

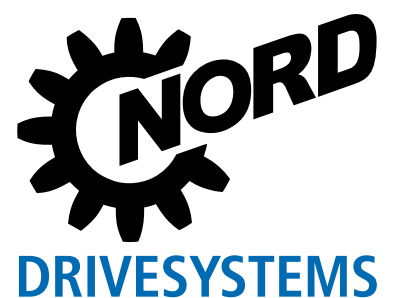
Intelligent Drivesystems, Worldwide Services

NORDAC *LINK* FIELD DISTRIBUTION SYSTEM THE VARIABLE SOLUTION FOR ANY APPLICATION



EN

NORDAC *LINK*
FREQUENCY INVERTERS
AND MOTOR STARTERS



NEW! NORDAC LINK FIELD DISTRIBUTION SYSTEM



"In general, conveyor technology and intralogistics require drive control systems which can be simply installed and which are easily accessible during operation and if maintenance is required. The NORDAC *LINK* field distribution system supplements the NORD DRIVESYSTEMS product range and provides customers with a drive control which can be flexibly installed close to the motor. System costs can be significantly reduced thanks to decentralised drive technology."

- Flexible configuration and function – freely configurable according to requirements and the application
- Available as frequency inverters (up to 7.5 kW) and motor starters (up to 3 kW)
- Fast commissioning due to simple operation
- Simple and reliable plug-in capability
- Simplified system maintenance due to integrated maintenance switch and local manual control facility
- Can be integrated into all common bus systems

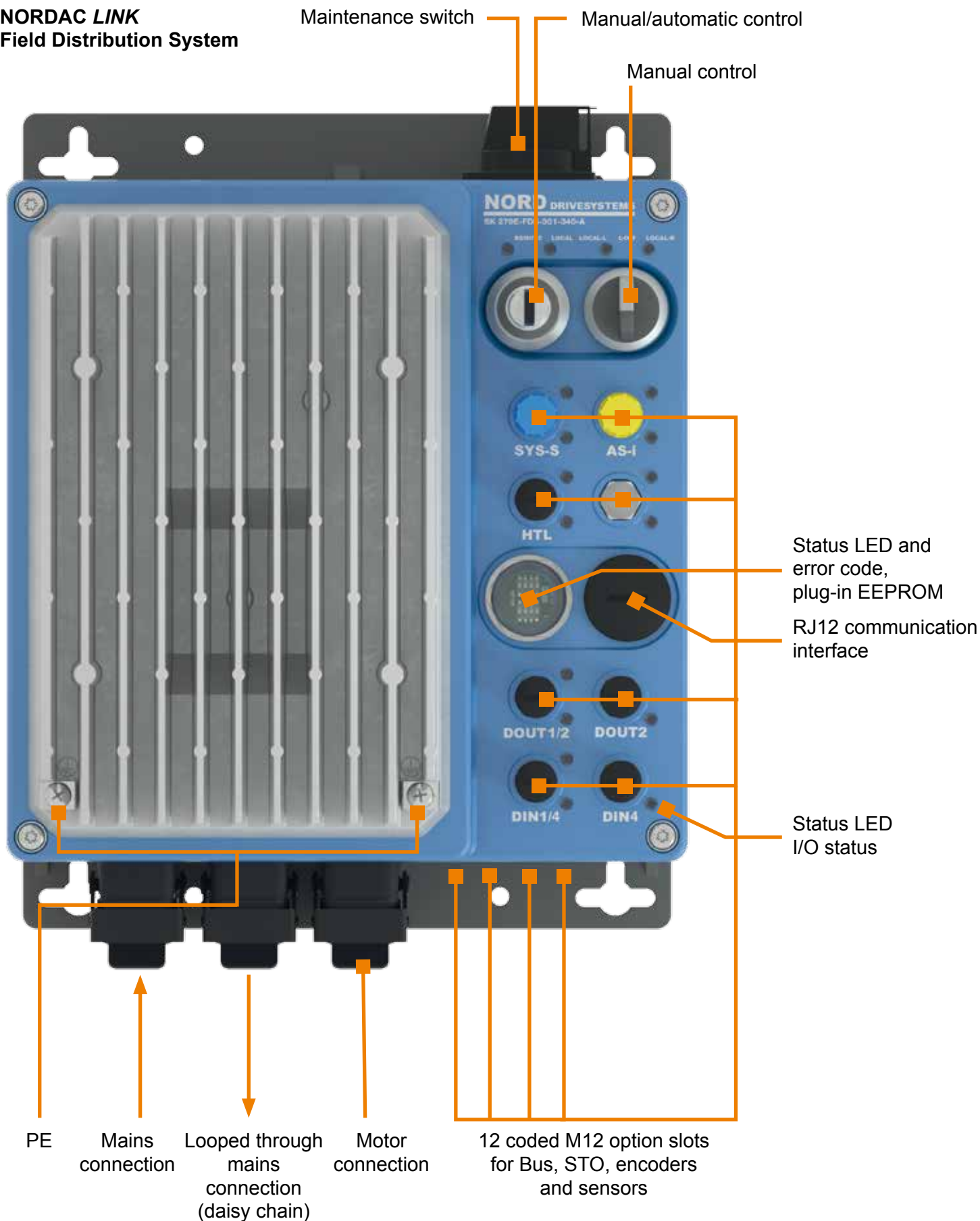


Motor starters
Size 1
up to 3.0 kW

Frequency inverter
Size 1
up to 3.0 kW

Frequency inverter
Size 2
up to 7.5 kW

NORDAC LINK
Field Distribution System



VERSATILE USE

NORD FREQUENCY INVERTERS WITH “SERVO GENES”

NORD frequency inverters are ideal for use in applications which require dynamics and precise positioning. High quality speed control is achieved by high performance current vector control. With this, NORD frequency inverters meet the stringent requirements of applications such as:

- Synchronisation of multiple drive units
- coupled control of drive units to another drive unit, e.g. flying saw
- relative positioning, e.g. intermittent drive
- absolute positioning, e.g. automated warehouse equipment, high bay storage, lifting equipment with defined positions

Incremental and absolute encoders for detection of the actual motor position can be read by the frequency inverter. By determination of the actual motor values, the NORD frequency inverter regulates asynchronous motors with performance similar to that of a servo drive, even with large load fluctuations.

The field distributor can be easily integrated into modern automated systems. NORDAC *LINK* supports all common field bus systems.



EXTREME PRECISION POSITIONING WITH POSICON

NORD frequency inverters with integrated POSICON functionality are able to determine the actual position of the drive unit via appropriate interfaces. Inputs for the connection of an HTL incremental encoder as well as a CANopen absolute encoder are available as interfaces. In addition to conventional point-to-point positioning (absolute positioning), POSICON also provides the facility for relative positioning of endless axes as well as various technology functions such as rotary tables with travel optimisation, synchronous operation and flying saw etc. By means of the standard POSICON position memory and features such as "teach in", "reference point", "reset position", "offset position", "target window positioning" and "S-ramp", the frequency inverter is able to perform complete, independent positioning control. The tasks for the external control are therefore reduced to the starting pulse and communication of the target position via digital I/O or at the field bus level. The frequency inverter can even monitor the positioning process and report the operating status.

POSICON

- targeted positioning of material conveyors and process control
- running gear of material conveyors / portal cranes with synchronous function of all driven axes
- rotating table functions for tool magazines on machines
- Flying saw: Coupling and parallel movement of a processing unit relative to a moving object

Available in SK 250E inverters

Applications

INTEGRATED CONTROL NORD FREQUENCY INVERTERS WITH PLC FUNCTIONALITY

The intelligent drive electronics with integrated PLC functionality reduces the load on the higher level system control unit. This enables a modular design of the system. Application data can be evaluated in real time by the decentralised PLC, for example for the optimisation of diagnostic facilities. The PLC functionality enables the application to respond according to the situation.

- The PLC can be programmed with the NORD CON Tool (IEC 61131-3, Structured Text ST and Instruction List IL). There are no license fees or other runtime costs.
- Customer-specific control functions can be simply integrated with the PLC. Evaluation of sensor data and control of actuators replaces the machine or drive control.
- Motion Control function blocks for implementation of movement control based on the PLCopen standard are available.

Further advantages

NORD ELECTRONIC DRIVESYSTEMS

CENTRAL AND DECENTRAL DRIVE ELECTRONICS

NORDAC FREQUENCY INVERTERS

Advantages

- scalable functionality – Flexible configuration and function
- Market-leading torques for all drive applications
- simple commissioning and operation

Functions (optional / device-dependent)

- POSICON – Integrated positioning mode and synchronisation
- PLC functionality for functions close to the drive unit
- Operation of asynchronous and synchronous motors
- Energy-saving function for partial load operation
- high precision regulation with current vector control
- 4-quadrant operation
- integrated brake rectifier for motor brake control
- Control and closed loop regulation
- STO and SS1 – Integrated functional safety
- integrated mains filter for compliance with EMC regulations
- compatible to all common bus systems
- control and parameterisation tools and simple parameter structure

NORDAC PRO SK 500E



The frequency inverter for all drive applications: large power range and capability of extension of functionality with plug-in option modules. Heat is optimally removed thanks to the variable cooling concept.

Frequency inverter

- Power range up to 160 kW
- Control cabinet installation
- IP20

NORDAC FLEX SK 200E



Decentralised drive unit with versatile installation possibilities Scalable functionality and flexible configuration. Simple installation and maintenance through extensive plug-in capability and simple parameter transfer via EEPROM memory.

Frequency inverter

- Power range up to 22 kW
- Wall or motor installation
- IP55, IP66

NORDAC BASE SK 180E



Economical decentralised version for simple drive applications. Low installation costs as well as robust design for simple installation outside of the control cabinet.

Frequency inverters

- Power range up to 2.2 kW
- Wall or motor installation
- IP55, IP66, IP69K

NORDAC START SK 135E



Decentralised, wear-free electronic motor starter for all types of gentle starting. With integrated motor protection and reversing function for flexible integration into the system.

Motor starters

- Power range up to 7.5 kW
- Wall or motor installation
- IP55, IP66, IP69K

Frequency inverter

- Power range up to 7.5 kW
- Field installation
- IP55, IP65

The field distribution system for flexible, decentralised installation. Flexible configuration and function - freely configurable according to requirements and the application. Available as frequency inverters and motor starters. Fast commissioning through high level of plug-in capability. Simple servicing of the system through integrated maintenance switch and local manual control facility.



NORDAC LINK
SK 250E

Motor starters

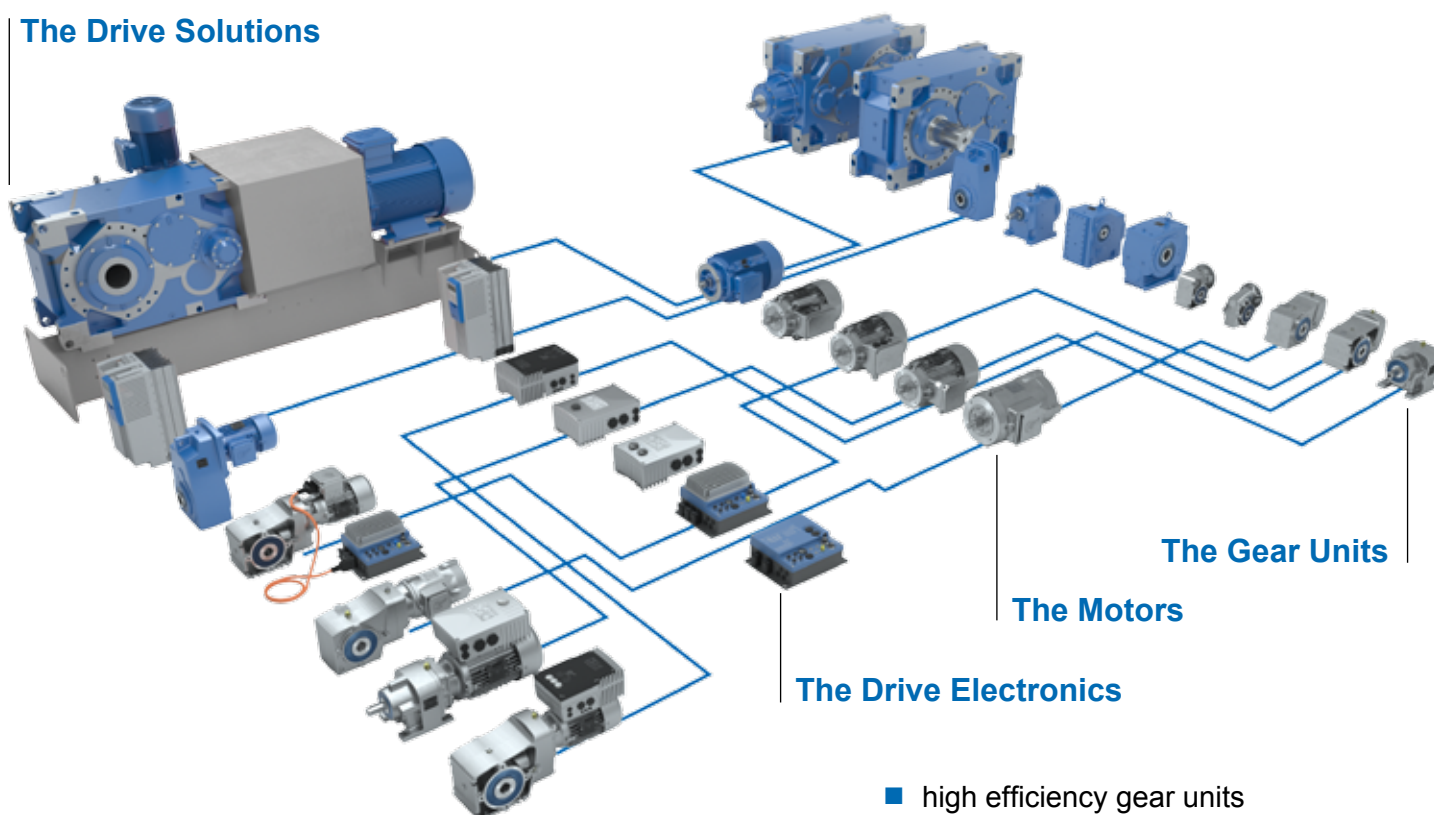
- Power range up to 3 kW
- Field installation
- IP65



NORDAC LINK
SK 155E

NORD DRIVESYSTEMS COMPLETE DRIVE SOLUTIONS FROM A SINGLE SOURCE

The Drive Solutions



The Gear Units

The Motors

The Drive Electronics

- high efficiency gear units
- Energy efficient motors
- Frequency inverters and motor starters for installation in the field or in control cabinets

MECHATRONIC DRIVE SOLUTIONS FOR CONVEYOR TECHNOLOGY

NORDAC *LINK* SK 250E FDS,
NORDBLOC.1 bevel gear unit SK 92x72.1
NORD IE4 motor



General information - NORDAC *LINK*

Feature	Frequency inverter	Motor starters
Mains voltage	380...500 V -20 % +10 %	380...500 V -20 % +10 %
Mains frequency	47 Hz...63 Hz	47 Hz...63 Hz
Power	0.55...7.5 kW	0.55...3.0 kW
Output frequency	0...400 Hz	Mains frequency
Overload capacity	200 % for 3.5 sec, 150 % for 60 sec	150 % for 9-170 sec depending on switch-off class (Class 5, 10A, 10)
Monitoring	Overvoltage, undervoltage, overtemperature, short-circuit, short-circuit to earth, overcurrent (I ^{2t})	Overvoltage, undervoltage, overtemperature, overcurrent (I ^{2t})


NORDAC LINK

EXTENSIVE BASIC EQUIPMENT



<ul style="list-style-type: none">■ Monitoring of load torque depending on the output frequency■ individual adaptation of load monitoring to protect the system from overload in certain frequency ranges <p><i>Available in all SK 250E inverters</i></p>	Load monitor
<ul style="list-style-type: none">■ high efficiency in partial load operation■ reduced operating costs due to energy savings of up to 60 %■ simple adjustment <p><i>Available in all SK 250E inverters</i></p>	Energy-saving function
<ul style="list-style-type: none">■ high precision current vector control for rapid and precise load pickup■ integrated brake chopper to divert generated energy to a braking resistor (braking resistor optional)■ Brake management for optimum control of an electro-mechanical holding brake for wear-free brake actuation <p><i>Available in all SK 250E inverters</i></p>	Lifting gear functions
<ul style="list-style-type: none">■ Feedback and evaluation of actual values for implementation of closed circuit control e.g. flow or compensator control■ P and I component can be set separately <p><i>Available in all SK 250E inverters</i></p>	Process controller, PI controller
<ul style="list-style-type: none">■ control of one or more slave inverters by a master inverter■ Communication via USS or CANopen with control word and setpoint values <p><i>Available in all SK 250E inverters</i></p>	Master/Slave operation
<ul style="list-style-type: none">■ high precision speed regulation■ highest possible acceleration due to direct feedback of the actual speed characteristics to the frequency inverter and therefore also:<ul style="list-style-type: none">■ full torque down to standstill (speed 0)■ digital speed controller with wide range of settings <p><i>Available in all SK 250E inverters</i></p>	Encoder feedback (Servo Mode)
<ul style="list-style-type: none">■ simple adaptation to control systems through optional interfaces■ quick and simple diagnostics via easily visible LED indicators■ various control boxes available for display, operation and parameterisation■ simple operation and parameterisation through logical parameter structure and intuitive layout of control elements <p><i>Available in all SK 250E inverters</i></p>	Handling and communication
<ul style="list-style-type: none">■ Bus systems – NORD supports all common bus systems to enable simple installation in the system design <p><i>Available in all devices</i></p>	Bus systems
<ul style="list-style-type: none">■ Functional safety - STO, SS1: Integrated, TÜV-certified safety functions simplify system design. <p><i>Available in all SK 250E inverters</i></p>	Functional Safety

ALL FIELD DISTRIBUTION SYSTEM VERSIONS AT A GLANCE

		SK 155E FDS	SK 175E FDS	SK 250E FDS	SK 260E FDS	SK 270E FDS	SK 280E FDS
		Motor starters 0.55 - 3.0 kW		Frequency inverter 0.55 - 7.5 kW			
Basic features	Plug connection of mains, motor and control cables	✓		✓			
	Energy bus, looped-through mains supply	○		○			
	Repair/maintenance switch	○		○			
	Complete range of functions, comparable with control cabinet inverters			✓			
	Sensorless current vector control			✓			
	Brake chopper, optional brake resistor for 4-quadrant operation			✓			
	Brake management for control of electro-mechanical motor brake	○		○			
	EMC performance	Class A up to max. motor cable length 20 m			C2 up to max. motor cable length 10 m ⁵		
	RS 232/485 parameterisation and diagnostic interface (optional USB)	✓		✓			
	Plug-in parameter storage module (EEPROM)			✓			
	Parameters pre-set with standard values	✓		✓			
	4 parameter sets, which can be switched over during operation			✓			
	Optional integrated mains unit or external 24 V supply	✓		✓			
	Basic functions	Automatic optimisation of motor data			✓		
Energy-saving function, optimised efficiency in partial load operation				✓			
Drive unit monitoring function, including motor monitoring, motor thermistor evaluation		✓		✓			
Reversing function				✓		✓	
Special functions	Torque control and limitation			✓			
	Process controller/PI controller			✓			
	PLC logic function	✓		✓			
	HTL incremental encoder evaluation (via DIN) for closed-loop speed control and POSICON POSICON positioning function with incremental or absolute encoders (CANopen)					✓	
Optional	Safe Stop (STO, SS1)			✓		✓	
	Local control elements (switch, key switch, potentiometer)	○		○			
Communication interfaces	RS 232/485 parameterisation and diagnostic interface (optional USB)	✓		✓			
	Number of digital inputs	3 (+2 sensor inputs for Bus) ²			5+2 ^{1,2,3}		
	Number of analogue inputs			2 ^{1,3}			
	Number of digital outputs	2		2 ³			
	AS Interface	○ ⁴				✓	
	PROFIBUS DP	○ ⁴		○			
	Industrial Ethernet			○			

¹: alternatively, the analogue inputs can also be used as digital inputs (not PLC-compatible).

²: If necessary, individual inputs can be defined at the factory by the use of certain optional modules.

³: optionally extendible

⁴: either ASI or Profibus

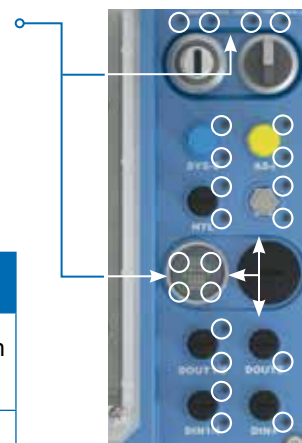
⁵: only grid-bound

LED- STATUS INDICATORS

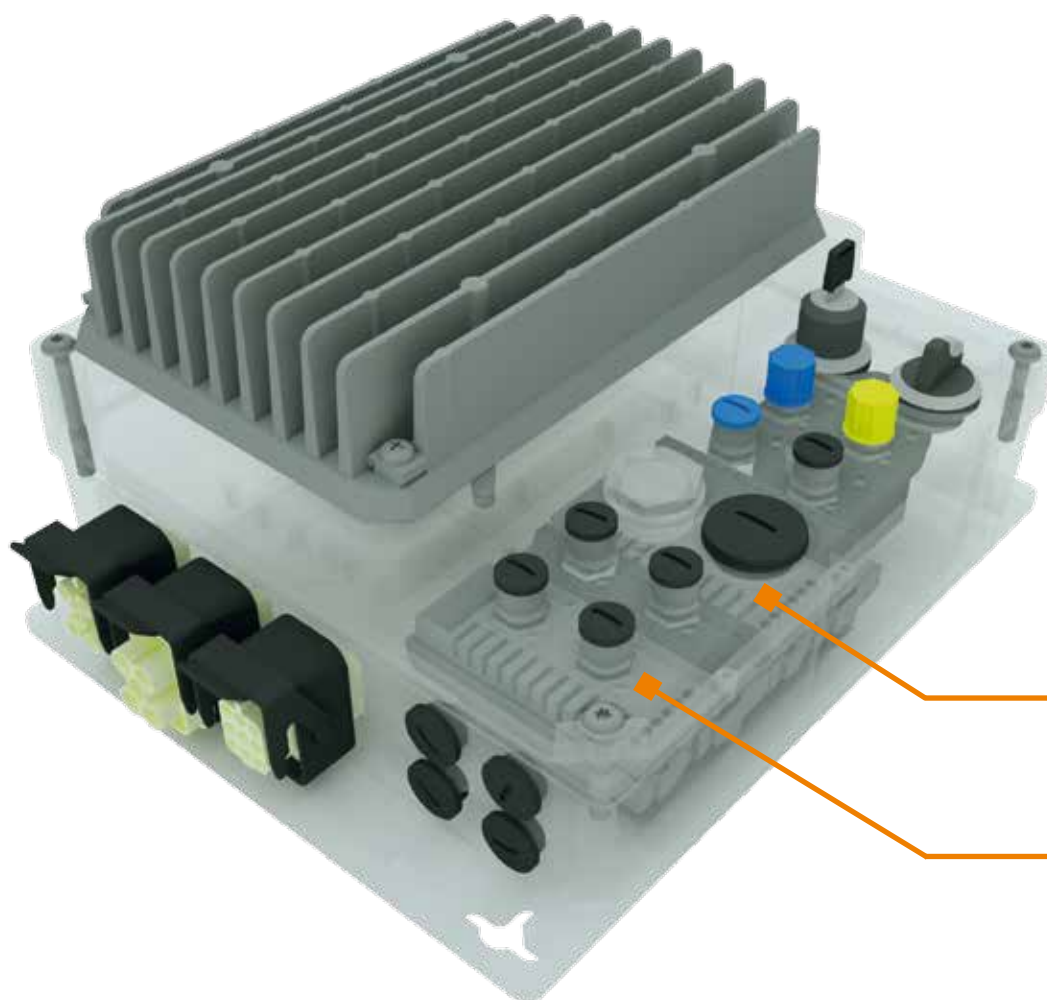
USE/MEANING

The FI is equipped with LED indicator lights. These are used to indicate the signal statuses of the relevant option slot.

One option slot is closed with a transparent screw cap. The LED status indicator lights which are installed in this option slot act as diagnostic LEDs and are therefore always visible.



LED indicators	Use / Meaning
Yellow - single colour - static	Indication of the signal status ("ON" / "OFF") or the associated function of the IOs.
Red/Green - single or dual colour - static or dynamic	Indication of the operating statuses on the inverter or communication level.





Can be extended with a maximum of two further function modules (SK CU4)



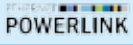





OPERATION AND DIAGNOSTICS

NORD CON SOFTWARE

Operation and parameterisation

Type	Designation	Material number	Version	Description	Remarks
			Control Boxes		
Control and parameterisation software	NORD CON USB serial adapter (SK TIE4-RS232-USB)	275 274 604	–	Software for operation, programming (PLC) and parameterisation as well as commissioning support and fault analysis. Parameter names are available in multiple languages	Free download: www.nord.com
 ParameterBox	SK PAR-3H	275 281 014	✓	Illuminated LCD screen for control and parameterisation. Multiple language plain text display and convenient keypad control unit (RS485).	Connection for data exchange with NORD CON on a PC via RS232 (USB 2.0), incl. 1 m connection cable, 4.5 ... 30 V DC / 1.3 W supply e.g. directly from the frequency inverter
 SimpleControl-Box	SK CSX-3H	275 281 013	✓	Suitable for control and parameterisation, 4-digit, 7-segment display, direct control of a device, convenient control keypad, incl. 2 m connection cable.	Electrical data: 4.5 ... 30 V DC / 1.3 W, Supply e.g. directly via the frequency inverter

Communication interfaces – Industrial Ethernet, field bus and IO extensions

Industrial Ethernet	Number of inputs	Frequency inverter	Motor starters	Field bus	Number of inputs	Number of outputs	Frequency inverter	Motor starters
	2 digital	✓			2 digital	–	✓	✓
	2 digital	✓			2 digital	–	✓	
	2 digital	✓			2 digital	–	✓	
	2 digital	✓			2 digital	–	✓	✓
				IO extensions	2 digital	2 digital, 1 analogue	✓	

BRAKING RESISTORS

INTERNAL VERSION *only SK 250E frequency inverter*

Internal braking resistor SK BRI4

Internal brake resistors are provided for applications in which dynamic braking (e.g. conveyor equipment, mixing equipment) is to be expected.

SK 2xxE-FDS...	Resistor	Continuous power [P _n]	Power consumption ¹ [P _{max}]
... 750-340-	400 Ω	100 W	1.0 kW
... 151-340- to ... 301-340-	400 Ω	100 W	1.0 kW
... 401-340- to ... 751-340-	200 Ω	200 W	2.0 kW

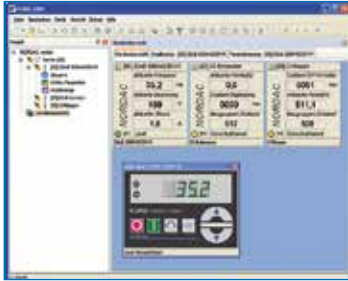
¹⁾ maximum once within 10s

DISCUSSION WITH EXPERTS

NORD CON SOFTWARE INCLUSIVE

NORD CON is the free operating software for controlling, parameterisation and diagnostics of all NORD frequency inverters and motor starters.

**NORD CON
software control**

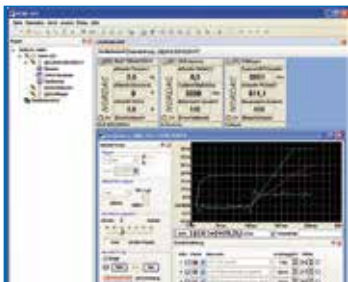


A virtual control unit, analogous to a SimpleBox (optional control and parameterisation unit), enables the display of operating values, parameterisation and the control of a connected frequency inverter.



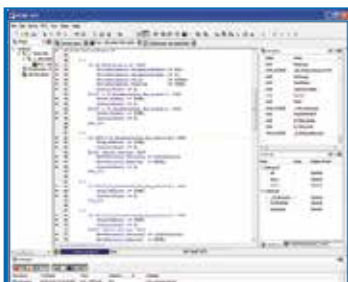
By means of a convenient overview the user can view and adjust each available parameter. By means of an appropriate printing option, parameter lists are generated in printed form either completely or only with the values which deviate from the factory settings. The finished data sets can be saved on a PC/laptop and archived for future use or sent by e-mail.

Parameterisation



The NORD CON oscilloscope function is an extremely useful instrument for the optimum adjustment of drive systems. By means of line graphs, all drive characteristics (current, torque, etc.) can be recorded and analysed. On the basis of the results, fine tuning of the ideal parameter settings of the relevant drive unit is possible.

Diagnosis



A PLC editor is available for creating, editing and managing a PLC program. The PLC programs can also be tested (debugged) with this editor and communicated to the frequency inverter. "Structured Text" and "Instruction List" supported according to IEC 61131-3.

**Programming the
PLC**

NORD DRIVESYSTEMS

COMPLETE DRIVE SYSTEMS FROM A SINGLE SOURCE

DER ANTRIEB

■ Reliable ■ Flexible ■ Global



The Gear Unit

- Strong bearings
- Quiet running
- High power density

The Motor

- High efficiency
- Global standards
- All operating conditions

The Drive Electronics

- Optimum control performance
- Simple commissioning
- Extensive functions

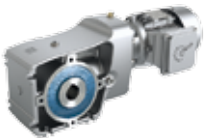
Large power range – Flexible complete solutions – High system efficiency



Headquarters and Technology Centre in Bargteheide, close to Hamburg

Mechanical products	Electrical products	Electronical products
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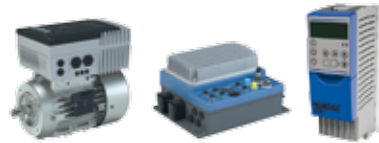
Gear units



Motors



Inverters, motors starters and field distribution systems



Innovative drive solutions for more than 100 branches of industry



Gear unit production



Motor production



Inverter production

7 state-of-the-art production plants produce gear units, motors and inverters also for complete drive solutions from a single source.



The map image above is for information purpose and may not have been prepared or be suitable for legal purpose and we do not own any responsibility for correctness or authenticity of the same.

Subsidiaries and sales partners in 98 countries on 5 continents provide local stocks, assembly, production, technical support and customer service



More than 3,600 employees throughout the world create customer oriented solutions

NORD DRIVESYSTEMS Group

Headquarters and Technology Centre
in Bargteheide, close to Hamburg

Innovative drive solutions
for more than 100 branches of industry

Mechanical products
parallel shaft, helical gear, bevel gear and worm gear units

Electrical products
IE2/IE3/IE4 motors

Electronic products
centralised and decentralised frequency inverters,
motor starters and field distribution systems

7 state-of-the-art production plants
for all drive components

Subsidiaries and sales partners
in 98 countries on 5 continents
provide local stocks, assembly, production,
technical support and customer service

More than 3,600 employees throughout the world
create customer oriented solutions

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