GETRIEBEBAU NORD
Member of the NORD DRIVESYSTEMS Group

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SK BRE4-1-400-100

Part number: 275 273 012

External brake resistor for direct mounting to decentralised frequency inverters

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

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

⚠ DANGER!

Danger of electric shock

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

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

⚠ CAUTION

Danger of burns

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

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

NOTICE

Validity of this document

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

Scope of supply

Module		
1 x	**Braking resistor**	Incl. guard (metal grating)
1 x	**Mounting bracket**	BRE
4 x	**Fastening screw**	M4x8
1 x	**Connection reduction**	M25 / M20, brass
1 x	**Cable gland**	M20x1.5 incl. sealing insert, brass
1 x	**Connection cables**	3-wire
1 x	**Protective sleeve**	0.2 m
1 x	**Sealing ring**	M20 with 3x4 mm aperture

Field of use

Dynamic braking (frequency lowering) of a three-phase motor via a frequency inverter results in generator braking energy that – depending on the application case – is dissipated by a braking resistor. This superfluous energy is transformed into heat.

The braking resistor is designed for the NORDAC *BASE* SK 180E and NORDAC *FLEX* SK 200E series of units and depends on the mains voltage and the power.

Technical Data

Electrical data

Number of leads		3
Resistance (GYADU)	Ω	400

Max. continuous power P_n	W	100
Energy consumption P_{max} 1)	kWs	2.2

[1] The value given applies to a single use within 120 s.

General

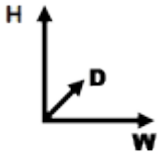
Temperature range	°C	0 … 40 (100 % duty cycle/S1) 0 … 50 (70 % duty cycle/S3)
Tightening torque		
Screws		0.6 – 1.2
Cable gland M20		1.5 – 2.0
Reduction M25/M20		1.5 – 2.0
Weight	kg	0.7

Certifications	CE, UR, RoHS
Protection class	IP67
Mounting 1)	
Mounting bracket	4 x M4 x 8 (size 7)

[1] included in the scope of supply

Dimensions

Envelope dimensions [mm]	W x H x D	149 x 178 x 61
Cable / line [mm]		
Lead green / grey / white	L	350 / 370 / 400
Wire end sleeve	L	10



Connections

Name	**PE connection**		**B-**	**B+**
Cross section / type	AWG 14/19			
Wire colour	Green	Yellow	White	Grey
Terminal label	PE		Power terminal B-	Power terminal B+
Tightening torque				
SK 1x0E	0.5 – 0.6 Nm			
SK 2xxE	1.2 – 1.5 Nm			

Frequency inverter assignment

Information

Overview in the manual

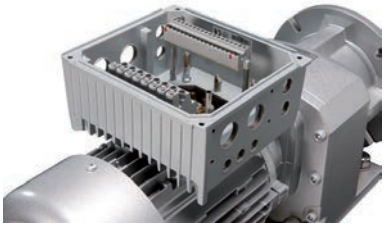
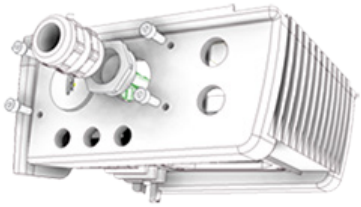
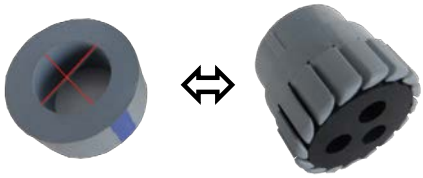
The braking resistors provided by the NORD DRIVESYSTEMS Group are directly tailored to the individual frequency inverters. However, when external braking resistors are being used, it is usually possible to select between 2 or 3 alternatives.

For detailed information, please refer to chapter 🕮 Electric data for brake resistors of the respective frequency inverter manual "Further documentation and software: www.nord.com".

Installation

Installation location	Direct installation on a decentralised, motor-mounted frequency inverter: • Sideways of the frequency inverter
Installation orientation	Lateral installation (standard position: option slot 3R, alternatively 3L) on the frequency inverter
Fastening	With screws (fastening material is included)

Installation steps

1.	Installing the frequency inverter The SK 2xxE frequency inverter is not yet installed on the SK TI4 connection unit or the SK 1x0E on the motor terminal box.	
2.	Installing the external brake resistor The brake resistor is installed on the right or left side of the frequency inverter (option slot 3R or 3L) with the 4 supplied M4 fastening screws. • Install it to the SK TI4 connection unit of the SK 2xxE with the 4 supplied M4 fastening screws • or mount it to the housing of the SK 1x0E frequency inverter	
3.	Route the connecting cable into the frequency inverter through one of the M25 openings. • **Caution:** Replace the clamping seal of the cable gland with the black sealing insert • Fit the M25/M20 cable gland reduction (preferably option slot 3AR, alternatively 3AL) • Insert the connecting cable through the M20 cable gland • Route the three leads of the cable through the black sealing insert • Then route the leads into the terminal box/housing of the frequency inverter • Screw an M20 cable gland into the M25/M20 reduction Make sure the gland is tight and tighten it to the specified torque (see 🕮 Technical Data – General).	  
4.	Connect the connecting cable to the respective terminal strip or the terminals of the frequency inverter. ① Green/yellow lead ⇔ PE ② White lead ⇔ B- ③ Grey lead ⇔ B+ Connect the PE lead to the PE lug of frequency inverter inside the terminal box or at the housing. Please heed the specified tightening torques; refer to 🕮 Technical Data – Connections.	

Parameter

For optimum operation of the braking resistor, the following frequency inverter parameters need to be changed.

Parameter	Meaning	Remarks
P555	Chopper limitation	Value of the (peak) power limitation of the braking resistor.
P556	Braking resistor	Value of the braking resistor for calculation of the maximum brake power in order to protect the resistor. • Error I^2t limit (E003.1) is triggered. For further details, see 🕮 in P737.
P557	Brake resistor type	Continuous power (nominal power) of the resistor, to display the actual utilisation in P737. For a correctly calculated value, the correct value must be entered into P556 and P557. • 0.00 = Off, monitoring disabled

P700	Actual operating status	This parameter holds information on the actual operating status of the frequency inverter, such as fault, maintenance, and reason for switch-on inhibit.
P701	Last fault	This parameter holds information on the frequency inverter's last faults.
P737	Usage rate brakeres.	This parameter holds information on the actual usage degree of the brake chopper or the actual utilisation of the braking resistor in generator mode. • Depending on parameter settings P556 and P557. • If both are correctly set, the resistance is displayed.

Refer to the frequency inverter manual for details 🕮 "Further documentation and software: www.nord.com".

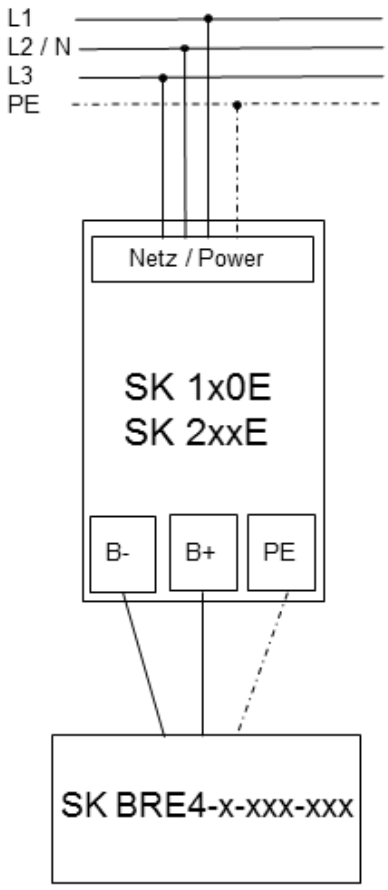
Error messages

Error messages from the braking resistor - the current or archived message for the last fault - can be read out from the information parameter Current Fault P700 and the Last Fault P701 in the error memory of the frequency inverter.

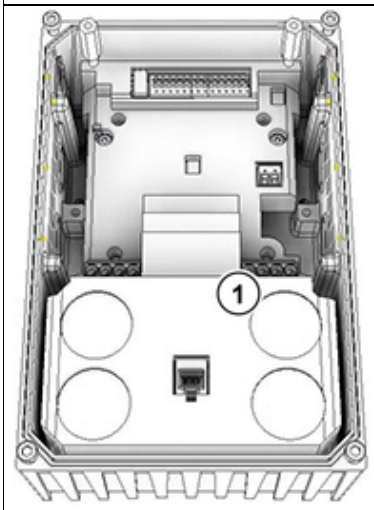
Error (E030/E050)	Meaning	Remarks
3.1	I^2t overcurrent limit	Brake chopper: I^2t limit has been triggered, 1.5x value for 60 s reached (🕮 P556, P557) • Avoid overcurrent in braking resistor
5.0	Overvoltage Ud	Link circuit voltage too high • Check the function of the braking resistor (cable break) • Resistance of connected braking resistor too high

Refer to the frequency inverter manual for details 🕮 "Further documentation and software: www.nord.com".

Wiring diagram

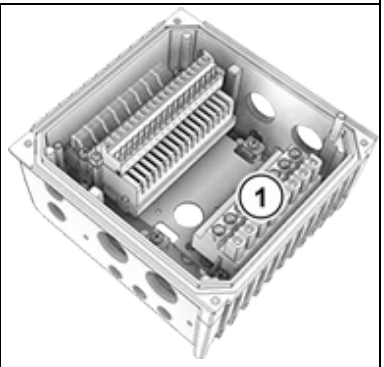


External brake resistor SK BREW4-1-… direct mounting



Size 2

SK 1x0E frequency inverter



① **Terminal connection**

Size 1 – 3

SK 2xxE frequency inverter

Further documentation and software: www.nord.com

Document	Name
BU 0180	SK 180E – SK 190E frequency inverter manual

Document	Name
BU 0200	SK 200E frequency inverter manual