

# High efficiency synchronous motors

- ▶ Lower operating costs thanks to high efficiency synchronous motors with permanent magnet technology
- ▶ Simple and highly flexible combination through full compatibility with the NORD modular system
- ▶ Simplified control of applications thanks to almost constant motor speed



High efficiency motors from NORD DRIVESYSTEMS are designed as permanent magnet synchronous motors (PMSM), which are especially suited for operation with gear units. Even at low speeds, these systems achieve high torques and excellent efficiency. These 4-pole motors for energy-optimised systems are exclusively designed for operation with frequency inverters.

70Hz rated frequency  
1.1 to 4 kW / 1.5 to 5 HP

70Hz rated frequency / smooth motor (HM)  
0.75 to 2.2 kW / 1 to 3 HP

100Hz rated frequency  
1.5 to 5.5 kW / 2 to 7.5 HP

Size	MN [Nm]	PN [kW]	nN [rpm]	I at 400V [A]	$\eta$	Mmax [Nm]	SK 180E	SK 200E*	SK 500E*
80T1/4	5.0	1.1	2,100	2.03	90.5	14.4	-111-323- -111-340-	-111-323- -111-340-	-111-323- -111-340-
80T1/4 $\Delta$	4.8	1.5	3,000	3.44	90.4	14.4	-151-340-	-151-340-	-151-340-
90T1/4	6.8	1.5	2,100	2.82	89.9	21.0	-151-340-	-151-340-	-151-323- -151-340-
90T1/4 $\Delta$	7.0	2.2	3,000	5.09	89.6	21.0	-221-340-	-221-340-	-221-340-
90T3/4	10.0	2.2	2,100	4.13	90.5	29.0	-221-340-	-221-340-	-221-323- -221-340-
90T3/4 $\Delta$	9.6	3.0	3,000	6.84	92.3	29.0		-301-340-	-301-340-
100T2/4	13.6	3.0	2,100	5.40	91.4	42.0		-301-340-	-301-340-
100T2/4 $\Delta$	12.7	4.0	3,000	8.90	92.1	42.0		-401-340-	-401-340-
100T5/4	18.2	4.0	2,100	7.10	92.1	57.0		-401-340-	-401-340-
100T5/4 $\Delta$	17.5	5.5	3,000	11.90	92.2	57.0		-551-340-	-551-340-

\*Please contact NORD for all combinations of high efficiency synchronous motors with SK 200E or SK 500E inverters.

## Smooth motors

Size	MN [Nm]	PN [kW]	nN [rpm]	I at 400V [A]	$\eta$	Mmax [Nm]	SK 180E	SK 500E*
80T1/4 HM	3.41	1.1	2,100	1.46	91.2	13.5	-111-323- -111-340-	-750-323- -750-340-
80T3/4 HM	5.0	1.5	2,100	2.08	93.0	28.3	-151-340-	-111-323- -111-340-
100T5/4 HM	10.0	4.0	2,100	4.16	91.2	53.5		-221-323- -221-340-



## Mounting styles

- ▶ IEC B3 foot mount
- ▶ IEC B14 flange mount
- ▶ IEC B5 flange mount
- ▶ NEMA C-face flange mount
- ▶ NEMA foot mount
- ▶ Integral motor for NORD gear units

## International certifications

- ▶ CE mark in accordance with the Low Voltage Directive for European Union (EU)
- ▶ Underwriters Laboratories Recognized per UL standard 1004
- ▶ Canadian Standards Association CSA mark
- ▶ China Compulsory Certification
- ▶ Eurasian Conformity



## International energy efficiency standards

- ▶ EU: IE1 – IE4 as per IEC 60034-30
- ▶ US: ee labeling as per EISA 2014 (Dept. of Energy)
- ▶ CA: CSA energy verified as per EER 2010
- ▶ CN: CEL as per GB 18613
- ▶ AU: MEPS as per AS/NZS 1359.5
- ▶ IN: IS 12615:2018

## Inverter duty

- ▶ Conformance with NEMA MG 1-2009 Section 31.4.4.2 Voltage Spikes
- ▶ Speed range 5:1 constant torque
- ▶ Speed range 10:1 constant torque
- ▶ Speed range 20:1 constant torque
- ▶ Speed range 1,000:1 constant torque



## Standard construction features

- ▶ Dual mode use: 50 Hz and 60 Hz
- ▶ Shaft lip seals on both ends of the motor shafts
- ▶ Stator to endbell connections sealed to exclude moisture
- ▶ Double coated magnetic wire insulation
- ▶ Moisture resistant varnish dipped windings with improved varnish materials
- ▶ Inorganic insulating components for tropical protection
- ▶ Conduit box sealed with gaskets
- ▶ Corrosion resistant alloy materials
- ▶ Threaded cable entry holes

## Environmental Protection

- ▶ Protection class IP55 standard
- ▶ Totally Enclosed Fan Cooled (TEFC/IC 411)
- ▶ Insulation class F standard
- ▶ Bureau Veritas certified

## Options

- ▶ Motor quick connectors
- ▶ Protection class IP66
- ▶ Thermal winding protection (thermistor/ thermostat)
- ▶ Protection canopies (single, double, for textile industry)
- ▶ Space heater
- ▶ Brake (IP55 and IP66)
  - ▶ Corrosion and/or dust protection
  - ▶ (Lockable) hand release lever

### NORD DRIVESYSTEMS Group

- ▶ Family business from Bargteheide near Hamburg with 4,700 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](http://www.nord.com)

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Headquarters:  
 Getriebebau NORD GmbH & Co. KG  
 Getriebebau-Nord-Str. 1  
 22941 Bargteheide, Germany  
 T: +49 45 32 / 289 0  
 F: +49 45 32 / 289 22 53  
[info@nord.com](mailto:info@nord.com)