 (0.04)	2	1.0	0.47	330			-08	326
FN 2030 B-1-..	1 (1.1)	0.00	20	0.22		1000	-06	-07		58
FN 2030 B-3-..	3 (3.4)	0.00	14	0.33		1000	-06	-07		87
FN 2030 B-4-..	4 (4.5)	0.00	14	0.33		1000	-06	-07		92
FN 2030 B-6-..	6 (6.7)	0.00	8	0.47		680	-06	-07		100
FN 2030 B-8-..	8 (8.9)	0.00	8	0.47		680	-06	-07		170
FN 2030 B-10-..	10 (11.2)	0.00	8.45	0.47		680	-06	-07		196
FN 2030 B-12-..	12 (13.4)	0.00	4	1.0		330	-06	-07		185
FN 2030 B-16-..	16 (17.9)	0.00	4	1.0		330	-06	-07		225
FN 2030 B-20-..	20 (22.4)	0.00	4	1.0		330	-06		-08	285
FN 2030 B-30-08	30 (33.5)	0.00	2	1.0		330			-08	326
Enhanced performance										
FN 2030 N1-1-06	1 (1.1)	5.34 (3.08)	20	0.22	68	1000	-06			65
FN 2030 M-3-06	3 (3.4)	3.69 (2.28)	14	0.33	47	1000	-06			110
FN 2030 M-4-06	4 (4.5)	3.69 (2.28)	14	0.33	47	1000	-06			110
FN 2030 M-6-06	6 (6.7)	3.69 (2.28)	8	0.47	47	680	-06			120
FN 2030 N1-8-06	8 (8.9)	5.34 (3.08)	8	0.47	68	3680	-06			200
FN 2030 N1-10-06	10 (11.2)	5.34 (3.08)	8	0.47	68	680	-06			200
FN 2030 N1-12-06	12 (13.4)	5.34 (3.08)	4	1.0	68	330	-06			210
FN 2030 M-16-06	16 (17.9)	3.69 (2.28)	4	1.0	47	330	-06			265
FN 2030 M-20-..	20 (22.4)	3.69 (2.28)	4	1.0	47	330	-06		-08	326
FN 2030 M-30-08	30 (33.5)	3.69 (2.28)	2	1.0	47	330			-08	346

* To compile a complete part number, please replace the -.. with the required I/O connection style. For surge pulse protection, please add Z (e.g. FN 2030Z-10-06, FN 2030BZ-20-08). The different letters code the used Cy values in the filter type (A = 0.47nF; M = 47nF; N1 = 47nF)

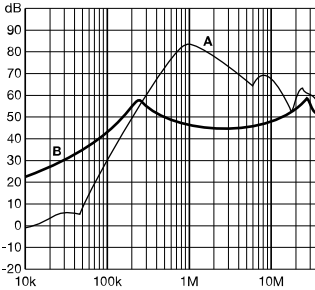
** Maximum leakage under usual AC operating conditions (acc. IEC60939-3). Note: if the neutral line is interrupted, worst case leakage could reach twice this level. Leakage current for DC application is 0 mA

Typical filter attenuation

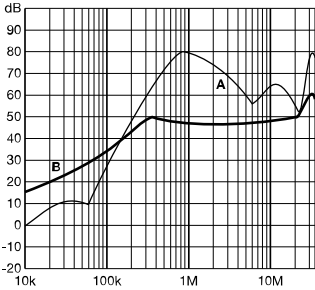
Per CISPR 17; A=50 Ω/50 Ω sym; B=50 Ω/50 Ω asym

Standard Types

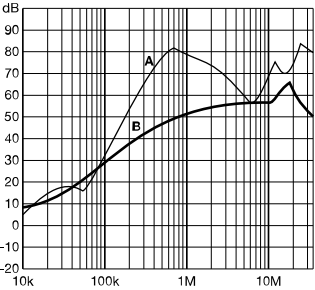
1 to 4 A types



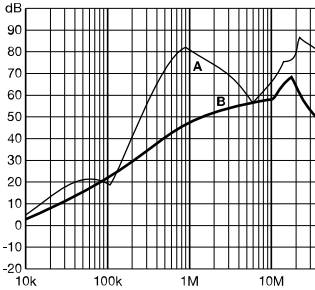
6 to 10 A types



12 to 20 A types

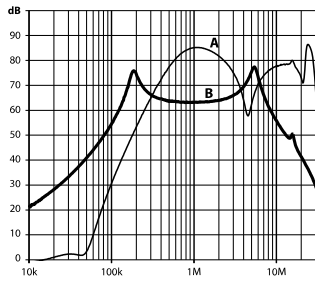


30 A types

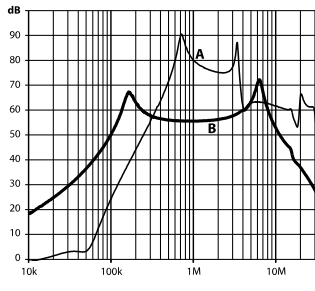


Enhanced Performance Types

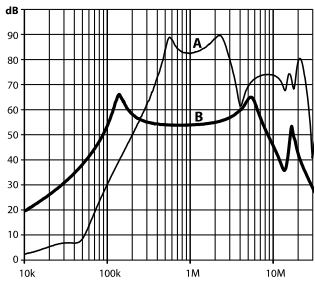
1 A types



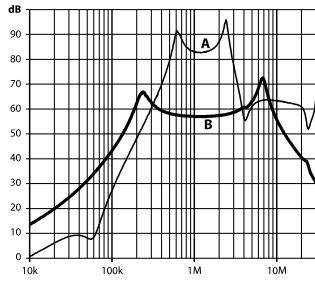
3 A types



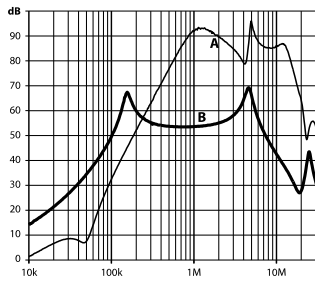
4 A types



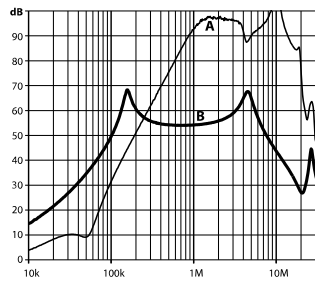
6 A types



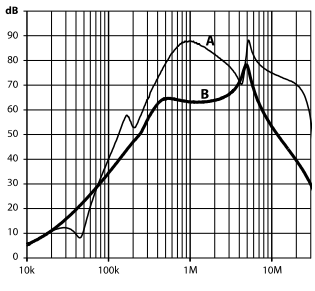
8 A types



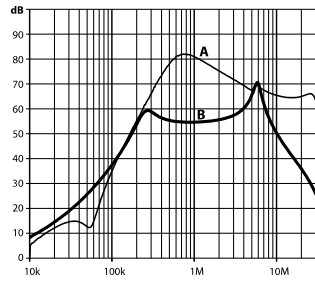
10 A types



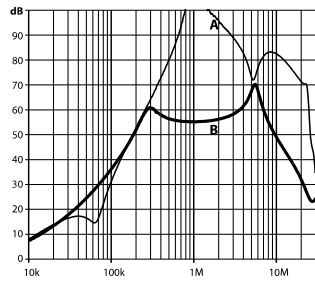
12 A types



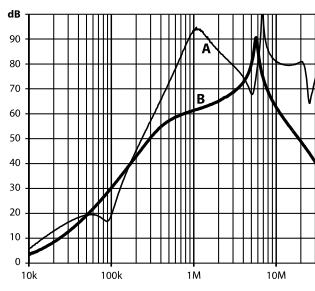
16 A types



20 A types

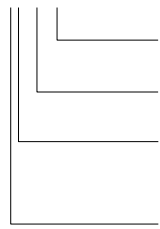


30 A types



Product selector

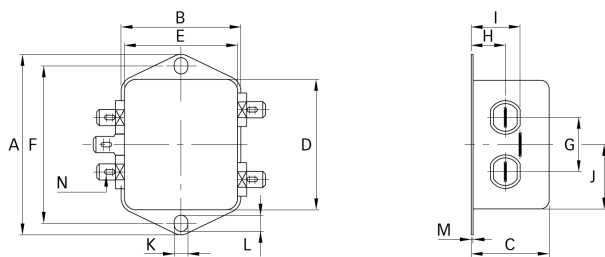
FN 2030-xy-xx-yy



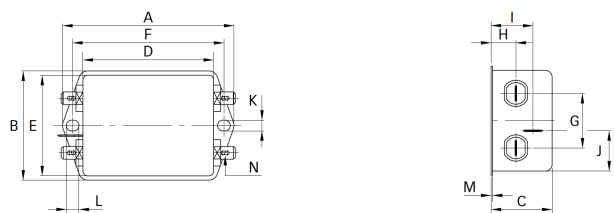
06	Faston 6.3 × 0.8 mm (spade/soldering)
07	Wire leads
08	Studs (M4 screws)
1 to 60	Rated current
Blank	Standard version
Z	With surge protection
Blank	Standard version
A	Safety version
B	Medical version
N1/M	High performance version

Mechanical data

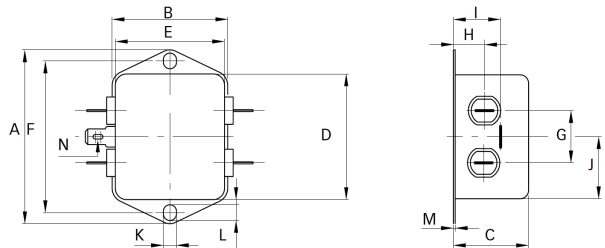
Connection style -06, 1 A types



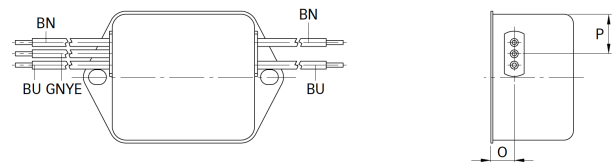
Connection style -06, 8 to 20 A types



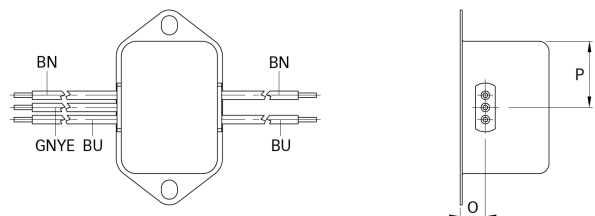
Connection style -06, 3 to 6 A types



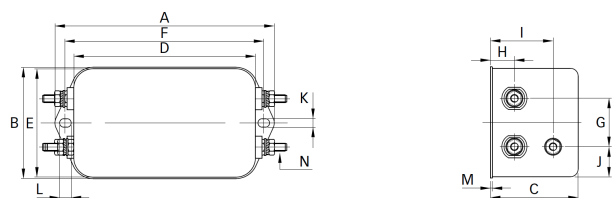
Connection style -07, 8 to 16 A types (same dimensions as style -06)



Connection style -07, 1 to 6 A types (same dimensions as style -06)



Connection style -08, 20 and 30 A types



Dimensions

	1 A	3 A	4 A	6 A	8 A	10 A	12 A	16 A	20 A	30 A	Tolerances
A	64	71	71	71	85	85	85	85	85	85	±0.5
B	35	46.6	46.6	46.6	54	54	54	54	54	54	±0.5
C	24.3	22.3	22.3	22.3	30.3	30.3	30.3	40.3	40.3	40.3	±0.5
D	43.5	50.5	50.5	50.5	64.8	64.8	64.8	64.8	64.8	64.8	±0.5
E	32.5	44.5	44.5	44.5	49.8	49.8	49.8	49.8	49.8	49.8	±0.5
F	54	61	61	61	75	75	75	75	75	75	±0.3
G	21	21	21	21	27	27	27	27	27	27	±0.2
H	9.3	10.8	10.8	10.8	12.3	12.3	12.3	12.3	12.3	12.3	±0.5
I	15.3	16.8	16.8	16.8	20.8	20.8	20.8	29.8	29.8	29.8	±0.5
J	21.8	25.25	25.25	25.25	19.9	19.9	19.9	11.4	11.4	11.4	±0.5
K	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	
L	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	
M	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	
Connection style -06											
N	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8	6.3 x 0.8		
Connection style -07											
O	8.3	8.3	8.3	8.3	8.3	8.3	8.3	8.3			±0.5
P	21.8	14	14	14	14.9	14.9	14.9	14.9			±0.5
AWG type wire	AWG 20	AWG 20	AWG 20	AWG 18	AWG 18	AWG 18	AWG 16	AWG 16			
Wire length	140	140	140	140	140	140	140	140			+5
Connection style -08											
N									M4	M4	
Recommended torque (Nm)									1.2 - 1.3	1.2 - 1.3	

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



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