

Intelligent Drivesystems, Worldwide Services

SUPPLEMENTARY MANUAL BU 0930 GB

CONTROL BOX SK OPR1-AUM  
FOR FREQUENCY INVERTERS NORD SK 200E, SK 300E, AND SK 750E



BU 0930 GB

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## Documentation

Designation: BU 0930 GB  
 Part No.: 607 93 02  
 Device series: **SK OPR1-AUM** for NORD frequency inverters  
 Device types: **SK OPR1-AUM** (Part No.: 278910130)

## Version list

Designation of previous versions	Software Version	Remarks
BU 0930 GB, July 2010 Part No. 607 9301 / 3010	-/-	First issue
BU 0930 GB, February 2012 Part No. 607 9301 / 0612	-/-	Supplement to SK 200E series

## Publisher

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### NOTE



This supplementary operating manual is only valid in conjunction with the operating manual supplied for the respective frequency inverter.

## 1 General information

With the **SK OPR1-AUM** control box it is possible to set a connected NORD frequency inverters from the series **SK 200E** or **SK 750E** series frequency inverter into the operating modes "Normal operation" and "Maintenance mode". Switchover between the modes is carried out by means of a detachable key switch. The switch setting "No function" also prevents the control of the digital inputs of the frequency inverter.

The control box is designed for permanent connection to the frequency inverter. For this, appropriate interfaces (**SK CU1-STD** or **SK CU1-MLT** for SK 750E or **SK CU2-STD** for SK 300E) are available as options. The SK 200E is connected directly to the integrated terminal bar. Further information about the interfaces can be found in the relevant manual for the frequency inverter.

### 1.1 Overview

Features of the **SK OPR1-AUM** control unit

- Key switch (detachable) with switch settings for 3 operational modes ( **I - 0 - II** )
- ON - Button for jog mode
- Approx. 2m long connecting cable with open ends for permanent connection to the relevant digital input terminals of the relevant frequency inverter
- Wall-mounting of the box
- Protection class IP 66

### 1.2 Delivery

Check the equipment **immediately** after delivery/unpacking for transport damage such as deformation or loose parts.

If there is any damage, contact the carrier immediately and carry out a thorough assessment.

**Important! This also applies even if the packaging is undamaged.**

### 1.3 Scope of supply

Standard version:

- **SK OPR1-AUM** (Part No.: 278910130) with integrated connection cable
- Operating instructions as PDF file under [www.nord.com](http://www.nord.com)

### 1.4 Certifications

#### 1.4.1 European EMC Directive

With the correct connection of the control unit, all requirements of the EMC Directive, according to the EMC product standard for motor-driven systems EN 61800-3 are fulfilled.



#### 1.4.2 RoHS compliance

NORD frequency inverters or their options are designed to be RoHS compliant according to Directive 2002/95/EEC









## 2 Installation

The **SK OPR1-AUM** control box is intended for permanent connection to a NORD frequency inverter of type SK 200E or SK 300E or SK 750E. It is equipped with a connecting cable with open ends and can be screwed to a wall via the four holes in the rear of the housing (Distance approx.: X direction: 106.5mm, Y direction: 66.5mm). The fixing material is not included in the scope of delivery.

### 2.1 Overview

The **SK OPR1-AUM** control box can be used with the following devices.

Series Frequency inverters	Option required (Customer interface)	Remarks
	SK CU1-STD 	Adapt the parameters of the digital input functions.
	SK CU1-MLT (Similar to illustration) 	Adapt the parameters of the digital input functions.
	SK CU2-STD 	Adapt the parameters of the digital input functions.
	Not required	Adapt the parameters of the digital input functions.

### 2.2 Control connections

#### WARNING



Installation must be carried out by qualified personnel only, paying particular attention to safety and warning instructions.

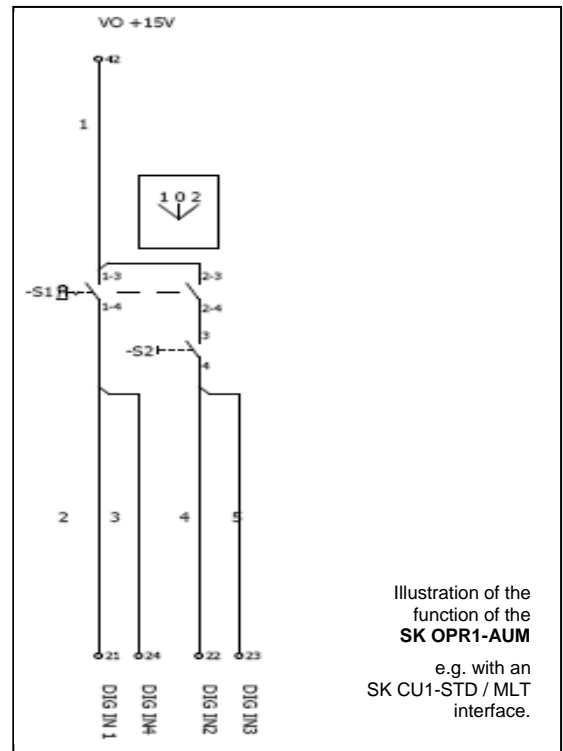
Installation or removal of modules or electrical connections must only be carried out when no voltage is present. For detailed information, please refer to the relevant frequency inverter manual.

The control box is designed for direct connection to the control terminals (of the customer interface) of the frequency inverter according to the following pattern.

Designation Connecting wire	Terminal designations of the frequency inverter or customer interface			
	SK 200E	SK CU1-STD	SK CU1-MLT	SK CU2-STD
SK OPR1-AUM				
1	43 (+24V)	X1.3:42 (+15V)	X2.3:42 (+15V)	X:42 (+15V)
2	21 (DIN1)	X1.3:21 (DIN1)	X2.3:21 (DIN1)	X:22 (DIN2)
3	23 (DIN3)	X1.3:24 (DIN4)	X2.3:24 (DIN4)	X:25 (DIN5)
4	22 (DIN2)	X1.3:22 (DIN2)	X2.3:22 (DIN2)	X:23 (DIN3)
5	24 (DIN4)	X1.3:23 (DIN3)	X2.3:23 (DIN3)	X:24 (DIN4)

According to the setting of the key switch, the contacts are closed in the following manner:

Key switch position	Contact 1-3 / 1-4	Contact 2-3 / 2-4
I	closed	open
O	open	open
II	open	closed



### 3 Parameterisation

To ensure the correct function of the **SK OPR1-AUM** control box, the following parameters must be changed in the frequency inverter.

The most important of these are listed below. For further information, please refer to the manual for the relevant frequency inverter.

**NOTE**



The direction of rotation stated in the following parameterisation recommendations "Recommended Settings" must be made according to the specified direction of rotation of the system or gear unit and may if necessary also have the value **{02} "Enable Left"**

**SK 200E**

Digital input	Parameter	Factory setting	Recommended setting	Comments
DIN 1	P420 [-01]	{01} "Enable right"	{01} "Enable right"	with (P428) "Automatic start": {ON}
DIN 2	P420 [-02]	{02} "Enable left"	{01} "Enable right"	
DIN 3	P420 [-03]	{04} "Fixed frequency 1"	{04} "Fixed frequency 1"	Value FF1: E.g.: {6.0} in (P465[-01])
DIN 4	P420 [-04]	{05} "Fixed frequency 2"	{05} "Fixed frequency 2"	Value FF2: E.g.: {55.5} in (P465[-02])

**SK CU1-STD / SK CU1-MLT (for SK 750E)**

Digital input	Parameter	Factory setting	Recommended setting	Comments
DIN 1	P420	{01} "Enable right"	{01} "Enable right"	with (P428) "Automatic start": {ON}
DIN 2	P421	{02} "Enable left"	{01} "Enable right"	
DIN 3	P422	{08} "P. set Bit 0"	{05} "Fixed frequency 2"	Value FF2: E.g.: {6.0} in (P430)
DIN 4	P423	{04} "Fixed frequency 1"	{04} "Fixed frequency 1"	Value FF1: E.g.: {55.5} in (P429)
DIN 5	P424	{00} "No function"	{00} "No function"	only SK CU1-MLT
DIN 6	P425	{00} "No function"	{00} "No function"	only SK CU1-MLT

### SK CU2-STD (for SK 300E)

Digital input	Parameter	Factory setting	Recommended setting	Comments
DIN 1	P420	{13} "Thermistor"	{13} "Thermistor"	Monitoring of motor thermistor
DIN 2	P421	{01} "Enable right"	{01} "Enable right"	with (P428) "Automatic start": {ON} CAUTION: <u>do not</u> parameterise to {mains voltage immediately}!
DIN 3	P422	{02} "Enable left"	{01} "Enable right"	
DIN 4	P423	{08} "P. set Bit 0"	{05} "Fixed frequency 2"	Value FF2: E.g.: {6.0} in (P430)
DIN 5	P424	{04} "Fixed frequency 1"	{04} "Fixed frequency 1"	Value FF1: E.g.: {55.5} in (P429)

#### NOTE



The listed parameters only relate to the digital functions of the frequency inverter. This supplementary manual does not deal with further settings (e.g. motor data, basic parameters).

In order to prevent control malfunctions it is recommended that the parameter (P509) "Interface" is changed to the function {01} "Control terminals only".

## 4 Operation

Switching between the operating modes (**I - 0 - II**) is carried out with the aid of the key switch. Control of the frequency inverter with the "ON" button of the control box is only possible in the operating mode **II** (maintenance). On activation of the button, the frequency inverter is enabled with the frequency set in (P430 or P465 [-02]). When the button is released, the drive unit is shut down again.

Switch positions	Name	Function	Description
	<b>inoperable</b> No function	FI control "Off"	Control of the frequency inverter is not possible. The enable button for "jog mode" has no function.
	<b>normal</b> Normal operation	Start-up of the FI with "mains on"	The FI is automatically enabled with "mains voltage on" with the frequency set in (P430 or P465 [-01]). The enable button for "jog mode" has no function.
	<b>maintenance</b> Maintenance mode	Control of the FI via the control box	On activating the enable button of the control box the drive unit operates with the frequency set in (P430 or P465 [-02]).

#### NOTE



The prerequisites for the mode of functioning described above are the correct connection of the frequency inverter and the parameter recommendations specified in Section 3.

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## 5 Additional information

### 5.1 Cable gland

The connection cable for the control box must be inserted into the frequency inverter via a suitable cable gland (not included in the scope of delivery), in order to maintain the protection class of the frequency inverter.

### 5.2 Repairs

The device must be sent to the following address if it needs repairing:

NORD Electronic DRIVESYSTEMS GmbH  
Tjüchkampstr. 37  
26605 Aurich, Germany

For queries about repairs, please contact:

Getriebebau NORD GmbH & Co. KG  
Telephone: 04532 / 401-515  
Fax: 04532 / 401-555

If a frequency inverter or accessories are sent in for repair, no liability can be accepted for any added components, e.g. such as line cables, potentiometer, external displays, etc.!

Please remove all non-original parts from the frequency inverter.

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#### NOTE



If possible, the reason for returning the component/device should be stated. If necessary, at least one contact for queries should be stated.

This is important in order to keep repair times as short and efficient as possible.

On request you can obtain a suitable goods return voucher from Getriebebau NORD GmbH.

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