NORDAC *LINK* Field distributor for decentralized applications

Variable frequency drive SK 250E-FDS,
Motor starter SK 155E-FDS

NORD® DRIVESYSTEMS

Easy connection
NORDAC *LINK*, SK 250E-FDS and SK 155E-FDS series

NORDAC *LINK*
Variable frequency drive

NORDAC *LINK*
Motor starter

General conveyor technology and intralogistics require drive control systems that can be installed quickly and easy to access during operation or if maintenance is required. The NORDAC *LINK* field distribution system supplements the NORD DRIVESYSTEMS range of products and provides drive control that can be installed close to the motor. System costs can be significantly reduced thanks to the decentralized drive technology.

- Flexible configuration and function – freely configurable according to requirements and the application
- Available as frequency drives (up to 10 HP) and motor starters (up to 4 HP)
- 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 0 – up to 1 HP
Size 1 – up to 4 HP

Variable frequency drive
Size 0 – up to 1 HP
Size 1 – up to 4 HP

Variable frequency drive
Size 2 – up to 10 HP

NORDAC *LINK*
extensive basic equipment

▸ Monitoring of load torque depending on the output frequency ▸ Individual adaptation of load monitoring to protect the system from overload Available in all VFDs from SK 250E and higher	Load monitor
▸ High efficiency in partial load operation ▸ Reduced operating costs due to energy savings of up to 60% ▸ Simple setting Available in all VFDs from SK 250E and higher	Energy-saving function
▸ High-precision current vector control for rapid and precise load take-up ▸ Integrated brake chopper to divert generated energy to a brake resistor (braking resistor optional) ▸ Brake management for optimum control of an electro-mechanical holding brake Available in all VFDs from SK 250E and higher	Lifting gear functions
▸ Feedback and evaluation of actual values for implementation of closed circuit control e.g. flow or compensator control ▸ P and I components can be set separately Available in all VFDs from SK 250E and higher	Process controller, PI controller
▸ Control of one or more follower VFD by a master VFD ▸ Communication via USS or CANopen® with control word and setpoint values Available in all VFDs from SK 250E and higher	Master / Follower operation

▸ High-precision speed regulation
▸ Direct feedback of the actual speed characteristics to the VFD allows:
  ▸ Highest possible acceleration
  ▸ Full torque down to standstill (speed 0)
  ▸ Digital speed controller with wide range of settings
Available in all VFDs from SK 250E and higher
	Encoder feedback (Servo Mode)

▸ Simple adaptation to control systems through optional interfaces ▸ Quick and simple diagnosis via easily visible LED indicators ▸ Various control boxes available for display, operation, and parameterization ▸ Simple operation, parameterization through parameter structure and intuitive layout of control elements Available in all VFDs from SK 250E and higher	Handling and communication
▸ Bus systems – NORD supports all common bus systems to enable simple installation in the system design	Bus systems
▸ Functional safety - STO, SS1: Integrated, TÜV-certified safety functions simplify system design Available for SK 260E and SK 280E VFDs	Functional safety
▸ Functional safety in bus communication with PROFIsafe, integrated, and TÜV-certified safety functions (SLS, SSR, SDI, SOS, SSM), connection and evaluation of a fail-safe SIN/COS encoder possible, 2 safe digital inputs (SI) and outputs (SO), max. 100 Mbaud, conformance class B and C, this option cannot be integrated later and must be specified during ordering Available for SK 260E and SK 280E VFDs in combination with SK CU4-PNS	Functional safety in bus communication

Standards and approvals
Type code

Motor starter field distributor

All drives of the series comply with the standards and directives listed below.

Approval	Directive		Applied standards	Certificates	Code
CE (European Union)	Low Voltage Directive	2014/35/EU	EN 60947-1 EN 60529 EN 60947-4-2 EN 630001	C310801	CE
	EMC	2014/30/EU			
	RoHS	2011/65/EU			
UL (USA)	Delegated directive (EU)	2015/863			
CSA (Canada)			UL 60947-1 UL 60947-4-2	E365221	c UL us LISTED
RCM (Australia)			C22.2 No.60947-1-13 C22.2 No.60947-4-2-14	E365221	
EAC (Eurasia)	F2018L00028		EN 60947-1 EN 60947-4-2	133520966	EAC
EAC (Eurasien)	TR CU 004/2011, TR CU 020/2011		IEC 60947-1 IEC 60947-4-2	ЕАЭС N RU Д-DE.HB27.B.02731/20	

SK 175E-FDS-301-340-A-AXS(-xxx)

- Equipment code (multiple statements possible)
- Device version
  - **AS-i** – Actuator-sensor interface with “AS-i” connector option
  - **ASS** – Actuator-sensor interface with “ASS” connector option
  - **AUX** – Actuator-sensor interface with “AUX” connector option
  - **AXS** – Actuator-sensor interface with “AXS” connector option
  - **PBR** – PROFIBUS interface
- Radio interference suppression **A** = class A
- Mains voltage: **x40** = 400 V
- Number of mains phases: **3xx** = 3-phase
- Digits before decimal point for power: **0** = 0.xx, **1** = 0x.x0
- Device rated power: **111** = 1.1 kW / 1.5 HP, **301** = 3.0 kW / 4 HP
- Motor starter series: SK 155E-FDS, SK 175E-FDS

Standards and approvals
Type code

Field distributor variable frequency drive

All drives of the series comply with the standards and directives listed below.

Approval	Directive		Applied standards	Certificates	Code
CE (European Union)	Low Voltage Directive	2014/35/EU	EN 61800-5-1 EN 60529 EN 61800-3 EN 63000 EN 61800-9-1 EN 61800-9-2	C310701	CE
	EMC	2014/30/EU			
	RoHS	2011/65/EU			
	Delegated directive (EU)	2015/863			
	Ecodesign	2009/125/EG			
	Regulation (EU) Ecodesign	2019/1781			
UL (USA)			UL 61800-5-1	E171342	c UL us LISTED
CSA (Canada)			C22.2 No274-13	E171342	
RCM (Australia)	F2018L00028		EN 61800-3	133520966	
EAC (Eurasia)	TR CU 004/2011, TR CU 020/2011		IEC 61800-5-1 IEC 61800-3	ЕАЭС N RU Д-DE. HB27.B.02725/20	EAC

SK 250E-FDS-301-340-A (-xxx)

- Equipment code (multiple statements possible)
- Radio interference suppression **0** = without, **A** = class A1 (C2)
- Mains voltage: **x40** = 400 V
- Number of mains phases: **3xx** = 3-phase
- Digits before decimal point for power: **0** = 0.xx, **1** = 0x.x0
- Device rated power: **370** = 0.37 kW / 0.5 HP, **301** = 3.0 kW / 4 HP, **751** = 7.50 kW / 10 HP
- Variable frequency drive series:
  SK 250E-FDS, SK 260E-FDS, SK 270E-FDS, SK 280E-FDS

AS-Interface

Modern automation systems

Modern automation systems have a wide range of requirements and in order to ensure efficient operation, require a specific bus system and drive components.

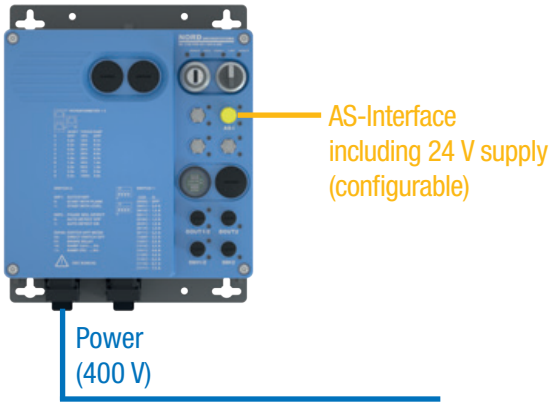
AS-Interface

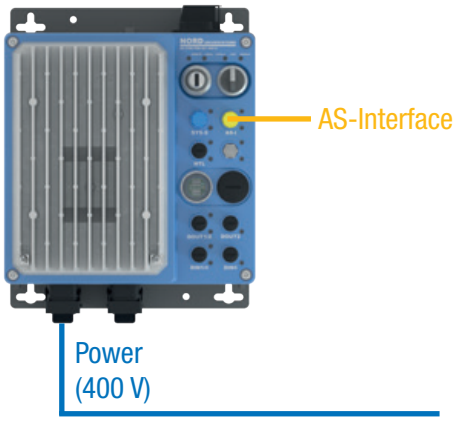
The AS-Interface is a cost-effective solution that enables the networking of binary sensors and actuators for the lower field level. NORDAC *LINK* can be configured with an AS-Interface to provide special versions for this price-sensitive area.

The VFDs supply voltage is connected separately via corresponding plugs and the control voltage, depending on the version of the drive, is generated either via an integrated power supply unit or supplied separately with the yellow AS-Interface cable. This eliminates the need for an additional AUX cable (black).

The type of addressing possible (standard or A/B follower) also depends on the version of the device. The “ASI” and “AUX” variants are designed as double follower with the VFD. With the double followers, there are two physical A/B followers in the device which can be configured for extended data transfer according to the CTT2 protocol. Additional IO bits (1 x BUS IN + 2 x BUS OUT) are available for the extended data transfer.

Available in the following devices:
SK 155E-FDS-...-ASI,
SK 175E-FDS-...-ASI,
SK 270E-FDS,
SK 280E-FDS





PROFIBUS DP®

This bus system allows for cyclic exchange of 4 control or 4 status bits via a process data object (with up to 12 Mbps). Addressing is performed via a rotary encoding switch. The PROFIBUS® termination resistor can be set via a standard M12 termination resistor. Connection is made with M12 plug connectors.

Available in all
SK 175E ... ASI devices

Variant	Follower profile	Follower type	Control voltage	Inputs/Outputs	Configuration via parameters
-ASI	S-7.A	A/B-Follower	Yellow AS-I cableg	4I/4O + 1I/2O[1]	●
-AUX	S-7.A	A/B-Follower	Black AS-I cable	4I/4O + 1I/2O[1]	●
-AXS	S-7.0	Standard	Black AS-I cabl	4I/4O	●

[1] additionally available I/Os for configuration of CTT2 protocol (only available with variable frequency drives)

The entire team
All device versions at a glance

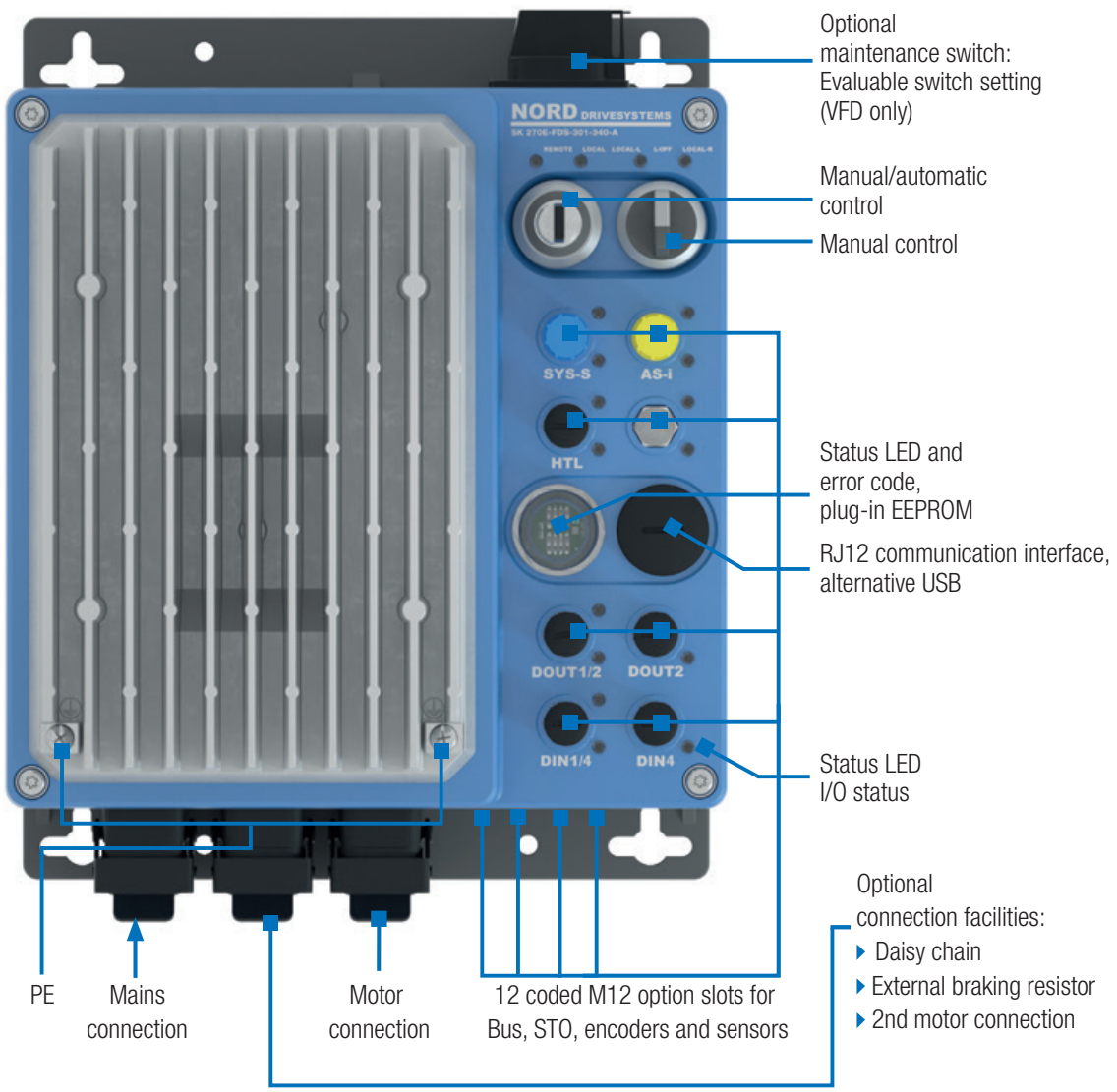
	SK 155E-FDS	SK 175E-FDS	SK 250E-FDS	SK 260E-FDS	SK 270E-FDS	SK 280E-FDS
	Motor starters 0.10 - 4 HP			VFDs 0.5 - 10 HP		
Plug connection of mains, motor, and control cables	●	●	●	●	●	●
Energy bus - loop-through of mains supply cables	○	○	○	○	○	○
Repair/maintenance switch	○	○	○	○	○	○
Sensorless current vector control (ISD control)	❍	❍	●	●	●	●
Brake chopper (brake resistor optional)	❍	❍	●	●	●	●
RS-232/ RS-485 parameterization and diagnostic interface (optional USB)	●	●	●	●	●	●
4 parameter sets, which can be switched over during operation	❍	❍	●	●	●	●
Parameters pre-set with standard values	●	●	●	●	●	●
Automatic determination of motor data	❍	❍	●	●	●	●
Energy-saving function, optimized efficiency in partial load operation	❍	❍	●	●	●	●
Integrated EMC line filters	according to EN 55011: Class A up to 20 m motor cable			according to EN 61800-3: Category C2 up to 10 m[1] motor cable		
Drive unit monitoring function, including motor monitoring, motor thermistor evaluation	●	●	●	●	●	●
Reversing function	❍	●	●	●	●	●
PI controller	❍	❍	●	●	●	●
Process controller / compensator control	❍	❍	●	●	●	●
Speed control (closed loop) with incremental encoder (HTL)	❍	❍	●	●	●	●
POSICON positioning with incremental encoder (HTL) or absolute encoder (CANopen®)	❍	❍	●	●	●	●
PLC functionality	●	●	●	●	●	●
Synchronous motor operation (PMSM)	❍	❍	●	●	●	●
Modification for operation in IT network[2]	●	●	●	●	●	●
Plug-in parameter storage (EEPROM) for additional data backup	❍	❍	○	○	○	○
All common field bus systems	❍	❍	○	○	○	○
Brake management for mechanical holding brake	○	○	○	○	○	○
Lifting gear functionality	❍	❍	○	○	○	○
Safe Stop function (STO, SS1)	❍	❍	❍	●	❍	●
Torque control and limitation	❍	❍	●	●	●	●
AS-Interface on board	❍	○[3]	❍	❍	●	●
PROFIBUS DP® on board	❍	○[3]	❍	❍	❍	❍
Internal 24 V power supply unit to supply the control board	○	○	○	○	○	○
Internal / external braking resistors	❍	❍	○	○	○	○
Local control elements (e.g switches, key switches)	○	○	○	○	○	○

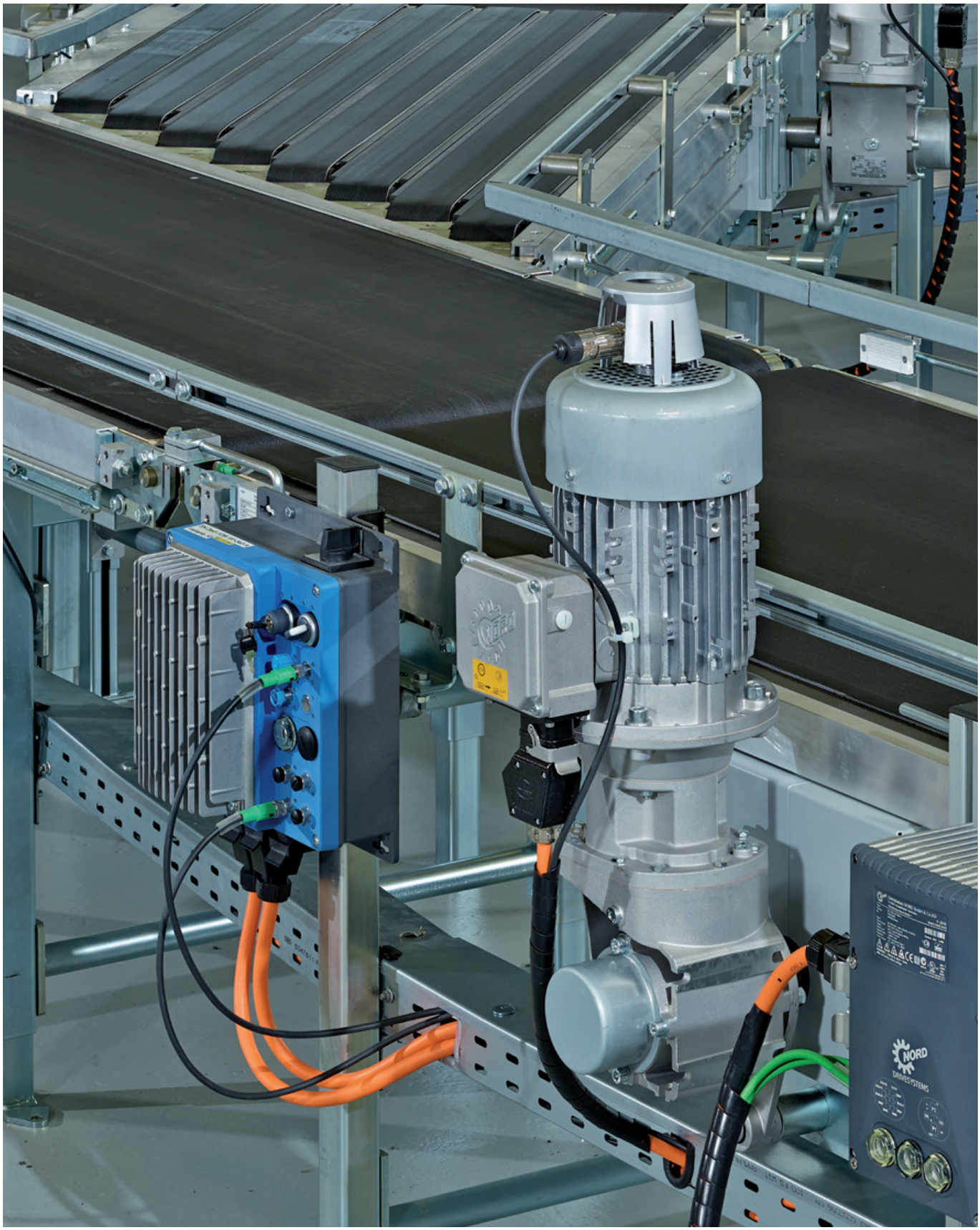
[1] Cable-bound transmission only
[2] Must be taken into account for the order
[3] Either AS-Interface or PROFIBUS® DP

● Available as standard
○ Optional
❍ Not available

	SK 155E-FDS	SK 175E-FDS	SK 250E-FDS	SK 260E-FDS	SK 270E-FDS	SK 280E-FDS
	Motor starters 0.10 - 4 HP		VFDs 0.5 - 10 HP			
Number of digital inputs	3 (+2 sensor inputs for bus)[2]		5+2[1,2]			
Number of analog inputs	❍	❍	2[1]	2[1]	2[1]	2[1]
Number of digital outputs	2	2	2	2	2	2
Temperature sensor (PTC)	1	1	1	1	1	1
CANopen®	❍	❍	●	●	●	●
HTL	❍	❍	●	●	●	●

[1] Alternatively, the analog 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.

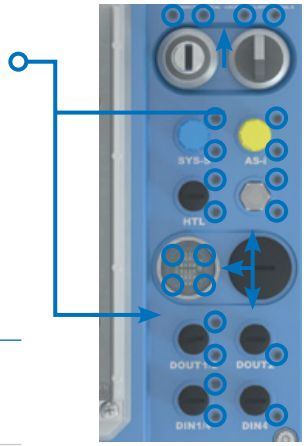



NORD
DRIVESYSTEMS

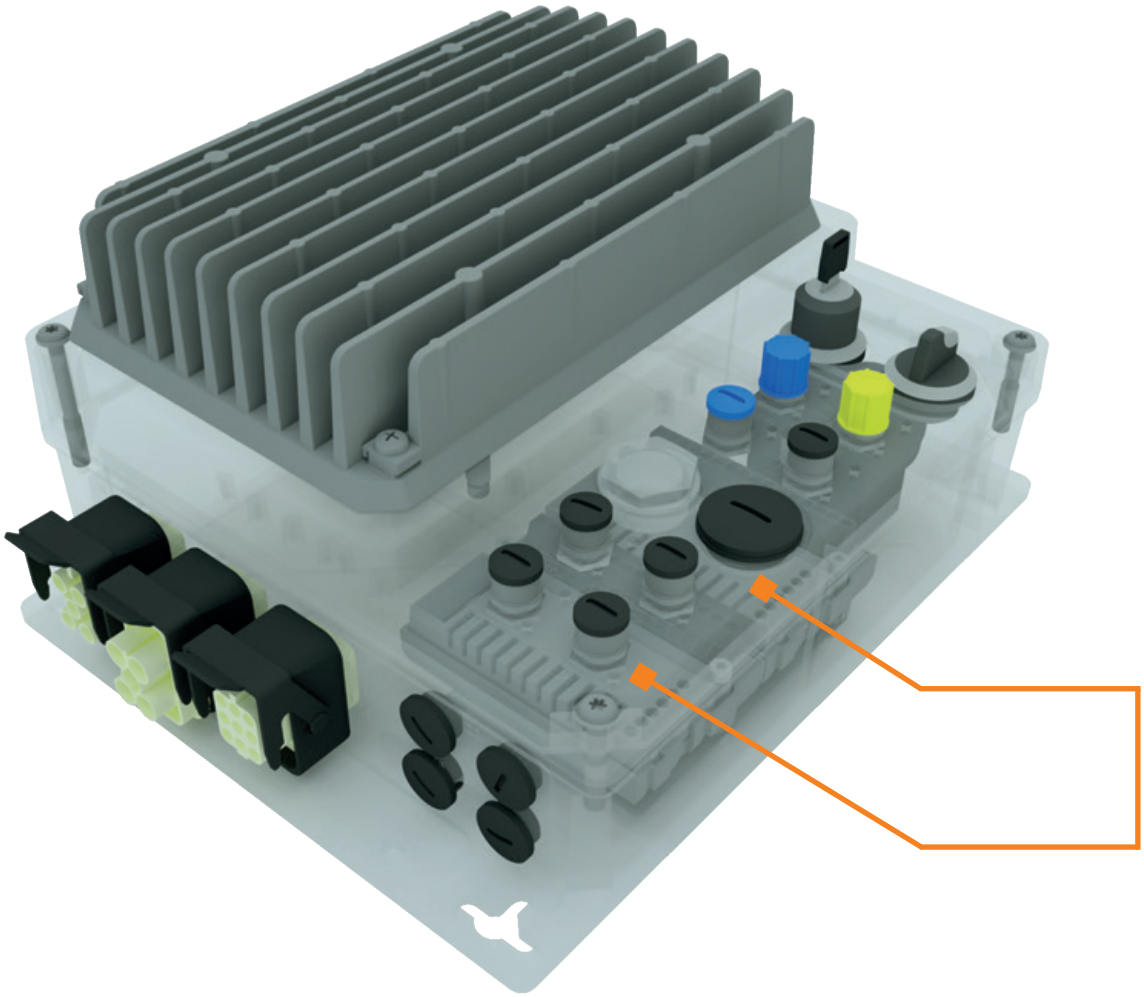
LED- status indicators
Use / meaning

The variable frequency drive 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 always visible.



LED indicators	Use/Meaning
Yellow - Single color - Static	Indication of the signal status (ON / OFF) or the associated function of the IOs.
Red/Green - Single or dual color - Static or dynamic	Indication of the operating statuses on the VFD or communication level.



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

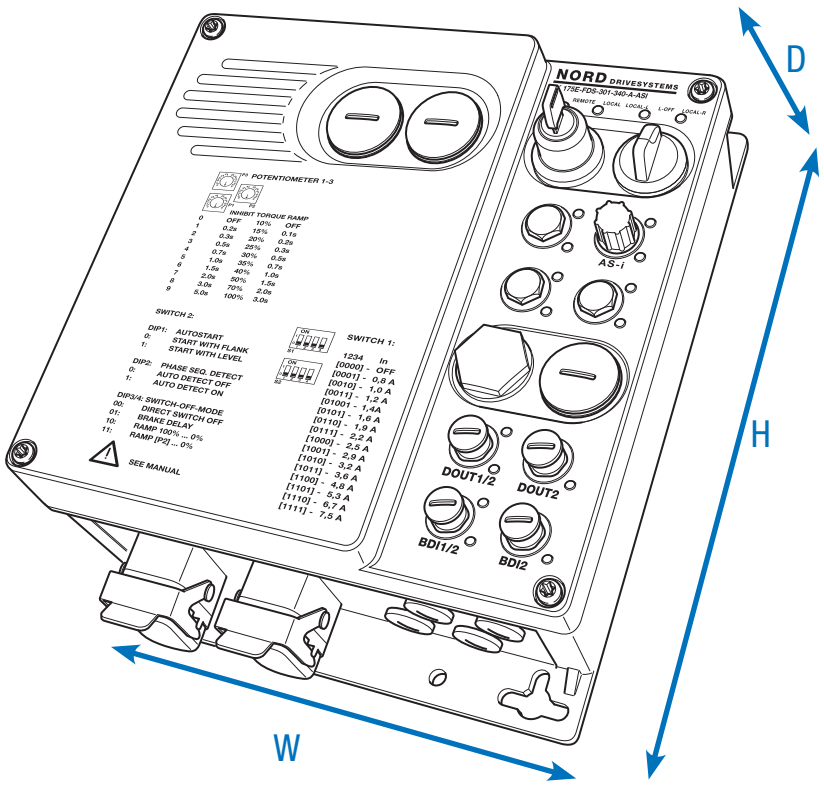
NORDAC *LINK* motor starter
3~ 380 ... 500 V

Typical overload capacity	150 % for 9 s up to 170 s (adjustable (shut-down class 5, 10 A, 10))
Energy efficiency class	IE2
Motor starter efficiency	> 98 %
Ambient temperature	-25 °C...+50 °C (S1)
Protection class	IP65

Protective measures against	▸ Mains phase failure ▸ Motor phase failure ▸ Flux monitoring ▸ Motor over temperature (PTC) ▸ Motor overload ▸ Mains over/under voltage
Motor temperature monitoring	I^2t Motor PTC / bi-metal switch
Leakage current	< 20 mA

Motor starter SK 155E-FDS... / SK 175E-FDS...	Nominal motor power [kW]	[HP]	Nominal output current rms [A]	Line voltage/ Output voltage	Weight	Size	Overall dimensions H x W x D
-111-340-B	up to 1.1	up to 1.5	3.2	3~ 380 V … 500 V, -20 % / +10 %, 47 ... 63 Hz	approx. 3 kg / 6.6 lbs	0	312[1] x 243 x 104[2] mm 12.28[1] x 9.56 x 4.09[2] in
-301-340-B	up to 3.0	up to 4	7.5		approx. 3 kg / 6.6 lbs	1	312[1] x 243 x 104[2] mm 12.28[1] x 9.56 x 4.09[2] in

[1] Without maintenance switch H=307 mm / 12.09 in
[2] With key switch and key inserted D=125 mm / 4.92 in



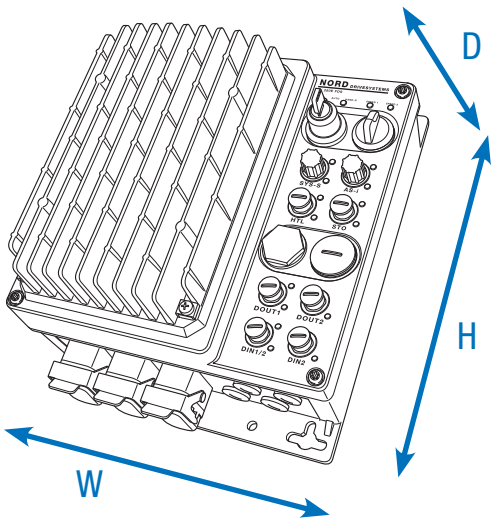
NORDAC *LINK* variable frequency drive 3~ 380 ... 500 V

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
Energy efficiency class	IE2
VFD efficiency	> 95 %
Ambient temperature	-25 °C ... +40 °C (S1)

Protection class	IP65 devices up to 2 HP however not with option -FANO[1] IP55 devices of 3 HP and higher as well as devices <3 HP, with option -FANO[1]
Regulation and control	Sensorless current vector control (ISD), linear V/f characteristic curve
Motor temperature monitoring	I^2t Motor PTC / bi-metal switch
Leakage current	< 30 mA

[1] (heat sink with mounted fan)

VFDs SK 2xxE-FDS...	Nominal motor power 400 V [kW]	Nominal motor power 480 V [HP]	Nominal output current rms [A]	Line voltage/ Output voltage	Weight [kg]	Weight [lbs]	Overall dimensions H x W x D	Size
-370-340-A	0.37	1/2	1.1	3 ~ 380...500 V, -20 % / +10 %, 47 ... 63 Hz 3 ~ AC 0 V up to mains voltage	3.8	8.4	312 x 243 x 130 mm 12.28 x 9.56 x 5.11 in	0
-550-340-A	0.55	3/4	1.7		4.6	10.1		0
-750-340-A	0.75	1	2.3		4.6	10.1		0
-111-340-A	1.1	1 1/2	3.1		4.6	10.1	312 x 243 x 175[1] mm 12.28 x 9.56 x 6.88 in	1
-151-340-A	1.5	2	4.0		4.6	10.1		1
-221-340-A	2.2	3	5.5		4.8	10.6		1
-301-340-A	3.0	4	7.0		4.8	10.6		1
-401-340-A	4.0	5	8.9		6.8	15	312 x 358 x 184 mm 12.28 x 14.09 x 7.24 in	2
-551-340-A	5.5	7	11.7		6.8	15		2
-751-340-A	7.5	10	15		6.8	15		2



[1] Devices up to 1.5 kW / 2 HP power, without -FANO option (optional fan on heat sink) D=155

Interfaces for operation, parameterization, and communication

Operation and parameterization

Optional modules are available with up to 14 languages for displaying status, operational indicators, parameterization, and operation of the variable frequency drive. Variants are available for direct mounting on the device, installation in a control cabinet door, and handheld versions.

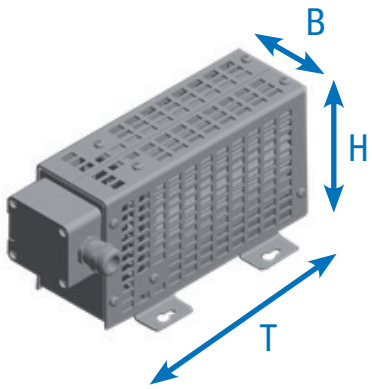
	Type designation Material No.	Description	Remarks
	ParameterBox SK PAR-3H 275 281 014	Control and parameterization, LCD screen (illuminated), plain text display in 14 languages, direct control of up to five devices, memory for five device data sets, convenient control keypad, communication via RS-485, including 2 m connection cable. Handheld, IP54.	Connection for data exchange with NORDCON on a PC (USB 2.0), including 1 m connection cable, 4.5 … 30 V DC/1.3 W Supply e.g. directly via the VFD
	SimpleControlBox SK CSX-3H 275 281 013	Control and parameterization, 4-digit, 7-segment display, direct control of a device, convenient control keypad, including 2 m connection cable. Handheld, IP54.	Electrical data: 4.5 … 30 V DC / 1.3 W, supply e. g. directly via the VFD
	Control and parameterization software NORDCON	Software for control and parameterization as well as support for commissioning and fault analysis of NORD electronic drive technology. Parameter names in 14 languages.	Free download at: www.nord.com
	Bluetooth-Stick NORDAC *ACCESS BT* SK TIE5-BT-STICK 275 900 120	Interface for wireless connection to a mobile terminal device (e.g. tablet or smartphone) via Bluetooth. With the aid of the NORDCON APP, the NORDCON software for mobile terminal devices, enables smart operation and parameterization as well as commissioning assistance and fault analysis of NORD electronic drive technology.	Available free of charge for Android and iOS:

Brake resistors
for dynamic drive characteristics

Chassis braking resistors, SK BRW5

The chassis braking resistor elements are integrated into a housing cage and must be connected to the VFD via a separate connecting cable. They must be mounted horizontally using a shielded cable that is as short as possible.

Chassis brake resistors have protection class IP65.



VFDs SK 2xxE-FDS ...	Resistor type Material No.	Resistance [Ω]	Continuous output [W]	Short-term power [kW][1]	Overall dimensions L x W x H
0.55 … 2.2 kW 0.75 … 3 HP	SK BRW5-1-300-225 278 281 070	300	225	4	245 x 120 x 123 mm 9.64 x 4.72 x 4.84 in
3.0 … 7.5 kW 4 … 10 HP	SK BRW5-2-150-450 278 281 071	150	450	8	405 x 120 x 123 mm 4.13 x 4.72 x 4.84 in
Temperature monitoring for SK BRW5 resistors integrated (2 terminals 4 mm)			Bimetallic switch as opener. Nominal switching temperature: 180°C.		

[1] Once within 120 s, for a maximum duration of 1.2 s

External braking resistors

External braking resistors are intended for applications with low braking energy and offer full availability of nominal continuous power. External braking resistors cannot be retrofitted and must be taken into account when ordering. The attachment increases the frequency drive's width by 44 mm.

Available on request

Internal braking resistors

Internal brake resistors are intended for applications in which slight or brief braking (e.g. continuous conveyor equipment, mixing equipment) is to be expected. They effectively enable the use of the VFD in very confined spaces or in explosive atmospheres

Internal brake resistors cannot be retrofitted and must be taken into account when ordering. For thermal reasons, the rated continuous output is limited to 25%.

VFDs SK 2xxE-FDS-...	Resistance [Ω]	Continuous power Pn [W]	Power consumption[1] Pmax [kWs]
… 750-340-	400 Ω	100 W	1.0 kWs
… 151-340- bis … 301-340-	400 Ω	100 W	1.0 kWs
… 401-340- bis … 751-340-	200 Ω	200 W	2.0 kWs

[1] maximum once within 10s

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