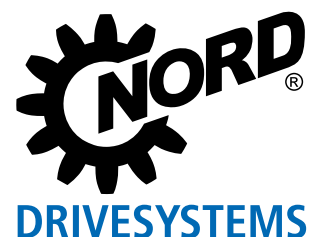




# Frequency inverter for horizontal conveyor applications

NORDAC *ON* and *ON+* SK 300P series



# Top class inverter technology

## NORDAC *ON*, SK 300P series



### [NORDAC \*ON\*](#)

The NORDAC *ON* is a compact, smart frequency inverter for decentralised use that has been specially developed to meet the special requirements of horizontal conveyor technology, as well as for the interaction with the new IE5+ synchronous motor (NORDAC *ON+*).

#### Focused

The NORDAC *ON* is optimised for the common range of functions in horizontal conveyor technology. The following functions are included as standard:

- ▶ Integration of sensors via digital inputs
- ▶ If required, an integrated brake chopper dissipates regenerative energy to an optional braking resistor
- ▶ Brake management for optimum control of an electromagnetic holding brake for wear-free brake actuation
- ▶ Quick and simple diagnostics via easily visible LED indicators
- ▶ The Safe Torque Off (STO) function can be optionally integrated into the frequency inverter and is controlled via two safe inputs

#### Compact

The power range from 0.37 to 3.7 kW (NORDAC *ON/ON+*) or to 1.5 kW (NORDAC *ON PURE*) is covered by three sizes. Power-size assignments optimised this way allow for installations even in a very small space.

NORDAC *ON* was designed for use with asynchronous motors, whereas NORDAC *ON+* is intended for combination with synchronous motors and supplements the NORD high-efficiency portfolio around the new IE5+ motor generation.

In case the frequency inverter should or could not be mounted on the motor, it can alternatively be mounted on the wall to connect the converter close to the drive.



**NORDAC *ON PURE***

#### *PURE*

The NORDAC *ON PURE* extends the application area of the compact frequency inverter to applications in the food and beverage (F&B) industry.

Therefore, the device's housing has been specifically adjusted to the requirements within the F&B area.

Apart from the diagnostic opening, there are only robust M23 circular connectors for the hybrid connection of the mains/control voltage and the Ethernet connection.

The NORDAC *ON PURE* is intended for mounting on the equally F&B-enabled NORD IE5+ smooth motor (without ventilation) or alternatively as wall mounting option. Special hygienic cables are available for the electrical connection.

## Digitalisation

As with all NORD frequency inverters, the new member of the NORDAC family is equipped with a powerful PLC for functions close to the drive. It can process the data from connected sensors and actuators, autonomously initiate control sequences and communicate drive and application data to the control centre, networked components or to cloud storage.

For this purpose, both frequency inverter versions have an integrated Ethernet interface and thus are ideally equipped for integration into modern automation systems. Whether for ProfiNet, EtherNet/IP or EtherCAT – the required protocol can be easily set via parameters.

## 100% Plug-and-play

All connections are pluggable and ensure quick, easy, error-minimised commissioning and maintenance on site. The 24 V DC supply for control and communication is also integrated in the 3-phase 400 V supply and is realised via a 6-pole plug connector. The daisy chain connector can be used to supply several drives in series in order to optimise the required cable length.

## Robust

The frequency inverter housing is made entirely from aluminium and with a high IP protection class (up to IP66) it is thus also suitable for harsh environmental conditions.

In addition, the NORDAC *ON* / *ON+* can be operated in a temperature range from -30 to +40°C and can therefore also be used in deep-freeze applications.



NORDAC *ON*



NORDAC *ON*  
Wandmontage-Variante

# Standards and approvals

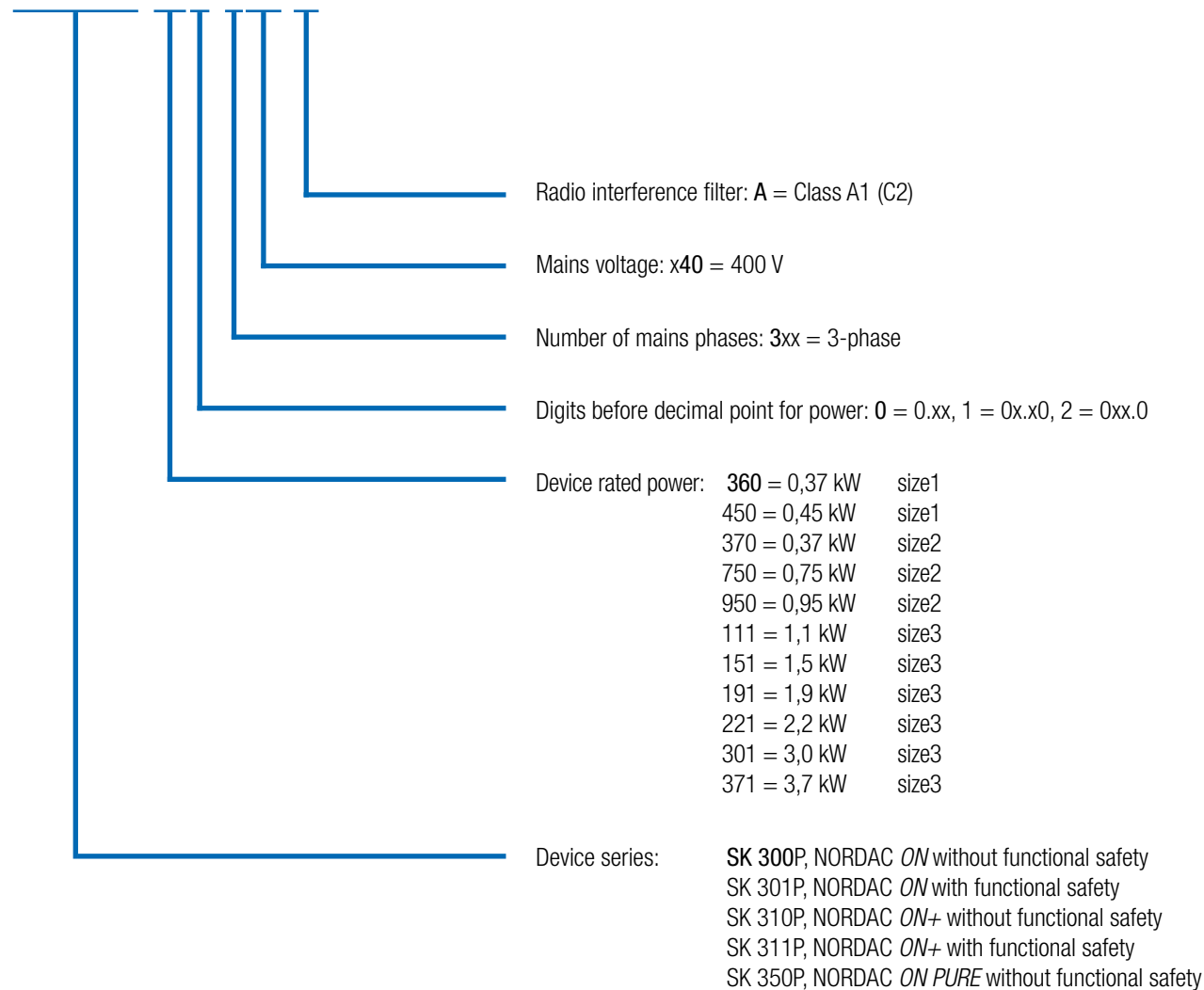
All devices across the entire series comply with the standards and directives listed below.

Approval	Directive	Applied standards	Certificates	Label
CE (European Union)	Low Voltage Directive 2014/35/EU	EN 61800-5-1 EN 60529	C310001	
	EMC 2014/30/EU	EN 61800-3 EN 63000		
	RoHS 2011/65/EU	EN 61800-9-1 EN 61800-9-2		
	Delegated directive (EU) 2015/863			
	Ecodesign 2009/125/EG			
	Regulation (EU) Ecodesign 2019/1781			
UL (USA)		UL 61800-5-1	E171342	
CSA (Kanada)		C22.2 No.274-13	E171342	
RCM (Australien)	F2018L00028	EN 61800-3	C310001	
EAC (Eurasien)	TR CU 004/2011, TR CU 020/2011	IEC 61800-5-1 IEC 61800-3	in preparation	
UkrSEPRO (Ukraine)		EN 61800-5-1 EN 60529 EN 61800-3 EN 63000 EN 60947-1 EN 60947-4 EN 61558-1 EN 50581	C311900	
UKCA (United Kingdom)		EN 61800-5-1 EN 60529 EN 61800-3 EN 63000 EN 61800-9-1 EN 61800-9-2	C352000	

# Type code

## Frequency inverter

### SK 300P-360-340-A



# NORDAC ON, SK 300P series all versions at a glance

	NORDAC ON SK 30xP	NORDAC ON SK 30xP	NORDAC ON+ SK 31xP	NORDAC ON PURE SK 350P
Power	0.37 - 0.45 kW	0.37 - 3.7 kW	0.37 - 3.7 kW	0.37 - 1.5 kW
Size	1	2 - 3	2 - 3	2 - 3
Sensorless current vector control (ISD control)	●	●	●	●
RS-485/RS-232 diagnostic interface via RJ12	●	●	●	●
4 switchable parameter sets	●	●	●	●
All normal drive functions	●	●	●	●
Parameters pre-set with standard values	●	●	●	●
Stator resistance measurement	●	●	●	●
Energy-saving function, optimised efficiency in partial load operation	●	●	●	●
Class C2 line filter, motor-mounted or up to 5 m motor cable for wall-mounting	●	●	●	●
Monitoring functions	●	●	●	●
Load monitor	●	●	●	●
POSICON	○	○	●	●
PLC functionality	●	●	●	●
Ethernet communication: EtherCAT, Ethernet IP, ProfiNet IO	●	●	●	●
External 24 V DC power supply for the control board	●	●	●	●
Brake management for mechanical Holding brake	○	●	●	●
Brake chopper (braking resistor optional)	○	●	●	●
"Safe Torque Off" and "Safe Stop" (STO, SS1-t) functions	○	●	●	○
Internal braking resistors	○	●	●	●

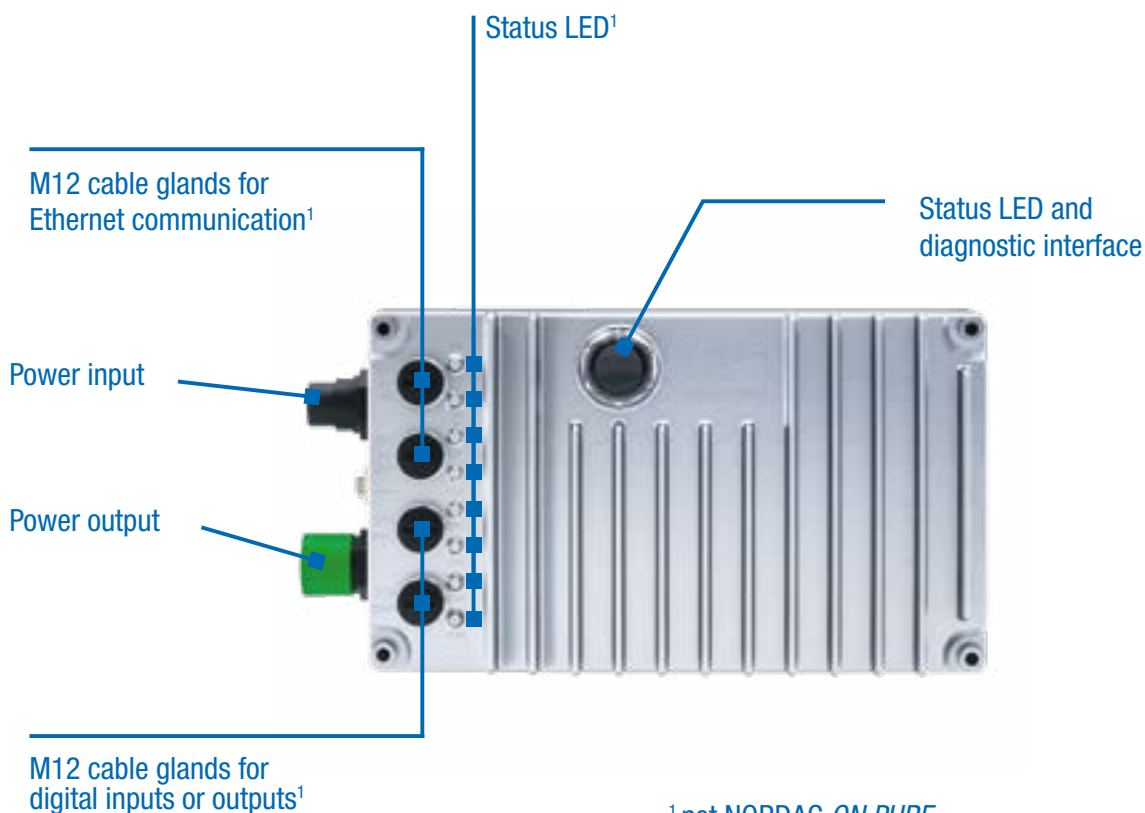
<sup>1</sup>With integrated optional module SK CU6-STO, connection via M12 plug connectors

- Available as standard
- Optional
- Not available

	NORDAC <i>ON</i> SK 30xP	NORDAC <i>ON</i> SK 30xP	NORDAC <i>ON+</i> SK 31xP	NORDAC <i>ON PURE</i> SK 350P
Power	0.37 - 0.45 kW	0.37 - 3.7 kW	0.37 - 3.7 kW	0.37 - 1.5 kW
Size	1	2 - 3	2 - 3	2 - 3
Mountable on IE3 motor	●	●	○	○
Mountable on IE5+ motor	○	○	●	●
RS-485 encoder interface	○	○	●	●
DIN via M12 plug connector	4-2 <sup>1</sup>	4-4 <sup>2</sup> -2 <sup>2</sup>	4-4 <sup>2</sup> -2 <sup>2</sup>	○
DOUT via M12 plug connector	0-2 <sup>1</sup>	2-0 <sup>2</sup> -2 <sup>2</sup>	2-0 <sup>2</sup> -2 <sup>2</sup>	○
Mains input (3-phase 400 V) with integrated 24 V DC via plug connector	●	●	●	●
Mains output / daisy chain (3-phase 400 V) with integrated 24 V DC via plug connector	●	●	●	●
Thermostats (PTC)	●	●	●	●

<sup>1</sup> 2 digital IOs optionally parameterisable as DIN or DOUT

<sup>2</sup> Version SK 3x1P and higher has 4 DINs, 2 of which are optionally parameterisable as DIN or DOUT.



<sup>1</sup> not NORDAC *ON PURE*

# Frequency inverter NORDAC *ON*

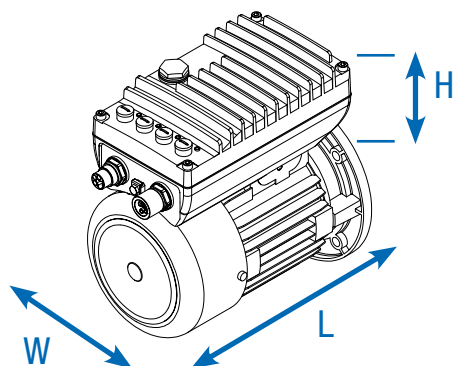
## 3~400 ... 480 V

<b>Output frequency</b>	0.0 ... 400.0 Hz	<b>Protection class</b>	IP55 , optional IP66 NORDAC <i>ON PURE</i> : only IP69 NEMA type 1 (higher NEMA classifications on request)
<b>Pulse frequency</b>	3.0 ... 16.0 kHz	<b>Regulation and control</b>	Sensorless current vector control (ISD), linear V/f characteristic curve
<b>Typical overload capacity</b>	150% for 60 s 200% for 5 s 250% for 1 s only asynchronous motors	<b>Motor temperature monitoring</b>	I <sup>2</sup> t motor PTC / bimetallic switch
<b>Frequency inverter efficiency</b>	approx. 95%	<b>Leakage current</b>	< 30 mA
<b>Ambient temperature</b>	-30°C ... +40°C (S1) -30°C ... +50°C (S3, 70% ED)		

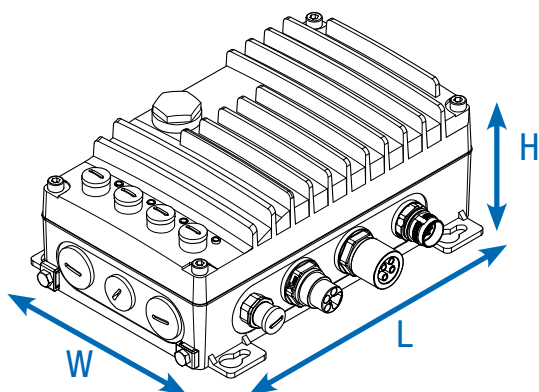
Frequency inverter	Nominal motor power		Nominal output current rms [A]	Mains voltage	Output voltage	Size
	400 V [kW]	480 V [hp]				
SK 300P-360-340-A	0,37	1/2	1,2	3~ 400 ... 480 V, -20 % / +10 %, 47 ... 63 Hz	3~ 0 up to mains voltage	1
SK 3XP-370-340-A	0,37	1/2	1,2			2
SK 300P-450-340-A	0,45	3/5	1,5			1
SK 3XP-750-340-A	0,75	1	2,2			2
SK 3XP-950-340-A	0,95	1 1/4	2,7			2
SK 3XP-1111-340-A	1,1	1 1/2	3,0			3
SK 3XP-151-340-A	1,5	2	3,8			3
SK 30XP-191-340-A	1,9	2 1/2	4,3			3
SK 3XP-221-340-A	2,2	3	5,2			3
SK 3XP-301-340-A	3,0	4	7,2			3
SK 31XP-371-340-A	3,7	5	8,1			3







Frequency inverter	Motor	Weight [kg]	Dimensions for motor mounting excluding motor L x W x H [mm]	Size	
SK 30xP	-360-340-A bis -450-340-A	IE3 BG 63 - 71	1,5	230 x 121 x 79	1
	-370-340-A bis -950-340-A	IE3 BG 63 - 80	1,9	260 x 130 x 83	2
	-111-340-A bis -151-340-A	IE3 BG 80 - 90	3,3	296 x 160 x 104	3
	-191-340-A bis -301-340-A	IE3 BG 90	3,5	296 x 160 x 123	3
SK 31xP	-370-340-A bis -950-340-A	IE5+ BG 71	1,9	251 x 130 x 97	2
	-111-340-A bis -151-340-A	IE5+ BG 90	3,4	285 x 160 x 124	3
	-221-340-A bis -371-340-A	IE5+ BG 90	3,6	304 x 160 x 144	3
SK 35xP	-370-340-A bis -750-340-A	IE5+ BG 71		277 x 133 x 122	2
	-111-340-A bis -151-340-A	IE5+ BG 90		307 x 160 x 146	3



Frequency inverter	Weight [kg]	Dimensions for wall mounting L x W x H [mm]	Size	
-360-340-A bis -450-340-A	1,7	211 x 161 x 84	1	
SK 30xP/ SK 31xP	-370-340-A bis -950-340-A	2,1	244 x 171 x 99	2
SK 31xP	-111-340-A bis -151-340-A	3,5	272 x 201 x 117	3
	-191-340-A bis -371-340-A	3,7	272 x 201 x 137	3
SK 35xP	-370-340-A bis -750-340-A		260 x 184 x 111	2
	-111-340-A bis -151-340-A		290 x 214 x 134	3

# NORDAC *ON* options

## Functional Safety

NORDAC *ON* and NORDAC *ON+* frequency inverters in sizes 2 and 3 have the “Functional safety” option.

Available in the following devices:

SK 301P, SK 311P

Functions	IOs	Remarks
Functional safety: STO - PLe / SIL 3 SS1-t - PLd / SIL 2	2 safe DIN	Functional safety: 2-channel connection

## Internal braking resistors

Internal braking resistors are intended for applications in which slight or only sporadic and brief braking is to be expected.

Internal braking resistors cannot be retrofitted and must therefore be taken into account in the order. For thermal reasons, the rated continuous output is limited to 25%.

	Frequency inverter	Wall mounting	Motor assembly	Resistance [Ω]	Continuous output <sup>1</sup> [W]	Power consumption <sup>1</sup> E <sub>max</sub> [kW]	Size
SK 30xP	-360-340-A to -950-340-A	●	●	400	70	0,9	2
	-111-340-A to -301-340-A	●	●	300	100	1,3	3
SK 31xP	-370-340-A to -950-340-A	●	●	400	70	0,9	2
	-111-340-A to -371-340-A	●		300	100	1,3	3
	-111-340-A to -371-340-A		●	200	200	2,0	3
SK 35xP	-370-340-A to -750-340-A	●	●	400	70	0,9	2
	-111-340-A to -151-340-A	●		300	100	1,3	3
	-111-340-A to -151-340-A		●	200	200	2,0	3

<sup>1</sup> Reduction of the continuous output of the braking resistor to 25% of the rated output

<sup>2</sup> Once within 10 s,

# Interfaces for operation, parameterisation and communication

## Operation and parameterisation

Optional modules with up to 14 languages for displaying status and operational indicators, parameterisation and operation of the frequency inverter. In addition to variants for direct mounting on the device or installation in a control cabinet door, handheld versions are also available. See also Accessories starting on page 165

	Type Designation Part number	Description	Remarks
	ParameterBox SK PAR-5H 275 281 614	Control and parameterisation, LCD (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 1.5 m connection cable. Handheld, suitable for installation in a control cabinet door. IP54	Connection for data exchange with NORDCON <i>STUDIO</i> to a PC (USB 2.0), (standard "USB-C" connection cable required, e.g. material number: 275 292 100) Power supply, e.g. directly via frequency inverter or PC
	SimpleControlBox SK CSX-3H 275 281 013	Control and parameterisation, 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 frequency inverter.
	Control and parameterisation software NORDCON	Software for control and parameterisation as well as support for commissioning and fault analysis of NORD electronic drive technology. Parameter names in 14 languages	Free download: <a href="http://www.nord.com">www.nord.com</a>
	Bluetooth-Stick NORDAC <i>ACCESS BT</i> SK TIE5-BT-STICK 275 900 120	Interface for wireless connection to a mobile terminal device (e.g. tablet or smartphone) via Bluetooth. The NORDCON <i>APP</i> , the NORDCON software for mobile terminal devices, enables smart operation and parameterisation as well as commissioning assistance and fault analysis of NORD electronic drive technology.	Available free of charge for Android and iOS 

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