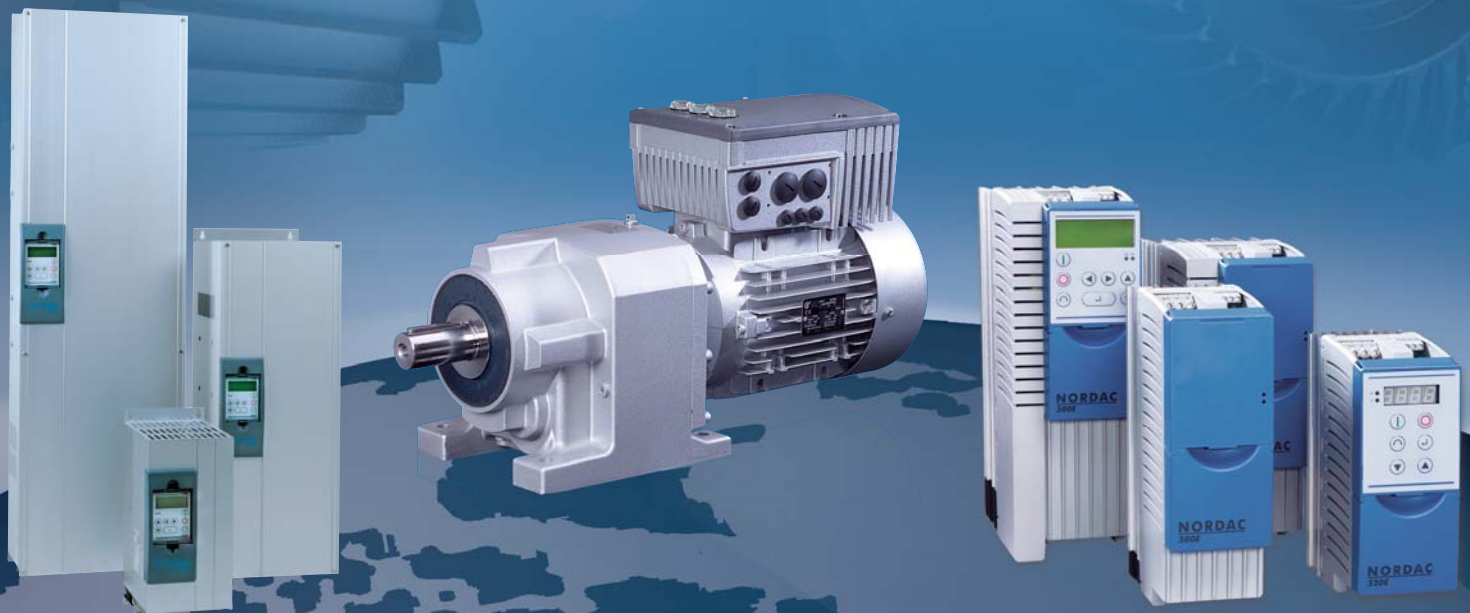


Intelligent Drivesystems



CE C **UL** US  
Pending

# NORDAC AC VECTOR DRIVE FAMILY

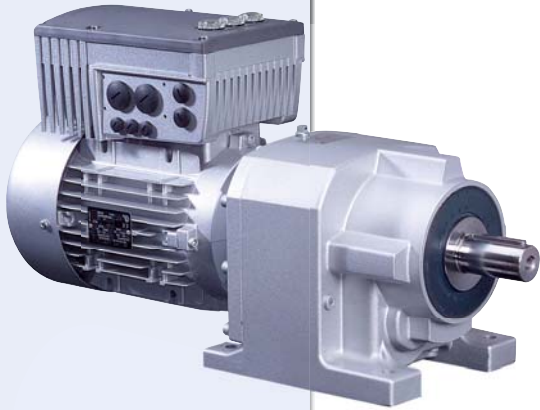
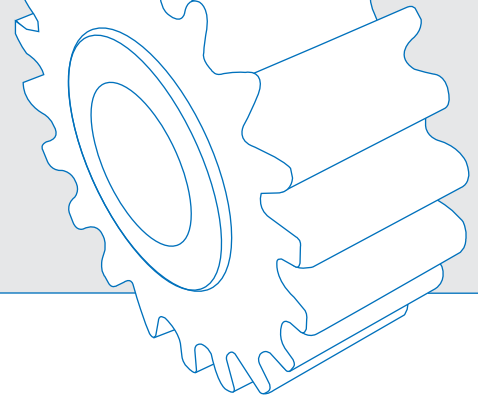
High Performance AC Vector Drives

F3000



# NORDAC HIGH PERFORMANCE AC VECTOR DRIVES

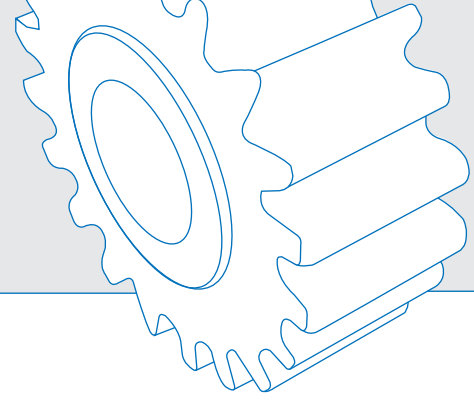
## Performance & Flexibility



The NORDAC Family of high-performance AC Vector Frequency Inverters provides unmatched performance and flexibility

- Package solution with NORD motors and reducers
  - Single source responsibility
  - Simplified set up
  - Insured compatibility
- Modular construction
  - Pre-engineered plug-in options
  - Purchase only what is needed
- Compact, side-by-side mounting
- Ease of installation/replacement
  - Plug in terminal strips
  - Versatile program storage and transfer options
- Free NORD CON Software tool
  - Simplified programming, monitoring, diagnostics
  - On and off line modes
  - Built-in 4 channel scope
- Full programmability/multiple parameter sets
  - Minimal programming for simple applications
  - Features to do the most difficult jobs
- Commonality of programming and related tools across product lines
  - Shortens learning cycle
  - Minimizes investment
- Highest performance ISD sensorless vector control
  - Wide constant torque speed range
  - Rapid response
  - High starting torque
- Heavy duty overload capability
  - Full 150% for 60 seconds
  - 200 % for 3-5 seconds (most ratings)
- Mechanical brake interface
  - Programmable coordination
  - Independently adjustable application and release times
- Full current dynamic brake chopper rating
- Economical closed loop vector control and positioning
  - Available on select units utilizing motor mounted encoder
  - Highest performance levels
- Ability to do "Servo" applications with low inertia NORD motors
- Built-in PID regulator
- Integral EMC filter to enable meeting CE included in most ratings

**NORD GEAR SPEED REDUCERS, GEARMOTORS, AND INVERTERS**



# Options & Accessories



## BRAKING RESISTORS

During dynamic braking, energy is delivered from the load through the motor (acting as a generator) to the frequency inverter. The inverter dissipates this energy as heat via the integral brake chopper to the optional external braking resistors. A variety of resistors are available, depending on the inverter series and rating.

**Foot print** - mounts beneath inverter

**Chassis mount** - mounts in customer cabinet near inverter

**Motor mount** - mounts on SK 300E motor interface



## CHOKES (INDUCTORS)

**Input Chokes** - Wired on the input to the inverter to add line impedance to reduce the effects of external voltage spikes, match the inverter to supplies having high capacity compared to the inverter rating, and to minimize current harmonics imposed by the nonlinear inverter load on the supply. A variety of panel mount units are offered, depending on the inverter series and rating.

**Output Chokes** - Wired on the output to the inverter to compensate for long wire runs between the inverter and the motor. A variety of panel mount units are offered, depending on the inverter series and rating.

## FILTERS

Most NORDAC inverters (all except SK 700E above 30 HP) feature integral EMC filters to allow their use in installations requiring CE compliance. For applications where additional filtering is required, NORD offers a line of external filters



## NORDAC PARAMETER BOX (P-BOX)

External add-on unit that can be used to program and display parameters and control the operation of the connected Frequency Inverter. Features multi-line plain text display selectable in six languages. Manages and stores up to five unique inverter programs. Connects to any NORDAC inverter via RS485 communication on inverter or plug-in option (adapter cables sometimes required). Available as:

- SK PAR-2H Handheld version with 10 foot cable
- SK PAR-2E Panel Mount version

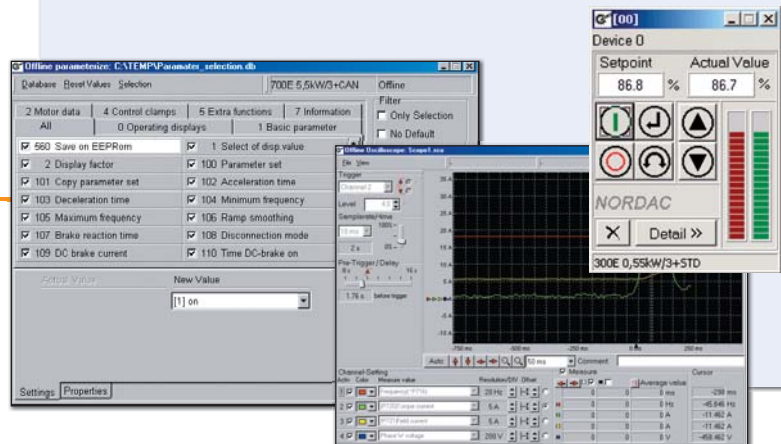


## NORD CON SOFTWARE

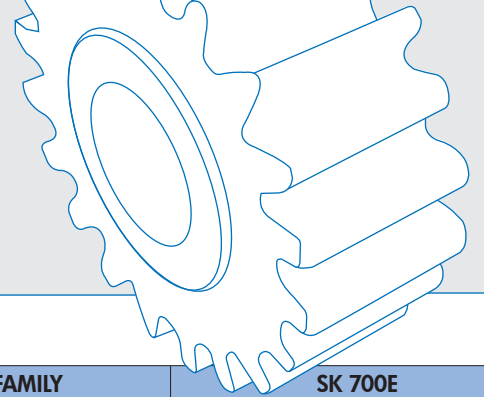
NORD CON Software is a Windows-based PC program that enables the control and programming of NORDAC Frequency Inverters. It provides for accessing up to 31 Frequency Inverters simultaneously via the RS485 interface. It features both off-line and on-line programming and data management modes.



NORD CON allows user to:

- Program inverters and upload/download parameter files
- Control connected inverters for test/troubleshooting
- Monitor connected inverters and examine up to four variables versus time with built-in oscilloscope feature
- Produce macros to test process sequences
- Display parameter information in six languages



# Product Family Overview

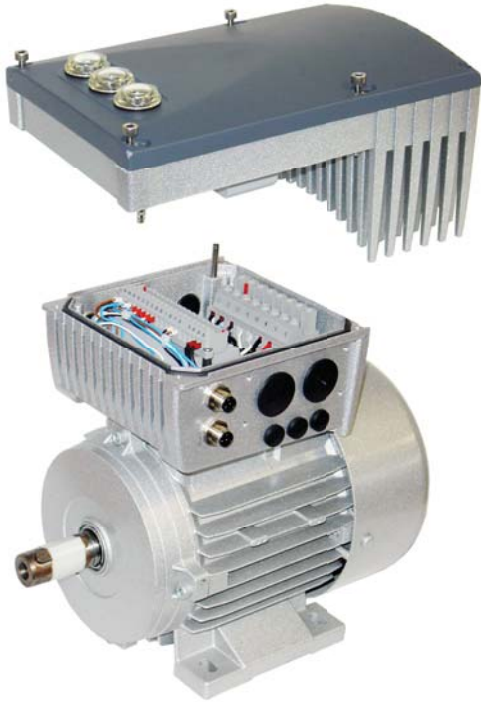
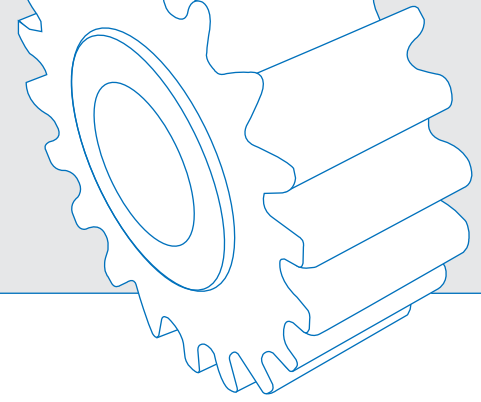


Device series	NORDAC ...	SK 200E FAMILY	SK 500E FAMILY	SK 700E
				
<b>Features and functions</b>		Motor Mounted Vector Frequency Inverter/ Wall Mount Option	Vector Frequency inverter	Vector Frequency inverter
<b>Input voltage/ Output power range</b>		100-120 VAC 1 phase 50/60 Hz: 1/3 - 1 HP 200-240 VAC 1 phase 50/60 Hz: 1/3 - 1 HP 200-240 VAC 3 phase 50/60 Hz: 1/3 - 5 HP 380-500 VAC 3 phase 50/60 Hz: 3/4 - 10 HP	110-120 VAC 1 phase 50/60 Hz: 1/3 - 1.5 HP 200-240 VAC 1 phase 50/60 Hz: 1/3 - 3 HP 200-240 VAC 3 phase 50/60 Hz: 5 - 15 HP 380-480 VAC 3 phase 50/60 Hz: 3/4 - 50 HP	380-480 VAC 3 phase 50/60 Hz: 2 through 200 HP
<b>Overload capacity</b>		200%	200 %	200 % (Through 30 HP)
<b>Output frequency / speed</b>		0-400 Hz	0-400 Hz	0-400 Hz
<b>Mode of control Without feedback</b>		ISD Sensorless Vector Control V/F Control Setup Possible	ISD Sensorless Vector Control V/F Control Setup Possible	ISD Sensorless Vector Control V/F Control Setup Possible
<b>Encoder feedback for closed loop vector control</b>		√	√ (SK 520E, 530E, 535E)	○
<b>Position control</b>		√	√ (530E, 535E)	○
<b>Torque current limit</b>		√	√	√
<b>Torque regulator mode</b>		√	√ (SK 520E, 530E, 535E)	○
<b>Full current brake chopper</b>		√	√	√
<b>Internal line filter</b>		√	√	√ (through 30 HP)
<b>Built-in PID regulator</b>		√	√	√
<b>Mechanical brake coordination software</b>		√	√	√
<b>Digital inputs</b>		4	5 / 7	○ max. 6
<b>Analogue/digital outputs</b>		1 digital output, 1 analog output	2	○ max. 2
<b>Analogue inputs</b>		○	0...10 V 0/4...20mA	○ 0...10 V -10...+10 V 0/4...20 mA
<b>Parameter sets, number of</b>		4	4	4
<b>Motor temperature control</b>		√	√	√
<b>Licences</b>		CE, UL	CE, UL	CE, UL, cUL
<b>Ambient temperature</b>		-20 - 50°C	0 - 50°C	0 - 50°C
<b>Storage temperature</b>		-25 ...+60 / 70°C	-20...+60/70°C	-20...+60/70°C
<b>Protection class</b>		IP 55 / IP66	IP20	IP20
<b>RS 485 interface (USS)</b>		√	√	○ (√ ≥ 30kW)
<b>Profibus</b>		○	○	○
<b>CAN bus</b>		○	○	○
<b>CANopen</b>		○	○	○
<b>DeviceNet</b>		○	○	○
<b>InterBus</b>		no	○	○
<b>AS Interface</b>		○	○	○
<b>RS 232</b>		√	√	○ (√ ≥ 30kW)

√ Provided as standard    ○ Optional

# SK 200E FAMILY

## MOTOR OR REMOTE MOUNTED AC VECTOR DRIVES



### SK 200E AC Vector Drive Ratings

- 100-120 VAC 1-phase 50/60 Hz input, 0-240 VAC output, 1/3 through 1 hp
- 200-240 VAC 1-phase 50/60 Hz input, 0-240 VAC output, 1/3 through 1.5 hp
- 200-240 VAC 3-phase 50/60 Hz input, 0-240 VAC output, 1/3 through 5 hp
- 380-480 VAC 3-phase 50/60 Hz input, 0-480 VAC output, 3/4 through 10 hp

### SK 200E Features

- Sensorless vector ISD current control
  - High torque
  - Wide speed range
  - Rapid response to speed reference and load changes
- Completely configurable
  - Simple setup via DIP switches and adjustment potentiometers
  - Fully programmable with NORDCON software or handheld programming device
  - 4 parameter sets
- High overload capability: 150% for 60 seconds, 200% for 3.5 seconds
- Unique plug-in construction minimizes return to service time; program stored on transferrable EEPROM chip
- Specific versions include built-in brake rectifier and coordinating software
- Internal braking chopper (resistor optional)
- Standard RS-485/232 interface via RJ12 connector
- IP55 and IP66 versions available
- Machine/wall mountable with optional kit. Enables installation flexibility and use with inverter duty non-NORD motors

### I/O Based Control

- Basic interface I/O
  - 4X digital inputs
  - 1X digital output
- Expanded interface I/O (with option modules)
  - 2-4X additional digital inputs
  - 1-2X additional digital outputs
  - 24VDC control power supply
  - 10VDC reference supply
  - 2X analog inputs
  - 1X analog output

### Quick Disconnect Options

- M12 field bus and I/O connectors
- "Mini" input and output power connectors
- Harting connectors

### Field Bus Control Interfaces

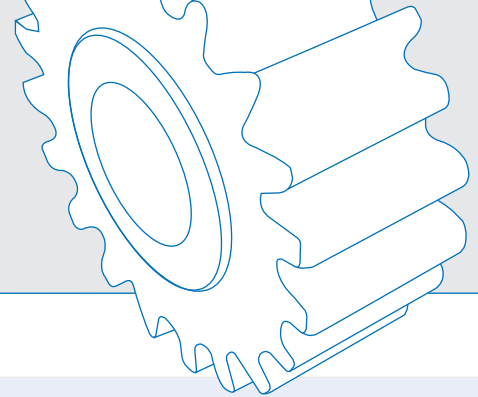
- DeviceNet
- Profibus
- CANopen
- AS-interface
- EtherCAT
- ProfiNET

### Manual Control Interfaces

- Left/Off/Right selector switch & speed potentiometer (at inverter or remotely mounted)
- Handheld LCD English operator
- Handheld LED coded operator

# SK 500E FAMILY

## COMPACT HIGH PERFORMANCE AC VECTOR DRIVES



Technology Boxes

### SK500E FAMILY INVERTER RATINGS

- 110-120 VAC 1 phase 50/60 Hz: 1/3 - 1.5 HP
- 200-240 VAC 1 or 3 phase 50/60 Hz: 1/3 - 3 HP
- 200-240 VAC 3 phase 50/60 Hz: 5 - 15 HP
- 380-480 VAC 3 phase 50/60 Hz: 3/4 - 50 HP

The NORDAC SK 500E family inverters have the high torque, rapid response and wide speed range that only World Class AC Vector Frequency inverters can provide. Now this performance is available in a compact package. Plug-in, pre-engineered option modules provide best value solutions for your toughest applications.

#### SK 500E

- ISD – Higher performance sensorless vector control

#### SK 520E (adds)

- Closed-loop flux vector control
- Incremental encoder input
- Added I/O
- CAN bus
- Added RS485 via terminals

#### SK 530E (adds)

- POSICON - Integrated position control

### STANDARD CUSTOMER CONTROL INTERFACE

SK 500E	SK 520E/530E/535E
5 digital inputs (high speed response)	7 digital inputs (high speed response)
2 analog inputs	2 analog inputs
2 output relays	2 output relays
1 analog output	1 analog output
	2 digital outputs
RS232/485 interface via RJ12 connector	RS232/485 interface via RJ12 connector
	Additional RS485 interface via terminals
Reference power supplies	Reference power supplies
	2 CANbus interfaces via RJ45 connector
	Connection for incremental encoder (closed loop)
Inputs and outputs are programmable	Inputs and outputs are programmable

### PRE-ENGINEERED, PLUG-IN TECHNOLOGY OPTIONS

Plug into front cover of the Frequency Inverter to provide flexible programming, display, control and Field Bus connection choices (choice of 1 + SimpleBox).

- **SimpleBox (top mount)**
  - 4 digit, 7 segment LED display
  - Single button programming and control
- **Control Box**
  - 4 digit, 7 segment LED display
  - Program, control and store program
- **Parameter Box**
  - Clear text multiline display/6 Languages
  - Program, control and store up to 5 data records
- **Field Bus/Communication Boxes**
  - DeviceNet
  - InterBus
  - Profibus
  - ASiBus
  - CANopen



# SK 700E FAMILY

## COMPACT HIGH PERFORMANCE AC VECTOR DRIVES

### SK 700E INVERTER RATINGS

- 380-480 VAC 3 phase 50/60 Hz: 2 through 200 HP

The NORDAC SK 700E has the high torque, rapid response and wide speed range that only a World Class AC Vector Frequency Inverter can provide. Its plug-in, pre-engineered option modules provide the best value solutions for your toughest applications, from those requiring precise speed control to positioning.

- 2 through 200 HP at 460 VAC 3 phase input
- Selectable control modes
  - V/f for multiple motors
  - Sensorless vector control
  - Flux vector control (requires optional encoder feedback card)
  - Position control (requires optional PosiCon card)

### PRE-ENGINEERED, PLUG-IN OPTIONS TECHNOLOGY UNITS

Plug into front cover of the Frequency Inverter to provide flexible programming, display, control and Field Bus connection choices (choice of 1).

- Control Box
  - 4 digit, 7 segment LED display
  - Program, control and store program
- Parameter Box
  - Clear text multiline graphics display/6 languages
  - Program, control and store up to 5 data records
- Potentiometer Box
  - Potentiometer (Select 12 different functions including speed reference, current limit and PID reference)
  - Operator controls
- Separate Field Bus/Communication Boxes
  - DeviceNet            - CANopen
  - Profibus             - Interbus
  - CAN Bus             - ASi Bus



### CUSTOMER INTERFACE UNITS

I/O Boards that plug into top expansion slot (choice of 1)

- Discrete analog and digital interfaces

Name	# Relays	# Digital In	Analog In	Analog Out	# RS 485
Basic	1	3	1: 0-10V	0	0
Standard	2	4	1: 0-10V or 0/4-20 ma	1: 0-10V	1
Multi	2	6	1: 0-10V or 0/4-20 ma 1: +/-10V or 0/4-20 ma	2: 0-10V	0

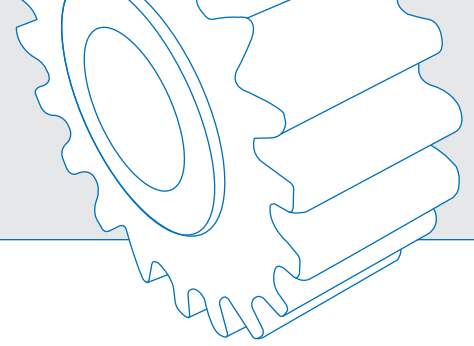
- Field Bus interfaces
  - USS (RS485)    - CAN Bus            - Profibus

### SPECIAL EXTENSION UNITS

Special function boards that plug into bottom expansion slot (choice of 1)

- Incremental Encoder – Enables precise speed control, maximizes torque, & insures optimum dynamic response
  - TTL, RS422 incremental quadrature encoder input
  - 8 selectable counts from 500 to 5000, 250 kHz max.
- PosiCon Position – Enables precise positioning to 252 locations
  - TTL, RS422 incremental quadrature encoder input
  - Absolute encoder input
  - 6 digital inputs
  - 2 relay outputs
  - 4 methods of setting positions including teach mode

# Product Overview



## UNICASE™ SPEED REDUCERS



### HELICAL IN-LINE

- Foot or Flange Mount
- Torque up to 205,000 lb-in
- Gear ratios – 1.82:1 to over 300,000:1



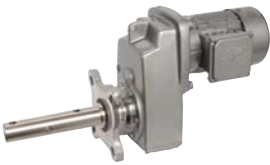
### NORDBLOC®.1 HELICAL IN-LINE

- Foot or Flange Mount
- Torque up to 26,550 lb-in
- Gear ratios – 1.88:1 to over 370:1



### PARALLEL HELICAL CLINCHER™

- Shaft, Flange or Foot Mount
- Torque up to 797,000 lb-in
- Gear ratios – 4.26:1 to over 300,000:1



### SCP SCREW CONVEYOR PACKAGE

- Shaft, or Flange Mount
- Torque up to 53,100 lb-in
- Gear ratios – 4.32:1 to over 1500:1



### RIGHT ANGLE HELICAL-BEVEL 2-STAGE

- Foot, Flange or Shaft Mount
- Torque up to 5,840 lb-in
- Gear ratios – 4.1:1 to 72:1



### RIGHT ANGLE HELICAL-BEVEL

- Foot, Flange or Shaft Mount
- Torque up to 283,000 lb-in
- Gear ratios – 8.04:1 to over 300,000:1



### RIGHT ANGLE HELICAL-WORM

- Foot, Flange or Shaft Mount
- Torque up to 27,585 lb-in
- Gear ratios – 4.40:1 to over 300,000:1

## HIGH PERFORMANCE MOTORS & BRAKEMOTORS



### INVERTER/VECTOR DUTY

- Standard or Energy Efficient
- Integral, NEMA or Metric IEC
- 1/6 to 250 hp

## UNICASE™ SPEED REDUCERS



### MINICASE™ RIGHT ANGLE WORM

- Foot, Flange or Shaft Mount
- Torque up to 3,540 lb-in
- Gear ratios – 5:1 to 500:1



### FLEXBLOC™ WORM

- Modular bolt-on options
- Torque up to 4,683 lb-in
- Gear ratios – 5:1 to 3,000:1



### MAXXDRIVE™ LARGE INDUSTRIAL GEAR UNITS PARALLEL HELICAL

- Modular bolt-on options
- Torque up to 2,027,000 lb-in
- Gear ratios – 5:1 to 1,600:1



### MAXXDRIVE™ LARGE INDUSTRIAL GEAR UNITS HELICAL-BEVEL

- Modular bolt-on options
- Torque up to 2,027,000 lb-in
- Gear ratios – 5:1 to 1,600:1

## NORDAC AC VECTOR DRIVES



### SK200E FAMILY

- Decentralized, high performance
- 380-480V, 3-phase to 10 hp
- 200-240V, 3-phase to 5 hp
- 200-240V, 1-phase to 1.5 hp
- 100-120V, 1-phase to 1 hp



### SK500E FAMILY

- Compact, high performance
- 380-480V, 3-phase, to 50hp
- 200-240V, 3-phase, to 15hp
- 200-240V, 1-phase, to 3hp
- 110-120V, 1-phase, to 1.5hp



### SK700E FAMILY

- Flexible high performance
- 380-460V, 3-phase, to 200hp



DRIVESYSTEMS

[www.nord.com](http://www.nord.com)

**WEST**  
Corona, CA (Los Angeles)  
Phone: 608.849.0190

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Charlotte, NC  
Phone: 608.849.0140

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