About Line Filters

Field of Application

The increasing use of electronic circuitry in many technical fields made it necessary to protect these sensitive control systems from external interference. For this purpose, special mains filters have been developed. These filters eliminate or minimize interference to guarantee the function of electronic equipment.

Possible Interference

In practice, mains interference can be divided into four categories:

A. Fluctuation of the mains voltage (magnetic stabilizer).
B. Harmonic wave interference in the frequency range 100 Hz-2 kHz (selective harmonic filter type).
C. Transient interference signals in the frequency range up to 300 MHz (low pass filter type)
D. Sinusoidal interference signals in the frequency range up to 1 GHz (broad band, low pass filter type)

From a practical point of view, the main types of interference are those in the last two categories, C and D, superimposed upon the mains. Such interference may adversely affect or even destroy electronic circuits.

Function of the Mains Filter

An optimum rated mains filter can readily perform a double function (Fig.1).

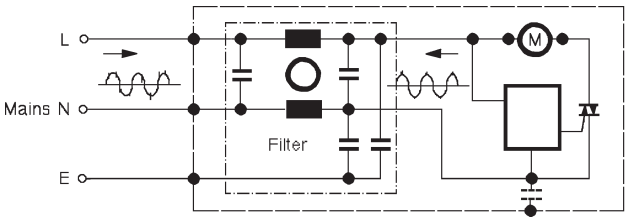


Fig. 1. Double function of a mains filter, acts in both directions.

Function 1
The filter protects the electronic control circuit from voltage peaks on the mains input that can be generated by, for instance, electromechanical switches and relays.

Function 2
The same filter also acts in the opposite direction. These can attenuate interference variables to such an extent that the admissible level of interference can be attained.

Filter Construction and Combination

SCHURTER mains filters are always available together with standard appliance inlets, or with a combination of inlet, fuse holder, switch and voltage selector. Following criterion are of essential importance:

a) Radio interference suppression capacitors
All SCHURTER filters are equipped with radio interference suppression capacitors, either Class X_2 or Class Y, according to international standards requirements of IEC. As a rule, they are self healing metal-paper types, which are tested according to the standards of the major user countries, and which are accepted as noise suppression capacitors.

Class X_2 capacitors have unlimited capacity for those applications in which a failure caused by a short circuit cannot result in a dangerous electrical shock.

Class Y Capacitors are intended for an operation voltage V_{eff} =250 V with increased electrical and mechanical safety and limited capacity.

b) Leakage current according to IEC 335.T. 1
The leakage current of a device is mainly determined by the capacitance value of the Y-capacitor. According to international standards IEC 335-1 and VDE 0700 T.1., the following regulations with respect to leakage current can be assumed:

For electrical household appliances

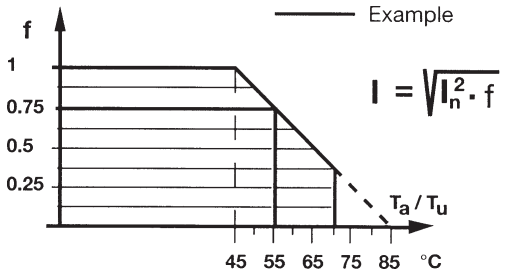
Portable appliances	to Protection class I	0.75 mA
Stationary motor appliances *	to Protection class I	3.5 mA
Stationary heating appliances	to Protection class I	5 mA
Appliances	to Protection class II	0.25 mA
Unshielded appliances		5 mA
Others		3.5 mA

* Stationary appliances fixed or weighing in excess of 18 kg (without carrying handle)

For other applications

Ref.	Analytical	Medical	EDV	Calculators	Instruments
UL	0.5 mA (UL 1262)	0.1 mA (UL 544)	5.0 mA (UL 478)	5.0 mA (UL 114)	5.0 mA (UL 1244)
IEC	-	0.1 mA (IEC601-1)	3.5 mA (IEC 435)	0.5 mA (IEC 380)	3.5 mA (IEC 348)

c) Rated voltage U_n ; Rated current I_n
For each filter type, the rated voltage and the rated current are specified in the technical data sheet. The indicated rated currents refer to the full load (I_n) at an ambient temperature of 45˚C (40˚C). At higher temperatures, the allowable maximum rated current decreases linearly to 0 amp at a temperature of 85˚C.



Permissible working continuous I as a function of ambient temperature

d) Application class according to DIN40040
HPF (-25˚C to +85˚C / 95% RAH 30 days)

e) Attenuation loss (asymm., and symm.)
In the case of asymmetric measurement, the line and neutral conductors are measured together with respect to earth (Fig. 2).

About Line Filters, continued

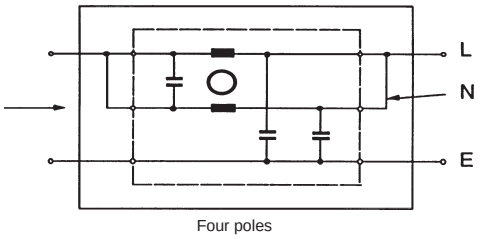


Fig. 2. Asymmetric measurement: line (L) and neutral (N) are measured together with respect to earth (E).

In the case of symmetric measurement, the attenuation loss is measured between the line and neutral through a balancing transformer. The earth wire is not used (Fig. 3).

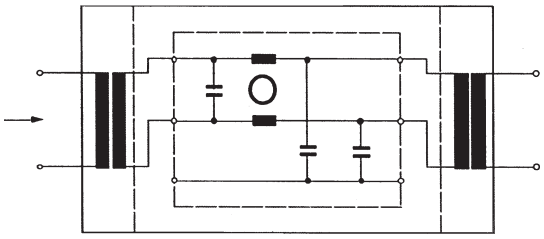


Fig. 3. Four pole network with integrated balanced transformer for the measurement of attenuation loss in the symmetrical case.

f) Measurement method
The attenuation loss A is defined as that loss which is developed when a four pole network is inserted into an existing set-up, having a surge impedance Z. Using the assumption that the LHS as well as the RHS terminal impedance of the four pole network are of the same real value, the attenuation loss and the overall loss are the same. (Fig. 4)

The insertion transmission loss, calculated in decibels, can be obtained as follows:

$$A_{dB} = 20 \log \frac{U_G}{2\,U_2}$$

In practice, the substitution method is used exclusively. Its main advantage is that the absolute value of the voltage needs not to be known (Fig. 5).

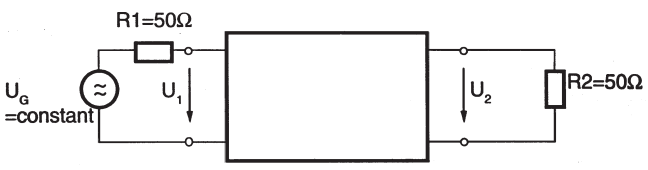


Fig. 4. Four pole network with real termination

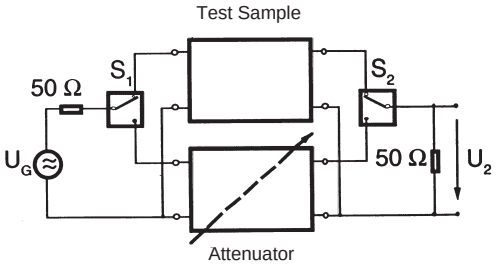


Fig. 5. Substitution method for measurement of attenuation loss

g) Dielectric strength
To date the dielectric strength which has been tested according to the Y-capacitor specification VDE 0565 T.3 specifies this test as per the following table:

Capacitor		Type test
Class X2	Ceramic and foil capacitors	Up – = 4.3 Un
	Self healing capacitors (MP)	Up ~ = 2.15 Un
Class Y	All capacitors	Up ~ = 1500 V
	Between plate and case	Up ~ = 2 Un + 1500V
	Impulse voltage test	in Germany none

Standards and Approvals

SCHURTER mains filters according to international quality standards are approved or in test at all major laboratories such as UL, CSA, VDE, SEMKO, SEV and DEMKO.

The design of SCHURTER filter has air gaps and creepage clearances which qualfy them for use in equipment according to IEC/EN 60950. In addition, SCHURTER medical filters have low-leakage, tool-accessible only fuse drawers, and bleed resistors which qualify them for use in equipment according to UL 601-1 and IEC/EN 60950.

Consulting, Laboratory Tests

If you have a particular application not mentioned in this catalog, feel free to contact SCHURTER at one of the numbers listed below. We can perform technical tests and if necessary, also specific laboratory measurements. The measurements can either be simulated or performed directly on your equipment.

5110 Series Line Filter with AC Inlet

NEW

Improved Filter Design for Optimum Attenuation

Enhanced Range, Now Available up to 15 Amps

Standard or Medical Filter
(types with bleed resistors on request)

Standards: UL 1283; CSA C22.2/8; IEC 320/C14 and 60939; EN 60320-1 and 133200

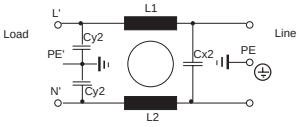
Screw-on Panel Mount

Snap-in Panel Mount

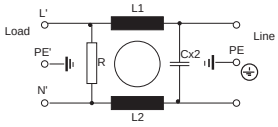
- For “cold” connections 70˚C, Protection Class I
- Qualifies for use in equipment with safety requirements according to IEC 950 / EN60950 and IEC 601-1
- Designed to replace discrete filters that require wiring between the filter and panel inlet; eliminates re-radiated electromagnetic energy caused by current traveling back and forth across the wires.
- Bleed resistor eliminates the potential for shock after power is removed from the equipment
- Screw mount from front or rear, or snap-in mount from front
- Quick-connect terminals .250 x .032” (6.3 X 0.8mm)
- 0.5 Nm torque required for M3 screws
- For attenuation graphs, see page 2
- For ac inlets without RFI filter, request our latest “International Circuit Protection and Power Entry Devices” catalog

UL/CSA recognition 1A-15A/250V
VDE approval 1A-10A/250V

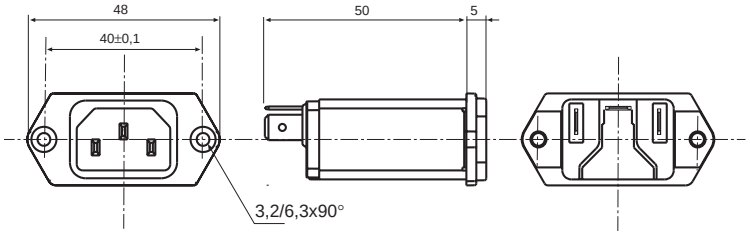
Standard Filter



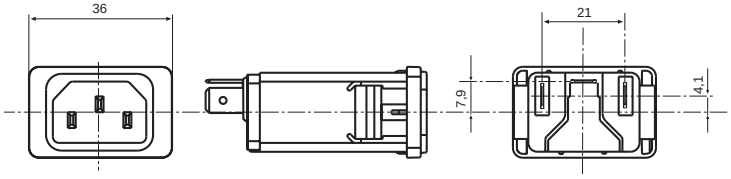
Medical Filter



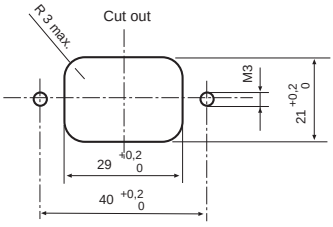
Screw-on mounting with countersunk screw M3



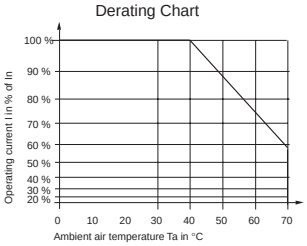
Snap-in mounting for panel thickness 0.8 - 3 mm



Cut out



Derating Chart



Order Numbers

5110 with standard RFI filter

Screw-on	Snap-in 0.8 - 3.0 mm	I_n (A) T_{amb} 40˚C	U_n (V)	Max. leakage curr. @ 250V/50 HZ	Cx2 (nF)	Cy2 (2X) (nF)	L(2X) (mH)	Test voltage L,N E	Test voltage L N
5110.0133.1	5110.0143.1	1A	up to 250V max. 50/60 HZ	<0.5 mA	47	2.2	11	2700V DC 2 sec.	1075V DC 2 sec.
5110.0233.1	5110.0243.1	2A		<0.5 mA	47	2.2	4		
5110.0333.1	5110.0343.1	3A		<0.5 mA	47	2.2	2.5		
5110.0433.1	5110.0443.1	4A		<0.5 mA	47	2.2	1.6		
5110.0633.1	5110.0643.1	6A		<0.5 mA	47	2.2	0.7		
5110.0833.1	5110.0843.1	8A		<0.5 mA	47	2.2	0.6		
5110.1033.1	5110.1043.1	10A		<0.5 mA	47	2.2	0.4		
5110.1533.1	5110.1543.1	15A		<0.5 mA	47	2.2	0.1		

5110 with medical RFI filter (low leakage)

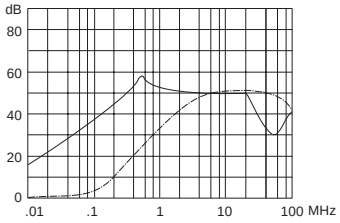
Screw-on	Snap-in 0.8 - 3.0 mm	I_n (A) T_{amb} 40˚C	U_n (V)	Max. leakage curr. @ 250V/50 HZ	Cx2 (nF)	Bleed resistor	L(2X) (mH)	Test voltage L,N E	Test voltage L N
5110.0133.3	5110.0143.3	1A	up to 250V max. 50/60 HZ	<5 µA	47	1 M ohm	11	2700V DC 2 sec.	1075V DC 2 sec.
5110.0233.3	5110.0243.3	2A		<5 µA	47	1 M ohm	4		
5110.0333.3	5110.0343.3	3A		<5 µA	47	1 M ohm	2.5		
5110.0433.3	5110.0443.3	4A		<5 µA	47	1 M ohm	1.6		
5110.0633.3	5110.0643.3	6A		<5 µA	47	1 M ohm	0.7		
5110.0833.3	5110.0843.3	8A		<5 µA	47	1 M ohm	0.6		
5110.1033.3	5110.1043.3	10A		<5 µA	47	1 M ohm	0.4		
5110.1533.3	5110.1543.3	15A		<5 µA	47	1 M ohm	0.1		

5110 Series continued

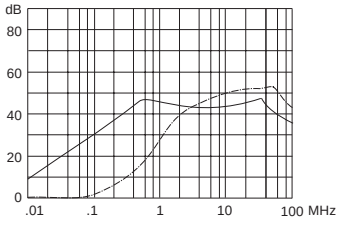
Attenuation Loss – Standard Filters

- - - - - symmetrical (differential mode): Line to line
_____ asymmetrical (common mode): Line to ground

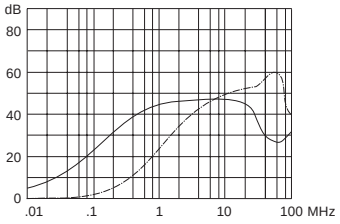
1 A



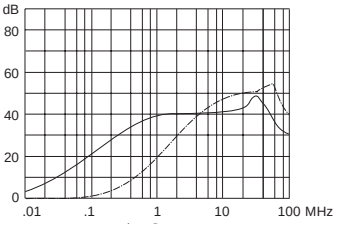
NEW 2 A



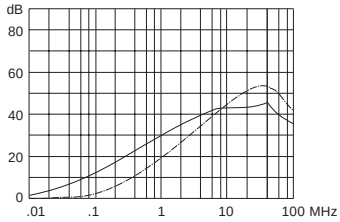
3 A



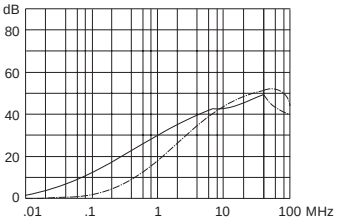
NEW 4 A



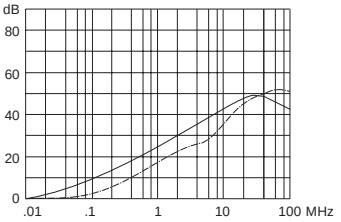
6 A



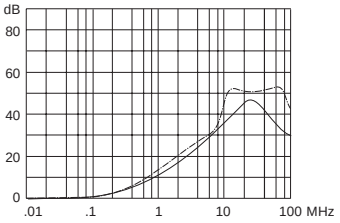
NEW 8 A



10 A



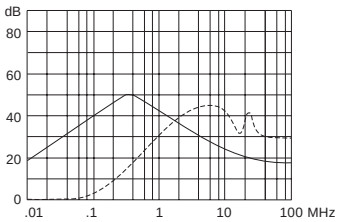
NEW 15 A



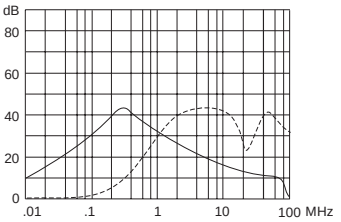
Attenuation Loss – Medical Filters

- - - - - symmetrical (differential mode): Line to line
_____ asymmetrical (common mode): Line to ground

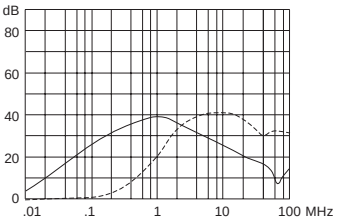
1A



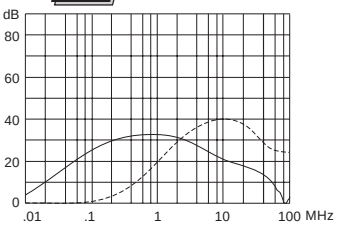
NEW 2A



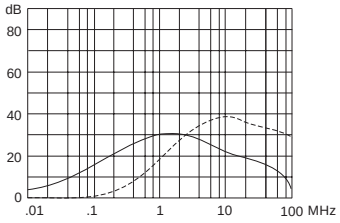
3A



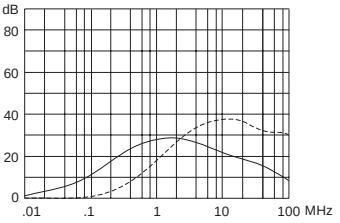
NEW 4A



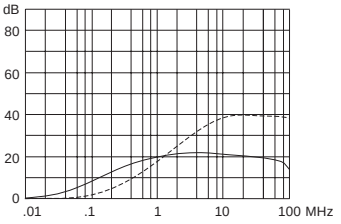
6A



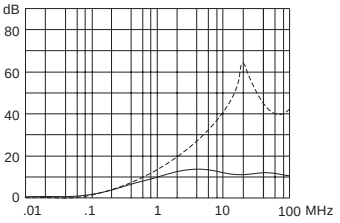
NEW 8A



10A



NEW 15A



C20F High Current Line Filter and AC Inlet - 20 Amps

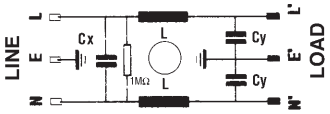
NEW

Standard or Medical Filter

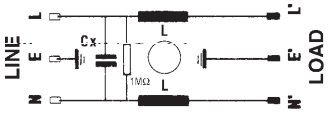
- For cold connections 65˚ C, Protection Class I
- Qualifies for use in equipment with safety requirements according to IEC 950 / EN 60950 and IEC 601-1
- Designed to replace discrete filters that require wiring between the filter and panel inlet. Eliminates re-radiated electromagnetic energy due to current traveling back and forth across the wires.
- Screw mounts from front side
- Solder/quick-connect terminals .250 x .032" (6.3 x 0.8mm)
- Applications include higher power consuming equipment such as CAD systems, office automation equipment, industrial workstations, base stations, file servers, power supplies
- 0.5 Nm torque required for M3 screws
- Materials: body: thermoplastic PBT (UL 94V-0); aluminum casing
  terminals: brass, tin-plated
- For attenuation graphs, see page 68
- For general information on filters, see page 50
- For options and accessories, see page 30
- For ac inlet or outlet without RFI filter, see page 18
- For mating cordset with Nema 5-15P plug-end, see page 21

UL	recognition	20A/250V	File #E72928
CSA	certification	20A/250V	File #LR97784
VDE	approval	16A/250V	File #104884

Standard filter

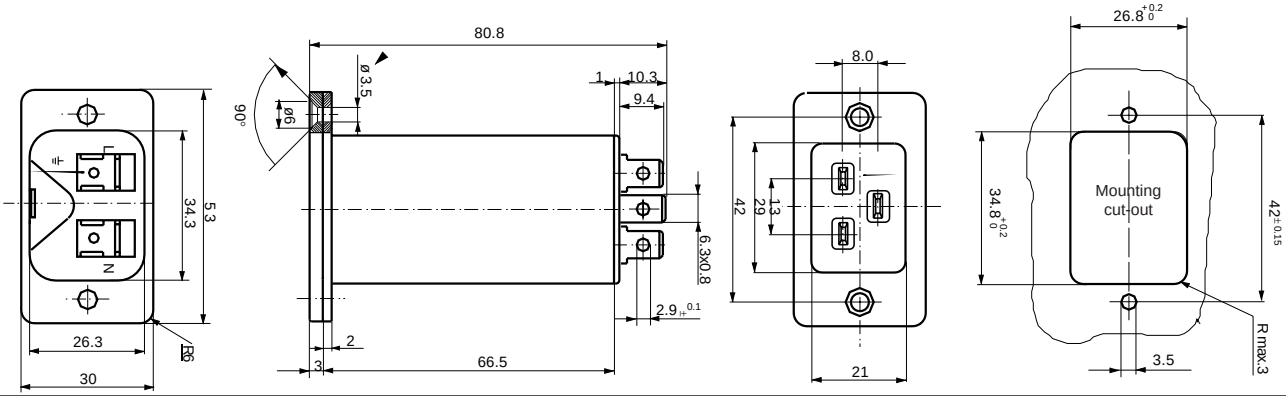


Medical filter



Standards: UL 1283 and 498; CSA C22.2/8 and /42; IEC 320/C20 and 939; EN 133 200 and 60320; DIN VDE 0565 T.3

Technical Drawings – Filter



Order Numbers

C20F with standard RFI filter

Order number	Mounting	I_n (A) T_{amb} 40˚C	U_n (V)	Max. leakage curr. @250V/50 HZ	Cx (nF)	Cy (nF)	Bleed resistor	L(2X) (mH)	Test voltage L,N E	Test voltage L N
C20F.0001	screw mount from front	20A / 16A (see approvals)	up to 250V max. 50/60 HZ	<0.5mA	100	2.2	1 MΩ	0.3	2700VDC 2 sec.	1075VDC 2 sec.

C20F with medical RFI filter

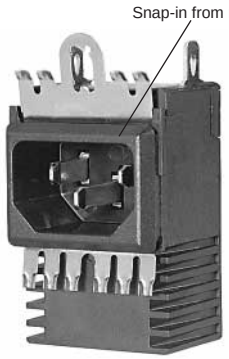
Order number	Mounting	I_n (A) T_{amb} 40˚C	U_n (V)	Max. leakage curr. @250V/50 HZ	Cx (nF)	Cy (nF)	Bleed resistor	L(2X) (mH)	Test voltage L,N E	Test voltage L N
C20F.0002	screw mount from front	20A / 16A (see approvals)	up to 250V max. 50/60 HZ	< 5µA	100	–	1 MΩ	0.3	2700VDC 2 sec.	1075VDC 2 sec.

Cordset (see page 21 for technical drawing and information)

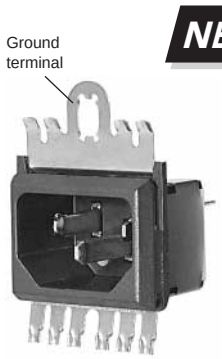
Order Number	Equipment End	Destination End	Cordage	Color	Length of Cable	Rated Current	Approvals
0888.0220	C19 plug mates to C20 inlet	Nema 5-15P	SJT (3x14 AWG)	Black	8 foot	15A/125V *	UL #E191239 CSA #LR702497

*Nema 5-15P max. rating

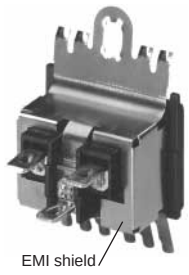
GRF Line Filter with AC Inlet and EMI Shield



GRF4 with filter



NEW



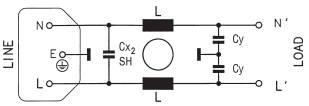
Standard or Medical Filter
(types with bleed resistors on request)

Standards: UL 1283; CSA C22.2/8; IEC 320/C14; EN 60320; EN133200

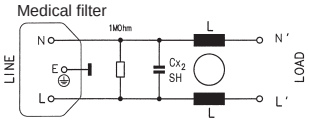
- For cold connections 70° C, Protection Class I. Qualifies for use in equipment acc. to IEC 950 and IEC 601-1 (medical filter).
- Metal shield safeguards equipment against radiated EMI (electromagnetic interference). The force of its "claws" against the enclosure reinforces contact and ensures continuity in the path to ground.
- Shielded inlet with RFI filter (GRF4) or without filter (GRF2)
- New Lock and Shield™ snap-in design for rear panel mounting – allows terminals to be pre-wired before mounting
- Solder/quick-connect terminals .187 x .032" (4.8 x 0.8mm)
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered KP, see page 32

		GRF2		GRF4 (500mA-15A/250V)
UL	recognition	15A/250V	File #E96454	File#E72928
CSA	certification	15A/250V	File #LR38456	File#LR701867
VDE	approval	10A/250V	File #100875	File#102348
SEMKO	approval	10A/250V	} File numbers on request	
SEV	approval	10A/250V		

Standard filter

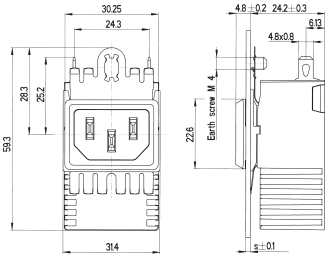


Medical filter

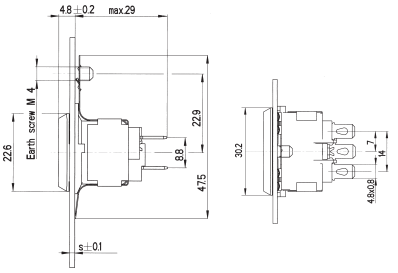


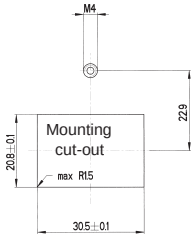
Technical Drawings

GRF4 (with filter)

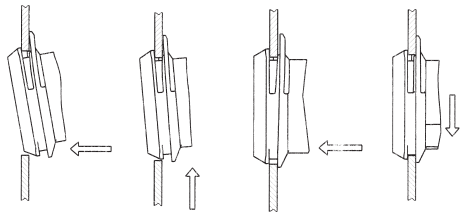


GRF2 (without filter)





Mounting Instructions



1. Slide slot over panel
2. Press up
3. Push forward
4. Snap into place

Order Numbers

GRF4 with standard RFI filter

Order No.	Mounting	I_n (A) T_{amb} 40˚C	U_n (V)	Max. leakage curr. @ 230V/50 HZ	Cx_2 (nF)	Cy (nF)	L(2X) (mH)	Test voltage L,N E	Test voltage L N
GRF4.0411.013	1.5mm panel thickness (other panel thicknesses available on request)	500mA	up to 250V max. 50/60 HZ	<0.5mA	100	2.2	24	2kV 50Hz 2 sec.	.76kV 50Hz 2 sec.
GRF4.0412.013		1A		<0.5mA	100	2.2	12		
GRF4.0413.013		3A		<0.5mA	100	2.2	2.5		
GRF4.0416.013		6A		<0.5mA	100	2.2	0.78		
GRF4.0417.013		10A		<0.5mA	100	2.2	0.225		
GRF4.0419.013		15A		<0.5mA	100	2.2	0.075		

GRF4 with medical RFI filter (low leakage)

No. Order numbers	Mounting	I_n (A) T_{amb} 40˚C	U_n (V)	Max. leakage curr. @ 120V/60 HZ	Cx_2 (nF)	Bleed resistor	L(2X) (mH)	Test voltage L, N E	Test voltage L N
GRF4.0021.013	1.5mm panel thickness (other panel thicknesses available on request)	500mA	up to 250V max. 50/60 HZ	< 5µA	100	1 MΩ	24	2.5kV 50Hz 2 sec.	.76kV 50Hz 2 sec.
GRF4.0022.013		1A		< 5µA	100	1 MΩ	12		
GRF4.0023.013		3A		< 5µA	100	1 MΩ	2.5		
GRF4.0026.013		6A		< 5µA	100	1 MΩ	0.78		
GRF4.0027.013		10A		< 5µA	100	1 MΩ	0.225		
GRF4.0029.013		15A		< 5µA	100	1 MΩ	0.075		

GRF2 (without filter)

Ground through metal shield and terminals	Ground through metal shield only	Panel thickness	Terminals
GRF2.0312.11	GRF2.0212.11	1.2 mm	solder/quick-connect 4.8 x 0.8mm
GRF2.0315.11	GRF2.0215.11	1.5 mm	
GRF2.0320.11	GRF2.0220.11	2.0 mm	

Unlocking accessory tool: part number 0696.0131

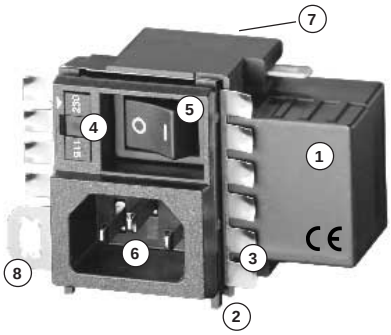
GRM4 Advanced, Multifunction Power Entry Module – With RFI Filter and EMI Shield

Features:

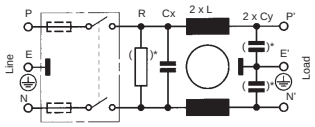
1. **Ultra-compact RFI filter design - only 26mm deep behind the panel**
2. **Snap-in mounting**
3. **EMI protection around panel cut-out**
4. **2-position voltage selector (optional)**
5. **2-pole on/off switch (1-pole optional)**
6. **AC inlet (IEC 320/C14)**
7. **Fuse clips ride on the back (fuses can be pre-inserted); with plastic insulation cover**
8. **Screw terminal ensures high integrity path to ground**

For Standard or Medical Filter Applications

NEW



Standard filter (Medical filter *)



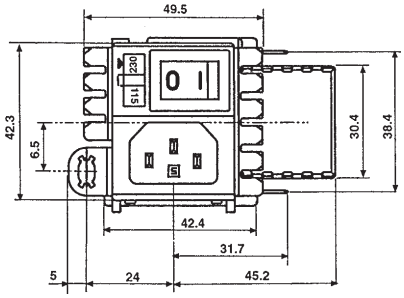
* Medical version without Y-capacitor, with bleed resistor (R = 1 M-Ohm)

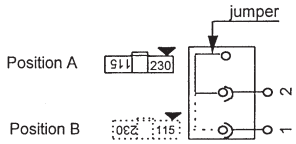
- For cold connections 65° C, Protection Class I
- Qualifies for use in equipment with safety requirements according to IEC 950 / EN 60950 and IEC 601-1 (for medical filter)
- Advanced filter design provides optimal attenuation of line-conducted interference, with improved performance at high frequencies
- Metal shield safeguards equipment against radiated, electromagnetic interference (EMI). The force of its "claws" against the enclosure reinforces contact and ensures continuity in the path to ground.
- Lock and Shield™ snap-in design, for rear panel mounting – allows terminals to be pre-wired before mounting
- Solder/quick-connect terminals .187 x .032" (4.8 x 0.8mm)
- Materials: body: thermoplastic (UL 94V-0)
  terminals: brass, tin-plated
  EMI shield: stainless steel
- For mating cordsets or power entry modules without filter, request our latest "International Circuit Protection & Power Entry Devices" catalog

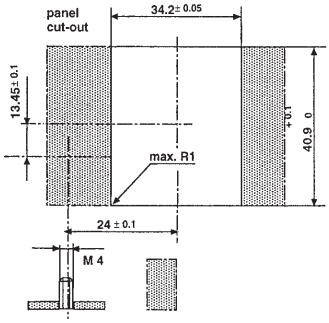
UL	recognition	10A/250V	File #E72928
CSA	certification	10A/250V	File #LR701867
VDE	approval	10A/250V	File #118913

Standards: UL 1283; CSA C22.2/8; IEC 320/C14; EN 60320; EN133200

Technical Drawings

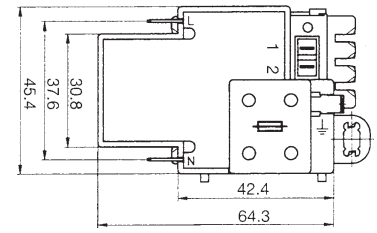


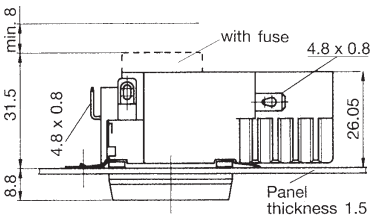




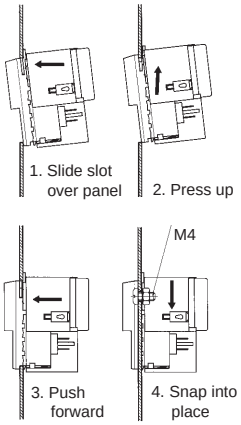
earth conductor E, with hole ø4.5 or threaded bolt M4

Shaded area on the inside of the equipment must be conductive for optimal shielding. Do not apply paint or coating.





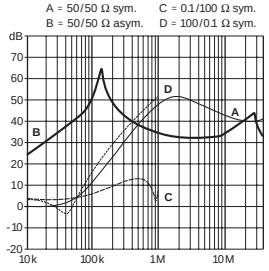
Mounting Instructions



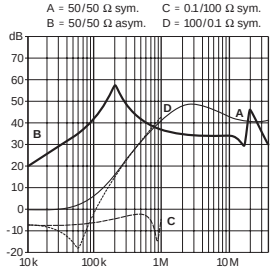
Filter Attenuation Loss

- - - - - - symmetrical (differential mode): Line to line ——— asymmetrical (common mode): Line to ground

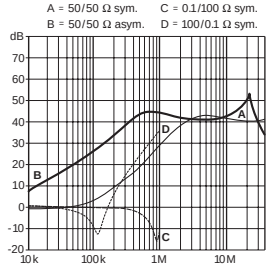
500 mA



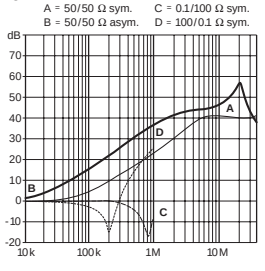
1 A



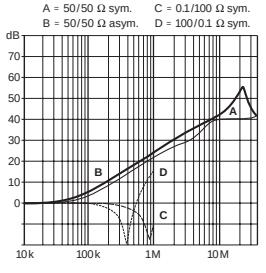
3 A



6 A



10 A

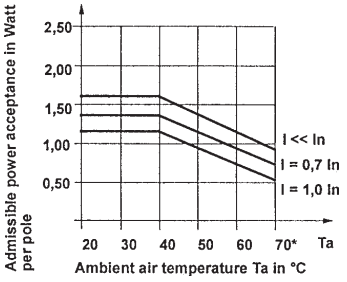


Graphs are for standard filters; medical filter graphs available on request.

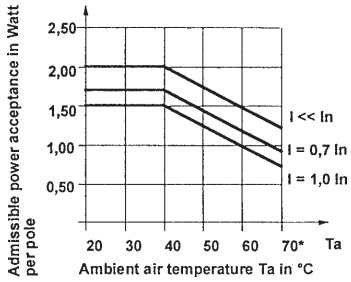
GRM4 continued

De-rating

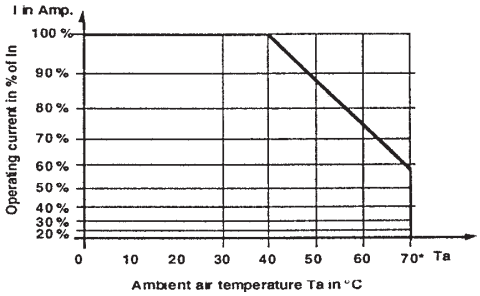
For fuse clips, 2-poles



For fuse clips, 1-pole



For RFI filter



Rated power acceptance at ambient air temperatures +23˚C: 2-poles = 1.6 watts 1-pole = 2 watts
For power acceptance at higher temperatures, see derating charts.
Corresponding values for other operating currents can be interpolated between the existing charts.

Correlation between operating current I and ambient air temperature Ta

Rated temperature: +40˚C
Upper operating limit: +70˚C
Lower operating limit: - 25˚C

Order Numbers

Type 1 *without* fuseholder; *with* voltage selector switch

Standard version

Order No.	Panel thickn.	Filtertype (In)
GRM4.4102.123	1,5mm	0,5A
GRM4.4202.123	1,5mm	1A
GRM4.4302.123	1,5mm	3A
GRM4.4402.123	1,5mm	6A
GRM4.4502.123	1,5mm	10A

Medical version

Order No.	Panel thickn.	Filtertype (In)
GRM4.5102.123	1,5mm	0,5A
GRM4.5202.123	1,5mm	1A
GRM4.5302.123	1,5mm	3A
GRM4.5402.123	1,5mm	6A
GRM4.5502.123	1,5mm	10A

Type 2 *with* fuseholder 2-pole; *with* voltage selector switch

Standard version

Order No.	Panel thickn.	Filtertype (In)
GRM4.4122.123	1,5mm	0,5A
GRM4.4222.123	1,5mm	1A
GRM4.4322.123	1,5mm	3A
GRM4.4422.123	1,5mm	6A
GRM4.4522.123	1,5mm	10A

Medical version

Order No.	Panel thickn.	Filtertype (In)
GRM4.5122.123	1,5mm	0,5A
GRM4.5222.123	1,5mm	1A
GRM4.5322.123	1,5mm	3A
GRM4.5422.123	1,5mm	6A
GRM4.5522.123	1,5mm	10A

Type 3 *without* fuseholder; *without* voltage selector switch

Standard version

Order No.	Panel thickn.	Filtertype (In)
GRM4.4102.013	1,5mm	0,5A
GRM4.4202.013	1,5mm	1A
GRM4.4302.013	1,5mm	3A
GRM4.4402.013	1,5mm	6A
GRM4.4502.013	1,5mm	10A

Medical version

Order No.	Panel thickn.	Filtertype (In)
GRM4.5102.013	1,5mm	0,5A
GRM4.5202.013	1,5mm	1A
GRM4.5302.013	1,5mm	3A
GRM4.5402.013	1,5mm	6A
GRM4.5502.013	1,5mm	10A

Type 4 *with* fuseholder 2-pole; *without* voltage selector switch

Standard version

Order No.	Panel thickn.	Filtertype (In)
GRM4.4122.013	1,5mm	0,5A
GRM4.4222.013	1,5mm	1A
GRM4.4322.013	1,5mm	3A
GRM4.4422.013	1,5mm	6A
GRM4.4522.013	1,5mm	10A

Medical version

Order No.	Panel thickn.	Filtertype (In)
GRM4.5122.013	1,5mm	0,5A
GRM4.5222.013	1,5mm	1A
GRM4.5322.013	1,5mm	3A
GRM4.5422.013	1,5mm	6A
GRM4.5522.013	1,5mm	10A

Technical Data, Standard Version

Filtertype (In)	Cx (nF)	Cy2 (nF)	L (2x)(mH)
0,5A	100	2,2	24
1A	100	2,2	12
3A	100	2,2	2,5
6A	100	2,2	0,78
10A	100	2,2	0,225

Technical Data, Medical Version

Filtertype (In)	Cx (nF)	Cy2 (nF)	L (2x)(mH)
0,5A	100	–	24
1A	100	–	12
3A	100	–	2,5
6A	100	–	0,78
10A	100	–	0,225

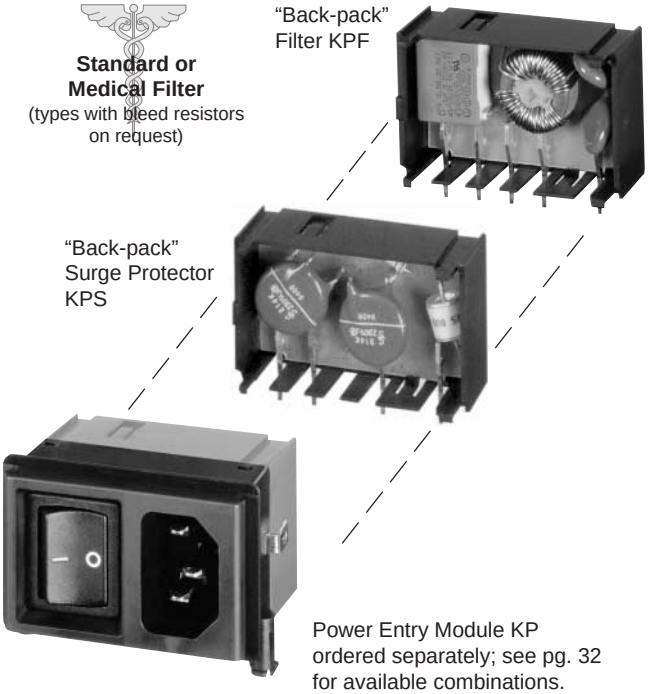
Types on request:

1. Panel thickness 1,0mm; 2,0mm; 2,5mm; or others
2. Voltage selector switch different markings
3. Switch, 1-pole or fuseholder, 1-pole

KPF / KPS

Pcb Mount RFI / EMI Filter and Surge Protector

Standard or Medical Filter
(types with bleed resistors on request)



Power Entry Module KP ordered separately; see pg. 32 for available combinations.

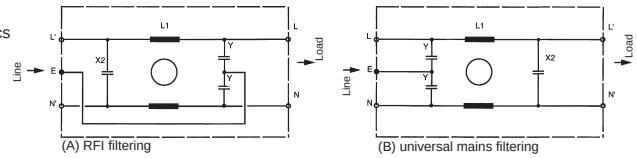
Standards:
Filterfit: UL1283; CSA C22.2; DIN/VDE 0565 part 3
Surgefit: CSA C22.2; DIN/VDE 0675 part 6

MULTIFIT

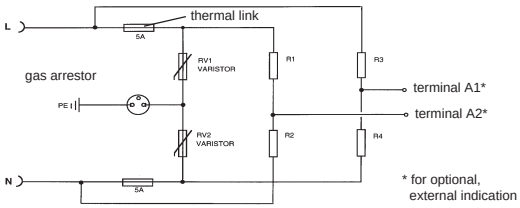
- For "cold" connections 70° C, Protection Class I
- Pcb mount "back-pack" filter (KPF) and/or surge protector (KPS) snaps onto rear of KP power entry module (ordered separately, page 32)
- Electrical connections between the filter(s) and power entry module are to be made individually on the pcb (see layout proposal below)
- For general information on filters, see page 50
- For filter attenuation graphs, see page 68
- For materials, options and accessories, see page 30
- For further description see unfiltered KP, see page 32

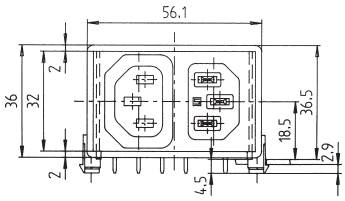
		KPF	KPS 250V	KPS125V
UL	recognition	1A-10A/250V, File #E72928	File #189323	File #E189323
CSA	certification	1A-10A/250V, File #LR97784	File #LR38456	File #LR38456
VDE	approval	1A-10A/250V, File #104869	File #6667	

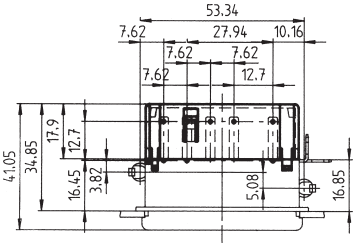
KPF Schematics

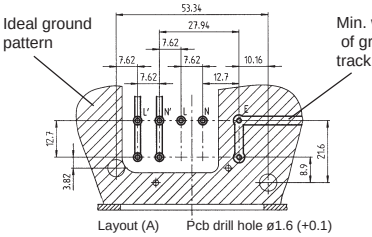


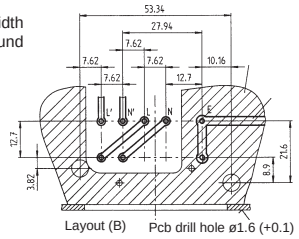
KPS Schematic











Order Numbers

FILTERFIT with standard RFI filter

Order No.	In (A) Tamb 40° C	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L,N E	Test voltage L N
KPF 1.1	1A	up to 250V max. 50 / 60 Hz	< 0.5 mA	100	2.2	10	2700V DC 2 Sec.	1075V DC 2 sec.
KPF 2.1	2A		< 0.5 mA	100	2.2	4		
KPF 4.1	4A		< 0.5 mA	100	2.2	2		
KPF 6.1	6A		< 0.5 mA	100	2.2	1		
KPF 8.1	8A		< 0.5 mA	100	2.2	.06		
KPF 0.1	10A		< 0.5 mA	100	2.2	.04		

FILTERFIT with medical RFI filter (low leakage)

Order No.	In (A) Tamb 40° C	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cy (nF)	L (mH)	Test voltage L,N E	Test voltage L N
KPF 1.3	1A	up to 250V max. 50 / 60 Hz	< 5 µA	2.2	10	2700V DC 2 Sec.	1075V DC 2 sec.
KPF 2.3	2A		< 5 µA	2.2	4		
KPF 4.3	4A		< 5 µA	2.2	2		
KPF 6.3	6A		< 5 µA	2.2	1		
KPF 8.3	8A		< 5 µA	2.2	.06		
KPF 0.3	10A		< 5 µA	2.2	.04		

SURGEFIT for surge protection

KPS 1.1	250V	
KPS 2.1	125V	

[1] New 10Amp version just added, document update pending.

KFB Line Filter • AC Inlet • On / Off Line Switch

KFB 1-pole

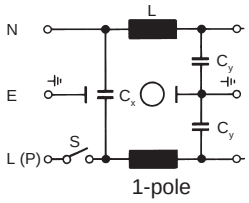
KFB 2-pole

Standard or Medical Filter
(types with bleed resistors on request)

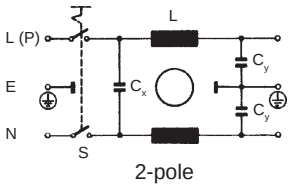
- For cold connections 70° C, Protection Class I. Qualifies for use in equipment according to IEC 950, IEC 664 Installation Category I & II.
- Screw mount from front or rear
- Quick-connect terminals .250 x .032 (6.3 x 0.8mm)
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered KEB, page 34

UL	recognition[1]	1A-10A/250V	File #E72928
CSA	certification[1]	1A-10A/250V	File #LR72559
VDE	approval [1]	1A-10A/250V*	File #58823/122175
SEMKO	approval [1]	1A-10A/250V*	File numbers on request
SEV	approval [1]	1A-10A/250V*	

*SPST 4A & 6A has 3A inductive load
DPST 6A has 4A inductive load



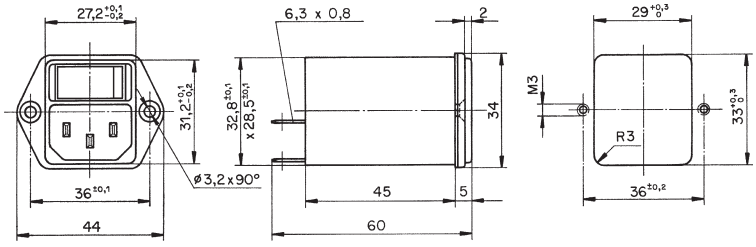
1-pole



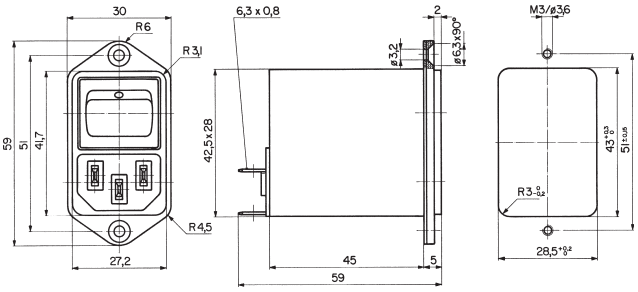
2-pole

Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320

KFB 1-pole



KFB 2-pole



Order Numbers

Casing with standard RFI filter

KFB 1-pole switch	KFB 2-pole switch	In (A) Tamb 45˚C*	Switch color	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L,N E	Test voltage L N
4302.5001	4302.5311	1A	unlighted (lighted red or green on request	up to 250V max. 50 / 60 Hz	< 0.5 mA	68	2.2	10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
4302.5002	4302.5312	2A			< 0.5 mA	68	2.2	4		
4302.5003	4302.5313	4A			< 0.5 mA	68	2.2	1.5		
4302.5004	4302.5314	6A			< 0.5 mA	68	2.2	0.8		
4302.5005	4302.5315	10A			< 0.5 mA	68	2.2	0.3		

* VDE Tamb 40˚C; Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Casing with medical RFI filter (low leakage)

KFB 2-pole switching	In (A) Tamb 45˚C*	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cx2 (nF)	L (mH)	Test voltage L,N E	Test voltage L N
4302.5331	1A	up to 250V max. 50 / 60 Hz	< 5 µA	68	10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
4302.5333	2A		< 5 µA	68	4		
4302.5335	4A		< 5 µA	68	1.5		
4302.5337	6A		< 5 µA	68	0.8		
4302.5339	10A		< 5 µA	68	0.3		

* VDE Tamb 40˚C

[1] New 10Amp version just added, document update pending.

5200 / 5220 Line Filter • AC Inlet • 5 x 20mm Fuseholder

5200
1-pole, with captive fuse drawer

Plug Removal Necessary for Fuse Replacement

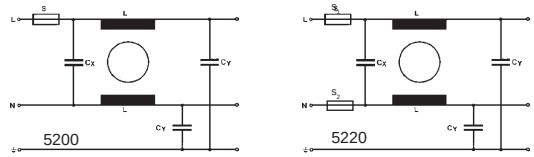
(standard or medical filter available; types with bleed resistors on request)

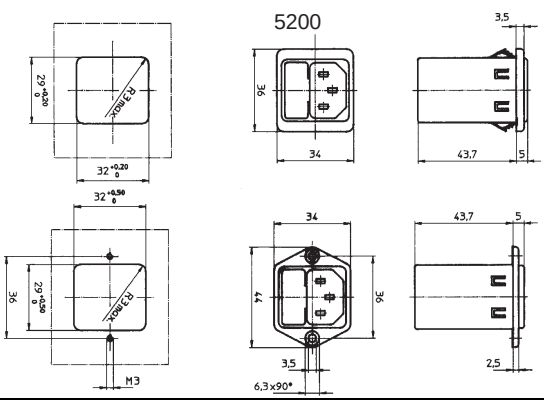
5220
2-pole

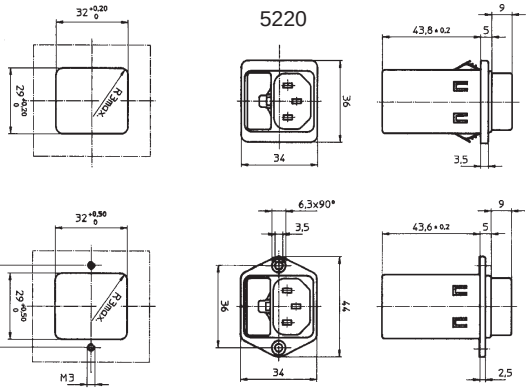
- For cold connections 70° C, Protection Class I
- Quick-connect terminals .250 x .032" (6.3 x 0.8mm)
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered 6200 / 6220, page 35

UL	recognition	1A-10A/250V [1]	File #E72928
CSA	certification	1A-10A/250V [1]	File #LR97784-1
VDE	approval	1A-10A/250V [1]	File #53155/101307
SEMKO	approval	1A-10A/250V [1]	File numbers on request
SEV	approval	1A-10A/250V [1]	File numbers on request

Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320. 5200 fusedrawer meets tool-only accessibility requirements of medical standards IEC 601-1, BS5724 part 1, DIN/VDE 0750 part 1.







Order Numbers (type)

Note: Casing and fuseholders combined for Series 5200 and 5220. To order fuses, please see page 102.

Casing with standard RFI filter

5200, 1-pole Screw-on		Snap-in(0.8-3.0mm)		In (A) Ta 40˚C	Un (V)	Max. leakage curr. @250V/50Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L, N E	Test voltage L N
5200.0123.1	(5200-1-23)	**5200.0143.1**	(5200-1-43)	1A	up to 250V max. 50/60 Hz	< 0.5 mA	47	2.2	11	2700V DC 2 sec.	1075V DC 2 sec.
5200.0223.1	(5200-2-23)	**5200.0243.1**	(5200-2-43)	2A		< 0.5 mA	47	2.2	4		
5200.0423.1	(5200-4-23)	**5200.0443.1**	(5200-4-43)	4A		< 0.5 mA	47	2.2	1.6		
5200.0623.1	(5200-6-23)	**5200.0643.1**	(5200-6-43)	6A		< 0.5 mA	47	2.2	0.7		
5200.0823.1	(5200-8-23)	**5200.0843.1**	(5200-8-43)	8A		< 0.5 mA	47	2.2	0.6		
5200.1023.1	(5200-10-23)	**5200.1043.1**	(5200-10-43)	10A		< 0.5 mA	47	2.2	0.4		
5220, 2-pole Screw-on		Snap-in(0.8-3.0mm)									
5220.0123.1	(5220-1-23)	**5220.0143.1**	(5220-1-43)	1A	up to 250V max. 50/60 Hz	< 0.5 mA	47	2.2	11	2700V DC 2 sec.	1075V DC 2 sec.
5220.0223.1	(5220-2-23)	**5220.0243.1**	(5220-2-43)	2A		< 0.5 mA	47	2.2	4		
5220.0423.1	(5220-4-23)	**5220.0443.1**	(5220-4-43)	4A		< 0.5 mA	47	2.2	1.6		
5220.0623.1	(5220-6-23)	**5220.0643.1**	(5220-6-43)	6A		< 0.5 mA	47	2.2	0.7		
5220.0823.1	(5220-8-23)	**5220.0843.1**	(5220-8-43)	8A		< 0.5 mA	47	2.2	o.6		
5220.1023.1	(5220-10-23)	**5220.1043.1**	(5220-10-43)	10A		< 0.5 mA	47	2.2	0.4		

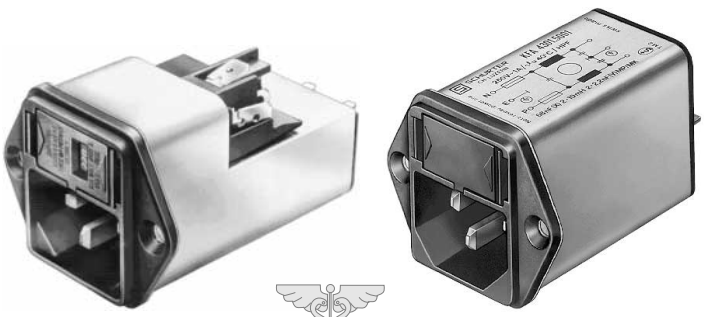
Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Casing with medical RFI filter (low leakage)

5200, 1-pole Screw-on		Snap-in 0.8-3.0mm		In (A) Tamb 40˚C	Un (V)	Max. leakage curr. @250V/50 HZ	Cx2 (nF)	L (mH)	Test voltage L,N E	Test voltage L N
5200.0123.3	(5200-1-23B)	**5200.0143.3**	(5200-1-43B)	1A	up to 250V max. 50/60 HZ	<5µA	47	11	2700V DC 2 sec.	1075V DC 2 sec.
5200.0223.3	(5200-2-23B)	**5200.0243.3**	(5200-2-43B)	2A		<5µA	47	4		
5200.0423.3	(5200-4-23B)	**5200.0443.3**	(5200-4-43B)	4A		<5µA	47	1.6		
5200.0623.3	(5200-6-23B)	**5200.0643.3**	(5200-6-43B)	6A		<5µA	47	0.7		
5200.0823.3	(5200-8-23B)	**5200.0843.3**	(5200-8-43B)	8A		<5µA	47	0.6		
5200.1023.3	(5200-10-23B)	**5200.1043.3**	(5200-10-43B)	10A		<5µA	47	0.4		
5220, 2-pole Screw-on		Snap-in 0.8-3.0mm								
5220.0123.3	(5220-1-23B)	**5220.0143.3**	(5220-1-43B)	1A	up to 250V max. 50/60 HZ	<5µA	47	11	2700V DC 2 sec.	1075V DC 2 sec.
5220.0223.3	(5220-2-23B)	**5220.0243.3**	(5220-2-43B)	2A		<5µA	47	4		
5220.0423.3	(5220-4-23B)	**5220.0443.3**	(5220-4-43B)	4A		<5µA	47	1.6		
5220.0623.3	(5220-6-23B)	**5220.0643.3**	(5220-6-43B)	6A		<5µA	47	0.7		
5220.0823.3	(5220-8-23B)	**5220.0843.3**	(5220-8-43B)	8A		<5µA	47	0.6		
5220.1023.3	(5220-10-23B)	**5220.1043.3**	(5220-10-43B)	10A		<5µA	47	0.4		

[1] New 10Amp version just added, document update pending.

KFA Line Filter • AC Inlet • Voltage Selector • Fuseholder for 5 x 20mm Fuses



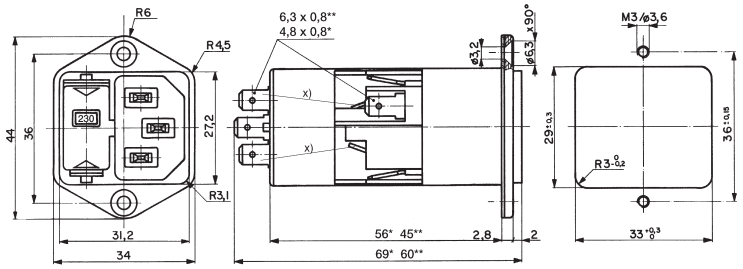
Plug Removal Necessary for Fuse Replacement

(standard or medical filter available; types with bleed resistors on request)

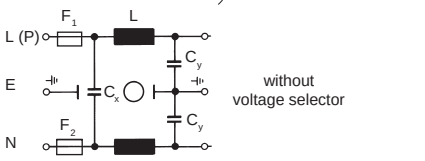
- For cold connections 70° C, Protection Class I. Qualifies for use in equipment according to IEC 950, IEC 664 Installation Category I & II.
- Quick-connect terminals .250 x .032" (6.3 x 0.8mm) without voltage selector; .187 x .032" (4.8 x 0.8mm) with voltage selector
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered KEA, page 36

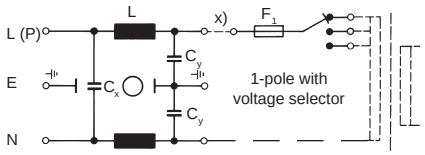
UL	recognition	1A-10A/250V [1]	File #E72928
CSA	certification	1A-10A/250V [1]	File #LR72559
VDE	approval	1A-10A/250V [1]	File #58823/122175
SEMKO	approval	1A-10A/250V [1]	File numbers on request
SEV	approval	1A-10A/250V [1]	

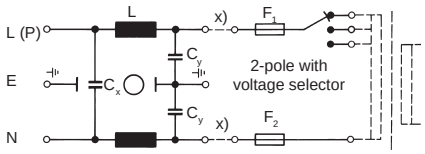
Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320. Medical fusedrawer meets tool-only accessibility requirements of medical standards IEC 601-1, BS5724 part 1, DIN/VDE 0750 part 1.



* with voltage selector ** without voltage selector







x) External connections to be made by the customer(solder terminals)

Order Numbers

Note: Casing and fusedrawer must be ordered separately. To order fuses, please see page 102.
If casing and fusedrawer with combined part number is preferred, please see series 5200/5220, page 47.

Casing with standard RFI filter

KFA 1-pole fusing	2-pole fusing	Voltage selector	In (A) Tamb 45°C*	Un (V)	Max. leakage current @ 250V / 50 Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L,N E	Test voltage L N
4301.5011	4301.5001	without	1A	up to 250V max. 50 / 60 Hz	< 0.5 mA	68	2.2	10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
4301.5012	4301.5002	without	2A		< 0.5 mA	68	2.2	4		
4301.5013	4301.5003	without	4A		< 0.5 mA	68	2.2	1.5		
4301.5014	4301.5004	without	6A		< 0.5 mA	68	2.2	0.8		
4301.5015	4301.5005	without	10A		< 0.5 mA	68	2.2	0.3		
4301.5051	4301.5041	2-3 pos.	1A		< 0.5 mA	68	2.2	10		
4301.5052	4301.5042	2-3 pos.	2A		< 0.5 mA	68	2.2	4		
4301.5053	4301.5043	2-3 pos.	4A		< 0.5 mA	68	2.2	1.5		
4301.5054	4301.5044	2-3 pos.	6A		< 0.5 mA	68	2.2	0.8		
4301.5055	4301.5045	2-3 pos.	10A		< 0.5 mA	68	2.2	0.3		

* VDE Tamb 40°C; Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Casing with medical RFI filter (low leakage)

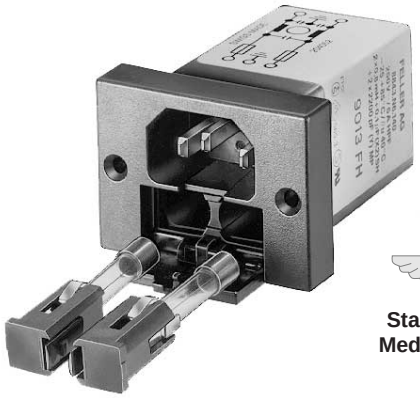
KFA, 2-pole fusing w/o voltage selector	KFA, 2-pole fusing with voltage selector	Voltage Selector	In (A) Tamb 45°C*	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cx2 (nF)	Cy (pF)	L (mH)	Test voltage L,N E	Test voltage L N
	4301.5241	2-3 pos.	1A	up to 250V max. 50 / 60 Hz	< 5 µA	68		10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
4301.5203 (4301.5204)	4301.5243 (4301.5244)	2-3 pos.	2A		< 5 µA (< 80 µA)	68	(470)	4		
4301.5205 (4301.5206)	4301.5245 (4301.5246)	2-3 pos.	4A		< 5 µA (< 80 µA)	68	(470)	1.5		
	4301.5247	2-3 pos.	6A		< 5 µA	68		0.8		
	4301.5249	2-3 pos.	10A		< 5 µA	68		0.3		

* VDE Tamb 40°C

Fusedrawer

Voltage markings / terminal markings: 1 2 3 4		5 x 20mm 1-pole black	2-pole black	1-pole + spare fuse-case	2-pole grey, with shorting bar in the neutral side
With voltage selector: see selector chart on page 30 for .XX	Standard	4301.1214.XX	4301.1014.XX	4301.2814.XX	4301.3536.XX
	Medical *	4301.1224.XX	4301.1024.XX	4301.2824.XX	4301.3537.XX
Without voltage selector	Standard	4301.1405	4301.1401	4301.1409	4301.1413
	Medical *	4301.1407	4301.1403	4301.1411	4301.1415
	* Meets tool-only accessibility requirements of medical standards IEC 601-1, BS 5724 part 1, DIN/VDE 0750 part 1				

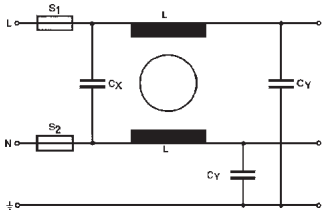
8843 Line Filter • AC Inlet • Interchangeable Fusedrawer for 1/4 x 1 1/4" or 5 x 20mm Fuses



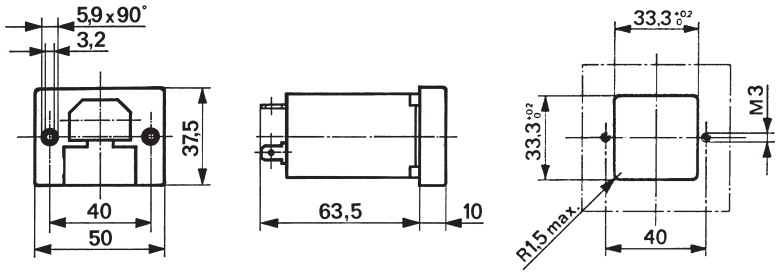
Standard or Medical Filter

- For cold connections 70° C, Protection Class I
- Quick-connect terminals 250 x .032" (6.3 x 0.8mm)
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered 8843, see page 37

UL	recognition	1A-10A/250V	File #E72928
CSA	certification (standard filter only)	1A-10A/250V	File #LR97784
VDE	approval	1A-10A/250V	File #32561
SEV	approval	1A-10A/250V	File number on request



Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320



Order Number (type)

Note: Casing and fuseholders must be ordered separately. To order fuses, please see page 102.

Casing with standard RFI filter

8843 2-pole fusing		In (A) Ta 40˚C	Un (V)	Max. leakage curr. @ 250V / 50Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L,N E	Test voltage L N	Fuseholder inserts (2 inserts must be ordered for 2-pole fusing)	
8843.8123.1	(8843.N1.140.60)	1A	up to 250V max. 50/60 Hz	< 0.5 mA	47	2.2	11	2700V DC 2 sec.	1075V DC 2 sec.	**8843.0901** (8843-901.60)	for 1/4 x 1 1/4" (6.3x32mm)
8843.8323.1	(8843.N3.140.60)	3A		< 0.5 mA	47	2.2	1.6				
8843.8623.1	(8843.N6.140.60)	6A		< 0.5 mA	47	2.2	0.8			**8843.0902** (8843-902.60)	for 5 x 20mm
8843.8923.1	(8843.N10.140.60)	10A		< 0.5 mA	47	2.2	0.4				

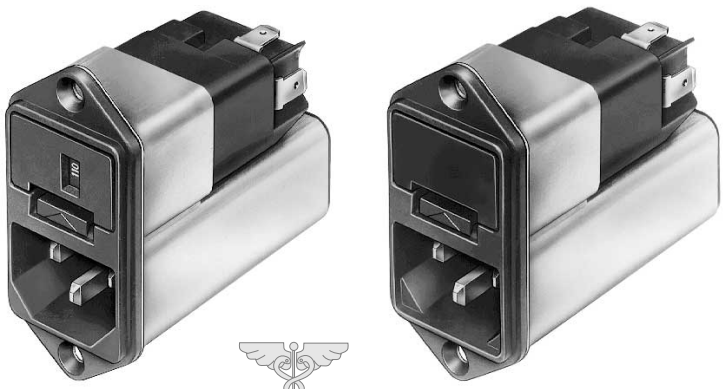
Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Casing with medical RFI filter (low leakage)

8843 2-pole fusing		In (A) Ta 40˚C	Un (V)	Max. leakage curr. @ 250V / 50Hz	Cx2 (nF)	L (mH)	Test voltage L,N E	Test voltage L N	Fuseholder inserts (2 inserts must be ordered for each casing)	
8843.8123.3	(8843.N1.144.60)	1A	up to 250V max. 50/60 Hz	< 5 µA	47	11	2700V DC 2 sec.	1075V DC 2 sec.	**8843.0901** (8843-901.60)	for 1/4 x 1 1/4" (6.3x32mm)
8843.8323.3	(8843.N3.144.60)	3A		< 5 µA	47	1.6				
8843.8623.3	(8843.N6.144.60)	6A		< 5 µA	47	0.8			**8843.0902** (8843-902.60)	for 5 x 20mm
8843.8923.3	(8843.N10.144.60)	10A		< 5 µA	47	0.4				

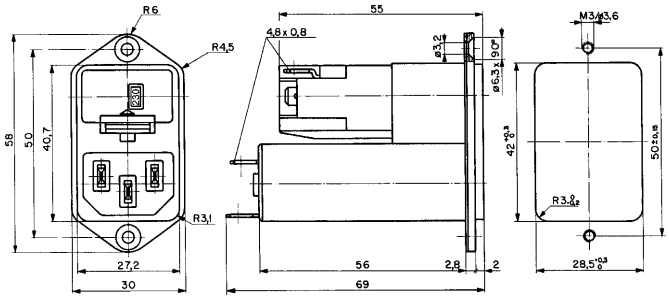
[1] New 10Amp version just added, document update pending.

KFC Line Filter • AC Inlet • Voltage Selector • Interchangeable Fusedrawer for 1/4 x 1 1/4" or 5 x 20mm Fuses



Standard or Medical Filter

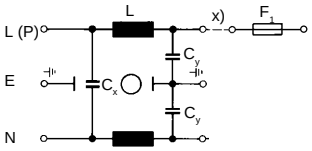
Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320. Medical fusedrawer meets tool-only accessibility requirements of medical standards IEC 601-1, BS5724 part 1, DIN/VDE 0750 part 1.



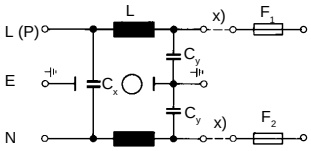
- For cold connections 65° C, Protection Class I. Qualifies for use in equipment acc. to IEC 950, IEC 664 Installation Category I & II.
- Screw mount from front or rear
- Optional voltage selector with 2-3 step switch positions max.
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered KEC, page 38

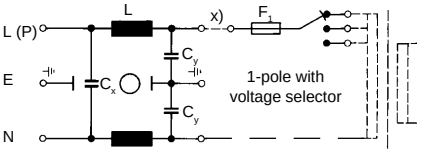
UL	recognition	1A-6A/250V [1]	File #E72928
CSA	certification	1A-6A/250V [1]	File #LR72559
VDE	approval	1A-6A/250V [1]	File #58823
SEMKO	approval	1A-6A/250V [1]	File numbers on request
SEV	approval	1A-6A/250V [1]	
CS	certification	1A-4A/250V [1]	

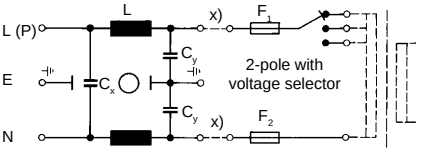
1-pole without voltage selector



2-pole without voltage selector







x) External connections to be made by the customer

Order Numbers

Note: Casing and fusedrawer must be ordered separately. To order fuses, please see page 102.

Casing with standard RFI filter

KFC 1-pole fusing	2-pole fusing	Voltage selector	In (A) Tamb 45°C*	Un (V)	Max. leakage current @ 250V / 50 Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L,N E	Test voltage L N
4303.5011	4303.5001	without	1A	up to 250V max. 50 / 60 Hz	< 0.5 mA	68	2.2	10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
4303.5012	4303.5002	without	2A		< 0.5 mA	68	2.2	4		
4303.5013	4303.5003	without	4A		< 0.5 mA	68	2.2	1.5		
4303.5014	4303.5004	without	6A		< 0.5 mA	68	2.2	0.8		
4303.5015	4303.5005	without	10A		< 0.5 mA	68	2.2	0.3		
4303.5031	4303.5021	2-3 pos. max.	1A		< 0.5 mA	68	2.2	10		
4303.5032	4303.5022	2-3 pos. max.	2A		< 0.5 mA	68	2.2	4		
4303.5033	4303.5023	2-3 pos. max.	4A		< 0.5 mA	68	2.2	1.5		
4303.5034	4303.5024	2-3 pos. max.	6A		< 0.5 mA	68	2.2	0.8		
4303.5035	4303.5025	2-3 pos. max.	10A		< 0.5 mA	68	2.2	0.3		

* VDE Tamb 40°C; Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Casing with medical RFI filter (low leakage)

KFC 2-pole fusing	Voltage Selector	In (A) Tamb 45°C*	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cx2 (nF)	Cy (pF)	L (mH)	Test voltage L,N E	Test voltage L N
4303.5221	2-3 pos.	1A	up to 250V max. 50 / 60 Hz	< 5 µA	68		10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
4303.5223 (4303.5224)	2-3 pos.	2A		< 5 µA (< 80 µA)	68	(470)	4		
4303.5225 (4303.5226)	2-3 pos.	4A		< 5 µA (< 80 µA)	68	(470)	1.5		
4303.5227	2-3 pos.	6A		< 5 µA	68		0.8		
4303.5229	2-3 pos.	10A		< 5 µA	68		0.3		

* VDE Tamb 40°C

Fusedrawer

Voltage markings / terminal markings: 1 2 3 4		5 x 20mm 1-pole black	2-pole black	2-pole black, with shorting bar in the neutral side	1/4" x 1-1/4" (6.3 x 32mm) 1-pole grey	2-pole grey	2-pole grey, with shorting bar in the neutral side	
With voltage selector: see selector chart on page 30 for .XX	Standard	4303.2114.XX	4303.2014.XX	4303.2036.XX	4303.2814.XX	4303.2714.XX	4303.2736.XX	
	Medical *	4303.2124.XX	4303.2024.XX	4303.2037.XX	4303.2824.XX	4303.2724.XX	4303.2737.XX	Black on request
Without voltage selector	Standard	4303.2406	4303.2401	4303.2411	4303.2907	4303.2902	4303.2912	
	Medical *	4303.2408	4303.2403	4303.2413	4303.2909	4303.2904	4303.2914	
	* Meets tool-only accessibility requirements of medical standards IEC 601-1, BS 5724 part 1, DIN/VDE 0750 part 1							

[1] New 10Amp version just added, document update pending.

SCHURTER

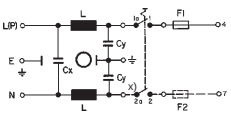
CD Line Filter • AC Inlet • On/off Line Switch – Integral or Remote • Voltage Selector • Interchangeable Fusedrawer for 1/4 x 1 1/4" or 5 x 20mm Fuses

Standard or Medical Filter
(types with bleed resistors on request)

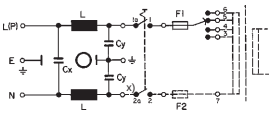
- For cold connections 70° C, Protection Class I. Qualifies for use in equipment acc. to IEC 950, IEC 664 Installation Category I & II.
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered KD, page 39

UL	recognition[1]	1A-6A/250V	File #E72928
CSA	certification[1]	1A-6A/250V	File #LR72559
VDE	approval [1]	1A-6A/250V*	File #58823-24/122175
SEMKO	approval [1]	1A-6A/250V*	File numbers on request
SEV	approval [1]	1A-6A/250V*	
		*4A inductive load	

without voltage selector

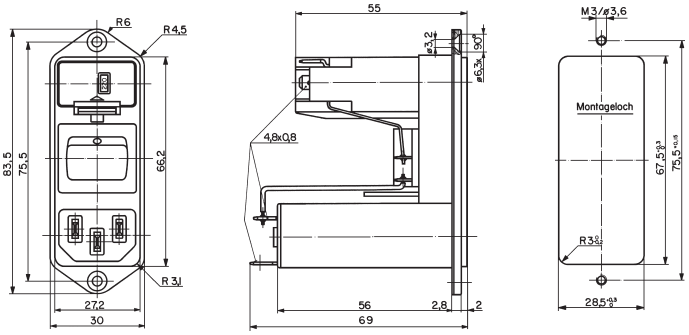


with voltage selector



x) external connections for 1-pole to be made by the customer

Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320. Medical fusedrawer meets tool-only accessibility requirements of medical standards IEC 601-1, BS5724 part 1, DIN/VDE 0750 part 1.



Order Numbe

Note: Casing, fusedrawer and Bowden cable must be orde

See page 102 for fuses.

Casing with standard RFI filter

CD with Bowden cable 1-pole fusing	CD with Bowden cable 2-pole fusing	CD without Bowden cable 1-pole fusing	CD without Bowden cable 2-pole fusing	Voltage Selector	In, Ta 45°C*	Un (V)
CD11.4599.151	CD14.4199.151	CD11.1501.151	CD14.1101.151	without	1A	up to 250V max. 50/60 Hz
CD21.4599.151	CD24.4199.151	CD21.1501.151	CD24.1101.151	without	2A	
CD31.4599.151	CD34.4199.151	CD31.1501.151	CD34.1101.151	without	4A	
CD41.4599.151	CD44.4199.151	CD41.1501.151	CD44.1101.151	without	6A	
-	-	CD61.1501.151	CD64.1101.151	without	10A	
CD11.4599.151	CD14.4199.151	CD11.4501.151	CD14.4101.151	2-4 pos.	1A	
CD21.4599.151	CD24.4199.151	CD21.4501.151	CD24.4101.151	2-4 pos.	2A	
CD31.4599.151	CD34.4199.151	CD31.4501.151	CD34.4101.151	2-4 pos.	4A	
CD41.4599.151	CD44.4199.151	CD41.4501.151	CD44.4101.151	2-4 pos.	6A	
-	-	CD61.4501.151	CD64.4101.151	2-4 pos.	10A	

* VDE Tamb 40°C; Values of fuses (time-lag): Isi In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4

40

Casing with medical RFI filter (low leakage)

CD without Bowden cable 2-pole fusing	CD with Bowden cable 2-pole fusing	Voltage selector	In (A) Ta 45°C *	Un (V)	Max. leakage current @ 250V/50Hz	Cx2 (nF)	Cy (pF)	L (mH)	Test voltage L, N	Test voltage E L N	Bowden cable
CDG4.4101.151	CDG4.4199.151	2-4 positions	1A	up to 250V max. 50/60 Hz	< 5 µA	68		10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.	Bowden cables are supplied in standard or custom lengths. Please see page 40 for ordering instructions.
CDA4.4101.151 (CDB4.4101.151)	CDA4.4199.151		2A		< 5 µA (< 80 µA)	68	(470)	4			
CDC4.4101.151 (CDD4.4101.151)	CDC4.4199.151		4A		< 5 µA (< 80 µA)	68	(470)	1.5			
CDE4.4101.151	CDE4.4199.151		6A		< 5 µA	68		0.8			
CDL4.4101.151	-		10A		< 5 µA	68		0.3			

Fusedrawer

Voltage markings / terminal markings: 3 4 5 6		5 x 20mm 1-pole black	2-pole black	2-pole black, with shorting bar in the neutral side	1/4" x 1-1/4" (6.3 x 32mm) 1-pole grey	2-pole grey	2-pole grey, with shorting bar in the neutral side	
With voltage selector: see selector chart on page 30 for .XX	Standard	4303.2114.XX	4303.2014.XX	4303.2036.XX	4303.2814.XX	4303.2714.XX	4303.2736.XX	Black on request
	Medical *	4303.2124.XX	4303.2024.XX	4303.2037.XX	4303.2824.XX	4303.2724.XX	4303.2737.XX	
Without voltage selector	Standard	4303.2406	4303.2401	4303.2411	4303.2907	4303.2902	4303.2912	
	Medical *	4303.2408	4303.2403	4303.2413	4303.2909	4303.2904	4303.2914	

* Meets tool-only accessibility requirements of medical standards IEC 601-1, BS 5724 part 1, DIN/VDE 0750 part 1

[1] New 10Amp version just added, document update pending.

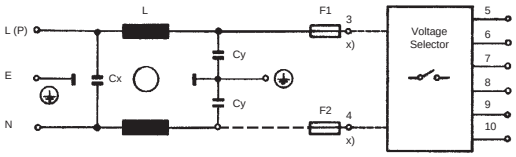
SCHURTER

CE Line Filter • AC Inlet • Series Parallel Voltage Selector • Interchangeable Fusedrawer for 1/4 x 1 1/4" or 5 x 20mm Fuses

Standard or Medical Filter
(types with bleed resistors on request)

- For cold connections 70° C, Protection Class I. Qualifies for use in equipment according to IEC 950, IEC 664 Installation Category I & II.
- For attenuation graphs, see pages 66-71
- For general information on filters, see page 50
- For materials, options and accessories, see page 30
- For further description see unfiltered KE, page 41

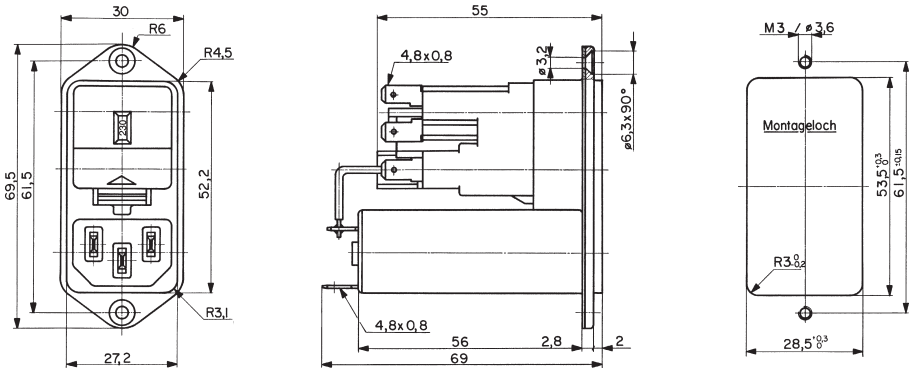
UL	recognition	1A-6A/250V [1]	File #E72928
CSA	certification	1A-6A/250V [1]	File #LR72559
VDE	approval	1A-6A/250V [1]	File #58824/122175
SEMKO	approval	1A-6A/250V [1]	File numbers on request
SEV	approval	1A-6A/250V [1]	File numbers on request



x) Connections to be made by customer

Optional accessory cable for voltage selector wiring shown on page 43

Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320. Fusedrawer meets tool-only accessibility requirements of medical standards IEC 601-1, BS5724 part 1, DIN/VDE 0750 part 1.



Order Numbers

Three order numbers are needed to specify the CE, complete with casing, voltage selector insert and fusedrawer. For example:
1. CE10.6100.151 = Casing for screw mounting with internal connections and 2-pole protection
2. 4305.0048.01 = Voltage Selector Insert with markings 100, 120, 220, 240
3. 4305.0001 = Fusedrawer with 2-pole protection for 5 x 20mm fuses

Casing with standard RFI filter

CE with internal connections 1-pole fusing	2-pole fusing	In (A) Tamb 45°C*	Un (V)	Max. leakage current @ 250V / 50 Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L, N E	L N
CE16.5100.151	CE10.6100.151	1A	up to 250V max. 50/60 Hz	< 0.5 mA	68	2.2	10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
CE26.5100.151	CE20.6100.151	2A		< 0.5 mA	68	2.2	4		
CE36.5100.151	CE30.6100.151	4A		< 0.5 mA	68	2.2	1.5		
CE46.5100.151	CE40.6100.151	6A		< 0.5 mA	68	2.2	0.8		
CE66.5100.151	CE60.6100.151	10A		< 0.5 mA	68	2.2	0.3		

* VDE Tamb 40°C; Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Order numbers for voltage selector inserts and fusedrawers shown on page 43.

Casing with medical RFI filter (low leakage)

CE 2-pole fusing	Voltage Selector	In (A) Ta 45°C *	Un (V)	Max. leakage current @ 250V/50Hz	Cx2 (nF)	Cy (pF)	L (mH)	Test voltage L, N E	L N
CEG0.6100.151	series-parallel	1A	up to 250V max. 50/60 Hz	< 5 µA	68		10	2 kV 50 Hz 2 sec.	1625V DC 2 sec.
CEA0.6100.151 (CEB0.6100.151)	series-parallel	2A		< 5 µA (< 80 µA)	68	(470)	4		
CEC0.6100.151 (CED0.6100.151)	series-parallel	4A		< 5 µA (< 80 µA)	68	(470)	1.5		
CEE0.6100.151	series-parallel	6A		< 5 µA	68		0.8		
CEL0.6100.151	series-parallel	10A		< 5 µA	68		0.3		

* VDE Tamb 40°C

Order numbers for voltage selector inserts and fusedrawers shown on page 43.

[1] New 10Amp version just added, document update pending.

SCHURTER

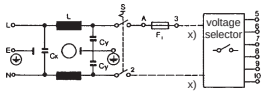
CG Line Filter • AC Inlet • On/off Line Switch – Integral or Remote • Series Parallel Voltage Selector • Interchangeable Fusedrawer for 1/4 x 1 1/4" or 5 x 20mm Fuses

Standard or Medical Filter
(types with bleed resistors on request)

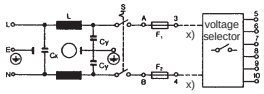
- For cold connections 70° C, Protection Class I. Qualifies for use in equipment according to IEC 950, IEC 664 Installation Category I & II.
- For attenuation graphs, see pages 66-71
- For materials, options and accessories, see page 30
- For further description see unfiltered KG, page 42

UL	recognition	1A-6A/250V [1]	File #E72928
CSA	certification	1A-6A/250V [1]	File #LR72559
VDE	approval	1A-6A/250V [1]	File #58824/122175
SEMKO	approval	1A-6A/250V [1]	File numbers on request
SEV	approval	1A-6A/250V [1]	

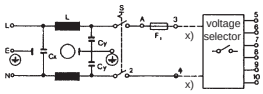
1-pole switch



2-pole switch with or without bowden cable



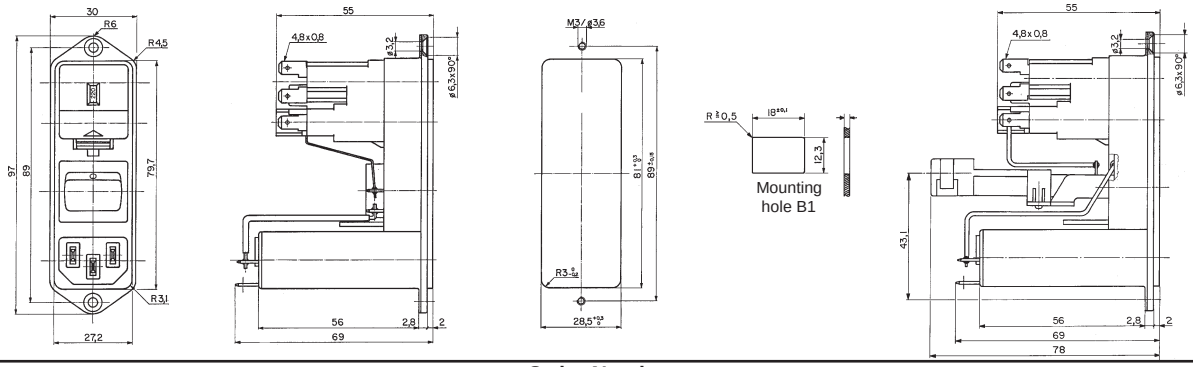
1-pole switch with bowden cable



x) Connections to be made by customer

Optional accessory cable for voltage selector wiring shown on page 43

Standards: UL 1283; CSA C22.2/8; DIN/VDE 0565; IEC 320/C14; EN 60320. Fusedrawer meets tool-only accessibility requirements of medical standards IEC 601-1, BS5724 part 1, DIN/VDE 0750 part 1.



Order Numbers

Three order numbers are needed to specify the CG, complete with casing, voltage selector insert and fusedrawer. For example:
1. CG10.6101.151 = Casing for screw mounting with internal connections and 2-pole protection
2. 4305.0048.01 = Voltage Selector Insert with markings 100, 120, 220, 240
3. 4305.0001 = Fusedrawer with 2-pole protection for 5 x 20mm fuses

Casing with standard RFI filter

CG without Bowden cable 1-pole fusing	CG without Bowden cable 2-pole fusing	CG with Bowden cable 1-pole fusing	CG with Bowden cable 2-pole fusing	In (A) Ta 45°C*	Un (V)	Max. leakage current @ 250V / 50 Hz	Cx2 (nF)	Cy (nF)	L (mH)	Test voltage L, N	Test voltage E	Test voltage L N
CG16.5101.151	CG10.6101.151	CG15.6199.151	CG10.6199.151	1A	up to 250V max. 50/60 Hz	< 0.5 mA	68	2.2	10	2 kV 50Hz 2sec.		1625V DC 2 sec.
CG26.5101.151	CG20.6101.151	CG25.6199.151	CG20.6199.151	2A		< 0.5 mA	68	2.2	4			
CG36.5101.151	CG30.6101.151	CG35.6199.151	CG30.6199.151	4A		< 0.5 mA	68	2.2	1.5			
CG46.5101.151	CG40.6101.151	CG45.6199.151	CG40.6199.151	6A		< 0.5 mA	68	2.2	0.8			
CG66.5101.151	CG60.6101.151	-	-	10A		< 0.5 mA	68	2.2	0.3			

* VDE Tamb 40°C; Values of fuses (time-lag): Isi ≤ In : Operable at 400 Hz (increase leakage current by factor 8 at 250V and 4 at 125V)

Order numbers for voltage selector insert and fusedrawer shown on page 43.
Bowden Cables are supplied in standard or custom length. Please see page 40 for ordering instructions.

Casing with medical RFI filter (low leakage)

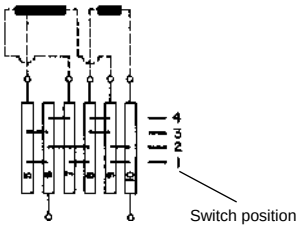
CG w/o Bowden Cable 2-pole fusing	CG w/Bowden Cable 2-pole fusing	Voltage Selector	In (A) Tamb 45°C*	Un (V)	Max. leakage current @ 250 V / 50 Hz	Cx2 (nF)	L (mH)	Test voltage L,N	Test voltage E	Test voltage L N
CGG0.6101.151	CGG0.6199.151	series-parallel	1A	up to 250V max. 50 / 60 Hz	< 5 µA	68	10	2 kV 50 Hz 2 sec.		1625V DC 2 sec.
CGA0.6101.151	CGA0.6199.151	series-parallel	2A		< 5 µA	68	4			
CGC0.6101.151	CGC0.6199.151	series-parallel	4A		< 5 µA	68	1.5			
CGE0.6101.151	CGE0.6199.151	series-parallel	6A		< 5 µA	68	0.8			
CGL0.6101.151	-	series-parallel	10A		< 5 µA	68	0.3			

* VDE Tamb 40°C

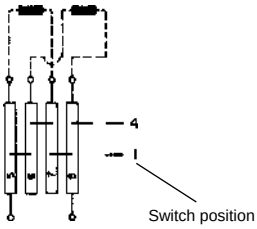
Order numbers for voltage selector inserts and fusedrawers shown on page 43.

KE, KG, CE, CG Voltage selector insert, fusedrawer and accessory cable

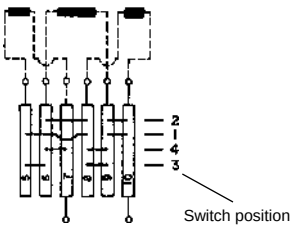
Voltage Selector Systems No. 1-4



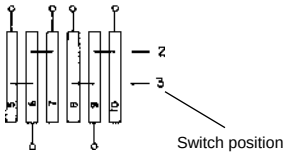
System No. 1
2 separate windings,
one with a tap
3 or 4 switch positions



System No. 2
2 separate windings
2 switch positions



System No. 3
3 separate windings
3 or 4 switch positions



System No. 4
DPDT

Voltage Selector Insert Order Numbers

Order Number	Voltage selector System No.	Voltage markings/switch position 1	2	3	4	Schematic	Switch position
*4305.0048.00	1, 2	without markings					
*4305.0048.01	1	100	120	220	240		
*4305.0048.03	2	110			220		
*4305.0048.05	2	115			230		
4305.0048.08	1	130	110	240	220		
4305.0048.09	2	120			240		
4305.0048.10	1	100	115		230		
4305.0048.11	2	230			110		
4305.0048.13	2 (special; .05 stand.)	230			115		
4305.0048.14	2 (special; .05 stand.)	220			110		
4305.0048.15	1	240	230	220	200		
4305.0048.17	—		115	230			
4305.0048.18	1		100	220			
**4305.0056.05	2	115			230		
4305.0050.00	3	without markings					
4305.0050.02	3	130	110	240	220		
4305.0050.04	3		110	240	220		
4305.0050.06	3	150	110		220		
4305.0050.12	3	130	115	240	230		
4305.0049.00	4	without markings					
4305.0049.07	4		220	110			
4305.0049.17	4		115	230			
4305.0049.19	4		230	110			

*Most common voltage. Other voltages and custom voltages require longer lead times and are subject to minimum order quantity.

**Insert is specially designed to block positions 2 and 3.

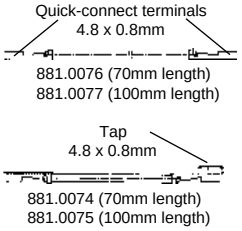
Fusedrawer Order Numbers* (to order fuses, please see pgs 97-128.)

5 x 20mm 1-pole black	2-pole black	2-pole black, w/shorting bar in the neutral side	6.3 x 32mm (1/4 x 1 1/4") 1-pole grey	2-pole grey	2-pole grey, w/shorting bar in the neutral side
4305.0006	4305.0001	4305.0021	4305.0017	4305.0012	4305.0027

* Meets tool-only accessibility requirements of medical standards IEC 601-1, BS 5724 part 1, DIN/VDE 0750 part 1

Accessory Cable Order Numbers

The accessory cable is optional for voltage selector wiring. Connections must be made by the customer.
Strand = 1.5mm^2. Note: To guarantee the minimum air and creepage distances, use taps for the following terminals only:
3/4 or N for KE/CE
2/3/4 or N for KG/CG (concerns voltage selector systems 1, 2 or 3)



Power entry modules type	Voltage selector System No. 1	Voltage selector System No. 2 and 3	Voltage selector System No. 4
KE/CE 1-pole	881.0075 881.0076	881.0074 881.0075	881.0076 881.0077
KE/CE 2-pole	881.0074 881.0076	2x 881.0074	2x 881.0076
KG/CG 1-pole	881.0075 881.0076	881.0074 881.0075	881.0076 881.0077
KG/CG 2-pole	881.0074 881.0076	2x 881.0074	2x 881.0076

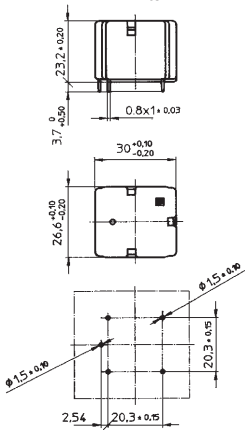
FELCOM® Series 54 Power Entry Modules with Line Filter

Standard or Medical Filter

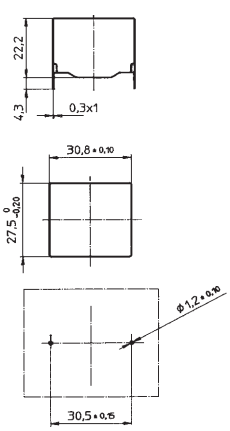
RFI Filter for pc board mounting

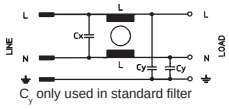
- Used on the Felcom
- Shield available separately (German silver)
- Filter built according to UL 1283; CSA C22.2/8; DIN/VDE 0565
- For attenuation graphs, see pages 66-71

RFI filter



shield





C_y only used in standard filter

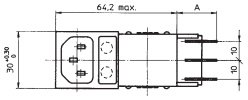
Standards: EN 60320; IEC 320/C14/F; DIN/VDE 0625; SEMKO 9320; CSA C22.2/8; UL 1283. U.S. Patented.

Series 5500 Order no.	Filter type	In (A) Tamb 40°C	Un (V)	Max. leakage current at 250V / 50 Hz	C_{x2} (nF)	C_y (nF)	L (mH)	Test voltage L, N	Test voltage E	Test voltage L	Test voltage N
5500.0155.1	standard	1	up to 250V max. 50 / 60 Hz	< 0.5 mA	47	2.2	11	2700 V DC 2 sec.		1075 VDC 2 sec.	
5500.0255.1	standard	2		< 0.5 mA	47	2.2	4				
5500.0455.1	standard	4		< 0.5 mA	47	2.2	1.6				
5500.0655.1	standard	6		< 0.5 mA	47	2.2	0.7				
5500.0155.3	medical	1		< 5 µA	47	-	11				
5500.0255.3	medical	2		< 5 µA	47	-	4				
5500.0455.3	medical	4		< 5 µA	47	-	1.6				
5500.0655.3	medical	6		< 5 µA	47	-	0.7				
5500.0001	shield										

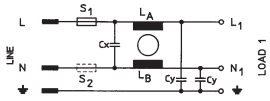
Plug removal necessary for fuse replacement

5411.XX5X.XXX

- IEC 320 inlet
- Fuseholder
- RFI filter (1, 2, 4, or 6A)
- See page 32, for KP inlet / fuseholder/ filter combination, which can also be mounted horizontally



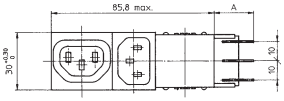
A = solder terminals 13.4mm or quick-connect terminals 17.0mm



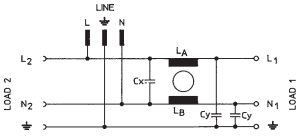
Mounting hole: $63^{+0.2}$ x $27.6^{+0.2}$ mm

5421.X05X.XXX

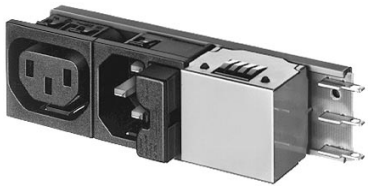
- IEC 320 inlet/outlet
- RFI filter (1, 2, 4, or 6A)
- See page 32, for KP inlet / fuseholder/ filter combination, which can also be mounted horizontally



A = solder terminals 13.4mm or quick-connect terminals 17.0mm



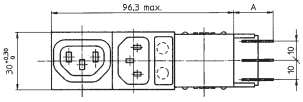
Mounting hole: $85.9^{+0.2}$ x $27.6^{+0.2}$ mm



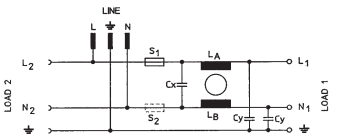
Plug removal necessary for fuse replacement

5423.XX5X.XXX

- IEC 320 inlet/outlet
- Fuseholder
- RFI filter (1, 2, 4, or 6A)



A = solder terminals 13.4mm or quick-connect terminals 17.0mm

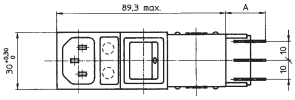


Mounting hole: $96.4^{+0.2}$ x $27.6^{+0.2}$ mm

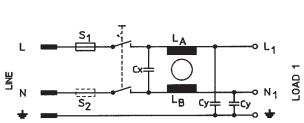
Plug removal necessary for fuse replacement

5424.XX5X.XXX

- IEC 320 inlet
- Fuseholder
- On/off switch
- RFI filter (1, 2, 4, or 6A)
- Switch in-rush max., 70A 3-4ms, followed by continuous current 5A on/off cycles 10,000 acc. to EN 61058-1



A = solder terminals 13.4mm or quick-connect terminals 17.0mm



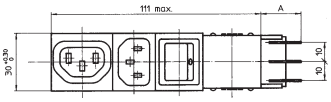
Mounting hole: $87.9^{+0.2}$ x $27.6^{+0.2}$ mm

see next page for technical data and ordering instructions

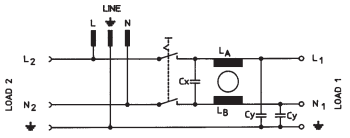
FELCOM® Series 54 Power Entry Modules with Line Filter, cont'd

5431.X05X.XXX

- IEC 320 inlet/outlet
- On/off switch
- RFI filter (1, 2, 4, or 6A)
- Switch in-rush max. 70A 3-4ms followed by continuous current 5A on/off cycles 10,000 acc. to EN 61058-1



A = solder terminals 13.4mm or quick-connect terminals 17.0mm

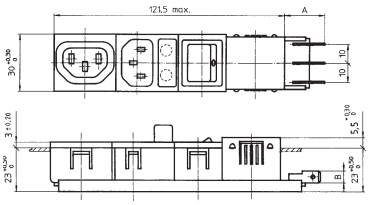


Mounting hole: $111.1^{+0.2}$ x $27.6^{+0.2}$ mm

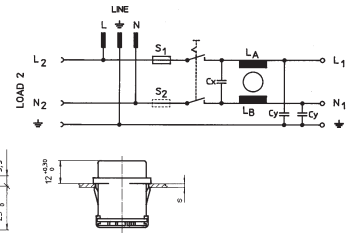
Plug removal necessary for fuse replacement

5432.XX5X.XXX

- IEC 320 inlet/outlet
- Fuseholder
- On/off switch
- RFI filter (1, 2, 4, or 6A)
- Switch in-rush max. 70A 3-4ms followed by continuous current 5A on/off cycles 10,000 acc. to EN 61058-1



A = solder terminals 13.4mm or quick-connect terminals 17.0mm



Mounting hole: $121.6^{+0.2}$ x $27.6^{+0.2}$ mm

- For cold connections 65° C, Protection Class I
- Filter version of Felcom® Series 64 modules
  – Nominal current at 40° C: 1, 2, 4 or 6A / 250V, 50 Hz
  – Leakage current: < 0.5mA / 250V or
  < 5µA / 250V (for medical applications)
- Snap-in mounting for 1mm – 3mm panel thickness
- Single or double pole shock-safe fuseholder for 5 x 20mm fuses (plug removal necessary for fuse replacement)
- DPST on/off line switch (non-illuminated)
- Solder terminals .138 x .032" (3.5 x 0.8mm) or quick-connect terminals .250 x .032" (6.3 x 0.8mm)
- Individual component modules are soldered on a printed circuit board, fully insulated from the rear
- Shallow depth behind the panel (23mm)
- IEC 320 inlet according to EN 60320, IEC 320/C14
- IEC 320 outlet according to EN 60320, IEC 320/F
- Body: thermoplastic
  Terminals: brass, tin-plated
- Max. power dissipation values on request (see page 5 for more information)
- For attenuation graphs, see page 66-71
- For general information on filters, see pages 50

Options:

- Other combinations available on request. Contact Schurter, Inc. for part numbers and minimum order requirements.
- For individual FELCOM® components, see page 47
- For FELCOM® without filter, see page 45
- For cord retaining clamp, see page 27
- For mating IEC 320 inlet plugs 4300.0602/0606, see page 23
- For mating IEC 320 outlet plugs 4300.0407/0411, see page 22
- To order fuses, see page102

Approvals: (1, 2, 4, 6A/250V)

UL	recognition	File #E72928
CSA	certification	File #LR97784-1
VDE	approval	File #68313
SEMKO	approval	File numbers on request
SEV	approval	File numbers on request

Order Numbers:

Standard or Medical Filter

5 4 XX . X X XX . XX X

Type of RFI filter
1 = standard
3 = medical

Snap-in panel thickness
10 = 1.0 mm
12 = 1.2 mm
15 = 1.5 mm
20 = 2.0 mm
25 = 2.5 mm
30 = 3.0 mm

Terminals
51 = Solder terminals .138 x .032" (3.5 x 0.8mm)
53 = quick-connect terminals .250 x .032" (6.3 x 0.8mm)

Fuseholder
0 = without fuseholder
1 = single pole, for 5 x 20mm fuse
2 = double pole, for 5 x 20mm fuses

RFI filter
1 = 1 amp
2 = 2 amp
4 = 4 amp
6 = 6 amp

Standard combinations
11 = IEC 320 inlet, fuseholder, filter
21 = IEC 320 inlet/outlet, filter
23 = IEC 320 inlet/outlet, fuseholder, filter
24 = IEC 320 inlet, fuseholder, switch, filter
31 = IEC 320 inlet/outlet, switch, filter
32 = IEC 320 inlet/outlet, fuseholder, switch, filter

Base model

PEM45

AC Inlet • Circuit Breaker For Equipment
On/off Line Switch • With or Without Line Filter

NEW

5145 (with filter)

6145

- Ac inlet with circuit breaker (6145 Series) and line filter (5145 Series). 1 or 2-pole over-current protection, or without. Manual reset on/off switch lighted or unlighted. High current limiting up to 15 amps.
- Standard filter or medical grade (<5µA leakage). Bleed resistor eliminates potential for shock after power is removed.
- AC inlet according to IEC 60320/C14.
- Qualifies for use in equipment meeting IEC/EN60950, 60601-1 and/or UL2601 compliance.
- Optional undervoltage release detects power loss.
- Mating cordsets & rewireable plugs available.

Effect of ambient temperature

The unit is calibrated for an ambient temperature of +23°C. To determine the rated current for a lower or higher ambient temperature, use a correction factor from the table below:

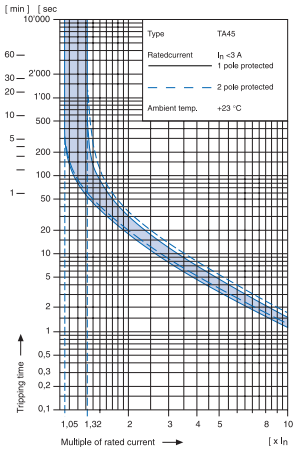
Ambient temperature [°C]	Correction factor
–10	0,89
–5	0,91
0	0,92
+23	1,00
+30	1,03
+40	1,08
+55	1,16

Example

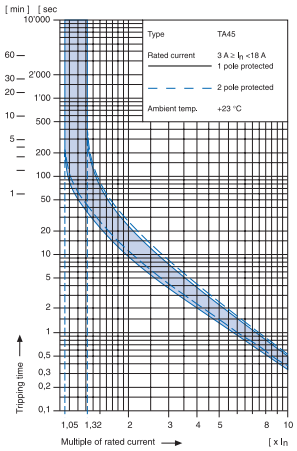
Rated current at +23°C	6,0 A
Ambient temperature	+40°C
Correction factor	1,08
Chosen rated current at +40°C ambient temperature	

6 A x 1,08 = 6,5 A

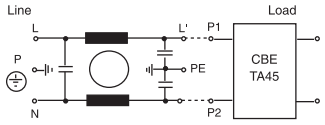
Tripping characteristics
I_n <3 A



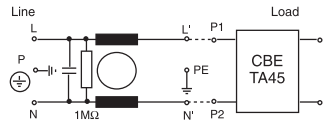
Tripping characteristics
I_n ≥ 3 A to 15 A



Standard Filter
Max. leakage current (250 V / 50 Hz) : 0,5 mA



Medical Filter
Max. leakage current (250 V / 50 Hz) : 5 µA



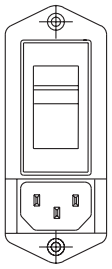
Rated voltage, rated current and approvals

Rated voltage (V), 50–60 Hz	Rated current (A)*	Tu (+∞C)	c-UL-us (recog. pending)	VDE approval (file #117118)	
AC 250	1, 2, 3, 4, 6, 8, 10	40	•	•	
AC 250	15	40	• 15 A		
		55		• up to 10 A	

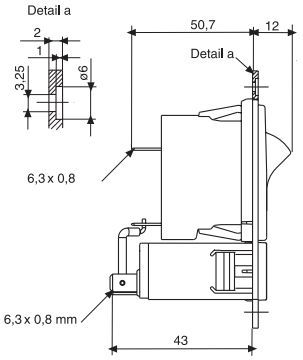
Short circuit capacity I_{cn}	AC 240 V at I_n < 3 A	10 x In
	AC 240 V at I_n ≥ 3 A	300 A
Test voltage	L/N -> PE > 2 sec	2700 V
Protection class	Accessible range	IP40
	Terminal side	IP00
Permissible ambient temperature (Power entry module)		-10∞C to +55∞C

PEM45 continued

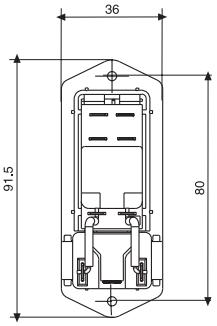
Front view



Side view

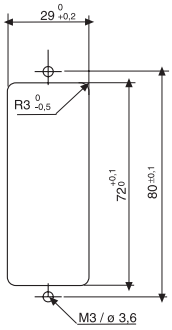


Back view

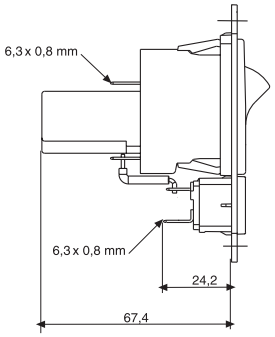


Type 5145 (with filter)

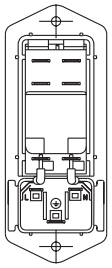
Cut-out



Side view



Back view



Type 6145 (without filter)

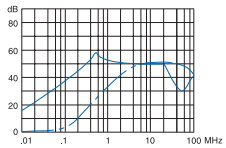
Line Filter Attenuation loss

—·—·— symmetrical (differential mode): Line to line

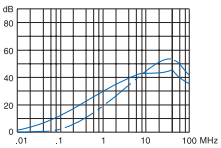
——— asymmetric common mode): Line to ground

Standard Filters

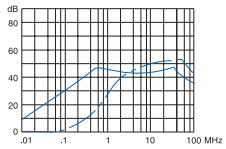
1 A



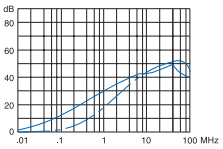
6 A



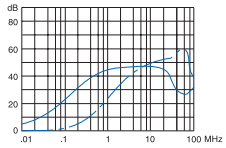
2 A



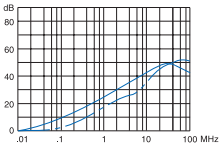
8 A



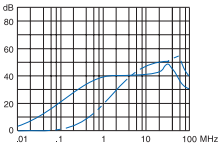
3 A



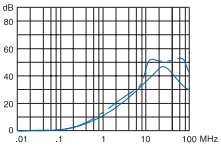
10 A



4 A

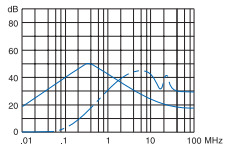


15 A

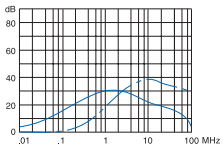


Medical Filters

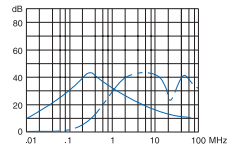
1 A



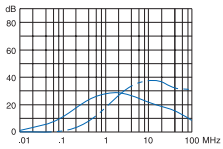
6 A



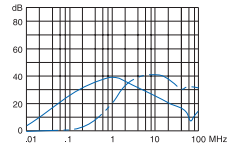
2 A



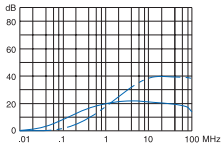
8 A



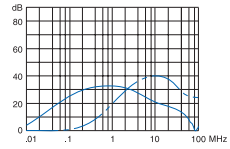
3 A



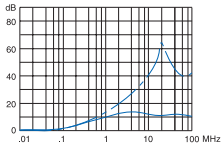
10 A



4 A



15 A



PEM45 continued

Combinations		Type 5145	Type 6145
Appliance-inlet		•	•
Line filter		•	
Circuit breaker for Equipment (CBE) TA45	ON/OFF mains switch 2 pole	•	•
	Thermal overload protection	•	•
	Undervoltage release	• (optional)	• (optional)
	Remote trip release	• (optional)	• (optional)

Power entry module

Order Code (with order example)

Type	TA45 Circuit Breaker	Line filter
5145 6145	2 pole rocker-switch without accessories	

5 - A B T W F 1 5 0 C 0 - 8 1 1

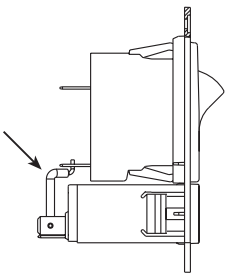
Wiring
- **0** Without
- **1** With
- **2** Special (on request)

Type of line filter
- **0** Without line filter (only Type 6145)
- **1** Standard
- **3** Medical

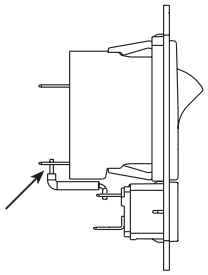
Rated current of line filter

Code	Rated Current I_n
0	Without line filter (only Type 6145)
1	1 (A)
2	2 (A)
3	3 (A)
4	4 (A)
5	6 (A)
6	8 (A)
7	10 (A)
8	15 (A)

Type
- **5** Power entry module (AC inlet + Line filter + Circuit breaker)
- **6** Power entry module (AC inlet + Circuit breaker)



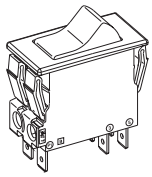
Type 5145 with filter



Type 6145 without filter

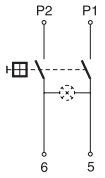
PEM45 continued

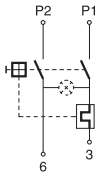
TA45 Circuit Breaker for Equipment

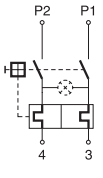


- ON/OFF switch
- 2 pole, rocker actuated
- Quick connect terminal

(other Types on request)







		ABC	ABT	ABD
Without illumination	–			
With illumination	220/240 V	A02	A12	A32
	110/120 V	A04	A14	A34

Colors

Switch front		Rocker	
		—	⊗
W	black	white	–
B	black	black	–
6	black	–	orange transp.

Order example

ABT | W | F | 150 | C0

Rocker legend

	Surface	Illustration		Color of print
F	embossed	–	0	
H	printed	ON	OFF	white
K	printed	ON	OFF	black

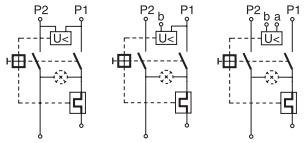
Without thermal overload protection: code C00

With thermal overload protection: rated current I_n (A)

I_n	Code	I_n	Code	I_n	Code	I_n	Code
0,1	J01	1,3	J13	2,8	J28	10,0	100
0,2	J02	1,4	J14	3,0	030	11,0	110
0,3	J03	1,5	J15	3,5	035	12,0	120
0,4	J04	1,6	J16	4,0	040	13,0	130
0,5	J05	1,7	J17	4,5	045	14,0	140
0,6	J06	1,8	J18	5,0	050	15,0	150
0,7	J07	1,9	J19	6,0	060		
0,8	J08	2,0	J20	6,5	065		
0,9	J09	2,1	J21	7,0	070		
1,0	J10	2,2	J22	7,5	075		
1,1	J11	2,3	J23	8,0	080		
1,2	J12	2,5	J25	9,0	090		

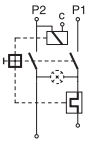
Without release: code C0

Undervoltage release



U	E	Z
ï	ï	ï
ï	ï	ï
ï	ï	ï

Remote trip release



A	Code	Rated voltage U_n AC (V)
ï	2	240
ï	3	230
ï	4	120