

SIEMENS



FAQ-0H3Q8UNB • 03/2017

# Unfiltered inverters with line filters.

MICROMASTER 420/430/440 Frame size A to C  
SINAMICS G110 Frame size A to C



<https://support.industry.siemens.com/cs/ww/en/view/109746435>

This entry is from the Siemens Industry Online Support. The general terms of use ([http://www.siemens.com/terms\\_of\\_use](http://www.siemens.com/terms_of_use)) apply.

## Security information

Siemens provides products and solutions with industrial security functions that support the secure operation of plants, systems, machines and networks. In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions only form one element of such a concept.

Customer is responsible to prevent unauthorized access to its plants, systems, machines and networks. Systems, machines and components should only be connected to the enterprise network or the internet if and to the extent necessary and with appropriate security measures (e.g. use of firewalls and network segmentation) in place.

Additionally, Siemens' guidance on appropriate security measures should be taken into account. For more information about industrial security, please visit <http://www.siemens.com/industrialsecurity>.

Siemens' products and solutions undergo continuous development to make them more secure. Siemens strongly recommends to apply product updates as soon as available and to always use the latest product versions. Use of product versions that are no longer supported, and failure to apply latest updates may increase customer's exposure to cyber threats.

To stay informed about product updates, subscribe to the Siemens Industrial Security RSS Feed under <http://www.siemens.com/industrialsecurity>.

## Table of content

<b>1</b>	<b>Unfiltered (industrial) variable speed drive compliance with Category C3 EMC requirements.....</b>	<b>3</b>
1.1	Unfiltered (industrial) MICROMASTER 420/430/440 compliance with Category C3 requirements.....	3
1.2	Unfiltered (industrial) SINAMICS G110 compliance with Category C3 requirements. ....	4
<b>2</b>	<b>EMC Directive.....</b>	<b>5</b>

# 1 Unfiltered (industrial) variable speed drive compliance with Category C3 EMC requirements.

Unfiltered (industrial) variable speed drive must be installed in a power drive system in compliance with category C3 EMC requirements for CE certification.

The following information details filter solutions that have been tested with the corresponding unfiltered (industrial) variable speed drive to achieve Class A2 (Category C3) conducted, and Class A2 (Category C3) radiated, emissions requirements, with 25m screened motor cable. Other filter types may perform satisfactorily but have not been tested.

For EMC compliant installation refer to EMC guidelines, ID: [60612658](#).

For MICROMASTER 4 and SINAMICS G110 specific issues, ID: [18162267](#) together with relevant operating instructions, ID: [24294529](#)

ID: [22102965](#)

## 1.1 Unfiltered (industrial) MICROMASTER 420/430/440 compliance with Category C3 requirements

Table 1-1

Inverter type	Inverter Article Number (MLFB)	Output kW	Filter Supplier	Filter Product Code	Alternate Filter Supplier	Alternate Filter Product Code
<b>1 AC 200 to 240V</b>						
MM420	6SE6420-2UC23-0CA1	3	Schaffner	FN 2410-32-33	Block	HLE 110-230/42
MM440	6SE6440-2UC23-0CA1	3	Schaffner	FN 2410-32-33	Block	HLE 110-230/42
<b>3 AC 200 to 240V</b>						
MM420	6SE6420-2UC23-0CA1	3	Schaffner <sup>1</sup>	FN 258-30-33	Block	HLD 710-500/30
MM420	6SE6420-2UC24-0CA1	4	Schaffner <sup>1</sup>	FN 258-30-33	Block	HLD 710-500/30
MM420	6SE6420-2UC25-5CA1	5.5	Schaffner <sup>1</sup>	FN 258-30-33	Block	HLD 710-500/30
MM440	6SE6440-2UC23-0CA1	3	Schaffner	FN 258-30-33	Block	HLD 710-500/30
MM440	6SE6440-2UC24-0CA1	4	Schaffner	FN 258-30-33	Block	HLD 710-500/30
MM440	6SE6440-2UC25-5CA1	5.5	Schaffner	FN 258-30-33	Block	HLD 710-500/30
<b>3 AC 380 to 480V</b>						
MM420	6SE6420-2UD22-2BA1	2.2	Schaffner	FN 258-16-29	Block	HLD 110-500/30
MM420	6SE6420-2UD23-0BA1	3	Schaffner	FN 258-16-29	Block	HLD 110-500/30
MM420	6SE6420-2UD24-0BA1	4	Schaffner	FN 258-16-29	Block	HLD 110-500/30
MM420	6SE6420-2UD25-5CA1	5.5	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM420	6SE6420-2UD27-5CA1	7.5	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM420	6SE6420-2UD31-1CA1	11	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM430	6SE6430-2UD27-5CA0	7.5	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM430	6SE6430-2UD31-1CA0	11	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM430	6SE6430-2UD31-5CA0	15	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM440	6SE6440-2UD22-2BA1	2.2	Schaffner	FN 258-16-29	Block	HLD 110-500/30
MM440	6SE6440-2UD23-0BA1	3	Schaffner	FN 258-16-29	Block	HLD 110-500/30
MM440	6SE6440-2UD24-0BA1	4	Schaffner	FN 258-16-29	Block	HLD 110-500/30
MM440	6SE6440-2UD25-5CA1	5.5	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM440	6SE6440-2UD27-5CA1	7.5	Schaffner	FN 258-30-33	Block	HLD 110-500/30
MM440	6SE6440-2UD31-1CA1	11	Schaffner	FN 258-30-33	Block	HLD 110-500/30

## 1 Unfiltered (industrial) variable speed drive compliance with Category C3 EMC requirements.

Inverter type	Inverter Article Number (MLFB)	Output kW	Filter Supplier	Filter Product Code	Alternate Filter Supplier	Alternate Filter Product Code
<b>3AC 500 to 600V</b>						
MM440	6SE6440-2UE17-5CA1	0.75	Schaffner	FN 258 HV-16-29		
MM440	6SE6440-2UE21-5CA1	1.5	Schaffner	FN 258 HV-16-29		
MM440	6SE6440-2UE22-2CA1	2.2	Schaffner	FN 258 HV-16-29		
MM440	6SE6440-2UE24-0CA1	4	Schaffner	FN 258 HV-16-29		
MM440	6SE6440-2UE25-5CA1	5.5	Schaffner	FN 258 HV-16-29		
MM440	6SE6440-2UE27-5CA1	7.5	Schaffner	FN 258 HV-16-29		
MM440	6SE6440-2UE31-1CA1	11	Schaffner	FN 258 HV-16-29		

One Schaffner Ferrite<sup>1</sup> placed round all three phase conductors close to the inverter supply input terminals. Type: WURTH snap 742 715 1 (119 ohm @ 100MHz) or similar.

The external filters must be positioned at the left side of the inverter (perspective: front view). Footprint mounting is not possible

## 1.2 Unfiltered (industrial) SINAMICS G110 compliance with Category C3 requirements.

Table 1-2

Inverter type	Inverter Article Number (MLFB)	Output kW	Filter Supplier	Filter Product Code	Alternate Filter Supplier	Alternate Filter Product Code
<b>1 AC 200 to 240V</b>						
G110	6SL3211-0AB11-2LA1	0.12	Siemens	6SE6400-2FL01-0AB0		
G110	6SL3211-0AB13-7LA1	0.37	Siemens	6SE6400-2FL01-0AB0		
G110	6SL3211-0AB23-0UB1 6SL3211-0AB23-0UA1	3	Schaffner	FN 2410-32-33	Block	HLE 110-230/42

## 2 EMC Directive

In the Standard EN 61800-3 of July 2005, a distinction is no longer made between "general availability" and "restricted availability". Instead, different categories C1 to C4 have been defined in accordance with the environment of the PDS at the operating location:

- **Category C1:**  
Drive systems for rated voltages < 1000 V for use in the first environment
- **Category C2:**  
Stationary drive systems not connected by means of a plug connector for rated voltages < 1000 V. When used in the first environment, the system must be installed and commissioned by personnel familiar with EMC requirements. A warning note is required.
- **Category C3:**  
Drive systems for rated voltages < 1000 V for exclusive use in the second environment. A warning note is required.
- **Category C4:**  
Drive systems for rated voltages  $\geq 1000$  V or for rated currents  $\geq 400$  A or for use in complex systems in the second environment. An EMC plan must be created.