GETRIEBEBAU NORD
Member of the NORD DRIVESYSTEMS Group

SK BRE4-3-050-450

Part number: 275 273 201

External brake resistor for direct mounting to decentralised frequency inverters

Only qualified electricians are allowed to install and commission the module. An electrician is a person who, because of their technical training and experience, has sufficient knowledge with regard 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 *FLEX* SK 200E series of units and depends on the mains voltage and the power.

Technical Data

Electrical data

Number of leads		3
Resistor (KYW13D)	Ω	50

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

Max. continuous power P_n	W	450
Energy consumption P_{max} [1]	kWs	3.0

General

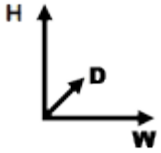
Temperature range	°C	0 … 40 (100 % duty cycle/S1) 0 … 50 (70 % duty cycle/S3)
Tightening torque		
Screws		0.6 – 1.2
Cable gland M20		1.5 – 2.0
Reduction M25/M20		1.5 – 2.0
Weight	kg	3.3

Certifications	CE, UR, RoHS
Protection class	IP67
Mounting [1]	
Mounting bracket	4 x M4 x8 (size 7)

[1] included in the scope of supply

Dimensions

Envelope dimensions [mm]	W x H x D	355 x 260 x 235
Cable / line [mm]		
Lead green / grey / white	L	430 / 450 / 480
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 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.

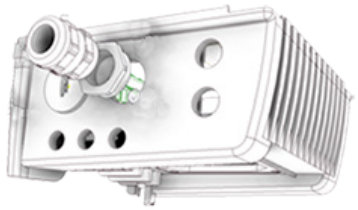
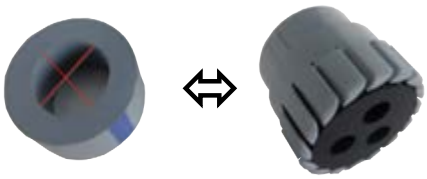
For detailed information, please refer to chapter 🕮 Electric data for brake resistors of the respective frequency inverter manual "Further documentation and software: www.nord.com".

Installation

Installation location	Direct installation on a decentralised, motor-mounted SK 2xxE frequency inverter of size 4: • Sideways of the frequency inverter
Installation orientation	Lateral installation between the base of the motor terminal box and the connecting unit of the frequency inverter
Fastening	With screws (fastening material is included)
Mounting kit	Mounting kit SK TIE4-BRE3-KIT (separate accessory)

Installation steps

1.	Installing the frequency inverter The SK 2xxE frequency inverter of size 4 and the SK TI4 connecting unit are not yet installed (on the base of the motor terminal box).	
2.	Installing the brake resistor on the mounting bracket Install the brake resistor with the 3 M4 hex screws fastened on the mounting bracket. • Loosen the 3 hex screws so that the square metal plate is held in place by the last threads • Then push the mounting bracket with the 3 square metal plates laterally into the top mounting slot of the brake resistor and screw tight	
3.	Mounting kit SK TIE4-BRE3-KIT • With the mounting kit (Part No. 275274920), the brake resistor is installed between the base of the motor terminal box and the SK TIE4 connecting unit • When doing so, replace the 4 existing fastening screws of the connecting unit with the 4 longer M8 x 30 cylinder screws supplied with the mounting kit • Two base gaskets of different thickness come with the mounting kit • Place the mounting bracket with the thinner base gasket (3 mm) below the mounting bracket on the base of the motor terminal box • Then place the thicker base gasket (6 mm) underneath the connecting unit on the mounting bracket and fasten to the base of the motor terminal box with screws Make sure the gland is tight and tighten it to the specified torque (see 🕮 Technical Data – General).	  3 mm 6 mm

4.	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 cable gland reduction Make sure the gland is tight and tighten it to the specified torque (see 🕮 Technical Data – General).	  
5.	Connect the connecting cable to the respective terminal strip or the terminals of the frequency inverter. • Yellow lead ⇔ PE • White lead ⇔ B- • 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.	

Parameters

Frequency inverter: The following parameters of the frequency inverter have to be set for optimum brake resistor operation. For details, refer to the frequency inverter manual 🕮 "Further documentation and software: www.nord.com".

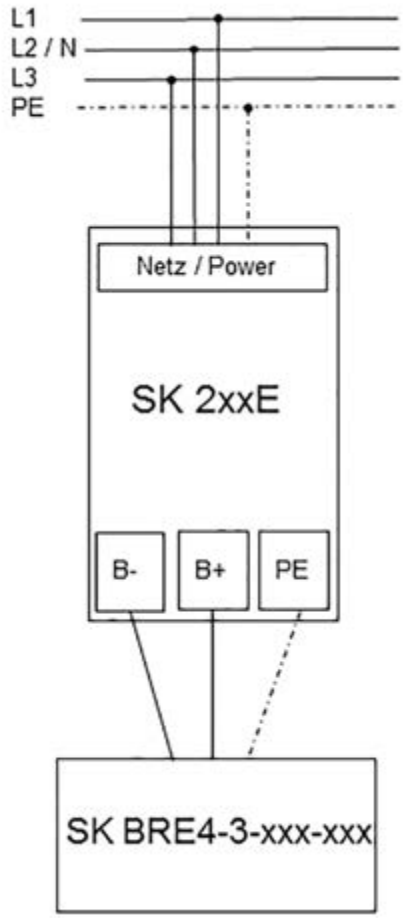
Parameters	Meaning	Remarks
P556	Braking resistor	Value of the brake resistance for the calculation of the maximum brake power to protect the resistor. • The error I^2t limit (E003.1) is triggered. Further details 🕮 in P737. • The error I^2t limit (E003.1) is triggered. Further details 🕮 in P737.
P557	Braking 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
P737	Usage rate brake res.	This parameter provides information about the actual degree of modulation of the brake chopper or the current utilisation of the braking resistor in generator mode. • Depending on the settings of parameters P556 and P557. • The resistance power is displayed if both parameters are set correctly.

Error messages

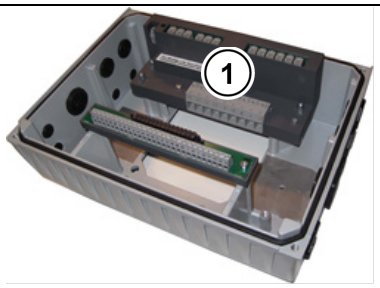
Error messages of the braking resistor – the current or the archived message of the last fault – can be retrieved by way of the information parameters Actual fault P700 and Last fault P701 from the error memory of the frequency inverter. For details, refer to the frequency inverter manual 🕮 "Further documentation and software: www.nord.com".

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

Wiring diagram



External brake resistor SK BREW4-3-… direct mounting



① **Terminal connection**

Size 4

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

Further documentation www.nord.com

Material No.	Name	Option / Component
275274920	SK TIE4-BRE3-Kit	Mounting kit