Drive solutions for conveyor belt applications

Application	Applications	Description	NORD solution	Gear unit	Braking resistor	Mech. holding brake	IE5+ synchronous motors with inverters Classification of inverters	f [Hz]	IE3 asynchronous motors with inverters Inverter overload capacity	f [Hz]
Incline or decline conveyor belts 	▸ Parcel distribution centres ▸ Baggage handling ▸ Intralogistics ▸ Material handling	Incline or decline conveyor belts: ▸ Transporting general goods ▸ Moving the goods to different heights ▸ Continuous or intermittent transport	 LogiDrive NORDBLOC.1® 2-stage bevel gear units with IE2, IE3, IE4 or IE5+ motor, direct or wall mounted inverter (NORDAC *FLEX*) or wall mounted field distributor (NORDAC *LINK*) Energy efficient ▸ In compliance with the most stringent efficiency regulations ▸ Reduces operating costs (TCO) ▸ High efficiency, even in partial load and partial speeds due to PMSM technology Reduction of variants ▸ Significant reduction of spare part stocks for the project ▸ Large speed range through inverter technology Easy to service and maintain ▸ Compact, space-saving design ▸ Weight reduction due to aluminium housing ▸ Service friendly through plug-and-play technology ▸ Replacement of individual system components possible	▸ Service factor (fb) > 1.6 ▸ Note the installation position – for incline or decline conveyor belts, tilted mounting positions are possible after technical clarification ▸ Hollow shaft > ø typically 25 – 30 mm (Post and Parcel) ø typically 30 – 40 mm (Airport)	External brake resistor recommended 	Recommended above 10° decline or incline, depending on load, ratio and conveyor belt construction – technical clarification necessary	Selected motor power to inverter power ratio 1:1, for highly dynamic operation, select the inverter 1 power size higher. 	140 Hz	Selected motor power to inverter power ratio 1:1, for highly dynamic operation, select the inverter 1 – 2 power sizes higher. 	50 Hz (standard) or 87 Hz With 87 Hz the power increases by a factor of 1.73. A larger inverter must be selected accordingly.
Horizontal conveyor belts 	▸ Parcel distribution centres ▸ Baggage handling ▸ Intralogistics ▸ Material handling	Horizontal conveyor belts: ▸ Horizontal transport of general goods ▸ Internal transport of goods between individual storage processes ▸ Usually fixed location ▸ Fields of use are for incoming goods, warehousing, order picking and goods dispatch as well as for various system functions such as buffering, storage and distribution of conveyed material to various lines and conveyors ▸ Continuous or intermittent transportation of product		▸ Service factor (fb) > 1.6 ▸ Hollow shaft > ø typically 25 – 30 mm (Post and Parcel) ø typically 30 – 40 mm (Airport)	Internal brake resistor 	Not necessary in general for inverter operation, as the motor is brought to a standstill in a controlled manner by the inverter	Selected motor power to inverter power ratio 1:1, for highly dynamic operation, select the inverter 1 power size higher. 	140 Hz	Selected motor power to inverter power ratio 1:1, for highly dynamic operation, select the inverter 1 – 2 power sizes higher. 	50 Hz (standard) or 87 Hz With 87 Hz the power increases by a factor of 1.73. A larger inverter must be selected accordingly.
Mergers and diverters 	▸ Parcel distribution centres ▸ Baggage handling ▸ Intralogistics ▸ Material handling	Mergers and diverters: ▸ Mergers guide several conveyor flows into an output line avoiding collisions ▸ Diverters precisely alter the direction of flow of the material or sort it in intermittent operation ▸ Cartons, containers, baggage or other individual goods are merged or diverted ▸ Used in sorting and distribution systems ▸ Highly dynamic applications with frequent start / stops		▸ Service factor (fb) > 2 ▸ Hollow shaft > ø typically 25 – 30 mm (Post and Parcel) ø typically 30 – 35 mm (Airport)	External brake resistor recommended 	Not necessary in general for inverter operation, as the motor is brought to a standstill in a controlled manner by the inverter	An inverter one power size higher must be selected. 	140 Hz	An inverter one power sizes higher must be selected. 	50 Hz (standard) or 87 Hz With 87 Hz the power increases by a factor of 1.73. A larger inverter must be selected accordingly.
Indexing conveyors 	▸ Parcel distribution centres ▸ Baggage handling ▸ Intralogistics ▸ Material handling	Indexing conveyors (also known as gappers or metering belts): ▸ Create defined gaps between packages which arrive with different spacings or close together ▸ Ensure stabilisation of package speed ▸ Flexible speed adjustment to change the throughput speed and gaps betweem items ▸ Highly dynamic applications with frequent start / stops		▸ Service factor (fb) > 2 ▸ Hollow shaft > ø typically 25 – 30 mm (Post and Parcel) ø typically 30 – 35 mm (Airport)	External brake resistor recommended 	Not necessary in general for inverter operation, as the motor is brought to a standstill in a controlled manner by the inverter	An inverter one power size higher must be selected. 	140 Hz	An inverter one power sizes higher must be selected. 	50 Hz (standard) or 87 Hz With 87 Hz the power increases by a factor of 1.73. A larger inverter must be selected accordingly.
Curves 	▸ Parcel distribution centres ▸ Baggage handling ▸ Intralogistics ▸ Material handling	Curves: ▸ Connection of straight sections which are at an angle to each other ▸ Continuous or intermittent transport		▸ Service factor (fb) > 1.6 ▸ Hollow shaft > ø typically 25 – 30 mm (Post and Parcel) ø typically 30 – 40 mm (Airport)	Internal brake resistor 	Not necessary in general for inverter operation, as the motor is brought to a standstill in a controlled manner by the inverter	Selected motor power to inverter power ratio 1:1, for highly dynamic operation, select the inverter 1 power size higher. 	140 Hz	Selected motor power to inverter power ratio 1:1, for highly dynamic operation, select the inverter 1 – 2 power sizes higher. 	50 Hz (standard) or 87 Hz With 87 Hz the power increases by a factor of 1.73. A larger inverter must be selected accordingly.

All specifications are recommendations based on Getriebebau NORD's experience. Project details need to be coordinated with NORD's sales department.

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NORDAC *FLEX* SK 200E frequency inverters (Catalogue E3000)

- ✓ Sensorless current vector control (ISD control)
- ✓ PLC functionality for drive-integrated functions
- ✓ Integrated POSICON positioning control
- ✓ Safe stop with "Safe Torque Off" (STO) and "Safe Stop 1" (SS1) as per EN 61800-5-2
- ✓ ASM and PMSM motor operation
- ✓ Energy-saving function
- ✓ Motor or wall mounting
- ✓ Protection class IP55 (optional IP66)
- ✓ AS interface integrated if required
- ✓ Many bus systems based on field bus and Industrial Ethernet
- ✓ Decentralised modules combined as asystem
- ✓ Extendable according to customer specification
- ✓ POSICON with absolute encoder

Sizes: 4
Voltage: 1 ~ 110 – 120 V, 1 ~ 200 – 240 V, 3 ~ 200 – 240 V, 3 ~ 380 – 500 V
Power: 0.25 – 22 kW

NORDAC *LINK* SK 250E Field Distribution System (Catalogue E3000)

- ✓ Protection class IP65 (up to 3 kW), IP55 (size 2)
- ✓ Simple commissioning and installation in the field
- ✓ All I/O, bus interface and power connections in plug-in version for easy commissioning and maintenance
- ✓ Extensive options e.g. key switch / maintenance switch, push buttons, potentiometers
- ✓ Integrated PLC for drive-related functions
- ✓ Functions compatible with modular NORDAC *FLEX*
- ✓ AS Interface
- ✓ Safe stop with "Safe Torque Off" (STO) and "Safe Stop 1" (SS1) as per EN 61800-5-2
- ✓ Many bus systems based on field bus and Industrial Ethernet

Sizes: 3
Voltage: 3 ~ 380 – 500 V
Power: Frequency inverter 0.37 – 7.5 kW, Motor starter 0.12 – 3 kW

NORDBLOC.1® 2-stage bevel gear units (Catalogue G1014)

- ✓ Foot, flange or face mounted
- ✓ Hollow or solid shaft
- ✓ Aluminium housing

Sizes: 6
Power: 0.12 – 9.2 kW
Torquet: 50 – 660 Nm
Speed ratio: 3.03 – 70:1

Motors (Catalogue M7000)

- IE3 asynchronous motors
- IE4 synchronous motors (Overload of up to 300 % with encoder)
- IE5+ motors (Overload of up to 300 % with encoder)

International energy efficiency standards

- EU: IE1 – IE4 acc. to IEC 60034-30
- US: ee labeling acc. to EISA 2014 (Dept. of Energy)
- CA: CSA energy verified acc. to EER 2010
- CN: CEL acc. to GB 18613
- KR: KEL acc. to REELS 2010
- BR: Alto Rendimento acc. to Decreto nº 4.508
- AU: MEPS acc. to AS / NZS 1359.5

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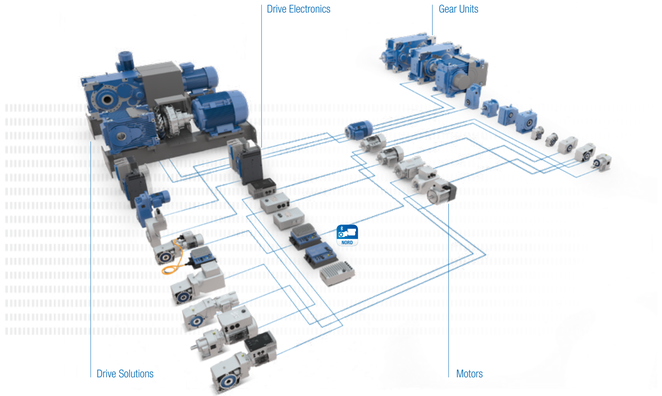

NORD DRIVESYSTEMS Group

- Family business from Bargteheide near Hamburg with more than 4,100 employees
- Drive solutions for more than 100 branches of industry
- 7 production locations worldwide
- Present in 98 countries on 5 continents
- More information: www.nord.com

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NORD DRIVESYSTEMS

Drive solutions for conveyor belt applications

Intelligent drive solutions for decline, incline and horizontal conveyor belts, mergers and diverters, indexing conveyors and curves

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NORD DRIVESYSTEMS

Complete drive systems from a single source

- Easy Engineering Tools
- Use of the NORD modular system
- Compliance with the most stringent energy efficiency regulations
- Reduction of variants to reduce costs
- TCO (Total Cost of Ownership) calculation for IE5+ drive units
- Service and maintenance friendly solutions
- Features for Easy Commissioning
- Pre-parameterisation for commissioning possible
- Configurable inverters (key switch, manual operation switch, isolating switch)

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