

2.2 Overview: line filters

In conjunction with a line reactor and an EMC-compliant plant configuration, line filters limit the electromagnetic emissions from the Power Modules to the limit values of class A1 to EN 55011.

Optional line filter rows that are coordinated with the power range are also available with the SINAMICS S120 converter system. These line filters differ with regard to the frequency range in which they reduce the conducted emissions.

Basic Line Filter for Active Line Modules

Basic Line Filters function in the frequency range from 150 kHz to 30 MHz. Above all, this protects the radio services.

Wideband Line Filter for Active Line Modules

Wideband Line Filters also function in the frequency range from 2 kHz to 150 kHz. They help reduce low-frequency line reactions, which protects consumers (e.g. electronic devices) against functional impairments and damage when they are operated on the same network.

Line filters for Smart Line Modules

Line filters for Smart Line Modules function in the frequency range from 150 kHz to 30 MHz. Above all, this protects the radio services.

Table 2-1 Overview

	Order number
Basic Line Filter for Active Line Modules	
16 kW	6SL3000-0BE21-6DAx
36 kW	6SL3000-0BE23-6DAx
55 kW	6SL3000-0BE25-5DA0
Wideband Line Filter for Active Line Modules	
16 kW	3SL3000-0BE21-6AAx
36 kW	3SL3000-0BE23-6AAx
55 kW	3SL3000-0BE25-5AAx
80 kW	3SL3000-0BE28-0AAx
120 kW	3SL3000-0BE31-2AAx
Line filters for Smart Line Modules	
5 kW	6SL3000-0HE15-0AAx
10 kW	6SL3000-0HE21-0AAx
16 kW	6SL3000-0BE21-6DAx
36 kW	6SL3000-0BE23-6DAx

2.3 Basic Line Filter for Active Line Modules

2.3.1 Description

The Basic Line Filter for Active Line Modules are designed for use in machines in which the conducted interference in the frequency range is to be reduced in accordance with EMC regulations. The machine manufacturer must carry out EMC-compliant CE certification for the product before it is implemented.

General conditions regarding Basic Line Filters for Active Line Modules

The firm that puts the machine on the market takes full responsibility for ensuring CE EMC conformity and that the Basic Line Filter is used correctly. The machine manufacturer (OEM) must have the machine conformity confirmed.

The Basic Line Filters can be used in accordance with the following general conditions for ensuring CE conformity with regard to conducted interference:

- The machine/system must only be used in industrial networks.
- No. of axes <12.
- Total cable lengths <150 m (motor cables, power supply cable between line filter and Line Module).

2.3.2 Safety information



Caution

Line filters are only suitable for direct connection to TN systems.



Danger

The 100 mm clearances above and below the components must be observed. The mounting position must ensure that cool air flows vertically through the filter. This measure prevents thermal overloading of the filter.

Caution

The terminals must be correctly connected:

Incoming line cable to LINE/NETZ L1, L2, L3

Outgoing cable to line reactor on LOAD/LAST L1', L2', L3'.

Non-observance may damage the line filter.



Caution

The line filters listed conduct a high leakage current via the PE conductor. Because of the high leakage current of the line filters, a permanent PE connection of the line filter or switching cabinet is required.

Measures according to EN 61800-5-1 must be taken (e.g. PE conductor ($\geq 10\text{mm}^2$ Cu) or fit an additional connection terminal for a PE conductor with the same cross-section as the original PE conductor).



Warning

A hazardous voltage will be present at the terminals for a further 5 minutes after the system has been shutdown.

Note

If a high-potential test is conducted with alternating voltage in the system, the line filters must be disconnected to obtain correct measurement results.

Caution

Only the line filters described in this Equipment Manual must be used. Other line filters can lead to line harmonics that can interfere with or damage other loads powered from the network.

2.3.3.1 Overview

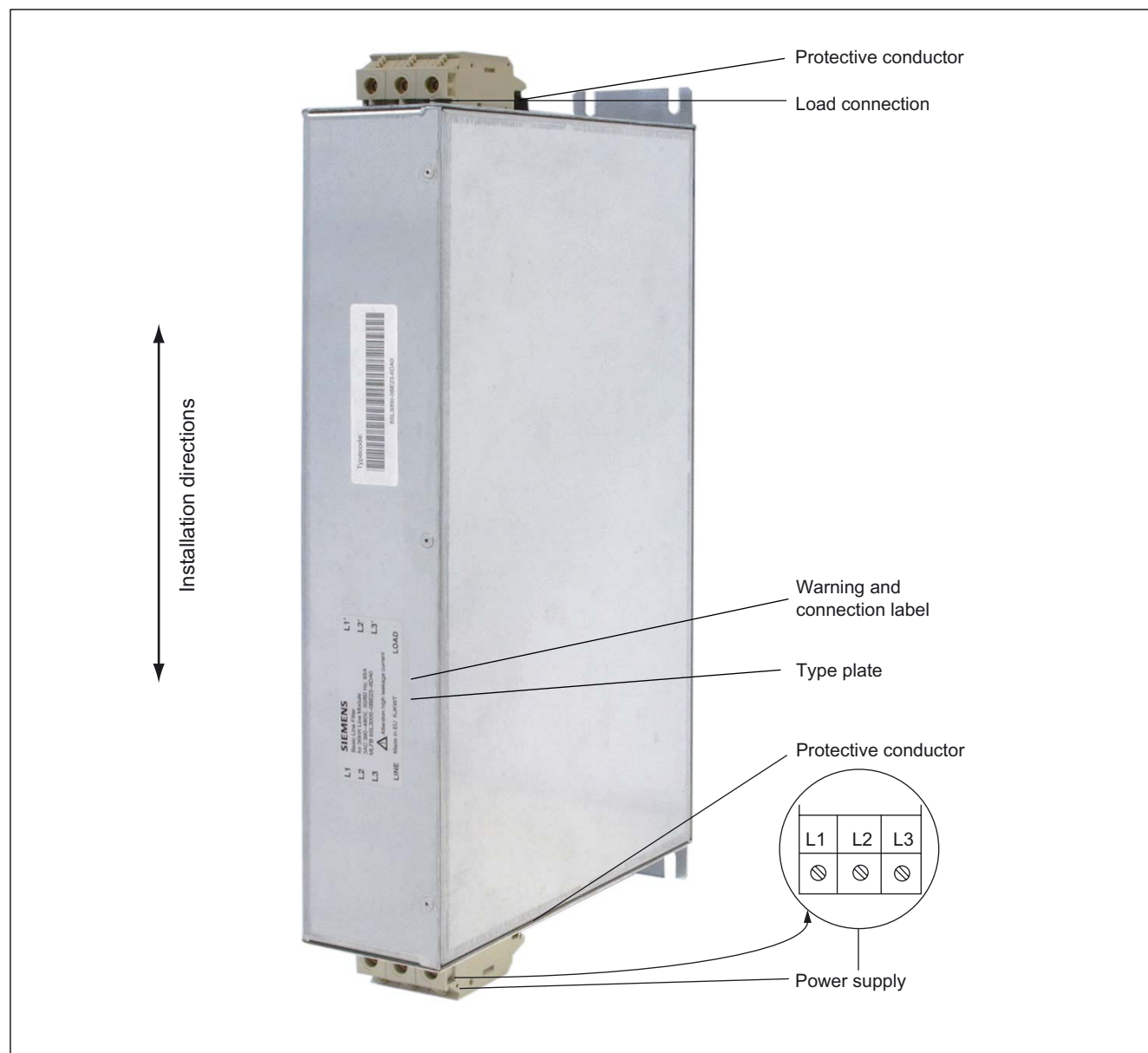


Figure 2-2 Basic Line Filter for Active Line Modules (example: 36 kW)

2.3.3.2 Line/load connection

The Basic Line Filter for Active Line Modules is rated for a voltage range of 380 V 3AC -10% to 480 V 3AC +10% (-15% <1 min) at 47 Hz to 63 Hz.

Table 2-2 Type of connection

Terminals	Designations
Line connection (line)	L1, L2, L3, PE
Load connection (load)	L1', L2', L3', PE
Basic Line Filter for Active Line Modules	
16 kW	Screw terminal: 10 mm ² 3-pin/1.5 Nm (see Screw Terminals) PE connection: M6/3 Nm ¹⁾
36 kW	Screw terminal: 35 mm ² PE connection: M6/3 Nm ¹⁾
55 kW	Screw terminal: 50 mm ² PE connection: M6/3 Nm ¹⁾
1) for ring cable lugs to DIN 46234	

2.3.4 Dimension Drawing

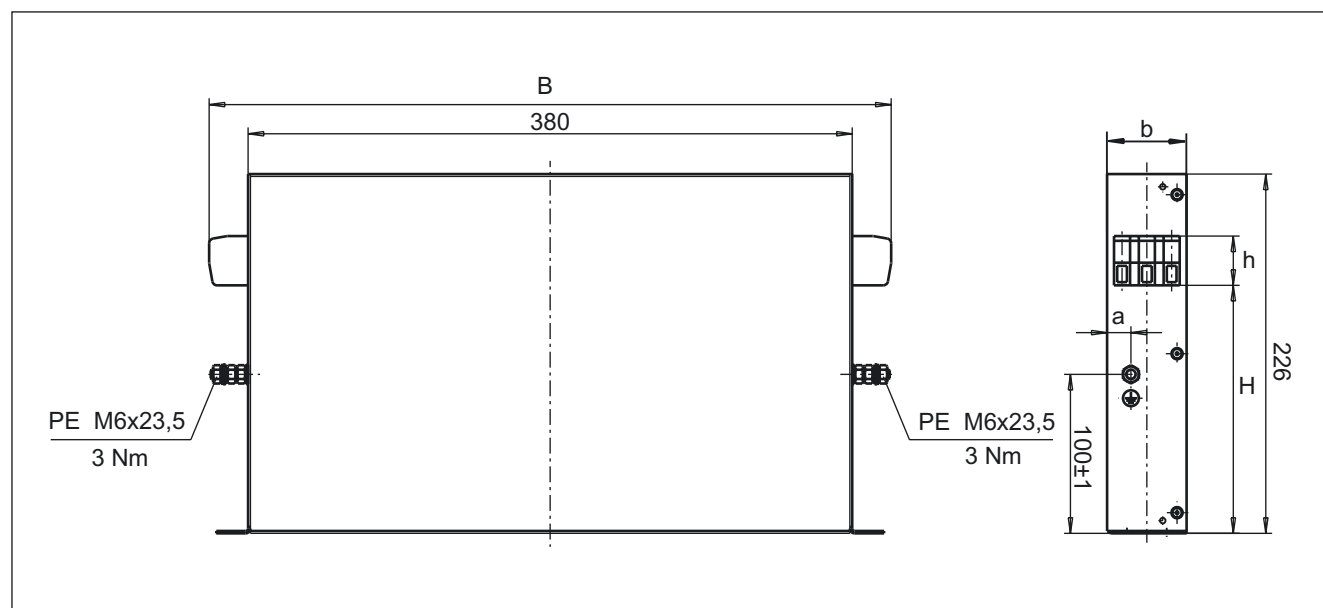


Figure 2-3 Dimension drawing: Basic Line Filter for Active Line Modules (16 kW to 55 kW)

Table 2-3 Dimensions: Basic Line Filter for Active Line Modules

Basic Line Filter	Order number	B [mm] (inches)	b [mm] (inches)	a [mm] (inches)	H [mm] (inches)	h [mm] (inches)
16 kW	6SL3000-0BE21-6DAx	429 (16.88)	50 (1.96)	15 (0.59)	156 (6.14)	31 (1.22)
36 kW	6SL3000-0BE23-6DAx	433 (17.07)	75 (2.95)	15 (0.59)	135 (5.31)	68 (2.67)
55 kW	6SL3000-0BE25-5DA0	466 (18.34)	100 (3.93)	15 (0.59)	148 (5.82)	54 (2.12)

2.3.5 Technical Specifications

Table 2-4 Technical specifications: Basic Line Filter for Active Line Modules

	6SL3000 unit	0BE21-6DA0	0BE23-6DA0	0BE25-5DA0
Rated power	kW	16	36	55
Connection voltage: Supply voltage Line frequency	V _{AC} Hz	3AC 380 -10% to 3AC 480 +10% (-15% < 1 min) 47 to 63 Hz		
Rated current	A _{AC}	36	65	105
Power loss ¹	W	16	28	41
Weight	kg	5	6.5	11.5

¹ For an overview, see the power loss tables in Cabinet Design.