



2-line filters IEC inlet filters

250 V DC/AC, 50/60 Hz, 1 ... 20 A, 50 °C

Ordering code: **B84771*A000**

Date: 2009-11-17

Version: 06

Construction

- 2-line filter with IEC connector
- Appliance connector according to IEC/EN 60320-1
- Metal case

Versions

- With bleed resistor (B84771A*)
- Without bleed resistor (B84771C*)
- Medical version with low leakage current (B84771M*)

Features

- Easy to install
- Compact design
- Cost optimized construction
- Degree of protection from front side IP 40 ¹⁾
- Design complies with IEC / EN 60939, UL 1283, CSA 22.2 No.8
- ENEC10 approvals (1 ... 15 A)
- ENEC10 approvals (16 ... 20 A) pending
- UL and cUL approvals pending

Applications

- Switched-mode power supplies for
 - industrial electronics
 - telecom systems
 - data systems
- DC applications
- Measuring instruments
- Medical engineering

Terminals

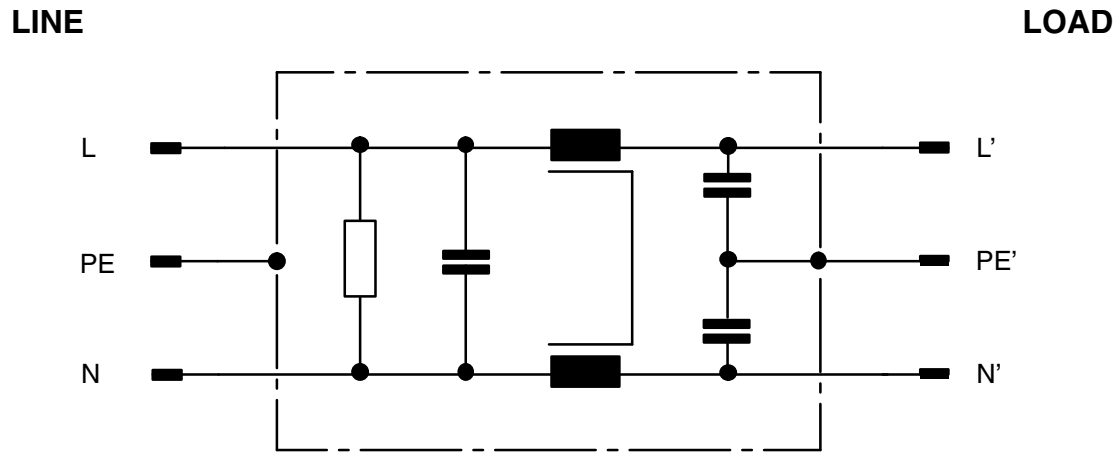
- Line side: IEC inlet C14 according to IEC/EN 60320-1 (1 ... 15 A)
IEC inlet C20 according to IEC/EN 60320-1 (16 ... 20 A)
- Load side: Tab connectors 6.3 x 0.8 mm

Marking

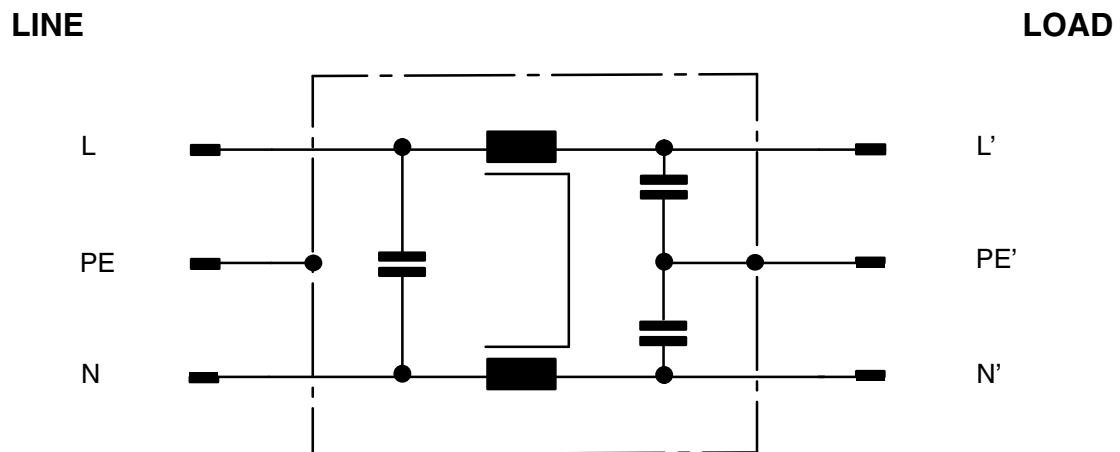
- Marking on component:
manufacturer's logo, ordering code, rated voltage, rated current,
rated temperature, climatic category, date code
- Minimum marking on packaging:
maufacturer's logo, ordering code, date code, quantity

¹⁾ To IEC 60529

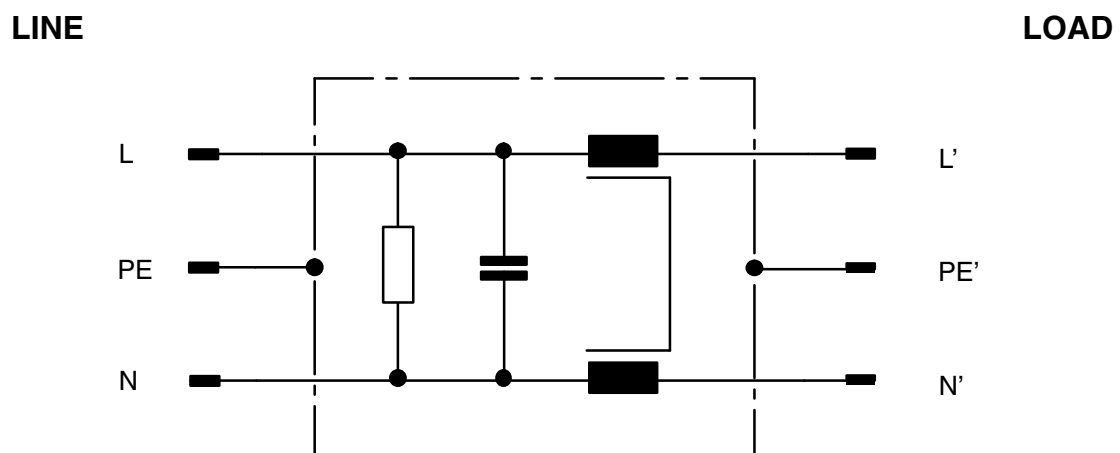
Typical circuit diagram of B84771A*A000 (with bleed resistor)



Typical circuit diagram of B84771C*A000 (without bleed resistor)



Typical circuit diagram of B84771M*A000 (medical version)



Technical data and measuring conditions of B84771*A000

Rated voltage	U_R	250	V DC/AC
Rated frequency	f_R	50/60	Hz
Test voltage line to line for 2 s (1 ... 15 A types)	U_{test}	1000	V AC
Test voltage line to line for 2 s (16 ... 20 A types)	U_{test}	1100	V DC
Test voltage line to case for 2 s (B84771A/C*)	U_{test}	2000	V AC
Test voltage line to case for 2 s (B84771M*)	U_{test}	2500	V AC
Rated temperature	T_R	50	°C
Climatic category (IEC 60068-1)		25/085/21	

Characteristics and ordering codes of B84771*A000

I _R	C _R		L _R	I _{leak} ²⁾	R _{bleed}	Approx. weight	Ordering code	Approvals ³⁾		
	X2	Y2								
A	μF	nF	mH	mA	MΩ	g				
1	1x0.1	2x2.2	2x12	0.173	1	40	B84771A0001A000	X	+	+
	1x0.1	2x2.2	2x12	0.173	—	40	B84771C0001A000	X	+	+
	1x0.1	—	2x12	0	1	40	B84771M0001A000	X	+	+
3	1x0.1	2x2.2	2x2.5	0.173	1	40	B84771A0003A000	X	+	+
	1x0.1	2x2.2	2x2.5	0.173	—	40	B84771C0003A000	X	+	+
	1x0.1	—	2x2.5	0	1	40	B84771M0003A000	X	+	+
6	1x0.1	2x2.2	2x0.84	0.173	1	40	B84771A0006A000	X	+	+
	1x0.1	2x2.2	2x0.84	0.173	—	40	B84771C0006A000	X	+	+
	1x0.1	—	2x0.84	0	1	40	B84771M0006A000	X	+	+
8	1x0.1	2x2.2	2x0.45	0.173	1	40	B84771A0008A000	X	+	+
	1x0.1	2x2.2	2x0.45	0.173	—	40	B84771C0008A000	X	+	+
	1x0.1	—	2x0.45	0	1	40	B84771M0008A000	X	+	+
10	1x0.1	2x2.2	2x0.24	0.173	1	40	B84771A0010A000	X	+	+
	1x0.1	2x2.2	2x0.24	0.173	—	40	B84771C0010A000	X	+	+
	1x0.1	—	2x0.24	0	1	40	B84771M0010A000	X	+	+
12	1x0.1	2x2.2	2x0.14	0.173	1	40	B84771A0012A000	X	+	+
	1x0.1	2x2.2	2x0.14	0.173	—	40	B84771C0012A000	X	+	+
	1x0.1	—	2x0.14	0	1	40	B84771M0012A000	X	+	+
15	1x0.1	2x2.2	2x0.09	0.173	1	40	B84771A0015A000	X	+	+
	1x0.1	2x2.2	2x0.09	0.173	—	40	B84771C0015A000	X	+	+
	1x0.1	—	2x0.09	0	1	40	B84771M0015A000	X	+	+
16	1x0.33	2x2.2	2x0.58	0.173	1	130	B84771A0016A000	+	+	+
	1x0.33	2x2.2	2x0.58	0	1	130	B84771M0016A000	+	+	+
20	1x0.33	2x2.2	2x0.4	0.173	1	130	B84771A0020A000	+	+	+
	1x0.33	2x2.2	2x0.4	0	1	130	B84771M0020A000	+	+	+

X = approval granted

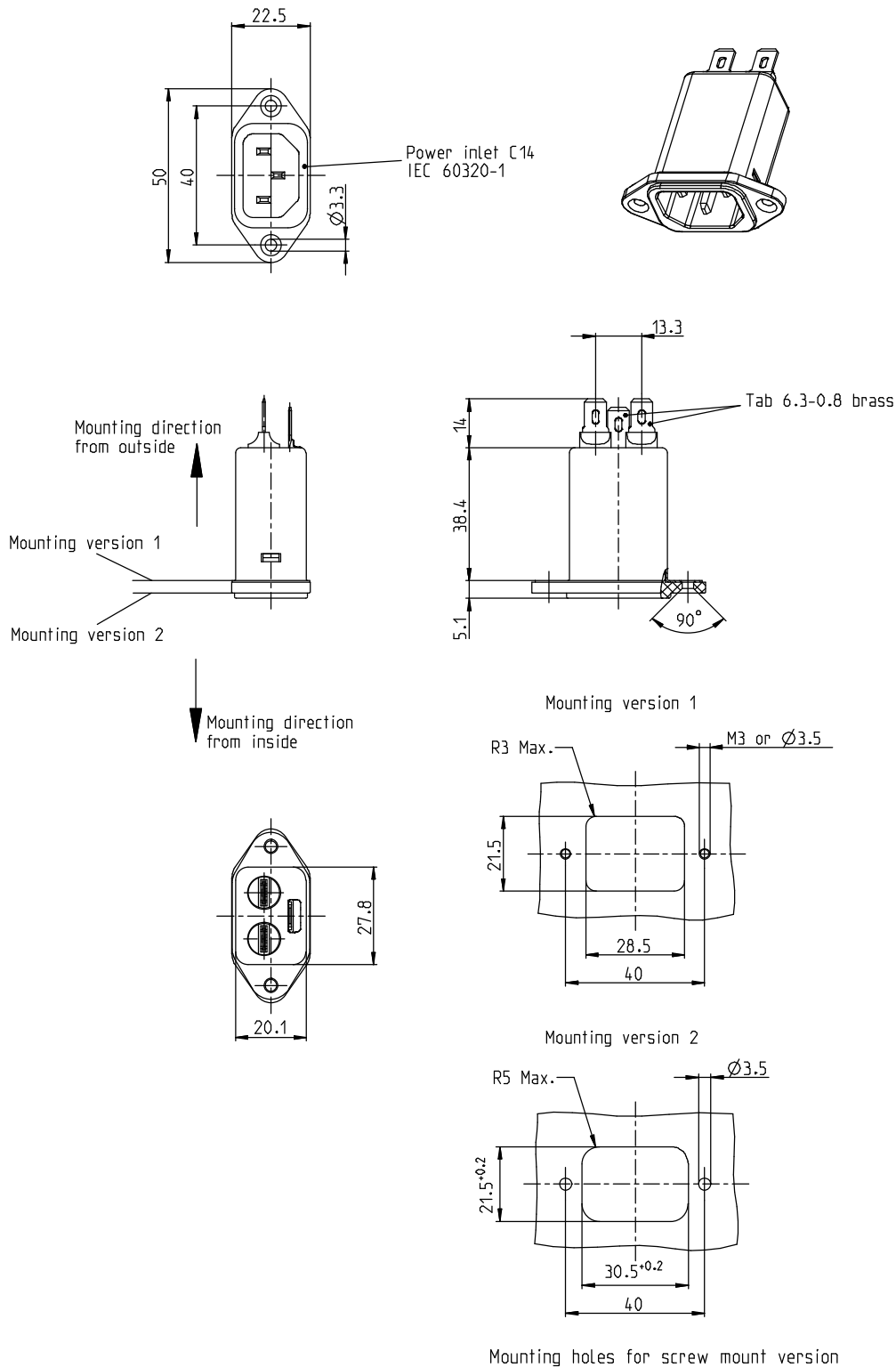
+ = approval pending

2) Calculation according draft proposal IEC 60939-1 Ed. 3 (2008-10-29), annex A, "Calculation of leakage current".

In practice are up to double values to be expected due to the insulation resistance values of the used ceramic capacitors. For the medical version results computationally the value 0. In practice are values 1 ... 2 μA to be expected due to the insulation resistance values of the used ceramic capacitors.

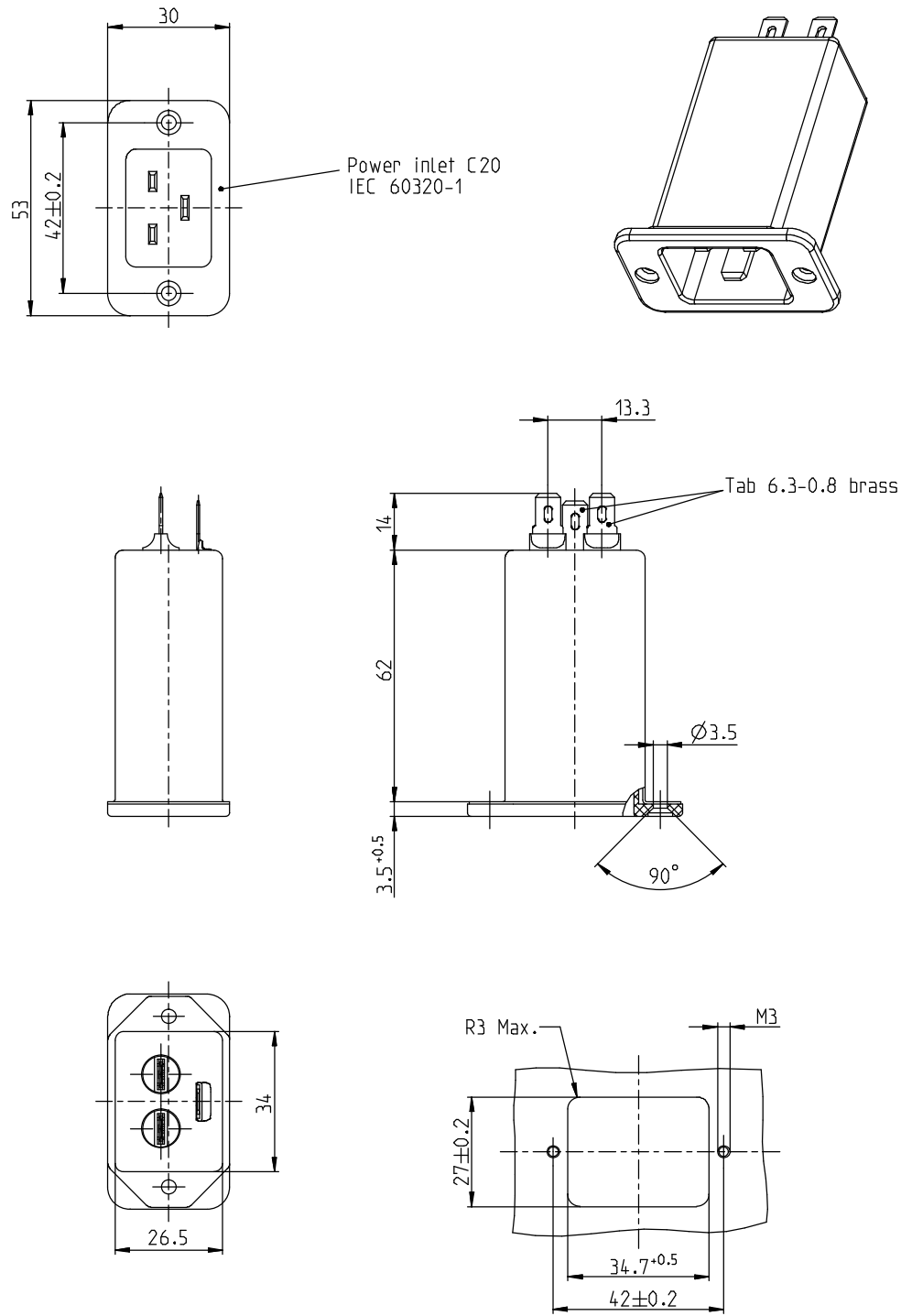
3) ENEC approval at 12 A and 15A types maximum with 10 A and at 20 A type maximum with 16 A feasible.

Dimensional drawing (1 ... 15 types)



All dimensions in mm

Dimensional drawing (16 ... 20 types)

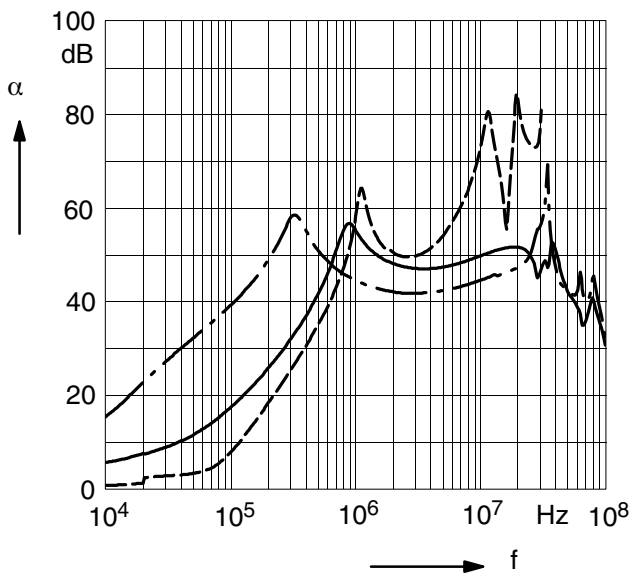


All dimensions in mm

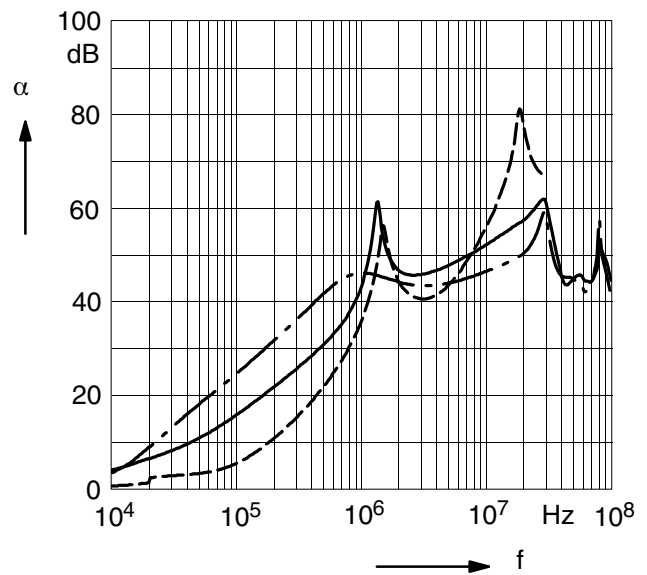
Insertion loss (typical values at $Z = 50 \Omega$)

- unsymmetrical, adjacent branches terminated
- - - common mode, all branches in parallel (asymmetrical)
- - - differential mode (symmetrical)

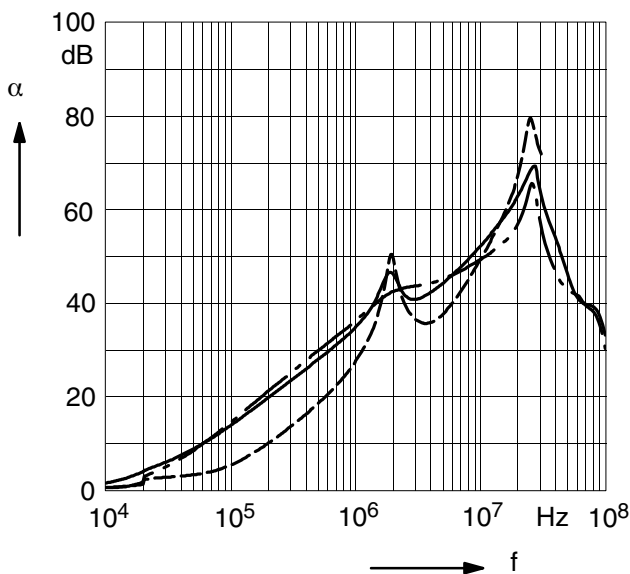
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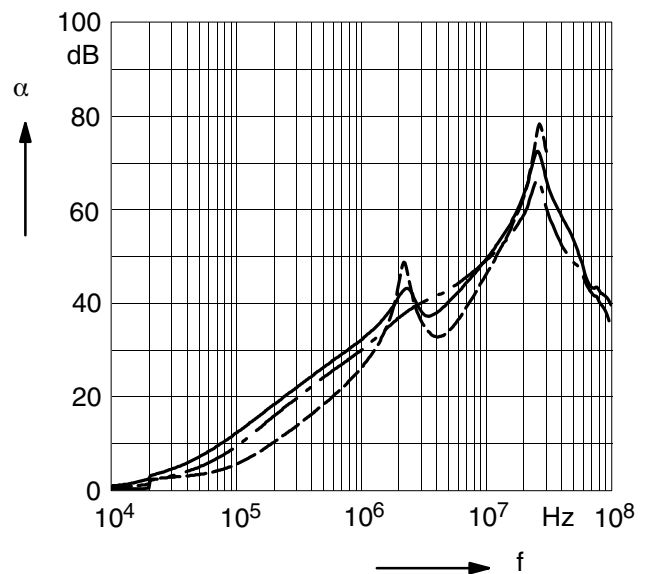
B84771A0003A000 & B84771C0003A000



B84771A0006A000 & B84771C0006A000



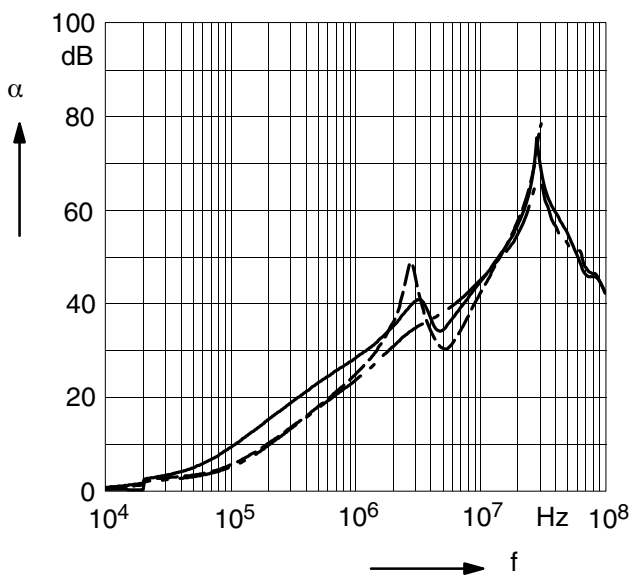
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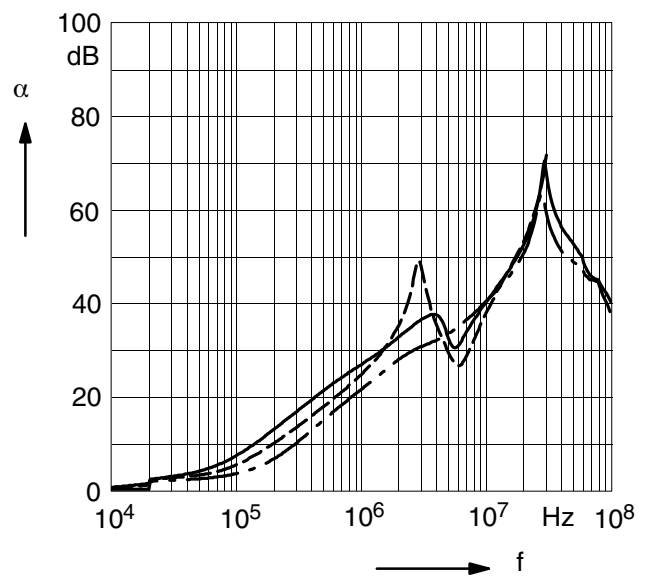
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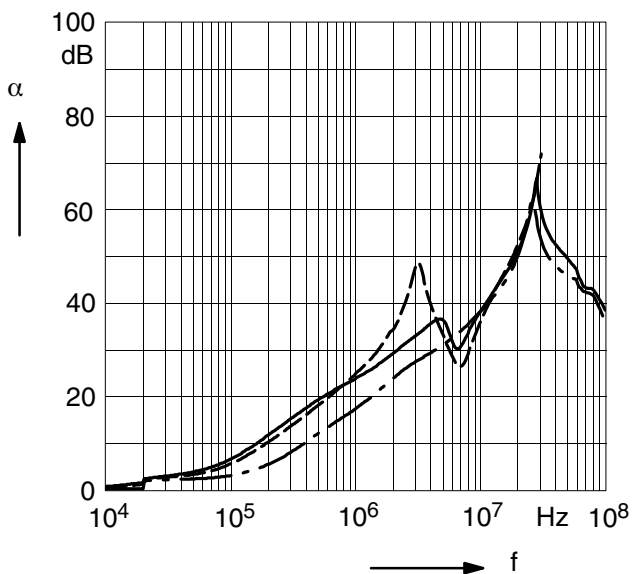
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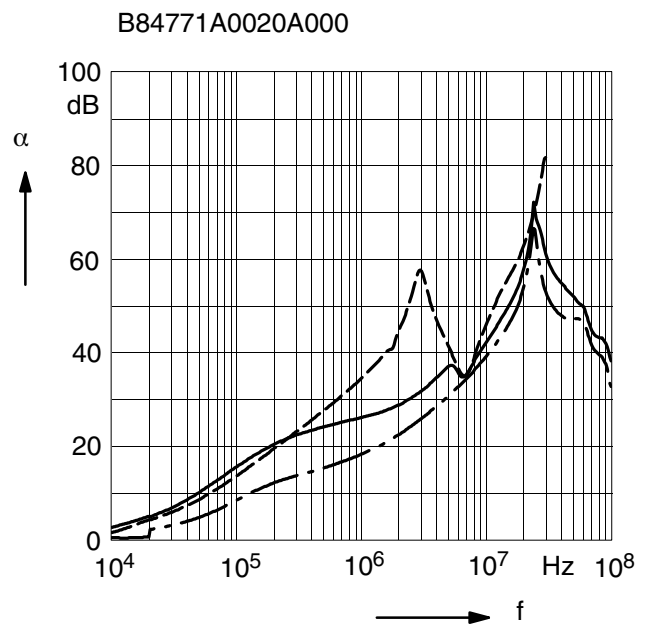
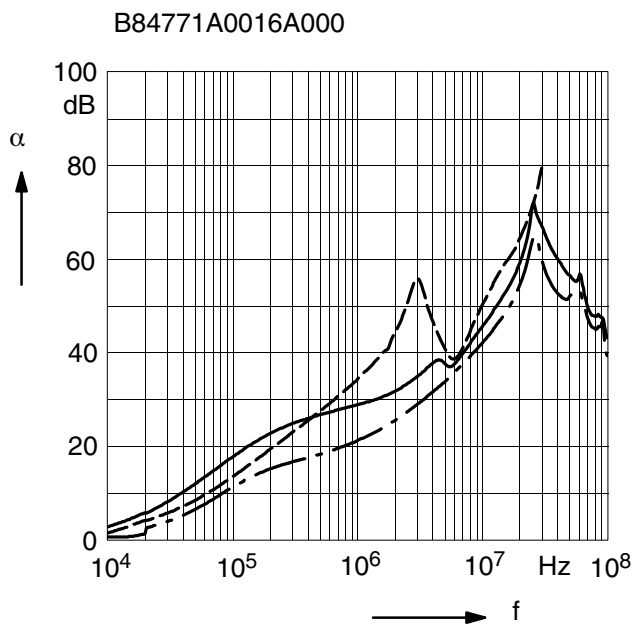


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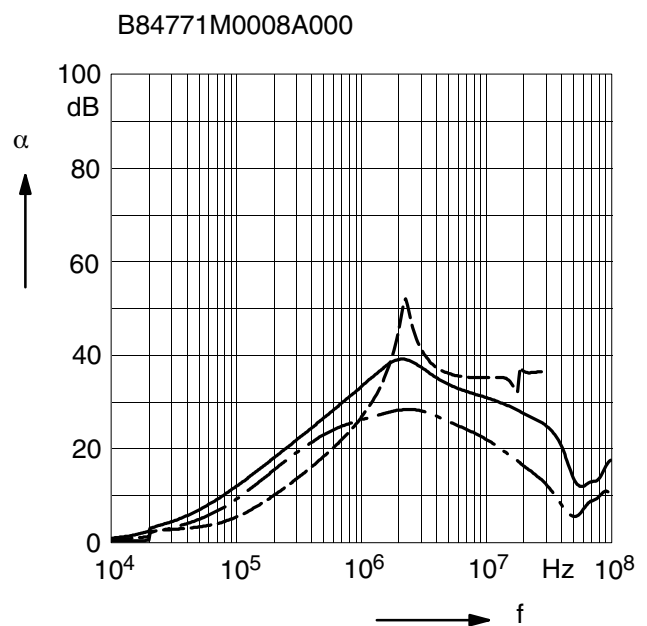
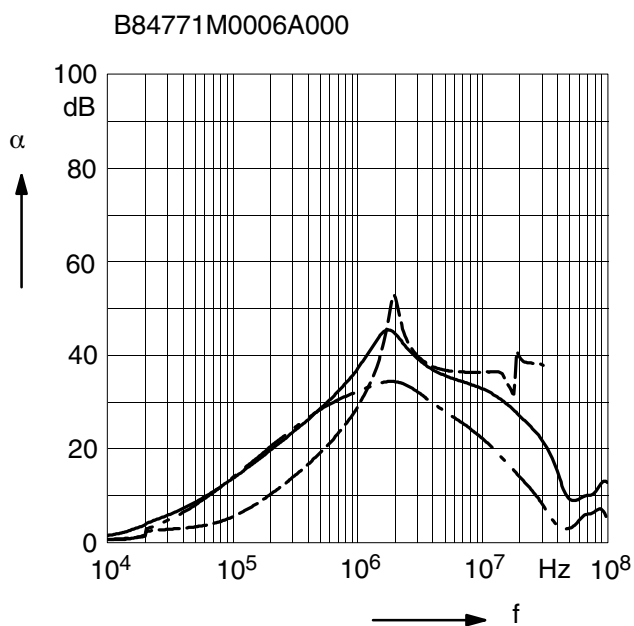
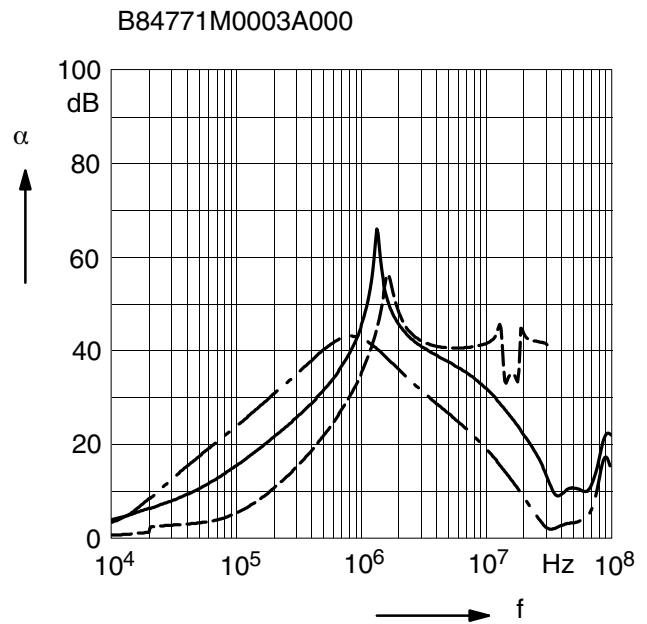
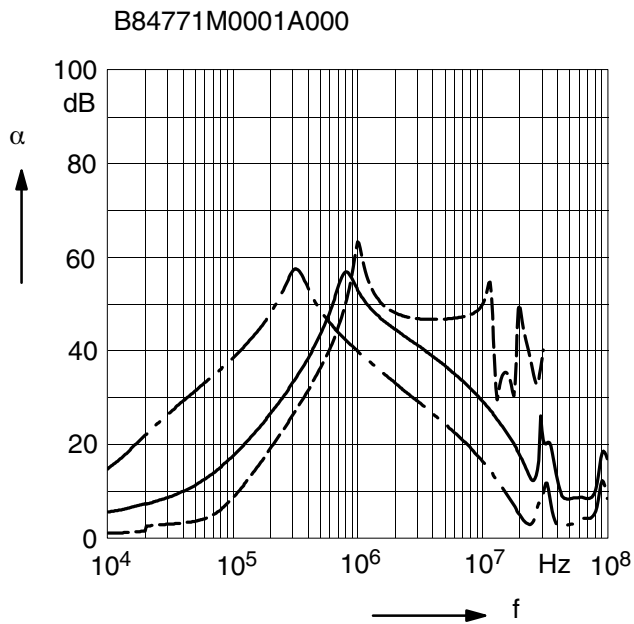
Insertion loss (typical values at $Z = 50 \Omega$)

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- - - differential mode (symmetrical)



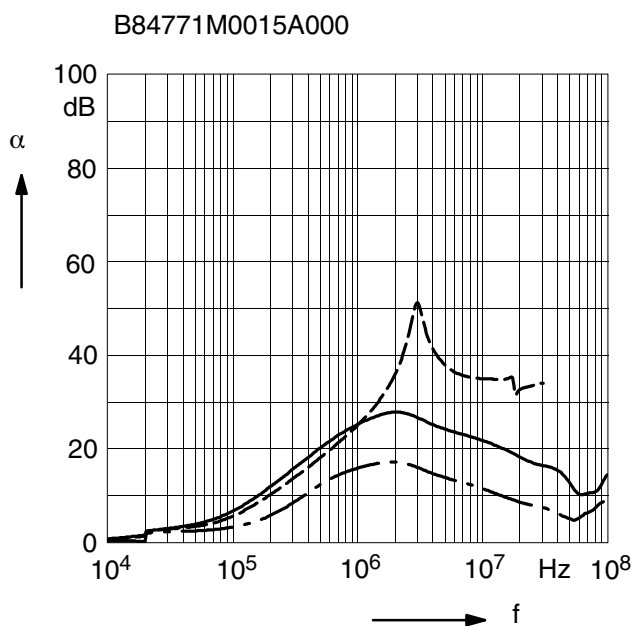
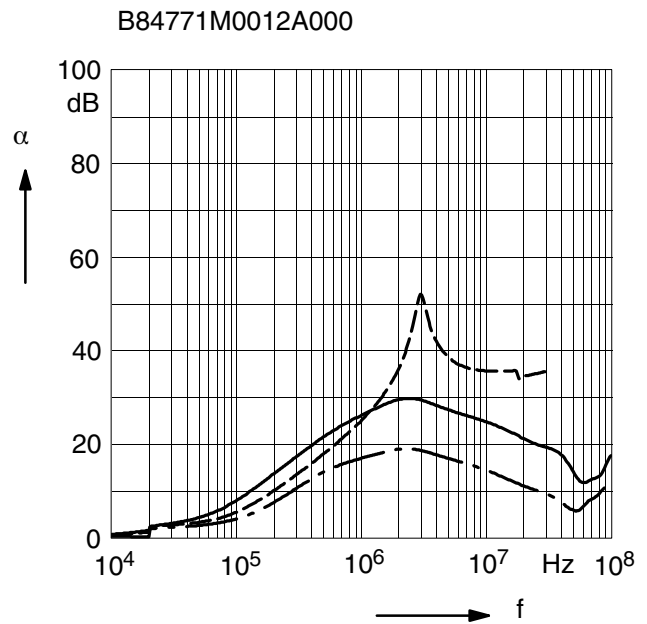
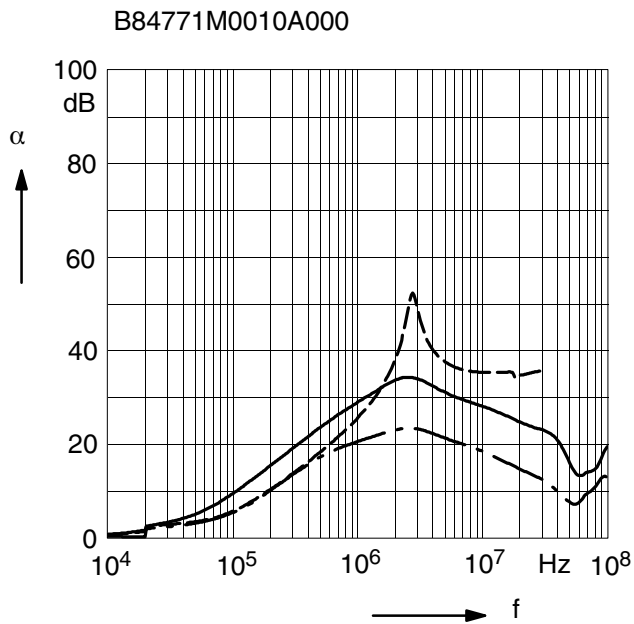
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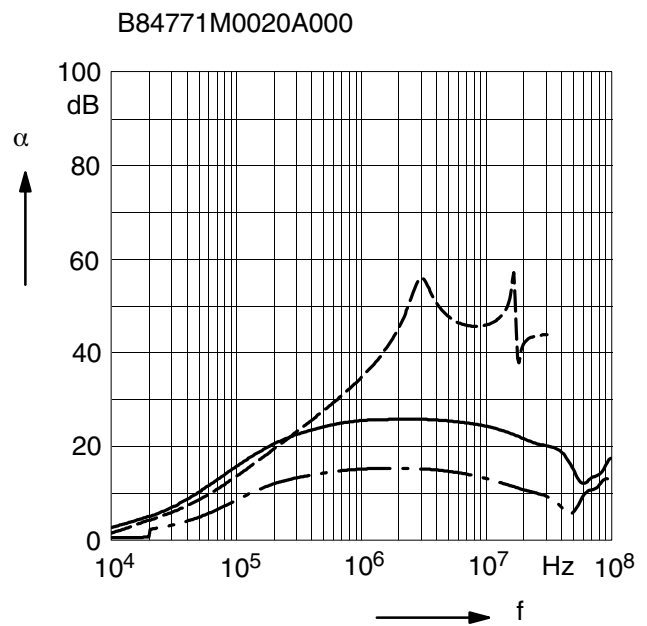
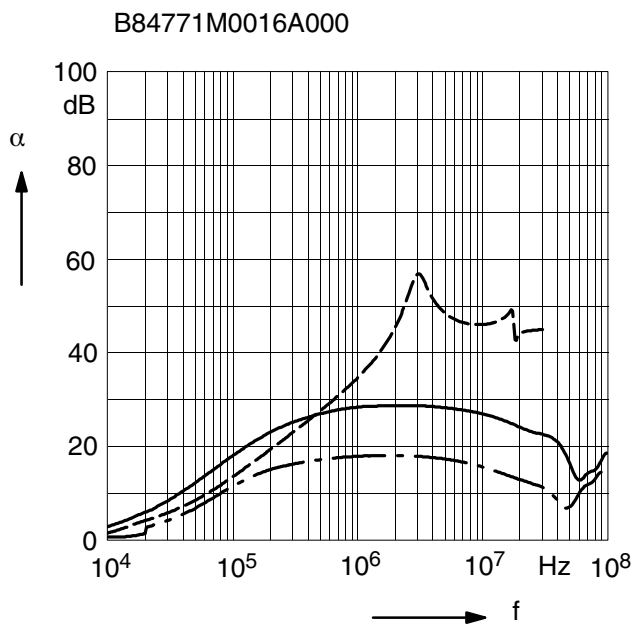
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- - - differential mode (symmetrical)



Caution and warnings

- Please note the advices in our data book “EMC Filters” (latest edition); attention should be paid to the chapter “General safety notes”.
- It shall be ensured that only qualified persons (electricity specialists) are engaged on work such as planning, assembly, installation, operation, repair and maintenance. They must be provided with the corresponding documentation.
- Danger of electric shock. EMC filters contain components that store an electric charge. Dangerous voltages can continue to exist at the filter terminals for longer than five minutes even after the power has been switched off.
- The protective earth connections shall be the first to be made when the EMC filter is installed and the last to be disconnected. Depending on the magnitude of the leakage currents, the particular specifications for making the protective–earth connection must be observed.
- Impermissible overloading of the EMC filter, such as with circuits able to cause resonances, impermissible voltages at higher frequencies etc. can lead to bodily injury and death as well as cause substantial material damages (e.g. destruction of the filter housing).
- EMC filters must be protected in the application against impermissible exceeding of the rated currents by overcurrent protective.
- In case of leakage currents $> 3.5 \text{ mA}$ you shall mount the PE conductor stationary with the required cross section before beginning of operation and save it against disconnecting. For leakage currents $I_L^{5)} < 10 \text{ mA}$ the PE conductor must have a KU value $^{4)}$ of 4.5; for leakage currents $I_L \geq 10 \text{ mA}$ the PE conductor must have a KU value of 6.

4) The KU value (symbol KU) is a classification parameter of safety–referred failure types designed to ensure protection against hazardous body currents and excessive heating.

A value of KU = 4.5 with respect to interruptions is attained:

– with a permanently connected protective earth circuit $\geq 1.5 \text{ mm}^2$

– with a protective earth circuit $\geq 2.5 \text{ mm}^2$ connected via shroud connectors (IEC 60309–2).

KU = 6 with respect to interruptions is achieved for fixed–connection lines $\geq 10 \text{ mm}^2$ where the type of connection and line layout correspond to the requirements for PEN conductors as specified in relevant standards.

5) I_L = leakage current let–go

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