

MI 0500 – en

**NORDAC PRO**

Migration guideline SK 5xxE to SK 5xxP





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# 1 Introduction

## 1.1 General

### 1.1.1 Documentation

Designation: **MI 0500**  
 Part No.: **6089702**  
 Series: NORDAC PRO  
 Device series: SK 500E, SK 510E, SK 511E, SK 520E, SK 530E, SK 535E, SK 540E, SK 545E, SK 500P, SK 510P, SK 530P, SK 550P  
 Device types: SK 5xxE-250-323- ... SK 5xxE-221-323- (0.25 - 2.2 kW, 1~ 230 V, output 3~ 230 V)  
 SK 5xxE-550-340- ... SK 5xxE-222-340- (0.55 – 22.0 kW, 3~ 400 V, output 3~ 400 V)  
 SK 5xxP-250-123- ... SK 5xxP-221-123- (0.25 - 2.2 kW, 1~ 230 V, output 3~ 230 V)  
 SK 5xxP-250-340- ... SK 5xxP-222-340- (0.25 – 22.0 kW, 3~ 400 V, output 3~ 400 V)

### 1.1.2 Document history

Edition	Order number	Software version	Remarks
MI 0500, April 2020	6089702 / 1820	V 1.0 R1	First edition, series approval of the SK 5xxP
MI 0500, July 2022	6089702 / 2922	V 1.3 R3	Supplement, size extension 4 and 5 of the SK 5xxP device types up to 22 kW

### 1.1.3 Copyright notice

As part of the device or functionality described here, this document must be made available to the users in the appropriate form.

Any document editing or modification is forbidden.

### 1.1.4 Publisher

**Getriebebau NORD GmbH & Co. KG**

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### 1.1.5 About this guide

This guide is intended to assist you with the migration of a central NORDAC *PRO* SK 5xxE frequency inverter from Getriebebau NORD GmbH & Co. KG to the latest SK 5xxP product series. It is intended for qualified electricians who plan, install and set up a migration. The information in this guide assumes that the qualified electricians who are entrusted with this work are familiar with the NORDAC *PRO* technology and functionalities, the available field bus systems and modules, as well as with the used accessory components.

This guide only contains information and descriptions for NORDAC *PRO* frequency inverters, optional modules and accessories from Getriebebau NORD GmbH & Co. KG.

## 1.2 Other applicable documents

This guide is only valid in combination with the technical information for the used modules and accessory components, and the operating instructions of the used frequency inverter. Only these documents contain all the information that is required for the migration. A list of these documents can be found in  Section 5 "Additional information".

The "Technical information" (TI) of the modules and accessory components, as well as the manuals (BU) of the NORD frequency inverters can be found at [www.nord.com](http://www.nord.com).



## 1.3 Display conventions

### 1.3.1 Other information

#### Information

Indicates hints for use and especially important information to ensure reliability of operation.



### 1.3.2 Text markings

The following markings are used to differentiate between various types of information:

#### Text

Type of information	Example	Marking
Instructions	1. 2.	Instructions whose sequence must be complied with are numbered sequentially.
Bullet points	•	Bullet points are marked with a dot.
Parameters	<b>P850</b>	Parameters are indicated by a "P" prefix, a three-digit number and bold lettering.
Factory settings	{ 0.0 }	Factory settings are indicated by curly brackets.








#### Symbols used

Type of information	Example	Marking
Cross-reference	 Chapter 5.1.1 "Manuals"	Internal cross-reference: A mouse click on the text calls up the stated point in the document.
	 Target link	External cross-reference
Hyperlink	<a href="http://www.nord.com/">http://www.nord.com/</a>	References to external websites are indicated in blue and underlined. A mouse click calls up the website.


### 1.3.3 Trademarks

For mentioning registered trademarks and logos within this guide, the following are listed:

#### Field bus systems

Trademarks	Logo	User association
PROFIBUS DP®		PROFIBUS Nutzerorganisation e.V. (PNO) Umbrella association PROFIBUS & PROFINET International (PI)
PROFINET®		
CANopen®		CAN in Automation (CiA)
DeviceNet®		Open DeviceNet Vendors Association (ODVA) Trade and standard development organisation
EtherNet/IP™		
EtherCAT®		EtherCAT Technology Group
POWERLINK		ETHERNET POWERLINK Standardization Group

#### Communication systems

Trademarks	Logo	Organisation
Bluetooth®		Bluetooth Special Interest Group (SIG)

## 2 Migration

### 2.1 NORDAC PRO

This guide serves the migration of drive electronics of the NORDAC *PRO* product family. The products for the SK 5xxE control cabinet frequency inverters are compared to those of the new SK 5xxP series.

The following products, fields and topics will be considered for the migration:

- Device types and sizes
- Device functions and device characteristics
- Field bus systems and bus interfaces
- Hardware ports and interfaces
- Control and parametrisation options
- Software and options
- Accessory components

Both series basically have the same structure. Structure, performance and range of functions of the new SK 5xxP frequency inverters have been essentially enhanced. For market launch in March 2020, the new NORDAC *PRO* of type SK 5xxP was sold in sizes 1 – 3, i.e. for motors with nominal powers of 0.25 kW – 5.5 kW. From mid-2022, the devices of sizes 4+5, i.e. for motors with nominal powers 7.5 kW – 22.0 kW, will be available. All device sizes are available with different performance levels (configuration levels).

The 1 ~ 230 V and 3 ~ 400 V frequency inverter types of the most common device or configuration versions are compared. In the following, only those functions and solutions will be considered that could also be implemented through the SK 5xxE. The detailed description of available options and features only considers the most common ones.



**Illustration 1: System overview of NORDAC *PRO* products**

The NORDAC *PRO* MI 0500 migration guide compares the optional accessory components for both series.

## 2.2 Device characteristics

The NORDAC PRO SK 5xxE series is available in 10 different performance levels (SK 500E, SK 505E, SK 510E, SK 511E, SK 515E, SK 520E, SK 530E, SK 535E, SK 540E, SK 545E). A differentiation is made between the SK 5x0E and SK 5x5E device types. These are subdivided into 11 sizes, and available with rated powers from 0.25 – 160 kW.

The NORDAC PRO SK 5xxP device series provides four different performance levels (SK 500P, SK 510P, SK 530P, SK 550P). They are differentiated into two device versions.

- Basic Drive SK 500P
- Advanced Drive SK 530P

The SK 5xxP devices are subdivided into 5 sizes, and available with rated powers from 0.25 – 22.0 kW.

Comparing both NORDAC PRO device series shows some deviations that are differentiated below.

### 2.2.1 Mains connection data

#### Mains connection and EMC line filter

Mains phases / Mains voltages		SK 5xxE										SK 5xxP			
		Device version										Basic		Advanced	
		SK 500E	SK 505E	SK 510E	SK 511E	SK 515E	SK 520E	SK 530E	SK 535E	SK 540E	SK 545E	SK 500P	SK 510P	SK 530P	SK 550P
Connection data	1~ 115 V devices SK ...-xxx-112-O	✓	✓	✓	✓		✓	✓	✓	✓	✓				
	1~ 230 V devices SK ...-xxx-123-A	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
	3~ 230 V devices SK ...-xxx-323-A	✓	✓	✓	✓		✓	✓	✓	✓	✓				
	3~ 400 V devices SK ...-xxx-340-A	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Table 1: Overview of mains connection data and EMC line filters

#### Information

For SK 5xxE, the 1~ 115 V devices are generally equipped without an integrated line filter and available with the SK 5xxE-...-...-O identifier. Further SK 5xxE device versions are partially available as a special version without an integrated line filter.

The SK 5xxP device versions are only available with an integrated line filter and with the SK 5xxP-...-...-A identifier.

2.2.2 Characteristics and functions

Functionalities

Features / Functions		SK 5xxE Device version									SK 5xxP Device version				
		SK 500E	SK 505E	SK 510E	SK 511E	SK 515E	SK 520E	SK 530E	SK 535E	SK 540E	SK 545E	Basic		Advanced	
												SK 500P	SK 510P	SK 530P	SK 550P
Characteristics	External heat sink technology (sizes 1 + 2) SK TH1-1 and SK TH1-2	✓	✓	✓	✓		✓	✓	✓	✓	✓				
	Top-hat rail mounting (sizes 1 + 2) SK DRK1-1 and SK DRK1-2	✓	✓	✓	✓		✓	✓	✓	✓	✓				
	Cold plate technology	✓	✓	✓	✓		✓	✓	✓	✓	✓				
	Internal 24 V DC power supply unit	✓		✓	✓	✓	✓	✓		✓	-	✓	✓	✓	✓
	External 24 V DC supply		✓			✓			✓		✓			✓	✓
	PLC functionality						✓	✓	✓	✓	✓	✓	✓	✓	✓
	POSICON							✓	✓	✓	✓	✓	✓	✓	✓
	Speed control with encoder feedback CFC closed-loop						✓	✓	✓	✓	✓	✓	✓	✓	✓
	Safe stop (STO, SS1)			✓	✓	✓		✓	✓	✓	✓		✓	o <sup>1</sup>	o <sup>1</sup>
	Evacuation run					✓			✓		✓				
	Universal encoder interface									✓	✓			o <sup>2</sup>	o <sup>2</sup>
	TF input (electrically isolated)													✓	✓
	Control unit connection Shielding plate, shielded cables	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓ <sup>3</sup>	✓ <sup>3</sup>	✓ <sup>3</sup>	✓ <sup>3</sup>
	Connection EMC kit Shield bracket SK EMC kit	o	o	o	o	o	o	o	o	o	o	o <sup>3</sup>	o <sup>3</sup>	✓ <sup>3</sup>	✓ <sup>3</sup>

✓ Standard

o Optional

<sup>1</sup> SK CU5-STO and SK CU5-MLT customer unit, STO 2-channel connection

<sup>2</sup> SK CU5-MLT customer unit

<sup>3</sup> High-quality EMC add-on kit

Table 2: Overview of characteristics and functions

### 2.2.3 Encoder type hardware

#### Interfaces and ports

Features / Types		SK 5xxE										SK 5xxP			
		Device version										Device version			
												Basic		Advanced	
		SK 500E	SK 505E	SK 510E	SK 511E	SK 515E	SK 520E	SK 530E	SK 535E	SK 540E	SK 545E	SK 500P	SK 510P	SK 530P	SK 550P
Encoder interfaces	TTL RS422						✓	✓	✓	✓			✓	✓	
	HTL					✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓	✓	✓	✓
	SIN/COS									✓	✓			o <sup>2</sup>	o <sup>2</sup>
	SSI									✓	✓			o <sup>2</sup>	o <sup>2</sup>
	BISS									✓	✓			o <sup>2</sup>	o <sup>2</sup>
	Hiperface									✓	✓			o <sup>2</sup>	o <sup>2</sup>
	Endat 2.1									✓	✓			o <sup>2</sup>	o <sup>2</sup>
	CANopen®							✓	✓	✓	✓	✓	✓	✓	✓

✓ Standard

o Optional

<sup>1</sup> Signal input up to 10 kHz

<sup>2</sup> SK CU5-MLT customer unit

Table 3: Overview of encoder type hardware

### 2.2.4 Communication

#### Connections

Features / Types		SK 5xxE										SK 5xxP			
		Device version										Device version			
												Basic		Advanced	
		SK 500E	SK 505E	SK 510E	SK 511E	SK 515E	SK 520E	SK 530E	SK 535E	SK 540E	SK 545E	SK 500P	SK 510P	SK 530P	SK 550P
Communication	CAN / CANopen®			✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓ <sup>1</sup>	✓	✓	✓	✓
	RS-485 / RS-232	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓	✓	✓	✓
	RS-485						✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>	✓ <sup>2</sup>				
	Modbus RTU	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

✓ Standard

<sup>1</sup> Parameterisable with DOUT functions

<sup>2</sup> With 2 digital IOs optionally parameterisable as DIN or DOUT

Table 4: Overview communication connections



### 2.2.6 Sizes













Size	SK 5xxE	Motor nominal power Mains voltage	Size	SK 5xxP	Motor nominal power Mains voltage
Size 1		0.25 – 0.75 kW 1 / 3~ 200 ... 240 V	Size 1		0.25 – 0.75 kW 1~ 200 ... 240 V
		0.55 – 0.75 kW 3~ 380 ... 480 V			0.25 – 0.75 kW 3~ 380 ... 480 V
Size 2		1.1 – 2.2 kW 1 / 3~ 200 ... 240 V	Size 2		1.1 – 2.2 kW 1~ 200 ... 240 V
		1.1 – 2.2 kW 3~ 380 ... 480 V			1.1 – 2.2 kW 3~ 380 ... 480 V
Size 3		3.0 – 4.0 kW 3~ 200 ... 240 V	Size 3		3.0 – 5.5 kW 3~ 380 ... 480 V
		3.0 – 4.0 kW 3~ 380 ... 480 V			
Size 4		5.5 kW 3~ 380 ... 480 V	Size 4		7.5 – 11.0 kW 3~ 380 ... 480 V
		7.5 kW 3~ 380 ... 480 V			
Size 5		11.0 kW 3~ 380 ... 480 V	Size 5		15.0 – 22.0 kW 3~ 380 ... 480 V
		15.0 kW 3~ 380 ... 480 V			
Size 6		18.5 kW 3~ 380 ... 480 V	Size 5		15.0 – 22.0 kW 3~ 380 ... 480 V
		22.0 kW 3~ 380 ... 480 V			

Table 7: NORDAC PRO sizes



**2.2.7 Weights**

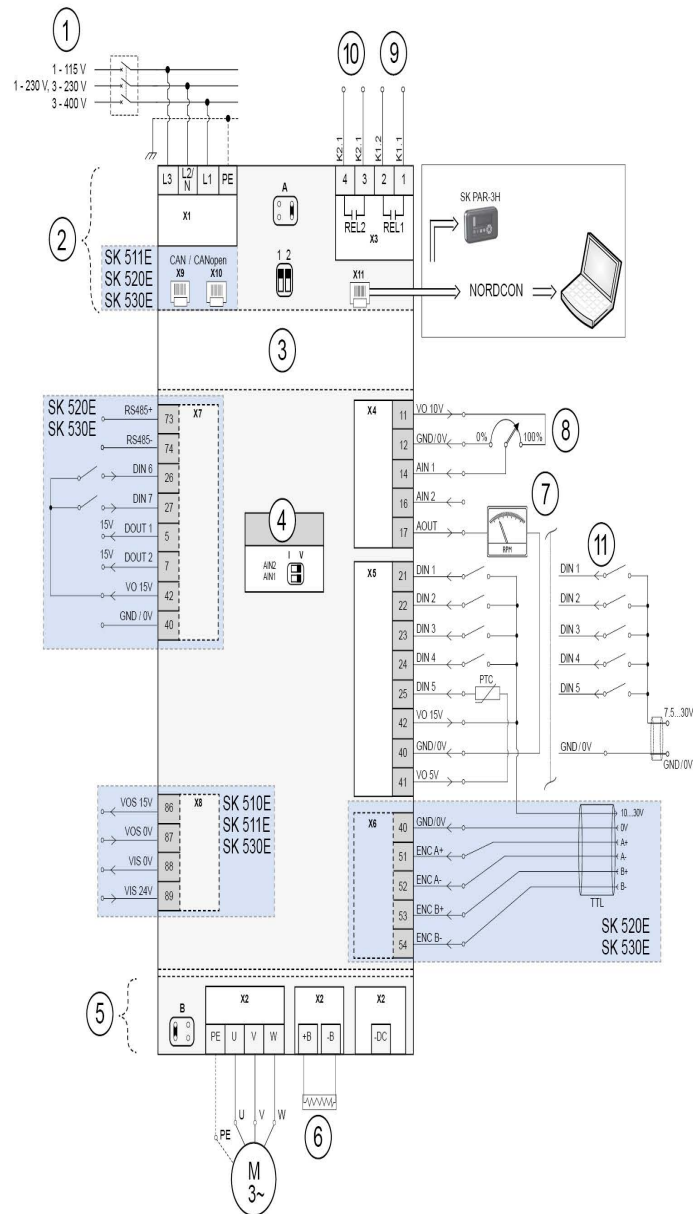
SK 5xxE	Size	Weight [kg]	SK 5xxP	Size	Weight [kg]
...-250-323-A ...-370-323-A ...-550-323-A ...-750-323-A ...-550-340-A ...-750-340-A	Size 1	1.4	...-250-123-A ...-370-123-A ...-550-123-A ...-750-123-A ...-250-340-A ...-370-340-A ...-550-340-A ...-750-340-A	Size 1	1.2
...-111-323-A ...-151-323-A ...-221-323-A ...-111-340-A ...-151-340-A ...-221-340-A	Size 2	1.8	...-111-123-A ...-151-123-A ...-221-123-A ...-111-340-A ...-151-340-A ...-221-340-A	Size 2	1.6
...-301-323-A ...-401-323-A ...-301-340-A ...-401-340-A	Size 3	2.7	...-301-340-A ...-401-340-A ...-551-340-A	Size 3	2.6
...-551-340-A ...-751-340-A	Size 4	3.1	...-751-340-A ...-112-340-A	Size 4	3.8
...-112-340-A ...-152-340-A	Size 5	8.0	...-152-340-A ...-182-340-A ...-222-340-A	Size 5	7.1
...-182-340-A ...-222-340-A	Size 6	10.3			

**Table 8: Weights NORDAC PRO**

## 2.3 Connections

### 2.3.1 SK 5xxE performance levels

SK 500E, SK 510E, SK 511E, SK 520E, SK 530E: Sizes 1 ... 4

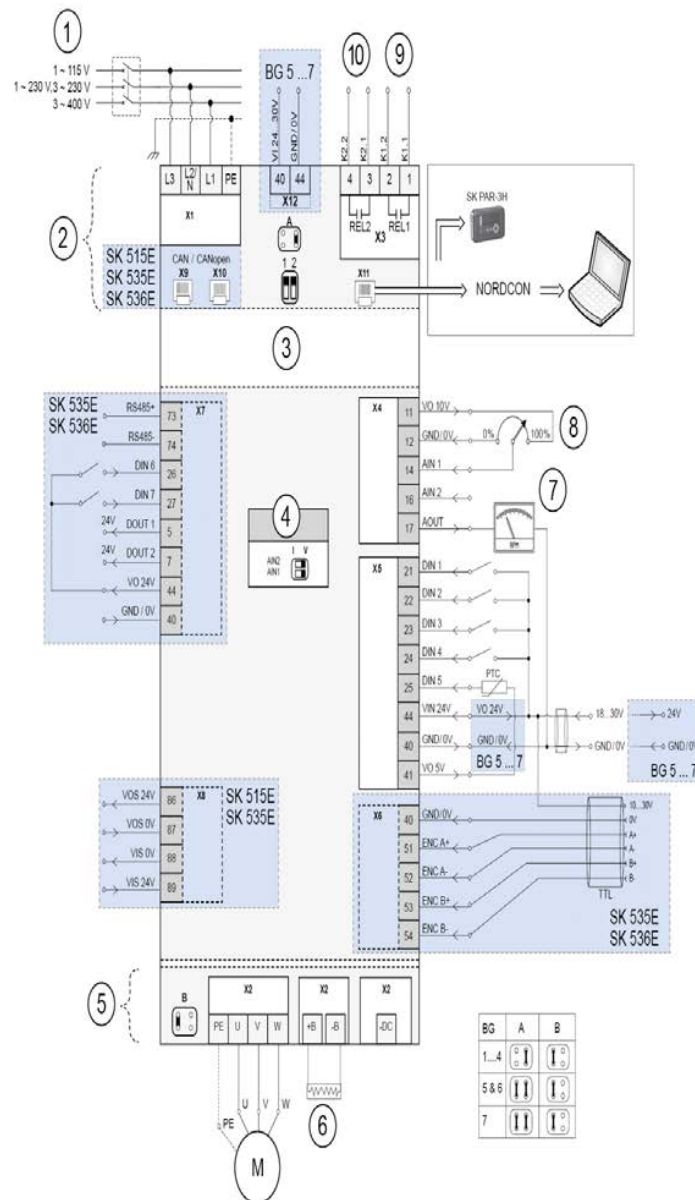


1	Power supply suitable for device (see Technical Data)	8	Setpoint (speed)
2	Top view	9	Connection for an electromechanical brake
3	Slot for a technology unit (SK TU3-...)	10	Connection message "Inverter ready"
4	Configuration of analogue inputs	11	Alternative example "Digital input power supply via external power source (24 V DC)"
5	Bottom view	M	Motor
6	Optional braking resistor	Size	Size
7	Actual value (speed)	X8	Not suitable for devices with a nominal

voltage of 1 ~ 115 V

**Important:** Please note the detailed description of the control terminals in the manual.

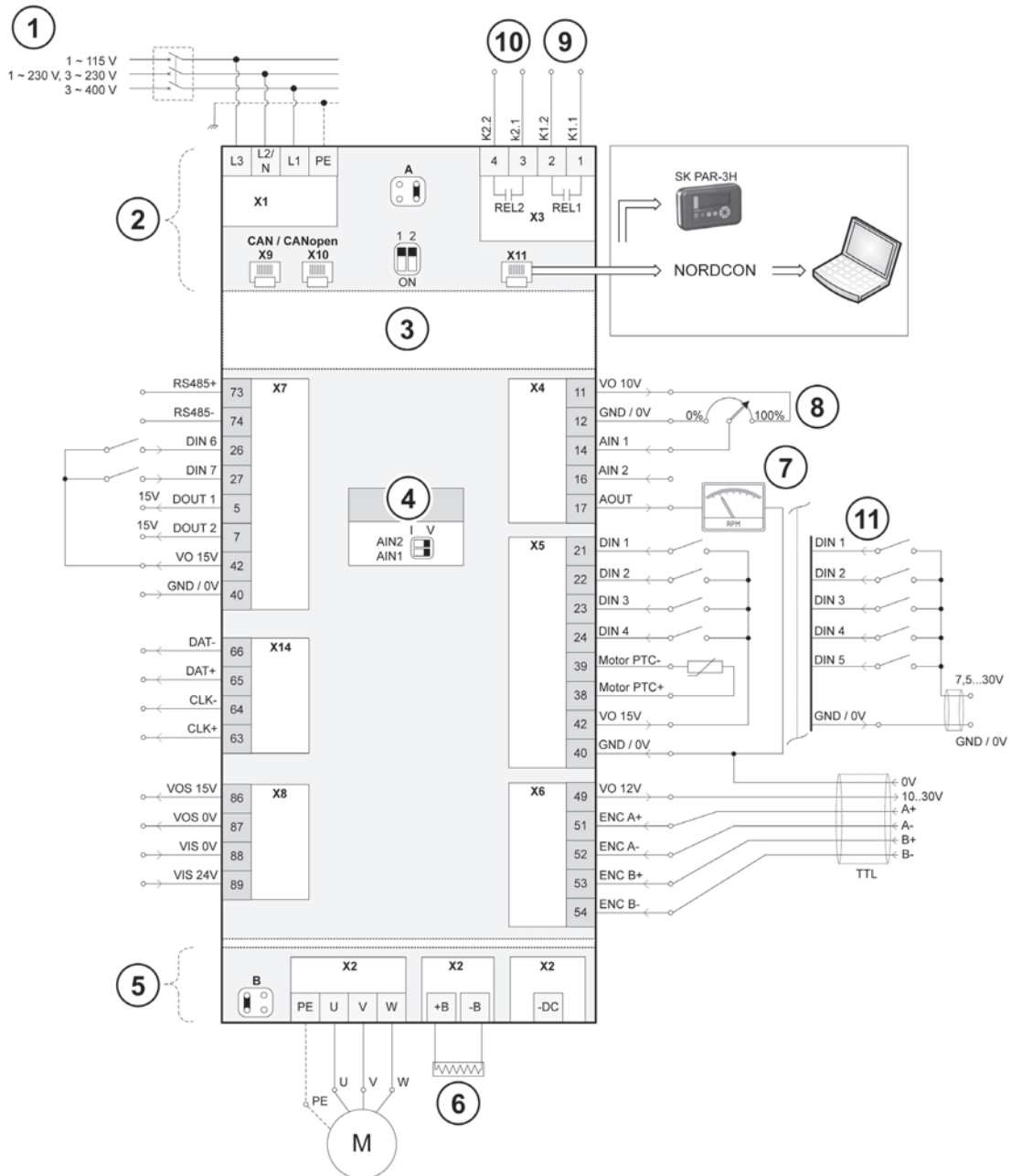
**SK 505E, SK 515E, SK 535E: Sizes 1 ... 7**



- |   |   |      |  |
|---|---|------|--|
| 1 | Power supply suitable for device (see Technical Data) | 8    | Setpoint (speed)   |
| 2 | Top view  | 9    | Connection for an electromechanical brake  |
| 3 | Slot for a technology unit (SK TU3-...)               | 10   | Connection message "Inverter ready"  |
| 4 | Configuration of analogue inputs                      | 11   | Alternative example "Digital input power supply via external power source (24 V DC)" |
| 5 | Bottom view   | M    | Motor  |
| 6 | Optional braking resistor                             | Size | Size   |
| 7 | Actual value (speed)                                  | X8   | Sizes 1 ... 4: Not suitable for devices with a nominal voltage of 1 ~ 115 V          |

**Important: Please note the detailed description of the control terminals in the manual.**

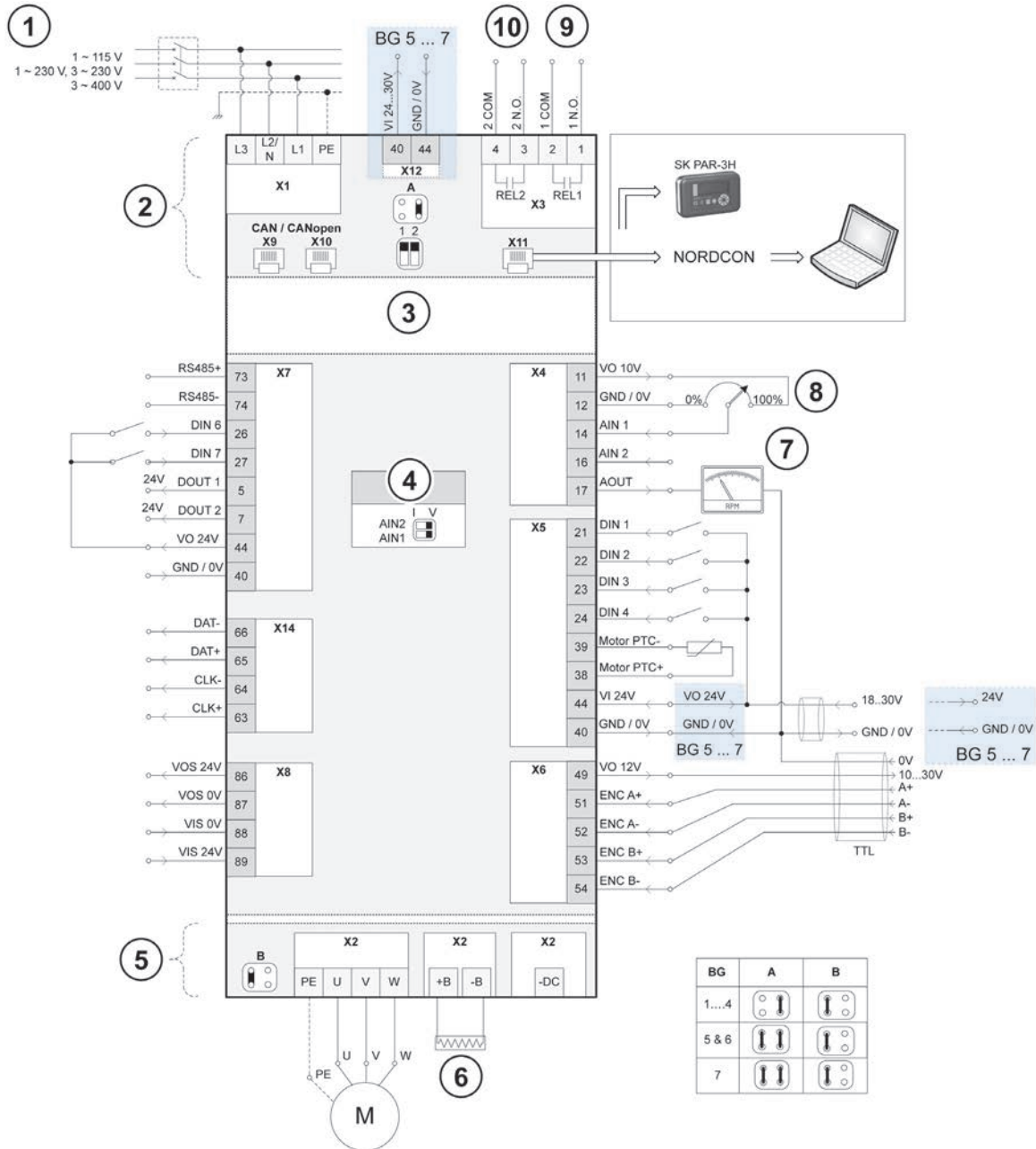
**SK 540E: Sizes 1 ... 4**



- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1 Power supply suitable for device (see Technical Data)</li> <li>2 Top view</li> <li>3 Slot for a technology unit (SK TU3-...)</li> <li>4 Configuration of analogue inputs</li> <li>5 Bottom view</li> <li>6 Optional braking resistor</li> <li>7 Actual value (speed)</li> </ul> | <ul style="list-style-type: none"> <li>8 Setpoint (speed)</li> <li>9 Connection for an electromechanical brake</li> <li>10 Connection message "Inverter ready"</li> <li>11 Alternative example "Digital input power supply via external power source (24 V DC)"</li> <li>M Motor</li> <li>Size Size</li> <li>X8 Not suitable for devices with a nominal voltage of 1 ~ 115 V</li> </ul> |
|--|---|

**Important: Please note the detailed description of the control terminals in the manual.**

**SK 545E: Sizes 1 ... 7**

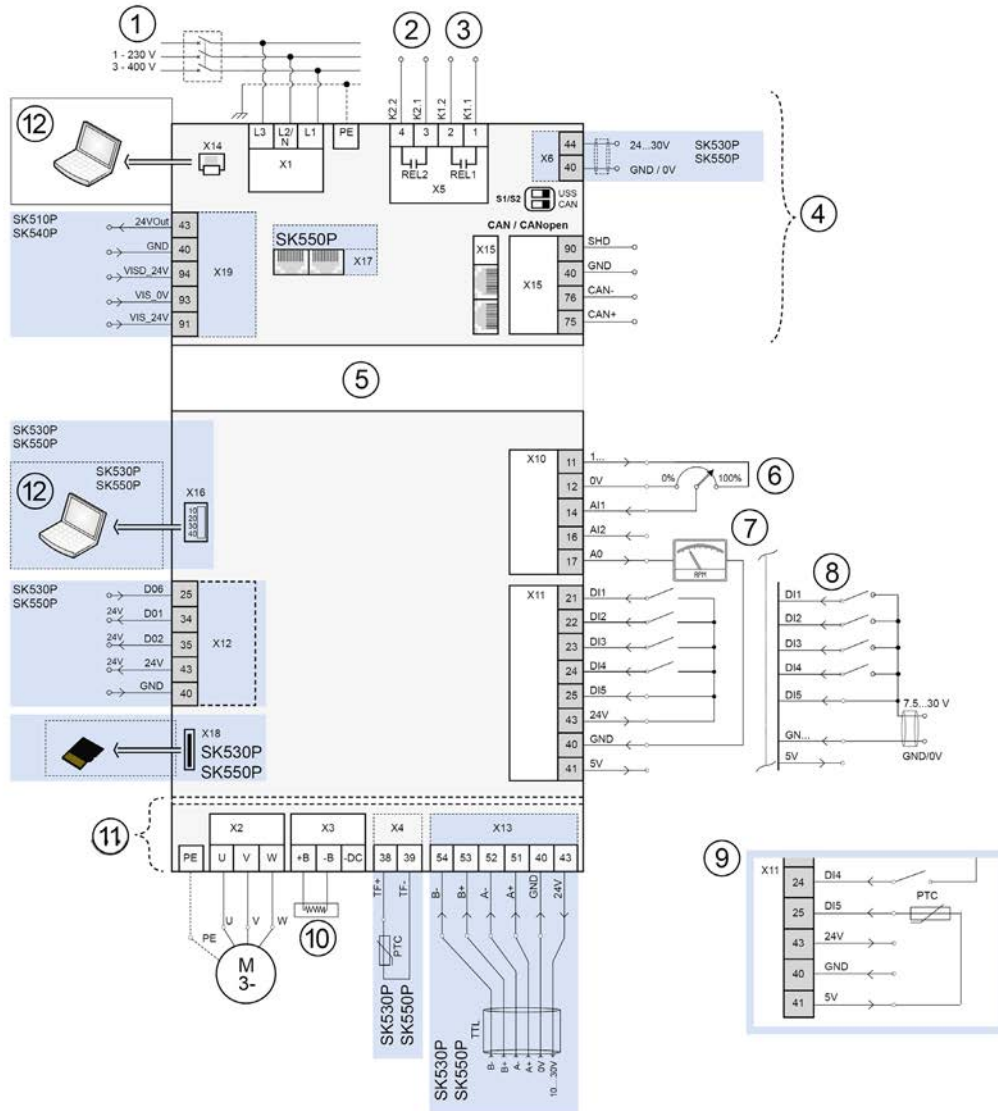


- |   |   |      |   |
|---|---|------|---|
| 1 | Power supply suitable for device (see Technical Data) | 8    | Setpoint (speed)  |
| 2 | Top view  | 9    | Connection for an electromechanical brake                                   |
| 3 | Slot for a technology unit (SK TU3-...)               | 10   | Connection message "Inverter ready"   |
| 4 | Configuration of analogue inputs                      | M    | Motor   |
| 5 | Bottom view   | Size | Size  |
| 6 | Optional braking resistor                             | X8   | Sizes 1 ... 4: Not suitable for devices with a nominal voltage of 1 ~ 115 V |
| 7 | Actual value (speed)                                  |      |   |

**Important: Please note the detailed description of the control terminals in the manual.**

### 2.3.2 SK 5xxP performance levels

#### Circuit diagram



- |   |   |    |  |
|---|---|----|--|
| 1 | Power supply suitable for device (see Technical Data) | 8  | Alternative example "Digital input power supply via external power source (24 V DC)" |
| 2 | Connection message "FI Ready" (default)               | 9  | Alternative example "PTC connected to D15"   |
| 3 | Electromechanical brake connection (default)          | 10 | Optional braking resistor  |
| 4 | Top view  | 11 | Bottom view  |
| 5 | Slot for option modules SK CU5 -..., SK TU5-CTR       | M  | Motor  |
| 6 | Setpoint (e.g. speed)                                 | 12 | Customer unit (NORDCON, Bluetooth stick, ControlBox)                                 |
| 7 | Actual value (e.g. speed)                             |    |  |

**Important: Please note the detailed description of the control terminals in the manual.**

## 2.4 Modules and options

The following overview tables list the SK TU3-...(-24V) technology units of the SK 5xxE, and compare them to the functionalities or options of the SK 5xxP.

### 2.4.1 Field bus interfaces















SK 5xxE		Bus system Connection	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK TU3-IBS 275 900 065		 2 x SUB-D9		Not available
SK TU3-PBR 275 900 030		 1 x SUB-D9		Not available
SK TU3-PBR-24V 275 900 160		 1 x SUB-D9 24 V DC		
SK TU3-CAO 275 900 075		 1 x SUB-D9		on board 275 29x xxx
SK TU3-DEV 275 900 085		 5-pole screw terminals		Not available
SK TU3-AS1 275 900 170		 5-pole and 8-pole screw terminals		Not available

Table 9: Technology units SK TU3-...(-24V) field bus interfaces

**i Information**

For detailed information, please refer to the  5.1.1 "Manuals" supplementary manuals on the field bus interface.

**2.4.2 Ethernet-based bus interfaces**

Only the frequency inverter of the SK 550P device version is equipped with an integrated bus interface for the connection of the Ethernet-based field bus systems:



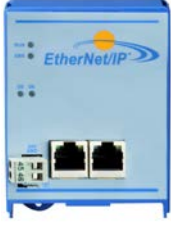



SK 5xxE		Bus system Connection	SK 550P	
Designation Part No.	Product		Product	Designation Part No.
SK TU3-ECT 275 900 180		<b>EtherCAT</b> 2 x RJ45 24 V DC		on board 275 295 xxx
SK TU3-EIP 275 900 150		<b>EtherNet/IP</b> 2 x RJ45 24 V DC		on board 275 295 xxx
SK TU3-POL 275 900 140		<b>ETHERNET POWERLINK</b> 2 x RJ45 24 V DC		on board 275 295 xxx
SK TU3-PNT 275 900 190		<b>PROFINET</b> 2 x RJ45 24 V DC		on board 275 295 xxx

Table 10: Technology units SK TU3-... Ethernet-based bus interfaces

**i Information**

For the SK 550P, the field bus protocol to be used is selected via the dialect's function setting in the *Changing the bus protocol* parameter.

For detailed information, please refer to the  5.1.1 "Manuals" supplementary manuals on the bus interface.



## 2.5 Functional safety (STO, SS1)

### 2.5.1 On board functionality

For the SK 510E, SK 511E, SK 530E, SK 535E, SK 540E and SK 545E performance levels, the functional safety is integrated in the device for the 230 V and 400 V mains voltages. This integrated function variant is only available for the SK 510P.






SK 5xxE		Functions Connection	SK 51xP	
Designation Part No.	Product		Product	Designation Part No.
SK 510E-xxx-323-A 275 71x xxx		Safe stop STO, SS1 1-channel		on board 275 291 xxx
SK 510E-xxx-340-x 275 72x xxx				
SK 511E-xxx-323-A 275 77x xxx				
SK 511E-xxx-340-x 275 78x xxx				

Table 11: Functional safety as integrated function (on board)

### Information

The functional safety (STO, SS1) is described device-specifically in supplementary manuals.

For detailed information, please refer to the  5.1.1 "Manuals" supplementary manuals on the functional safety.

### 2.5.2 Customer units (SK CU5-...)

For the SK 5xxP series, two functional extensions are available for the SK 530P and SK 550P advanced performance levels. These optional SK CU5-... customer units are available in the functions:

#### SK CU5-STO functional safety

STO, SS1  
2-channel connection

#### SK CU5-MLT encoder interface

STO, SS1  
2-channel connection  
TTL, SIN/COS, SSI,  
Hiperface, Endat, BISS



Illustration 2: SK CU5-STO customer unit











SK 5xxE		SK 5xxP		Customer unit	
Designation Part No.	Product	Product	Designation Part No.	Function Option	Designation Part No.
SK 530E-xxx-323-A 275 71x xxx			SK 530P-xxx-123-A 275 293 xxx	Functional safety  	SK CU5-STO 275 298 000
SK 530E-xxx-340-x 275 72x xxx			SK 530P-xxx-340-A 275 293 xxx		
SK 535E-xxx-323-A 275 77x xxx			SK 550P-xxx-123-A 275 295 xxx		
SK 535E-xxx-340-x 275 78x xxx			SK 550P-xxx-340-A 275 295 xxx		
SK 540E-xxx-323-A 275 77x xxx			SK 530P-xxx-123-A 275 293 xxx	Encoder interface + Functional safety  	SK CU5-MLT 275 298 200
SK 540E-xxx-340-x 275 78x xxx			SK 530P-xxx-340-A 275 293 xxx		
SK 545E-xxx-323-A 275 77x xxx			SK 550P-xxx123-A 275 295 xxx		
SK 545E-xxx-340-x 275 78x xxx			SK 550P-xxx-340-A 275 295 xxx		

Table 12: Functional extensions/SK CU5-... customer units

### Information

For the descriptions of the functional safety (STO, SS1) and the SK CU5-... customer units, please refer to the supplementary SK 5xxP manual.

For detailed information, please refer to the supplementary BU 0630  5.1.1 "Manuals" manual.

## 2.6 Control and parametrisation options

The following overview table lists the SK TU3-... technology units of the SK 5xxE, and compares them to the SK 5xxP control and parameterisation units.

### 2.6.1 Control and parameterisation units




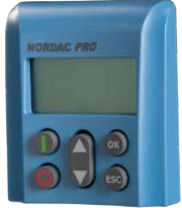


SK 5xxE		Control unit Information	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK TU3-POT 275 900 110		PotentiometerBox 0 ... 100 %		Not available
SK TU3-CTR 275 900 090		ControlBox 4-digit 7-segment display		SK TU5-CTR 275 297 000
		ControlBox 5-digit LCD 7-segment display		
SK TU3-PAR 275 900 100		ParameterBox LCD screen Plain text display		SK TIE5-BT-STICK 275 900 120
		NORDCON APP + NORDAC ACCESS BT		

Table 13: Technology units SK TU3-... control and parameterisation units

## 2.6.2 Accessories for the control and parameterisation units













SK 5xxE		Control unit Information	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK CSX-0 275 900 095		SimpleBox 4-digit 7-segment display		SK TU5-CTR 275 297 000
		ControlBox LCD, 5-digit 7-segment display		
SK PAR-3E 275 281 414		ParameterBox Installation LCD screen Plain text display		Version 4.8R0 and higher SK PAR-3E 275 281 414
SK PAR-3H 275 281 014		ParameterBox Handheld LCD screen Plain text display		Version 4.8R0 and higher SK PAR-3H 275 281 014
SK CSX-3E 275 281 413		SimpleControlBox Installation 4-digit 7-segment display		SK CSX-3E 275 281 413
SK CSX-3H 275 281 013		SimpleControlBox Handheld 4-digit 7-segment display		SK CSX-3H 275 281 013
SK SSX-3A 271 281 513		SimpleSetpointBox Handheld 4-digit 7-segment display		SK SSX-3A 271 281 513

Table 14: Accessories for the control and parameterisation units

### Information

The SK PAR-3H and SK CSX-3H handheld consoles are equipped with the connecting cable for the connection to the frequency inverter's communication or diagnostic interfaces.



2.6.3 Accessories for the control boxes





SK 5xxE		Control unit Information	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK POT1-1 278 910 120		Control box Handheld 3 m cable length 3-pole switch Potentiometer 0 ... 100%		SK POT1-1 278 910 120
SK POT1-2 278 910 140		Control box Handheld 20 m cable length 3-pole switch Potentiometer 0 ... 100%		SK POT1-2 278 910 140

Table 15: Accessories for the control boxes

## 2.7 Software

The following overview table lists the control and parameterisation software as well as the communication connection extension via Bluetooth to the NORDAC PRO.

### 2.7.1 Software and communication accessories


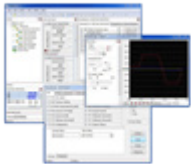
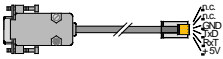
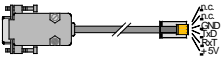



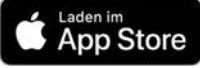





SK 5xxE		Information Connection	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
NORDCON Software Version 2.0 and higher		Software for controlling and parameterising NORD drive technology		NORDCON Software Version 2.8.3 and higher
RJ12-SUB-D9 278 910 240		Adapter cable RS232 communication RJ12 to SUB-D9		RJ12-SUB-D9 278 910 240
SK TIE4-RS232-USB 275 274 604		Connection set RS232 communication RJ12 - SUB-D9 / USB		SK TIE4-RS232-USB 275 274 604
NORDCON APP Software Version 1.0.30 and higher		 Laden im <b>App Store</b> Mobile terminal devices  JETZT BEI <b>Google Play</b>		NORDCON APP Software Version 1.1.0 and higher
SK TIE5-BT-STICK 275 900 120		NORDAC ACCESS BT 		SK TIE5-BT-STICK 275 900 120

Table 16: Software and communication accessories

### 2.7.2 USB interface

The Advanced Drive device series SK 530P and SK 550P have a USB port. This is used to parameterize the devices using the NORDCON software without connecting the mains or control voltage.



SK 530P and SK 550P			
Interface	Designation Part No.	Type Connection	Technical Data
	SK 530P-xxx-xxx-A 275 293 xxx SK 550P-xxx-xxx-A 275 295 xxx	USB-C communication interface	USB-C Micro type C
	SK CE-USB-C-PC-USB- 3M 275 292 100	USB cable for connection to PC	USB 3.0 Micro type C 3 m

Illustration 3: NORDAC PRO device series SK 5xxP USB interface and accessories

## 2.8 Accessory components

The following overview table lists further accessory options for a top-hat rail mounting for connection to the NORDAC PRO.

### 2.8.1 Accessory options



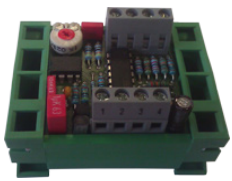
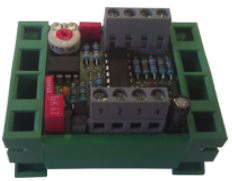







SK 5xxE		Option Assembly type	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
Adapter module RJ45/terminal 278 910 300		RJ45 WAGO adapter module CANopen® RJ45 ⇒ terminal		Adapter module RJ45/terminal 278 910 300
V/F converter 278 910 310		Adapter module V/F converter 0...10 V ⇒ Pulses		V/F converter 278 910 310
Setpoint converter +/- 10 V 278 910 320		Adapter module Setpoint chart +/- 10 V ⇒ 0...10 V		Setpoint converter +/- 10 V 278 910 320
HTL encoder WK 4/2/4*680 Ω 278 910 340		Adapter kit HTL encoder WK 4/2/4*680 Ω		Level adapter HTL- RS422 278 910 360
Level adapter HTL-RS422 278 910 360		Adapter module Level adapter Z HTL ⇒ RS422		
V/I converter 278 910 315		Adapter module V/I converter 0...10 V ⇒ 20 mA		Function integrated into the device 275 29x xxx

Table 17: Adapter modules and adapter kits





SK 5xxE		Option Assembly type	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK EBGR-1 electronic rectifier size 1 19 140 990		Electronic brake rectifier for holding brake control		Electronic rectifier size 1 SK EBGR-1 19 140 990

Table 18: SK EBGR-1 electronic brake rectifier



SK 540E / SK 545E		Option Assembly type	SK 530P / SK 550P	
Designation Part No.	Product		Product	Designation Part No.
IO extension SK EBIOE-2 275 900 210		External IO extension Digital and analogue inputs and outputs 5-pole		IO extension SK EBIOE-2 275 900 210

Table 19: IO extension SK EBIOE-2

## 2.8.2 Optional accessories for the SK 5xxP device series






SK 5xxP accessories			
Designation Part No.	Option	Type Connection	Installation
SK CE-USB-C-PC- USB-3M 275 292 100		USB cable for connection to the PC 3 m only SK 530P/SK 550P	
SK TIE5-SD-CARD- IND1 275 292 200		MicroSD card 128 MB only SK 530P/SK 550P	
SK TIE5-CAO- WIRE-2x4P 275 292 201		Double terminal CANopen® 2 x 4 terminals	
SK TIE5-CAO-2X- RJ45 275 292 202		Adapter CANopen® 2 x RJ45	

Table 20: Optional accessories for NORDAC PRO SK 5xxP device series

### 2.8.3 EMC kits

Optional EMC kits are available for EMC connection of shielded cables, and the correct strain relief.

These size-dependent EMC kits are installed on the NORDAC *PRO* and used to connect

- Motor cables
- Control and encoder cables
- Bus system cables

#### Motor connection shield (MS)


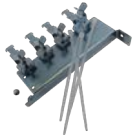
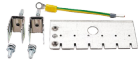

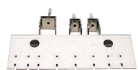


SK 5xxE			SK 5xxP		
Designation Part No.	Product	Size	Designation Part No.	Product	Size
SK EMC 2-1 275 999 011		Size 1 + Size 2	SK HE5-EMC-MS-HS12 275 292 300		Size 1 + Size 2
SK EMC 2-2 275 999 021		Size 3 + Size 4	SK HE5-EMC-MS-HS34 275 292 301		Size 3 + Size 4
SK EMC 2-3 275 999 031		Size 5			
SK EMC 2-4 275 999 041		Size 6	SK HE5-EMC-MS-HS5 275 292 302		Size 5

Table 21: NORDAC *PRO* EMC kits for motor connection



Illustration 4: NORDAC *PRO* EMC kits installed for motor connection

**IO port shield (IS)**











SK 5xxE		SK 5xxP		
Device	Size	Designation Part No.	Product	Size
	Size 1	SK HE5-EMC-IS- HS1 275 292 304		Size 1
	Size 2	SK HE5-EMC-IS- HS2 275 292 305		Size 2
	Size 3	SK HE5-EMC-IS- HS34 275 292 306		Size 3 + Size 4
	Size 4			
	Size 5			
	Size 6	SK HE5-EMC-IS- HS5 275 292 308		Size 5

Table 22: NORDAC PRO SK 5xxP EMC kits for IO ports (control cables)



Illustration 5: NORDAC PRO EMC kits installed for IO ports (control cables)

Customer unit shield SK CU5-... (CS)









SK 5xxE		SK 5xxP		
Device	Size	Designation Part No.	Product	Size
	Size 1	SK HE5-EMC-CS- HS1 275 292 310		Size 1
	Size 2	SK HE5-EMC-CS- HS23 275 292 311		Size 3 + Size 4
	Size 3			
	Size 4			
		Not available		Size 4
	Size 5	Not available		Size 5
	Size 6			

Table 23: NORDAC PRO SK 5xxP EMC kits for SK CU5-... customer units



Illustration 6: NORDAC PRO EMC kits installed for SK CU5-... customer units

## 2.9 Accessories

### 2.9.1 Braking resistors

External braking resistors are available as accessory components for the NORDAC *PRO* series.

Both NORDAC *PRO* frequency inverter types are implemented with an integrated brake chopper for dissipating the energy feedback (generated during dynamic braking) using an external braking resistor.

For these external braking resistors used for preventing overvoltage-related frequency inverter shutdowns, a differentiation is made between two different types and designs.

#### Design

- Chassis braking resistor
- Footprint braking resistor

#### 2.9.1.1 Chassis braking resistors

In the table below, the different SK BR2-... chassis braking resistors are assigned to the individual power ranges. The chassis braking resistor types/designs are identical for both device series.

The chassis braking resistors are subdivided into types and different designs. The chassis braking resistors or the resistor elements are integrated into housing cages and can be used almost universally. For thermal protection of the chassis braking resistor, these are equipped with an integrated thermostat (bimetallic switch as opener).




**Illustration 7: Versions of chassis braking resistors**

The temperature contact can be connected via two terminals (4 mm<sup>2</sup>) with one digital input of the frequency inverter and parameterised to, for example, one of the safety functions (“Disable voltage” or “Quick Stop”).

The chassis braking resistors are UL certified and can also be installed outside the control cabinet due to their IP20 protection class version and for better heat dissipation. The chassis braking resistors must be connected to the frequency inverter via a separate connection cable – a shielded cable is recommended. The connection cable should be as short as possible.

### Information

Special attention must be paid to the type of assembly (vertical or horizontal). For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets".

#### 400 V devices









SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK BR2-100/400-C 278 282 040		Chassis braking resistor 3.0 ... 4.0 kW		SK BR2-100/400-C 278 282 040
		100 Ω    100 Ω 400 W    400 W		
SK BR2-60/600-C 278 282 060		Chassis braking resistor 5.5 ... 7.5 kW		SK BR2-60/600-C 278 282 060
		60 Ω    60 Ω 600 W    600 W		
SK BR2-30/1500-C 278 282 150		Chassis braking resistor 11.0 ... 15 kW		SK BR2-30/1500-C 278 282 150
		30 Ω    30 Ω 1500 W    1500 W		
SK BR2-22/2200-C 278 282 220		Chassis braking resistor 15.5 ... 22.0 kW		SK BR2-22/2200-C 278 282 220
		22 Ω    22 Ω 2200 W    2200 W		

Table 24: Chassis braking resistors for 400 V devices

### 2.9.1.2 Footprint braking resistors

In the table below, the different SK BR4-... footprint braking resistors are assigned to the individual power ranges and compared to those of type SK BRU5-.... The footprint braking resistor types/designs are different for both device series. Depending on the space available and the respective depth in the control cabinet, the footprint braking resistors for the SK 5xxE can be mounted flat or vertically (book size) next to the frequency inverter.

SK 5xxE with SK BR4-xxx/xxx




SK 5xxP with SK BRU5-x-xxx-xxx



Illustration 8: Footprint braking resistor designs for size 2

Both footprint braking resistor designs are UL certified and can also be installed outside the control cabinet due to their IP40 protection class version and for better heat dissipation. The footprint braking resistors' lead-out connection cables must be lengthened accordingly.

#### Information

The connection cable lengths and short-time powers are different for the device-specific footprint braking resistor types. For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets".



### 230 V devices







SK 5xxE		Type Power range Data	SK 5xxP			
Designation Part No.	Product		Product	Designation Part No.		
SK BR4-240/100 275 991 110		Footprint braking resistor 0.25 ... 0.37 kW	240 Ω	240 Ω	 Similar to illustration  SK BRU5-1-240-050 275 299 004	
			100 W	50 W		
SK BR4-150/100 275 991 115		Footprint braking resistor 0.55 ... 0.75 kW	150 Ω	240 Ω		
			100 W	50 W		
SK BR4-75/200 275 991 120		Footprint braking resistor 1.1 ... 2.2 kW	75 Ω	75 Ω	 Similar to illustration  SK BRU5-2-075-200 275 299 210	
			200 W	200 W		
SK BR4-35/400 275 991 140		Footprint braking resistor 3.0 ... 4.0 kW	35 Ω			Not available
			400 W			

Table 25: Footprint braking resistors for 230 V devices

400 V devices

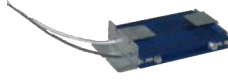







SK 5xxE		Type Power range Data	SK 5xxP			
Designation Part No.	Product		Product	Designation Part No.		
SK BR4-400/100 275 991 210		Footprint braking resistor 0.55 ... 0.75 kW	400 Ω	400 Ω	 Similar to illustration	SK BRU5-1-400-100 275 299 101
			100 W	100 W		
SK BR4-220/200 275 991 220		Footprint braking resistor 1.1 ... 2.2 kW	220 Ω	220 Ω	 Similar to illustration	SK BRU5-2-220-200 275 299 205
			200 W	200 W		
SK BR4-100/400 275 991 240		Footprint braking resistor 3.0 ... 4.0 kW	100 Ω	100 Ω	 Similar to illustration	SK BRU5-3-100-300 275 299 309
			400 W	300 W		
SK BR4-60/600 275 991 260		Footprint braking resistor 5.5 kW	60 Ω	100Ω	 Similar to illustration	SK BRU5-4-44-400 275 299 512
			600 W	300 W		
		Footprint braking resistor 7.5 kW	60 Ω	44Ω		
Not available		Footprint braking resistor 11.0 kW		44 Ω		
				400 W		

Table 26: Footprint braking resistors for 400 V devices

### Temperature monitoring accessories

For thermal protection of the SK BR4-... and SK BRU5-... braking resistors, a thermostat (bimetallic switch/opener contact) can be optionally installed directly on the resistor housing.

The type selection depends on the footprint braking resistor's assembly type.




SK 5xxE		Assembly type Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK BR4/BRU5-... temperature monitoring 275 991 100		Book size 180 °C 2.5 A		SK BR4/BRU5-... temperature monitoring 275 991 100
SK BR4/BRU5-... temperature monitoring 275 991 200		Footprint 100 °C 1.6 A		

Table 27: SK BR4/BRU5-... temperature monitoring accessories

## 2.9.2 Line filter

Both NORDAC *PRO* series are equipped with an integrated EMC line filter. The compliance with standards for limit values of class A1/category C2 is guaranteed for shielded motor cable lengths < 20 m. For shielded motor cable lengths < 5 m, the class B/category C1 limit values are observed.

### Information

For the following SK 5xxP device types, the compliance with the declared class B1/category C1 limit values cannot be guaranteed.

- SK 5xxP-250-123-A ... SK 5xxP-550-123-A
- SK 5xxP-250-340-A ... SK 5xxP-550-340-A

For applications with longer motor cables or for compliance with the class B limit values, external line filters are available as accessory components.

For these external line filters used for reducing the emission of electromagnetic interferences, a differentiation is made between two different types and designs.

#### Design

- Chassis line filter
- Footprint line filter

#### 2.9.2.1 Chassis line filters

In the table below, the different SK HLD ... chassis line filters are assigned to the individual power ranges for the SK 5xxE.

### Information


Optional chassis line filters for the entire SK 5xxP power range are available via the Getriebebau NORD sales department **only on request**.



Illustration 9: NORDAC *PRO* SK 5xxE chassis line filter

The SK HLD ... chassis line filters are UL certified and can also be installed outside the control cabinet due to their IP20 protection class version and for better heat dissipation. The chassis line filters must be connected to the mains connection and the frequency inverter via a separate connection cable – a shielded cable is recommended. The connection cables should be as short as possible.

### Information

Compliance with the wiring guidelines must be ensured when connecting. In the additional parameters, the pulse frequency should be set to the factory setting (6 kHz). For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets".

#### 400 V devices







SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK HLD 110-500/8 278 272 008		Chassis line filter 0.55 ... 2.2 kW 8.0 A 20/190 mA	Not available	On request
SK HLD 110-500/16 278 272 016		Chassis line filter 3.0 ... 5.5 kW 16.0 A 21/205 mA	Not available	On request
SK HLD 110-500/30 278 272 030		Chassis line filter 7.5 kW 30.0 A 29/280 mA	Not available	On request
SK HLD 110-500/42 278 272 042		Chassis line filter 11.0 kW 42.0 A 30/290 mA	Not available	On request
SK HLD 110-500/55 278 272 055		Chassis line filter 15.0 ... 18.5 kW 55.0 A 30/290 mA	Not available	On request
SK HLD 110-500/75 278 272 075		Chassis line filter 22.0 kW 75.0 A 22/210 mA	Not available	On request

Table 28: Chassis line filters for 400 V devices

### 2.9.2.2 Footprint line filter

In the table below, the different SK LF2-... footprint line filters are assigned to the individual power ranges for the SK 5xxE. Footprint line filters are only available for a 3-phase mains connection. Depending on the space available and the respective depth in the control cabinet, the footprint line filters can be mounted flat or vertically (book size) next to the frequency inverter.

---

#### Information

Optional footprint line filters for the entire SK 5xxP power range are available via the Getriebebau NORD sales department **only on request**.

---




**Illustration 10: NORDAC PRO SK 5xxE footprint line filter**

The SK LF2-... footprint line filters are UL certified and can only be installed in the control cabinet due to their IP00 protection class version. The connection cable for the mains connection must be provided and should be as short as possible. The mains cable is connected using screw terminals. The footprint line filters must be connected to the frequency inverter's mains connection on the outgoing circuit side using the pre-assembled connection cables.

---

#### Information

Compliance with the wiring guidelines must be ensured when connecting. In the additional parameters, the pulse frequency should be set to the factory setting (6 kHz). For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets".

---

### 400 V devices







SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK LF2-480/2-F 278 273 002		Footprint line filter 0.55 ... 0.75 kW ----- 2.3 A 6.4/61.5 mA	Not available	On request
SK LF2-480/5-F 278 273 005		Footprint line filter 1.1 ... 2.2 kW ----- 5.5 A 7.7/74.3 mA	Not available	On request
SK LF2-480/9-F 278 273 009		Footprint line filter 3.0 ... 4.0 kW ----- 9.5 A 19.5/187 mA	Not available	On request
SK LF2-480/15-F 278 273 015		Footprint line filter 5.5 ... 7.5 kW ----- 16.0 A 20.2/193 mA	Not available	On request
SK LF2-480/45-F 278 273 045		Footprint line filter 11.0 ... 15.0 kW ----- 45.0 A 12/120 mA	Not available	On request
SK LF2-480/66-F 278 273 066		Footprint line filter 18.5 ... 22.0 kW ----- 66.0 A 12/120 mA	Not available	On request

Table 29: Footprint line filters for 400 V devices

### 2.9.2.3 Footprint combined line filter

This combination of line filter with integrated mains choke in one housing is only available for a 3-phase mains connection. In the table below, the different SK NHD-... footprint combined line filters are assigned to the individual power ranges for the SK 5xxE. Depending on the space available and the respective depth in the control cabinet, the footprint combined line filters can be mounted flat or vertically (book size) next to the frequency inverter.

---

#### Information

Optional footprint combined line filters for the entire SK 5xxP power range are available via the Getriebekonstruktion NORD sales department **only on request**.

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Illustration 11: Footprint combined line filter NORDAC PRO SK 5xxE

The SK NHD-... footprint combined line filters are UL certified and can be installed in the control cabinet due to their IP20 protection class version. The connection cable for the mains connection must be provided and should be as short as possible. The mains cable is connected using screw terminals. The footprint combined line filters must be connected to the frequency inverter's mains connection on the outgoing circuit side using the pre-assembled connection cables.

---

#### Information

Compliance with the wiring guidelines must be ensured when connecting. In the additional parameters, the pulse frequency should be set to the factory setting (6 kHz). For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets".

---



## 400 V devices





SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK NHD-480/3-F 278 273 003		Footprint combined line filter 0.55 ... 0.75 kW	Not available	On request
		2.3 A 4.3/40 mA		
SK NHD-480/6-F 278 273 006		Footprint combined line filter 1.1 ... 2.2 kW	Not available	On request
		5.5 A 7.7/74.4 mA		
SK NHD-480/10-F 278 273 010		Footprint combined line filter 3.0 ... 4.0 kW	Not available	On request
		9.5 A 15/144 mA		
SK NHD-480/16-F 278 273 016		Footprint combined line filter 5.5 ... 7.5 kW	Not available	On request
		16.0 A 21.5/206.5 mA		

Table 30: Footprint combined line filters for 400 V devices

## 2.9.3 Chokes

### 2.9.3.1 Mains chokes

The mains chokes are located upstream from the frequency inverters and limit the input current to approximately the level of the NORDAC *PRO* output current.

In the following tables, the different mains chokes are assigned to the individual power ranges of both device series and compared to them.

**SK CI1-xxx/xxx-C for SK 5xxE**



**SK CI5-xxx/xxx-C for SK 5xxP**



**Illustration 12: NORDAC *PRO* mains chokes**


To reduce dangerous mains current peaks or mains voltage fluctuations, adaptive mains chokes may be used depending on the system. Mains feedback and the proportion of current harmonics will be considerably reduced.

SK CI1-... mains chokes are specified for a maximum supply voltage of 230 V or 480 V at 50/60 Hz.

SK CI5-... mains chokes are specified for a maximum supply voltage of 230 V or 500 V at 50/60 Hz.

Both types of mains chokes are UL certified and should always be installed in the control cabinet due to their IP00 protection class version. The mains chokes are connected using screw terminals.

### Information

For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets".

### 230 V devices











SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK CI1-230/8-C 278 999 030		Mains choke 0.25 ... 0.37 kW		SK CI5-230/006-C 276 993 005
		8.0 A 2 x 1.0 mH		
SK CI1-230/20-C 278 999 040	 Similar to illustration	Mains choke 0.55 ... 0.75 kW		SK CI5-230/010-C 276 993 009
		8.0 A 2 x 1.0 mH		
SK CI1-230/20-C 278 999 040	 Similar to illustration	Mains choke 1.1 ... 2.2 kW		SK CI5-230/025-C 276 993 024
		20.0 A 2 x 0.4 mH		

Table 31: Mains chokes for 230 V devices

### 400 V devices

SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK CI1-480/6-C 276 993 006		Mains choke 0.55 ... 0.75 kW		SK CI5-500/004-C 276 993 004
		6.0 A 3 x 4.88 mH		
SK CI1-480/6-C 276 993 006		Mains choke 1.1 ... 2.2 kW		SK CI5-500/008-C 276 993 008
		6.0 A 3 x 4.88 mH		









SK 5xxE		Type Power range Data	SK 5xxP			
Designation Part No.	Product		Product	Designation Part No.		
SK CI1-480/11-C 276 993 011		Mains choke 3.0 ... 4.0 kW		SK CI5-500/016-C 276 993 016		
		11.0 A 3 x 2.93 mH			16.0 A 3 x 1.84mH	
SK CI1-480/20-C 276 993 020		Mains choke 5.5 kW		SK CI5-500/035-C 276 993 035		
		20.0 A 3 x 1.47 mH			16.0 A 3 x 1.84 mH	
		Mains choke 7.5 kW			20.0 A 3 x 1.47 mH	35.0 A 3 x 0.84 mH
		Mains choke 11.0 kW				
SK CI1-480/40-C 276 993 040		Mains choke 15.0 kW		SK CI5-500/063-C 276 993 063		
		40.0 A 3 x 0.73 mH			35.0 A 3 x 0.84 mH	
		Mains choke 18.5 kW			40.0 A 3 x 0.73 mH	63.0 A 3 x 0.47 mH
		Mains choke 22.0 kW				
SK CI1-480/70-C 276 993 070		Mains choke 18.5 kW		SK CI5-500/063-C 276 993 063		
		70.0 A 3 x 0.47 mH			63.0 A 3 x 0.47 mH	
		Mains choke 22.0 kW			70.0 A 3 x 0.47 mH	63.0 A 3 x 0.47 mH
		Mains choke 22.0 kW				

Table 32: Mains chokes for 400 V devices

### 2.9.3.2 Motor chokes

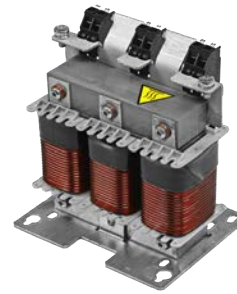
In case of long motor cables, motor chokes are installed between the frequency inverter and the motor for improving the EMC characteristics and the device protection. They reduce the motor cable's interference signals, or the cable compensation in case of longer motor cables.

In the following tables, the different motor chokes are assigned to the individual power ranges of both device series and compared to them.

**SK CO1-xxx/xxx-C for SK 5xxE**



**SK CO5-xxx/xxx-C for SK 5xxP**




**Illustration 13: NORDAC PRO motor chokes**

The SK CO1-... motor chokes are specified for a maximum supply voltage of 460 V at 50/60 Hz. The SK CO5-... motor chokes are specified for a maximum supply voltage of 500 V at 50/60 Hz.

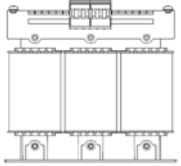


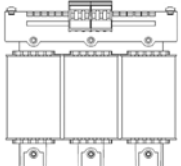


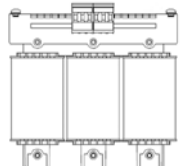


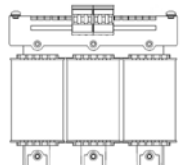


Both types of motor chokes are UL certified and should always be installed in the control cabinet due to their IP00 protection class version. The motor chokes are connected using screw terminals.

#### Information

All available motor chokes are only rated for a pulse frequency of 3 to 6 KHz and an output frequency of 0 to 120 Hz. The parameterisation is done under the additional parameters in the frequency inverter.

For detailed information, please refer to the technical information  Chapter 5.1.2 "Technical information/Data sheets" and the 5.1.1 "Manuals" manuals.

**230 V and 400 V devices**

SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK CO1-460/4-C 276 996 004		Motor choke 0.25 ... 0.75 kW		SK CO5-500/002-C 276 992 002
		4.0 A 3 x 3.5 mH		
		Motor choke 1.1 ... 1.5 kW		SK CO5-500/006-C 276 992 006
		4.0 A 3 x 3.5 mH		
SK CO1-460/9-C 276 996 009		Motor choke 2.2 kW		SK CO5-500/012-C 276 992 012
		9.0 A 3 x 2.5 mH		
		Motor choke 3.0 ... 4.0 kW		SK CO5-500/024-C 276 992 024
		9.0 A 3 x 2.5 mH		
SK CO1-460/17-C 276 996 017		Motor choke 5.5 kW		SK CO5-500/046-C 276 992 046
		17.0 A 3 x 1.2 mH		
		Motor choke 7.5 kW		SK CO5-500/002-C 276 992 002
		17.0 A 3 x 1.2 mH		
SK CO1-460/33-C 276 996 033		Motor choke 11.0 kW		SK CO5-500/006-C 276 992 006
		33.0 A 3 x 0.6 mH		
		Motor choke 15.0 kW		SK CO5-500/046-C 276 992 046
		33.0 A 3 x 0.6 mH		

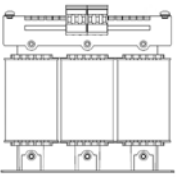

SK 5xxE		Type Power range Data	SK 5xxP	
Designation Part No.	Product		Product	Designation Part No.
SK CO1-480/60-C 276 992 060		Motor choke 18.5 ... 22.0 kW		SK CO5-500/046-C 276 992 046

Table 33: Motor chokes for 230 V and 400 V devices

### 2.9.3.3 Link circuit chokes

The link circuit chokes are connected to the frequency inverter's DC link circuit and reduce the frequency inverter's network loads inherent to its functional principle.

The SK DCL-... link circuit chokes are only available for the SK 5xxE from power size  $\geq 45$  kW.

---

#### Information

Optional link circuit chokes for the entire SK 5xxP power range are currently **not** available from Getriebebau NORD.

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**Illustration 14:** SK DCL-950/xxx-C NORDAC PRO SK 5xxE link circuit chokes

The SK DCL-... link circuit chokes are UL certified and should always be installed in the control cabinet due to their IP00 protection class version. The link circuit chokes are connected on both sides using ring cable lugs.



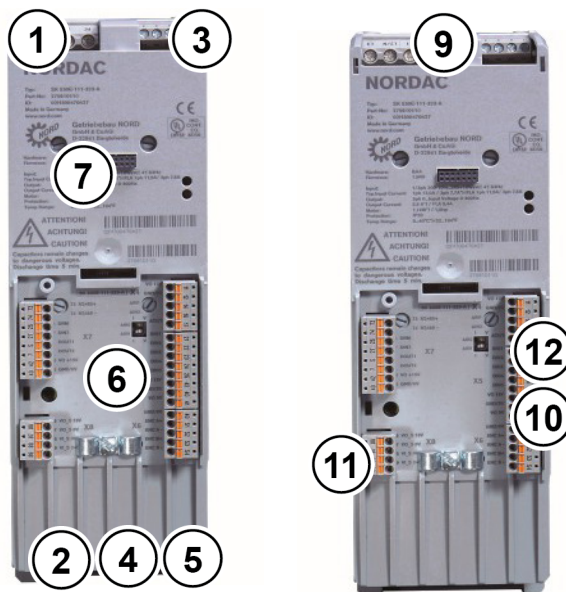
## 3 Electrical connection

### 3.1 SK 5xxE series

#### 3.1.1 Overview SK 5xxE terminal blocks

Depending on the size, the connection terminals for the power cables and the control cables are located in different positions. According to the configuration of the frequency inverter, terminals are not present.

Sizes 1 to 4



①	Mains connection	L1, L2/N, L3, PE	X1	
②	Motor connection	U, V, W, PE	X2	
③	Test multi-function relay	1 - 4	X3	
④	Braking resistor	+B, -B	X2	
⑤	DC link circuit	-DC	X2	
⑥	Control terminals	IOs, GND, 24Vout, IG, DIP for AIN	→	X4, X5, X6, X7, X14
⑦	Technology unit			
⑧	Link circuit choke			
⑨	Communication	CAN/CANopen; RS232/RS485	→	X9/X10; X11
⑩	PTC resistor	T1/2 or TF+/-	X13	up to size 4 (except SK 54xE): on DIN 5
⑪	Safe Pulse Block	86, 87, 88, 89	X8	
⑫	Supply voltage VI 24 V	40, 44	X12	except SK 5x0E and SK 511E

### 3.1.2 SK 5xxE circuit diagrams

#### Sizes 1 to 4

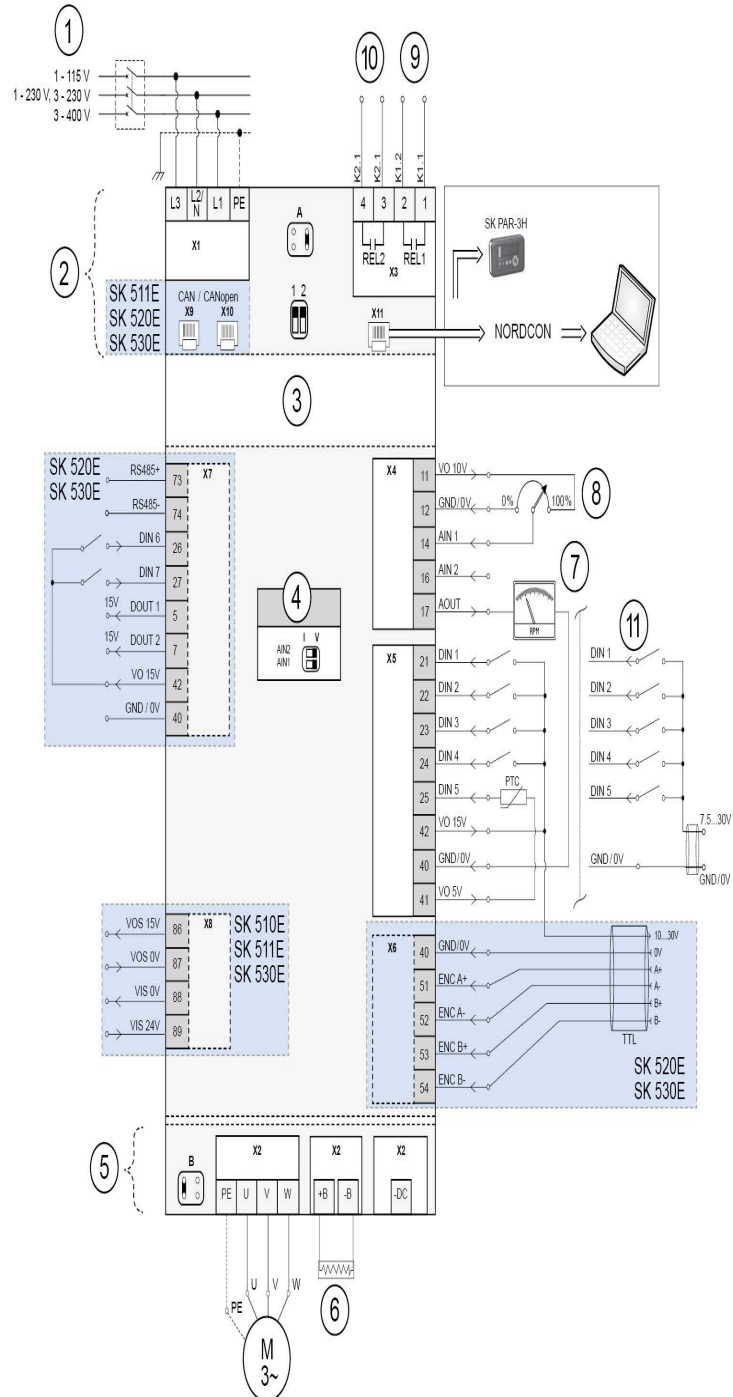


Illustration 15: SK 500E, SK 510E, SK 511E, SK 520E and SK 530E

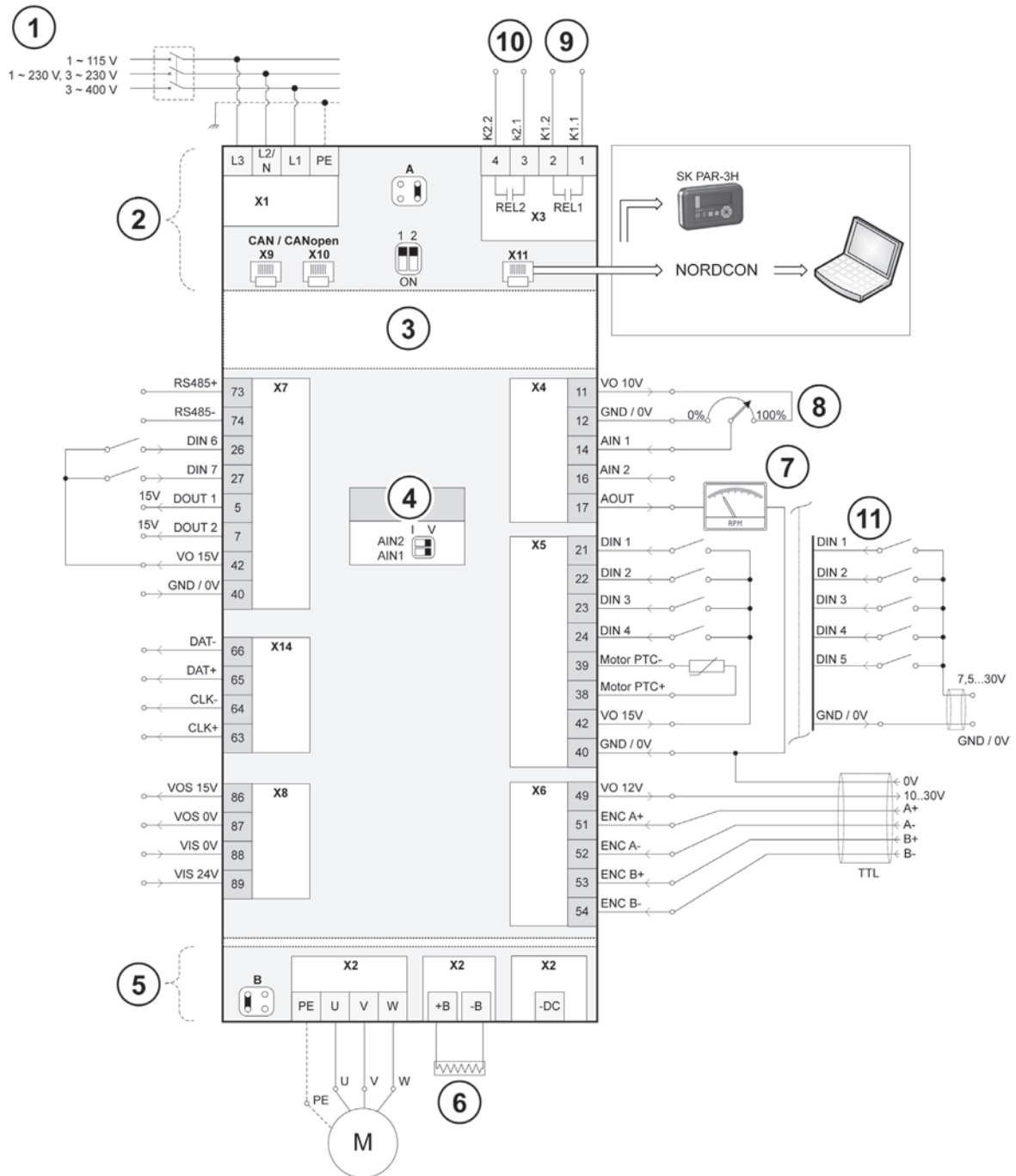


Illustration 16: SK 540E

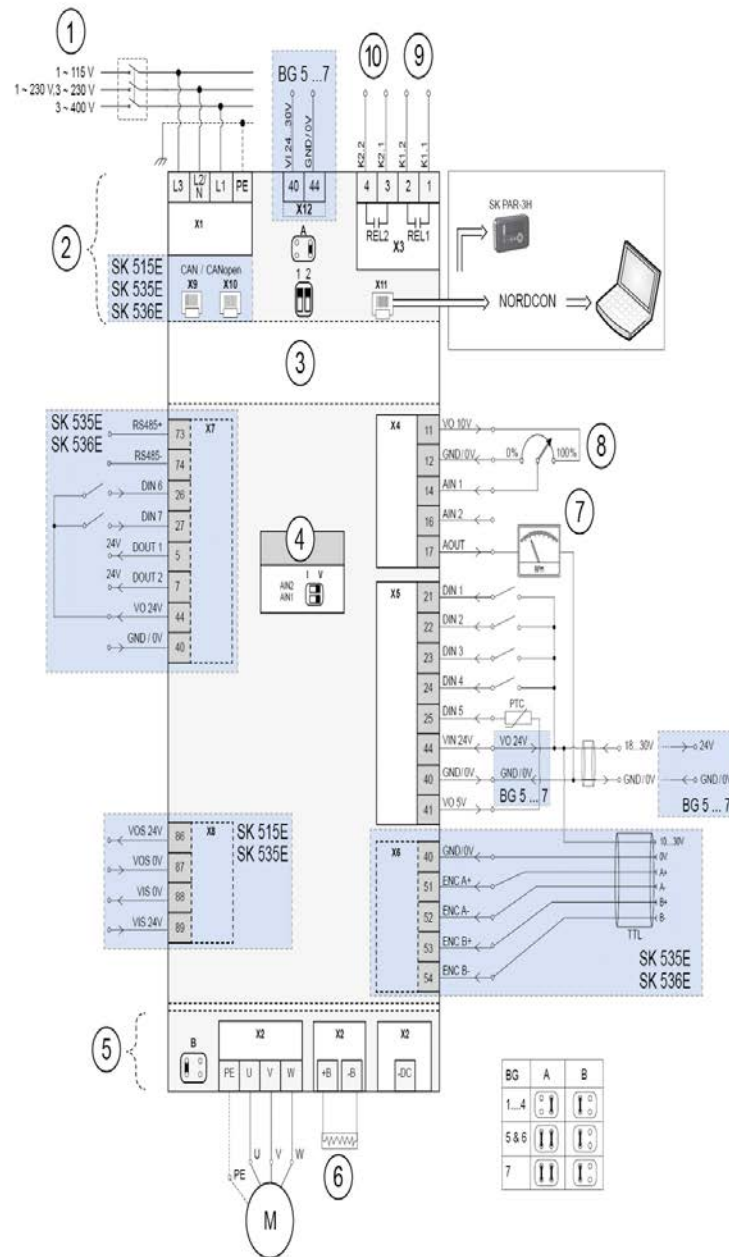


Illustration 17: SK 505E, SK 515E and SK 535E

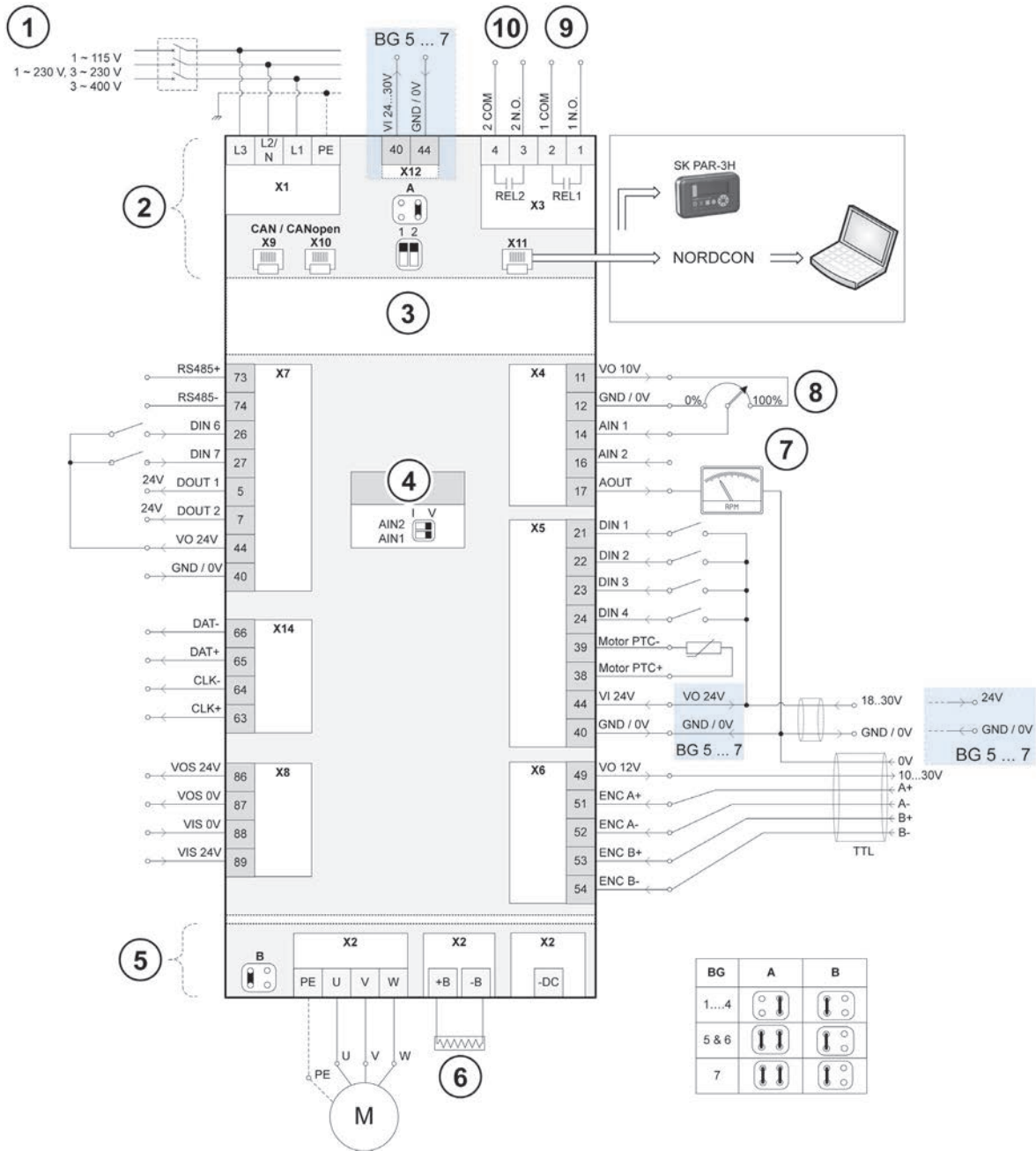



Illustration 18: SK 545E

#### 3.1.3 Legend SK 5xxE circuit diagrams

- ① Power supply suitable for device (see Technical Data)
  - ② Top view
  - ③ Slot for a technology unit (SK TU3-...)
  - ④ Configuration of analogue inputs
  - ⑤ Bottom view
  - ⑥ Optional braking resistor
  - ⑦ Actual value (speed)
  - ⑧ Setpoint (speed)
  - ⑨ Connection for an electromechanical brake
  - ⑩ Connection message "Inverter ready"
  - ⑪ Alternative example "Digital input power supply via external power source (24 V DC)"
- M Motor  
Size Size

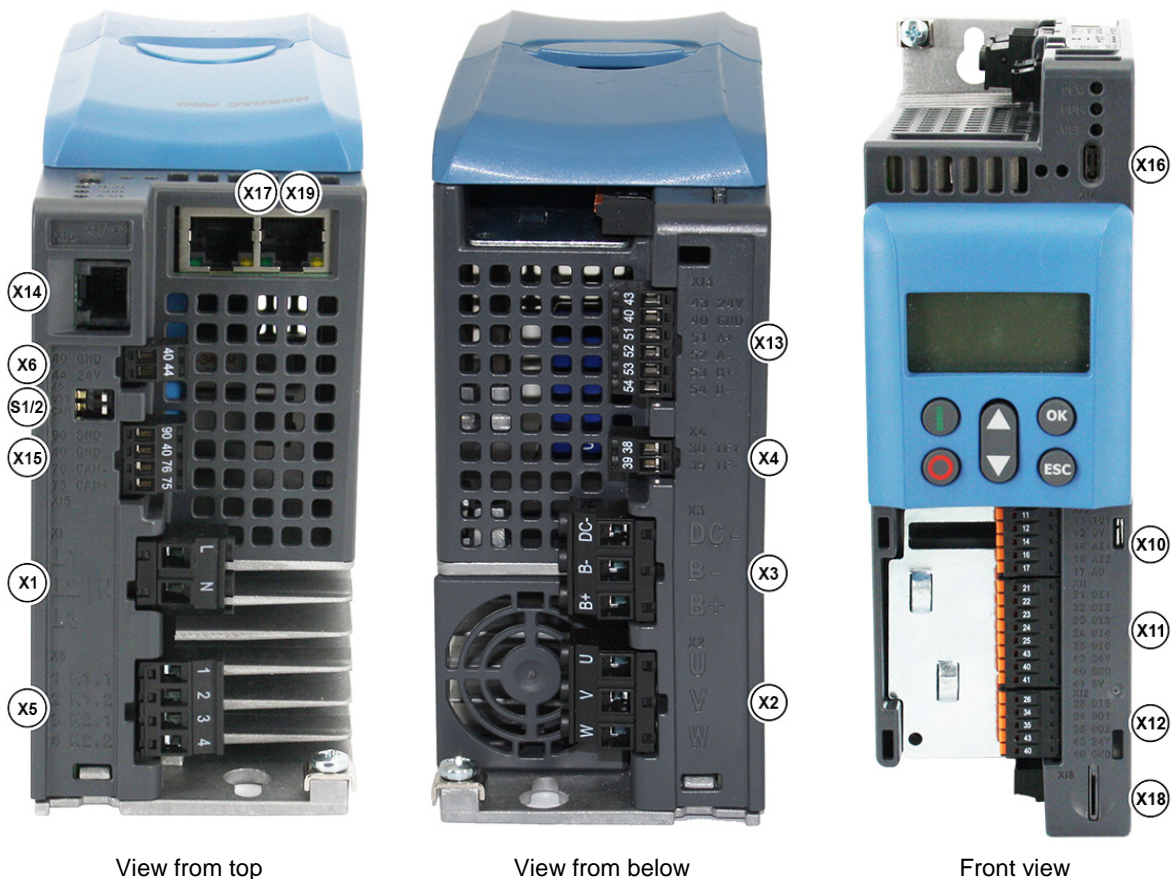
**i Information**

Note the details on the description of the connections in the BU 0500 or BU 0505 manual  5.1.1 "Manuals".

### 3.2 SK 5xxP series

#### 3.2.1 Overview SK 5xxP terminal blocks


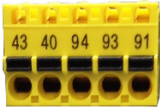
Depending on the size of the frequency inverter, the connection terminals for the supply cables and the control cables are located in different positions. According to the configuration of the frequency inverter, various terminals are not present.



Note for X17/X19: The illustration shows the X17 Ethernet connection.

### 3 Electrical connection

Terminal block		Signal	Pin no.	Number of poles	SK 500P	SK 510P	SK 530P	SK 550P
X1	Mains	L1	L	3	X	X	X	X
		L2/ N	N					
		L3	–					
X2	Motor	U	–	3	X	X	X	X
		V	–					
		W	–					
X3	Braking resistor	B+	–	3	X	X	X	X
		B-	–					
		DC-	–					
X4	PTC resistor	TF-	39	2	–	–	X	X
		TF+	38					
X5	Multi-function relay	K1.1	1	4	X	X	X	X
		K1.2	2					
		K2.1	3					
		K2.2	4					
X6	24 V	GND	40	1	–	–	X	X
		24 V	44					
X10	Analogue inputs	10 V	11	5	X	X	X	X
		0	12					
		AI1	14					
		AI2	16					
		AO	17					
X11	Digital inputs	DI1	21	8	X	X	X	X
		DI2	22					
		DI3	23					
		DI4	24					
		DI5	25					
		24 V	43					
		GND	40					
5 V	41							
X12	Auxiliary inputs	DI6	26	5	–	–	X	X
		DO1	34					
		DO2	35					
		24 V	43					
		GND	40					
X13	TTL incremental encoder	24 V	43	6	–	–	X	X
		GND	40					
		A+	51					
		A-	52					
		B+	53					
B-	54							
X14	RJ12 diagnostic connection	–	–	6	X	X	X	X

Terminal block		Signal	Pin no.	Number of poles	SK 500P	SK 510P	SK 530P	SK 550P
X15	CAN	SHD	90	4	X	X	X	X
		GND	40					
		CAN-	76					
		CAN+	75					
X16	USB	–	–	4	–	–	X	X
X17	Industrial Ethernet 	–	–	2 x 8	–	–	–	X
X18	MicroSD	–	–		–	–	X	X
X19	STO, single channel 				-	X	-	-
CAN	CANopen system bus termination	DIP switch		1	X	X	X	X
USS	RS485 termination	DIP switch		1	X	X	X	X






### 3.2.3 Legend SK 5xxP circuit diagrams

- |   |   |   |  |
|---|---|---|--|
| ① | Power supply suitable for device (see Technical Data) | ⑦ | Actual value (speed)   |
| ② | Connection message “Inverter ready”                   | ⑧ | Alternative example “Digital input power supply via external power source (24 V DC)” |
| ③ | Connection for an electromechanical brake             | ⑨ | Optional braking resistor  |
| ④ | Top view  | ⑩ | Bottom view  |
| ⑤ | Slot for option modules SK CU5 -..., SK TU5-CTR       | M | Motor  |
| ⑥ | Setpoint (speed)                                      |   |  |

---

#### Information

Note the details on the description of the connections in the BU 0600 manual  5.1.1 "Manuals".

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## 4 Dimensions

### Information

In the Dimensions chapter, only those products, options and accessory components are listed that can be used differently with the NORDAC *PRO* product series.

### 4.1 NORDAC *PRO*

In contrast to the SK 5xxE that must be installed using two supplied wall-mounting brackets for the sizes 1 - 4, the SK 5xxP frequency inverters are installed directly on the back in a control cabinet.



Illustration 20: NORDAC *PRO*

## 4.2 Frequency inverter

### Dimensioning

The following tables and figures compare the dimensions [mm] of both device series regarding their power sizes.

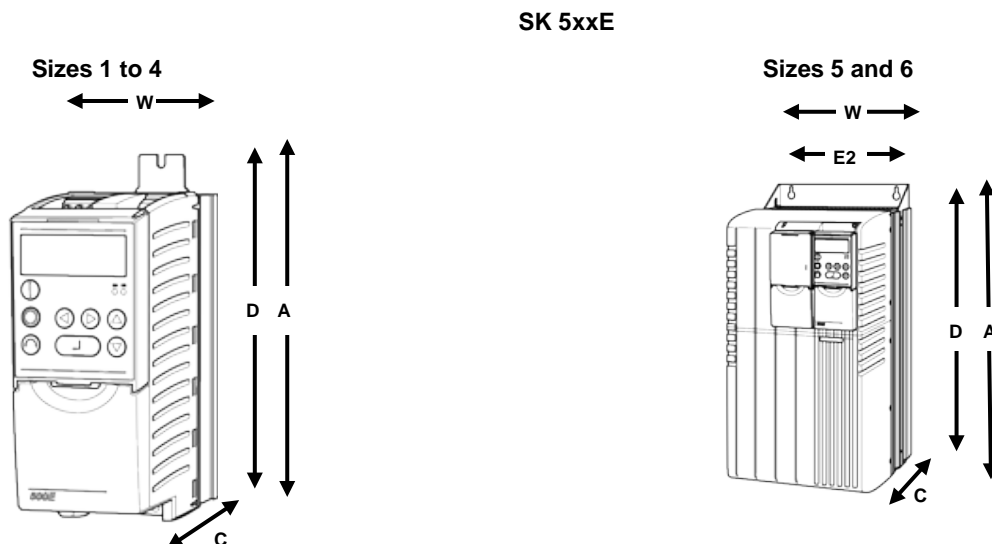


Illustration 21: Dimensioning of NORDAC PRO SK 5xxE

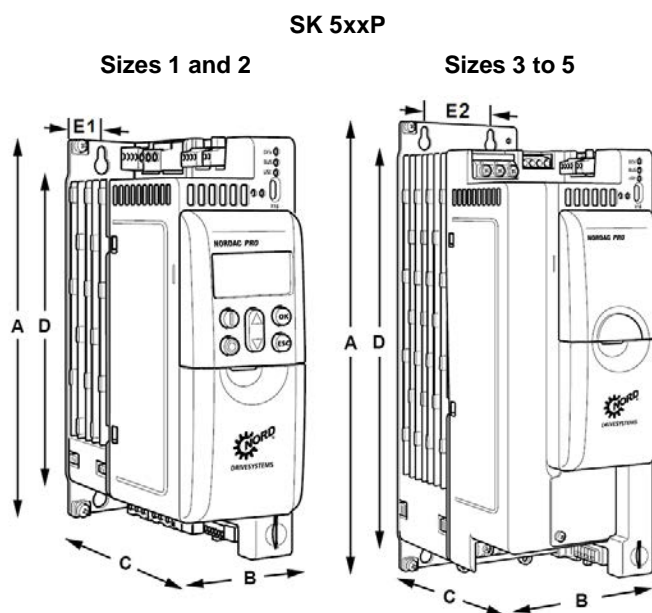


Illustration 22: Dimensioning of NORDAC PRO SK 5xxP

#### Dimensioning legend

<b>A</b>	Total height <sup>1)</sup>
<b>W</b>	Total width <sup>1)</sup>
<b>C</b>	Total depth <sup>1)</sup>
<b>D</b>	Hole spacing length <sup>2)</sup>
<b>E1 / E2</b>	Hole spacing width <sup>2)</sup>

<sup>1)</sup> Delivery state

<sup>2)</sup> Fixing dimensions

### 4.2.1 NORDAC PRO device series

Device types	SK 5xxP-...							
	-250-123-A -250-340-A -370-123-A -370-340-A -550-123-A -550-340-A -750-123-A -750-340-A		Size 1	-111-123-A -111-340-A -151-123-A -151-340-A -221-123-A <sup>1</sup> -221-340-A		Size 2	-301-340-A -401-340-A -551-340-A	
SK 5xxE-...	Dimensioning	[mm]		[mm]		[mm]		
-250-323-A -370-323-A -550-323-A -550-340-A -750-323-A -750-340-A	Size 1 A W C D E1	220 74 153 210 -	200 66 141 180 22					
-111-323-A -111-340-A -151-323-A -151-340-A -221-323-A -221-340-A	Size 2 A W C D E1			260 74 153 250 -	240/255 <sup>1</sup> 66 141 220 22			
-301-340-A -401-340-A	Size 3 A W C D E1 E2					275 98 181 265 -	286 91 175 266 20 50	
-551-340-A	Size 4 A W C D E1 E2					320 98 181 310 -	286 91 175 266 20 50	

<sup>1</sup> Due to the protruding connection terminal, the second declaration of value applies for the SK 5xxP-221-123-A device type.

Table 34: Dimensions of NORDAC PRO sizes from 250 W to 5.5 kW

Device types		SK 5xxP-...				
		-751-340-A -112-340-A	Size 4	-152-340-A -182-340-A -222-340-A	Size 5	
SK 5xxE-...	Dimensioning	[mm]		[mm]		
-751-340-A	Size 4	A	286	331		
		W	98	91		
		C	181	175		
		D	320	311		
		E1	-	20		
		E2	-	50		
-112-340-A -152-340-A	Size 5	A			327	371
		W			162	126
		C			224	232
		D			357	351
		E1			93	22
		E2				83
-182-340-A -222-340-A	Size 6	A			327	371
		W			162	126
		C			224	232
		D			357	351
		E1			93	22
		E2			-	83

Table 35: Dimensions of NORDAC PRO sizes from 7.5 kW to 22.0 kW

### 4.3 Modules and options

#### 4.3.1 SK 5xxE EMC kits



Illustration 23: Dimensioning of SK EMC 2-x EMC kits

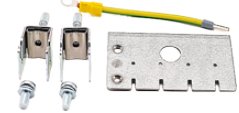
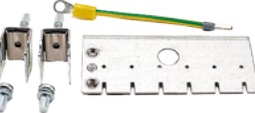


Designation Part No.	Product	Width x Depth [mm]
SK EMC 2-1 275 999 011		73 x 42
SK EMC 2-2 275 999 021		98 x 42
SK EMC 2-3 275 999 031		162 x 52
SK EMC 2-4 275 999 041		180 x 57

Table 36: Dimensions of EMC kits SK EMC-2-x of the SK 5xxE

### 4.3.2 SK 5xxP EMC kits



Illustration 24: Dimensioning of EMC kits SK HE5-EMC-... of the SK 5xxP

#### Motor connection (MS)




Designation Part No.	Product	Height x Width x Depth [mm]
SK HE5-EMC-MS-HS12 275 292 300		120.5 x 32 x 40.5
SK HE5-EMC-MS-HS34 275 292 301		35 x 67 x 28 150.5 x 32 x 34
SK HE5-EMC-MS-HS5 275 292 302		205.5 x 32 x 34

Table 37: Dimensions of motor connection EMC kits SK HE5-EMC-MS-... of the SK 5xxP



### IO ports (IS)



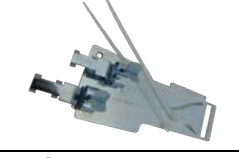

Designation Part No.	Product	Height x Width x Depth [mm]
SK HE5-EMC-IS-HS1 275 292 304		82 x 35.3 x 22
SK HE5-EMC-IS-HS2 275 292 305		108 x 45.8 x 22
SK HE5-EMC-IS-HS34 275 292 306		114 x 45.8 x 22
SK HE5-EMC-IS-HS5 275 292 308		114 x 45.8 x 22

Table 38: Dimensions of IO port EMC kits SK HE5-EMC-IS-... of the SK 5xxP

### Customer unit (CS)

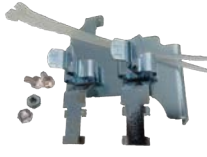

Designation Part No.	Product	Height x Width x Depth [mm]
SK HE5-EMC-CS-HS1 275 292 310		68.3 x 71.1 x 42.5
SK HE5-EMC-CS-HS23 275 292 311		69.3 x 71.1 x 42.5

Table 39: Dimensions of customer unit EMC kits SK HE5-EMC-CS-... of the SK 5xxP

### 4.3.3 Functional SK CU5-... extensions



Designation Part No.	Product	Width x Height x Depth [mm]
SK CU5-STO 275 298 000		65.0 x 145.0 x 23.0
SK CU5-MLT 275 298 200		65.0 x 145.0 x 23.0

Table 40: Dimensions of SK CU5-STO and SK CU5-MLT

## 4.4 Control and parametrisation options

### 4.4.1 Control and parametrisation options




Designation Part No.	Product	Width x Height x Depth [mm]
SK TU5-CTR 275 297 000	 ControlBox	65 x 72.5 x 17.1
SK CSX-3E 275 281 413	 SimpleControlBox	128 x 83 x 33
SK PAR-3E 275 281 414	 ParameterBox	128 x 83 x 33

Table 41: Dimensions for the control and parameterisation units

## 4.5 Accessories

### 4.5.1 NORDAC PRO chassis braking resistors

#### Dimensioning

Vertical design

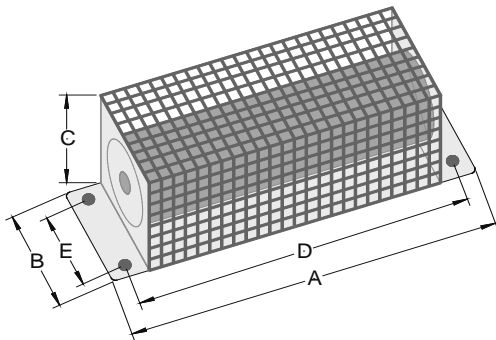


Horizontal design



Illustration 25: Designs of SK BR2-... chassis braking resistors

↗



SK BR2-...  
(Schematic diagram, design varies according to output)  
Vertical or horizontal

Illustration 26: Dimensioning of SK BR2-... chassis braking resistors

Resistor type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK BR2-100/400-C <sup>1</sup> 278 282 040	178	100	252	150	90	4.3
SK BR2-60/600-C <sup>2</sup> 278 282 060	385	92	120	330	64	6.5
SK BR2-30/1500-C <sup>2</sup> 278 282 150	585	185	120	526	150	6.5
SK BR2-22/2200-C <sup>2</sup> 278 282 220	485	275	120	426	240	6.5

<sup>1</sup> vertical

<sup>2</sup> horizontal

Table 42: Dimensions of BR SK BR2-... chassis braking resistors

## 4.5.2 SK 5xxE footprint braking resistors

### Dimensioning

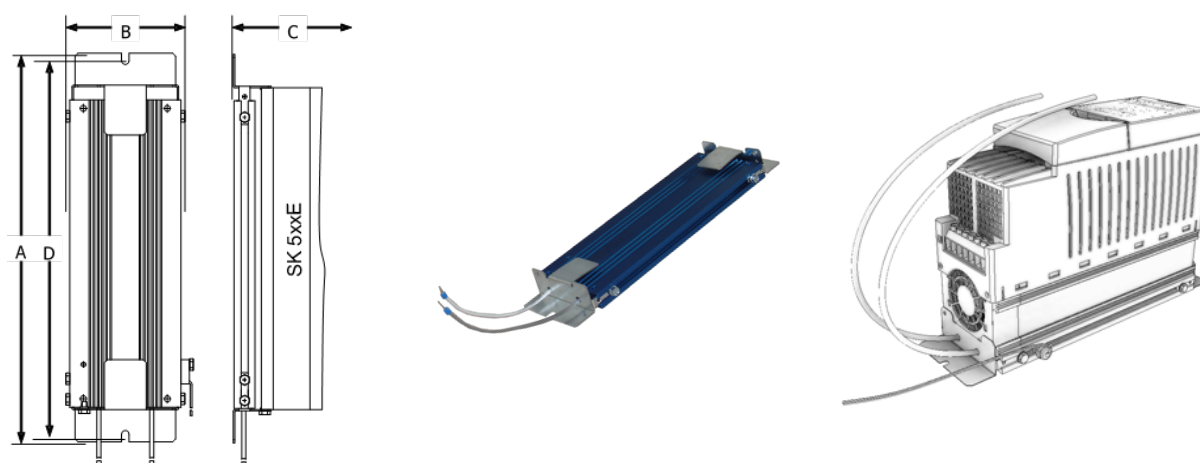


Illustration 27: Dimensioning and assembly of SK BR4-... on SK 5xxE

Resistor type	Size	Overall dimensions [mm]			Fixing dimensions [mm]	
		A	W	C / C+ <sup>1</sup>	D	Ø
SK BR4-240/100 275 991 110 SK BR4-150/100 275 991 115 SK BR4-400/100 275 991 210	Size 1	230	88	27 175	220	5.5
SK BR4-75/200 275 991 110 SK BR4-220/200 275 991 220	Size 2	270	88	27 175	260	5.5
SK BR4-35/400 275 991 140 SK BR4-100/400 275 991 240	Size 3	285	98	27 239	275	5.5
SK BR4-60/600 275 991 260	Size 4	330	98	57.5 239	320	5.5

<sup>1</sup> C+ Installation depth of the SK 5xxE frequency inverter + SK BR4

Table 43: Dimensions of SK BR4 footprint braking resistor

### 4.5.3 SK 5xxP footprint braking resistors

#### Dimensioning



Illustration 28: Dimensioning footprint braking resistors of SK BRU5-... on SK 5xxP

Resistor type	Size	Overall dimensions [mm]			Fixing dimensions [mm]	
		A	W	C / C+ <sup>1</sup>	E <sup>2</sup>	Ø
SK BRU5-1-240-050 275 299 004 SK BRU5-1-400-100 275 299 101	Size 1	240	66	40 181	-	5.5
SK BRU5-2-075-200 275 299 210 SK BRU5-2-220-200 275 299 205	Size 2	280	66	40 181	-	5.5
SK BRU5-3-100-300 275 299 309	Size 3	340	91	50 225	50	5.5
SK BRU5-4-044-400 275 299 512	Size 4	385	90	35 210	-	5.5

<sup>1</sup> C+ Installation depth of the SK 5xxP frequency inverter + SK BRU5

<sup>2</sup> Size 1, Size 2, Size 4: 2 x 1 Attachment point      Size 3: 2 x 2 Attachment points

Table 44: Dimensions of SK BRU5-... footprint braking resistor

### 4.5.4 NORDAC PRO line filters

#### Information

Line filters for the NORDAC PRO SK 5xxP device series are only verified on request.

### 4.5.5 SK 5xxE mains chokes

#### Dimensioning

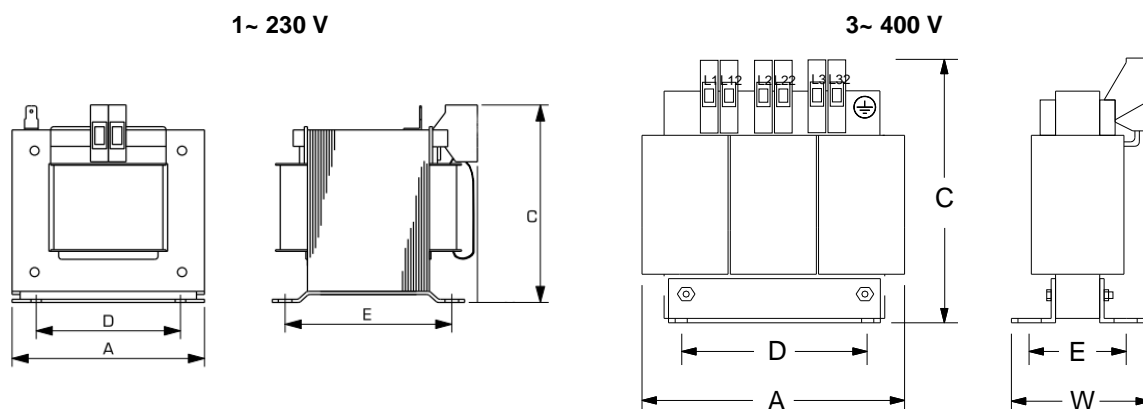


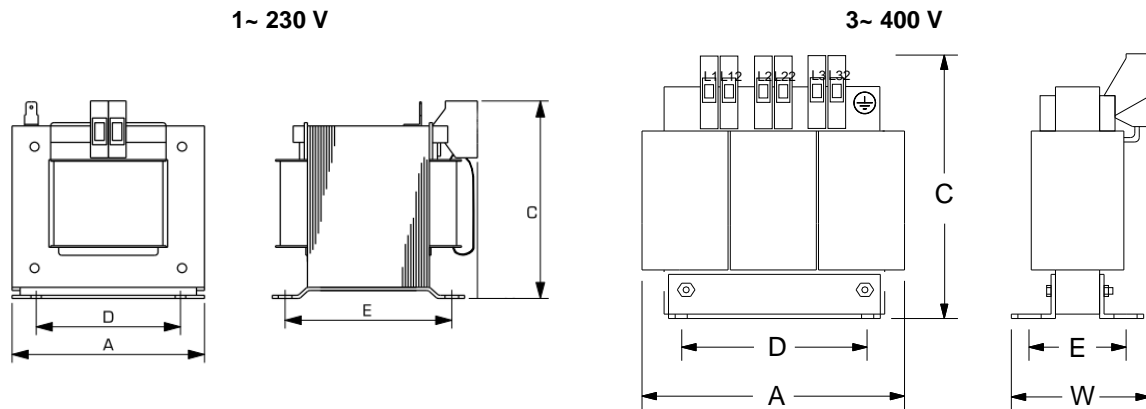
Illustration 29: Dimensioning of SK C11 mains chokes

Choke type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK C11-230/8-C 278 999 030	78	65	89	56	40	4.8
SK C11-230/20-C 278 999 040	96	90	106	84	65	4.8

Table 45: Dimensions of 1~ 230 V SK C11 mains chokes

Choke type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK C11-480/6-C 276 993 006	96	60	117	71	45	4.8
SK C11-480/11-C 276 993 011	120	85	140	105	70	4.8
SK C11-480/20-C 276 993 020	155	110	177	135	95	5.8
SK C11-480/40-C 276 993 040	155	115	172	135	95	5.8
SK C11-480/70-C 276 993 070	185	122	220	136	103	5.8

Table 46: Dimensions of 3~ 400 V SK C11 mains chokes

**4.5.6 SK 5xxP mains chokes**
**Dimensioning**

**Illustration 30: Dimensioning of SK CI5 mains chokes**

Choke type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK CI5-230/006-C 276 993 005	60	66	68	44	39	M3
SK CI5-230/010-C 276 993 009	84	78	96	64	52	M4
SK CI5-230/025-C 276 993 024	84	87	96	64	52	M4

**Table 47: Dimensions of 1~ 230 V SK CI5 mains chokes**

Choke type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK CI5-500/004-C 276 993 004	80	60	116	56 / 71	38 / 45	M4
SK CI5-500/008-C 276 993 008	120	85	135	90 / 105	39 / 70	M4
SK CI5-500/016-C 276 993 016	120	95	135	90 / 105	49 / 80	M4
SK CI5-500/035-C 276 993 035	155	110	167	113 / 135	65 / 95	M5
SK CI5-500/063-C 276 993 063	210	117	241	90 / 170	77 / 101	M6

**Table 48: Dimensions of 3~ 400 V SK CI5 mains chokes**

### 4.5.7 SK 5xxE motor chokes

#### Dimensioning

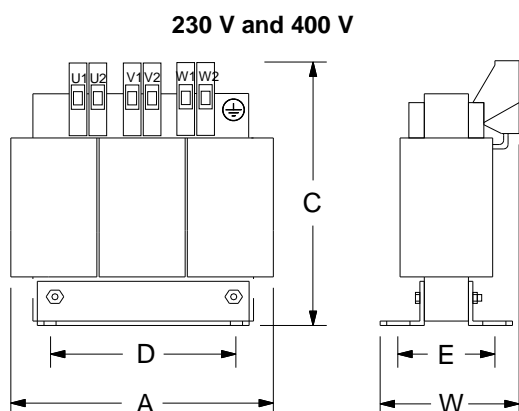


Illustration 31: Dimensioning of SK CO1 motor chokes

Choke type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK CO1-460/4-C 275 996 004	120	104	140	84	75	6.5
SK CO1-460/9-C 275 996 009	155	110	160	130	71.5	6.5
SK CO1-460/17-C 275 996 017	185	102	201	170	57	8
SK CO1-460/33-C 275 996 033	185	122	201	170	77	8
SK CO1-480/60-C 275 992 060	185	112	210	170	67	8

Table 49: Dimensions of 230 V and 400 V SK CO1 motor chokes



### 4.5.8 SK 5xxP motor chokes

#### Dimensioning

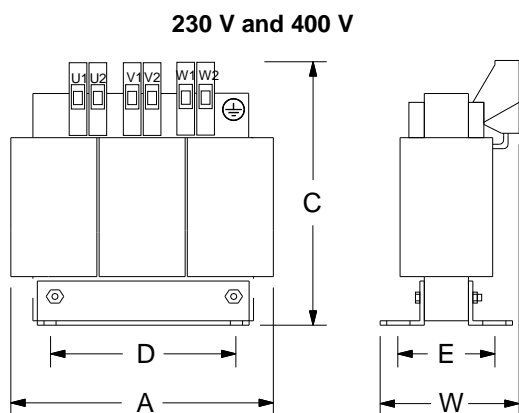


Illustration 32: Dimensioning of SK CO5 motor chokes

Choke type	Overall dimensions [mm]			Fixing dimensions [mm]		
	A	W	C	D	E	Ø
SK CO5-500/002-C 276 992 002	120	85	140	90 / 105	39 / 70	4.8
SK CO5-500/006-C 276 992 006	120	95	160	90 / 105	49 / 80	4.8
SK CO5-500/012-C 276 992 012	155	95	165	113 / 135	50 / 80	5.8
SK CO5-500/024-C 276 992 024	185	112	192	90 / 170	67 / 95	6.2
SK CO5-500/046-C 276 992 046	155	95	165	105 / 175	85 / 108	6.2

Table 50: Dimensions of 230 V and 400 V SK CO5 motor chokes

### 4.5.9 NORDAC PRO link circuit chokes

#### Information

Link circuit chokes for the NORDAC PRO SK 5xxP device series are not available.

## 5 Additional information

In addition to this migration guideline, further information can be found in different categories on the homepage [www.nord.com](http://www.nord.com).

### 5.1 Further documentation

Further documentation on the products mentioned here are available as a supplement to this migration guide.

### 5.1.1 Manuals

For basic information on NORDAC *PRO*, please refer to the respective main manual of the current device series (e.g. BU 0500 for SK 500E).

For further information on field-specific Ethernet-based bus systems (e.g. PROFINET IO®), please refer to the respective supplementary manuals e.g. BU 2400 for PROFINET IO®).

For further information on control and parameterisation units (e.g. SK TU3-PAR or SK PAR-3E), please refer to the BU 0040 manual for control and parameterisation units.

Document	Designation
<a href="#">BU 0000</a>	NORDCON software manual
<a href="#">BU 0040</a>	Control and parameterisation units manual
<a href="#">BU 0050</a>	USS protocol and MODBUS RTU manual
<a href="#">BU 0070</a>	InterBus manual
<a href="#">BU 0090</a>	AS-Interface manual
<a href="#">BU 0500</a>	SK 5xxE (SK 500E ... SK 535E) manual
<a href="#">BU 0505</a>	SK 54xE (SK 540E and SK 545E) manual
<a href="#">BU 0510</a>	POSICON positioning control (SK 530E ... SK 545E) manual
<a href="#">BU 0530</a>	Functional Safety (SK 51xE and ≥ SK 530E) manual
<a href="#">BU 0540</a>	Brief instructions SK 5xxE (SK 500E ... SK 545E) manual
<a href="#">BU 0550</a>	Supplementary PLC NORDAC (all device series) manual
<a href="#">BU 0600</a>	NORDAC <i>PRO</i> SK 500P (SK 500P ... SK 550P) manual
<a href="#">BU 0610</a>	POSICON positioning (SK 500P ... SK 550P) manual
<a href="#">BU 0620</a>	Supplementary NORDAC <i>PRO</i> Industrial Ethernet (SK 550P) manual
<a href="#">BU 0630</a>	Functional Safety (SK 510P, SK 530P, SK 550P and SK CU5-...) manual
<a href="#">BU 0940</a>	NORD S7 standard modules for PROFIBUS DP® and PROFINET IO® manual
<a href="#">BU 0950</a>	TIA standard modules for PROFIBUS DP® and PROFINET IO® manual
<a href="#">BU 0960</a>	NORDAC <i>ACCESS BT</i> and SK TIE5-BT-STICK manual
<a href="#">BU 0970</a>	RSLogix 5000® manual / Studio 5000® add-on instructions
<a href="#">BU 2100</a>	Supplementary EtherNet/IP® bus interface manual
<a href="#">BU 2200</a>	Supplementary POWERLINK bus interface manual
<a href="#">BU 2300</a>	Supplementary EtherCAT® bus interface manual
<a href="#">BU 2400</a>	Supplementary PROFINET IO® bus interface manual
<a href="#">BU 2500</a>	Supplementary CANopen® bus interface manual
<a href="#">BU 2600</a>	Supplementary DeviceNet™ bus interface manual
<a href="#">BU 2700</a>	Supplementary PROFIBUS DP® bus interface manual
<a href="#">BU 2800</a>	Supplementary PROFIsafe bus interface manual
<a href="#">BU 2900 in prep.</a>	Supplementary Industrial Ethernet for frequency inverters manual

## 5.1.2 Technical information/Data sheets

Basic information on some additional components, e.g. braking resistors and EMC line filters, or adapter and connecting cables used for the listed frequency inverter series, are documented in separate technical information/data sheets (e.g. TI 275900210 for the IO extension SK EBIOE-2).

### Options and modules

Document	Designation
<a href="#">TI 275900210</a>	Tech. information/data sheet SK EBIOE-2 IO extension
<a href="#">TI 275900075</a>	Tech. information/data sheet CANopen® SK TU3-CAO
<a href="#">TI 275900085</a>	Tech. information/data sheet DeviceNet™ SK TU3-DEV
<a href="#">TI 275900030</a>	Tech. information/data sheet PROFIBUS DP® SK TU3-PBR
<a href="#">TI 275900160</a>	Tech. information/data sheet PROFIBUS DP® SK TU3-PBR-24V
<a href="#">TI 275900180</a>	Tech. information/data sheet EtherCAT® SK TU3-ECT
<a href="#">TI 275900150</a>	Tech. information/data sheet ETHERNET IP® SK TU3-EIP
<a href="#">TI 275900140</a>	Tech. information/data sheet POWERLINK SK TU3-POL
<a href="#">TI 275900190</a>	Tech. information/data sheet PROFINET IO® SK TU3-PNT
<a href="#">TI 275298000</a>	Tech. information/data sheet Safety extension SK CU5-STO
<a href="#">TI 275298200</a>	Tech. information/data sheet Multi extension SK CU5-MLT
<a href="#">TI 275999011</a>	Tech. information/data sheet EMC kit SK EMC2-1
<a href="#">TI 275999021</a>	Tech. information/data sheet EMC kit SK EMC2-2
<a href="#">TI 275999031</a>	Tech. information/data sheet EMC kit SK EMC2-3
<a href="#">TI 275999041</a>	Tech. information/data sheet EMC kit SK EMC2-4
<a href="#">TI 278910120</a>	Tech. information/data sheet Handheld control box SK POT1-1
<a href="#">TI 278910140</a>	Tech. information/data sheet Handheld control box SK POT1-2
<a href="#">TI 278910310</a>	Tech. information/data sheet Signal converter 0 - 10 V → Frequency signal
<a href="#">TI 278910315</a>	Tech. information/data sheet Signal converter 0 - 10 V → 0 - 20 mA
<a href="#">TI 278910320</a>	Tech. information/data sheet Signal converter -10 ... +10 V → 0 - 10 V
<a href="#">TI 278910340</a>	Tech. information/data sheet Connection kit HTL encoder WK 4/2/4*680 Ω
<a href="#">TI 278910360</a>	Tech. information/data sheet Adapter module Level adapter HTL - RS422
<a href="#">TI 275274603</a>	Tech. information/data sheet Signal converter RS485 – RS232, IP20
<a href="#">TI 275274604</a>	Tech. information/data sheet Signal converter RS232-USB, IP20
<a href="#">TI051_275274601</a>	Tech. information/data sheet Connecting cable SK TIE4-RJ12-RJ12
<a href="#">TI059_19140990</a>	Tech. information/data sheet Electronic brake rectifier SK EBGR 1
<a href="#">TI 70-1801</a>	Tech. information Additional information SK 5xxP, 7.5 kW
<a href="#">TI 80-0010</a>	Tech. information Planning and commissioning guideline IE4 motors
<a href="#">TI 80-0011</a>	Tech. information EMC-compliant installation of NORD components
<a href="#">TI 80-0019</a>	Tech. information Dimensioning of the protective conductor
<a href="#">TI 80-0020</a>	Tech. information Climate classes
<a href="#">TI 80_0026</a>	Tech. information Smart Oil Change

### Accessories

Document	Designation
<a href="#">TI 2752923xx</a>	Tech. information/data sheet EMC kits SK HE5-EMC-...
<a href="#">TI 276993xxx</a>	Tech. information/data sheet Mains chokes SK CI5-xxx/xxx-C
<a href="#">TI 276992xxx</a>	Tech. information/data sheet Mains chokes SK CO5-xxx/xxx-C
<a href="#">TI 275299004</a>	Tech. information/data sheet Footprint braking resistor SK BRU5-1-240-050
<a href="#">TI 275299101</a>	Tech. information/data sheet Footprint braking resistor SK BRU5-1-400-100
<a href="#">TI 275299205</a>	Tech. information/data sheet Footprint braking resistor SK BRU5-2-220-200
<a href="#">TI 275299210</a>	Tech. information/data sheet Footprint braking resistor SK BRU5-2-075-200
<a href="#">TI 275299309</a>	Tech. information/data sheet Footprint braking resistor SK BRU5-3-100-300
<a href="#">TI 275299512</a>	Tech. information/data sheet Footprint braking resistor SK BRU5-4-044-400
<a href="#">TI 278282040</a>	Tech. information/data sheet Chassis braking resistor SK BR2-100/400-C
<a href="#">TI 278282060</a>	Tech. information/data sheet Chassis braking resistor SK BR2-60/600-C
<a href="#">TI 278282150</a>	Tech. information/data sheet Chassis braking resistor SK BR2-30/1500-C
<a href="#">TI 278282220</a>	Tech. information/data sheet Chassis braking resistor SK BR2-22/2200-C
On request	Tech. information/data sheet Footprint braking resistor SK BR4-240/100
On request	Tech. information/data sheet Footprint braking resistor SK BR4-150/100
On request	Tech. information/data sheet Footprint braking resistor SK BR4-75/200
<a href="#">TI014_275991140</a>	Tech. information/data sheet Footprint braking resistor SK BR4-35/400
On request	Tech. information/data sheet Footprint braking resistor SK BR4-400/100
On request	Tech. information/data sheet Footprint braking resistor SK BR4-220/200
<a href="#">TI014_275991240</a>	Tech. information/data sheet Footprint braking resistor SK BR4-100/400
<a href="#">TI014_275991260</a>	Tech. information/data sheet Footprint braking resistor SK BR4-60/600
<a href="#">TI 278272008</a>	Tech. information/data sheet Chassis line filter SK HLD 110-500/8
<a href="#">TI 278272016</a>	Tech. information/data sheet Chassis line filter SK HLD 110-500/16
<a href="#">TI 278272030</a>	Tech. information/data sheet Chassis line filter SK HLD 110-500/30
<a href="#">TI 278272042</a>	Tech. information/data sheet Chassis line filter SK HLD 110-500/42
<a href="#">TI 278272055</a>	Tech. information/data sheet Chassis line filter SK HLD 110-500/55
<a href="#">TI 278272075</a>	Tech. information/data sheet Chassis line filter SK HLD 110-500/75
<a href="#">TI 278273003</a>	Tech. information/data sheet Footprint combined line filter SK NHD-480/3-F
<a href="#">TI 278273006</a>	Tech. information/data sheet Footprint combined line filter SK NHD-480/6-F
<a href="#">TI 278273010</a>	Tech. information/data sheet Footprint combined line filter SK NHD-480/10-F
<a href="#">TI 278273016</a>	Tech. information/data sheet Footprint combined line filter SK NHD-480/16-F
<a href="#">TI 278273002</a>	Tech. information/data sheet Footprint line filter SK LF2-480/2-F 500 E Size 1
<a href="#">TI 278273005</a>	Tech. information/data sheet Footprint line filter SK LF2-480/5-F500 E Size 2
<a href="#">TI 278273009</a>	Tech. information/data sheet Footprint line filter SK LF2-480/9-F500 E Size 3
<a href="#">TI 278273015</a>	Tech. information/data sheet Footprint line filter SK LF2-480/15-F500 E Size 4
<a href="#">TI 278273045</a>	Tech. information/data sheet Footprint line filter SK LF2-480/45-F500 E Size 5
<a href="#">TI 278273066</a>	Tech. information/data sheet Footprint line filter SK LF2-480/66-F500 E Size 6





For further information on the accessory components (e.g. chokes, braking resistors and line filters) please refer to the NORDAC *PRO* manuals (BU 0500, BU 0505 and BU 0600).

If you require further information on the additional components, please contact the Getriebebau NORD GmbH & Co. KG service/technical support.

Further manufacturer-specific data sheets may be provided on request.

### 5.1.3 Product flyers/brochures

For summarised product information on the NORDAC *PRO* SK 5xxE and SK 5xxP frequency inverters, the different bus interfaces, options and the corresponding accessory components (e.g. chokes, braking resistors or line filters), please refer to the assigned product flyers.

Document	Designation
 <a href="#">E 3000</a>	Catalogue NORDAC electronic drive technology
 <a href="#">F 3050</a>	Flyer NORDAC <i>PRO</i> SK 500E control cabinet inverter
 <a href="#">F 3060</a>	Flyer NORDAC <i>PRO</i> SK 500P control cabinet inverter
 <a href="#">Technical information</a>	Training manual - Technical information

### 5.1.4 Spare parts lists

Among others, the product spare parts lists are available for planning and migration of the NORDAC product components. An overview of the available spare parts lists can be found on our homepage at Documentation:

[Spare parts lists](#)

### 5.1.5 Certificates

The certificates of the below-mentioned categories are available on the homepage at [Certificates](#) (Main page ⇒ Documentation ⇒ Certificates).

---

#### Information

You can gain fastest access to the certificates via the rapid access and the selection of the respective category:

- Electronic drive technology
  - Declaration of Conformity
  - Safe function
  - ATEX
  - CE
  - UL
  - CSA
  - RoHS
-

## 5.2 Software

The below-mentioned software products are available free of charge on the homepage at [Software](#) (Main page ⇒ Documentation ⇒ Software).

### Information

Getriebebau NORD GmbH & Co. KG does not accept any warranty for the installation and usage of the following software products.

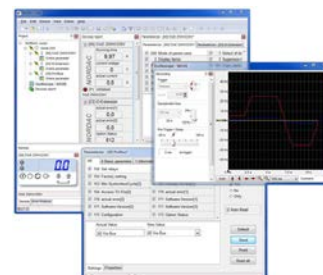
- NORDCON, NORDCON APP
- NORDAC options
- Device master data for field bus systems
- NORD TIA Portal standard modules
- NORD S7 Siemens standard modules
- NORD SISTEMA libraries
- ePLAN MACROS

### 5.2.1 NORDCON

For programming and operation of NORDAC electronic drive technology, computer-based software is available for download at [www.nord.com](http://www.nord.com).

The NORDCON software comprises the parametrisation of motor starters, frequency inverters as well as technology and customer units.

The software includes the following features:



- User-friendly parametrisation
- Simple commissioning of the drive
- Drive analysis via oscilloscope function
- PLC programming of the drive-based, integrated PLC 61131-3
- PLC programming, structured text (ST), PLCopen Motion Control library

For further information, please refer to the link listed below.

Software	Description	Version
<a href="#">NORDCON</a>	The NORDCON software is a program for computer applications for controlling and parameterising frequency inverters from Getriebebau NORD GmbH & Co. KG. The communication with electronic drive technology devices is realised via the computer's serial SUB-D9 interface or a normal USB adapter via the USB interface.	≥ 2.7

Table 51: NORDCON software



5.2.2 NORDCON APP

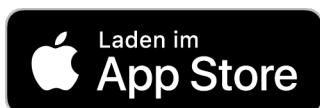
For the mobile commissioning and service solution of NORDAC electronic drive technology devices, a software app for mobile terminal devices is available for download at [www.nord.com](http://www.nord.com).

The NORDCON APP is a dashboard-based visualisation

- for drive monitoring and fault diagnosis
- Parameterisation with help function + rapid access to parameters
- Oscilloscope function for drive analysis
- Backup and recovery function for simple handling of drive parameters



This software-based APP is available for iOS and Android.



For further information, please refer to the links listed below.


Software	Description	Version
<a href="#">NORDCON APP</a>	<p>NORDCON APP software is an application for mobile terminal devices for commissioning and service analysis of NORDAC devices from Getriebebau NORD GmbH &amp; Co. KG.</p> <p>The communication with electronic drive technology devices is realised with NORDAC ACCESS BT via a wireless Bluetooth connection.</p> <p> <a href="#">QUICK-START (S9090)</a></p>	≥ 1.0

Table 52: NORDCON APP

### 5.2.3 NORDAC ACCESS BT

NORDAC ACCESS BT is the mobile Bluetooth access for electronic drive technology devices from Getriebebau NORD GmbH & Co. KG. It is used for wireless connection of devices to a mobile terminal device.

Monitoring, parameterisation and analysis of the connected device can be carried out using the free NORDCON APP software.

Furthermore, NORDAC ACCESS BT can be used to exchange parameter data

- between two identical devices
- via an USB port to a computer.



For further information, please refer to the links listed below.


Product	Description	Version
<a href="#">NORDCON APP</a>	<p>Monitoring, parameterisation and analysis of NORD electronic drive technology devices via Bluetooth (mobile terminal device with NORDCON APP software required).</p> <ul style="list-style-type: none"> <li>• Integrated data storage for parameter data exchange</li> <li>• Mechanical switch to activate write protection (LOCK)</li> <li>• RJ12 plug connector for connection to the device (RS485 communication)</li> <li>• USB Type A plug connector for connection to a computer</li> <li>• Three multi-colour LEDs as status and operation indicators</li> <li>• Two operating keys (data transfer for upload and download)</li> </ul> <p> <a href="#">QUICK-START (S9090)</a></p>	≥ V1.0R1

Table 53: NORDAC ACCESS BT

### 5.2.4 Field bus files

For planning and programming the different field bus systems and bus interfaces, several software files for integration into different automation systems are available for download for the NORDAC *PRO* device series at [www.nord.com](http://www.nord.com).



The NORDAC options comprise the manufacturer and device-specific information and parameters required for connecting the NORD products' bus system-specific field bus systems and bus interfaces to the respective used bus system.

For further information, please refer to the link listed below or to the assigned "readme" text files on the homepage.

Software	Description	Version
<a href="#">Field bus files</a>	<p>NORDAC field bus files are software files that are assigned to bus systems (such as PROFIBUS DP® – GSD, CANopen® – EDS, EtherCAT® – XML, etc.) and provided for planning system-specific automation projects with frequency inverters from Getriebebau NORD GmbH &amp; Co. KG.</p> <p>The software files are assigned to the available field bus systems of the different NORDAC device series.</p> <p>The implementation of the software files is done via integration into the control or automation software of the respective bus system manufacturer.</p>	Depends on the software and system

### 5.2.5 S7 modules

For PLC controls from SIEMENS, standardised S7 modules are available for planning and migration of the NORDAC product components. These manufacturer-specific modules can be imported into the Simatic hardware configurator.

For support, NORD provides modules that contain the relevant information for the device series.

An overview of the available S7 modules can be found on our homepage at Software:

[NORD S7 standard modules](#)

### 5.2.6 TIA portal

For PLC controls from SIEMENS, standardised modules are available for planning and migration of the NORDAC product components. These manufacturer-specific modules can be imported into the TIA planning tool.

For support, NORD provides a library that contains the relevant information for the device series.

An overview of the available modules can be found on our homepage under Software:

[NORD TIA standard modules](#)

### 5.2.7 NORD SISTEMA - Libraries

Among others, the Windows-based software assistant SISTEMA is available for planning and migration of the NORDAC product components. These manufacturer-specific modules can be imported into the SISTEMA software assistant. It is used for the safety evaluation of controls in the context of DIN EN ISO 13849-1.

Safety functions that have been realised or are to be realised can be modelled and evaluated. The results are the reliability values and the achieved performance level (PL).

For support, NORD provides a library that contains the relevant key figures for the calculation.

An overview of the available modules can be found on our homepage under Software:

[NORD SISTEMA - Libraries](#)

### 5.2.8 ePLAN macros

For the planning and creation of circuit diagrams, the respective ePLAN macros are available for download at [www.nord.com](http://www.nord.com) for NORDAC electronic drive technology products. The macros allow an easy integration of frequency inverters and options into your circuit and wiring diagrams.



The macros contain files in .edz format. In ePLAN, these can be converted into .dxf or .pdf files.

For further information, please refer to the link listed below.

Software	Description	Version
<a href="#">ePLAN macros</a>	ePLAN macros from NORD are available for planning and documentation of electronic automation projects for frequency inverters from Getriebebau NORD GmbH & Co. KG.	ePLAN P8

### **5.3 CAD data**

#### **5.3.1 3D model**

The STEP 3D models of the frequency inverters and some additional components can be automatically generated via the homepage under the CAD data tab. Different formats like .dxf, .igs, .obj, .sat or .stp are available for download.

In case of any queries, please contact the Getriebebau NORD GmbH & Co. KG service/technical support.

#### **5.3.2 Outline drawings**

The products' outline drawings are available for download in .dxf format.

#### **5.3.3 Dimensioned drawings**

The products' dimensioned drawings are available for download in .pdf and .dxf formats.

## 5.4 myNORD portal

Among others, the myNORD portal is available for configuration and planning of the NORDAC product components.

It is possible to view your recent configurations and orders as well as quickly access the most important information regarding your products and services via your account overview.

Further information on the portal can be found in the portal overview on our homepage:

[myNORD dashboard](#)

You can find the following categories and get information via the portal:

- Product Selection
- Orders & Quotes
- Online Service
- Portal
- E-shop
- Account

### 5.4.1 E-shop

In the e-shop, different functions are available for planning and migration of the NORDAC product components. An overview of the available tools can be found on our homepage at myNORD:

[E-shop](#)

Here you can find information about the categories

- Spare part identification
- Parts catalogues
- Part number search

## 5.5 Product configurator

Among others, the product configurator is available for planning and migration of the NORDAC product components. Please find the planning aids using the configurator on our homepage at:

[NORD product configurator](#).

The product configurator can be used to generate the available drawings and CAD files in different formats.

- 3D models
- Outline drawings
- Dimensioned drawings

## 6 Appendix

### 6.1 List of abbreviations

Abbreviations used in this guide:

Abbreviation	Meaning
3E	Installation
3H	Handheld
AG	Absolute encoder
AIN	Analogue input
AOUT	Analogue output
AS (AS1)	AS-Interface
BT	Bluetooth stick
BW	Braking resistor
CAD	Computer-aided drafting
CAN	Controller Area Network
CAO	Controller Area Network, higher protocol
CI	Mains choke type/designation
CO	Motor choke type/designation
CSX	SimpleControlBox
CTR	ControlBox
CU	Customer unit
DCL	Link circuit choke type/designation
DEV	DeviceNet
ECT	EtherCAT
EIP	EtherNet/IP
EMC	Electromagnetic compatibility
FI	Frequency inverter
HLD	Chassis line filter type/designation
HTL	High-Threshold Logic
IBS	InterBus
IP	Internet protocol
IP	Protection class
I/O	Input, Output
LCD	Liquid-crystal display
LED	Light-emitting diode
LF2	Line filter type/designation
NHD	Footprint line filter type/designation combined filter
PAR	ParameterBox
PBR	PROFIBUS DP
PNT	PROFINET IO
POL	POWERLINK
POS	POSICON
POT	PotentiometerBox
RS232	Serial 232 interface

Abbreviation	Meaning
RS422	Serial 422 interface
RS485	Serial 485 interface
SH	Safe stop
SK	Schlicht & Küchenmeister
SIN/COS	Sine/Cosine encoder type
SS1	Safe Stop 1 time-controlled
SSI	Synchronous Serial Interface
STO	Safe Torque Off
TI	Technical information/Data sheet
TTL	Transistor–transistor logic
TU	Technology unit
UB	Footprint
UL	Certification
USB	Universal serial bus
USS	Universal serial interface



## 6.2 Technical support

For further information on these documents or other potential applications, please contact the Getriebbau NORD GmbH & Co. KG [Service](#).

Further required information or software files (e.g. special software versions or firmware for software updates) may be provided to the user on request after technical consultation.

## 6.3 Service notes

For service/repair cases please contact your NORD Service contact person. You will find your contact person listed on your order confirmation. Additionally you will find further possible contact persons using the following link: <https://www.nord.com/en/global/locatortool.jsp>.

When contacting our technical support please have the following information available:

- Device type (name plate/display)
- Serial number (name plate)
- Software version (parameter P707)
- Information regarding accessories and options used

If you would like to send the device in for repair please proceed as follows:

- Remove all non-original parts from the device.

NORD accepts no liability for any attached parts such as power cables, switches or external displays.

- Back up the parameter settings before sending in the device.
- State the reason for returning the component/device.
  - You can obtain a return note from our web site ([Link](#)) or from our technical support.
  - In order to rule out the possibility that the cause of a device fault is due to an optional module, the connected optional modules should also be returned in case of a fault.
- Specify a contact person for possible queries.



### Information

#### Factory settings of parameters

Unless otherwise agreed, the device is reset to the factory settings after inspection or repair.

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