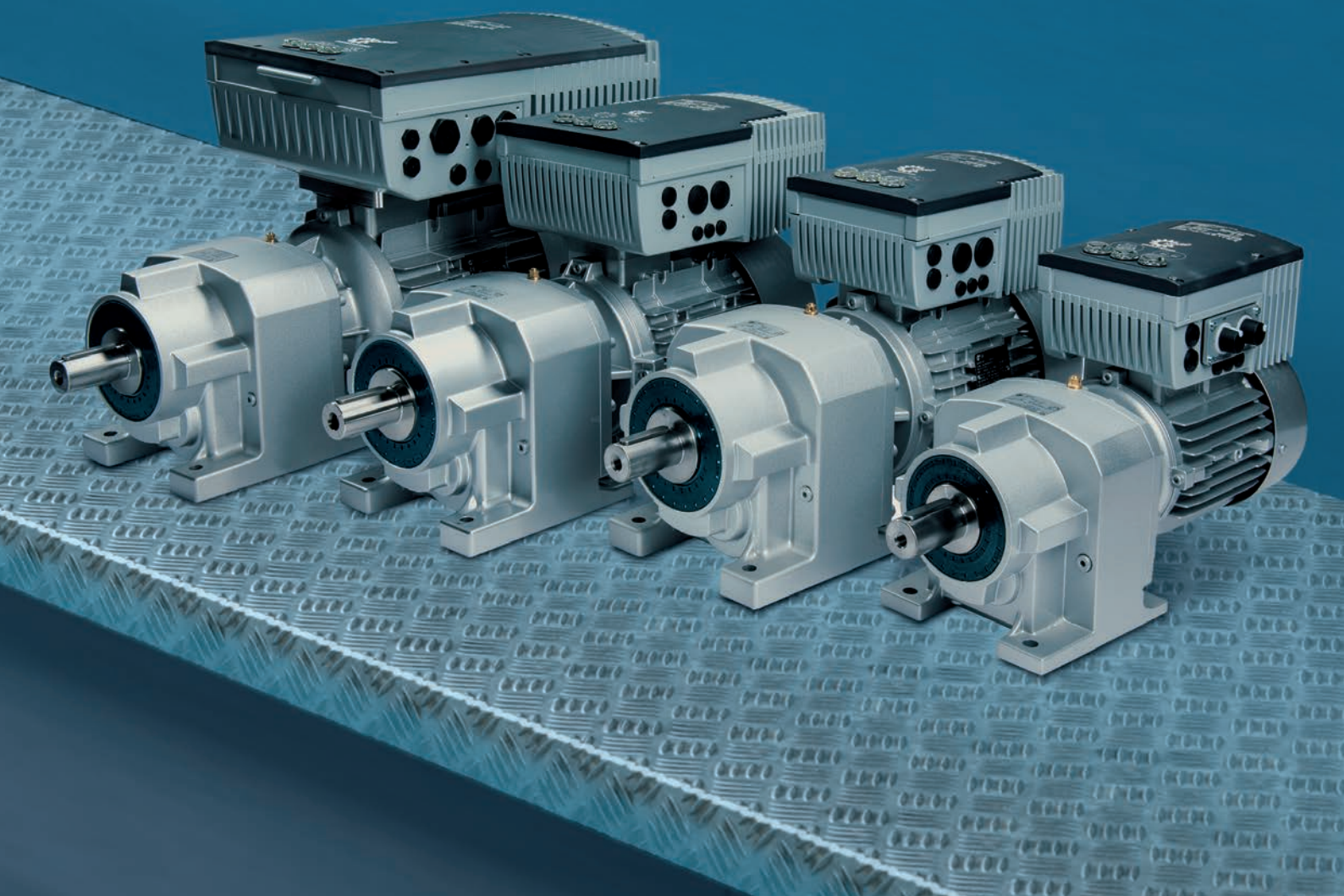


Intelligent Drivesystems, Worldwide Services

FLEXIBLE VARIABLE FREQUENCY DRIVE FOR DECENTRALIZED APPLICATIONS



US

NORDAC® FLEX
SK 200E

NORD®
DRIVESYSTEMS

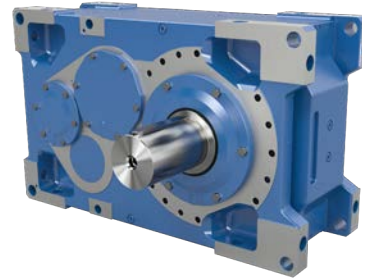
NORD DELIVERS COMPLETE DRIVE SOLUTIONS FROM A SINGLE SOURCE

Introduction



NORD Delivers

NORD offers full-featured drive solutions that can tackle the toughest requirements. All components are carefully selected and precisely configured to meet your exact specifications. In the rare case that standard components won't meet your needs, our in-house engineering team will work with you to design custom components or a complete customized system.



NORDAC PRO SK 500P



Reduce Lead Times and Decrease Inventory

- 25% of orders ship same day or next day with NO expedite fees
- 47% of orders ship within 5 working days
- 81% of orders ship in 2-3 weeks

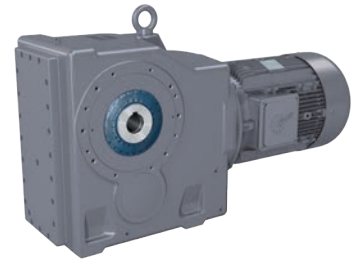


NORDAC LINK



Global Product Designs, Standards, and Support

- Innovative product range (one-stop shop)
- Global connected presence
- Mechanical and electrical application engineers ready to assist you
- Online resources



NORDAC FLEX



Increase Efficiency and Reduce Operation Costs

- First-class customer service and support, plus myNORD online tools
- Product flexibility through standard components and customizations
- Program personalization, such as weekly shipment schedules and custom nameplates
- Partner with a company that is easy to do business with and wants to see you succeed!



NORDAC BASE



NORDAC START

Accessories

Appendix

High-performance Solutions

NORD's extensive product portfolio is continuously evolving to meet the needs of today's fast-changing markets, but NORD does far more than manufacture the world's finest drive components. We provide our customers with optimum drive configurations for their specific purposes, providing each and every one of them with complete and efficient systems at a price/quality ratio that's unmatched.

By continuing to invest in the latest research, manufacturing, and automation technology, we are able to deliver innovative drive systems with the highest quality, reliability, and value found in the marketplace today. In short, we never stop improving.

On-time Delivery

NORD's linked global network of assembly and manufacturing operations gives you the best of both worlds – a world leader with local representatives. NORD has subsidiaries and sales partners in 98 countries on five continents, ensuring local inventory, assembly centers, technical support, and customer service.

This approach also allows us to provide the shortest lead times in the industry. As a NORD customer, you can rest assured that your order will be delivered on time and on spec. We offer our customers:

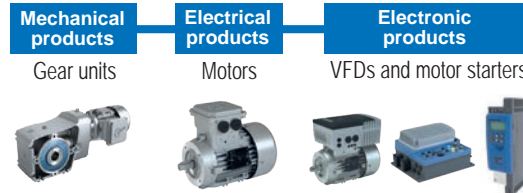
- Fast, accurate, reliable service
- Unmatched product versatility and customizations
- Short lead times
- Technical guidance from experienced engineers
- MyNORD online tools (configure, price, quote, and track your order)
- 24/7/365 after hours emergency support via the NORD 911 hotline

Peace of Mind

NORD's customer-first approach means superior drive solutions and peace of mind are just a call or click away. Put NORD's global team of engineers, manufacturing, service and support technicians to work for you. Together, we'll build something great!



Headquarters and technology center
in Bargteheide, near Hamburg



Innovative drive solutions
for more than 100 branches of industry

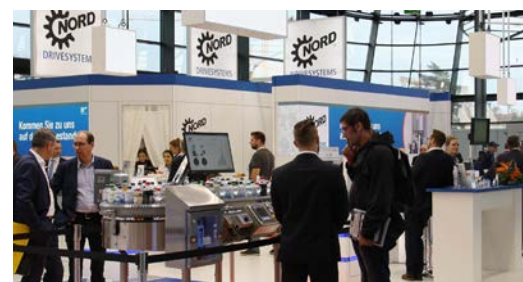


7 production locations with cutting-edge technology
produce gear units, motors, VFDs, and more to provide complete drive systems from a single source.



Subsidiaries and sales partners in 98 countries on 5 continents
provide local inventory, assembly, technical support, and industry-leading customer service.

The map shown above is for information only and does not claim to be created for or applicable to any legal purpose. For this reason, we do not assume any liability for legality, correctness and completeness.



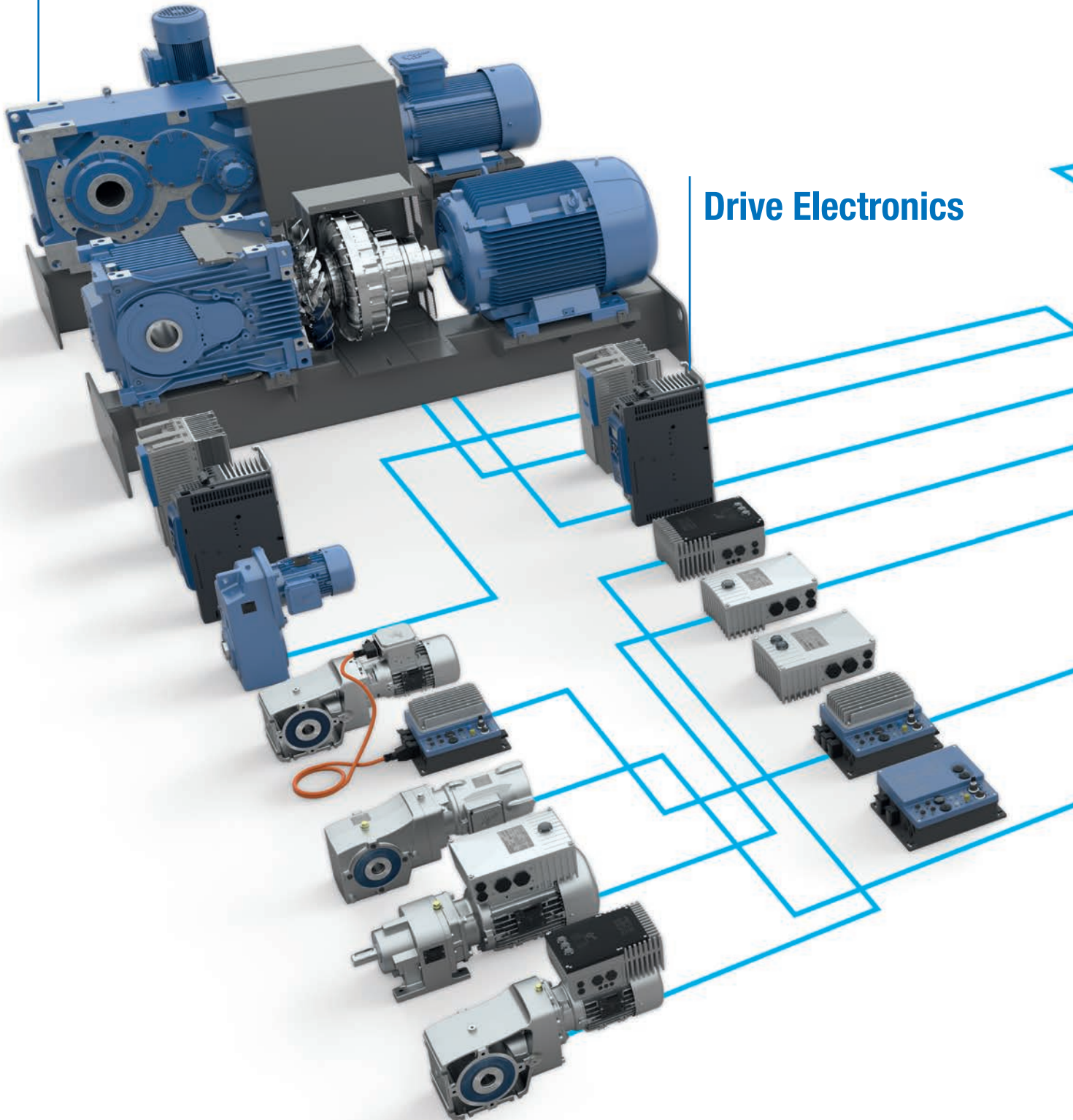
More than 4,000 employees throughout the world
create customized solutions.

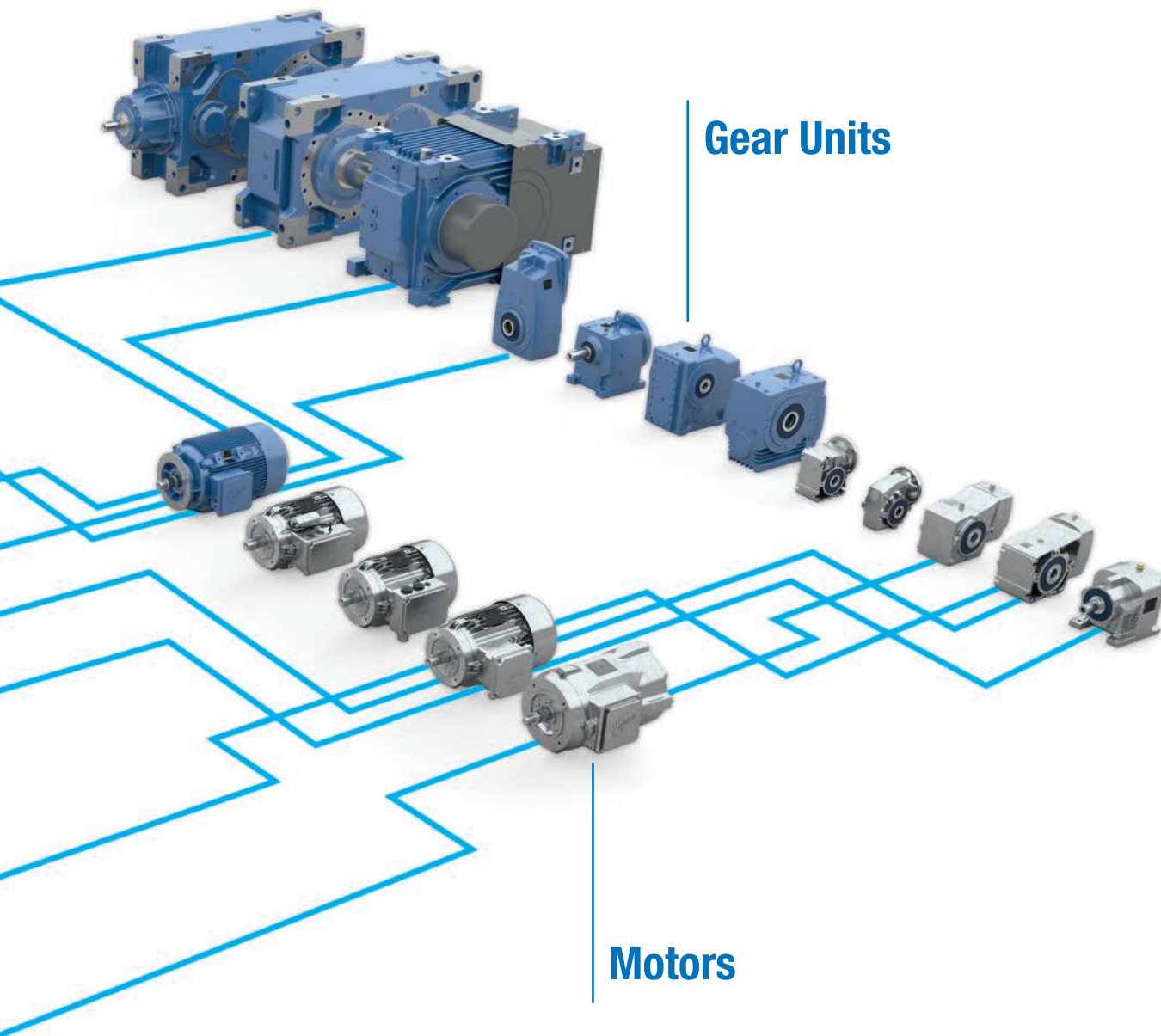


Contact Us Today! 888.314.6673
info.us@nord.com

Drive Solutions

Drive Electronics





Gear Units

Motors



Our products are available in ATEX certified versions.

An optimum and individual drive solution can therefore be created using the modular NORD system consisting of the gear unit, motor and drive electronics. The modular products are perfectly matched and can be combined in many variants. In addition, we offer planning, project management, installation, and service from a single source.

If required, industry solutions can be configured as a complete logistics package, programmed and ready for use. Each modular NORD product combines: highest product quality, short planning and assembly times, high delivery availability, and a good price/performance ratio. Our products are also available in ATEX certified versions.

THE ALL-ROUNDER

PRODUCT FAMILY NORDAC® FLEX

Introduction

NORDAC PRO
SK 500P

NORDAC PRO
SK 500E

NORDAC LINK

NORDAC FLEX

NORDAC BASE

NORDAC START

Accessories

Appendix

Variable frequency drives are essential components of electrical drive technology and are used for a wide range of automation tasks in almost all fields of application.

Universal

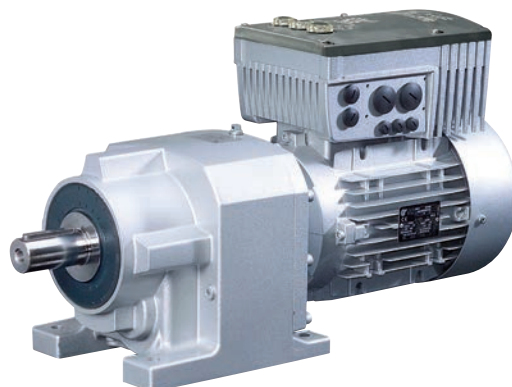
The highly versatile NORDAC® FLEX has established itself in almost all areas of engineering and industry. This is due not only to the wide range of available powers (up to 22 kW or 30 HP) but also the broad selection of functions and the flexibility offered by its comprehensive range of accessories.

Economical

The series has been structured with various function levels to take into consideration efficiency and customers' application-specific requirements. In addition, we have arranged the series into two equipment groups which optimally cater to typical customer applications for conveyors, pumps and fans.

Energy-saving

Even in applications where a VFD is not technically necessary (constant speed with 60 Hz), the NORDAC FLEX beats every unregulated drive unit with its substantial energy-saving characteristics, particularly in partial load operation (exact amount of savings is dependent on various factors).



Basic configuration

- Sensorless **current vector control** and **V/f characteristic curve**
- 4 switchable **parameter sets** for flexible use of parameter settings
- All common **drive functions** e.g. acceleration / braking on a ramp, PI controller
- **Parameters** with pre-set standard values
- **POSICON** for relative and absolute positioning
- **Incremental encoder interface** for speed feedback
- **Stator resistance measurement**
- **PLC functionality** for drive-related functions
- Operation of **three-phase asynchronous motors (ASM) and permanent magnet synchronous motors (PMSM)**

Optional

- Interfaces for **8 field bus systems**
- **Various control options** (switch, potentiometer or control and parameterization units)
- Versions with **functional safety** (Safe Stop)
- **IO modules** for additional analog and digital inputs and outputs
- **System plug connectors** for power connection of AC line and motor cables (industrial plug connectors) as well as for control and signal cables (M12 plug connectors)
- **ATEX versions** for operation in zone 22-3D

Pump/fan applications with the SK 2x0E

- 1~ 230 V .33-75 HP (0.25-0.55 kW)
- 3~ 230 V .33 - 15 HP (0.25-11 kW)
- 3~ 400 V .75 - 30 HP (0.55- 22 kW)

Typical requirements

- Speed setpoints/process signals via analog input, e.g. pressure sensors
- Stand-alone operation of individual drive units or mobile systems, thanks to integrated control voltage
- No motor or brake control necessary

Basic equipment of the SK 2x0E series

4 digital inputs
e.g. for left/right enabling, fixed frequencies or parameter set switchover

2 digital outputs
e.g. for reporting errors or various limit values

1 or 2 analog inputs
e.g. connection for speed setpoint or process signals

Integrated 24 V power supply
24 V control voltage for stand-alone operation



Conveyor applications with SK 2x5E (SK 2x0E, Size 4)

- 1~ 115 V .33 - 1 HP / 0.25- 0.75 kW
- 1~ 230 V .33-1.5HP / 0.25-1.1 kW
- 3~ 230 V .33 - 5 HP / 0.25-4 kW
(15 HP / 11 kW)
- 3~ 480 V .75-10 HP / 0.55-7.5 kW
(30 HP / 22 kW)

Typical requirements

- Separate voltage levels 480 V / 24 V, e.g. for separate start-up of bus system / control level and power
- Adjustable brake control with integrated rectifier
- No processing of analog values required as bus control is frequently used

Basic equipment of the SK 2x5E series

4 digital inputs
e.g. for left/right enabling, fixed frequencies or parameter set switchover

1 digital output
e.g. for reporting errors or various limit values

Connection for **external 24 V power supply**
Separate voltage levels for power and control, e.g. for separate start-up or online availability when the power is switched off

Integrated brake rectifier
Application and release time optimally adjustable via parameter

BRE

DELIVERING FLEXIBILITY IN A CONTROLLED DRIVE UNIT

If you are looking for a drive unit that enables your machine to perform specific functions, **NORDAC FLEX** can be perfectly tailored to your requirements and be easily retrofitted with a wide range of options to adapt to the changing conditions.

If you have:

Limited space

- Restricted installation space in the machine

High performance requirements

- High-performance drive units
- High breakaway torques

A need for high-precision speed control

- Speed fluctuations are not permissible
- Perfect load uptake (lifting equipment) is required
- Compensation for fluctuating loads (conveyor belts/conveying equipment)

A need for high-precision positioning

- Master-follower synchronization
- Movement to fixed positions (storage and retrieval machines)
- Movement to relative positions (endless belts in bottling plants)
- Movement of a drive unit to a changing position of a moving drive system (flying saw)

A need for high flexibility

- Short timeframe in case of service
- Frequent changes of use of your machine
- Existing motor and gear unit

A need for plug-and-play

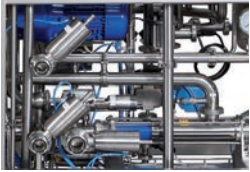
- Large projects or series production machinery
- Replacement devices for 1:1 exchange in case of service

A need for sustainability

- Resource-saving operation
- Use of products with low levels of hazardous substances

Introduction

NORDAC PRO
SK 500P



NORDAC PRO
SK 500E



NORDAC LINK



NORDAC FLEX



NORDAC BASE



NORDAC START



Accessories

Appendix



The NORDAC® FLEX solution:

Space-saving

- A compact device designed for the smallest possible overall dimensions
- Integrable optional modules (e.g. interfaces for field bus connection)
- Wall mounting kits for installation close to the motor

Powerful

- Unbeatable power range from 0.25 kW to 22 kW (0.33-30 HP)
- Optimized for continuous operation in 4 matching sizes
- Genuinely usable overload reserves of up to 200% of the rated power

Fast

- Comprehensive measuring methods for recording the actual electrical data as the basis for excellent control of the drive unit
- Integrated, precise and fast-acting current vector control for immediate adaptation to actual load conditions
- Integrated interface for connection of an incremental encoder to detect the actual motor speed (prerequisite for precise control)

Precise

- Integrated, precise, fast and completely autonomous positioning function (POSICON)
- Integrated interface for connection of an absolute encoder to detect the actual position

Adaptable

- Integrated DIP switches for basic configuration without modification of the software
- Comprehensive selection of plug connectors for control and power cable connections
- Easily accessible exchangeable data carrier (EEPROM) for simple exchange of parameter settings between identical devices
- Devices can also be supplied individually

Configurable

- Mounted on the geared motor
- Equipped with the necessary accessories (brake resistor, bus interface, encoders, etc.)
- Pre-parameterized for the specified drive application
- Equipped with the necessary system plug connectors

Environmentally friendly

- Energy efficient
- Energy-saving function to match the power output to the actual demand in partial load operation
- Consideration of environmental factors even during manufacture



VERSATILE AND SUSTAINABLE

VARIABLE FREQUENCY DRIVE WITH "SERVO GENES"

CANopen®



Standard encoder interfaces

Speed control in the NORDAC® *FLEX* is extremely precise thanks to sophisticated and fast measuring methods and calculation algorithms in combination with integrated high-precision current vector control.

For applications where even greater precision is needed in concert with very high dynamics (maximum acceleration, cyclic operation, synchronous rotation relative to other drive units) detailed accurate feedback from the mechanical momentary values of the motor or the drive unit is required. This feedback is provided by **incremental encoders**, which are normally mounted on the motor shaft and provide information about its actual position. These values enable the motor to be precisely controlled by the VFD so that even with large load fluctuations, an asynchronous motor can be operated with a performance similar to that of a servo motor.

Absolute encoders round off the concept so that high-precision drive applications such as,

- Synchronization of multiple drive units,
- Dynamic synchronization of a drive unit to a different drive unit (flying saw),
- Relative positioning tasks (cyclical drives),
- Absolute positioning tasks (automatic warehouse equipment / high-bay storage, lifting equipment with defined positions) are possible.

Every variable frequency drive is equipped with a corresponding interface

- HTL incremental encoder interface (connection via 2 digital inputs) - primarily for speed control,
- CANopen absolute encoder interface (connection via system bus) - primarily for positioning.

Available in all devices

Modern automation systems



Power
(115 V/230 V/400 V)

AS-Interface
including 24 V supply SK 2xxE

Modern automation systems have a wide range of requirements, so that a suitable bus system and drive components must be selected to ensure efficient implementation.

For the lower field level, the **AS-Interface** is a cost-effective solution that enables the networking of binary sensors and actuators. Special versions of the SK 200E series with an on-board AS-Interface are available.

The supply voltage is connected separately via the corresponding terminals. Depending on the version of the device, the control voltage is generated via an integrated power supply unit or supplied separately via the yellow AS-Interface cable. This eliminates the need for an additional AUX cable. The type of addressing possible (standard or A/B followers) also depends on the version of the device.

Device SK ...	220E/230E	225E/235E
ASI profile	S-7.A.	S-7.0.
ASI type	A/B	Standard
Control voltage	Internal power supply	Yellow AS-I cable
Inputs/Outputs	4/4	4/4
Configuration via DIP switch	✓	✓
Configuration via parameters	✓	✓

Introduction

NORDAC PRO SK 500P

NORDAC PRO SK 500E

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Appendix

ATEX-compliant drive systems, zone 22 3D

Size 1-3 devices can be modified for operation in explosive atmospheres. This allows the operation of the VFD directly in a hazardous area (ATEX 22-3D).

The advantages of this include:

- Compact drive unit
- No complex protective devices
- No motor cables
- Optimum EMC
- Permissible characteristic curves 50 Hz / 87 Hz
- Control range up to 100 Hz or 3000 rpm

Depending on the area of application (conductive or non-conductive dust), the modification includes replacement of the transparent diagnostic caps with a version made of aluminum and glass.

It must be noted that operation of the device within the hazard area is only permitted with integrable modules (SKCU4 modules, internal brake resistors) or specially approved accessories (ATEX potentiometer "SK ATX-POT").

There are exceptions for SK TU4 modules, which are described in detail in the manual for the device. Other accessories (e.g. external brake resistors, plug connectors) are not approved for use within a hazardous area.



Approval

- According to 2014/34/EU
- ATEX Zone 22 - 3D
 - Version for non-conducting dust: IP55
 - Version for conducting dust: IP66

Available in all size 1-3 devices



THE ENTIRE TEAM

NORDAC® FLEX VERSIONS AT A GLANCE

		SK 200E	SK 210E	SK 220E	SK 230E	SK 205E	SK 215E	SK 225E	SK 235E
		Size 1-4 0.25 - 22 kW 1/3-29.9 HP				Size 1-3 0.25 - 7.5 kW 1/3 -10.1 HP			
Introduction	Motor and wall mounting possible ¹		✓				✓		
	Energy bus - loop-through of AC line supply cables ²		✓				✓		
	Communication bus for various devices ²		✓				✓		
	Sensorless current vector control (ISD control)		✓				✓		
	Brake chopper (brake resistor optional)		✓				✓		
	RS-232 diagnostic interface		✓				✓		
	4 switchable parameter sets		✓				✓		
	Complete range of functions, as with a control cabinet VFD		✓				✓		
	Parameters pre-set with standard values		✓				✓		
	Scalable display values		✓				✓		
	Automatic determination of motor data		✓				✓		
	Energy-saving function, optimized efficiency in partial load operation		✓				✓		
	Class C2 line filter, for wall mounting with motor cable length up to 5 m and for motor mounting		✓				✓		
	Extensive monitoring functions		✓				✓		
	Load monitor		✓				✓		
	Process controller / PI controller		✓				✓		
	Plug-in memory module (EEPROM)		✓				✓		
	Incremental encoder evaluation (speed control)		✓				✓		
	POSIICON positioning control		✓				✓		
PLC functionality		✓				✓			
Synchronous motor operation (PMSM)		✓				✓			
Modification for operation in an IT network by means of jumpers		✓				✓			
Basic functions	All common field bus systems	○	○	○	○	○	○	○	○
	Brake management for mechanical holding brake	○	○	○	○ ³	✓			
	Lifting gear functionality	○	○	○	○ ³	✓			
	Safe Stop function (STO, SS1)	-	✓	-	✓	-	✓	-	✓
	AS-Interface on board	-	-	✓	✓	-	-	✓	✓
	Evacuation run	- ³	- ³	- ³	- ³	✓			
	Internal 24 V power supply unit to supply the control board		✓			○	○	○	○
	External 24 V power supply for the control board	○ ⁴	○ ⁴	○ ⁴	○ ⁴	✓			
	Internal / external braking resistors	○	○	○	○	○	○	○	○
	Switch and potentiometer versions	○	○	○	○	○	○	○	○
	Plug connectors for control, motor and AC line cables	○	○	○	○	○	○	○	○
Options	All common field bus systems	○	○	○	○	○	○	○	○
	Brake management for mechanical holding brake	○	○	○	○ ³	✓			
	Lifting gear functionality	○	○	○	○ ³	✓			
	Safe Stop function (STO, SS1)	-	✓	-	✓	-	✓	-	✓
	AS-Interface on board	-	-	✓	✓	-	-	✓	✓
	Evacuation run	- ³	- ³	- ³	- ³	✓			
	Internal 24 V power supply unit to supply the control board		✓			○	○	○	○
	External 24 V power supply for the control board	○ ⁴	○ ⁴	○ ⁴	○ ⁴	✓			
	Internal / external braking resistors	○	○	○	○	○	○	○	○
	Switch and potentiometer versions	○	○	○	○	○	○	○	○
	Plug connectors for control, motor and AC line cables	○	○	○	○	○	○	○	○

¹ Wall mounting: Wall mounting kit required
 Motor mounting: an adapter for connection to the motor terminal box may be necessary.

² Direct connection to the terminal bar or via system plug connectors

³ Size 4: standard

⁴ Size 1 -3: no, Size 4: optional

✓ Available as standard
 ○ Optional
 - Not available

THE SENSES

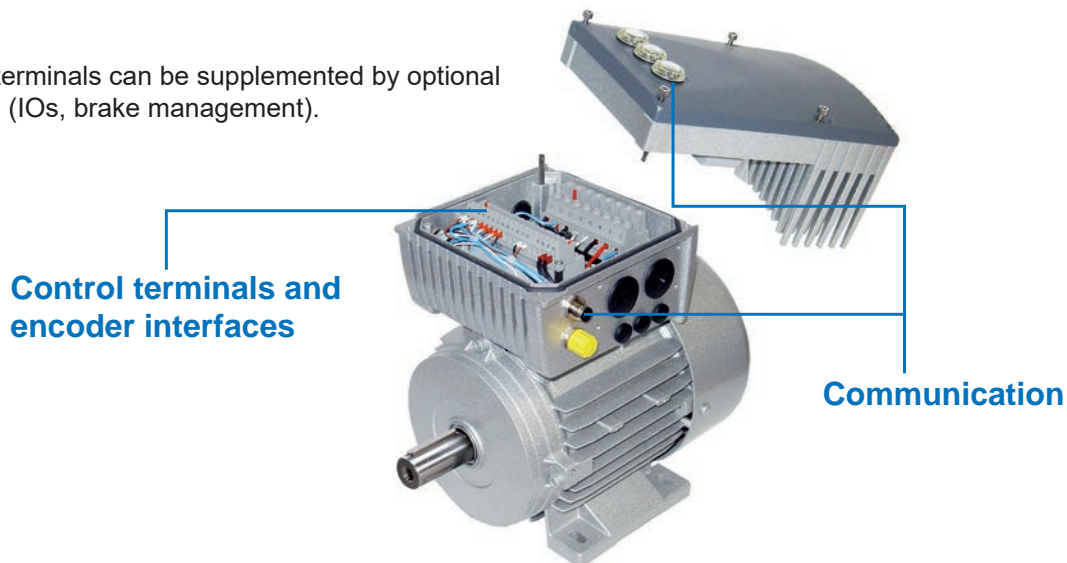
CONTROL CONNECTIONS

		SK 200E	SK 210E	SK 220E	SK 230E	SK 200E	SK 210E	SK 220E	SK 230E	SK 205E	SK 215E	SK 225E	SK 235E
		Size 1-3 0.25 - 7.5 kW 1/3 -10 HP				Size 4 11 - 22 kW 15-30 HP				Size 1-3 0.25 - 7.5 kW 1/3 -10 HP			
Control terminals	Number of digital inputs (DIN)	4	3	4	3	4	3	4	3	4	3	4	3
	Safe torque off input	-	✓	-	✓	-	✓	-	✓	-	✓	-	✓
	Number of digital outputs (DOUT)	2	2	2	2	2	2	2	2	1	1	1	1
	Number of analog inputs (AIN) ¹	2	2	1	1	2	2	2	2	-	-	-	-
	Brake control	-	-	-	-	✓				✓			
	Temperature sensor (PTC)	✓				✓				✓			
Encoder interfaces	HTL	✓				✓				✓			
	CANopen ²	✓				✓				✓			
Communication	RS 485 / RS232	✓				✓				✓			
	AS-I	-	-	✓	✓	-	-	✓	✓	-	-	✓	✓

¹ 0(2) - 10 V, 0(4) - 20 mA
² via system bus

Note

Control terminals can be supplemented by optional modules (IOs, brake management).

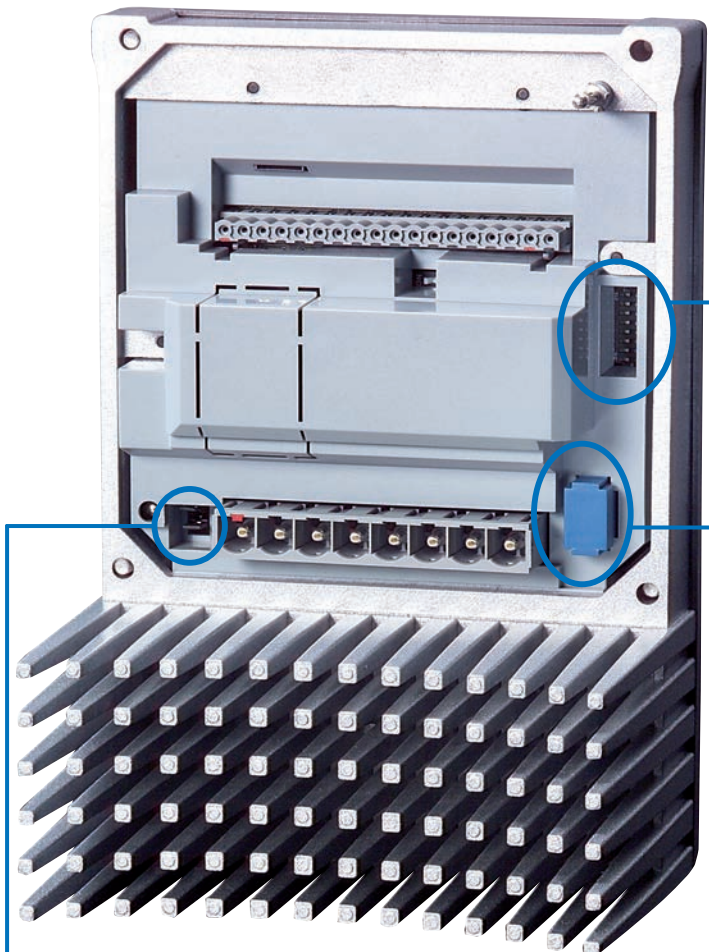


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- NORDAC BASE
- NORDAC START
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CONFIGURATION AND MONITORING

INTEGRATED AIDS FOR SAFE OPERATION

Introduction
NORDAC PRO SK 500P
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Commissioning with a screwdriver

Various basic functions can be simply set via easily accessible DIP switches so that commissioning is possible without parameterization software. Even when an EEPROM is plugged in, the DIP switch settings have priority over the relevant parameters.



Plug-in EEPROM

The variable frequency drive is equipped with two EEPROMs for saving the individual parameter settings of the device.

Jumpers for AC line adaptation

It is possible to adapt the variable frequency drive for operation in an IT network by plugging in a jumper. However, this adaptation has a negative effect on the emission of electromagnetic interference. Compliance with the specified degree of radio interference suppression can no longer be guaranteed in this case.

One EEPROM is integrated into the device and another EEPROM can be plugged in and is easily accessible. All parameter settings are managed by the internal EEPROM. The data is mirrored to the external EEPROM. Because of the easy access, data sets can be exchanged between identical drive units via the plug-in EEPROM. Via an optional parameterization adapter (SK EPG-3H) devices can be parameterized in the laboratory so that only the plug-in EEPROM needs to be transferred between the system and the laboratory.

Status and diagnostic cockpit

Depending on the type of device, various aids for monitoring and diagnostics are located behind three transparent cover caps. In addition, there are other elements (e.g. DIP switches or similar) which are useful for screwdriver-assisted commissioning.



Example: SK 2x0E

SK 2x0E in Sizes 1-3

(Size 4 as for SK 2x5E)

1 Diagnostic interface, RS-232 and RS-485

RJ12 interface for connection of a diagnostic and parameterization tool (e.g. PC with NORDCON software, Parameter Box). Analysis, diagnostics, parameterization and monitoring of the drive unit via software is possible during commissioning or service.

2 DIP switches for analog inputs

The integrated analog inputs of the device can be configured to the signal form of setpoint values (current or voltage) via the DIP switches.

3 Status LED for VFD and system bus

In addition to status and readiness indicators, the current overload level, warnings and error messages are indicated in coded form by the LEDs.

SK 2x5E and SK 2x0E in Size 4

1 Diagnostic interface, RS-232 and RS-485

RJ12 interface for connection of a diagnostic and parameterization tool (e.g. PC with NORDCON software, Parameter Box). Analysis, diagnostics, parameterization and monitoring of the drive unit via software is possible during commissioning or service.

2 Status and diagnostic LEDs

In addition to the operating status of the system bus, various signal statuses (e.g. of the digital IOs) can be read out here.

3 Potentiometer and status LEDs

The two potentiometers are used for the fixed setting of various dynamic factors (setpoint frequency, frequency band, acceleration time). The two diagnostic LEDs indicate the operating statuses and error messages of the device or the AS-Interface (if present).

NORDAC® FLEX

1~ 110 ... 120 V AND 1/3~ 200 ... 240 V

Introduction

Output frequency	0.0 ... 400.0 Hz
Pulse frequency	3.0 ... 16.0 kHz
Typical overload capacity	150% for 60 s, 200% for 3.5 s
Efficiency	> 95%
Ambient temperature	-25 °C ... +50 °C (depending on type of operation)

Protection class	IP55, optional IP66
Regulation and control	Sensorless current vector control (ISD), linear V/f characteristic
Motor temperature monitoring	I ² t Motor PTC / bi-metal switch
Leakage current	<40 mA for standard configuration of integrated line filter <20 mA for configuration for "operation on IT network"

NORDAC PRO SK 500P

NORDAC PRO SK 500E

NORDAC LINK

Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Nominal motor power		Nominal output current rms [A]	AC line voltage	Output voltage
			230 V [kW]	240 V [hp]			
-250-112-O (-C)	-	✓	0.25	1/3	1.7	1~ 110 ... 120 V, +/- 10 %, 47 ... 63 Hz	3~ 0 up to double the AC line voltage
-370-112-O (-C)	-	✓	0.37	1/2	2.2		
-550-112-O (-C)	-	✓	0.55	3/4	3.0		
-750-112-O (-C)	-	✓	0.75	1	4.0		

NORDAC FLEX

Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Nominal motor power		Nominal output current rms [A]	AC line voltage	Output voltage
			230 V [kW]	240 V [hp]			
-250-123-A (-C)	✓	✓	0.25	1/3	1.7	1~ 200 ... 240 V +/-10% 47 ... 63 Hz	3 AC 0 – 200 ... 240 V
-370-123-A (-C)	✓	✓	0.37	1/2	2.2		
-550-123-A (-C)	✓	✓	0.55	3/4	3.0		
-750-123-A (-C)	-	✓	0.75	1	4.0		
-111-123-A (-C)	-	✓	1.1	1 1/2	5.5		

NORDAC BASE

Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Nominal motor power		Nominal output current rms [A]	AC line voltage	Output voltage
			230 V [kW]	240 V [hp]			
-250-323-A (-C)	✓	✓	0.25	1/3	1.7	3~ 200 ... 240 V, +/- 10%, 47 ... 63 Hz	3~ 0 up to AC line voltage
-370-323-A (-C)	✓	✓	0.37	1/2	2.2		
-550-323-A (-C)	✓	✓	0.55	3/4	3.0		
-750-323-A (-C)	✓	✓	0.75	1	4.0		
-111-323-A (-C)	✓	✓	1.1	1 1/2	5.5		
-151-323-A (-C)	✓	✓	1.5	2	7.0		
-221-323-A (-C)	✓	✓	2.2	3	9.5		
-301-323-A (-C)	✓	✓	3	4	12.5		
-401-323-A (-C)	✓	✓	4	5	16.0		
-551-323-A (-C)	✓	-	5.5	7 1/2	23.0		
-751-323-A (-C)	✓	-	7.5	10	29.0		
-112-323-A (-C)	✓	-	11	15	40.0		

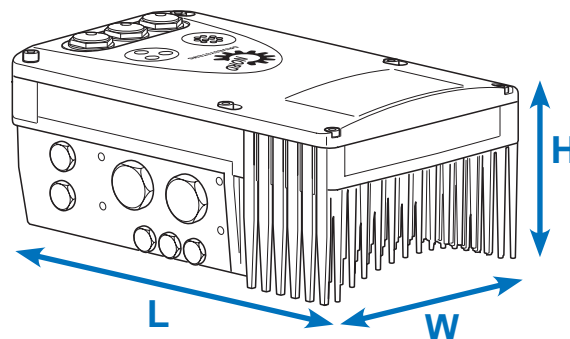
NORDAC START

Accessories

Appendix

IP66 measures

- Coated aluminum components
- Coated circuit boards
- Low-pressure test
- Diaphragm valve



Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Weight [kg / lbs]	Dimensions L x W x H	Size
-250-112-O (-C)	-	✓	3.0 kg / 6.6 lbs	236 x 156 x 127 mm 9.29 x 6.14 x 5.00 in	1
-370-112-O (-C)	-	✓			
-550-112-O (-C)	-	✓	4.1 kg / 9.0 lbs	266 x 176 x 134 mm 10.47 x 6.92 x 5.27 in	2
-750-112-O (-C)	-	✓			

Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Weight [kg]	Dimensions L x W x H	Size
-250-123-A (-C)	✓	✓	3.0 kg / 6.6 lbs	236 x 156 x 127 mm 9.29 x 6.14 x 5.00 in	1
-370-123-A (-C)	✓	✓			
-550-123-A (-C)	✓	✓			
-750-123-A (-C)	-	✓	4.1 kg / 9.0 lbs	266 x 176 x 134 mm 10.47 x 6.92 x 5.27 in	2
-111-123-A (-C)	-	✓			

Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Weight [kg]	Dimensions L x W x H	Size
-250-323-A (-C)	✓	✓	3.0 kg / 6.6 lbs	236 x 156 x 127 mm 9.29 x 6.14 x 5.00 in	1
-370-323-A (-C)	✓	✓			
-550-323-A (-C)	✓	✓			
-750-323-A (-C)	✓	✓			
-111-323-A (-C)	✓	✓			
-151-323-A (-C)	✓	✓	4.1 kg / 9.0 lbs	266 x 176 x 134 mm 10.47 x 6.92 x 5.27 in	2
-221-323-A (-C)	✓	✓			
-301-323-A (-C)	✓	✓	6.9 kg / 15.2 lbs	330 x 218 x 144 mm 12.99 x 8.58 x 5.66 in	3
-401-323-A (-C)	✓	✓			
-551-323-A (-C)	✓	-	17.0 kg / 37.4 lbs	480 x 305 x 160 mm 18.89 x 12.00 x 6.29 in	4
-751-323-A (-C)	✓	-			
-112-323-A (-C)	✓	-			

Output frequency	0.0 ... 400.0 Hz
Pulse frequency	3.0 ... 16.0 kHz
Typical overload capacity	150% for 60 s, 200% for 3.5 s
Efficiency	> 95%
Ambient temperature	-25 °C ... +50 °C (depending on type of operation)

Protection class	IP55, optional IP66
Regulation and control	Sensorless current vector control (ISD), linear V/f characteristic
Motor temperature monitoring	I ² t Motor PTC / bi-metal switch
Leakage current	<40 mA for standard configuration of integrated line filter <20 mA for configuration for "operation on IT network"

Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Nominal motor power		Nominal output current rms [A]	AC line voltage	Output voltage
			400 V [kW]	480 V [hp]			
-550-340-A	✓	✓	0.55	3/4	1.7	3~ 380 ... 500 V, -20% / +10%, 47 ... 63 Hz	3~ 0 up to AC line voltage
-750-340-A	✓	✓	0.75	1	2.3		
-111-340-A	✓	✓	1.1	1 1/2	3.1		
-151-340-A	✓	✓	1.5	2	4.0		
-221-340-A	✓	✓	2.2	3	5.5		
-301-340-A	✓	✓	3.0	4	7.5		
-401-340-A	✓	✓	4.0	5	9.5		
-551-340-A	✓	✓	5.5	7 1/2	12.5		
-751-340-A	✓	✓	7.5	10	16.0		
-112-340-A	✓	–	11.0	15	23.0		
-152-340-A	✓	–	15.0	20	32.0		
-182-340-A	✓	–	18.5	25	40.0		
-222-340-A	✓	–	22.0	30	46.0		

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NORDAC PRO SK 500E

NORDAC LINK

NORDAC FLEX

NORDAC BASE

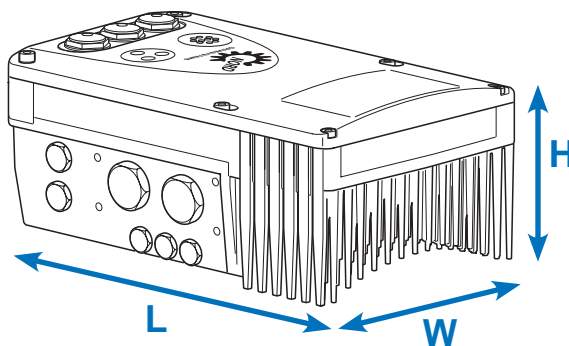
NORDAC START

Accessories

Appendix

IP66 measures

- Coated aluminum components
- Coated circuit boards
- Low-pressure test
- Diaphragm valve



Variable frequency drives SK 2xxE ...	SK 2x0E	SK 2x5E	Weight [kg / lbs]	Dimensions L x W x H	Size
-550-340-A	✓	✓	3.0 kg / 6.6 lbs	236 x 156 x 127 mm 9.29 x 6.14 x 5.00 in	1
-750-340-A	✓	✓			
-111-340-A	✓	✓			
-151-340-A	✓	✓			
-221-340-A	✓	✓			
-301-340-A	✓	✓	4.1 kg / 9.0 lbs	266 x 176 x 134 mm 10.47 x 6.92 x 5.27 in	2
-401-340-A	✓	✓	6.9 kg / 15.2 lbs	330 x 218 x 144 mm 12.99 x 8.58 x 5.66 in	3
-551-340-A	✓	✓			
-751-340-A	✓	✓			
-112-340-A	✓	–	17.0 kg / 37.4 lbs	480 x 305 x 160 mm 18.89 x 12.00 x 6.29 in	4
-152-340-A	✓	–			
-182-340-A	✓	–			
-222-340-A	✓	–			

VARIED INSTALLATION POSSIBILITIES

MOTOR AND WALL MOUNTING

Motor assembly

The variable frequency drive can be mounted directly on the terminal box of the gear motor, thus forming a perfect unit consisting of the drive and the control technology. This motor-mounted format makes full use of its unbeatable advantages: compact overall dimensions of the drive unit; near immediate readiness for use after connection to the AC line supply thanks to the pre-configuration of the drive unit at the factory; optimum EMC due to short cable lengths, or elimination of a motor cable.

Wall mounting

As an alternative to motor mounting, the device can be mounted close to the motor with a wall mounting kit. You can select from different versions depending on the prevalent ambient conditions.

1. Standard version

SK TIE4-WMK-1-K (-2-K or -3)

Note: If the VFD is wall mounted, the cooling air flow from the motor is not present. This can ultimately result in power restrictions (derating) for the drive.

2. Versions with fan

SK TIE4-WMK-L-1 (or -L-2)

This version differs from the standard version due to an extra fan. The fan ensures a continuous flow of cooling air over the VFD, which avoids derating due to wall mounting. Size 4 variable frequency drives come equipped with fans. A corresponding wall mounting kit is therefore not necessary and is not available.

3. ATEX version

SK TIE4-WMK-1-EX (up to -2-EX)

This version is functionally comparable to the standard version, however it is suitable for use in explosion hazard environments (ATEX Zone 22 3D).

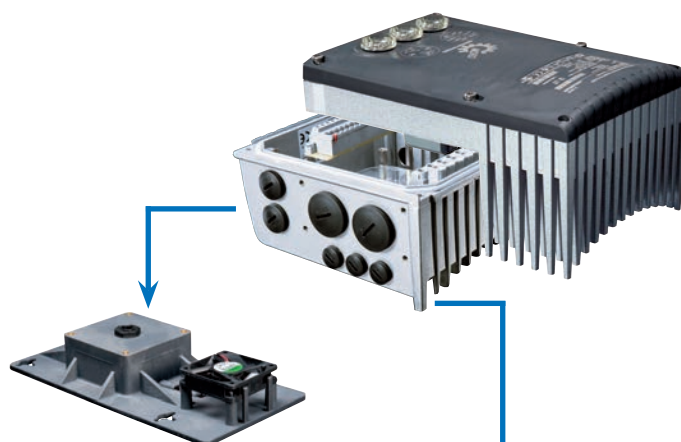
Designation	Material No.	VFD Frame Size
SK TIE4-WMK-1-K	275 274 004	Size 1, 2
SK TIE4-WMK-2-K	275 274 015	Size 3
SK TIE4-WMK-L-1	275 274 005	Size 1, 2
SK TIE4-WMK-L-2	275 274 006	Size 3
SK TIE4-WMK-1-EX	275 175 053	Size 1, 2
SK TIE4-WMK-2-EX	275 175 054	Size 3
SK TIE4-WMK-3	275 274 003	Size 4
SK TIE4-WMK-3-C	275 274 009	Size 4
SK TIE4-WMK-TU	275 274 002	Type: SK TU4-

¹ Mounting of the WMK on the connection unit of the VFD

² H = Increase in the total height of the device if use the wall mounting kit

³ Mounting of the WMK on the connection unit of the technology unit

Motor-mounted or wall-mounted variable frequency drives



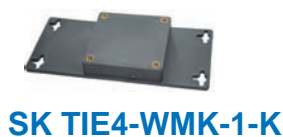
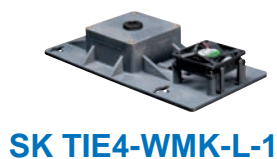
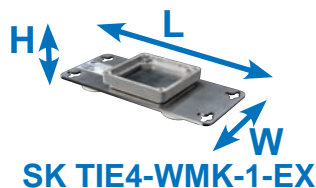
Wall mounting
(with or without fan)

Motor Assembly

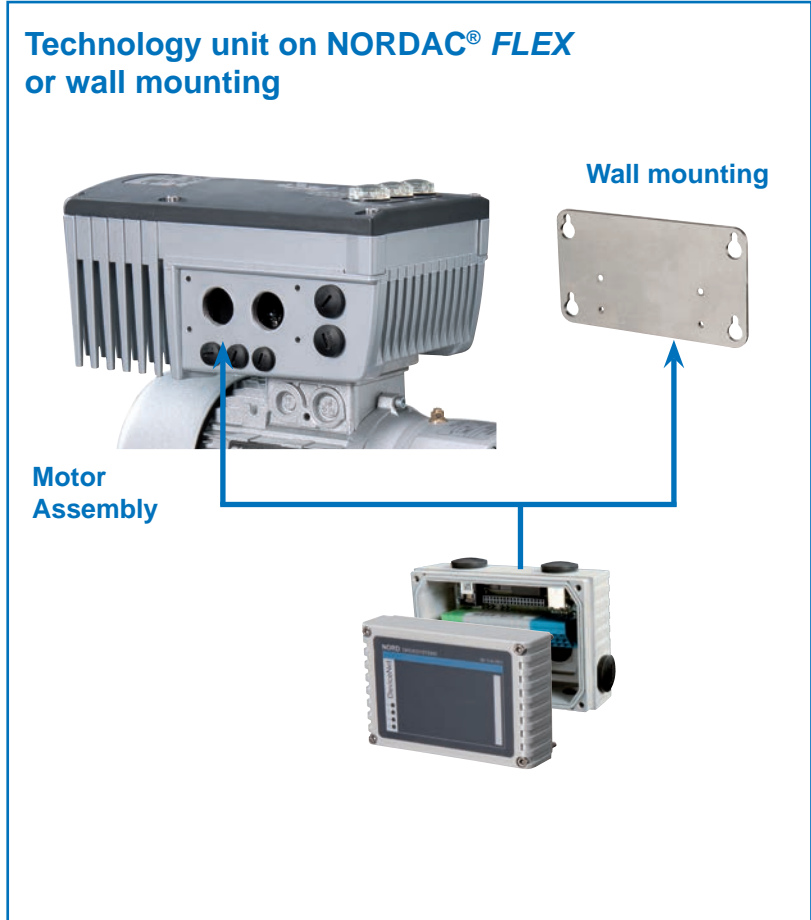
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Designation	Version Material	Integrated fan	Achievable protection class	Weight [Kg]	Dimensions L x W x H	Remarks
SK TIE4-WMK-1-K	Plastic	-	IP66	0.2	205 x 95 x 5 mm 8.07 x 3.74 x 0.19 in	Derating as necessary
SK TIE4-WMK-2-K	Plastic	-	IP66	0.3	235 x 105 x 5 mm 9.25 x 4.13 x 0.19 in	Derating as necessary
SK TIE4-WMK-L-1	Plastic	✓	IP55	0.4	255 x 130 x 24 mm 10.03 x 5.11 x 0.94 in	Fan power: 24 V DC, 1.3 W
SK TIE4-WMK-L-2	Plastic	✓	IP55	0.5	300 x 150 x 30 mm 11.81 x 5.90 x 1.18 in	Fan power: 24 V DC, 1.3 W
SK TIE4-WMK-1-EX	Stainless steel	-	IP66	0.6	205 x 95 x 4 mm 8.07 x 3.74 x 0.15 in	Derating as necessary
SK TIE4-WMK-2-EX	Stainless steel	-	IP66	0.8	235 x 105 x 10 mm 9.25 x 4.13 x 0.39 in	Derating as necessary
SK TIE4-WMK-3	Stainless steel	-	IP55	2.4	295 x 255 x 8 mm 11.61 x 10.03 x 0.31 in	
SK TIE4-WMK-3-C	Stainless steel	-	IP66	2.4	295 x 255 x 8 mm 11.61 x 10.03 x 0.31 in	

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Technology unit on NORDAC® FLEX or wall mounting



Motor Assembly

Wall mounting

BRAKE RESISTORS

INTERNAL VERSION

Internal brake resistor SK BRI4

Internal brake resistors are intended for applications where slight, sporadic or brief braking is expected (e.g. continuous conveyor equipment, mixing equipment). In addition, they enable the use of the variable frequency drive in very confined spaces or in an explosive atmosphere.

Internal brake resistors are intended for installation in the connection unit of the VFD. The devices provide space for the integration of one brake resistor or a set of 2 brake resistors (SK 2x0E, size 4). For thermal reasons, the rated continuous output is limited to 25%.



Variable frequency drive SK 2xxE ...		Resistor type	Material No.	Resistance [Ω]	Continuous output [W]	Power consumption ² [kW]
1~ 115 V	... -250-112-O up to ... -750-112-O	SK BRI4-1-100-100	275 272 005	100	100/25%	1.0
	... -250-123-A up to ... -111-123-A	SK BRI4-1-100-100	275 272 005	100	100/25%	1.0
3~ 230 V	... -250-323-A up to ... -221-323-A	SK BRI4-1-200-100	275 272 008	200	100/25%	1.0
	... -301-323-A up to ... -401-323-A	SK BRI4-2-100-200	275 272 105	100	200/25%	2.0
	... -551-323-A up to ... -751-323-A	SK BRI4-3-047-300	275 272 201	47	300/25%	3.0
	... -112-323-A	SK BRI4-3-023-600	275 272 800	23	600/25%	6.0
3~ 480 V	... -550-340-A up to ... -401-340-A	SK BRI4-1-400-100	275 272 012	400	100/25%	1.0
	... -551-340-A up to ... -751-340-A	SK BRI4-2-200-200	275 272 108	200	200/25%	2.0
	... -112-340-A up to ... -152-340-A	SK BRI4-3-100-300	275 272 205	100	300/25%	3.0
	... -182-340-A up to ... -222-340-A	SK BRI4-3-050-600	275 272 801	50	600/25%	6.0

¹ Reduction of the continuous output of the brake resistor to 25% of the rated output

² Permissible max. once within 10 s

BRAKE RESISTORS

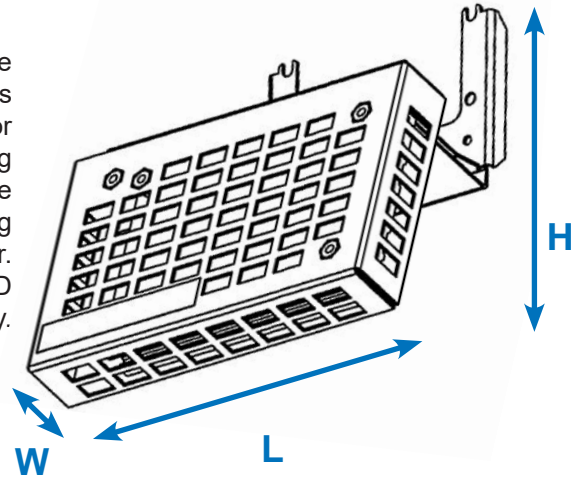
EXTERNAL VERSIONS

External brake resistors SK BRE4

External brake resistors (IP67) are intended for applications in which longer (lifting equipment), frequent (cyclic operation) or intensive (highly dynamic positioning applications) braking is expected. They are mounted directly on the VFD. Typically, they can develop high surface temperatures (>70°C), which exclude their use in an explosive atmosphere.

Note

The brake resistors listed here are designed for typical applications with occasional braking. For applications with higher braking power (lifting equipment), we recommend targeted planning of the necessary brake resistor. Please contact the NORD DRIVESYSTEMS Group directly.



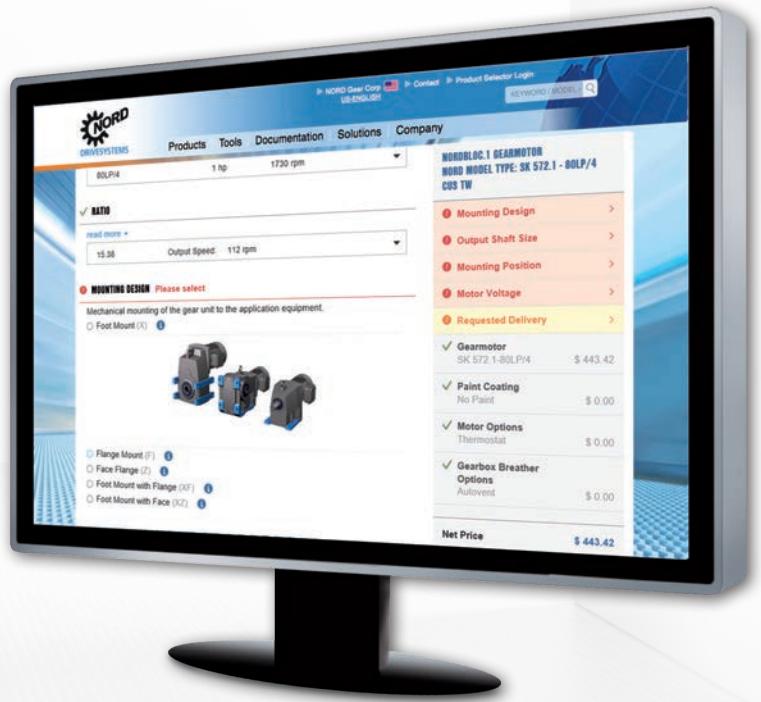
Variable frequency drives SK 2xxE ...		Resistor type Material No.	Resistance [Ω]	Continuous output [W]	Power Consumption ¹ [kW]	L x W x H
1 ~ 115 V	... -250-112-O up to ... -750-112-O	SK BRE4-1-100-100 275 273 005	100	100	2.2	150 x 61 x 178 mm 5.90 x 2.40 x 7.00 in
		Alternatively: SK BRE4-2-100-200 275 273 105	100	200	4.4	255 x 61 x 178 mm 10.03 x 2.40 x 7.00 in
1 ~ 230 V	... -250-123-A up to ... -111-123-A	SK BRE4-1-100-100 275 273 005	100	100	2.2	150 x 61 x 178 mm 5.90 x 2.40 x 7.00 in
		Alternatively: SK BRE4-2-100-200 275 273 105	100	200	4.4	255 x 61 x 178 mm 10.03 x 2.40 x 7.00 in
3 ~ 230 V	... -250-323-A up to ... -221-323-A	SK BRE4-1-200-100 275 273 008	200	100	2.2	150 x 61 x 178 mm 5.90 x 2.40 x 7.00 in
		Alternatively: SK BRE4-2-200-200 275 273 108	200	200	4.4	255 x 61 x 178 mm 10.03 x 2.40 x 7.00 in
	... -301-323-A up to ... -401-323-A	SK BRE4-2-100-200 275 273 105	100	200	4.4	255 x 61 x 178 mm 10.03 x 2.40 x 7.00 in
		SK BRE4-3-050-450 275 273 201	50	450	3.0	355 x 245 x 318 mm 13.97 x 9.64 x 12.51 in
3 ~ 480 V	550-340-A up to ... -401-340-A	SK BRE4-1-400-100 275 273 012	400	100	2.2	150 x 61 x 178 mm
		Alternatively: SK BRE4-2-200-200 275 273 108	200	200	4.4	255 x 61 x 178 mm 10.03 x 2.40 x 7.00 in
	... -551-340-A up to ... -751-340-A	SK BRE4-2-200-200 275 273 108	200	200	4.4	255 x 61 x 178 mm 10.03 x 2.40 x 7.00 in
		SK BRE4-3-100-450 275 273 205	100	450	3.0	355 x 245 x 318 mm 13.97 x 9.64 x 12.51 in

¹ Permissible max. once within 120 s

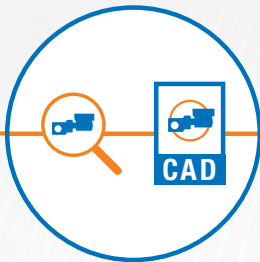


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