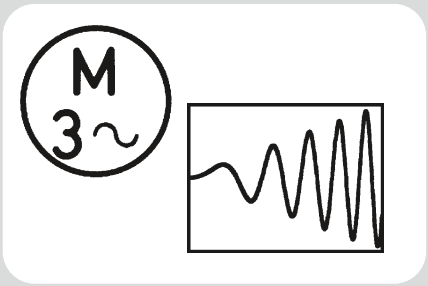


14

Motors

ErP Directive 2009/125/EC

Directive 2009/125/EC of the European Parliament and the Council, issued in 2009, specifies requirements for the environmentally responsible design of energy-related products (ErPs). In November 2009 it superseded Directive 2005/32/EC, which formed the framework for requirements for the environmentally responsible design of energy-using products (EuPs). This change has no effect on already proclaimed implementation measures.

Objectives

The ErP Directive has several objectives:

1. **Mitigating the environmental impact of energy-using products**
   This objective is intended to be achieved by the documentation and labelling of products, by regulations for inspection, and by the formulation of individual requirements in implementation measures. As the entire product life cycle is taken into consideration, action must be taken as early as the design phase.

2. **Climate protection**
   Achievement of the EU climate protection objectives is to be supported. This can be implemented by reducing energy consumption and the emission of global warming gasses in the production, operation and disposal of energy-using products.

3. **Harmonised legislation**
   The directive creates a framework for the European regulation of environmental design requirements. This avoids trade impediments resulting from differences in national regulations. This can be achieved by means of the proclamation of legally binding implementation measures for the entire Community and protection of free trade in goods against further-reaching regulations of the Member States.

Which motors are excluded from the scheme?

- Motors designed to be operated completely immersed in a liquid
- motors fully integrated into a product (e.g. a gearbox, a pump, a fan or a compressor) whose energy efficiency cannot be measured independently of that productn
- at altitudes above 4000 meters above sea level
- at ambient temperatures above 60 °C
- at ambient temperatures below - 30 °C (any motor) or at ambient temperatures below 0 °C (air-cooled motor)
- in potentially explosive atmospheres within the meaning of Directive 94/9/EC of the European Parliament and of the Council
- Brake motors

Example:

Regulation (EU) 2019/1781

To establish eco-design requirements for electric motors and variable speed drives pursuant to Directive 2009/125/EC

Valid from: 01.07.2021
- Frequency converter 0.12 - 1,000 kW: IE2
- 3-phase motors 0.12 < 0.75 kW/2.4, 6 or 8 poles: IE2 (Excluded: Ex eb (DXE))
- 3-phase motors 0.75 - 1,000 kW/2.4, 6 or 8 poles: IE3 (Excluded: Ex eb (DXE)

ATTENTION:
Brake motors are no longer exempt!!
IE2 for inverter operation is no longer permitted!!!

Valid from: 01.07.2023
- 1-phase motors ≥ 0.12 kW: IE2
- Ex eb (DXE) Motors ≥ 0.12 kW: IE2
- 3-phase motors 75 kW – 200 kW 2. 4 or 6 pole: IE4
  (Exempt: brake motor and all explosion-proof motors)

Scope
Induction electric motors without brushes, commutators, slip rings or electrical connections to the rotor, rated for operation on a 50 Hz, 60 Hz or 50/60 Hz sinusoidal voltage and having the following characteristics:
- 2-, 4-, 6- and 8-pole motors
- Rated power PN between 0.12 kW and 1000 kW
- Rated voltage UN over 50 V up to and including 1,000 V
- are designed for continuous operation (S1, S3 ≥ 80 % ED, S6 ≥ 80 % ED) and are intended for direct mains operation

Which engines are excluded from the scheme?

- Motors designed to be operated completely immersed in a liquid
- Motors fully integrated into a product (e.g. a gearbox, a pump, a fan or a compressor) whose energy efficiency cannot be measured independently of that product
- Motors with integrated frequency converter (compact drives) whose energy efficiency cannot be tested independently of the frequency converter
- Motors specifically designed and specified to operate exclusively
  - at altitudes exceeding 4000 m above sea-level
  - at ambient temperatures above 60 °C
  - at ambient temperatures below -30 °C
- Motors with integrated brake, which is an integral part of the inner motor construction and cannot be removed or supplied from a separate power source when testing the motor efficiency.
- Motors specifically qualified for the safety of nuclear installations, as defined in Article 3 of Council Directive 2009/71/EURATOM
- Motors with mechanical commutators
- Totally enclosed Non-Ventilated motors (TENV)
- Engines from the respective scope of application of the two deadlines 01.07.2021 or 01.07.2023, which were placed on the market before these deadlines, may continue to be placed on the market until 30.06.2029 as 1:1 replacements and may be specifically marketed as such
- Multi-speed motors, i.e. pole-changing motors
- Motors designed specifically for the traction of electric vehicles
- Motors in portable equipment whose weight is supported by hand during operation
- Motors in hand-held mobile equipment which are moved during operation
- Motors in cordless or battery-operated equipment
- Motors for underground mining (mines)

Method for determining the motor efficiency according to IEC 60034-2-1

Individual loss procedure
Additional losses according to residual loss method
Low measurement uncertainty

Bauer geared motors for connection to three-phase supply are supplied with specially designed induction motors. This design ensures maximum operating safety with high breakaway torque and minimum starting current.

The torque/speed characteristic is largely free of torque dips. Torque is optimised to suit requirements and application parameters. See “www.bauergears.com” for more information.

Torques

The torques as stated in the selection tables are fully available at the output shaft. These figures apply for continuous operation (S1-100 %) at a maximum ambient temperature of 40 °C and at site elevations up to 1000 m above sea level. Drives for higher ambient temperatures and site elevations are available on request. Gear efficiencies, which are lower than the usual values for spur gears, are taken into account in the torques listed in the selection tables.

Line voltages

BAUER motors are available as standard for the following three-phase line voltages:

Motor size	Standard voltages:
D..04LA4 - D09X.4	220 V Δ/ 380 V Y 50 Hz
0.06 - 2.2 kW	230 V Δ**/400 V Y 50 Hz***
	240 V Δ/415 V Y 50 Hz**
	440 V Y/60 Hz 460 V Y/60 Hz
from D..11SA4	220 V Δ/ 380 V Y 50 Hz
from 3.0 kW	230 V Δ/ 400 V Y 50 Hz
	240 V Δ/ 415 V Y 50 Hz**
	440 V Y/60 Hz460 V Y/60 Hz
	380 V Δ/ 660 V Y 50 Hz
	400 V Δ/ 690 V Y**50 Hz***
	415 V Δ/50 Hz**
	440 V Δ/ 60 Hz
	460 V Δ/ 60 Hz

*Voltage recommended world-wide by IEC 38 and in Europe by CENELEC.
**= Insulation Class F is necessary.

Designs for other voltages available on request and at extra cost.

Unless otherwise specified, motors for operation in conjunction with frequency converters with a 50 or 60 Hz frequency have a Y-circuit to optimise operating noise and winding load.

Unless otherwise stated, the tolerance for the rated voltage is +/- 5 %, in accordance with IEC 60034-1.

The D..04.. to D..18.. motors in 4 pole design can be operated within a tolerance of +/- 10 % of the rated voltage (400 V 50 Hz).

Line frequencies

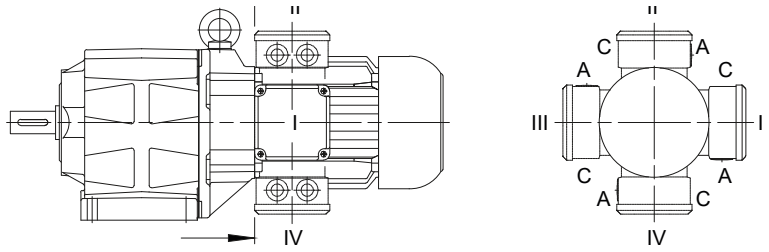
All motors are available with the same power ratings for either 50 or 60 Hz. Increased power models are available on request.

Rating plate

Bauer geared motors are supplied with a corrosion-proof rating plate as standard. The standard rating plate is made of special plastic tried and tested in many years of practical use and approved for hazardous areas by the Physikalisch-Technische-Bundesanstalt (PTB).

Terminal box

The cables of motors with and without brakes can be introduced into the motor terminal box from side A or side C.

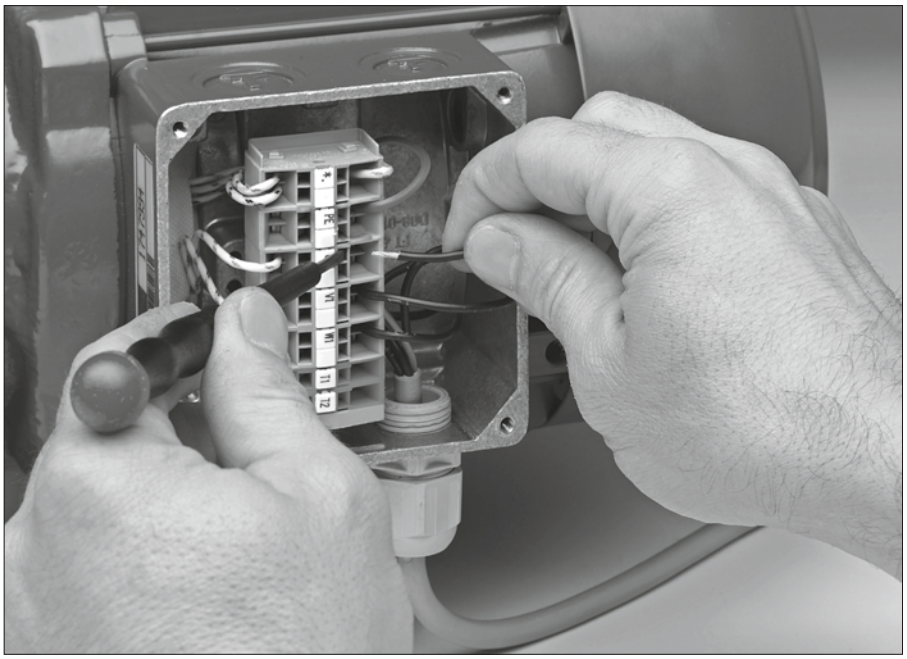


The standard position for the motor terminal box is shown in the dimensional drawings for the geared motors (see chapter 10,11,12 and 13). The terminal box can be installed at any of 3 other positions on request, if on-site space is restricted. The 4 possible positions are 90° offsets around the axis of the motor (dimensional drawing and designation for standard terminal box, see chapter 16 “Dimensional drawing standard terminal box”).

Cast-on terminal boxes (KAG) are supplied with knock out entries with metric nut for cable gland. Screw- on terminal boxes (TBI...4 are supplied with a metric screw thread as standard.

Motor connections

The electrical connection of gear motors is time consuming and creates costs, which cannot be neglected both during initial installation and in service cases. These costs are reduced considerably by the use of BAUER Gear Motors, have CAGE CLAMP® connection technology instead of the conventional terminal block – and that without extra charge.



What are the advantages for you ?

Cost reduction during connection
Public timing test have confirmed, that the electrical connection of a cable by means of CAGE CLAMP® technology saves up to 75 % working time compared with the classic screw connection.

Simple Handling
Cable connection from the top, very easily accessible: The CAGE CLAMP® spring is pressed, and the cable inserted from the front, i.e. in the field of vision of the installation engineer.

Which cable core diameters ?
Suitable for all copper wires from 0.5 mm^2 to 25 mm^2.

Cost saving in material and tooling
- multicore cable ends, cable eyes or cable ring eyes are no longer needed
- Tools such as crimping pliers are no longer needed
- Inadvertently over tightening or breaking of the terminal bolts and the procurement of a new terminal block belong in the past.
- Searching and procurement of nuts and washers for the terminal blocks, which have fallen down, also belongs in the past.

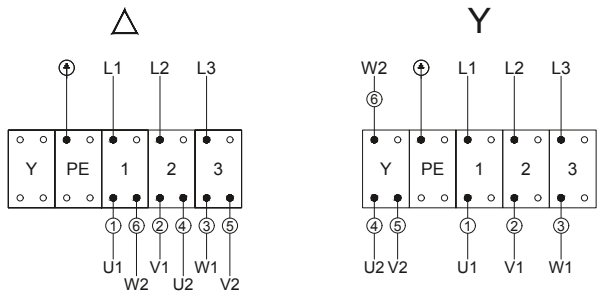
Vibration and shock resistant
Vibration and shock result neither in conductor damage nor in a measurable contact interruption. The connection is service free.

Type of conductors
The CAGE CLAMP®-connector can clamp fine stranded, stranded and solid cores wires.

Terminal connections for single speed motors

Standard connection of three phase motors via CAGE CLAMP®.
D..04 - D..09

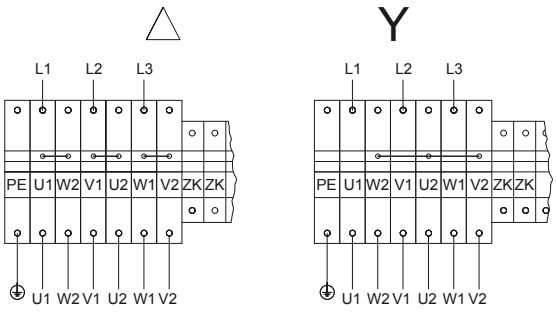
Connection of three-phase motor via CAGE CLAMP®



	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230V)		
Y	Connections for the high rated voltage (e.g.: 400V)		

D..11 - D..18

Connection of three-phase motor via CAGE CLAMP®

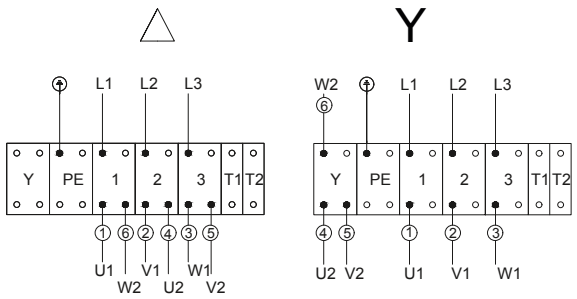


	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230V)		
Y	Connections for the high rated voltage (e.g.: 400V)		
ZK	Optimal additional connection		

Terminal connections for single speed motors with thermal motor protection

Standard connection of three phase motors with thermal motor protection via CAGE CLAMP®.
D..04.. - D..09..

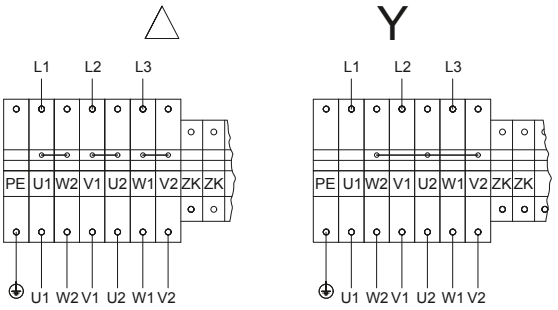
Connection of three-phase motor and thermal motor protection via CAGE CLAMP®



	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Schaltung für niedrige Nennspannung (z. B.: 230V)		
Y	Schaltung für hohe Nennspannung (z. B.: 400V)		
T1 T2	Thermal motor protection		

D..11 - D..18

Connection of three-phase motor via CAGE CLAMP®

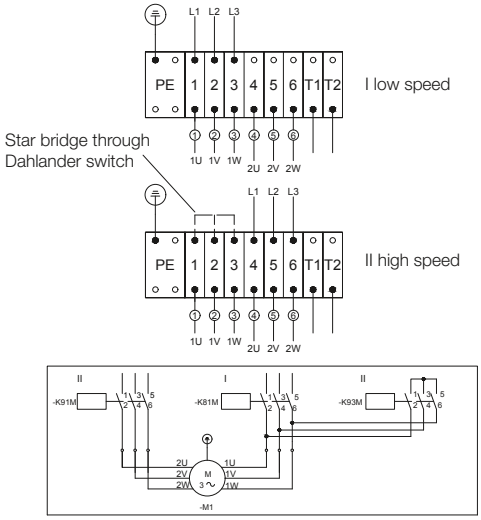


	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1 L2 L3	L1 L2 L3	
Motor winding	U1 V1 W1 U2 V2 W2	T1 T2 T3 T4 T5 T6	black blue brown yellow red violet
Δ	Connections for the low rated voltage (e.g.: 230V)		
Y	Connections for the high rated voltage (e.g.: 400V)		
ZK	Optimal additional connection		

Terminal connections for pole changing motors in Dahlander connection (Δ/YY or Y/YY)

Standard connection of three phase motors without motor protection via CAGE CLAMP®.
D..04.. - D..09..

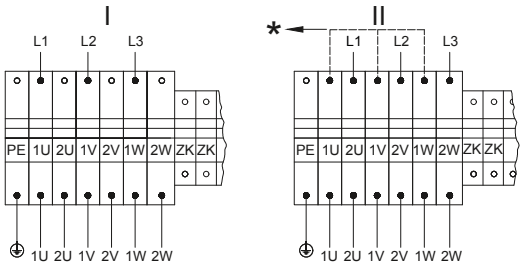
Motor 2 Speeds, Dhalander connection D/YY or Y/YY
(T1-T2 Thermal Motor protection optional)



	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1	L1	
	L2	L2	
	L3	L3	
Motor winding	1U	T1	black
	1V	T2	blue
	1W	T3	brown
	2U	T5	yellow
	2V	T6	red
	2W	T4	violet
I	low speed		
II	high speed		

D..11.. - D..18..

Connection of three phase motor via CAGE CLAMP®
Pole changing for 2 speeds; Dahlander connection Δ/ YY

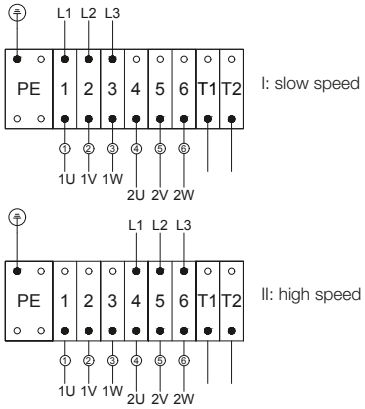


	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1	L1	
	L2	L2	
	L3	L3	
Motor winding	1U	T1	black
	1V	T2	blue
	1W	T3	brown
	2U	T4	yellow
	2V	T5	red
	2W	T6	violet
I	low speed		
II	high speed		
ZK	Optimal additional connection		
*	Star point over Dahlander Relay		

Terminal connections for pole changing motors with two separate windings (Y/Y or Δ/Δ)

Standard connection of three phase motors with motor protection via CAGE CLAMP®.
D..04.. - D..09..

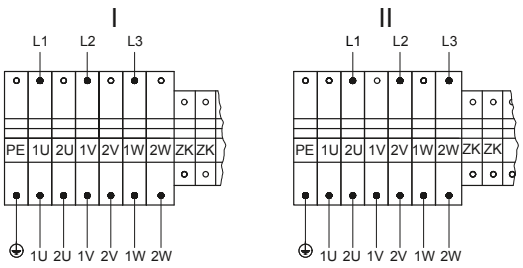
Motor pole-changing
2 speeds, 2 windings: Y/Y or Δ/Δ
(T1-T2 thermal motor protection optional)



	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1	L1	
	L2	L2	
	L3	L3	
Motor winding	1U	T1	black
	1V	T2	blue
	1W	T3	brown
	2U	T11	yellow
	2V	T12	red
	2W	T13	violet
I	low speed		
II	high speed		
T1 T2	Thermal motor protection		

D..11.. - D..18..

Connection of three phase motor via CAGE CLAMP®
Motor pole-changing 2 speeds, 2 windings; Y/Y or Δ/Δ

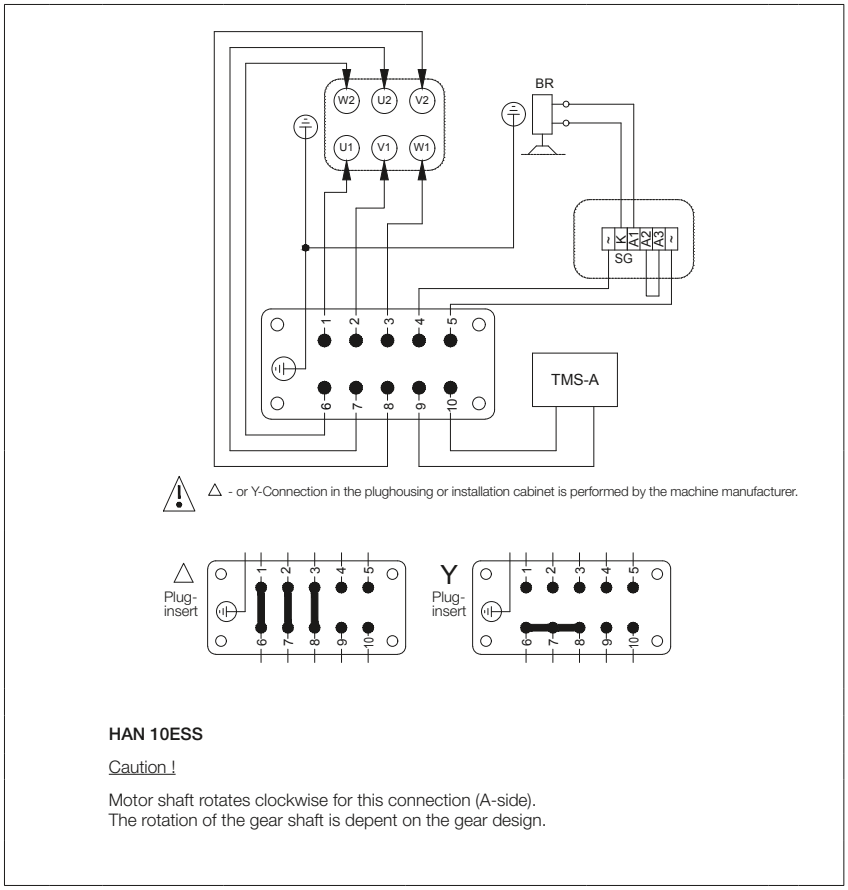


	IEC/EN 60034-8	NEMA MG 1	Colour
Supply lines	L1	L1	
	L2	L2	
	L3	L3	
Motor winding	1U	T1	black
	1V	T2	blue
	1W	T3	brown
	2U	T4	yellow
	2V	T5	red
	2W	T6	violet
I	low speed		
II	high speed		
ZK	Optimal additional connection		

Plug-and-socket connection

D..06.. to D..16.. Bauer motors are available with plug-in motor connection. The socket housing is mounted on the fan-cowl side of the terminal box as standard. This layout minimises the protrusion caused by the plug.
The standard plug-and-socket type connection incorporates the attachment housing, pin insert and cover. Grommet-type housings and jack inserts are available on request at extra cost. Pin assignments on request (dimensional drawing, see chapter 17 “Dimensional drawing, plug-connector terminal box”).

A design with single clamp lever according to the DESINA regulation of the „Verbandes Deutscher Werkzeugmaschinenhersteller“ (VDW) is also available.



The motors are also available with a low-cost round plug connector as an alternative. This is fitted at the factory in the standard terminal box and is also suitable for brake connection, thermistors and thermostats. Additional information on request.

Bauer motors from D..08.. with motor-mounted brake are also available with plug-in brake connection. This means that if it requires attention, the brake can be replaced on site with no loss of time.

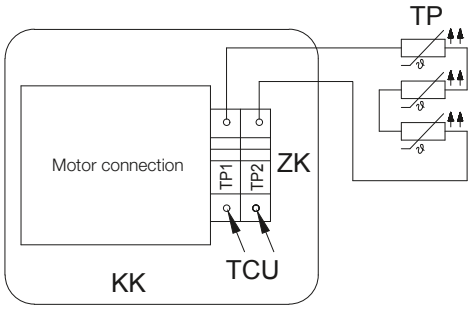
Motor protection

Each geared motor requires a current-dependent motor protection switch or an overcurrent relay with thermal delay in the switchgear to protect the motor windings. The rated motor currents required for settings are stated in the order acknowledgment. Thermal protection for the winding is recommended as an additional safety measure for special operating conditions (short-time or intermittent periodic duty, high switching frequency, severe voltage fluctuations or restricted cooling) and for operation in conjunction with a frequency converter.

Thermistors (PTC)

Thermistors are temperature-dependent resistors which are fitted in each phase winding. In conjunction with a motor protection switch, they ensure optimum protection for the winding in the event of rapid temperature rise. Characteristic to DIN 44081 and “Mark A” to IEC 34-11-2. Thermistors are available for all motors at extra cost. The requisite monitoring device is not included in the scope of supply.

Thermal motor protection with PTC-thermistors



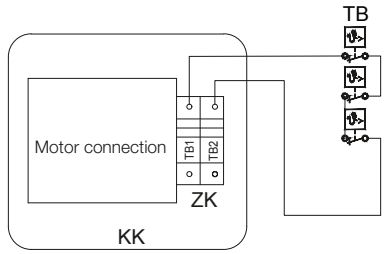
KK	Terminal box
ZK	Additional terminals
TP	PTC-thermistors
TCU	Connection of Thermistor control unit EN 60947 Max. permissible testing voltage 2.5 VDC/thermistor in case of Ex with auth. certificate: PTB 3.53-PTC A

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

Thermostatic protection

Bimetal switches are used for slow-acting, independent temperature monitoring and are embedded in each winding section of the motor.
The bimetal disc is sized such that when the temperature rises above a specific, previously set value, the disc suddenly snaps from a convex state to a concave state and the contact moves vertically away from the contact plate. In this state the switch is either open (normally closed switch) or closed (normally open switch). A significant temperature change is necessary to allow the bimetal disc to independently snap back to its initial position. When it does, the switch is again closed (normally closed switch) or open (normally open switch). Thermal protection switches are available for all motors at additional cost. For technical reasons, this option is not recommended for large motors (D..11.. to D..18..).

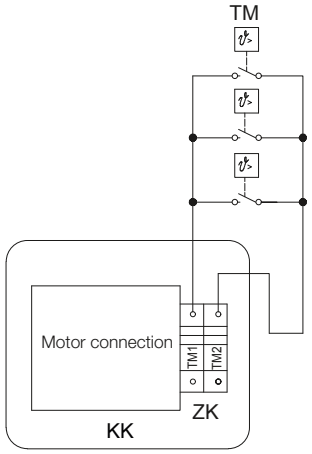
Thermal motor protection with thermostats
(with normally closed contacts)



KK	Terminal box
ZK	Additional terminals
TB	Thermostats with normally closed contacts max. 250VAC 1.6A

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

Thermal motor protection with thermostats
(with normally opened contacts)



KK	Terminal box
ZK	Additional terminals
TB	Thermostats with normally closed contacts max. 250VAC 1.6A

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

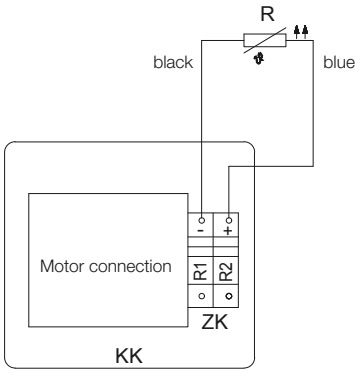
KTY sensors

KTY sensors with heat-shrink insulation can be used to measure and monitor critical surface temperatures and internal temperatures of motors and machines. These sensors are suitable for use in harsh industrial environments in all places where accurate measurements with a single sensor are required. KTY sensors are available for all types of motors at additional cost.

Type 84-130SH: primarily installed in motors that are operated with Siemens frequency converters.

Working principle: KTY sensors are temperature-dependent components. The resistance of the KTY sensor increases when its temperature rises. The characteristic curve is nearly linear in the sensor‘s measuring range; the reference resistance (at 100 °C) is 970 to 1030 ohms.

Resistance temperature sensor KTY84-130SH



KK	Terminal box
ZK	Additional terminals
R	Resistance temperature sensor

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

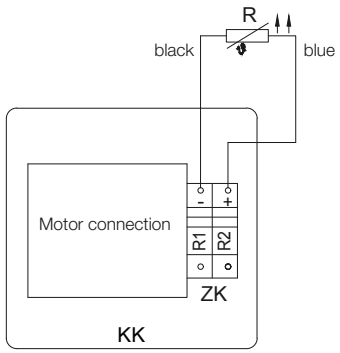
PT100 sensors

Precise monitoring of motor temperatures is necessary in many fields of industry. Pt100 sensors feature high accuracy, short response time and long-term stability, and they are suitable for use over a wide range of temperatures. Pt100 sensors are available for all motor types at additional cost.

Specifications
Nominal resistance: 100 Ω at 0 °C

The resistance characteristics are specified in EN 60751.

Resistance temperature sensor PT 100



KK	Terminal box
ZK	Additional terminals
R	Resistance temperature sensor

The location of the additional terminals in the drawing is not necessarily identical with the actual arrangement.

Insulation

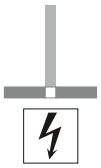
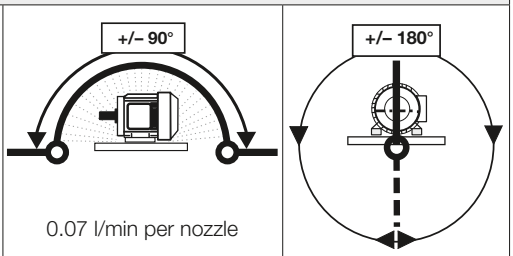
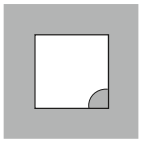
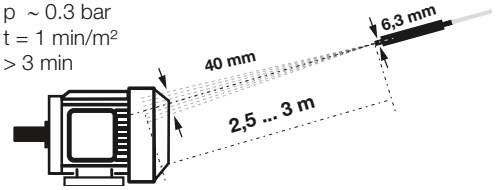
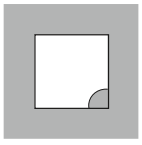
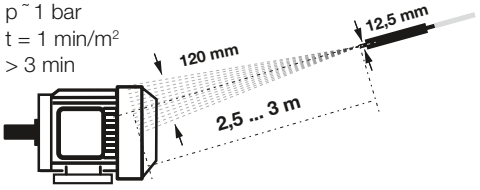
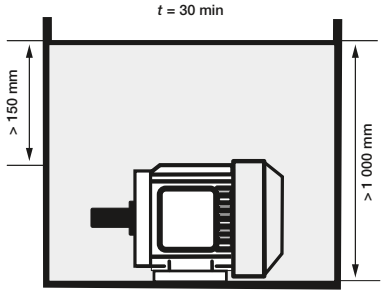
The gearmotors described in the selection tables of this catalogue with the motor sizes D..04.., D..05.., D..06.., D..08.., D..09S and D..09L are executed in insulation class B. Temperature class F is available on request at extra cost.

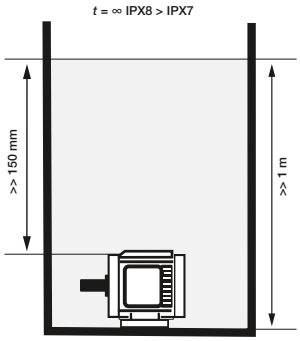
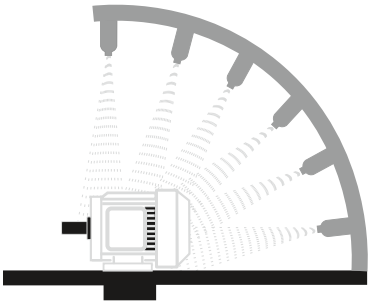
4-pole motors D..07.. and D..09XA4 (2.2 kW) to D..18XA4 (30 kW) and all multi-speed motors are rated in Temperature Class F as standard.
Insulation Class F bestows the winding a multiple protection against high humidity, acidic gases and heavy tropical influences while making the same shock resistant and more resistant to heat. Protection against insects (termites) is guaranteed through the complete enclosure (IP65) as long as the mains cables are encased in metal.

IP – Protection classes

Bauer motors from motor size D..06.. are manufactured to IP65 degree of protection as standard. Motor sizes D..04.. and D..05.. have a smooth motor housing of IP54. Higher IP protection classes on request.

Degrees of protection provided by enclosures for electrical equipment

First IP - code number after DIN EN 60529					Second IP - code number after DIN EN 60529		
	Protection against penetration of solid foreign bodies		Protection of persons against access to hazardous parts with			Protection against penetration of moisture or water	
4	diameter > = 1.0 mm		Wire		4	Splash water	 0.07 l/min per nozzle
5	Dustproof				5	Jet water	qv = 12,5 l/min p ~ 0.3 bar t = 1 min/m² > 3 min 
6	Dust tight				6	Strong Jet water	qv = 100 l/min p ~ 1 bar t = 1 min/m² > 3 min 
					7	Temporary Submerge	

First IP - code number after DIN EN 60529		Second IP - code number after DIN EN 60529		
Protection against penetration of solid foreign bodies	Protection of persons against access to hazardous parts with		Protection against penetration of moisture or water	
		8	Permanent Submerge	 x = 5 m (Standard) or by agreement
		9 (9K= DIN 40050-9)	High pressure and high jet water temperature	Housing >= 250 mm t = 1 min /m² > 3 min Water temperature (80 +- 5) °C 15 l/min, 100 bar Distance (175 +- 25) mm 

Speed of output shaft

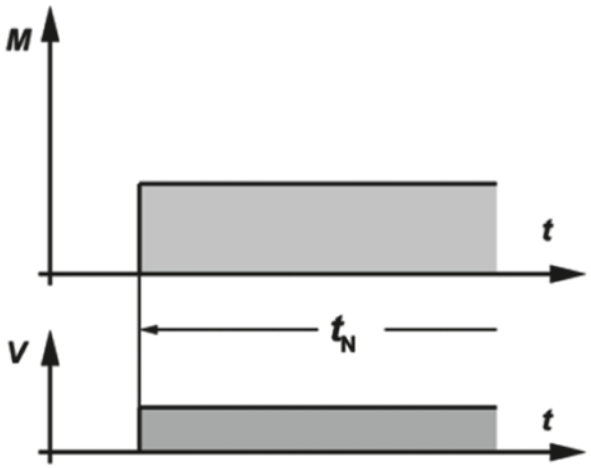
The rated speeds in the selection tables are guidelines for load at rated power. Speed can vary depending on degree of load and temperature (particularly in the case of relatively small motors). Combination gear units for lower speeds are available on request.

Duty types as defined by EN 60034

General

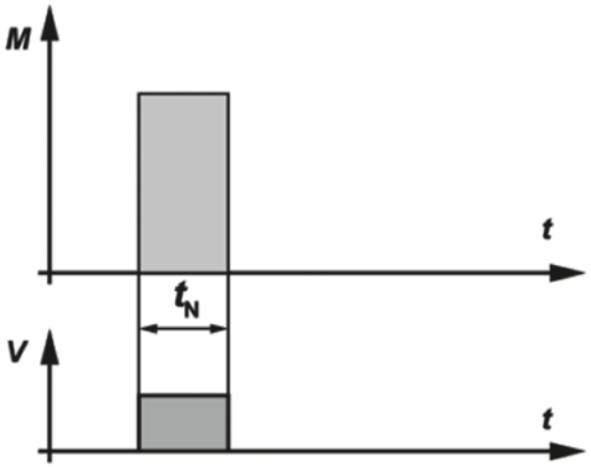
Aside from special drives (such as lifting equipment), standard motors are always designed for continuous running duty. If the drive is operated with frequent on/off cycles, it may be necessary to select a larger motor with a special design. On the other hand, with pronounced short-time duty it is often possible to select a smaller model. **For this reason, it is technically necessary or economically advantageous to inform the motor manufacturer of any duty type that differs from continuous running.**

Continuous running duty (S1)



Operation under rated load for sufficient time to allow temperature equilibrium to be attained, such that the temperature does not increase any more with continued operation. The equipment can operate continuously under the rated load without exceeding the allowable temperature.

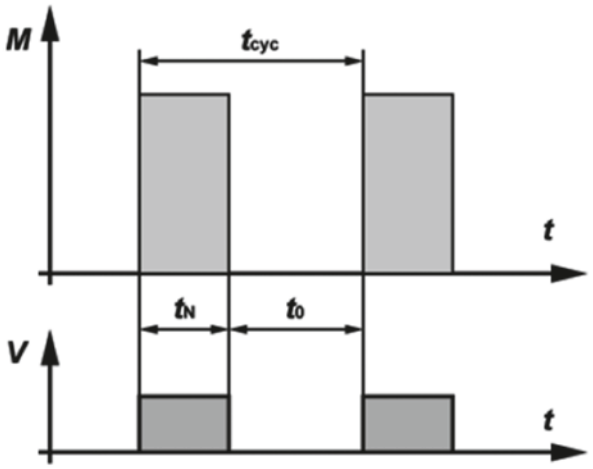
Short-time duty (S2)



The operating time under rated load is short compared with the subsequent rest period. The standard operating times are 10, 30, 60 and 90 minutes. The equipment can operate for this period under the rated load without exceeding the allowable temperature.

Example: S2 – 60 min

Intermittent periodic duty (S3)



S3 duty consists of a sequence of identical cycles, each composed of an operating time with constant load and a rest time with the windings de-energised. The cycle is such that the starting current does not significantly affect the temperature rise. The operating time under rated load and the subsequent pause are both short. The equipment can operate under load only during the period indicated by the duty cycle as a percentage of the total cycle time (cycle duration).
The standardised duty cycles are 15, 25, 40 and 60 %. The cycle duration is 10 minutes unless otherwise specified.

Intermittent periodic duty means that a state of thermal equilibrium is not reached during the load interval.

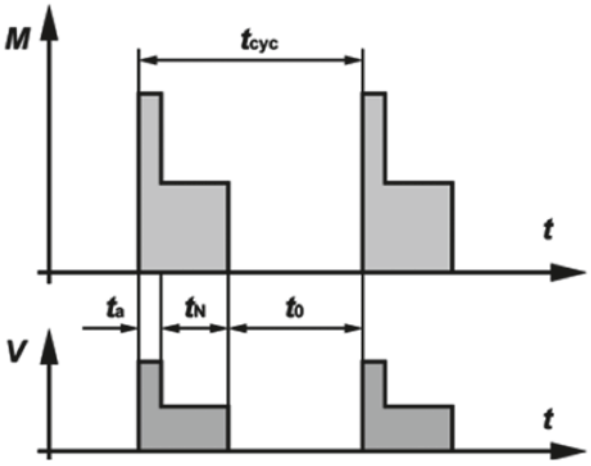
The duty cycle can be determined as follows:

$$ED = \frac{t_N}{t_{cyc}} \times 100\% = \frac{t_N}{t_N + t_0} \times 100\%$$

Example: S3 – 25%

Duty types as defined by EN 60034

Intermittent periodic duty with starting (S4)



S4 duty consists of a sequence of identical cycles, each of which is composed of a distinct starting time, a time of operation under constant load, and a rest period with the windings de-energised.

The operating time under rated load and the subsequent pause are both short. The equipment can operate under load only during the period indicated by the duty cycle as a percentage of the total cycle time (cycle duration).

The standardised duty cycles are 15, 20, 40 and 60 %. The cycle duration is 10 minutes unless otherwise specified.

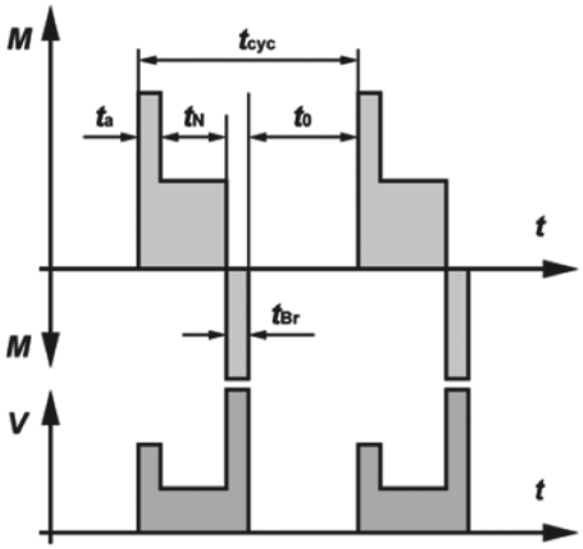
The load cycle corresponds to mode S3, but with additional heating during the starting time that must be taken into account.

The duty cycle can be determined as follows:

$$ED = \frac{(t_a + t_N)}{t_{cyc}} \times 100\% = \frac{t_a + t_N}{t_a + t_N + t_0} \times 100\%$$

Example: S4 – 25 %, J_M = 0.15 kgm²

Intermittent periodic duty with electric braking (S5)



S5 duty consists of a sequence of identical cycles, each of which is composed of a starting time, a time of operation under constant load, a time of fast electric braking, and a rest period with the windings de-energised.
The operating time under rated load and the subsequent pause are both short. The equipment can operate under load only during the period indicated by the duty cycle as a percentage of the total cycle time (cycle duration).
The standardised duty cycles are 15, 20, 40 and 60 %. The cycle duration is 10 minutes unless otherwise specified.

The load cycle corresponds to S3 duty, but with additional warming during the starting time t_a and the braking time t_{Br} taken into account.

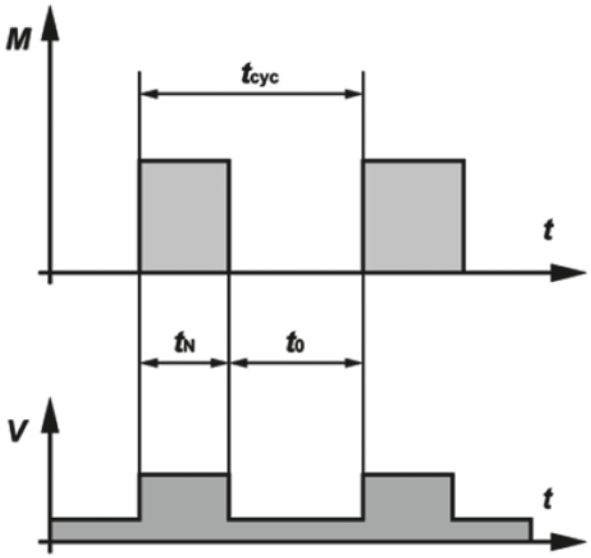
The duty cycle can be determined as follows:

$$ED = \frac{(t_a + t_N + t_{Br})}{t_{cyc}} \times 100\% = \frac{t_a + t_N + t_{Br}}{t_a + t_N + t_{Br} + t_0} \times 100\%$$

Example: S5 – 25%; J_M = 0.15 kgm², J_{ext} = 0.7 kgm²
(J_M Moment of inertia of the motor / J_{ext} Moment of inertia of the load)

Duty types as defined by EN 60034

Continuous-operation periodic duty (S6)



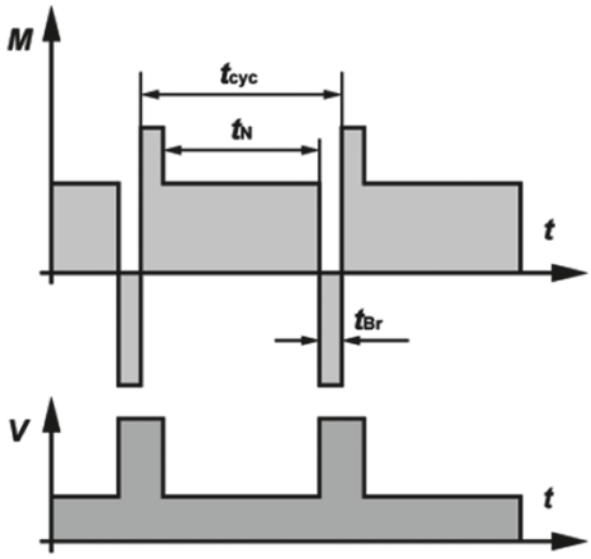
This type of duty corresponds to S3, with the exception that the equipment remains energised during the rest periods. In other words, it operates with no load during these periods. The duty cycle and cycle duration are specified the same way as for S3 duty.

The duty cycle can be determined as follows:

$$ED = \frac{t_N}{t_{cyc}} \times 100\% = \frac{t_N}{t_N + t_0} \times 100\%$$

Example: S6 – 40 %

Continuous-operation periodic duty with electric braking (S7)

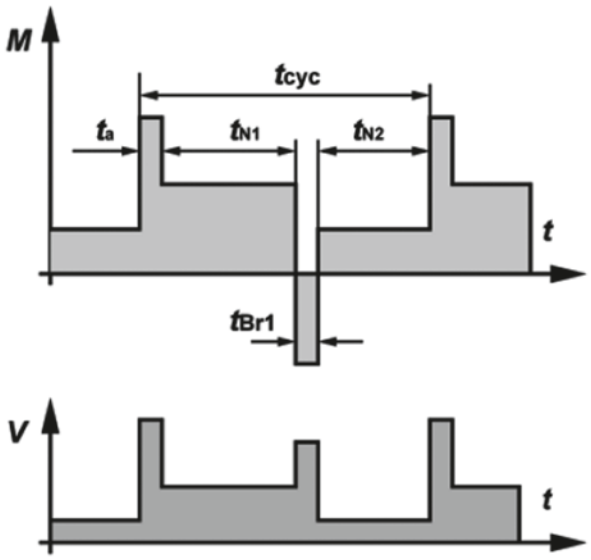


The machine starts up, operates under load, and then is braked electrically, for example by feeding it from a DC power source. Following this, it starts up again immediately. The machine can operate continuously in this manner if the specified moments of inertia of the motor J_M and of the load J_{Ext} as well as the specified duty cycle are not exceeded. If the cycle duration is not specified, it is assumed to be 10 minutes.

The duty cycle can be determined as follows: DC = 1

Example: S7 – J_M = 0.4 kgm², J_{ext} = 7.5 kgm²
(J_M Moment of inertia of the motor / J_{ext} Moment of inertia of the load)

Continuous-operation periodic duty with relative load/speed changes (S8)



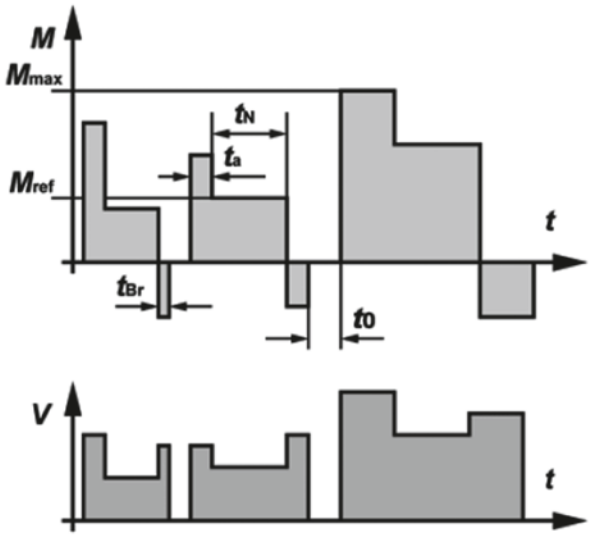
The machine runs continuously under variable load with frequent speed variations. The machine can operate continuously in this manner if at each speed the specified values are not exceeded (moments of inertia J_M and J_{Ext} cycle duration (if other than 10 minutes), rated output and duty cycle. With a moment of inertia of 1 kg m², the acceleration characteristics are the same as with a mass of 1 kg at a distance of 1 m from the axis of rotation).

The duty cycle can be determined as follows:

$$ED = \frac{t_a + t_{N1}}{t_{cyc}} \times 100\% = \frac{t_{Br} + t_{N2}}{t_{cyc}} \times 100\%$$

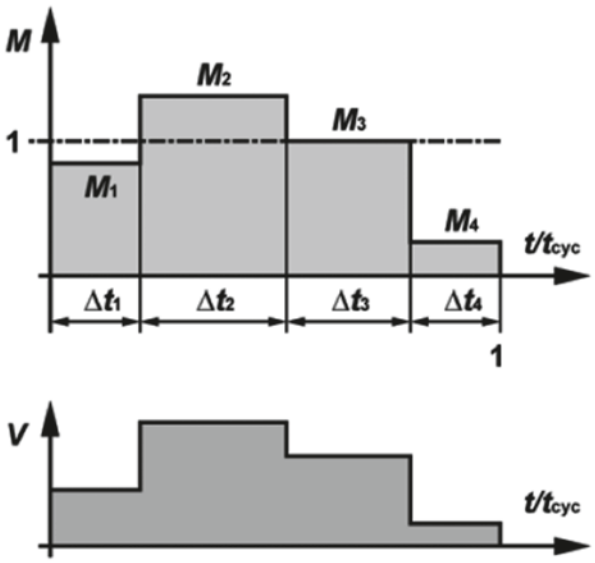
Example: S8 – J_M = 0.5 kgm², J_{ext} = 6 kgm²
(J_M Moment of inertia of the motor / J_{ext} Moment of inertia of the load)

Duty with non-periodic load and speed variations (S9)



In S9 duty the load and the speed vary non-periodically within the permissible operating range. This includes frequently applied overloads, which must never exceed the reference load.
For this duty type, a constant load appropriately selected and based on duty type S1 shall be taken as the reference value M_{ref} for the overload.

Duty with discreet constant loads and speeds (S10)



S10 duty comprises operation with at most four different load levels, each of which is maintained long enough to allow the machine to reach thermal equilibrium.
The minimum load within a duty cycle may have a value of zero (no-load operation or at rest with the windings de-energised).
The appropriate abbreviation is S10 followed by the per unit quantities $p/\Delta t$ for the respective load and its duration and the per unit quantity *TL* for the relative thermal life expectancy of the insulation system. The reference value for the thermal life expectancy is the thermal life expectancy at rating for continuous running duty and permissible limits of temperature rise based on duty type S1. For a time de-energized and at rest, the load shall be indicated by the letter *r*.

Example: S10 $p/\Delta t$ = 1.1/0.4, 1/0.3, 0.9/0.2, *r*/0.1; *TL* = 0.6

The figures given in the table below are for Bauer motors operating in conjunction with the frequency inverter. The torques referred to in tables can be entered for the respective frequencies in continuous operation (S1 = duty factor 100 %).

Notes on design

Use the torque required at the lowest operating speed to select motors for applications which require constant torque over the entire speed range, as is the case, for example, with lifting gear and conveyors. Bear in mind, too, the possibility of torque being lower in the field-weakening range.

Use only the torque required at the highest operating speed to select motors for applications which require square-law torque over the speed range, as is the case, for example, with pumps and fans. Field weakening is not permissible.

The motor‘s power is frequency-dependent. It can be approximated in kW from torque M in Nm, the 50 Hz or 60 Hz speed n and the frequency f in Hz by means of the equation

$P = M \times n / 9550 \times f/50$
or
$P = M \times n / 9550 \times f/60$

If a frequency inverter is used in conjunction with a pulse generator, the full 50 Hz or 60 Hz rated torque is available as holding torque at motor standstill (independent fan required for prolonged periods at standstill). In many instances, however, a mechanical brake is necessary for holding a position exactly or for safety reasons.

The use of thermistors for the thermal protection of the motor winding for frequency inverter duty are strictly recommended (available at extra cost for all motor sizes).

Increased torque with reduced duty factor

A reduction in duty factor increases the torque available at the low end of the frequency range (up to the transition frequency for field weakening) in accordance with the factors in the table below:

Duty factor	Motor torque with reduced duty factor	Increase in current requirementap-proximate
100 %	-	-
60 %	1.15 x S1 torque	1.15 x S1 current
40 %	1.30 x S1 torque	1.30 x S1 current
25 %	1.45 x S1 torque	1.45 x S1 current
15 %	1.60 x S1 torque	1.60 x S1 current

This, in turn, means that short-term overload by a factor of 1.6 is permissible for starting from a low speed, for example. An increase in torque in the field-weakening range due to a reduction in duty factor is possible only under certain conditions; the 1.6x S1 torque generally cannot be achieved

Increased torque with external fan

If an independent fan is used, the S1- torque in the lower frequency range (below 30 Hz) need not be reduced, i.e., when it has an independent fan the motor can provide the 50 Hz or 60 Hz rated torque throughout the entire frequency range to the cut-off frequency of the field weakening.

With a high quality frequency inverter of 160 %, when independent ventilation is combined with a reduced duty factor the 50 Hz or 60 Hz torque is available from rest through to the transition frequency of the field weakening range.

External ventilation is available for motor types D..08.. and larger (see chapter 16 “Motor-independent fan (FV). In many instances, a more economical alternative is to select a larger motor without external ventilation.

Operation with frequency converter

Energy-saving function

High quality frequency inverters reduce voltage in part-load operation to lower the motor current and thus improve efficiency. This converter function emulates the method of operation of commercially available “energy-saving devices”.

Regeneration

Regenerative torques (braking torques) are required for motors used in lifting gear, for example. In conjunction with high quality frequency inverters, the motor torques listed in the table can also be applied as regenerative torques. As with motor torque, an increase in regenerative torque with reduced duty factor is permissible.

Notes on operation with other-make frequency inverters

The precondition is that the motor current generated by the frequency converter is largely free of harmonics. The harmonics generated in the motor by some old-style frequency inverters result in additional losses and cut available torque by some 10 % across the entire frequency range. There is also a risk of oscillation causing damage to the gear unit.

At frequencies below approximately 5 Hz, operation without pulse generators is possible only using a frequency inverter with state-of- the-art control. If frequency inverters are used that do not feature load-dependent frequency and current adjustment, the increase in the motor‘s current consumption means that, particularly in the case of small motors (D..04..-D..09..), torque has to be reduced at frequencies below approximately 10 Hz even if an external fan is used or the duty factor is reduced. Regenerative operation is possible only under certain circumstances.

Technical data of the 50 Hz motors

50 Hz

4-pole IE1 motors for continuous operation S1, line frequency 50 Hz

P_N kW	Type	n_N 1/min	M_N Nm	I_N (400V) A	Connection	cosφ	η (100%-load) %	η (75%-load) %	η (50%-load) %	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²	Brake
0.03	D04LA4	1350	0.21	0.20	Y	0.60	-	-	-	2.2	2.6	2.6	3.0	0.000175	
0.04	D04LA4	1350	0.28	0.20	Y	0.60	-	-	-	2.2	2.0	2.0	2.3	0.000175	
0.06	D04LA4	1350	0.42	0.30	Y	0.60	-	-	-	2.3	2.1	2.1	2.4	0.000175	E003
0.09	D04LA4	1350	0.63	0.45	Y	0.69	-	-	-	2.5	2.2	2.2	2.6	0.000175	
0.11	D04LA4	1350	0.78	0.45	Y	0.68	-	-	-	2.2	1.9	1.9	2	0.000175	
0.06	D05LA4	1350	0.42	0.35	Y	0.72	-	-	-	3.7	3.7	3.5	3.7	0.000295	E003
0.09	D05LA4	1350	0.63	0.38	Y	0.70	-	-	-	3.9	3.0	2.8	3.0	0.000295	
0.06	D06LA4	1350	0.42	0.35	Y	0.72	-	-	-	3.7	3.7	3.5	3.7	0.000295	
0.09	D06LA4	1350	0.63	0.38	Y	0.70	-	-	-	3.9	3.0	2.8	3.0	0.000295	
0.12	DSE04LA4	1350	0.87	0.45	Y	0.72	53.4	51.4	43.2	2.3	1.7	1.4	1.8	0.000175	
0.18	DSE05LA4	1350	1.28	0.63	Y	0.66	63	61.7	54.9	3.4	2.2	2.2	2.4	0.000295	
0.2	DSE05LA4	1350	1.42	0.66	Y	0.71	61.6	61.7	54.9	3.3	2	2	2.2	0.000295	E003
0.25	DSE05LA4	1350	1.75	0.87	Y	0.68	61.5	58.8	54	2.6	2	2	2.1	0.000295	
0.18	DSE06LA4	1350	1.28	0.63	Y	0.65	63.5	61.7	53.1	3.1	2.4	2.3	2.5	0.000295	
0.2	DSE06LA4	1350	1.42	0.65	Y	0.7	62.5	61.7	53.1	3.3	2	2	2.2	0.000295	
0.25	DSE06LA4	1350	1.75	0.87	Y	0.68	61.5	58.8	51.4	2.6	2	2	2.1	0.000295	
0.37	DSE07LA4	1350	2.6	1.15	Y	0.71	66	65.2	59.7	3	2.2	2.1	2.2	0.000385	E003 E004
0.55	DSE08MA4	1400	3.75	1.45	Y	0.72	75.4	75.2	72.0	4.2	2.1	2.0	2.4	0.00115	
0.75	DSE08LA4	1400	5.1	1.95	Y	0.76	75.6	76.2	72.7	4.6	2.0	2.0	2.4	0.00150	ES(X)010 EH(X)010 EH(X)027
1.1	DSE08XA4	1400	7.5	2.8	Y	0.75	75.5	76.8	73.5	3.7	2.0	1.8	2.2	0.00170	
1.1	DSE09SA4	1420	7.5	2.6	Y	0.76	80.0	80	77.5	4.9	2.5	2.2	2.8	0.00245	
1.5	DSE09LA4	1420	10.1	3.5	Y	0.76	80.7	80.9	79.5	5.0	2.5	2.3	2.9	0.00320	ES(X)010 ES(X)027 EH(X)027 EH(X)040
2.2	DSE09XA4	1420	15	4.9	Y	0.81	80.5	81.1	80.4	4.5	2.3	2.2	2.6	0.00380	
3	DSE11SA4	1420	20	6.4	D	0.80	84.4	85.0	83.8	5.9	2.7	2.5	3.2	0.00810	ES(X)027
4	DSE11MA4	1420	27	8.4	D	0.83	84.0	84.9	84.2	5.5	2.8	2.4	3.0	0.01050	ES(X)040 ES(X)070 EH(X)070
5.5	DSE11LA4	1420	37	11.3	D	0.83	85.8	86.2	85.4	6.3	2.8	2.6	3.2	0.014	EH(X)125
7.5	DSE13MA4	1440	50	15.3	D	0.81	87.5	87.8	87.1	6.2	2.8	2.5	3.2	0.029	ES(X)040
7.5	DSE13MA4	1440	50	15.3	D	0.81	87.5	87.8	87.1	6.2	2.8	2.5	3.2	0.029	ES(X)070 ES(X)125
9.5	DSE13LA4	1440	63	19.2	D	0.82	87.1	87.5	87.5	6.0	2.9	2.6	3	0.03450	EH(X)200
11	DSE16MB4	1460	72	22.6	D	0.81	87.7	88.0	87.3	6.0	2.5	2.1	2.7	0.05700	ES(X)125
15	DSE16LB4	1460	98	29.5	D	0.83	88.9	89.2	88.9	6.1	2.5	2.1	2.8	0.07600	ES(X)200 EH(X)400
18.5	DSE16XB4	1460	121	37.5	D	0.81	89.3	89.9	88.5	6.1	2.6	2.2	2.8	0.08700	ZS(X)300
22	DSE18LB4	1460	144	41.5	D	0.85	90.7	91.0	90.5	6.8	3.0	2.5	2.8	0.16000	ES(X)250
30	DSE18XB4	1460	196	56	D	0.85	90.9	91.2	90.8	6.8	3.1	2.4	2.8	0.19500	EH(X)400 ZS(X)500

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

Winding configuration for standard motors for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

4-pole IE2 motors for continuous operation S1, mains frequency 50 Hz

P_N	Type	n_N	M_N	I_N (400V)	Connection	cosφ	η (100% - Last)	η (75% - Last)	η (50% - Last)	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}	Brake
kW		1/min	Nm	A			%	%	%					kgm²	
0.12	DHE05LA4	1390	0.82	0.39	Y	0.67	66.1	64.6	58.3	3.3	2.3	2.3	2.5	0.000295	E003
0.12	DHE06LA4	1385	0.83	0.39	Y	0.67	65.9	64.1	57.7	3.3	2.3	2.3	2.5	0.000295	
0.18	DHE05LA4	1375	1.25	0.57	Y	0.67	68.3	67.3	61.9	3.4	2.6	2.5	2.6	0.000295	
0.18	DHE06LA4	1370	1.25	0.58	Y	0.67	68	67	61.4	3.3	2.5	2.5	2.6	0.000295	
0.25	DHE07LA4	1375	1.74	0.76	Y	0.68	69.4	68.7	63.6	3.5	2.7	2.6	2.7	0.000385	E003 E004
0.3	DHE07LA4	1360	2.1	0.9	Y	0.67	70.8	70.5	66	3.5	2.8	2.7	2.7	0.000385	
0.37	DHE08MA4	1430	2.4	1.1	Y	0.65	75.9	74.6	69.6	4.5	2.5	2.4	3	0.00115	ES(X)010 EH(X)010 EH(X)027
0.55	DHE08LA4	1415	3.7	1.38	Y	0.74	78.1	78.9	76.2	4.5	2.3	2.1	2.6	0.0015	
0.75	DHE08XA4	1420	5.0	1.88	Y	0.72	79.7	80.0	77.4	4.7	2.3	2.2	2.7	0.00170	
0.75	DHE09SA4	1440	5.0	1.8	Y	0.73	81.6	81.0	77.4	5.9	3.1	2.7	3.5	0.00245	ES(X)010 ES(X)027 EH(X)027 EH(X)040
1.1	DHE09LA4	1440	7.3	2.5	Y	0.75	82.7	82.3	79.8	5.9	2.9	2.7	3.4	0.0032	
1.5	DHE09XA4	1440	10.0	3.3	Y	0.78	83.2	82.8	79.5	5.6	3.0	2.9	3.3	0.0038	
2.2	DHE09XB4	1420	14.8	4.7	Y	0.79	84.5	85.2	83.9	6.0	3.1	2.5	3.3	0.0049	
2.2	DHE11SA4	1440	14.5	4.6	Y	0.80	86.2	86.0	84.7	7.0	3.1	2.8	3.6	0.0081	ES(X)027 ES(X)040 ES(X)070 EH(X)070 EH(X)125
3	DHE11MA4	1440	20	6.3	D	0.8	86.5	86.5	84.7	6.7	3.4	2.8	3.7	0.0105	
4	DHE11LA4	1440	26.5	8.4	D	0.79	87.5	87	85.3	7.6	3.6	3.3	4.2	0.014	
5.5	DHE11LB4	1450	36	11	D	0.82	88.1	88.5	87.4	7.9	3.3	2.9	3.8	0.017	
5.5	DHE13MA4	1460	36	11.0	D	0.81	88.9	88.9	87.6	7.2	3.2	2.9	3.6	0.0290	ES(X)040 ES(X)070 ES(X)125 EH(X)200
7.5	DHE13LA4	1460	49	15.1	D	0.81	88.9	89.2	87.9	7.0	3.3	3.0	3.5	0.0345	
9.5	DHE16MB4	1470	62	19.7	D	0.78	89.4	89.4	86.5	6.8	2.9	2.5	3.2	0.057	ES(X)125 ES(X)200 EH(X)400 ZS(X)300
11	DHE16LB4	1470	71	22.5	D	0.78	90.3	90.0	88.3	7.9	3.5	2.9	3.8	0.076	
15	DHE16XB4	1470	97	31	D	0.77	90.6	90.8	88.8	7.2	3.2	2.8	3.5	0.087	
18.5	DHE18LB4	1470	120	35	D	0.83	91.5	91.7	90.0	7.9	3.6	3.0	3.3	0.160	ES(X)250 EH(X)400 ZS(X)500
22	DHE18XB4	1470	142	43.5	D	0.80	92.0	91.6	89.6	8.7	4.2	3.3	3.9	0.195	

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

Winding configuration for standard motors for 400 V / 50 Hz.

All motors are suitable for the voltage range 380…420 V or 400 V +/- 10 % if executed in insulation class F.

Important: Current, power factor and torque change as voltage deviates from 400 V.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

4-pole IE3 motors for continuous operation S1, mains frequency 50 Hz

P_N	Type	n_N	M_N	I_N (400V)	Connection	cosφ	η (100%-Load)	η (75%-Load)	η (50%Load)	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}	Brake
kW		1/min	Nm	A			%	%	%					kgm²	
0.12	DPE05LA4	1405	0.82	0.4	Y	0.62	69.3	67.1	60.5	3.8	3	3	3.1	0.000295	E003
0.12	DPE06LA4	1400	0.82	0.41	Y	0.63	68.8	66.4	59.9	3.7	3	3	3.1	0.000295	E003
0.18	DPE07LA4	1400	1.23	0.56	Y	0.65	70.8	69.3	63.9	3.9	3.1	3	3.1	0.000385	E003. E004
0.25	DPE08MA4	1440	1.66	0.71	Y	0.66	77.7	76.4	71.8	4.9	2.6	2.5	3.1	0.00115	ES(X)010 EH(X)010/027
0.37	DPE08LA4	1445	2.45	1.03	Y	0.64	79.9	78.8	74.3	5.5	3.2	3	3.6	0.0015	
0.55	DPE08XA4	1430	3.65	1.4	Y	0.7	81.2	81	77.9	5.3	2.9	2.7	3.2	0.0017	
0.75	DPE08XB4	1425	5	1.86	Y	0.71	82.5	83.1	81.3	5.3	3.1	2.8	3.3	0.002	
0.75	DPE09LA4	1440	5	1.67	Y	0.79	82.7	82.5	79.1	6.6	3.4	3	3.6	0.0032	ES(X)010/027 EH(X)027/040
1.1	DPE09XA4	1440	7.3	2.4	Y	0.78	84.4	84.3	81.9	6.7	3.4	3.1	3.7	0.0038	
1.5	DPE09XB4	1435	10	3.25	Y	0.79	85.5	86.1	84.5	6.5	3.2	3	3.6	0.0049	
2.2	DPE09XB4C	1450	14.5	4.7	Y	0.77	86.8	87.4	85.9	6.7	2.6	2.4	3.6	0.0069	
2.2	DPE11MA4	1450	14.5	4.6	Y	0.8	87.1	87.2	85.2	7.3	3.2	2.7	3.9	0.0105	ES(X)027/040/070 EH(X)/070/125
3	DPE11LA4	1455	19.7	6.2	D	0.8	87.7	87.6	85.5	8.3	3.7	3	4.4	0.014	
4	DPE11LB4	1450	26.5	7.8	D	0.83	89.4	90.3	89.5	7.8	3.3	2.6	4	0.017	
5.5	DPE11LB4C	1465	36	11	D	0.8	90	89.4	88	8.2	2.7	2.4	4	0.022	
4	DPE13MA4	1465	26	8	D	0.82	88.9	90.6	89.7	7.4	3.3	2.6	3.5	0.029	ES(X)040/070/125 EH(X)200
5.5	DPE13LA4	1465	36	11.5	D	0.77	90.2	90.3	89	8.1	3.7	3	4.2	0.0345	
7.5	DPE13XA4	1460	49	15.2	D	0.79	90.5	91.2	90.5	7.6	3.6	3.3	3.9	0.04	
9.5	DPE16LB4	1475	61	19.1	D	0.78	91.9	92.2	91.4	8.3	3.6	2.8	3.7	0.0755	ES(X)125/200 EH(X)400 ZS(X)300
11	DPE16LB4	1475	71	22	D	0.78	91.6	92.2	91.4	7.7	3.4	2.8	3.5	0.0755	
15	DPE16XB4	1475	97	30.5	D	0.78	92.2	92.6	91.8	8.3	3.8	3.1	3.9	0.097	
18.5	DPE18LB4	1480	119	35.5	D	0.81	93.3	93.6	92.7	9	4.3	3.5	4	0.17	ES(X)250 EH(X)400 ZS(X)500
22	DPE18XB4	1475	142	41.5	D	0.82	93.3	93.8	93.5	8.7	4.2	3.4	3.7	0.195	
30	DPE20XA4	1480	194	53.5	D	0.87	94.1	94.6	94.4	8.6	3.1	2.6	3.5	0.3888	ES(X)250 ZS(X)500
37	DPE22MA4	1480	239	69	D	0.83	94	94.3	94	8.8	3.3	3	3.8	0.4318	ES(X)250 ZS(X)500

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

Winding configuration for standard motors for 400 V / 50 Hz.

All motors are suitable for the voltage range 380…420 V or 400 V +/- 10 % if executed in insulation class F.

Important: Current, power factor and torque change as voltage deviates from 400 V.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

4 pole motors for periodic duty S3/S6-75 %, Mains Frequency 50 Hz

P_N kW	Type	n_N 1/min	M_N Nm	I_N (400V) A	Connection	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²	Brake
0.75	DSE08MA4	1320	5.4	2	Y	0.81	2.9	1.5	1.4	1.7	0.00115	ES(X)010
0.9	DSE08LA4	1350	6.3	2.3	Y	0.79	3.4	1.6	1.6	2	0.0015	
1.25	DSE08XA4	1350	8.8	3.1	Y	0.8	3.3	1.6	1.6	1.9	0.0017	
1.65	DSE09SA4	1370	11.5	3.7	Y	0.86	3.5	1.6	1.5	1.8	0.00245	ES(X)010 ES(X)027
2.2	DSE09LA4	1370	15.5	5	Y	0.86	3.6	1.7	1.6	2	0.0032	
2.5	DSE09XA4	1370	17.3	5.5	Y	0.84	4	2	1.9	2.3	0.0038	
3.7	DSE11SA4	1400	25	7.8	D	0.85	4.1	2.2	2	2.6	0.0081	ES(X)027 ES(X)040 ES(X)070
5	DSE11MA4	1380	34	10.3	D	0.86	4.4	2.2	1.9	2.4	0.0105	
6.6	DSE11LA4	1400	44	13.5	D	0.86	4.8	2.4	2.1	2.7	0.014	
9.5	DSE13MA4	1420	63	19	D	0.85	5	2.2	2	2.5	0.029	ES(X)040 ES(X)070 ES(X)125
11	DSE13LA4	1430	73	22	D	0.84	5.3	2.5	2.3	2.6	0.0345	
13.5	DSE16MB4	1450	90	27.5	D	0.83	4.8	2	1.7	2.2	0.057	ES(X)125 ES(X)200 ZS(X)300
18.5	DSE16LB4	1450	123	36.5	D	0.85	5	2	1.7	2.2	0.076	
20	DSE16XB4	1450	132	40	D	0.82	5.7	2.3	2	2.6	0.087	
27	DSE18LB4	1450	180	52	D	0.86	5.4	2.5	2	2.2	0.16	ES(X)250 ZS(X)500
33	DSE18XB4	1450	215	63	D	0.86	5.4	2.8	2.2	2.6	0.195	

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

The standard motor winding configuration is for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

4 pole motors for periodic duty S3/S6, Mains Frequency 50 Hz

P_N	ED	Type	n_N	M_N	I_N (400V)	Connec-tion	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}
kW			1/min	Nm	A							kgm²
0.15	15%	D04LA4	1350	1.05	0.6	Y	0.77	2	1.6	1.5	1.6	0.000175
0.3	15%	D05LA4	1350	2.1	0.98	Y	0.75	2.6	1.9	1.8	1.9	0.000295
0.3	60%	D06LA4	1350	2.1	0.98	Y	0.75	2.6	1.9	1.8	1.9	0.000295
0.55	60%	D07LA4	1350	3.9	1.95	Y	0.86	3.4	1.6	1.5	1.6	0.000385
0.75	60%	D08MA4	1400	5.1	2	Y	0.81	3.4	1.6	1.4	1.7	0.00115
1.1	60%	D08LA4	1400	7.5	2.8	Y	0.82	3.3	1.5	1.4	1.7	0.0015
1.5	60%	D09SA4	1400	10.2	3.6	Y	0.84	3.9	1.7	1.5	2	0.00245
2.2	60%	D09LA4	1400	15	5	Y	0.86	3.9	1.6	1.5	1.9	0.0032
3	60%	D09XA4	1400	20	6.8	Y	0.86	3.4	1.7	1.6	1.9	0.0038
4	60%	D11SA4	1420	26.5	8.9	Δ	0.85	4	1.6	1.4	2	0.0081
5.5	60%	D11MA4	1420	37	11.7	Δ	0.87	4.3	1.5	1.5	2	0.0105
7.5	60%	D11LA4	1420	50	16	Δ	0.87	4.3	1.8	1.7	2.1	0.014
9.5	60%	D13MA4	1420	64	19	Δ	0.87	4.9	1.9	1.6	2.2	0.029
11	60%	D13LA4	1420	72	22	Δ	0.84	5.5	2.4	2.1	2.5	0.0345
13.5	60%	D16MB4	1460	88	28	Δ	0.84	5.6	2.1	1.6	2	0.057
18.5	60%	D16LB4	1460	121	38	Δ	0.84	5.1	1.9	1.6	2.1	0.076
22	60%	D16XB4	1460	144	46	Δ	0.84	5.4	2.1	1.3	2	0.087
30	60%	D18LB4	1460	196	58	Δ	0.89	4.5	1.8	1.5	1.7	0.16
37	60%	D18XB4	1460	240	74	Δ	0.85	5.5	2.5	2	2.3	0.195

P_N	Rated power
ED	Duty cycle
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

4/2-pole Δ/YY motors for continuous running duty (S1) and 50 Hz mains frequency

P_N kW	Type	n_N 1/min	M_N Nm	I_N (400V) A	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²
0.03/0.06	D04LA42	1350/2700	0.210/0.210	0.230/0.250	0.56/0.67	2.2/3.1	3.4/3.1	3.4/3.1	3.6/3.3	0.000175
0.04/0.08	D04LA42	1350/2700	0.280/0.280	0.250/0.280	0.60/0.75	2.0/2.8	3.0/2.1	3.0/2.1	3.3/2.2	0.000175
0.06/0.12	D05LA42	1350/2700	0.420/0.420	0.450/0.450	0.50/0.75	2.8/3.3	3.1/2.0	3.0/1.9	3.8/2.6	0.000295
0.08/0.16	D05LA42	1350/2700	0.56/0.56	0.50/0.50	0.55/0.75	2.8/3.3	3.1/1.8	2.7/1.7	3.4/2.3	0.000295
0.06/0.12	D06LA42	1350/2700	0.420/0.420	0.450/0.450	0.50/0.75	2.8/3.3	3.1/2.0	3.0/1.9	3.8/2.6	0.000295
0.08/0.16	D06LA42	1350/2700	0.56/0.56	0.50/0.50	0.55/0.75	2.8/3.3	2.8/1.8	2.7/1.7	3.4/2.3	0.000295
0.11/0.22	D06LA42	1350/2700	0.77/0.77	0.68/0.68	0.55/0.75	2.8/3.3	2.8/1.8	2.7/1.7	3.4/2.3	0.000295
0.16/0.32	D06LA42	1350/2700	1.13/1.13	0.90/0.90	0.57/0.80	2.8/3.3	2.6/1.7	2.5/1.6	3.1/2.1	0.000295
0.2/0.4	D07LA42	1400/2800	1.35/1.37	1.10/1.15	0.58/0.81	2.9/3.6	2.8/1.6	2.7/1.4	3.0/2.0	0.000385
0.28/0.56	D08MA42	1400/2800	1.90/1.90	1.20/1.75	0.61/0.81	3.4/2.9	2.3/1.5	2.3/1.4	3.0/1.9	0.00115
0.4/0.8	D08LA42	1400/2800	2.7/2.7	1.53/1.91	0.62/0.90	4.7/5.1	2.7/1.8	2.4/1.7	3.1/2.1	0.0015
0.5/1.0	D09SA42	1400/2800	3.4/3.4	1.65/2.4	0.71/0.91	5.1/4.5	2.9/1.9	2.9/1.9	3.6/2.4	0.00245
0.7/1.4	D09SA42	1400/2800	4.8/4.8	2.1/3.3	0.71/0.93	4.7/4.1	2.5/1.6	2.5/1.6	3.1/2.0	0.00245
1.0/2.0	D09LA42	1400/2800	6.8/6.8	2.9/4.7	0.72/0.94	4.7/4.1	2.5/1.6	2.5/1.6	3.1/2.0	0.0032
1.2/2.4	D09XA42	1400/2800	8.2/8.1	3.8/5.7	0.65/0.87	6.2/3.0	2.5/1.8	2.5/1.8	3.1/2.3	0.0038
1.4/2.8	D11SA42	1420/2840	9.4/9.4	3.6/6.2	0.74/0.90	6.4/4.5	3.0/1.7	2.6/1.5	4.1/2.8	0.0081
2.0/4.0	D11MA42	1420/2840	13.5/13.4	5.5/9.1	0.70/0.90	6.7/5.4	3.1/2.1	2.7/1.6	3.7/2.5	0.0105
2.5/5.0	D11LA42	1420/2840	16.8/16.8	5.5/10	0.79/0.92	5.6/4.6	2.8/1.8	2.7/1.7	3.7/2.6	0.014
3.5/7.0	D13MA42	1420/2840	23/23	8.2/14.8	0.76/0.91	6.8/5.2	3.4/2.0	2.8/1.8	3.8/2.7	0.029
4.5/9.0	D13LA42	1420/2840	30.2/30	10.5/19	0.76/0.91	6.8/5.5	3.2/1.9	2.6/1.7	3.5/2.5	0.0345
5.5/11	D16MB42	1460/2920	36/36	13.4/24	0.73/0.91	6.7/5.2	2.8/1.7	2.2/1.2	3.2/2.3	0.057
7.0/14	D16LB42	1460/2920	45/45	15.5/28.5	0.78/0.92	7.2/5.5	3.1/2.1	2.5/1.4	3.3/2.6	0.076
9.0/18	D16XB42	1460/2920	58/58	19.1/36.5	0.79/0.92	7.9/5.8	2.8/1.8	2.2/1.2	3.1/2.2	0.087
12.5/25	D18LB42	1460/2920	81/81	28.5/49.5	0.77/0.89	8.5/7.0	3.9/2.8	3.3/1.9	3.8/3.0	0.16
16/32	D18XB42	1460/2920	104/104	38.5/66	0.77/0.89	7.8/6.5	3.7/2.6	3.1/1.8	3.6/2.8	0.195

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

8/4-pole Δ/YY motors for continuous running duty (S1) and 50 Hz mains frequency

P_N kW	Type	n_N 1/min	M_N Nm	I_N (400V) A	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²
0.03/0.06	D05LA84	680/1350	0.410/0.420	0.300/0.280	0.52/0.71	1.6/2.6	2.7/1.9	1.6/1.7	1.6/1.7	0.000295
0.03/0.06	D06LA84	680/1350	0.410/0.420	0.300/0.280	0.52/0.71	1.6/2.6	2.7/1.9	1.6/1.7	1.6/1.7	0.000295
0.04/0.08	D06LA84	680/1350	0.54/0.56	0.480/0.400	0.52/0.66	1.4/2.2	2.6/2.1	1.6/1.7	1.6/1.7	0.000295
0.06/0.12	D07LA84	680/1350	0.84/0.85	0.70/0.60	0.52/0.66	1.7/2.8	3.2/1.7	3.2/1.5	3.3/2.1	0.000385
0.06/0.12	D08LA84	700/1400	0.81/0.81	0.50/0.50	0.61/0.83	2.8/3.7	3.1/2.3	3.1/2.3	3.7/3.1	0.0025
0.08/0.16	D08LA84	700/1400	1.08/1.09	0.62/0.62	0.61/0.83	2.8/3.7	3.0/2.2	3.0/2.2	3.5/3.0	0.0025
0.11/0.22	D08LA84	700/1400	1.49/1.5	0.80/0.80	0.61/0.83	2.8/3.7	2.8/2.1	2.8/2.1	3.3/2.8	0.0025
0.14/0.28	D08LA84	700/1400	1.90/1.91	1.00/1.00	0.61/0.83	2.8/3.7	2.8/2.1	2.8/2.1	3.3/2.8	0.0025
0.2/0.4	D08LA84	700/1400	2.7/2.7	1.10/1.30	0.55/0.77	2.8/3.7	2.3/1.7	2.3/1.7	2.7/2.3	0.0025
0.25/0.5	D09XC84	700/1400	3.3/3.3	1.40/1.40	0.48/0.77	2.9/5.0	2.7/2.0	2.7/2.1	3.1/2.7	0.006
0.28/0.56	D09XC84	700/1400	3.8/3.8	1.40/1.50	0.57/0.80	2.9/4.9	2.4/1.8	2.4/1.9	2.8/2.4	0.006
0.4/0.8	D09XC84	700/1400	5.4/5.4	1.95/2.4	0.55/0.79	2.8/4.2	2.3/1.7	2.3/1.8	2.7/2.3	0.006
0.5/1.0	D09XC84	700/1400	6.8/6.8	2.4/2.6	0.55/0.81	2.6/4.0	2.2/1.6	2.2/1.6	2.5/2.2	0.006
0.8/1.6	D11LC84	710/1420	10.7/10.7	3.0/4.2	0.63/0.88	3.5/4.3	2.2/1.9	2.2/1.7	2.8/2.7	0.0215
1.1/2.2	D11LC84	710/1420	14.7/14.7	4.0/5.0	0.58/0.85	3.9/5.7	2.3/2.1	2.3/1.7	2.7/2.5	0.0215
1.6/3.2	D11LC84	710/1420	21.5/21.5	6.0/7.6	0.59/0.84	3.7/5.1	2.2/1.8	2.1/1.5	2.6/2.3	0.0215
2.2/4.4	D13LC84	710/1420	29/29	7.2/9.5	0.60/0.87	4.3/5.4	2.1/1.7	2.1/1.4	2.9/2.8	0.046
2.8/5.6	D13LC84	710/1420	37.5/37.5	9.4/12.3	0.60/0.86	4.3/5.4	2.1/1.7	2.1/1.4	2.9/2.8	0.046
3.5/7.0	D16MB84	730/1460	45.8/45.5	13.9/15.6	0.59/0.84	3.3/4.9	2.1/1.8	1.8/1.4	2.1/2.2	0.057
5.0/10	D16LB84	730/1460	65/65	17.5/20.5	0.57/0.87	3.6/5.6	2.1/1.8	1.9/1.4	2.1/2.2	0.076
7.0/14	D16XB84	730/1460	91/91	24.5/29	0.60/0.84	3.3/5.2	2.1/1.9	2.0/1.6	2.1/2.4	0.087
8.0/16	D18LB84	730/1460	105/104	24/32.5	0.60/0.86	3.7/5.5	2.2/2.2	1.8/1.8	1.9/2.1	0.16
44105	D18XB84	730/1460	130/130	30/41	0.60/0.86	3.7/5.5	2.2/2.2	1.8/1.8	1.9/2.1	0.195

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

8/2-pole Y/Y motors for intermittent periodic duty S3 25/75 % and 50 Hz mains frequency

P_N kW	ED	Type	n_N 1/min	M_N Nm	I_N (400V) A	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²
0.04/0.16	25/75 %	D05LA82	680/2700	0.56/0.56	0.400/0.80	0.63/0.75	1.6/3.2	1.9/2.2	1.9/2.1	2.0/2.3	0.000295
0.05/0.20	25/75 %	D06LA82	680/2700	0.70/0.70	0.51/1.02	0.63/0.75	1.4/2.8	1.7/2.0	1.7/1.9	1.8/2.1	0.000295
0.063/0.25	25/75 %	D07LA82	650/2840	0.87/0.87	0.60/1.20	0.69/0.62	1.4/2.6	1.6/1.4	1.6/1.4	1.8/2.7	0.000385
0.071/0.28	25/75 %	D07LA82	650/2840	0.99/0.98	0.65/1.40	0.69/0.68	1.4/2.6	1.5/1.3	1.5/1.3	1.7/2.6	0.000385
0.063/0.25	25/75 %	D08LA82	700/2800	0.85/0.85	0.55/0.70	0.55/0.87	2.8/4.0	2.4/2.6	2.4/2.5	2.8/3.0	0.0015
0.09/0.36	25/75 %	D08LA82	700/2800	1.22/1.22	0.70/1.05	0.60/0.92	2.9/4.5	2.0/2.6	2.0/2.5	2.4/2.9	0.0015
0.12/0.5	25/75 %	D08LA82	700/2800	1.70/1.70	0.95/1.43	0.60/0.92	2.9/4.5	2.0/2.6	2.0/2.5	2.4/2.9	0.0015
0.16/0.63	25/75 %	D08LA82	700/2800	2.1/2.1	1.20/1.45	0.63/0.90	2.0/4.6	1.8/2.1	1.8/2.0	2.2/2.4	0.0015
0.25/1.0	25/75 %	D09XA82	700/2800	3.4/3.4	1.30/2.3	0.62/0.90	2.2/5.2	1.9/2.3	1.9/2.3	2.0/2.6	0.0038
0.36/1.4	25/75 %	D09XA82	700/2800	4.9/4.8	2.1/3.3	0.57/0.87	2.0/4.5	1.9/2.1	1.9/2.1	2.0/2.4	0.0038
0.45/1.8	25/75 %	D09XA82	700/2800	6.1/6.1	2.4/4.3	0.65/0.89	2.0/4.3	1.7/2.0	1.7/2.0	2.0/2.5	0.0038
0.56/2.2	25/75 %	D11LA82	710/2840	7.5/7.3	2.3/4.7	0.60/0.94	3.2/4.9	1.9/2.9	1.9/2.4	2.2/2.9	0.014
0.71/2.8	25/75 %	D11LA82	710/2840	9.5/9.4	2.8/5.6	0.58/0.94	2.5/4.7	1.9/2.3	1.9/2.0	2.1/2.4	0.014
0.90/3.6	25/75 %	D11LA82	710/2840	12.1/12.1	3.5/7.9	0.58/0.94	2.5/4.5	1.8/2.0	1.8/1.8	2.0/2.1	0.014
1.10/4.5	25/75 %	D13LA82	710/2840	14.7/15.1	4.0/10.1	0.59/0.90	2.8/5.4	1.8/2.5	1.8/1.8	2.3/2.7	0.0345
1.25/5.0	25/75 %	D13LA82	710/2840	16.8/16.8	4.5/11.5	0.59/0.88	2.9/5.4	1.6/2.3	1.6/1.8	2.1/2.7	0.0345
1.6/6.3	25/75 %	D16XB82	730/2920	20/20.5	7.6/13.5	0.48/0.88	3.6/6.5	2.4/3.0	2.2/2.1	2.7/3.0	0.087
2.0/8.0	25/75 %	D16XB82	730/2920	25.5/26	9.5/17	0.50/0.89	3.6/6.1	2.4/3.0	2.1/2.0	2.7/3.0	0.087
2.8/11	25/75 %	D16XB82	730/2920	36.6/36	11.5/24	0.53/0.91	3.0/5.9	1.8/2.9	1.6/2.0	1.9/2.8	0.087
3.6/14	25/75 %	D18XB82	730/2920	47/45.5	13.6/30.5	0.55/0.91	3.3/4.9	1.7/2.2	1.6/1.5	2.1/2.4	0.195
4.0/16	25/75 %	D18XB82	730/2920	52/52	15.1/34.5	0.55/0.91	3.3/4.9	1.7/2.2	1.6/1.5	2.1/2.4	0.195
5.0/20	25/75 %	D18XB82	730/2920	65/65	18.8/43	0.55/0.91	3.3/4.9	1.7/2.2	1.6/1.5	2.1/2.4	0.195

P_N	Rated power
ED	Duty cycle
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 50 Hz motors

50 Hz

12/2-pole Y/Y motors for intermittent periodic duty S3 25/75 % and 50 Hz mains frequency

P_N kW	DC	Type	n_N 1/min	M_N Nm	I_N (400V) A	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²
0.045/0.28	25/75 %	D08LA122	470/2800	0.92/0.95	0.55/0.86	0.70/0.90	1.4/4.5	1.9/2.4	1.9/2.4	1.9/2.7	0.0015
0.063/0.4	25/75 %	D08LA122	470/2800	1.29/1.36	0.66/1.10	0.70/0.90	1.4/4.5	1.7/2.2	1.7/2.2	1.7/2.4	0.0015
0.09/0.56	25/75 %	D08LA122	470/2800	1.85/1.91	1.00/1.45	0.63/0.89	1.4/4.1	1.7/2.1	1.7/2.3	1.8/2.4	0.0015
0.11/0.71	25/75 %	D09XA122	470/2800	2.3/2.4	1.05/1.60	0.59/0.88	1.5/5.5	1.7/2.7	1.7/2.6	1.8/3.3	0.0038
0.16/1.0	25/75 %	D09XA122	470/2800	3.2/3.4	1.70/2.4	0.62/0.89	1.5/5.5	1.8/2.6	1.8/2.5	1.8/3.3	0.0038
0.20/1.25	25/75 %	D09XA122	470/2800	4.1/4.2	2.0/3.0	0.62/0.89	1.5/5.0	1.7/2.4	1.7/2.3	1.7/3.1	0.0038
0.25/1.6	25/75 %	D11LA122	470/2840	5.1/5.3	2.3/3.4	0.53/0.95	1.6/4.9	1.7/2.6	1.7/2.4	2.0/2.8	0.014
0.32/2.0	25/75 %	D11LA122	470/2840	6.5/6.7	2.9/4.0	0.53/0.94	1.6/4.7	1.7/2.5	1.7/2.2	2.0/2.7	0.014
0.45/2.8	25/75 %	D11LA122	470/2840	9.2/9.4	4.5/5.6	0.52/0.94	1.6/4.7	1.5/2.3	1.5/2.0	1.8/2.4	0.014
0.63/4.0	25/75 %	D13LA122	470/2840	12.9/13.4	4.1/8.6	0.45/0.95	1.6/5.6	1.6/2.4	1.6/1.8	1.8/2.7	0.0345
0.80/5.0	25/75 %	D13LA122	470/2840	16.3/16.8	6.3/11.3	0.41/0.92	1.7/5.3	1.5/2.7	1.5/1.9	2.0/2.9	0.0345
1.0/6.3	25/75 %	D16XB122	490/2920	19.6/20	8.0/13.4	0.35/0.90	2.2/6.3	1.9/2.7	1.9/1.7	2.4/2.8	0.087
1.25/8.0	25/75 %	D16XB122	490/2920	24.5/26	9.9/16.9	0.35/0.90	2.2/6.3	1.9/2.7	1.9/1.7	2.4/2.8	0.087
1.6/10	25/75 %	D16XB122	490/2920	30.5/32	10.5/21	0.40/0.92	1.9/5.4	1.6/2.4	1.6/1.4	2.1/2.4	0.087
2.4/14	25/75 %	D18XB122	490/2920	47/45	16.6/31	0.39/0.91	1.8/4.3	1.6/2.6	1.7/2.0	1.9/2.6	0.195
2.5/16	60/60 %	D18XB122	490/2920	49/52	15.5/31	0.46/0.92	1.8/5.4	1.6/2.5	1.4/1.5	1.6/2.6	0.195
2.8/18	10/40 %	D18XB122	490/2920	55/58	19.3/39.5	0.39/0.91	1.8/4.3	1.6/2.6	1.7/2.0	1.9/2.6	0.195

P_N	Rated power
ED	Duty cycle
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 400 V / 50 Hz.

See “www.bauergears.com” for more information.

Technical data of the 60 Hz motors

60 Hz

4-pole IE1 motors for continuous operation S1, mains frequency 60 Hz

P_N kW	Type	n_N 1/min	M_N Nm	I_N (460V) A	Connec-tion	cosφ	η (100%-Load) %	η (75%-Load) %	η (50%-Load) %	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²	Brake
0.03	D04LA4	1620	0.17	0.18	Y	0.60	-	-	-	2.4	2.9	2.9	3.3	0.000175	
0.04	D04LA4	1620	0.23	0.18	Y	0.60	-	-	-	2.4	2.2	2.2	2.5	0.000175	
0.06	D04LA4	1620	0.35	0.28	Y	0.60	-	-	-	2.5	2.3	2.3	2.7	0.000175	E003
0.09	D04LA4	1620	0.52	0.40	Y	0.69	-	-	-	2.7	2.4	2.4	2.9	0.000175	
0.11	D04LA4	1620	0.64	0.42	Y	0.58	-	-	-	2.7	2.4	2.4	2.7	0.000175	
0.12	D04LA4	1620	0.7	0.42	Y	0.73	-	-	-	2.5	1.9	1.9	2.1	0.000175	
0.06	D05LA4	1620	0.35	0.32	Y	0.72	-	-	-	4.1	4.1	3.8	4.1	0.000295	
0.09	D05LA4	1620	0.52	0.35	Y	0.70	-	-	-	4.3	3.3	3.1	3.3	0.000295	
0.12	D05LA4	1620	0.7	0.38	Y	0.73	-	-	-	3.7	2.4	2.3	2.4	0.000295	E003
0.18	D05LA4	1620	1.06	0.58	Y	0.70	-	-	-	3.7	2.5	2.4	2.6	0.000295	
0.25	D05LA4	1620	1.45	0.80	Y	0.69	-	-	-	3.6	2.5	2.4	2.5	0.000295	
0.06	D06LA4	1620	0.35	0.32	Y	0.72	-	-	-	4.1	4.1	3.8	4.1	0.000295	
0.09	D06LA4	1620	0.52	0.35	Y	0.70	-	-	-	4.3	3.3	3.1	3.3	0.000295	
0.12	D06LA4	1620	0.7	0.38	Y	0.73	-	-	-	3.7	2.4	2.3	2.4	0.000295	E003
0.18	D06LA4	1620	1.06	0.58	Y	0.70	-	-	-	3.7	2.5	2.4	2.6	0.000295	
0.25	D06LA4	1620	1.45	0.80	Y	0.69	-	-	-	3.6	2.5	2.4	2.5	0.000295	
0.3	D07LA4	1620	1.76	1.20	Y	0.60	-	-	-	3.0	3.0	3.0	3.1	0.000385	E003 E004
0.37	D07LA4	1620	2.1	1.26	Y	0.66	-	-	-	2.8	2.4	2.4	2.4	0.000385	
0.55	DSE08MA4	1720	3.1	1.28	Y	0.72	75.4	75.2	73.0	4.6	2.3	2.2	2.7	0.00115	
0.75	DSE08LA4	1720	4.15	1.75	Y	0.69	78.2	77.0	72.7	4.8	2.5	2.4	2.9	0.00150	ES(X)010 EH(X)010 EH(X)027
1.1	DSE08XA4	1720	6.2	2.4	Y	0.71	79.0	77.0	73.0	4.1	2.2	2.0	2.4	0.00170	
1.1	DSE09SA4	1740	6.05	2.3	Y	0.72	83.6	82.6	79.2	6.5	3.6	3.3	4.0	0.00245	
1.5	DSE09LA4	1740	8.25	3.1	Y	0.72	84.2	83.5	80.4	6.5	3.4	3.1	4.0	0.00320	ES(X)010 ES(X)027 EH(X)027 EH(X)040
2.2	DSE09XA4	1720	12.2	4.3	Y	0.76	84.9	85.0	83.0	6.2	3.3	3.0	3.6	0.00380	
3	DSE11SA4	1740	16.4	5.5	D	0.78	86.7	86.6	84.4	6.9	3.0	2.7	3.8	0.00810	
4	DSE11MA4	1740	21.9	7.2	D	0.81	86.2	86.4	84.9	6.9	3.3	2.7	3.7	0.01050	ES(X)027 ES(X)040 ES(X)070 EH(X)070 EH(X)125
5.5	DSE11LA4	1740	30.2	9.7	D	0.81	87.7	87.8	86	7.6	3.3	2.9	4	0.014	
7.5	DSE13MA4	1760	41	13.3	D	0.8	89.1	89.1	87.6	7.6	3.4	2.9	3.6	0.029	
9.5	DSE13LA4	1760	52	16.6	D	0.81	88.4	88.7	87.5	7.3	3.4	2.9	3.4	0.0345	ES(X)040 ES(X)070 ES(X)125 EH(X)200
11	DSE16MB4	1760	59	19.3	D	0.80	88.7	88.8	87.5	6.9	2.9	2.2	3.0	0.05700	
15	DSE16LB4	1760	81	25.3	D	0.83	89.6	89.8	88.8	6.7	2.7	2.3	3.1	0.07600	ES(X)125 ES(X)200 EH(X)400 ZS(X)300
18.5	DSE16XB4	1760	100	32	D	0.81	90.5	89.7	88.7	6.7	2.8	2.4	3.1	0.08700	
22	DSE18LB4	1760	120	36	D	0.85	91.1	91.2	89.9	7.4	3.3	2.7	3.1	0.16000	ES(X)250 EH(X)400 ZS(X)500
30	DSE18XB4	1760	162	49	D	0.83	91.8	91.8	90.8	7.4	3.4	2.6	3.1	0.19500	

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P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com” for more information.

Technical data of the 60 Hz motors

60 Hz

4-pole IE2 motors for continuous operation S1, mains frequency 60 Hz

P_N kW	Type	n_N 1/min	M_N Nm	I_N (460 V) A	Connec-tion	cosφ	η (100%-Last) %	η (75%-Last) %	η (50%-Last) %	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²	Brake
0.12	DHE05LA4	1710	0.67	0.36	Y	0.61	68.8	65.8	58.9	4	2.8	2.8	3.2	0.000295	
0.12	DHE06LA4	1710	0.67	0.36	Y	0.6	68.4	65.4	58.1	3.9	2.8	2.8	3.3	0.000295	E003
0.18	DHE05LA4	1700	1.01	0.52	Y	0.61	71.6	69.3	63.1	4	3.2	3.1	3.3	0.000295	
0.18	DHE06LA4	1700	1.01	0.53	Y	0.6	71.2	68.8	62.4	3.9	3.2	3.1	3.3	0.000295	
0.25	DHE07LA4	1700	1.4	0.7	Y	0.62	72.6	70.3	64.6	4.2	3.4	3.2	3.5	0.000385	E003
0.3	DHE07LA4	1690	1.7	0.82	Y	0.62	74.6	73	67.6	4.2	3.5	3.3	3.5	0.000385	E004
0.37	DHE08MA4	1745	2	0.99	Y	0.6	77.8	75.7	70.1	5.9	2.9	2.7	3.6	0.00115	
0.55	DHE08LA4	1730	3	1.23	Y	0.69	80.5	79.9	76.3	5.4	2.7	2.4	3.2	0.0015	ES(X)010 EH(X)010 EH(X)027
0.75	DHE08XA4	1720	4.1	1.60	Y	0.72	82.5	81.0	78.0	5.1	2.5	2.4	3.0	0.0017	
0.75	DHE09SA4	1740	4.1	1.60	Y	0.70	83.7	82.4	78.3	7.3	3.4	3.0	4.0	0.00245	
1.1	DHE09LA4	1740	6.0	2.25	Y	0.73	84.8	83.8	80.4	7.3	3.6	3.3	4.3	0.0032	ES(X)010 ES(X)027 EH(X)027 EH(X)040
1.5	DHE09XA4	1740	8.2	2.95	Y	0.74	85.8	85.2	82.5	7.2	3.7	3.5	4.3	0.0038	
2.2	DHE09XB4	1740	12.1	4.1	Y	0.77	87.5	87.1	85.2	7.5	3.4	3.1	4.0	0.0049	
2.2	DHE11SA4	1760	12	4.0	Y	0.78	87.7	87.2	84.1	8.3	3.5	3.1	4.3	0.0081	
3	DHE11MA4	1760	16.5	5.5	D	0.78	87.6	87.2	83.9	7.9	3.9	3.1	4.4	0.0105	ES(X)027 ES(X)040 ES(X)070 EH(X)070 EH(X)125
4	DHE11LA4	1760	21.5	7.3	D	0.77	88.3	87.5	84.6	9.3	4.1	3.6	4.9	0.014	
5.5	DHE11LB4	1750	30	9.6	D	0.8	89.5	89.2	87.4	9.1	3.6	3.2	4.5	0.017	
5.5	DHE13MA4	1760	30	9.7	D	0.80	89.7	89.3	87.1	8.5	3.8	3.3	4	0.029	ES(X)040 ES(X)070 ES(X)125 EH(X)200
7.5	DHE13LA4	1760	40.5	13.2	D	0.8	89.6	89.2	87.2	8.2	3.9	3.4	4	0.0345	
9.5	DHE16LB4	1760	51	16.5	D	0.79	91.4	90.1	89.7	9.1	3.7	3.2	4.1	0.076	ES(X)125 ES(X)200 EH(X)400 ZS(X)300
11	DHE16LB4	1780	59	19.6	D	0.78	91.0	90.5	88.0	8.7	3.8	3.2	4.2	0.076	
15	DHE16XB4	1780	81	27	D	0.77	91.0	90.8	88.6	7.9	3.8	3.4	4.2	0.087	
18.5	DHE18LB4	1780	100	31	D	0.82	92.5	91.2	89.1	8.7	3.9	3.3	3.6	0.16	ES(X)250 EH(X)400 ZS(X)500
22	DHE18XB4	1780	118	38.5	D	0.79	92.5	92.0	89.0	9.5	4.6	3.6	4.3	0.195	

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

Winding configuration for standard motors for 460 V / 60 Hz.

All motors are suitable for the voltage range 440…480 V or 460 V +/- 10 % if executed in insulation class F.

Important: Current, power factor and torque change as voltage deviates from 460 V.

See “www.bauergears.com” for more information.

Technical data of the 60 Hz motors

60 Hz

4-pole IE3 motors for continuous operation S1, mains frequency 60 Hz

PN	Type	n_N	M_N	I_N (460 V)	Connec-tion	cosφ	η (100%-Load)	η (75%-Load)	η (50%-Load)	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}	Brake
kW		1/min	Nm	A			%	%	%					kgm²	
0.12	DPE05LA4	1715	0.67	0.37	Y	0.57	71.4	68.2	61	4.4	3.7	3.6	3.9	0.000295	E003
0.12	DPE06LA4	1715	0.67	0.37	Y	0.57	70.8	67.4	60.3	4.4	3.7	3.6	3.9	0.000295	E003
0.18	DPE07LA4	1715	1	0.52	Y	0.6	73.1	70.5	64.2	4.7	3.8	3.6	3.9	0.000385	E003. E004
0.25	DPE08MA4	1745	1.37	0.65	Y	0.63	78.2	76.2	70.9	5.5	3	2.7	3.7	0.00115	ES(X)010 EH(X)010/027
0.37	DPE08LA4	1750	2	0.94	Y	0.6	81.5	79.4	74.3	6.3	3.6	3.3	4.3	0.0015	
0.55	DPE08XA4	1740	3	1.25	Y	0.67	82.9	81.7	77.9	6.2	3.4	3	3.9	0.0017	
0.75	DPE08XB4	1735	4.15	1.67	Y	0.67	85	84.6	81.7	6.4	3.6	3.1	4	0.002	
0.75	DPE09LA4	1750	4.1	1.45	Y	0.76	83.9	82.6	78.9	7.7	3.7	3.4	4.2	0.0032	ES(X)010/027 EH(X)027/040
1.1	DPE09XB4	1755	6	2.2	Y	0.73	87.4	86.4	83.5	8.7	4.2	3.8	5	0.0049	
1.5	DPE09XB4	1745	8.2	2.9	Y	0.76	87.1	86.8	84.4	7.6	3.6	3.4	4.3	0.0049	
2.2	DPE11LB4	1760	11.9	3.7	Y	0.83	90.3	90	88.3	9.5	3.7	3.2	4.5	0.017	ES(X)027/040/070 EH(X)070/125
3	DPE11LB4	1760	16.3	5.2	D	0.81	90.7	90.5	88.9	9	3.8	3.3	4.6	0.017	
4	DPE11LB4	1760	21.7	6.9	D	0.81	90.5	90.5	89.5	9.3	3.7	3	4.7	0.017	
4	DPE13MA4	1770	21.6	7	D	0.8	89.6	89.1	86.9	8.5	3.7	2.7	4.1	0.029	ES(X)040/070/125 EH(X)200
5.5	DPE13XA4	1770	29.5	9.5	D	0.79	91.8	91.8	90.4	9	4.4	3.1	4.2	0.04	
7.5	DPE13XA4	1765	40.5	13.2	D	0.77	91.8	91.9	90.6	8.5	3.7	3	4.1	0.04	
9.5	DPE16LB4	1780	51	16.7	D	0.77	92.5	92.3	90.8	8.7	3.5	2.1	3.5	0.0755	ES(X)125/200 EH(X)400 ZS(X)300
11	DPE16LB4	1780	59	19.3	D	0.77	92.5	92.6	91.2	8	3.3	2	3.3	0.0755	
15	DPE16XB4	1780	80.5	26.2	D	0.77	93.3	93.1	92	8.8	3.7	2.3	3.6	0.097	
18.5	DPE18LB4	1780	99	31	D	0.8	93.8	93.7	92.6	9.6	4.3	2.7	3.7	0.17	ES(X)250 EH(X)400 ZS(X)500
22	DPE18XB4	1780	118	36.5	D	0.81	93.8	93.9	93.2	9.1	3.9	2.4	3.2	0.195	
30	DPE20XA4	1785	160	46.5	D	0.86	94.8	94.9	94.4	9.5	3.4	2.9	3.9	0.3888	ES(X)250 ZS(X)500
37	DPE22MA4	1780	198	60	D	0.82	94.8	94.8	94.2	9.7	3.7	3.3	4.2	0.4318	ES(X)250 ZS(X)500

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
η	Efficiency at different loads
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

The standard motor winding configuration is for 460 V / 60 Hz.

All motors are suitable for the voltage range 440…480 V or 460 V +/- 10 % if executed in insulation class F.

Important: Current, power factor and torque change as voltage deviates from 460 V.

See “www.bauergears.com” for more information.

Technical data of the 60 Hz motors

60 Hz

4-pole motors for intermittent periodic duty (S3/S6 75 %) and 60 Hz mains frequency

P_N kW	Type	n_N 1/min	M_N Nm	I_N (460 V) A	Connection	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²	Brake
0.9	DSE08MA4	1620	5.4	2.1	Y	0.81	3.2	1.6	1.5	1.9	0.00115	ES(X)010
1.1	DSE08LA4	1660	6.3	2.4	Y	0.79	3.6	1.6	1.6	1.9	0.0015	
1.5	DSE08XA4	1660	8.4	3.1	Y	0.81	3.6	1.6	1.5	1.8	0.0017	
2	DSE09SA4	1660	11.5	3.8	Y	0.86	4.2	1.8	1.6	2	0.00245	ES(X)010 ES(X)027
2.6	DSE09LA4	1660	15.3	5	Y	0.86	4.3	1.9	1.8	2.2	0.0032	
3	DSE09XA4	1680	17	5.5	Y	0.83	4.8	2.4	2.2	2.6	0.0038	
4.5	DSE11SA4	1700	25	7.8	D	0.85	4.9	2	1.8	2.5	0.0081	ES(X)027 ES(X)040 ES(X)070
6	DSE11MA4	1700	34	10.5	D	0.86	4.7	2.2	1.8	2.4	0.0105	
7.5	DSE11LA4	1720	41.5	12.7	D	0.86	5.8	2.4	2.1	2.9	0.014	
11	DSE13MA4	1730	63	19	D	0.85	5.3	2.2	2	2.4	0.029	ES(X)040 ES(X)070 ES(X)125
13.5	DSE13LA4	1730	71	25	D	0.84	5.4	2.4	2	2.4	0.0345	
15	DSE16MB4	1750	82	26	D	0.83	4.9	2.2	1.6	2.2	0.057	ES(X)125 ES(X)200 ZS(X)300
22	DSE16LB4	1750	123	37	D	0.86	5	1.8	1.6	2.1	0.076	
24	DSE16XB4	1750	131	41	D	0.84	5.2	2.1	1.9	2.4	0.087	
33	DSE18LB4	1750	180	53	D	0.87	5.4	2.2	1.8	2	0.16	ES(X)250 ZS(X)500
37	DSE18XB4	1760	205	60	D	0.86	5.4	2.7	2.1	2.5	0.195	

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor
Brake	Brake dimensioning see chapter "Motor Mounted Components-Dimensions"

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com” for more information.

Technical data of the 60 Hz motors

60 Hz

4-pole motors for intermittent periodic duty (S3/S6) and 60 Hz mains frequency

P_N	ED	Type	n_N	M_N	I_N (460 V)	Connection	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}
kW			1/min	Nm	A							kgm²
0.15	15%	D04LA4	1620	0.87	0.56	Y	0.77	2.2	1.8	1.7	1.8	0.000175
0.3	15%	D05LA4	1620	1.75	0.9	Y	0.75	2.8	2.1	2	2.1	0.000295
0.3	60%	D06LA4	1620	1.75	0.9	Y	0.75	2.8	2.1	2	2.1	0.000295
0.55	60%	D07LA4	1620	3.2	1.78	Y	0.86	3.7	1.8	1.6	1.8	0.000385
0.75	60%	D08MA4	1680	4.2	1.84	Y	0.81	3.7	1.8	1.5	1.9	0.00115
1.1	60%	D08LA4	1680	6.2	2.5	Y	0.82	3.6	1.6	1.5	1.9	0.0015
1.5	60%	D09SA4	1680	8.5	3.3	Y	0.84	4.3	1.9	1.6	2.2	0.00245
2.2	60%	D09LA4	1680	12.5	4.5	Y	0.86	4.3	1.8	1.6	2.1	0.0032
3	60%	D09XA4	1680	16.6	6.2	Y	0.86	3.7	1.9	1.8	2.1	0.0038
4	60%	D11SA4	1710	22	8.1	Δ	0.85	4.4	1.8	1.5	2.2	0.0081
5.5	60%	D11MA4	1710	30.5	10.7	Δ	0.87	4.7	1.6	1.6	2.2	0.0105
7.5	60%	D11LA4	1710	41.5	14.6	Δ	0.87	5	2	1.9	2.3	0.014
9.5	60%	D13MA4	1710	53	17.3	Δ	0.87	5.4	2.1	1.8	2.4	0.029
11	60%	D13LA4	1710	60	20	Δ	0.84	6	2.6	2.3	2.7	0.0335
13.5	60%	D16MB4	1760	73	25.5	Δ	0.84	6.1	2.3	1.8	2.2	0.057
18.5	60%	D16LB4	1760	100	35	Δ	0.84	5.6	2.1	1.8	2.3	0.076
22	60%	D16XB4	1760	120	42	Δ	0.84	5.9	2.3	1.4	2.2	0.087
30	60%	D18LB4	1760	163	53	Δ	0.89	4.9	2	1.6	1.9	0.16
37	60%	D18XB4	1760	200	68	Δ	0.85	6	2.7	2.2	2.5	0.195

P_N	Rated power
ED	Duty cycle
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com“ for additional information.

Technical data of the 60 Hz motors

60 Hz

4/2-pole motors Δ/YY for continuous operation S1, line frequency 60 Hz

P_N	Type	n_N	M_N	I_N (460 V)	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}
kW		1/min	Nm	A						kgm²
0.03/0.06	D04LA42	1620/3240	0.160/0.170	0.200/0.230	0.56/0.67	2.4/3.4	3.8/3.4	3.8/3.4	4.0/3.7	0.000175
0.04/0.08	D04LA42	1620/3240	0.230/0.230	0.230/0.260	0.60/0.75	2.2/3.1	3.3/2.3	3.3/2.3	3.7/2.4	0.000175
0.06/0.12	D05LA42	1620/3240	0.350/0.350	0.420/0.420	0.50/0.75	3.1/3.6	3.4/2.2	3.3/2.1	4.2/2.9	0.000295
0.08/0.16	D05LA42	1620/3240	0.470/0.470	0.460/0.460	0.55/0.75	3.1/3.6	3.1/2.0	3.0/1.9	3.8/2.5	0.000295
0.06/0.12	D06LA42	1620/3240	0.350/0.350	0.420/0.420	0.50/0.75	3.1/3.6	3.4/2.2	3.3/2.1	4.2/2.9	0.000295
0.08/0.16	D06LA42	1620/3240	0.470/0.470	0.46/0.460	0.55/0.75	3.1/3.6	3.1/2.0	3.0/1.9	3.8/2.5	0.000295
0.11/0.22	D06LA42	1620/3240	0.64/0.64	0.63/0.63	0.55/0.75	3.1/3.6	3.1/2.0	3.0/1.9	3.8/2.5	0.000295
0.16/0.32	D06LA42	1620/3240	0.94/0.94	0.82/0.82	0.57/0.80	3.1/3.6	2.8/1.9	2.7/1.8	3.4/2.3	0.000295
0.2/0.4	D07LA42	1680/3360	1.12/1.14	1.04/1.08	0.58/0.81	3.2/3.9	3.1/1.8	3.0/1.5	3.3/2.2	0.000385
0.28/0.56	D08MA42	1680/3360	1.58/1.58	1.10/1.60	0.61/0.81	3.7/3.2	2.5/1.7	2.5/1.5	3.3/2.1	0.00115
0.4/0.8	D08LA42	1680/3360	2.2/2.2	1.40/1.74	0.6/0.90	5.1/5.6	3.0/2.0	2.6/1.9	3.4/2.3	0.0015
0.5/1.0	D09SA42	1680/3360	2.8/2.8	1.60/2.6	0.71/0.91	5.5/4.6	3.4/2.2	3.4/2.2	4.2/2.6	0.00245
0.7/1.4	D09SA42	1680/3360	3.9/3.9	1.93/3.1	0.71/0.93	5.1/4.5	2.8/1.8	2.8/1.8	3.4/2.2	0.00245
1.0/2.0	D09LA42	1680/3360	5.6/5.6	2.8/4.3	0.72/0.94	5.1/4.5	2.8/1.8	2.8/1.8	3.4/2.2	0.0032
1.2/2.4	D09XA42	1680/3360	6.8/6.7	3.4/5.2	0.65/0.87	6.8/3.3	2.7/2.0	2.7/2.0	3.4/2.5	0.0038
1.4/2.8	D11SA42	1710/3420	7.8/7.8	3.3/5.7	0.74/0.90	7.0/4.9	3.3/1.9	2.8/1.6	4.5/3.1	0.0081
2.0/4.0	D11MA42	1710/3420	11.2/11.1	51./8.4	0.70/0.90	7.3/5.9	3.4/2.3	3.0/1.8	4.1/2.8	0.0105
2.5/5.0	D11LA42	1710/3420	14/14	5.0/9.1	0.79/0.92	6./5.0	3.1/2.0	3.0/1.9	4.1/2.8	0.014
3.5/7.0	D13MA42	1710/3420	19.1/19.1	7.5/13.5	0.76/0.91	7.4/5.7	3.7/2.2	3.1/2.0	4.2/3.0	0.029
4.5/9.0	D13LA42	1710/3420	25/25	9.6/17.3	0.76/0.91	7.4/6.0	3.5/2.1	2.8/1.9	3.8/2.7	0.0345
5.5/11	D16MB42	1760/3520	30/29.5	12.4/22.5	0.73/0.91	7.3/5.7	3.1/1.9	2.4/1.3	3.5/2.5	0.057
7.0/14	D16LB42	1760/3520	37.5/37.5	14.1/26	0.78/0.92	7.9/6.0	3.4/2.3	2.7/1.5	3.6/2.8	0.076
9.0/18	D16XB42	1760/3520	48.5/48.5	17.6/34	0.79/0.92	8.7/6.4	3.1/2.0	2.4/1.3	3.4/2.4	0.087
12.5/25	D18LB42	1760/3520	68/67	26.5/45.5	0.77/0.89	9.3/7.7	4.3/3.1	3.7/2.1	4.2/3.3	0.16
16/32	D18XB42	1760/3520	86/86	35/60	0.77/0.89	8.5/7.1	4.1/2.8	3.4/2.0	3.9/3.1	0.195

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com“ for additional information.

Technical data of the 60 Hz motors

60 Hz

8/4-pole motors Δ/YY for continuous operation S1, line frequency 60 Hz

P_N	Type	n_N	M_N	I_N (460 V)	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot}
kW		1/min	Nm	A						kgm^2
0.03/0.06	D05LA84	810/1620	0.340/0.350	0.280/0.260	0.52/0.71	1.8/2.8	3.0/2.1	1.8/1.9	1.8/1.9	0.000295
0.03/0.06	D06LA84	810/1620	0.340/0.350	0.280/0.260	0.52/0.71	1.8/2.8	3.0/2.1	1.8/1.9	1.8/1.9	0.000295
0.04/0.08	D06LA84	810/1620	0.450/0.460	0.440/0.370	0.52/0.66	1.5/2.4	2.9/2.3	1.8/1.9	1.8/1.9	0.000295
0.06/0.12	D07LA84	810/1620	0.70/0.70	0.65/0.55	0.52/0.66	1.9/3.1	3.5/1.9	3.5/1.7	3.6/2.3	0.000385
0.06/0.12	D08LA84	840/1680	0.67/0.67	0.460/0.460	0.61/0.83	3.1/4.1	3.4/2.5	3.4/2.5	3.9/3.2	0.0025
0.08/0.16	D08LA84	840/1680	0.90/0.90	0.57/0.57	0.61/0.83	3.1/4.1	3.3/2.4	3.3/2.4	3.9/3.3	0.0025
0.11/0.22	D08LA84	840/1680	1.24/1.25	0.74/0.74	0.61/0.83	3.1/4.1	3.1/2.3	3.1/2.3	3.7/3.1	0.0025
0.14/0.28	D08LA84	840/1680	1.58/1.59	0.92/0.92	0.61/0.83	3.1/4.1	3.1/2.3	3.1/2.3	3.7/3.1	0.0025
0.2/0.4	D08LA84	840/1680	2.2/2.2	1.05/1.20	0.55/0.77	3.1/4.1	2.5/1.9	2.5/1.9	3.0/2.5	0.0025
0.25/0.5	D09XC84	840/1680	2.8/2.8	1.28/1.28	0.48/0.77	3.2/5.5	3.0/2.2	3.0/2.3	3.4/3.0	0.006
0.28/0.56	D09XC84	840/1680	3.1/3.1	1.29/1.38	0.57/0.80	3.2/5.4	2.7/2.0	2.7/2.1	3.1/2.7	0.006
0.4/0.8	D09XC84	840/1680	4.5/4.5	1.80/2.2	0.55/0.79	3.1/4.6	2.5/1.9	2.5/2.0	3.0/2.5	0.006
0.5/1.0	D09XC84	840/1680	5.6/5.6	2.2/2.4	0.55/0.81	2.9/4.4	2.4/1.8	2.4/1.8	2.8/2.4	0.006
0.8/1.6	D11LC84	850/1710	8.9/8.9	2.8/3.8	0.63/0.88	3.8/4.7	2.4/2.1	2.4/1.9	3.1/3.0	0.0215
1.1/2.2	D11LC84	850/1710	12.2/12.2	3.7/4.5	0.58/0.85	4.3/6.2	2.5/2.3	2.5/1.9	3.0/2.7	0.0215
1.6/3.2	D11LC84	850/1710	17.9/17.9	5.5/7.0	0.59/0.84	4.1/5.6	2.4/2.0	2.3/1.6	2.8/2.5	0.0215
2.2/4.4	D13LC84	850/1710	24/24	6.6/8.7	0.60/0.87	4.7/5.9	2.3/1.9	2.3/1.5	3.2/3.1	0.046
2.8/5.6	D13LC84	850/1710	31/31	8.6/11.2	0.60/0.86	4.7/5.9	2.3/1.9	2.3/1.5	3.2/3.1	0.046
3.5/7.0	D16MB84	880/1760	38/38	12.7/14.2	0.59/0.84	3.6/5.4	2.3/2.0	2.0/1.5	2.3/2.4	0.057
5.0/10	D16LB84	880/1760	54/54	16.1/18.9	0.57/0.87	3.9/6.1	2.3/2.0	2.1/1.5	2.3/2.4	0.076
7.0/14	D16XB84	880/1760	76/75	22.5/26.5	0.60/0.84	3.6/5.7	2.3/2.1	2.2/1.8	2.3/2.6	0.087
8.0/16	D18LB84	880/1760	87/86	22/30	0.60/0.86	4.1/6.0	2.4/2.4	2.0/2.0	2.1/2.3	0.16
10/20	D18XB84	880/1760	108/108	27.5/37.5	0.60/0.86	4.1/6.0	2.4/2.4	2.0/2.0	2.1/2.3	0.195

P_N	Rated power
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com“ for additional information.

Technical data of the 60 Hz motors

60 Hz

8/2-pole Y/Y motors for intermittent periodic duty S3 25/75 % and 60 Hz mains frequency

P_N kW	ED	Type	n_N 1/min	M_N Nm	I_N (460 V) A	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²
0.04/0.16	25/75 %	D05LA82	680/2700	0.56/0.56	0.400/0.80	0.63/0.75	1.6/3.2	1.9/2.2	1.9/2.1	2.0/2.3	0.000295
0.05/0.20	25/75 %	D06LA82	680/2700	0.70/0.70	0.51/1.02	0.63/0.75	1.4/2.8	1.7/2.0	1.7/1.9	1.8/2.1	0.000295
0.063/0.25	25/75 %	D07LA82	650/2840	0.87/0.87	0.60/1.20	0.69/0.62	1.4/2.6	1.6/1.4	1.6/1.4	1.8/2.7	0.000385
0.071/0.28	25/75 %	D07LA82	650/2840	0.99/0.98	0.65/1.40	0.69/0.68	1.4/2.6	1.5/1.3	1.5/1.3	1.7/2.6	0.000385
0.063/0.25	25/75 %	D08LA82	700/2800	0.85/0.85	0.55/0.70	0.55/0.87	2.8/4.0	2.4/2.6	2.4/2.5	2.8/3.0	0.0015
0.09/0.36	25/75 %	D08LA82	700/2800	1.22/1.22	0.70/1.05	0.60/0.92	2.9/4.5	2.0/2.6	2.0/2.5	2.4/2.9	0.0015
0.12/0.5	25/75 %	D08LA82	700/2800	1.70/1.70	0.95/1.43	0.60/0.92	2.9/4.5	2.0/2.6	2.0/2.5	2.4/2.9	0.0015
0.16/0.63	25/75 %	D08LA82	700/2800	2.1/2.1	1.20/1.45	0.63/0.90	2.0/4.6	1.8/2.1	1.8/2.0	2.2/2.4	0.0015
0.25/1.0	25/75 %	D09XA82	700/2800	3.4/3.4	1.30/2.3	0.62/0.90	2.2/5.2	1.9/2.3	1.9/2.3	2.0/2.6	0.0038
0.3/1.4	25/75 %	D09XA82	700/2800	4.9/4.8	2.1/3.3	0.57/0.87	2.0/4.5	1.9/2.1	1.9/2.1	2.0/2.4	0.0038
0.45/1.8	25/75 %	D09XA82	700/2800	6.1/6.1	2.4/4.3	0.65/0.89	2.0/4.3	1.7/2.0	1.7/2.0	2.0/2.5	0.0038
0.56/2.2	25/75 %	D11LA82	710/2840	7.5/7.3	2.3/4.7	0.60/0.94	3.2/4.9	1.9/2.9	1.9/2.4	2.2/2.9	0.014
0.71/2.8	25/75 %	D11LA82	710/2840	9.5/9.4	2.8/5.6	0.58/0.94	2.5/4.7	1.9/2.3	1.9/2.0	2.1/2.4	0.014
0.90/3.6	25/75 %	D11LA82	710/2840	12.1/12.1	3.5/7.9	0.58/0.94	2.5/4.5	1.8/2.0	1.8/1.8	2.0/2.1	0.014
1.10/4.5	25/75 %	D13LA82	710/2840	14.7/15.1	4.0/10.1	0.59/0.90	2.8/5.4	1.8/2.5	1.8/1.8	2.3/2.7	0.0345
1.25/5.0	25/75 %	D13LA82	710/2840	16.8/16.8	4.5/11.5	0.59/0.88	2.9/5.4	1.6/2.3	1.6/1.8	2.1/2.7	0.0345
1.6/6.3	25/75 %	D16XB82	730/2920	20/20.5	7.6/13.5	0.48/0.88	3.6/6.5	2.4/3.0	2.2/2.1	2.7/3.0	0.087
2.0/8.0	25/75 %	D16XB82	730/2920	25.5/26	9.5/17	0.50/0.89	3.6/6.1	2.4/3.0	2.1/2.0	2.7/3.0	0.087
2.8/11	25/75 %	D16XB82	730/2920	36.6/36	11.5/24	0.53/0.91	3.0/5.9	1.8/2.9	1.6/2.0	1.9/2.8	0.087
3.6/14	25/75 %	D18XB82	730/2920	47/45.5	13.6/30.5	0.55/0.91	3.3/4.9	1.7/2.2	1.6/1.5	2.1/2.4	0.195
4.0/16	25/75 %	D18XB82	730/2920	52/52	15.1/34.5	0.55/0.91	3.3/4.9	1.7/2.2	1.6/1.5	2.1/2.4	0.195
5.0/20	25/75 %	D18XB82	730/2920	65/65	18.8/43	0.55/0.91	3.3/4.9	1.7/2.2	1.6/1.5	2.1/2.4	0.195

P_N	Rated power
ED	Duty cycle
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com“ for additional information.

Technical data of the 60 Hz motors

60 Hz

12/2-pole motors Y/Y for intermittent periodic duty S3-25/75 %, line frequency 60 Hz

P_N kW	ED	Type	n_N 1/min	M_N Nm	I_N (460 V) A	cosφ	I_A/I_N	M_A/M_N	M_S/M_N	M_K/M_N	J_{rot} kgm²
0.045/0.28	25/75 %	D08LA122	560/3360	0.76/0.79	0.51/0.79	0.70/0.90	1.5/4.9	2.1/2.7	2.1/2.7	2.1/3.0	0.0015
0.063/0.40	25/75 %	D08LA122	560/3360	1.07/1.13	0.61/1.02	0.70/0.90	1.5/4.9	1.9/2.4	1.9/2.4	1.9/2.7	0.0015
0.09/0.56	25/75 %	D08LA122	560/3360	1.54/1.59	0.95/1.35	0.63/0.89	1.5/4.5	1.9/2.3	1.9/2.5	2.0/2.6	0.0015
0.11/0.71	25/75 %	D09XA122	560/3360	1.88/2.0	1.00/1.50	0.59/0.88	1.6/6.0	1.9/3.0	1.9/2.9	2.0/3.6	0.0038
0.16/1.0	25/75 %	D09XA122	560/3360	2.7/2.8	1.56/2.2	0.62/0.89	1.6/6.0	2.0/2.9	2.0/2.7	2.0/3.6	0.0038
0.2/1.25	25/75 %	D09XA122	560/3360	3.4/3.5	1.85/2.8	0.62/0.89	1.6/5.5	1.9/2.6	1.9/2.5	1.9/3.4	0.0038
0.25/1.6	25/75 %	D11LA122	560/3420	4.2/4.4	2.1/3.1	0.53/0.95	1.8/5.4	1.9/2.8	1.9/2.6	2.2/3.1	0.014
0.32/2.0	25/75 %	D11LA122	560/3420	5.4/5.5	2.7/3.6	0.53/0.94	1.8/5.1	1.9/2.7	1.9/2.4	2.2/3.0	0.014
0.45/2.8	25/75 %	D11LA122	560/3420	7.6/7.8	3.8/5.1	0.52/0.94	1.8/5.1	1.6/2.5	1.6/2.2	2.0/2.6	0.014
0.63/4.0	25/75 %	D13LA122	560/3420	10.7/11.1	3.8/7.9	0.45/0.95	1.8/6.1	1.8/2.6	1.8/2.0	2.0/3.0	0.0345
0.80/5.0	25/75 %	D13LA122	560/3420	13.5/14	5.8/10.3	0.41/0.92	1.9/5.8	1.6/3.0	1.6/2.1	2.2/3.2	0.0345
1.0/6.3	25/75 %	D16XB122	590/3520	16.3/16.6	7.3/12.2	0.35/0.90	2.4/6.9	2.1/3.0	2.1/1.9	2.6/3.1	0.087
1.25/8.0	25/75 %	D16XB122	590/3520	20/21.5	9.0/15.4	0.35/0.90	2.4/6.9	2.1/3.0	2.1/1.8	2.6/3.1	0.087
1.6/10	25/75 %	D16XB122	590/3520	25/26.5	9.6/19.1	0.40/0.92	2.1/5.9	1.8/2.6	1.8/1.5	2.3/2.6	0.087
2.4/14	25/75 %	D18XB122	590/3520	39/37.5	15.1/28.5	0.39/0.91	2.0/4.7	1.8/2.8	1.9/2.2	2.1/2.8	0.195
2.5/16	60/60 %	D18XB122	590/3520	40.5/43	14.1/28.5	0.46/0.92	2.0/5.9	1.8/2.7	1.5/1.6	1.8/2.8	0.195
2.8/18	10/40 %	D18XB122	590/3520	45.5/48	17.6/36	0.39/0.91	2.0/4.7	1.8/2.8	1.9/2.2	2.1/2.8	0.195

P_N	Rated power
ED	Duty cycle
n_N	Guideline value for rated speed at the rotor shaft
M_N	Rated torque at the rotor shaft
I_N	Rated current (the current can be converted in inverse ratio to the voltages for the desired special voltage)
cosφ	Power factor
I_A/I_N	Relative starting current
M_A/M_N	Relative starting torque
M_S/M_N	Relative pull-up torque
M_K/M_N	Relative breakdown torque
J_{rot}	Mass moment of inertia of the rotor

The standard motor winding configuration is for 460 V / 60 Hz.

See “www.bauergears.com“ for additional information.

Operation with frequency converter, 50 Hz

50 Hz

IE1 Motor torques for frequency-converter range 5 Hz - 70 Hz, line frequency 50 Hz

P_N	Type	Connec-tion	5 Hz M	10 Hz M	20 Hz M	30 Hz M	50 Hz M	60 Hz M	70 Hz M	5 Hz I	10 Hz I	20 Hz I	30 Hz I	50 Hz I	60 Hz I	70 Hz I
kW			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0.03	D04LA4	Y	0.125	0.155	0.185	0.205	0.21	0.21	0.18	0.19	0.193	0.198	0.2	0.2	0.23	0.23
0.04	D04LA4	Y	0.165	0.21	0.25	0.275	0.28	0.275	0.205	0.19	0.193	0.198	0.2	0.2	0.23	0.2
0.06	D04LA4	Y	0.25	0.315	0.375	0.41	0.42	0.42	0.32	0.29	0.295	0.3	0.3	0.3	0.34	0.305
0.09	D04LA4	Y	0.375	0.47	0.56	0.62	0.63	0.63	0.52	0.435	0.44	0.45	0.45	0.45	0.51	0.495
0.11	D04LA4	Y	0.465	0.58	0.7	0.77	0.78	0.67	0.495	0.41	0.425	0.44	0.45	0.45	0.45	0.435
0.06	D05LA4	Y	0.25	0.315	0.375	0.41	0.42	0.42	0.36	0.3	0.315	0.34	0.35	0.35	0.395	0.4
0.09	D05LA4	Y	0.375	0.47	0.56	0.62	0.63	0.63	0.54	0.355	0.365	0.375	0.38	0.38	0.43	0.43
0.06	D06LA4	Y	0.25	0.315	0.375	0.41	0.42	0.42	0.36	0.3	0.315	0.34	0.35	0.35	0.395	0.4
0.09	D06LA4	Y	0.375	0.47	0.56	0.62	0.63	0.63	0.54	0.355	0.365	0.375	0.38	0.38	0.43	0.43
0.12	DSE04LA4	Y	0.52	0.65	0.78	0.85	0.87	0.67	0.495	0.45	0.45	0.45	0.45	0.45	0.45	0.45
0.18	DSE05LA4	Y	0.76	0.96	1.15	1.26	1.28	1.28	0.97	0.6	0.61	0.63	0.63	0.63	0.72	0.64
0.2	DSE05LA4	Y	0.85	1.06	1.27	1.4	1.42	1.35	0.99	0.62	0.63	0.65	0.66	0.66	0.72	0.66
0.25	DSE05LA4	Y	1.05	1.31	1.57	1.72	1.75	1.59	1.17	0.86	0.87	0.87	0.87	0.87	0.9	0.87
0.18	DSE06LA4	Y	0.76	0.96	1.15	1.26	1.28	1.28	1.02	0.6	0.61	0.63	0.63	0.63	0.72	0.67
0.2	DSE06LA4	Y	0.85	1.06	1.27	1.4	1.42	1.35	0.99	0.61	0.63	0.64	0.65	0.65	0.71	0.65
0.25	DSE06LA4	Y	1.05	1.31	1.57	1.72	1.75	1.59	1.17	0.86	0.87	0.87	0.87	0.87	0.9	0.87
0.37	DSE07LA4	Y	1.59	1.98	2.3	2.6	2.6	2.5	1.85	1.13	1.14	1.15	1.15	1.15	1.24	1.15
0.55	DSE08MA4	Y	2.2	2.8	3.3	3.7	3.8	3.8	2.8	1.29	1.35	1.41	1.45	1.45	1.64	1.47
0.75	DSE08LA4	Y	3	3.8	4.5	5	5.1	5.1	3.9	1.7	1.79	1.89	1.95	1.95	2.2	1.97
1.1	DSE08XA4	Y	4.5	5.6	6.7	7.4	7.5	7.1	5.2	2.5	2.6	2.8	2.8	2.8	3.1	2.8
1.1	DSE09SA4	Y	4.5	5.6	6.7	7.4	7.5	7.5	6.4	2.2	2.4	2.5	2.6	2.6	3	3
1.5	DSE09LA4	Y	6	7.5	9	9.9	10.1	10.1	8.6	3	3.2	3.4	3.5	3.5	4	4
2.2	DSE09XA4	Y	9	11.2	13.5	14.8	15	15	12.4	3.9	4.2	4.7	4.9	4.9	5.6	5.4
3	DSE11SA4	Y	12	15	18	19.7	20	20	17.1	5.1	5.5	6.1	6.4	6.4	7.3	7.3
4	DSE11MA4	Y	16.2	20	24	26.5	27	27	23	6.4	7.1	7.9	8.4	8.4	9.5	9.5
5.5	DSE11LA4	Y	22	27.5	33	36.5	37	37	31.5	8.2	9.3	10.5	11.2	11.3	12.8	12.8
7.5	DSE13MA4	Y	30	37.5	45	49	50	50	42.5	11.4	12.8	14.3	15.2	15.3	17.3	17.3
9.5	DSE13LA4	Y	37.5	47	56	62	63	63	54	14.1	15.9	17.8	19.1	19.2	22	22
11	DSE16MB4	Y	43	54	64	71	72	72	61	16.3	18.4	21	22.5	22.5	25.5	25.5
15	DSE16LB4	Y	58	73	88	96	98	98	84	20.5	24	27.5	29.5	29.5	33.5	33.5
18.5	DSE16XB4	Y	72	90	108	119	121	121	103	27	30.5	34.5	37	37	42	42
22	DSE18LB4	Y	86	108	129	142	144	144	123	28	33	38	41.5	41.5	47	47
30	DSE18XB4	Y	117	147	176	193	196	196	168	39	45	52	56	56	64	64

P_N Rated power

M Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter

I Load current for operation with frequency inverter

Field weakening for frequencies above 50 Hz, winding for standard voltage **400 V Y / 50 Hz**, Temperature Class F.ation with frequency inverter

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency inverter. Load current is lower if the load torque is below the values permitted for 30-70 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 50 Hz

50 Hz

IE1 Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz

P_N	Type	Connection	5 Hz	8.7 Hz	10 Hz	20 Hz	87 Hz	100 Hz	5 Hz	8.7 Hz	10 Hz	20 Hz	87 Hz	100 Hz
			M	M	M	M	M	M	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A
0.03	D04LA4	D	0.125	0.15	0.155	0.185	0.21	0.21	0.33	0.335	0.335	0.345	0.35	0.38
0.04	D04LA4	D	0.165	0.2	0.21	0.25	0.28	0.28	0.33	0.335	0.335	0.345	0.35	0.38
0.06	D04LA4	D	0.25	0.3	0.315	0.375	0.42	0.42	0.51	0.51	0.51	0.52	0.52	0.57
0.09	D04LA4	D	0.375	0.45	0.47	0.56	0.63	0.63	0.76	0.76	0.77	0.78	0.78	0.86
0.11	D04LA4	D	0.465	0.56	0.58	0.7	0.78	0.73	0.71	0.73	0.73	0.76	0.78	0.81
0.06	D05LA4	D	0.25	0.3	0.315	0.375	0.42	0.42	0.52	0.54	0.55	0.59	0.61	0.67
0.09	D05LA4	D	0.375	0.45	0.47	0.56	0.63	0.63	0.62	0.63	0.63	0.65	0.66	0.73
0.09	D05LA4	D	0.375	0.45	0.47	0.56	0.63	0.63	0.62	0.63	0.63	0.65	0.66	0.73
0.06	D06LA4	D	0.25	0.3	0.315	0.375	0.42	0.42	0.52	0.54	0.55	0.59	0.61	0.67
0.09	D06LA4	D	0.375	0.45	0.47	0.56	0.63	0.63	0.62	0.63	0.63	0.65	0.66	0.73
0.12	DSE04LA4	D	0.52	0.62	0.65	0.78	0.87	0.74	0.78	0.78	0.78	0.78	0.78	0.78
0.18	DSE05LA4	D	0.76	0.92	0.96	1.15	1.28	1.28	1.04	1.06	1.06	1.08	1.1	1.2
0.2	DSE05LA4	D	0.85	1.02	1.06	1.27	1.42	1.42	1.06	1.09	1.09	1.13	1.15	1.26
0.25	DSE05LA4	D	1.05	1.25	1.31	1.57	1.75	1.73	1.49	1.5	1.5	1.51	1.51	1.65
0.18	DSE06LA4	D	0.76	0.92	0.96	1.15	1.28	1.28	1.04	1.06	1.06	1.08	1.1	1.2
0.2	DSE06LA4	D	0.85	1.02	1.06	1.27	1.42	1.42	1.06	1.08	1.08	1.11	1.13	1.24
0.25	DSE06LA4	D	1.05	1.25	1.31	1.57	1.75	1.73	1.49	1.5	1.5	1.51	1.51	1.65
0.37	DSE07LA4	D	1.59	1.9	1.98	2.3	2.6	2.6	1.95	1.96	1.97	1.98	2	2.2
0.55	DSE08MA4	D	2.2	2.7	2.8	3.3	3.8	3.8	2.2	2.4	2.4	2.5	2.6	2.8
0.75	DSE08LA4	D	3	3.6	3.8	4.5	5.1	5.1	3	3.1	3.1	3.3	3.4	3.8
1.1	DSE08XA4	D	4.5	5.4	5.6	6.7	7.5	7.5	4.3	4.5	4.5	4.7	4.9	5.4
1.1	DSE09SA4	D	4.5	5.4	5.6	6.7	7.5	7.5	3.8	4	4.1	4.4	4.5	5
1.5	DSE09LA4	D	6	7.2	7.5	9	10.1	10.1	5.1	5.4	5.4	5.8	6.1	6.7
2.2	DSE09XA4	D	9	10.7	11.2	13.5	15	15	6.8	7.3	7.4	8.1	8.5	9.4
3	DSE11SA4	D	12	14.3	15	18	20	20	8.7	9.4	9.6	10.5	11.1	12.2
4	DSE11MA4	D	16.2	19.4	20	24	27	27	11	12	12.2	13.6	14.6	16
5.5	DSE11LA4	D	22	26.5	27.5	33	37	37	14.2	15.7	16.1	18.2	19.6	21.5
7.5	DSE13MA4	D	30	36	37.5	45	50	50	19.8	22	22.5	25	27	29.5
9.5	DSE13LA4	D	37.5	45	47	56	63	63	24.5	27	27.5	31	33.5	36.5
11	DSE16MB4	D	43	51	54	64	72	72	28.5	31.5	32	36.5	39	43
15	DSE16LB4	D	58	70	73	88	98	98	35.5	40	41	47	52	57
18.5	DSE16XB4	D	72	87	90	108	121	121	46.5	52	53	60	65	71
22	DSE18LB4	D	86	103	108	129	144	144	48.5	55	57	66	72	79
30	DSE18XB4	D	117	141	147	176	196	196	67	76	78	89	97	107

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 87 Hz, winding for
230 V Δ/ 50 Hz (U_{max} = 400 V Δ/87 Hz), Temperature Class F.

The load currents in the table are guideline values for selecting the size of frequency inverter. Load current is lower if the load torque is below the values permitted for 30-100 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 50 Hz

50 Hz

IE2 Motor torques for frequency-converter range 5 Hz - 70 Hz, line frequency 50 Hz

P_N	Type	Connec-tion	5 Hz M	10 Hz M	20 Hz M	30 Hz M	50 Hz M	60 Hz M	70 Hz M	5 Hz I	10 Hz I	20 Hz I	30 Hz I	50 Hz I	60 Hz I	70 Hz I
kW			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0.12	DHE05LA4	Y	0.49	0.61	0.73	0.81	0.82	0.82	0.65	0.36	0.37	0.385	0.39	0.39	0.44	0.415
0.18	DHE05LA4	Y	0.75	0.93	1.12	1.23	1.25	1.25	1.03	0.53	0.54	0.56	0.57	0.57	0.65	0.63
0.12	DHE06LA4	Y	0.495	0.62	0.74	0.81	0.83	0.83	0.66	0.36	0.37	0.385	0.39	0.39	0.44	0.415
0.18	DHE06LA4	Y	0.75	0.93	1.12	1.23	1.25	1.25	1.03	0.54	0.55	0.57	0.58	0.58	0.66	0.64
0.25	DHE07LA4	Y	1.04	1.3	1.56	1.71	1.74	1.74	1.49	0.7	0.72	0.75	0.76	0.76	0.86	0.86
0.3	DHE07LA4	Y	1.26	1.57	1.89	2	2.1	2.1	1.8	0.82	0.85	0.88	0.9	0.9	1.02	1.02
0.37	DHE08MA4	Y	1.47	1.83	2.2	2.4	2.4	2.4	2.1	0.99	1.03	1.07	1.1	1.1	1.25	1.25
0.55	DHE08LA4	Y	2.2	2.8	3.3	3.6	3.7	3.7	3	1.15	1.23	1.32	1.38	1.38	1.56	1.51
0.75	DHE08XA4	Y	3	3.8	4.5	4.9	5	5	4.2	1.6	1.7	1.81	1.88	1.88	2.2	2.2
0.75	DHE09SA4	Y	3	3.8	4.5	4.9	5	5	4.2	1.54	1.63	1.73	1.8	1.8	2.1	2.1
1.1	DHE09LA4	Y	4.3	5.4	6.5	7.2	7.3	7.3	6.2	2.1	2.2	2.5	2.6	2.6	2.9	2.9
1.5	DHE09XA4	Y	5.9	7.4	8.9	9.8	9.9	9.9	8.5	2.7	2.9	3.2	3.4	3.4	3.8	3.8
2.2	DHE09XA4C	Y	8.7	10.8	13	14.3	14.5	14.5	12.4	3.8	4.2	4.5	4.8	4.8	5.4	5.4
2.2	DHE09XB4	Y	8.8	11.1	13.3	14.6	14.8	14.8	12.6	3.7	4	4.5	4.7	4.7	5.4	5.4
2.2	DHE11SA4	Y	8.7	10.8	13	14.3	14.5	14.5	12.4	3.6	3.9	4.4	4.6	4.6	5.2	5.3
3	DHE11MA4	Y	12	15	18	19.7	20	20	17.1	4.9	5.4	5.9	6.3	6.3	7.2	7.2
4	DHE11LA4	Y	15.9	19.8	23.5	26	26.5	26.5	22.5	6.9	7.4	8	8.4	8.4	9.5	9.5
5.5	DHE11LA4C	Y	21.5	27	32	35.5	36	36	30.5	8.2	9.2	10.3	11	11	12.5	12.5
5.5	DHE11LB4	Y	21.5	27	32	35.5	36	36	30.5	8.3	9.2	10.3	11	11	12.5	12.5
5.5	DHE13MA4	Y	21.5	27	32	35.5	36	36	30.5	8.2	9.2	10.3	11	11	12.5	12.5
7.5	DHE13LA4	Y	29	36.5	44	48	49	49	42	11.2	12.6	14.1	15	15.1	17.1	17.1
9.5	DHE16MB4	Y	37	46.5	55	61	62	62	53	14.8	16.5	18.4	19.6	19.7	22.5	22.5
11	DHE16LB4	Y	42.5	53	64	70	71	71	61	17.2	19	21.5	22.5	22.5	25.5	25.5
15	DHE16XB4	Y	58	73	87	96	97	97	83	24	26.5	29.5	31	31	35	35.5
18.5	DHE18LB4	Y	72	90	108	118	120	120	102	25	28.5	32.5	35	35	39.5	40
22	DHE18XB4	Y	85	106	127	140	142	142	121	33.5	37	41	43.5	43.5	49.5	49.5

P_N Rated power

M Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter

I Load current for operation with frequency inverter

Field weakening for frequencies above 50 Hz, winding for standard voltage **400 V Y / 50 Hz**, Temperature Class F.

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 30-70 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 50 Hz

50 Hz

IE2 Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz

P_N	Type	Connec-tion	5 Hz M	8.7 Hz M	10 Hz M	20 Hz M	87 Hz M	100 Hz M	5 Hz I	8.7 Hz I	10 Hz I	20 Hz I	87 Hz I	100 Hz I
kW			Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A
0.12	DHE05LA4	D	0.51	0.61	0.63	0.76	0.85	0.85	0.68	0.69	0.7	0.72	0.73	0.8
0.12	DHE05LA4	D	0.49	0.59	0.61	0.73	0.82	0.82	0.62	0.64	0.64	0.67	0.68	0.75
0.18	DHE05LA4	D	0.76	0.92	0.96	1.15	1.28	1.28	0.95	0.98	0.98	1.02	1.04	1.14
0.18	DHE05LA4	D	0.75	0.89	0.93	1.12	1.25	1.25	0.91	0.93	0.94	0.97	0.99	1.09
0.12	DHE06LA4	D	0.51	0.61	0.63	0.76	0.85	0.85	0.68	0.69	0.7	0.72	0.73	0.8
0.12	DHE06LA4	D	0.495	0.59	0.62	0.74	0.83	0.83	0.62	0.64	0.64	0.67	0.68	0.75
0.18	DHE06LA4	D	0.76	0.92	0.96	1.15	1.28	1.28	0.94	0.97	0.97	1	1.03	1.13
0.18	DHE06LA4	D	0.75	0.89	0.93	1.12	1.25	1.25	0.93	0.95	0.95	0.99	1.01	1.11
0.25	DHE07LA4	D	1.05	1.25	1.31	1.57	1.75	1.75	1.22	1.25	1.26	1.32	1.36	1.49
0.25	DHE07LA4	D	1.04	1.25	1.3	1.56	1.74	1.74	1.2	1.23	1.24	1.29	1.32	1.45
0.3	DHE07LA4	D	1.26	1.51	1.57	1.89	2.1	2.1	1.42	1.46	1.47	1.52	1.56	1.71
0.37	DHE08MA4	D	1.47	1.76	1.83	2.2	2.4	2.4	1.72	1.78	1.79	1.86	1.91	2.1
0.37	DHE08MA4	D	1.47	1.76	1.83	2.2	2.4	2.4	1.72	1.77	1.78	1.86	1.91	2.1
0.55	DHE08LA4	D	2.2	2.6	2.8	3.3	3.7	3.7	1.95	2.1	2.1	2.2	2.4	2.6
0.55	DHE08LA4	D	2.2	2.6	2.8	3.3	3.7	3.7	1.99	2.1	2.2	2.3	2.4	2.7
0.75	DHE08XA4	D	3	3.6	3.8	4.5	5	5	2.8	2.9	3	3.2	3.3	3.6
0.75	DHE09SA4	D	3	3.6	3.8	4.5	5	5	2.7	2.8	2.8	3	3.2	3.5
1.1	DHE09LA4	D	4.3	5.2	5.4	6.5	7.3	7.3	3.6	3.8	3.9	4.2	4.5	4.9
1.5	DHE09XA4	D	5.9	7.1	7.4	8.9	9.9	9.9	4.6	5	5.1	5.5	5.9	6.4
2.2	DHE09XA4C	D	8.7	10.4	10.8	13	14.5	14.5	6.7	7.1	7.2	7.8	8.3	9.1
2.2	DHE09XB4	D	8.8	10.6	11.1	13.3	14.8	14.8	6.4	6.9	7	7.7	8.2	9
2.2	DHE11SA4	D	8.7	10.4	10.8	13	14.5	14.5	6.2	6.7	6.8	7.5	8	8.8
3	DHE11MA4	D	12	14.3	15	18	20	20	8.4	9.1	9.3	10.3	11	12
4	DHE11LA4	D	15.9	19	19.8	23.5	26.5	26.5	11.9	12.6	12.8	13.9	14.6	16
5.5	DHE11LA4C	D	21.5	25.5	27	32	36	36	14.2	15.6	15.9	17.8	19.1	21
5.5	DHE11LB4	D	21.5	25.5	27	32	36	36	14.3	15.6	15.9	17.8	19.1	21
5.5	DHE13MA4	D	21.5	25.5	27	32	36	36	14.1	15.5	15.8	17.7	19.1	21
7.5	DHE13LA4	D	29	35	36.5	44	49	49	19.3	21.5	22	24.5	26.5	29
9.5	DHE16MB4	D	37	44.5	46.5	55	62	62	26	28	29	32	34.5	37.5
11	DHE16LB4	D	42.5	51	53	64	71	71	30	32.5	33	36.5	39	43
15	DHE16XB4	D	58	70	73	87	97	97	41.5	45	46	51	54	59
18.5	DHE18LB4	D	72	86	90	108	120	120	43.5	48	49.5	56	61	67
22	DHE18XB4	D	85	102	106	127	142	142	58	63	64	71	76	83

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 87 Hz, winding for
230 V Δ/ 50 Hz (U_{max} = 400 V Δ/87 Hz), Temperature Class F.

The load currents in the table are guideline values for selecting the size of frequency inverter. Load current is lower if the load torque is below the values permitted for 30-100 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 50 Hz

50 Hz

IE3 Motor torques for frequency-converter range 5 Hz - 70 Hz. line frequency 50 Hz

P	Type	Connec-tion	5 Hz	10 Hz	20 Hz	30 Hz	50 Hz	60 Hz	70 Hz	5 Hz	10 Hz	20 Hz	30 Hz	50 Hz	60 Hz	70 Hz
			M	M	M	M	M	M	M	I	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0.12	DPE05LA4	Y	0.49	0.61	0.73	0.81	0.82	0.82	0.7	0.37	0.38	0.395	0.4	0.4	0.455	0.455
0.12	DPE06LA4	Y	0.49	0.61	0.73	0.81	0.82	0.82	0.7	0.38	0.39	0.405	0.41	0.41	0.465	0.465
0.18	DPE07LA4	Y	0.73	0.92	1.1	1.21	1.23	1.23	1.05	0.52	0.53	0.55	0.56	0.56	0.64	0.64
0.25	DPE08MA4	Y	0.99	1.24	1.49	1.63	1.66	1.66	1.42	0.62	0.65	0.69	0.71	0.71	0.81	0.81
0.37	DPE08LA4	Y	1.47	1.83	2.2	2.4	2.4	2.4	2.1	0.92	0.96	1	1.03	1.03	1.17	1.17
0.55	DPE08XA4	Y	2.1	2.7	3.2	3.6	3.6	3.6	3.1	1.19	1.26	1.35	1.4	1.4	1.58	1.59
0.75	DPE08XB4	Y	3	3.8	4.5	4.9	5	5	4.2	1.57	1.67	1.78	1.85	1.86	2.1	2.2
0.75	DPE09LA4	Y	3	3.8	4.5	4.9	5	5	4.2	1.3	1.43	1.57	1.66	1.67	1.89	1.89
1.1	DPE09XA4	Y	4.3	5.4	6.5	7.2	7.3	7.3	6.2	1.9	2.1	2.3	2.4	2.4	2.8	2.8
1.5	DPE09XB4	Y	6	7.5	9	9.8	10	10	8.5	2.6	2.8	3.1	3.2	3.2	3.7	3.7
2.2	DPE09XB4C	Y	8.7	10.8	13	14.3	14.5	14.5	12.4	3.8	4.1	4.5	4.7	4.7	5.4	5.4
2.2	DPE11MA4	Y	8.7	10.8	13	14.3	14.5	14.5	12.4	3.5	3.9	4.3	4.6	4.6	5.2	5.3
3	DPE11LA4	Y	11.8	14.7	17.7	19.4	19.7	19.7	16.8	4.8	5.3	5.9	6.2	6.2	7	7.1
4	DPE11LB4	Y	15.9	19.8	23.5	26	26.5	26.5	22.5	5.7	6.4	7.3	7.8	7.8	8.8	8.9
5.5	DPE11LB4C	Y	21.5	27	32	35.5	36	36	30.5	8.3	9.2	10.3	11	11	12.5	12.5
4	DPE13MA4	Y	15.6	19.5	23	25.5	26	26	22	5.8	6.6	7.4	8	8	9.1	9.1
5.5	DPE13LA4	Y	21.5	27	32	35.5	36	36	30.5	8.9	9.8	10.8	11.5	11.5	13	13.1
7.5	DPE13XA4	Y	29	36.5	44	48	49	49	42	11.5	12.8	14.2	15.1	15.2	17.2	17.2
9.5	DPE16LB4	Y	36.5	45.5	54	60	61	61	52	14.3	16	17.8	19	19.1	22	22
11	DPE16LB4	Y	42.5	53	63	70	71	71	60	16.5	18.4	20.5	22	22	25	25
15	DPE16XB4	Y	58	72	87	95	97	97	83	23	25.5	28.5	30.5	30.5	34.5	34.5
18.5	DPE18LB4	Y	71	89	107	117	119	119	102	26	29.5	33	35.5	35.5	40.5	40.5
22	DPE18XB4	Y	85	106	127	140	142	142	121	29.5	34	38.5	41.5	41.5	47	47
30	DPE20LA4	Y	117	146	175	192	195	195	167	37.5	43	49.5	54	54	61	62
37	DPE22SA4	Y	144	180	215	235	240	240	205	43.5	51	60	65	65	74	74

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 50 Hz, winding for standard voltage **400 V Y / 50 Hz**, Temperature Class F.

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 30-70 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 50 Hz

50 Hz

IE3 Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz

P	Type	Connection	5 Hz	8.7 Hz	10 Hz	20 Hz	87 Hz	100 Hz	5 Hz	8.7 Hz	10 Hz	20 Hz	87 Hz	100 Hz
			M	M	M	M	M	M	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A
0.12	DPE05LA4	D	0.49	0.59	0.61	0.73	0.82	0.82	0.64	0.66	0.66	0.68	0.7	0.76
0.12	DPE06LA4	D	0.49	0.59	0.61	0.73	0.82	0.82	0.66	0.67	0.68	0.7	0.72	0.78
0.18	DPE07LA4	D	0.73	0.88	0.92	1.1	1.23	1.23	0.89	0.91	0.92	0.95	0.97	1.07
0.25	DPE08MA4	D	0.99	1.19	1.24	1.49	1.66	1.66	1.07	1.11	1.13	1.19	1.23	1.35
0.37	DPE08LA4	D	1.47	1.76	1.83	2.2	2.4	2.4	1.59	1.64	1.66	1.73	1.79	1.96
0.55	DPE08XA4	D	2.1	2.6	2.7	3.2	3.6	3.6	2.1	2.2	2.2	2.4	2.5	2.7
0.75	DPE08XB4	D	3	3.6	3.8	4.5	5	5	2.8	2.8	2.9	3.1	3.2	3.6
0.75	DPE09LA4	D	3	3.6	3.8	4.5	5	5	2.2	2.5	2.5	2.8	2.9	3.2
1.1	DPE09XA4	D	4.3	5.2	5.4	6.5	7.3	7.3	3.3	3.6	3.6	4	4.2	4.6
1.5	DPE09XB4	D	6	7.1	7.5	9	10	10	4.4	4.8	4.9	5.3	5.7	6.2
2.2	DPE09XB4C	D	8.7	10.4	10.8	13	14.5	14.5	6.5	7	7.1	7.7	8.2	9
2.2	DPE11MA4	D	8.7	10.4	10.8	13	14.5	14.5	6.1	6.6	6.7	7.5	8	8.8
3	DPE11LA4	D	11.8	14.1	14.7	17.7	19.7	19.7	8.3	9	9.1	10.1	10.8	11.8
4	DPE11LB4	D	15.9	19	19.8	23.5	26.5	26.5	9.9	10.9	11.1	12.5	13.6	14.9
5.5	DPE11LB4C	D	21.5	25.5	27	32	36	36	14.3	15.6	15.9	17.8	19.1	21
4	DPE13MA4	D	15.6	18.7	19.5	23	26	26	10	11.1	11.4	12.8	13.9	15.2
5.5	DPE13LA4	D	21.5	25.5	27	32	36	36	15.3	16.6	16.9	18.7	20	22
7.5	DPE13XA4	D	29	35	36.5	44	49	49	19.9	22	22.5	25	26.5	29
9.5	DPE16LB4	D	36.5	43.5	45.5	54	61	61	25	27.5	28	31	33.5	36.5
11	DPE16LB4	D	42.5	51	53	63	71	71	29	31.5	32	35.5	38.5	42
15	DPE16XB4	D	58	69	72	87	97	97	40	43.5	44.5	49.5	53	58
18.5	DPE18LB4	D	71	85	89	107	119	119	45	49.5	51	57	62	68
22	DPE18XB4	D	85	102	106	127	142	142	52	57	59	67	72	79
30	DPE20LA4	D	117	140	146	175	195	195	65	73	75	86	94	103
37	DPE22SA4	D	144	172	180	215	240	240	76	86	88	103	113	124

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 87 Hz, winding for
230 V Δ / 50 Hz (Umax = 400 V Δ / 87 Hz), Temperature Class F.

The load currents in the table are guideline values for selecting the size of frequency inverter. Load current is lower if the load torque is below the values permitted for 30-100 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 60 Hz

60 Hz

IE1 Motor torques for frequency-converter range 6 Hz - 84 Hz. line frequency 60 Hz

P_N	Type	Connec-tion	6 Hz M	12 Hz M	24 Hz M	36 Hz M	60 Hz M	72 Hz M	84 Hz M	6 Hz I	12 Hz I	24 Hz I	36 Hz I	60 Hz I	72 Hz I	84 Hz I
kW			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0.03	D04LA4	Y	0.115	0.14	0.165	0.18	0.18	0.18	0.15	0.176	0.178	0.18	0.185	0.18	0.205	0.205
0.04	D04LA4	Y	0.145	0.18	0.215	0.235	0.23	0.23	0.18	0.176	0.178	0.18	0.185	0.18	0.205	0.19
0.06	D04LA4	Y	0.22	0.275	0.325	0.355	0.35	0.35	0.3	0.275	0.275	0.28	0.29	0.28	0.32	0.32
0.09	D04LA4	Y	0.33	0.41	0.485	0.53	0.52	0.52	0.445	0.4	0.4	0.4	0.415	0.4	0.455	0.455
0.11	D04LA4	Y	0.38	0.48	0.57	0.63	0.64	0.64	0.57	0.42	0.42	0.42	0.42	0.42	0.465	0.475
0.12	D04LA4	Y	0.445	0.55	0.65	0.71	0.7	0.63	0.465	0.41	0.415	0.42	0.435	0.42	0.435	0.415
0.06	D05LA4	Y	0.22	0.275	0.325	0.355	0.35	0.35	0.3	0.28	0.295	0.315	0.33	0.32	0.365	0.365
0.09	D05LA4	Y	0.33	0.41	0.485	0.53	0.52	0.52	0.445	0.335	0.34	0.35	0.36	0.35	0.395	0.4
0.12	D05LA4	Y	0.445	0.55	0.65	0.71	0.7	0.7	0.53	0.345	0.36	0.375	0.395	0.38	0.43	0.385
0.18	D05LA4	Y	0.67	0.83	0.99	1.08	1.06	1.06	0.87	0.54	0.56	0.58	0.6	0.58	0.66	0.64
0.25	D05LA4	Y	0.92	1.14	1.36	1.48	1.45	1.45	1.15	0.78	0.79	0.8	0.83	0.8	0.91	0.85
0.06	D06LA4	Y	0.22	0.275	0.325	0.355	0.35	0.35	0.3	0.28	0.295	0.315	0.33	0.32	0.365	0.365
0.09	D06LA4	Y	0.33	0.41	0.485	0.53	0.52	0.52	0.445	0.335	0.34	0.35	0.36	0.35	0.395	0.4
0.12	D06LA4	Y	0.445	0.55	0.65	0.71	0.7	0.7	0.53	0.345	0.36	0.375	0.395	0.38	0.43	0.385
0.18	D06LA4	Y	0.67	0.83	0.99	1.08	1.06	1.06	0.87	0.54	0.56	0.58	0.6	0.58	0.66	0.64
0.25	D06LA4	Y	0.92	1.14	1.36	1.48	1.45	1.45	1.15	0.78	0.79	0.8	0.83	0.8	0.91	0.85
0.3	D07LA4	Y	1.12	1.38	1.65	1.8	1.76	1.76	1.5	1.18	1.19	1.2	1.24	1.2	1.36	1.36
0.37	D07LA4	Y	1.37	1.69	2	2.2	2.1	2.1	1.64	1.24	1.25	1.26	1.3	1.26	1.43	1.28
0.37	D08MA4	Y	1.31	1.61	1.92	2.1	2	2	1.75	0.93	0.97	1.01	1.05	1.02	1.16	1.16
0.55	DSE08MA4	Y	1.86	2.3	2.8	3	3.1	3.1	2.8	1.14	1.19	1.25	1.28	1.28	1.42	1.45
0.75	DSE08LA4	Y	2.5	3.1	3.8	4.1	4.2	4.2	3.8	1.51	1.59	1.69	1.75	1.75	1.94	1.98
1.1	DSE08XA4	Y	3.7	4.6	5.5	6.1	6.2	6.2	5.2	2.2	2.3	2.4	2.5	2.5	2.8	2.6
1.1	DSE09SA4	Y	3.6	4.5	5.4	5.9	6	6	5.4	1.96	2.1	2.2	2.3	2.3	2.6	2.6
1.5	DSE09LA4	Y	5	6.1	7.4	8.1	8.2	8.2	7.4	2.6	2.8	3	3.1	3.1	3.5	3.6
2.2	DSE09XA4	Y	7.3	9.1	10.9	12	12.2	12.2	10.9	3.5	3.8	4.1	4.3	4.3	4.8	4.9
3	DSE11SA4	Y	9.8	12.3	14.7	16.2	16.4	16.4	14.7	4.3	4.7	5.2	5.5	5.5	6.1	6.3
4	DSE11MA4	Y	13.1	16.4	19.7	21.5	21.5	21.5	19.7	5.4	6.1	6.8	7.2	7.2	8	8.2
5.5	DSE11LA4	Y	18.1	22.5	27	29.5	30	30	27	7.3	8.1	9.1	9.7	9.7	10.8	11
7.5	DSE13MA4	Y	24.5	30.5	36.5	40	41	41	36.5	10	11.1	12.4	13.2	13.3	14.8	15.1
9.5	DSE13LA4	Y	31	39	46.5	51	52	52	46.5	12.2	13.7	15.4	16.5	16.6	18.4	18.8
11	DSE16MB4	Y	35.5	44.5	53	58	59	59	53	14	15.8	17.9	19.2	19.3	21.5	22
15	DSE16LB4	Y	48.5	60	72	80	81	81	72	17.7	20.5	23.5	25.5	25.5	28.5	29
18.5	DSE16XB4	Y	60	75	90	98	100	100	90	23.5	26.5	30	32	32	35.5	36.5
22	DSE18LB4	Y	72	90	108	118	120	120	108	24.5	28.5	33	36	36	40	41
30	DSE18XB4	Y	97	121	145	160	162	162	145	34.5	39.5	45	48.5	49	55	56

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P_N Rated power

M Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter

I Load current for operation with frequency inverter

Field weakening for frequencies above 60 Hz, winding for standard voltage **460 V Y / 60 Hz**, Temperature Class F.

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-84 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 60 Hz

60 Hz

IE1 Motor torques for frequency-converter range 6 Hz - 120 Hz. line frequency 60 Hz

P_N	Type	Connec-tion	6 Hz M	12 Hz M	24 Hz M	36 Hz M	104 Hz M	120 Hz M	6 Hz I	12 Hz I	24 Hz I	36 Hz I	104 Hz I	120 Hz I
kW			Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A
0.03	D04LA4	D	0.115	0.14	0.165	0.18	0.18	0.18	0.305	0.31	0.315	0.325	0.315	0.345
0.04	D04LA4	D	0.145	0.18	0.215	0.235	0.23	0.23	0.305	0.31	0.315	0.325	0.315	0.345
0.06	D04LA4	D	0.22	0.275	0.325	0.355	0.35	0.35	0.47	0.475	0.485	0.5	0.485	0.54
0.09	D04LA4	D	0.33	0.41	0.485	0.53	0.52	0.52	0.69	0.69	0.7	0.72	0.7	0.77
0.11	D04LA4	D	0.38	0.48	0.57	0.63	0.64	0.64	0.73	0.73	0.73	0.73	0.73	0.8
0.12	D04LA4	D	0.445	0.55	0.65	0.71	0.7	0.69	0.71	0.72	0.73	0.75	0.73	0.79
0.06	D05LA4	D	0.22	0.275	0.325	0.355	0.35	0.35	0.48	0.51	0.55	0.57	0.56	0.61
0.09	D05LA4	D	0.33	0.41	0.485	0.53	0.52	0.52	0.58	0.59	0.61	0.63	0.61	0.67
0.12	D05LA4	D	0.445	0.55	0.65	0.71	0.7	0.7	0.6	0.62	0.65	0.68	0.66	0.73
0.18	D05LA4	D	0.67	0.83	0.99	1.08	1.06	1.06	0.93	0.96	1	1.04	1.01	1.11
0.25	D05LA4	D	0.92	1.14	1.36	1.48	1.45	1.45	1.34	1.36	1.38	1.43	1.39	1.53
0.06	D06LA4	D	0.22	0.275	0.325	0.355	0.35	0.35	0.48	0.51	0.55	0.57	0.56	0.61
0.09	D06LA4	D	0.33	0.41	0.485	0.53	0.52	0.52	0.58	0.59	0.61	0.63	0.61	0.67
0.12	D06LA4	D	0.445	0.55	0.65	0.71	0.7	0.7	0.6	0.62	0.65	0.68	0.66	0.73
0.18	D06LA4	D	0.67	0.83	0.99	1.08	1.06	1.06	0.93	0.96	1	1.04	1.01	1.11
0.25	D06LA4	D	0.92	1.14	1.36	1.48	1.45	1.45	1.34	1.36	1.38	1.43	1.39	1.53
0.3	D07LA4	D	1.12	1.38	1.65	1.8	1.76	1.76	2.1	2.1	2.1	2.2	2.1	2.3
0.37	D07LA4	D	1.37	1.69	2	2.2	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.4
0.37	D08MA4	D	1.31	1.61	1.92	2.1	2	2	1.6	1.67	1.74	1.82	1.77	1.95
0.55	DSE08MA4	D	1.86	2.3	2.8	3	3.1	3.1	1.97	2.1	2.2	2.2	2.2	2.5
0.75	DSE08LA4	D	2.5	3.1	3.8	4.1	4.2	4.2	2.7	2.8	3	3.1	3.1	3.4
1.1	DSE08XA4	D	3.7	4.6	5.5	6.1	6.2	6.2	3.8	4	4.2	4.2	4.2	4.7
1.1	DSE09SA4	D	3.6	4.5	5.4	5.9	6	6	3.4	3.6	3.8	4	4	4.4
1.5	DSE09LA4	D	5	6.1	7.4	8.1	8.2	8.2	4.5	4.8	5.2	5.4	5.4	6
2.2	DSE09XA4	D	7.3	9.1	10.9	12	12.2	12.2	6	6.5	7.1	7.4	7.5	8.2
3	DSE11SA4	D	9.8	12.3	14.7	16.2	16.4	16.4	7.4	8.2	9	9.5	9.6	10.5
4	DSE11MA4	D	13.1	16.4	19.7	21.5	21.5	21.5	9.4	10.5	11.7	12.4	12.5	13.8
5.5	DSE11LA4	D	18.1	22.5	27	29.5	30	30	12.6	14.1	15.7	16.7	16.9	18.5
7.5	DSE13MA4	D	24.5	30.5	36.5	40	41	41	17.2	19.3	21.5	23	23.5	25.5
9.5	DSE13LA4	D	31	39	46.5	51	52	52	21.5	24	27	28.5	29	32
11	DSE16MB4	D	35.5	44.5	53	58	59	59	24.5	27.5	31	33.5	33.5	37
15	DSE16LB4	D	48.5	60	72	80	81	81	31	35.5	40.5	43.5	44	48.5
18.5	DSE16XB4	D	60	75	90	98	100	100	40.5	45.5	52	55	56	61
22	DSE18LB4	D	72	90	108	118	120	120	42	49	57	62	63	69
30	DSE18XB4	D	97	121	145	160	162	162	59	68	78	84	85	94

P_N Rated power

M Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter

I Load current for operation with frequency inverter

Field weakening for frequencies above 87 Hz, winding for standard voltage 265 V Δ / 60 Hz (U_{max} = 460 V Δ / 104 Hz), Temperature Class F.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-120 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 60 Hz

60 Hz

IE2 Motor torques for frequency-converter range 5 Hz - 80 Hz, line frequency 60 Hz

P	Type	Connec-tion	5 Hz	10 Hz	20 Hz	30 Hz	60 Hz	70 Hz	80 Hz	5 Hz	10 Hz	20 Hz	30 Hz	60 Hz	70 Hz	80 Hz
			M	M	M	M	M	M	M	I	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0.12	DHE05LA4	Y	0.4	0.5	0.6	0.66	0.67	0.67	0.6	0.335	0.345	0.355	0.36	0.36	0.4	0.41
0.18	DHE05LA4	Y	0.6	0.75	0.9	0.99	1.01	1.01	0.9	0.485	0.5	0.51	0.52	0.52	0.58	0.59
0.12	DHE06LA4	Y	0.4	0.5	0.6	0.66	0.67	0.67	0.6	0.34	0.35	0.355	0.36	0.36	0.4	0.41
0.18	DHE06LA4	Y	0.6	0.75	0.9	0.99	1.01	1.01	0.9	0.495	0.51	0.52	0.53	0.53	0.59	0.6
0.25	DHE07LA4	Y	0.84	1.05	1.26	1.38	1.4	1.4	1.26	0.65	0.67	0.69	0.7	0.7	0.78	0.8
0.3	DHE07LA4	Y	1.02	1.27	1.53	1.67	1.7	1.7	1.53	0.76	0.78	0.81	0.82	0.82	0.91	0.93
0.37	DHE08MA4	Y	1.2	1.5	1.8	1.97	2	2	1.8	0.9	0.94	0.97	0.99	0.99	1.1	1.12
0.55	DHE08LA4	Y	1.83	2.2	2.7	3	3	3	2.7	1.05	1.11	1.18	1.23	1.23	1.37	1.39
0.75	DHE08XA4	Y	2.4	3.1	3.7	4.1	4.1	4.1	3.7	1.45	1.5	1.56	1.6	1.6	1.78	1.81
0.75	DHE09SA4	Y	2.4	3.1	3.7	4.1	4.1	4.1	3.7	1.34	1.43	1.53	1.6	1.6	1.78	1.81
1.1	DHE09LA4	Y	3.6	4.5	5.4	5.9	6	6	5.4	1.85	1.99	2.2	2.2	2.2	2.5	2.6
1.5	DHE09XA4	Y	4.9	6.1	7.3	8.1	8.2	8.2	7.3	2.4	2.6	2.8	3	3	3.3	3.4
2.2	DHE09XA4C	Y	7.2	9	10.8	11.8	12	12	10.8	3.3	3.6	3.8	4	4	4.5	4.5
2.2	DHE09XB4	Y	7.2	9	10.8	11.9	12.1	12.1	10.8	3.2	3.6	3.9	4.1	4.1	4.5	4.7
2.2	DHE11SA4	Y	7.2	9	10.8	11.8	12	12	10.8	3.1	3.5	3.8	4	4	4.5	4.5
3	DHE11MA4	Y	9.9	12.3	14.8	16.2	16.5	16.5	14.8	4.2	4.7	5.2	5.5	5.5	6.1	6.3
4	DHE11LA4	Y	13	16.2	19.5	21	21.5	21.5	19.5	6.2	6.6	7	7.3	7.3	8.1	8.3
5.5	DHE11LA4C	Y	18	22.5	27	29.5	30	30	27	7.2	8	8.9	9.5	9.5	10.6	10.8
5.5	DHE11LB4	Y	18	22.5	27	29.5	30	30	27	7.5	8.2	9.1	9.6	9.6	10.7	10.9
5.5	DHE13MA4	Y	18	22.5	27	29.5	30	30	27	7.3	8.1	9.1	9.7	9.7	10.8	11
7.5	DHE13LA4	Y	24	30	36	40	40.5	40.5	36	9.9	11	12.3	13.1	13.2	14.7	15
9.5	DHE16LB4	Y	30.5	38	45.5	50	51	51	45.5	12.4	13.9	15.4	16.4	16.5	18.3	18.7
11	DHE16LB4	Y	35	44	53	58	59	59	53	15	16.6	18.4	19.5	19.6	22	22.5
15	DHE16XB4	Y	48.5	60	72	80	81	81	72	21	23	25.5	27	27	30	31
18.5	DHE18LB4	Y	60	75	90	98	100	100	90	22	25.5	29	31	31	34.5	35.5
22	DHE18XB4	Y	70	88	106	116	118	118	106	29.5	32.5	36	38.5	38.5	43	43.5

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 60 Hz, winding for standard voltage **460 V Y / 60 Hz**, Temperature Class F.

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-84 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 60 Hz

60 Hz

IE2 Motor torques for frequency-converter range 5 Hz - 120 Hz. line frequency 60 Hz

P	Typ	Connection	5 Hz	10 Hz	20 Hz	30 Hz	104 Hz	120 Hz	5 Hz	10 Hz	20 Hz	30 Hz	104 Hz	120 Hz
			M	M	M	M	M	M	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A
0.12	DHE05LA4	D	0.4	0.5	0.6	0.66	0.67	0.67	0.58	0.6	0.62	0.63	0.63	0.69
0.18	DHE05LA4	D	0.6	0.75	0.9	0.99	1.01	1.01	0.84	0.86	0.89	0.9	0.91	0.99
0.12	DHE06LA4	D	0.4	0.5	0.6	0.66	0.67	0.67	0.59	0.6	0.62	0.63	0.63	0.69
0.18	DHE06LA4	D	0.6	0.75	0.9	0.99	1.01	1.01	0.86	0.88	0.91	0.92	0.92	1.01
0.25	DHE07LA4	D	0.84	1.05	1.26	1.38	1.4	1.4	1.12	1.15	1.19	1.21	1.22	1.34
0.3	DHE07LA4	D	1.02	1.27	1.53	1.67	1.7	1.7	1.3	1.35	1.39	1.42	1.43	1.57
0.37	DHE08MA4	D	1.2	1.5	1.8	1.97	2	2	1.56	1.62	1.68	1.71	1.72	1.89
0.55	DHE08LA4	D	1.83	2.2	2.7	3	3	3	1.81	1.92	2.1	2.2	2.2	2.4
0.75	DHE08XA4	D	2.4	3.1	3.7	4.1	4.1	4.1	2.6	2.6	2.7	2.8	2.8	3.1
0.75	DHE09SA4	D	2.4	3.1	3.7	4.1	4.1	4.1	2.4	2.5	2.7	2.8	2.8	3.1
1.1	DHE09LA4	D	3.6	4.5	5.4	5.9	6	6	3.2	3.5	3.8	3.9	3.9	4.3
1.5	DHE09XA4	D	4.9	6.1	7.3	8.1	8.2	8.2	4.2	4.5	4.9	5.1	5.2	5.7
2.2	DHE09XA4C	D	7.2	9	10.8	11.8	12	12	5.7	6.1	6.6	6.9	7	7.7
2.2	DHE09XB4	D	7.2	9	10.8	11.9	12.1	12.1	5.7	6.2	6.7	7.1	7.2	7.9
2.2	DHE11SA4	D	7.2	9	10.8	11.8	12	12	5.4	5.9	6.5	6.9	7	7.7
3	DHE11MA4	D	9.9	12.3	14.8	16.2	16.5	16.5	7.4	8.1	9	9.5	9.6	10.5
4	DHE11LA4	D	13	16.2	19.5	21	21.5	21.5	10.7	11.4	12.2	12.6	12.7	13.9
5.5	DHE11LA4C	D	18	22.5	27	29.5	30	30	12.4	13.8	15.4	16.4	16.5	18.1
5.5	DHE11LB4	D	18	22.5	27	29.5	30	30	12.9	14.2	15.6	16.5	16.7	18.3
5.5	DHE13MA4	D	18	22.5	27	29.5	30	30	12.6	14.1	15.7	16.7	16.9	18.5
7.5	DHE13LA4	D	24	30	36	40	40.5	40.5	17.1	19.1	21.5	23	23	25.5
9.5	DHE16LB4	D	30.5	38	45.5	50	51	51	21.5	24	27	28.5	29	31.5
11	DHE16LB4	D	35	44	53	58	59	59	26	29	32	34	34	37.5
15	DHE16XB4	D	48.5	60	72	80	81	81	36.5	40	44	46.5	47	52
18.5	DHE18LB4	D	60	75	90	98	100	100	38	43.5	49.5	54	54	60
22	DHE18XB4	D	70	88	106	116	118	118	51	56	63	67	67	74

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 87 Hz, winding for standard voltage 265 V Δ / 60 Hz (U_{max} = 460 V Δ / 104 Hz), Temperature Class F.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-120 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 60 Hz

60 Hz

IE3 Motor torques for frequency-converter range 5 Hz - 80 Hz, line frequency 60 Hz

P	Type	Connec-tion	5 Hz	10 Hz	20 Hz	30 Hz	60 Hz	70 Hz	80 Hz	5 Hz	10 Hz	20 Hz	30 Hz	60 Hz	70 Hz	80 Hz
			M	M	M	M	M	M	M	I	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A	A
0.12	DPE05LA4	Y	0.4	0.5	0.6	0.66	0.67	0.67	0.6	0.345	0.355	0.365	0.37	0.37	0.41	0.42
0.12	DPE06LA4	Y	0.4	0.5	0.6	0.66	0.67	0.67	0.6	0.35	0.36	0.365	0.37	0.37	0.41	0.42
0.18	DPE07LA4	Y	0.6	0.75	0.9	0.98	1	1	0.9	0.48	0.495	0.51	0.52	0.52	0.58	0.59
0.25	DPE08MA4	Y	0.82	1.02	1.23	1.35	1.37	1.37	1.23	0.57	0.6	0.63	0.65	0.65	0.72	0.74
0.37	DPE08LA4	Y	1.2	1.5	1.8	1.97	2	2	1.8	0.85	0.88	0.92	0.94	0.94	1.05	1.07
0.55	DPE08XA4	Y	1.8	2.2	2.7	2.9	3	3	2.7	1.08	1.14	1.21	1.25	1.25	1.39	1.42
0.75	DPE08XB4	Y	2.4	3.1	3.7	4.1	4.1	4.1	3.7	1.43	1.51	1.61	1.67	1.67	1.85	1.89
0.75	DPE09LA4	Y	2.4	3	3.6	4	4.1	4.1	3.6	1.16	1.26	1.37	1.44	1.45	1.61	1.64
1.1	DPE09XB4	Y	3.6	4.5	5.4	5.9	6	6	5.4	1.8	1.94	2.1	2.2	2.2	2.5	2.5
1.5	DPE09XB4	Y	4.9	6.1	7.3	8.1	8.2	8.2	7.3	2.4	2.6	2.8	2.9	2.9	3.2	3.3
2.2	DPE11LB4	Y	7.1	8.9	10.7	11.7	11.9	11.9	10.7	2.8	3.1	3.5	3.7	3.7	4.1	4.2
3	DPE11LB4	Y	9.7	12.2	14.6	16.1	16.3	16.3	14.6	3.9	4.4	4.9	5.2	5.2	5.8	5.9
4	DPE11LB4	Y	13	16.2	19.5	21	21.5	21.5	19.5	5.2	5.8	6.5	6.9	6.9	7.7	7.8
4	DPE13MA4	Y	12.9	16.2	19.4	21	21.5	21.5	19.4	5.2	5.8	6.5	7	7	7.8	8
5.5	DPE13XA4	Y	17.7	22	26.5	29	29.5	29.5	26.5	7.2	8	8.9	9.5	9.5	10.6	10.8
7.5	DPE13XA4	Y	24	30	36	40	40.5	40.5	36	10.2	11.3	12.4	13.1	13.2	14.7	15
9.5	DPE16LB4	Y	30.5	38	45.5	50	51	51	45.5	12.7	14.1	15.6	16.6	16.7	18.5	18.9
11	DPE16LB4	Y	35	44	53	58	59	59	53	14.6	16.3	18.1	19.2	19.3	21.5	22
15	DPE16XB4	Y	48	60	72	79	80	80	72	19.9	22.5	24.5	26	26.5	29.5	30
18.5	DPE18LB4	Y	59	74	89	97	99	99	89	23	26	29	31	31	34.5	35.5
22	DPE18XB4	Y	70	88	106	116	118	118	106	26.5	30	34	36.5	36.5	40.5	41.5
30	DPE20LA4	Y	96	120	144	158	160	160	144	33.5	38	43.5	47	47	53	54
37	DPE22SA4	Y	120	150	180	197	200	200	180	39	45	52	56	57	63	64

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 60 Hz, winding for standard voltage **460 V Y / 60 Hz**, Temperature Class F.

Motors with standard windings can be switched from Y- to Δ- circuit for operation with a converter having a single-phase mains connection. This has no effect on the torques and frequencies as listed in the table above. As regards the choice of converter, however, note that currents are higher than those of the Y-circuit by a factor of 1.73.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-84 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.

Operation with frequency converter, 60 Hz

60 Hz

IE3 Motor torques for frequency-converter range 5 Hz - 120 Hz, line frequency 60 Hz

P	Type	Connection	5 Hz	10 Hz	20 Hz	30 Hz	104 Hz	120 Hz	5 Hz	10 Hz	20 Hz	30 Hz	104 Hz	120 Hz
			M	M	M	M	M	M	I	I	I	I	I	I
kW			Nm	Nm	Nm	Nm	Nm	Nm	A	A	A	A	A	A
0.12	DPE05LA4	D	0.4	0.5	0.6	0.66	0.67	0.67	0.6	0.62	0.63	0.64	0.65	0.71
0.12	DPE06LA4	D	0.4	0.5	0.6	0.66	0.67	0.67	0.61	0.62	0.64	0.64	0.65	0.71
0.18	DPE07LA4	D	0.6	0.75	0.9	0.98	1	1	0.83	0.86	0.89	0.9	0.91	0.99
0.25	DPE08MA4	D	0.82	1.02	1.23	1.35	1.37	1.37	0.99	1.04	1.09	1.13	1.13	1.24
0.37	DPE08LA4	D	1.2	1.5	1.8	1.97	2	2	1.47	1.52	1.59	1.63	1.63	1.79
0.55	DPE08XA4	D	1.8	2.2	2.7	2.9	3	3	1.87	1.98	2.1	2.2	2.2	2.4
0.75	DPE08XB4	D	2.4	3.1	3.7	4.1	4.1	4.1	2.5	2.7	2.8	2.9	2.9	3.2
0.75	DPE09LA4	D	2.4	3	3.6	4	4.1	4.1	2.1	2.2	2.4	2.5	2.6	2.8
1.1	DPE09XB4	D	3.6	4.5	5.4	5.9	6	6	3.2	3.4	3.7	3.8	3.8	4.2
1.5	DPE09XB4	D	4.9	6.1	7.3	8.1	8.2	8.2	4	4.4	4.8	5	5.1	5.6
2.2	DPE11LB4	D	7.1	8.9	10.7	11.7	11.9	11.9	4.7	5.3	6	6.4	6.5	7.1
3	DPE11LB4	D	9.7	12.2	14.6	16.1	16.3	16.3	6.7	7.5	8.4	9	9.1	9.9
4	DPE11LB4	D	13	16.2	19.5	21	21.5	21.5	8.9	10	11.2	11.9	12	13.2
4	DPE13MA4	D	12.9	16.2	19.4	21	21.5	21.5	8.9	10	11.3	12.1	12.2	13.4
5.5	DPE13XA4	D	17.7	22	26.5	29	29.5	29.5	12.4	13.8	15.4	16.4	16.5	18.1
7.5	DPE13XA4	D	24	30	36	40	40.5	40.5	17.6	19.5	21.5	23	23	25.5
9.5	DPE16LB4	D	30.5	38	45.5	50	51	51	22	24.5	27.5	29	29	32
11	DPE16LB4	D	35	44	53	58	59	59	25.5	28.5	31.5	33.5	33.5	37
15	DPE16XB4	D	48	60	72	79	80	80	34.5	38.5	42.5	45.5	45.5	50
18.5	DPE18LB4	D	59	74	89	97	99	99	39.5	44.5	50	54	54	60
22	DPE18XB4	D	70	88	106	116	118	118	45.5	52	59	63	64	70
30	DPE20LA4	D	96	120	144	158	160	160	58	66	75	81	82	90
37	DPE22SA4	D	120	150	180	197	200	200	67	78	90	97	98	108

P_N	Rated power
M	Permissible load torque (S1-100 %) at the rotor shaft by operation with a frequency inverter
I	Load current for operation with frequency inverter

Field weakening for frequencies above 87 Hz, winding for standard voltage 265 V Δ / 60 Hz (U_{max} = 460 V Δ / 104 Hz), Temperature Class F.

The load currents in the table are guideline values for selecting the size of frequency converter. Load current is lower if the load torque is below the values permitted for 36-120 Hz and the frequency inverter used is of the high-grade type. This means that a smaller inverter can sometimes be used, particularly in conjunction with large motors.