

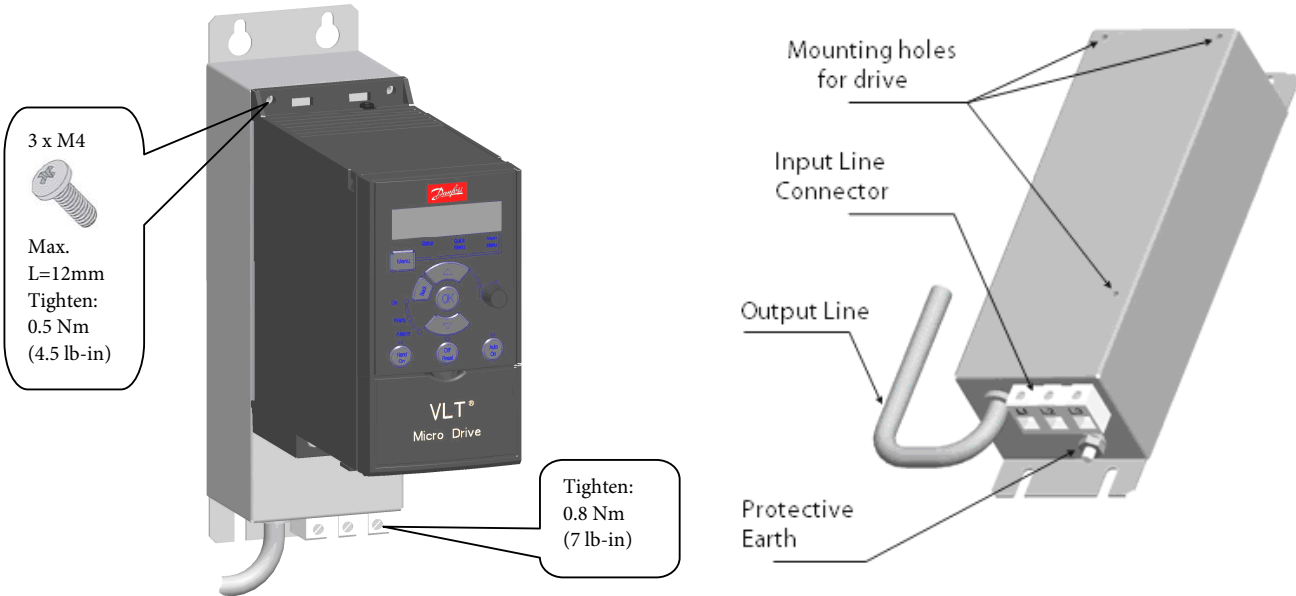
Line Filter MCC 107 – for VLT® Micro Drive FC-051



Installation guideline

Introduction

The VLT® Micro Drive Line Filter combines a harmonic filter and an EMC filter to improve the low frequency and high frequency performance of the line current to the VLT® FC 51 Micro drives. There are three different frame sizes of Line Filters corresponding to the M1, M2 and M3 Micro drives.



Mounting

- ▣ The Line Filter must be mounted in a vertical position with the terminals at the bottom.
- ▣ The drive should be mounted on the front of the Line Filter. The contact between the Line Filter and the drive should be a tight metal to metal to get a good EMC performance and a good thermal conductivity because the baseplate of the drive will work as a heatsink to the Line Filter.
- ▣ The Line Filter has an input terminal and an output cable. The input terminal should be connected to the grid and the output cable should be connected to the input terminals of the drive.
- ▣ Filter can be side-mounted with the frequency converter. There is no requirement for spacing between the filter and VLT®. In this case, the front of the Line Filter must be mounted to a cooling surface, such as a metal wall. Otherwise the Line Filter should be derated by one size.
- ▣ Do not mount the Line Filter close to other heating elements or heat sensitive material (such as wood).

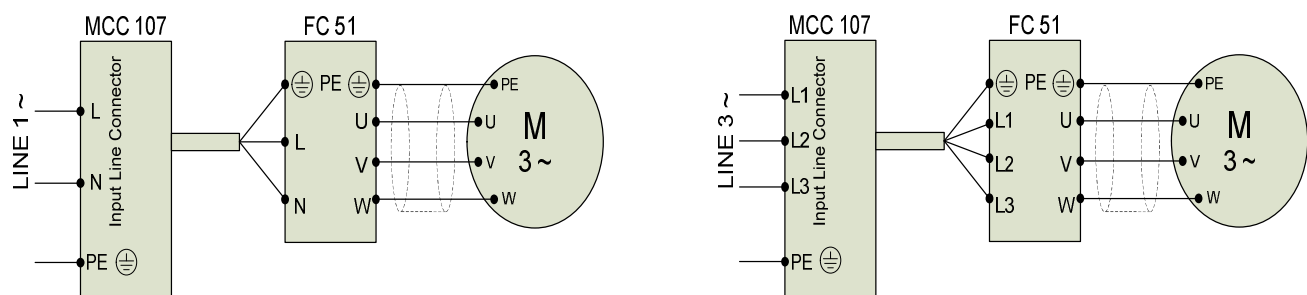
Warnings

- ▣ When in use, the Line Filter surface temperature rises. DO NOT touch the Line Filter during operation.
- ▣ Never work on the Line Filter in operation. Touching the electrical parts may be fatal. Wait at least 4 minutes after the equipment has been disconnected from the drive.
- ▣ Never attempt to repair a defective filter.

Earthing

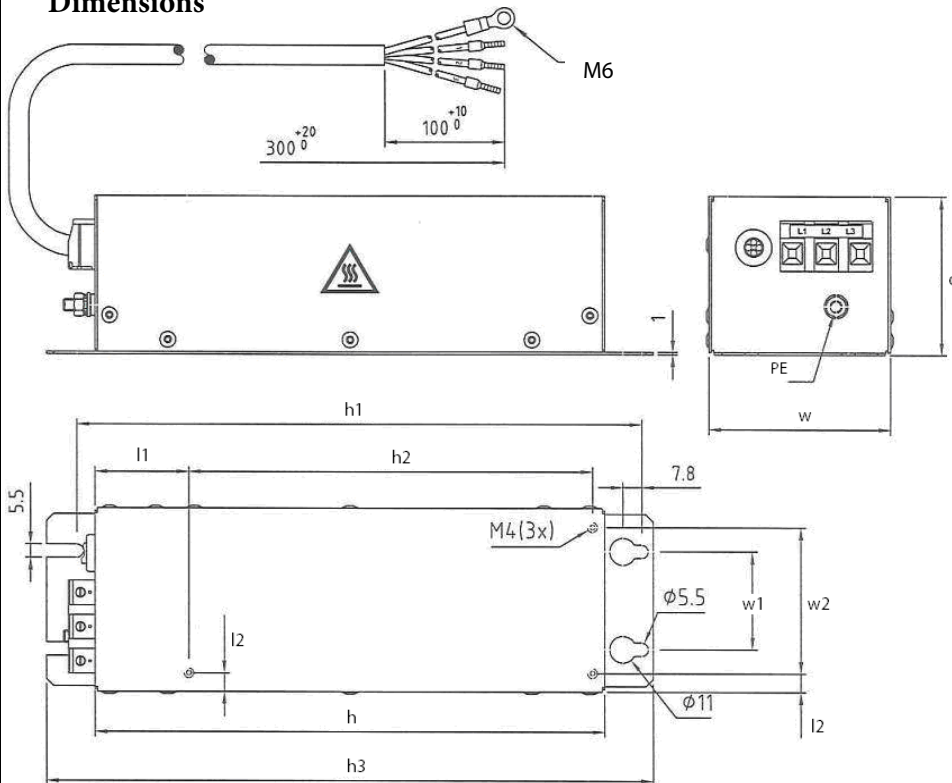
- The Line Filter must be earthed before switching the power on (high leakage currents). Common mode interferences are kept small by ensuring that the current path to the VLT® Micro Drive has the lowest possible impedance.
- ▣ Choose the best earthing possibility (e.g. cabinet mounting panel).
 - ▣ Ensure that the Line Filter and the VLT® Micro Drive make solid electrical contact (high frequency earthing).

Block diagram



Refer to the VLT® Micro Drive FC 51 Operating Instruction for voltage rating, wire size, and fuse selection.

Dimensions



Frame	M1	M2	M3	
w	70	75	90	mm
d	55	65	69	mm
h	190	210	300	mm
h3	230	250	340	mm
w1	40	40	55,6	mm
h1	213	233	323	mm
w2	55	59	69	mm
h2	140	166,5	226	mm
l1	45	38,5	68	mm
l2	7,6	8	9,3	mm
PE	M6	M6	M6	metric
Weight	2	3	5	kg

Selection

VLT FC 51	Power	Ph.	Voltage	Option MCC 107	Rated Current
Part no.	kW		V	Part no.	A
132F0001	0,18	1	200	130B2522	4,1
132F0002	0,37	1	200	130B2522	4,1
132F0003	0,75	1	200	130B2533	7,4
132F0005	1,5	1	200	130B2525	14,2
132F0007	2,2	1	200	130B2530	20,1
132F0008	0,25	3	200	130B2523	3,3
132F0009	0,37	3	200	130B2523	3,3
132F0010	0,75	3	200	130B2523	3,3
132F0012	1,5	3	200	130B2526	6,2
132F0014	2,2	3	200	130B2531	8,6
132F0016	3,7	3	200	130B2527	15,0
132F0017	0,37	3	400	130B2523	3,3
132F0018	0,75	3	400	130B2523	3,3
132F0020	1,5	3	400	130B2524	3,4
132F0022	2,2	3	400	130B2526	6,2
132F0024	3,0	3	400	130B2529	6,4
132F0026	4,0	3	400	130B2531	8,6
132F0028	5,5	3	400	130B2528	11,3
132F0030	7,5	3	400	130B2527	15

Compliance

EMC – Conducted; All according to norm IEC/EN61800-3:

▫ 1st Environment (residential)

Category C1; EN55011, Class B: 10m motor cable

▫ 1st Environment (residential)

Category C2; EN55011, Class A, Group 1: 50m motor cable

▫ 2nd Environment (industrial)

Category C3; EN55011, Class A, Group 2: 50m motor cable

Harmonics; All according to norm IEC61000-3-2 and IEC61000-3-12¹⁾. ⁽¹⁾ 2.2kW 1ph; for industrial only

Benefits

▫ *Increased drive lifetime.*

Reducing the voltage ripple on the DC link will result in higher reliability and longer drive life time. Under same running conditions (temperature, load) the expected life time of the DC capacitors may be extended by 2-3 times.

▫ *Improved Power Factor.*

The Line Filter will reduce the RMS value of line current. A Smaller line current means higher true power factor (PF). Typically, line current can be reduced by more than 40% and improve PF from 0.4 to 0.7 for single phase drives and 0.47 to 0.9 for three phase drives.

▫ *Improved high frequency conduction EMC performance.*

The Line Filter ensures compliance with EN55011 class A1 up to a 50m motor cable, and class B up to a 10m motor cable. That means the VLT® Micro Drive + Line Filter, has an outstanding EMC performance in the class of Micro inverters, even with relatively long motor cables.

▫ *High Immunity against grid disturbances.*

The Line Filter will reduce the harmonic current drawn from the grid. The drive will comply with IEC61000-2-2 and IEC6100-2-4 without power derating, including 15% harmonic voltage distortion, 3% voltage unbalance and commutation notches described in IEC60146-1. With the Line Filter, the performance of the immunity to the surge and burst impact of the drive stated in IEC61800-3 will be greatly improved.

▫ *One filter for several drives.*

The Line Filter can be used for filtering several small VLT® Micro Drives. In this case the Line Filter should be derated by one size.

Example: 1x FC 51 400V/1,5 kW + 1x FC 51 400V/1,5 kW -> Total 3,0kW+Derating one size up: Select Filter 400V/4,0kW.