

# GETRIEBEBAU NORD

Member of the NORD DRIVESYSTEMS Group

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## Mains chokes for NORDAC PRO SK 5xxP

1~ 230 V AC

SK CI5-230/006-C 276 993 005	SK CI5-230/010-C 276 993 009	SK CI5-230/025-C 276 993 024
		

3~ 400 V AC

SK CI5-500/004-C 276 993 004	SK CI5-500/008-C 276 993 008	SK CI5-500/016-C 276 993 016
		

### Field of use

Frequency inverters have been developed for operation in industrial environments. It may be necessary to implement an optional mains choke if required by the system and/or the application. These chokes must be matched to the power range of the frequency inverter and the mains supply.

### Benefits

Using an optional choke will

- Minimise mains feedback and mains current surges
- Significantly reduce the current harmonics
- Restrict start-up and peak current
- Reduce the apparent power and charge currents in the link circuit
- Improve  $\cos\varphi$

Technical Information / Datasheet	SK CI5-xxx/xxx-C			
Mains choke	TI 276993xxx	1.0	3121	en

### Application

The mains choke is implemented upstream of the frequency inverter and limits the input current to approximately the output current level of the SK 5xxP. These mains chokes are UL certified and should always be installed in the control cabinet due to their protection class (IP00). Optional connection occurs with a connection cable to be supplied and with screw terminals at the mains choke and at the frequency inverter.

### Overview

#### 1~ 230 V AC

Product type	Part number	Rated current [A]	Inductance [mH]	Mains voltage [V]
SK CI5-230/006-C	276 993 005	6.0	4.88	200 ... 240 ± 10 %
SK CI5-230/010-C	276 993 009	10.0	2.93	
SK CI5-230/025-C	276 993 024	25.0	1.17	

#### 3~ 400 V AC

Product type	Part number	Rated current [A]	Inductance [mH]	Mains voltage [V]
SK CI5-500/004-C	276 993 004	4.0	3 x 7.35	380 ... 480 -20 % / +10 %
SK CI5-500/008-C	276 993 008	8.0	3 x 3.86	
SK CI5-500/016-C	276 993 016	16.0	3 x 1.84	

### Copyright notice

As an integral component of the device described here, this document must be provided to all users in a suitable form.

Any editing or amendment or other utilisation of the Technical Information manual is prohibited.

## Hazard and safety notes

### **DANGER!**

#### **Danger of electric shock**

The frequency inverter continues to carry hazardous voltages for up to 5 minutes after it was switched off.

- Work must not be carried out unless the device has been disconnected from the voltage and at least 5 minutes have elapsed since the mains was switched off!
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### **CAUTION**

#### **Danger of burns**

The module and all other metal components can heat up to temperatures above 70 °C.

- Sufficient cooling time must be allowed for when working on the components in order to avoid injuries (local burns) to parts of the body coming into contact with the components.
  - In order to avoid damage to neighbouring objects, sufficient clearance must be maintained during installation.
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### **NOTICE**

#### **Validity of this document**

This document is only valid in combination with the operating instructions for the relevant frequency inverter. Safe commissioning of this module and the frequency inverter depends on the availability of this information.

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For further information, please refer to the manual BU 0600 (see "Further documentation [www.nord.com](http://www.nord.com)").

It only is allowed for qualified electricians to install and commission the module. An electrician is a person who, because of their technical training and experience, has sufficient knowledge relating to

- switching on, switching off, isolating, earthing and marking power circuits and devices,
- proper maintenance and use of protective devices in accordance with defined safety standards.

## Standards and approvals

All chokes of the SK CI5 series comply with the standards and directives listed below.

Approval	Directive	Applied standards	Certificates	Label
CE (European Union)	Low Voltage 2014/35/EU	EN 60529+A1+A2+AC EN 61800-3 EN 61800-5-1 EN 61800-9-1 EN 61800-9-2 EN 63000	C310601	
	EMC 2014/30/EU			
	RoHS 2011/65/EU			
	Delegated directive (EU) 2015/863			
	Ecodesign 2009/125/EG			
	EU Ecodesign Directive 2019/1781			
DIN	Mains and commutation choke	EN 61558-2-20		
UL (USA)	UL 506	E 103521		
CSA (Canada)	CSA 22.2			
cURus (USA / Canada)				
EAC (Eurasia)	2015	IEC 61558-2-20	On request	

## Assignment to frequency inverters

### Information

The chokes provided by the NORD DRIVESYSTEMS Group are directly tailored to the individual NORDAC PRO series.

For further information, please refer to the manual BU 0600 (see "Further documentation [www.nord.com](http://www.nord.com)").

**Technical Data**
*General*

<b>Protection class</b>	IP 00
<b>Ambient temperature [°C]</b>	-10 to +40
<b>Climate class</b> (EN 60068-1)	25/085/21
<b>Humidity</b> (average rel. humidity 85 %)	3K3
<b>Operating mode</b>	Continuous operation
<b>Vibration resistance</b> (IEC/EN 60721-3-2)	Transport 2M2
<b>Degree of contamination</b> (EN 61800-5-1)	2
<b>Winding material</b>	CU

*Electrical*

<b>Voltage drop [V]</b> (AC) <sup>1)</sup>	9.2 / 11.0
<b>Rated frequency [Hz]</b>	50 – 60
<b>Inductance tolerance [%]</b>	±10
<b>Overload capacity</b> <sup>2)</sup>	1.5 x nominal current

1) 1st value @ 50 Hz, 2nd value @ 60 Hz

2) 1 minute per hour

Data	Rated voltage [V] (AC)	Rated current [A]	Inductance [mH]	Short circuit voltage uK [%]	Power loss [W]	Test voltage <sup>3)</sup> [V] (AC)
	230	6.0	4.88	6.9 <sup>1)</sup>	6.8	2500
	230	10.0	2.93	6.9 <sup>1)</sup>	7.8	2500
	230	25.0	1.17	6.9 <sup>1)</sup>	27.0	2500
	3 x 400	3 x 4.0	7.35	4.0 <sup>2)</sup>	11.5	4000
	3 x 400	3 x 8.0	3.68	4.0 <sup>2)</sup>	23.0	4000
	3 x 400	3 x 16.0	1.84	4.0 <sup>2)</sup>	46.1	4000

1) @ 230 V (AC)

2) @ 400 V (AC)

3) Test duration 2 seconds

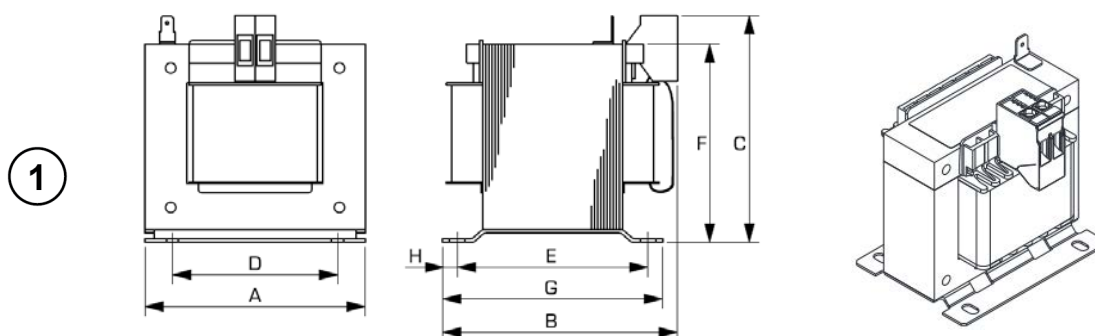
Mains choke – SK CI5-xxx/xxx-C

Data	Temperature class (VDE)	Temperature class [°C] (UL)	No. of phases	Typical Resistance of windings [mΩ]	Fuse protection [A]
SK CI5-230/006-C	B	Class 130	1	375	BU 0600
SK CI5-230/010-C	B	Class 130	1	73	
SK CI5-230/025-C	B	Class 130	1	20	
SK CI5-500/004-C	B	Class 130	3	280	BU 0600
SK CI5-500/008-C	F	Class 155	3	84	
SK CI5-500/016-C	F	Class 155	3	44	

Mechanical

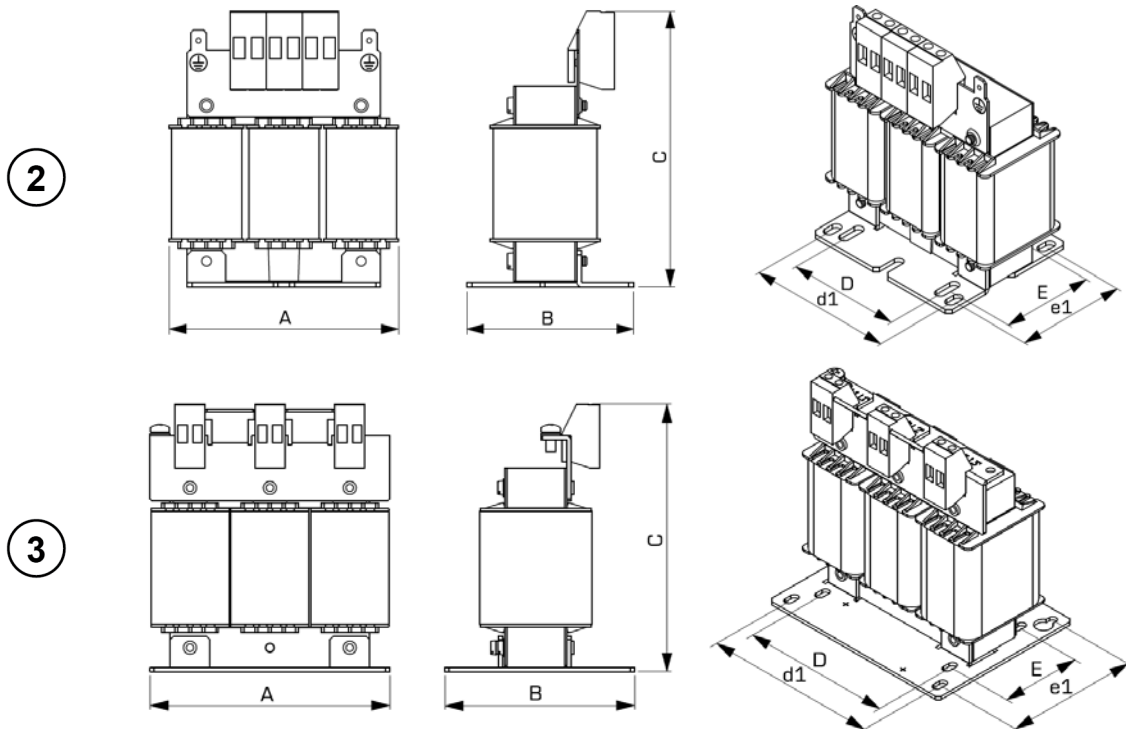
Data	Dimensioned drawing	Weight [kg]	Fastening screws	Dimensions [mm]							
				Overall dimensions							
				A	B	C <sup>1)</sup>	D	E	F	G	H
SK CI5-230/006-C	①	0.51	M3	60	66	70	44	39	56	50	5.5
SK CI5-230/010-C	①	1.317	M4	84	78	95	64	51.5	76	64	6
SK CI5-230/025-C	①	1.484	M4	84	87	98	64	51.5	76	64	6

1) Typical, varies due to air gap inlay




Data Product type	Dimensioned drawing	Weight [kg]	Fastening screws	Dimensions [mm]						
				Overall dimensions						
				A	B	C <sup>1)</sup>	D	d1	E	e1
SK CI5-500/004-C	②	1.31	M4	80	60	117	56	71	38	45
SK CI5-500/008-C	②	1.9	M4	120	85	140	90	105	39	70
SK CI5-500/016-C	③	2.7	M4	120	95	140	90	105	49	80

1) Typical, varies due to air gap inlay




## Connection data

Data Product type	Phases (1.1; 1.2)		 (PE) Flat connector [mm]	Mounting Foot plate
	Screw terminal [mm <sup>2</sup> ]	Tightening torque [Nm]		
	SK CI5-230/006-C	4	1.0 – 1.2	6.3 x 0.8
SK CI5-230/010-C	4	0.5 – 1.0	6.3 x 0.8	✓
SK CI5-230/025-C	10	1.2 – 2.0	6.3 x 0.8	✓

Mains choke – SK CI5-xxx/xxx-C

Data	Phases (1.1; 1.2)			
	Solid/flexible [mm <sup>2</sup> ]	Stranded <sup>1)</sup> [mm <sup>2</sup> ]	Insulation stripping length [mm]	AWG
Product type				
<b>SK CI5-230/006-C</b>	0.75 – 2.5 / 1.0– 2.5	1.0 – 2.5	11	18 – 14
<b>SK CI5-230/010-C</b>	0.2 – 6.0 / 0.2– 6.0	0.2 – 4.0	9	22 – 10
<b>SK CI5-230/025-C</b>	0.2 – 6.0 / 0.2– 6.0	0.2 – 4.0	14	22 – 10


1) With end ferrule

Data	Phases (L1-L12; L2-L22; L3-L32)		 (PE)	Mounting
	Screw terminal [mm <sup>2</sup> ]	Tightening torque [Nm]	Flat connector <sup>1)</sup> [mm]	Foot bracket
Product type				
<b>SK CI5-500/004-C</b>	4	0.5 – 1.0	6.3 x 0.8	✓

1) 2 PE flat connectors/connections

Data	Phases (L1-L12; L2-L22; L3-L32)			
	Solid/flexible [mm <sup>2</sup> ]	Stranded <sup>1)</sup> [mm <sup>2</sup> ]	Insulation stripping length [mm]	AWG
Product type				
<b>SK CI5-500/004-C</b>	0.2 – 6.0	0.2 – 4.0	9	22 – 10

1) With end ferrule

Data	Phases (L1-L12; L2-L22; L3-L32)		 (PE)	Mounting
	Screw terminal [mm <sup>2</sup> ]	Tightening torque [Nm]	Screw	Tightening torque [Nm]
Product type				
<b>SK CI5-500/008-C</b>	4	0.5 – 1.0	M5	3.0
<b>SK CI5-500/016-C</b>	4	0.5 – 1.0	M5	3.0

Data	Phases (L1-L12; L2-L22; L3-L32)			
	Solid/flexible [mm <sup>2</sup> ]	Stranded <sup>1)</sup> [mm <sup>2</sup> ]	Insulation stripping length [mm]	AWG
Product type				
<b>SK CI5-500/008-C</b>	0.2 – 6.0	0.2 – 4.0	9	22 – 10
<b>SK CI5-500/016-C</b>	0.2 – 6.0	0.2 – 4.0	9	22 – 10

1) With end ferrule



### Installation

The mains choke is mounted directly on the mounting surface (rear wall) of a control cabinet. Appropriate mounting holes are provided for this purpose.

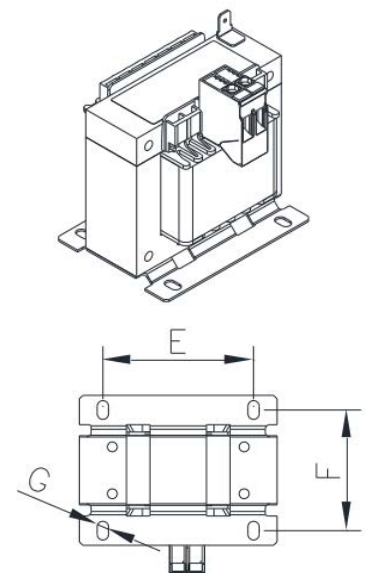
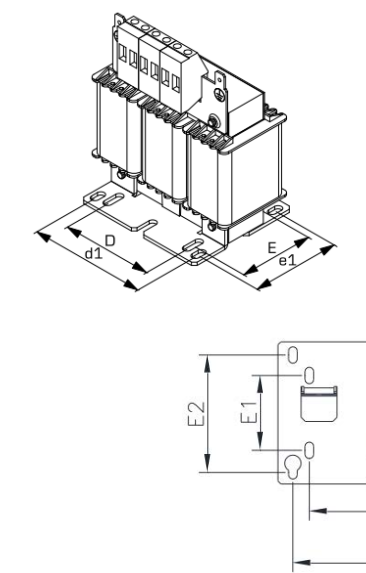
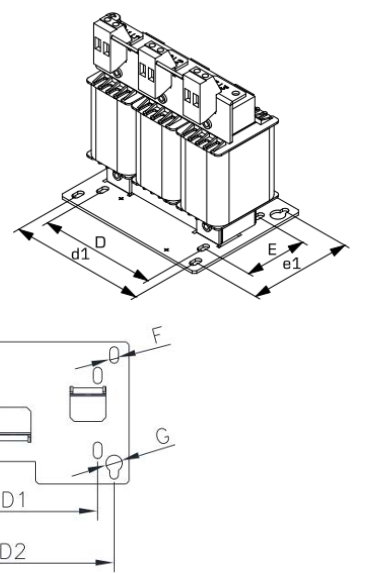
### **i** Information

The mains choke is intended for installation in electrical systems or machines. To protect the mains choke from overheating, it requires sufficient ventilation.

When mounting chokes, heed the information in sections "*Installation position*" and "*Clearances*".

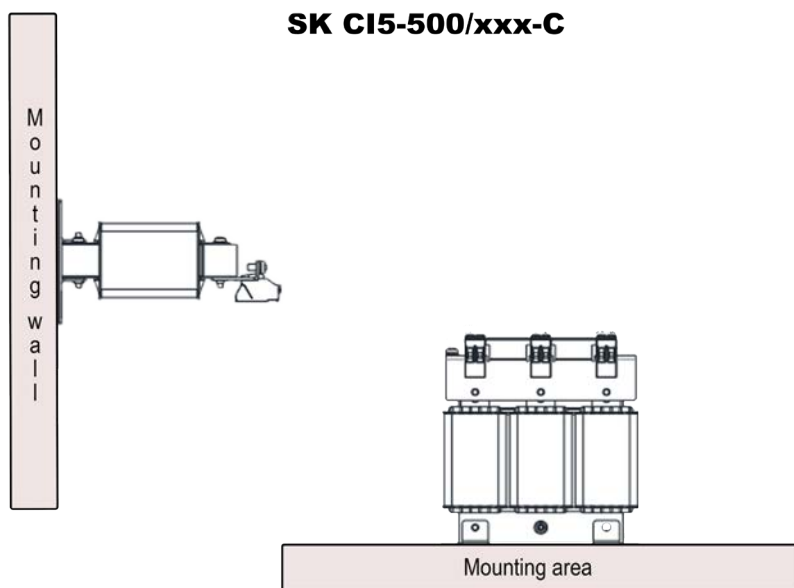
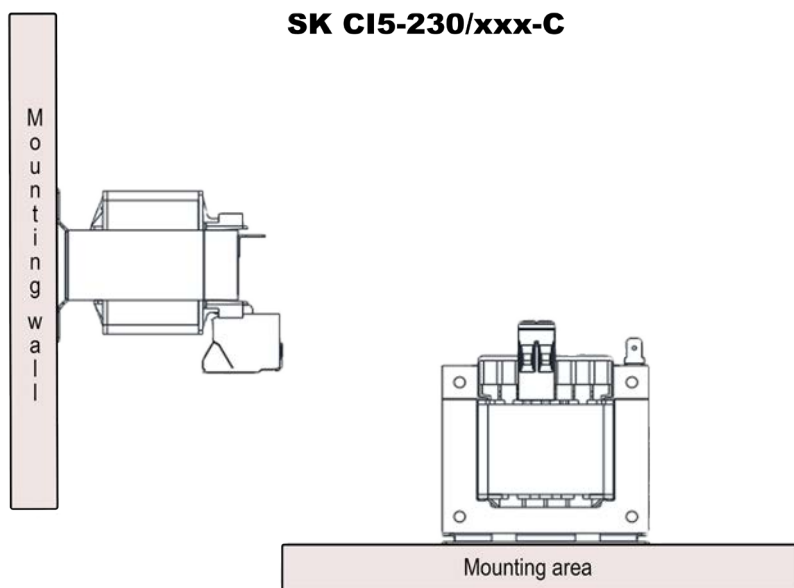
### Installation

Appropriate screws (4 off) must be provided for mains choke fastening.

Product type	<b>SK CI5-230/006-C</b> <b>SK CI5-230/010-C</b> <b>SK CI5-230/025-C</b> 1~ 230 V	<b>SK CI5-500/004-C</b> 3~ 400 V	<b>SK CI5-500/008-C</b> <b>SK CI5-500/016-C</b> 3~ 400 V
	<b>1</b>	<b>2</b>	<b>3</b>
Drilling template			

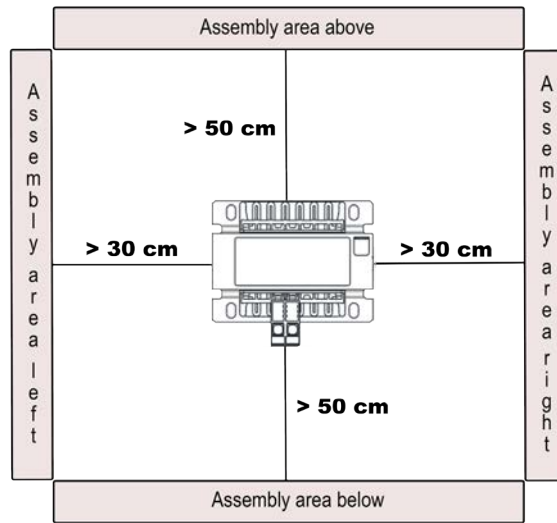
For information on fastening, please refer to the Technical Data in section "*Mechanical*".

*Installation position*

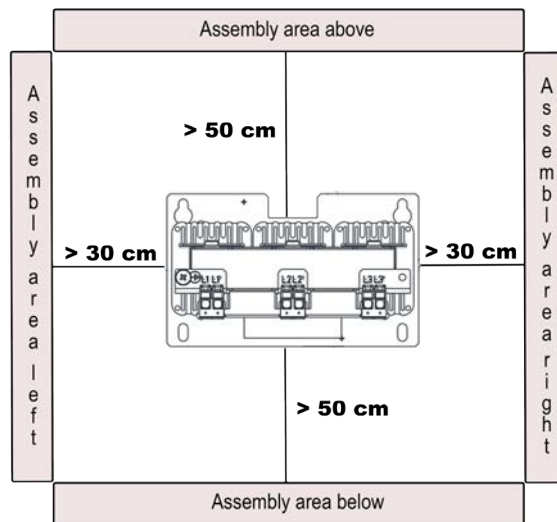


Clearances

**SK CI5-230/xxx-C**



**SK CI5-500/xxx-C**



### Connection

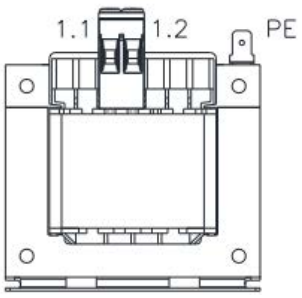
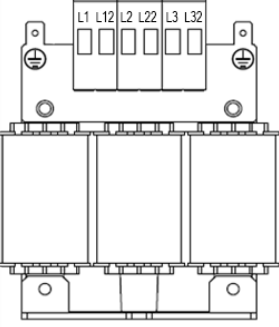
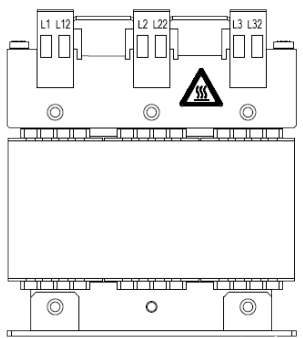



The mains choke must be connected upstream of the frequency inverter. Connect the input to mains and the output to the frequency inverter.

### Information

The user has to provide the connections cables for the choke.





For further information, please refer to section [<dg\\_ref\\_source\\_inline>Anschlussdaten</dg\\_ref\\_source\\_inline>](#) and the manual BU 0600 [<dg\\_ref\\_source\\_inline>Weiterführende Dokumentationen</dg\\_ref\\_source\\_inline>](#).

### Mains choke

	Product type		SK CI5-500/004-C		SK CI5-500/008-C SK CI5-500/016-C	
	Phase	Terminal	Phases	Terminals	Phases	Terminals
	1~ 230 V		3~ 400 V		3~ 400 V	
Terminals						
<b>Input</b>	L1	1.1	L1 L2 L3	L1 L2 L3	L1 L2 L3	L1 L2 L3
<b>Output</b>	L1	1.2	L1 L2 L3	L12 L22 L32	L1 L2 L3	L12 L22 L32
<b>PE</b>		Flat connector		Flat connector		Screw

The tightening torques specified in section "*Mechanica*" must be heeded when connecting the mains choke.

Frequency inverter

Product type	<b>SK 5xxP-xxx-123-A</b> Sizes 1 + 2 1~ 230 V		<b>SK 5xxP-xxx-340-A</b> Sizes 1 – 3 3~ 400 V	
				
Terminals				
Terminal block X1	Phase / connection	Terminals	Phase / connection	Terminals
	L1	L1	L1 L2 L3	L1
	Neutral	N		L2 L3
PE		PE		Terminal

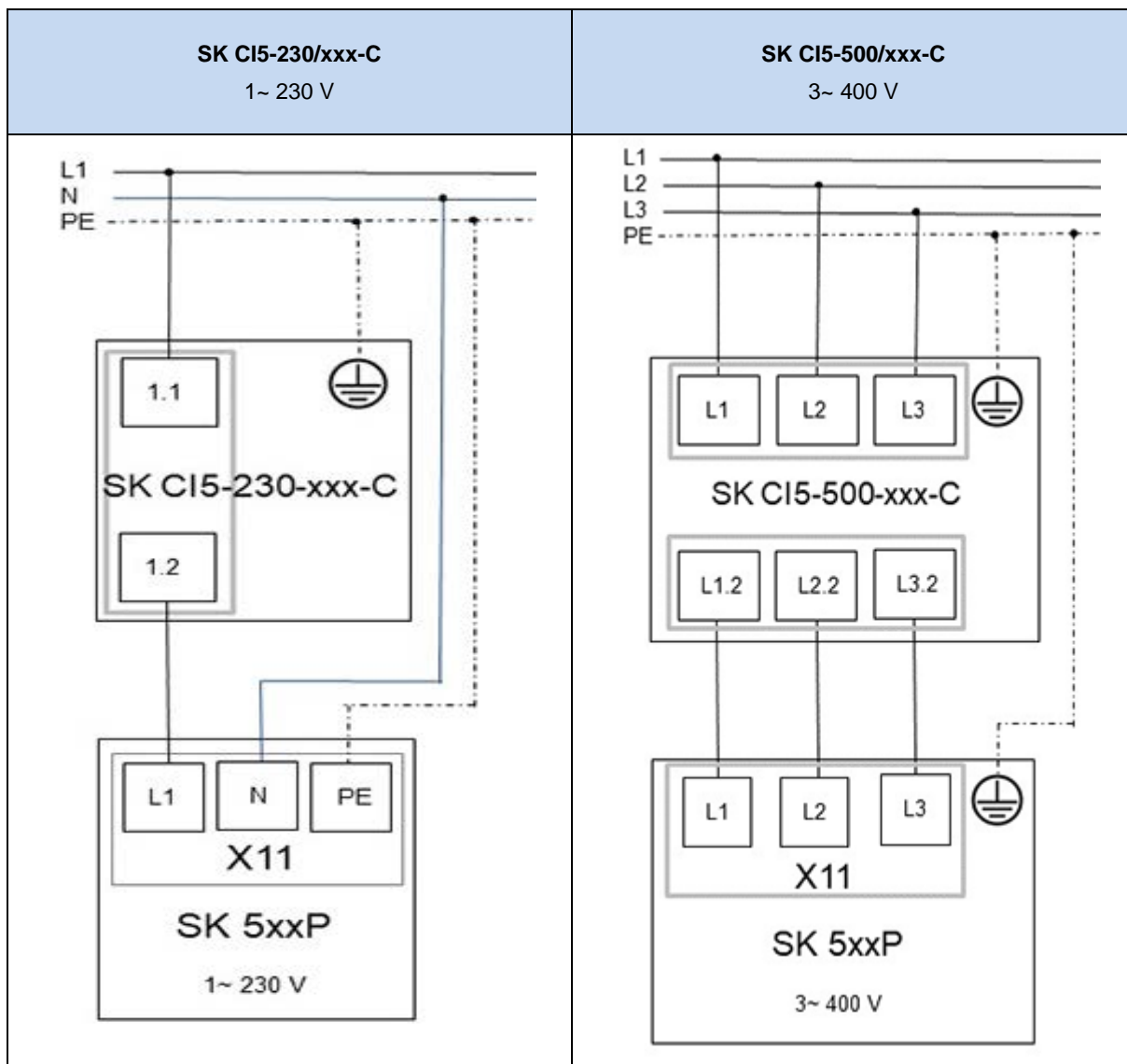
Tightening torques and wiring rules for the connection to the frequency inverter are specified in manual BU 0600 (see "Further documentation [www.nord.com](http://www.nord.com)").

** Information**

When mounting and connecting the choke, the user must heed the notes on tools.

For further information, please refer to the manual BU 0600 (see "Further documentation [www.nord.com](http://www.nord.com)").

Connection diagram



## Error message

Error messages referring to the mains choke – the current or the archived message of the last fault – can be retrieved using the information parameters “*Actual fault*” **P700** and “*Last fault*” **P701** from the error memory of the frequency inverter.

Error (E007)	Meaning	Remarks
7.0	<b>Mains Phase Failure</b>	Error at mains connection side <ul style="list-style-type: none"> <li>• Check that all mains phases are present</li> <li>• Mains is asymmetrical</li> </ul>

For further information, please refer to the manual BU 0600 (see "Further documentation [www.nord.com](http://www.nord.com)").

## Maintenance

In order to ensure proper heat dissipation from the choke body and the connection cables, these must be free from dirt during operation.

Deposits of flammable material must be prevented in order to prevent ignition because the choke surface can heat up.

Cleaning the choke must be carried out with a dry duster on a regular basis when the choke has completely cooled down. The use of detergents for cleaning is generally not permitted. The choke does not contain any serviceable parts.

For further information, please refer to the manual BU 0600 (see "Further documentation [www.nord.com](http://www.nord.com)").

## Further documentation [www.nord.com](http://www.nord.com)

Document	Designation	Product series
<a href="#">BU 0600</a>	Frequency inverter manual	NORDAC PRO SK 500P
<a href="#">F3060 E3000</a>	Product flyers	NORDAC PRO SK 500P

## Further software [www.nord.com](http://www.nord.com)

Software	Designation	Information
ePLAN	Macros	On request
CAD	STEP 3D models	On request

## Certificates [www.nord.com](http://www.nord.com)

Certificate	Designation	Product series
<a href="#">C310601</a>	EU Declaration of Conformity	NORDAC PRO SK 500P
On request	Manufacturer's EAC declaration for chokes	SK CI5-... for frequency inverter SK 500P