3–line filters
for converters and power electronics

520/300 V, 50/60 Hz, 35 ... 230 A, 50 °C

Ordering code:	**B84143A*R410, B84143B*R410**
Date:	2009–08–03
Version:	02

Construction

- 3–line filter
- Metal case
- Book size

Features

- High insertion loss
- Easy to install
- Compact design
- Degree of protection IP 20 [1)]
- Design complies with IEC 60939, UL 1283, CSA 22.2 No.8
- Optimized for long motor cable and operation under full load
- B84143A*R410: UL– and cUL approval

Applications

- Frequency converters and regenerative frequency converters (AFE) for motor drives, e.g.
  – elevators
  – machine tool building
  – pumps
  – traction systems
  – conveyor systems
  – HVAC systems (heating, ventilation and air conditioning)

Terminals

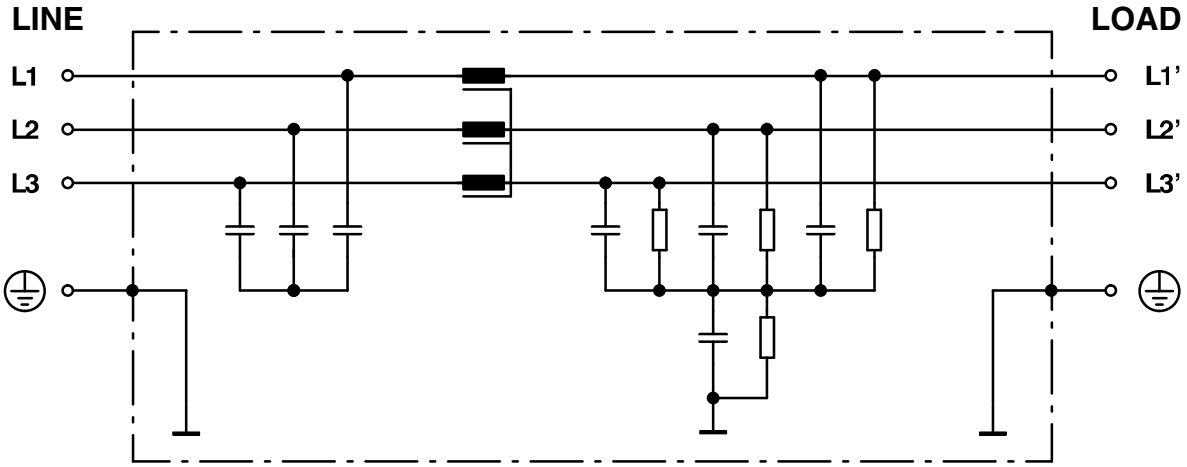
- Finger–save terminal blocks

Marking

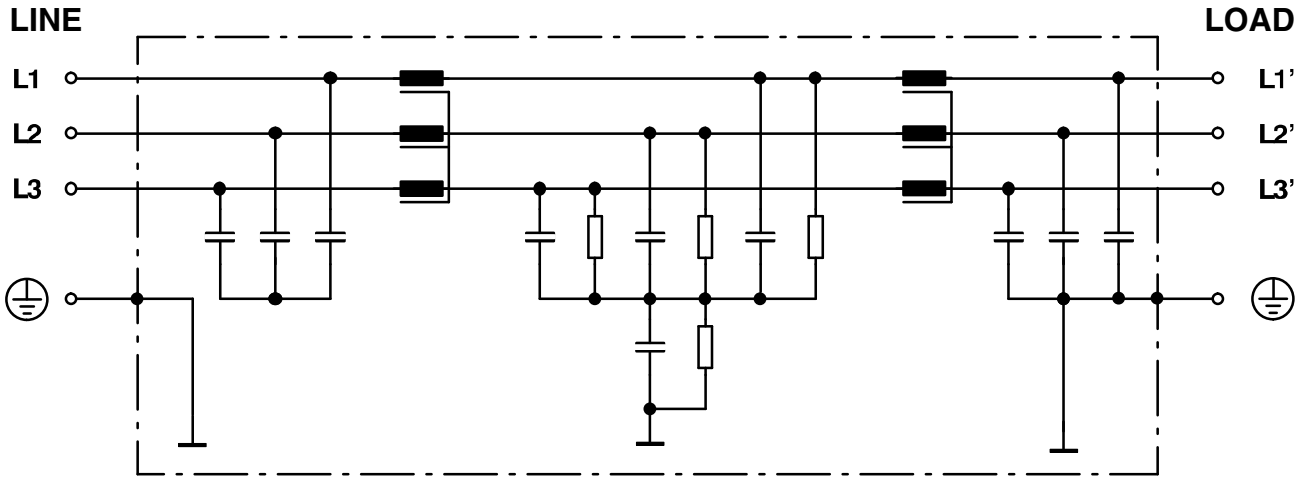
- Marking on component:
  manufacturer’s logo, ordering code, rated voltage, rated frequency, rated current, rated temperature, climatic category, date code
- Minimum marking on packaging:
  manufacturer’s logo, ordering code, date code, quantity

[1)] To IEC 60529:2001

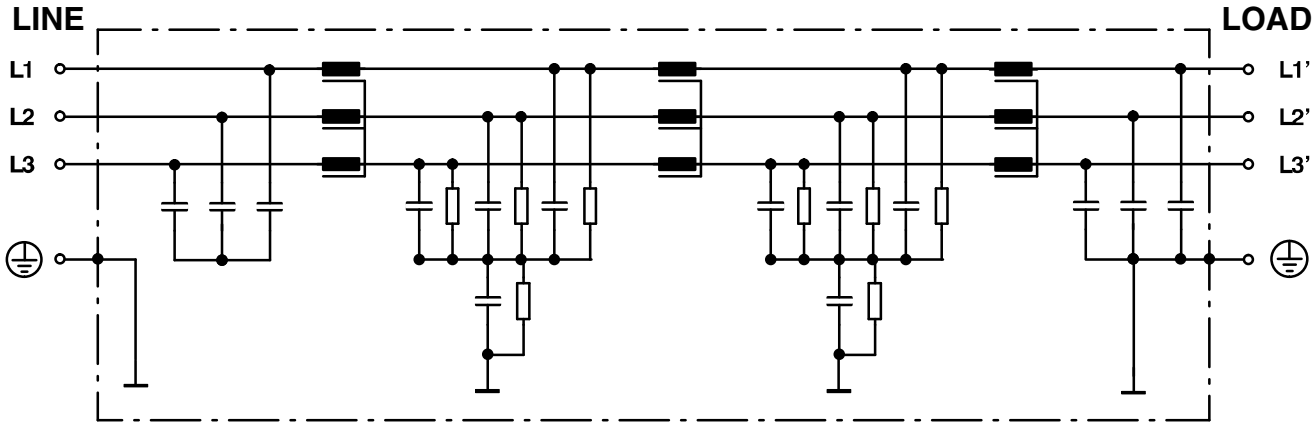
Typical circuit diagram of B84143A0035R410, B84143A0200R410, B84143A0230R410



Typical circuit diagram of B84143A0050R410, B84143A0080R410, B84143A0110R410, B84143A0150R410



Typical circuit diagram of B84143B0200R410, B84143B0230R410



Technical data and measuring conditions

Rated voltage	U_R	520/300	V AC
Rated frequency	f_R	50/60	Hz
Test voltage line to line for 2 s	U_{test}	2240	V DC
Test voltage line to case for 2 s	U_{test}	2720	V DC
Rated temperature	T_R	50	°C
Overload capability (thermal) for 3 min per hour or for 30 s per hour		 1.5 x I_R 2.5 x I_R	
Climatic category (IEC 60068–1)		25/100/21	

Characteristics and ordering codes

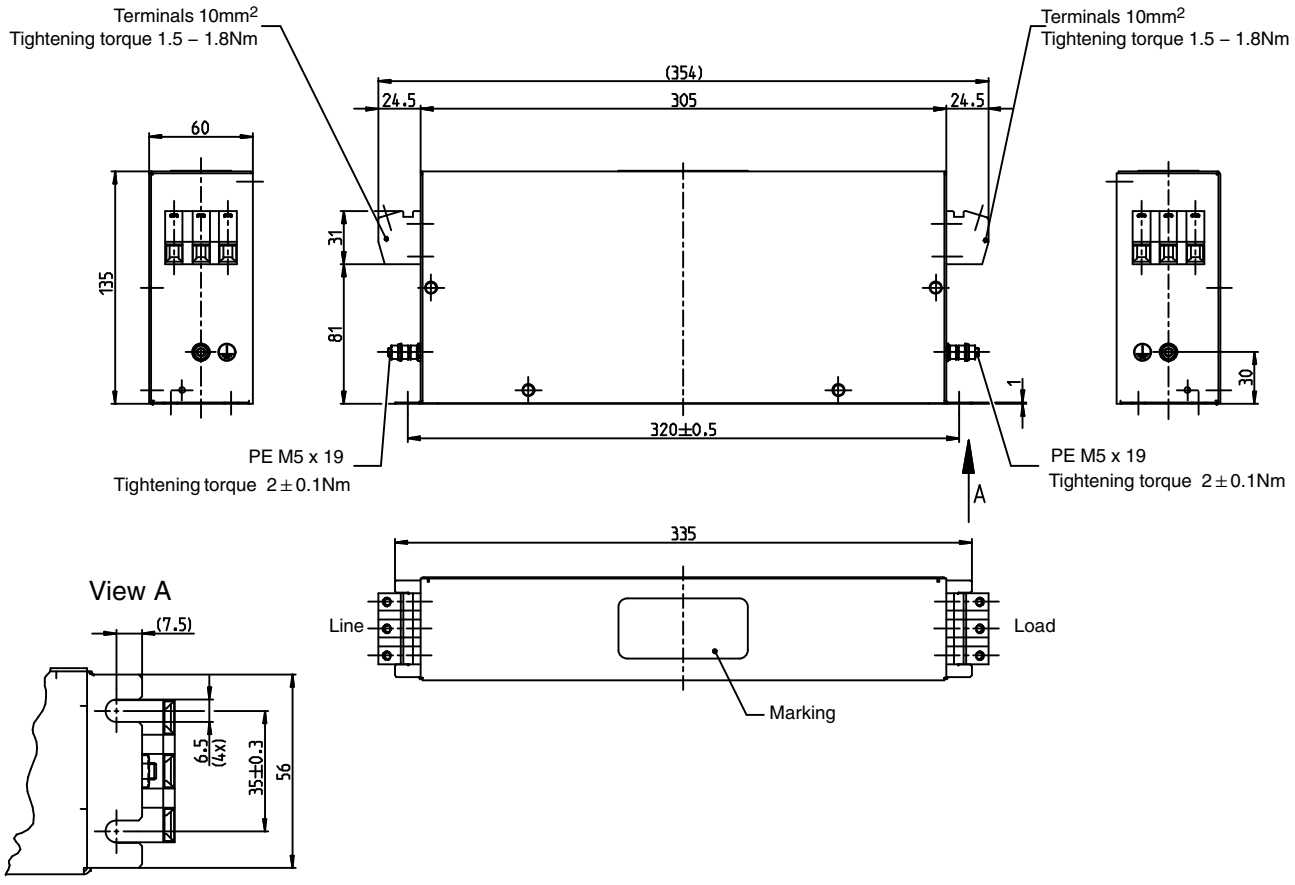
U_R AC	I_R	Terminal cross section	I_{leak} [2)]	R_{typ}	Approx. weight	Ordering code	Approvals	
V	A	mm^2	mA	mΩ	kg			
520/300	35	10	14	2.9	2.5	B84143A0035R410	X	X
	50	25	15	1.6	4.5	B84143A0050R410	X	X
	80	50	15	0.9	8.5	B84143A0080R410	X	X
	110	50	15	0.65	9.0	B84143A0110R410	X	X
	150	95	15	0.6	13.5	B84143A0150R410	X	X
	200	95	10	0.3	14.0	B84143A0200R410	X	X
	230	95	10	0.25	14.5	B84143A0230R410	X	X
	200	95	18	0.39	19.0	B84143B0200R410	–	–
	230	95	18	0.35	19.0	B84143B0230R410	–	–

X = approval granted

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

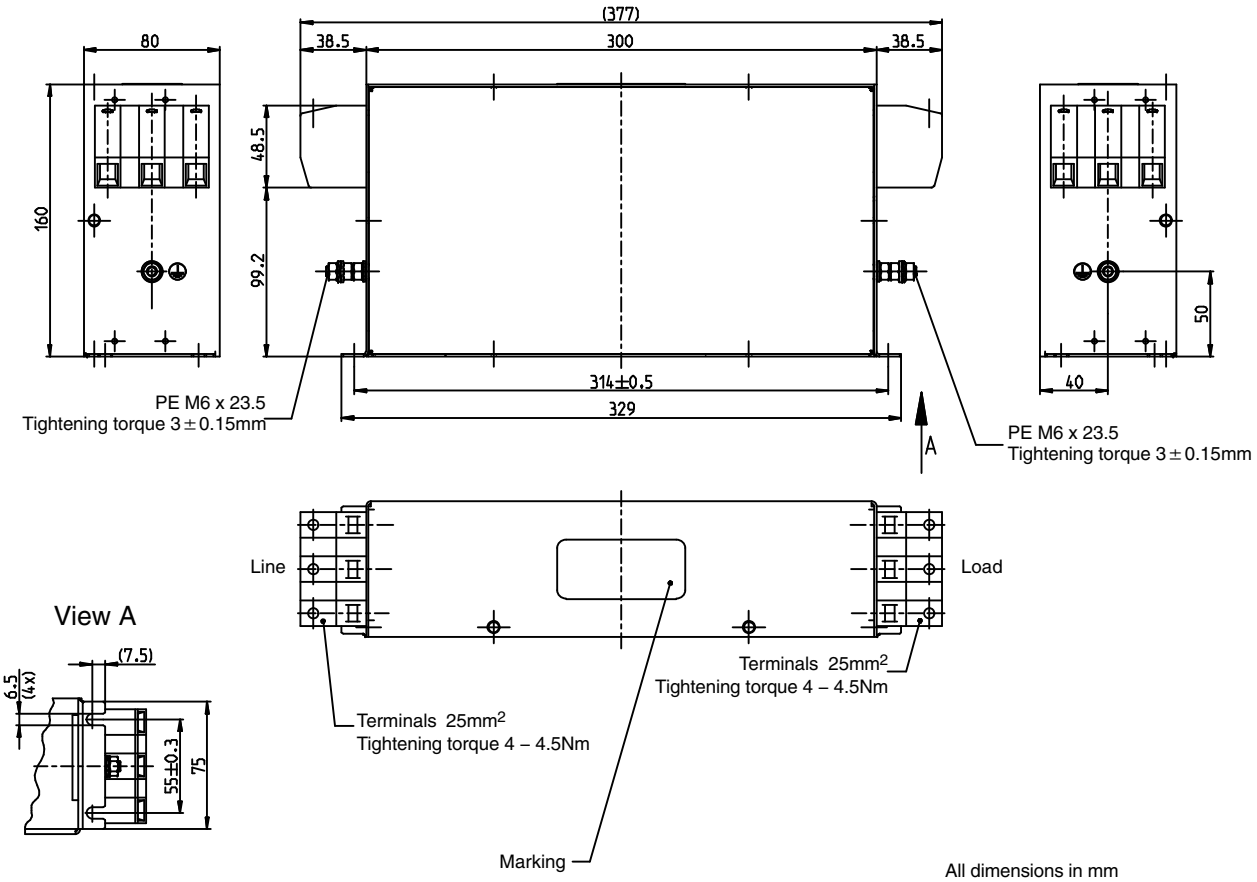
Dimensional drawings

B84143A0035R410

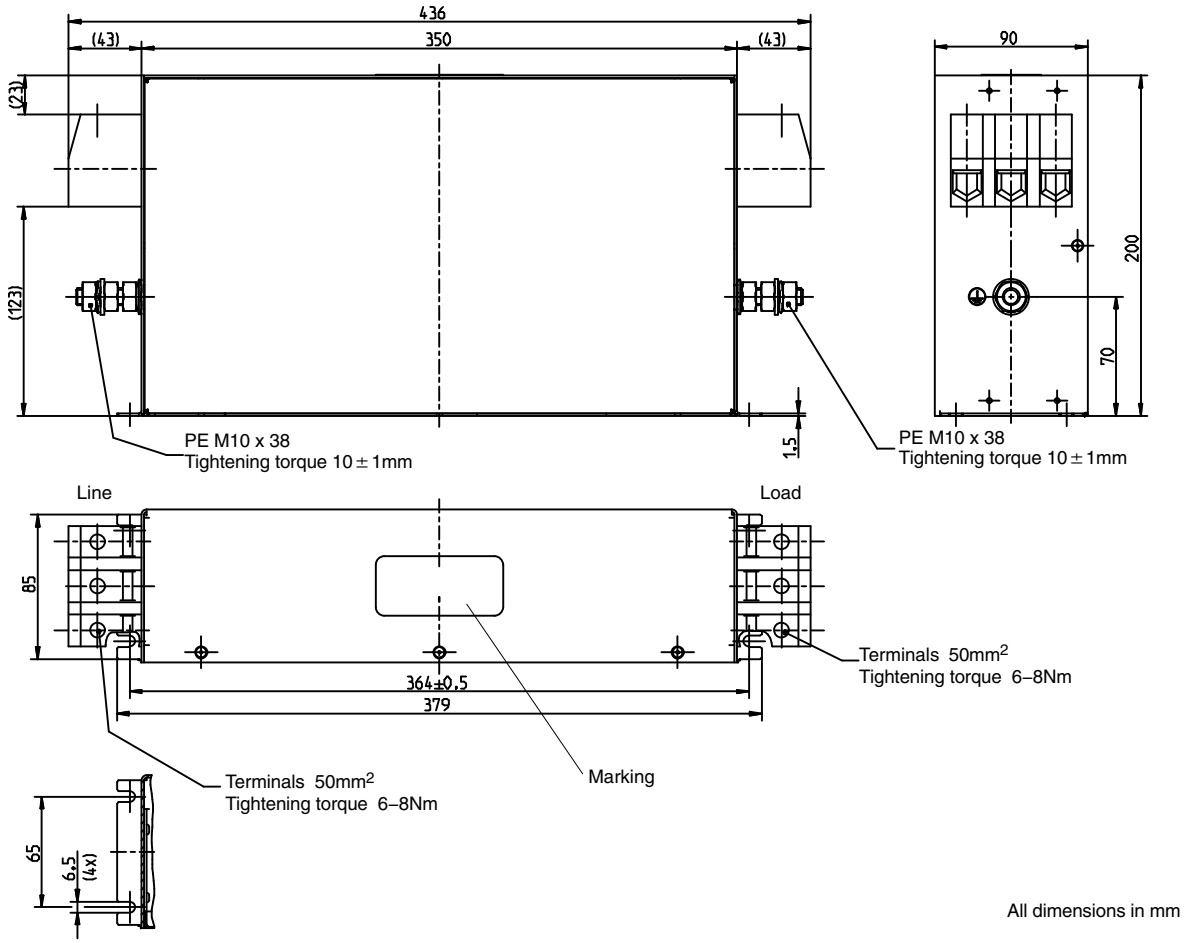


All dimensions in mm

B84143A0050R410

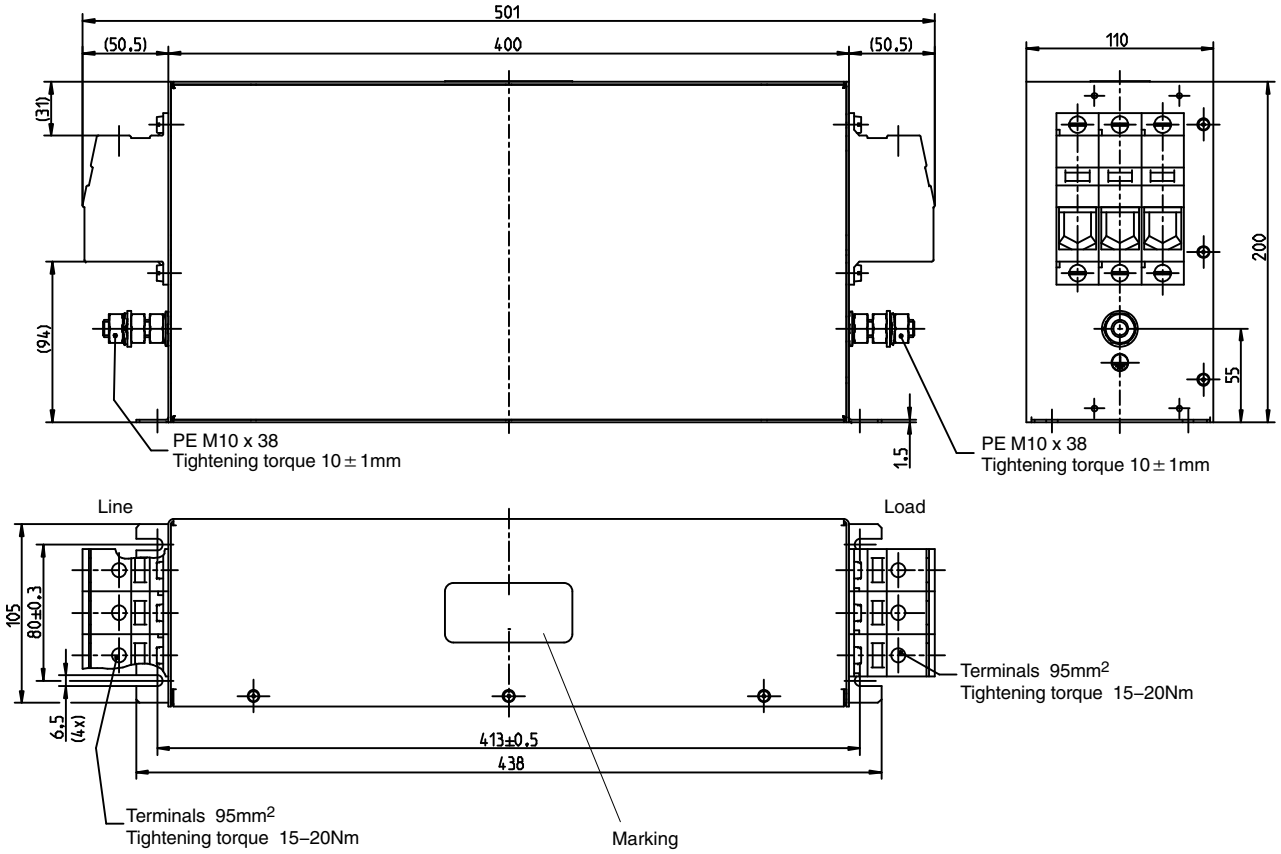


B84143A0080R410, B84143A0110R410



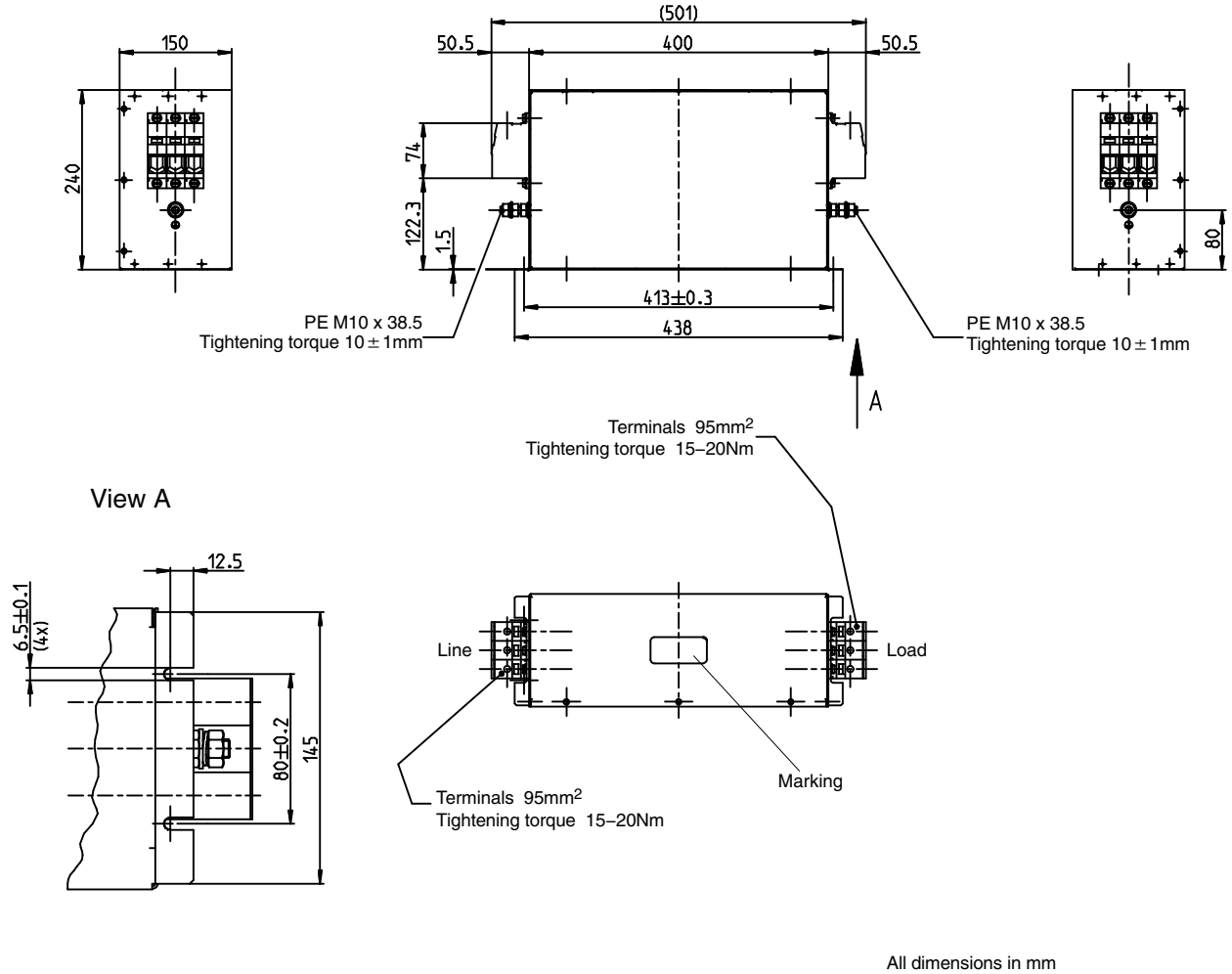
All dimensions in mm

B84143A0150R410, B84143A0200R410, B84143A0230R410



All dimensions in mm

B84143B0200R410, B84143B0230R410



All dimensions in mm

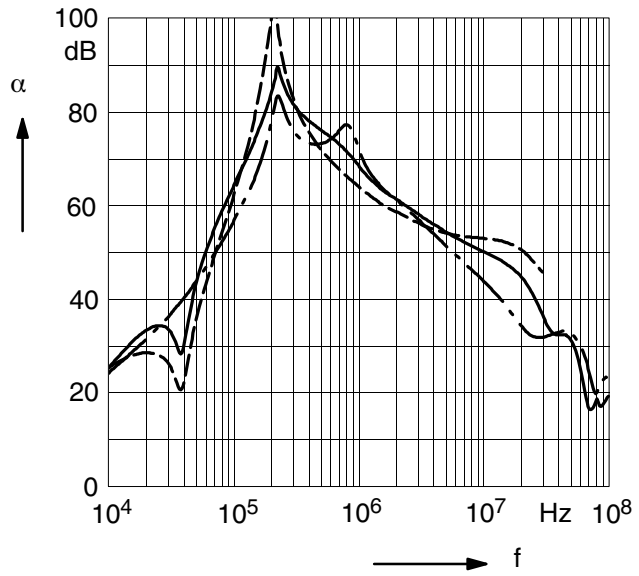
Insertion loss (typical values at Z = 50 Ω)

——— unsymmetrical, adjacent branches terminated

—·— common mode, all branches in parallel (asymmetrical)

– – – differential mode (symmetrical)

B84143A0035R410



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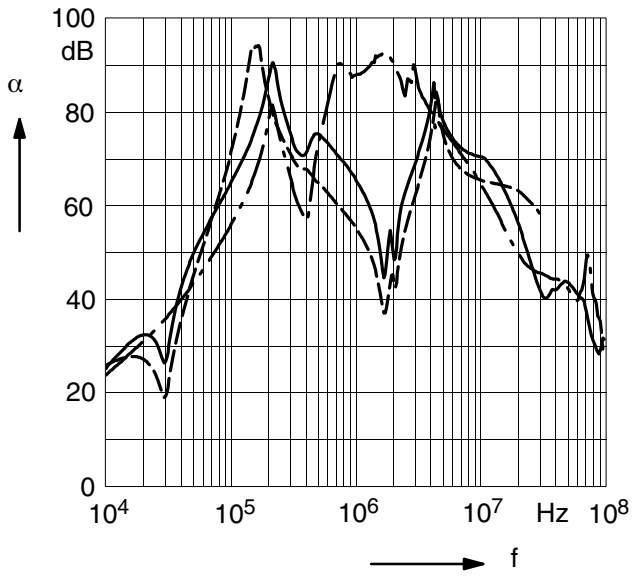

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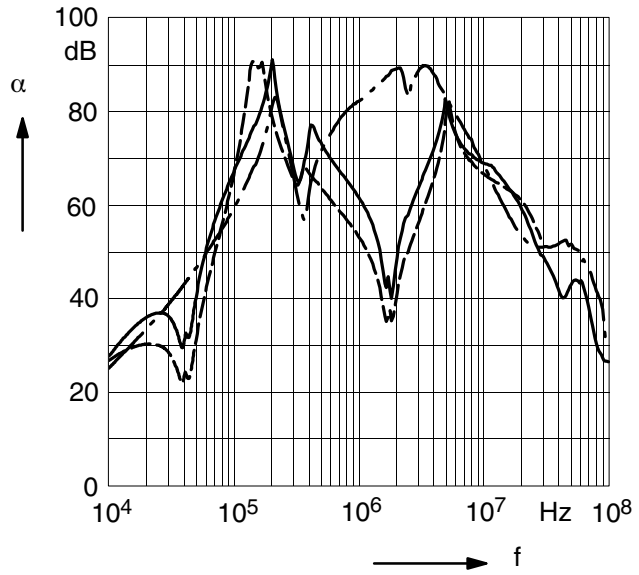
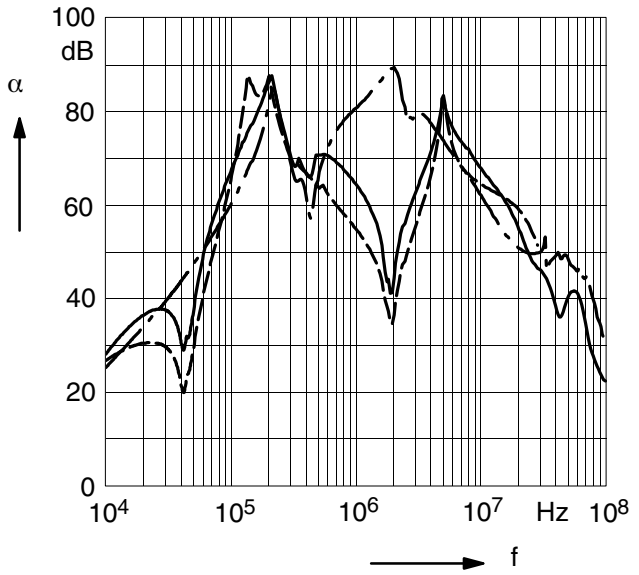


B84143A0110R410



Insertion loss (typical values at Z = 50 Ω)

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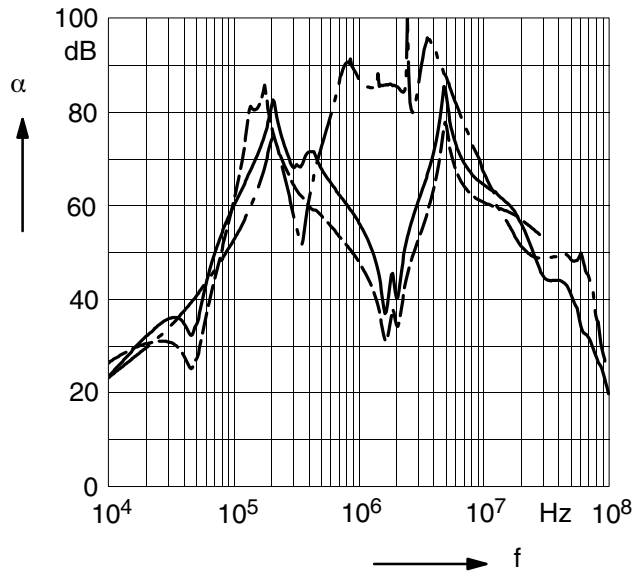
—·— common mode, all branches in parallel (asymmetrical)

– – – differential mode (symmetrical)

B84143A0150R410



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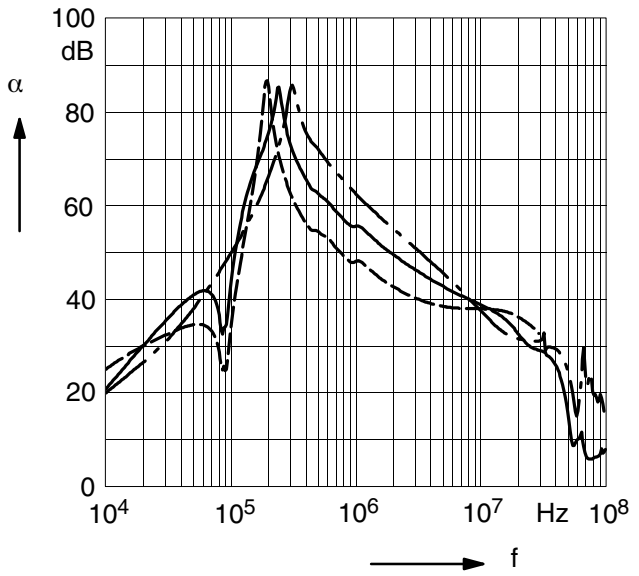
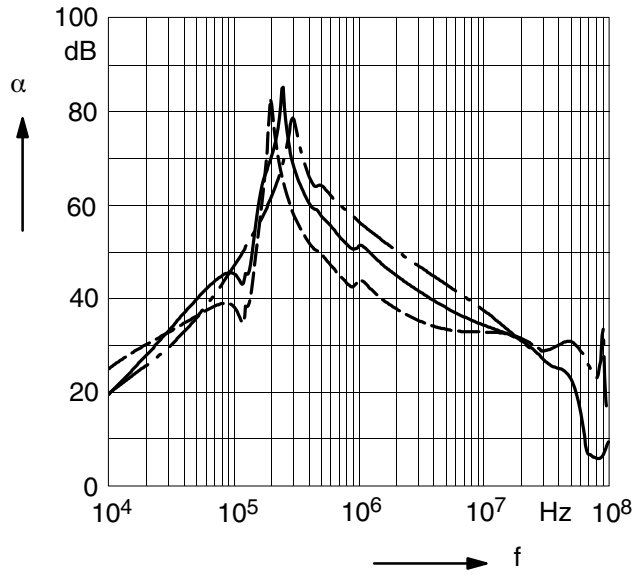


B84143A0230R410



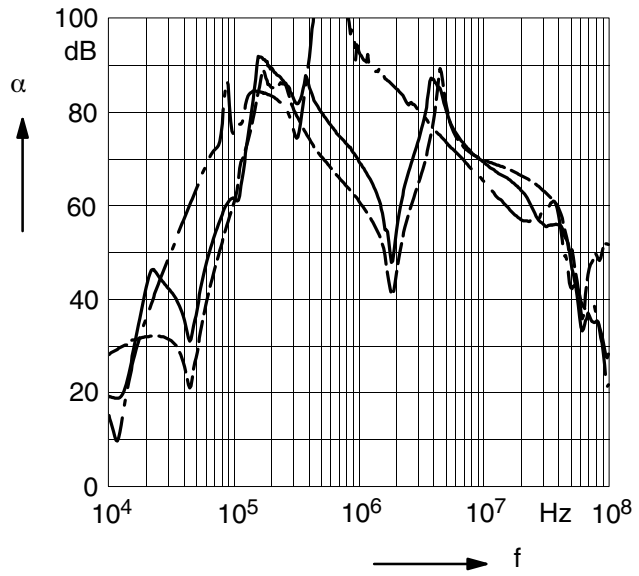
Insertion loss (typical values at Z = 50 Ω)

——— unsymmetrical, adjacent branches terminated

—·— common mode, all branches in parallel (asymmetrical)

– – – differential mode (symmetrical)

B84143B0200R410



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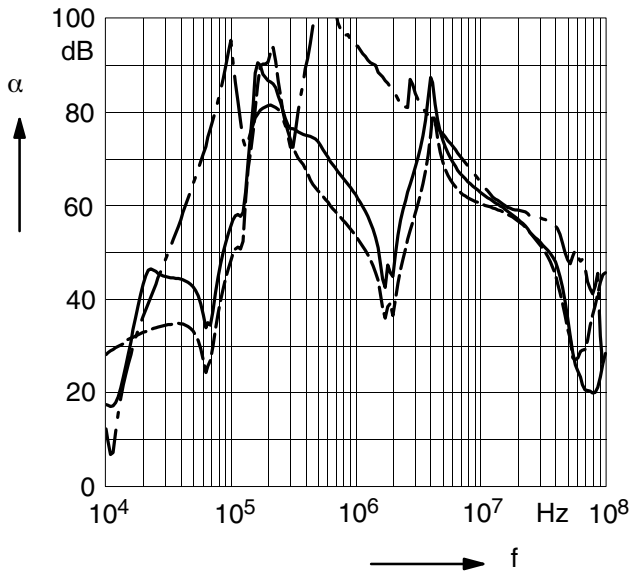

Caution and warnings

- 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 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 [4] < 10 mA the PE conductor must have a KU value [3] of 4.5; for leakage currents $I_L \geqslant 10$ mA the PE conductor must have a KU value of 6.

3) 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 ≥ 1.5 mm^2
– with a protective earth circuit ≥ 2.5 mm^2 connected via shroud connectors (IEC 60309–2).
KU = 6 with respect to interruptions is achieved for fixed–connection lines ≥ 10 mm^2 where the type of connection and line layout correspond to the requirements for PEN conductors as specified in relevant standards.

4) I_L = leakage current let–go

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