

GETRIEBEBAU NORD

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SK CU5-STO

Part number: 275 298 000

Optional modules – Functional safety



The customer unit SK CU5-STO described below may only be installed and commissioned by qualified electricians. A qualified electrician is a person who, because of their technical training and experience, has sufficient knowledge with regard to

- Switching on, switching off, disconnection, earthing and labelling of electric circuits and devices,
- Correct maintenance and use of protective devices according to specified safety standards.

DANGER


Danger of electric shock

The frequency inverter has a hazardous voltage for up to 5 minutes after it has been switched off.

- Only carry out work when the frequency inverter has been disconnected and at least 5 minutes have elapsed since the mains was switched off!

NOTICE

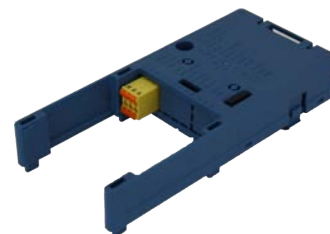
Validity of document

This document is only valid in combination with the operating instructions BU 0600 for the NORDAC PRO frequency inverter SK 500P and the supplementary instructions BU 0630 functional safety ( "Further documentation and software (www.nord.com)"). Only these documents contain all of the information that is required for safe commissioning of the modules and the frequency inverter.

Technical Information / Datasheet	SK CU5-STO			
NORDAC PRO (SK 500P series)	275298000	1.1	0224	en

Scope of delivery

1 x	Customer unit	SK CU5-STO
1 x	Screw for fastening the module to the frequency inverter	



Field of use

Plug-in customer unit for functional extension of a NORDAC *PRO* series frequency inverter of device types SK 530P and SK 550P. This module can be mounted on the front side of the frequency inverter. A plug-in 2-channel connection and 1 safe digital input are available on the module for functional safety requirements. The module ensures safe shut-down methods for Safe Pulse Block and Safety Digital Input to execute the STO and SS1-t stop functions.

Technical Data

Module

Temperature range	-10°C ... +50°C
Temperature class	Class 3k3
Protection class	IP20
Max. installation altitude above sea level	≤ 2000 m

Vibration resistance	3M4
Hardware version	AA
Dimensions [mm] H x W x D	145 x 65 x 23

“Safe Pulse Block” and “Safety Digital Input”

You will find the data in the supplementary manual [BU 0630](#).

Installation

Installation of the SK CU5-STO must be carried out as follows:

1. Switch off the mains voltage and observe the waiting period.
2. Push the control terminal cover down and remove it.
3. Remove the blank cover by activating the release mechanism at the lower edge and removing it with an upward rotating movement.
4. Break out the internal jumper of the STO contact with the aid of a small screwdriver or small needle-nose pliers. Otherwise the customer unit cannot be installed.



Screwdriver max.
2.5 mm



Needle-nosed pliers



STO contact jumper



Frequency inverter
without STO contact
jumper

5. Hook the customer unit onto the upper edge and press in lightly until it engages. Take care that the connector strip makes proper contact.
6. Screw the module firmly to the frequency inverter using the enclosed screw!
7. Install the control terminals and blank cover.



Remove the control
terminals and blank
cover.



Remove the STO
contact jumper.



Install the SK CU5-STO
customer unit.



Install the control
terminals and blank
cover.

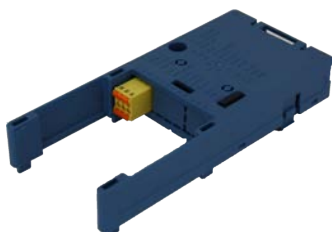
Information

Once the jumper of the STO contact has been removed, the frequency inverter cannot be operated with functional safety without customer unit SK CU5-STO.

Wiring guidelines

If flexible cables (multiple strand or fine-wire) are used for connections on the terminal block X20, wire end sleeves must be used. In addition, the wiring guidelines in the SK 500 frequency inverter manual BU 0600 and the supplementary instructions BU 630 "Further documentation and software (www.nord.com)" apply.



Electrical connection



X20: Functional safety: STO, SS1-t

The electrical connection of the functional safety is established at the customer unit SK CU5-STO via connection terminals on the terminal block X20.

The appropriate contacts must be used depending on the functional safety function in use.


Terminal block X20	Designation	No.	Description
 Top view	VIS2_24V	92	24 V STO input 2 (SI2)
	VIS12_0V	93	Reference potential for STO inputs (SI1/2)
	VISD_24V	94	Safety Digital Input
 Bottom view	VIS12_0V	93	Reference potential for STO inputs(SI1/2)
	VIS1_24V	91	24 V STO input 1 (SI1)
	VISD_0V	95	Reference potential for the Safety Digital Input

Terminals: Push-in, wire stripping length 10 mm
Cross section: 0.2 mm²... 1.5 mm², AWG 24 ... 16, rigid
 0.25 mm²... 1.5 mm², AWG 24 ... 16, flexible with wire end sleeve

Cross section [mm ²]	Wire end sleeve length without insulating collar according to DIN 46228-1 [mm]	Wire end sleeve length with insulating collar according to DIN 46228-4 [mm]
0.25	5 ... 7	8 ... 10
0.34	7	8 ... 10
0.50	8 ... 10	8 ... 10
0.75	8 ... 10	8 ... 10
1.00	8 ... 10	-
1.50	10	-

Two wires with the same cross section are not possible.

Information

All information on electrical connections can be found in the SK 500P frequency inverter manual BU 0600 as well as in the supplementary instructions BU 0630  "Further documentation and software (www.nord.com)".

EMC-compliant shield connection

If shielded connection cables are used, the terminal connection cables must always be connected on both sides. The connection can be made as follows:

- Shielding on the rear wall of the control cabinet
- Use of EMC kits

Depending on size and type or configuration level of the frequency inverter, two different optional EMC kits of type SK HE5-EMC-... can be used for connection. The EMC kits are divided into three different categories and depend on size.



SK 550P without blank covers



SK 550P with mounted SK CU5-STO




SK HE5-EMC-MS-HS12
SK HE5-EMC-CS-HS23




Detailed view of mounted EMC kits

Information

The EMC kits used for connection to the customer unit (SK HE5-EMC-CS-...) can only be mounted and used in conjunction with those for motor connection (SK HE5-EMC-MS-...). Detailed information can be found in the technical information on EMC kits  "Further documentation and software (www.nord.com)".


Commissioning of functional safety

Information

All information on the commissioning of the device, operating status messages or error messages related to the customer unit or the functional safety function can be found in the SK 500P frequency inverter manual BU 0600 as well as in the supplementary instructions BU 0630  "Further documentation and software (www.nord.com)".

Parameter overview

 Information

All information on parametrisation can be found in the SK 500P frequency inverter manual BU 0600 as well as in the supplementary instructions BU 0630  "Further documentation and software (www.nord.com)".

 Information


Restricted visibility of parameters with external 24 V supply

Via terminal 44 the device can be externally supplied with 24 V (X6). This enables the values of most parameters to be read out and changed by the usual parameterisation methods. However, this does not apply for all parameters. The available display range is limited and essentially consists of the setting values for bus communication (Ethernet, CANopen, USS). The device status is not available if the mains supply is not connected (X1). Except for the communication sector, the device is therefore in a switched-off state. For complete diagnosis of the device, a mains supply (X1) is required (230 V for single phase devices, 400 V for 3-phase devices).

Error messages

Error messages that occur in connection with the customer unit are displayed in the frequency inverter's error memory in parameter **P700/P701**.

 Information

Error messages of the optional modules can be found in the SK 500 frequency inverter manual BU 0600 and the supplementary instructions BU 0630  "Further documentation and software (www.nord.com)".

Further documentation and software (www.nord.com)

Document	Description	Document	Description
BU 0600	Manual for frequency inverter NORDAC PRO SK 5xxP	TI 2752923xx	Technical information EMC kits for SK HE5-EMC-xx-...
BU 0630	Supplementary instructions Functional safety for frequency inverter NORDAC PRO SK 5xxP		