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Motors

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-Type S.XE.09XA4-..	568
-Type S.XE.11SA6-..	570
-Type S.XE.11MA6-..	572
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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 In November 2009 it superseded Directive 2005/32/EC, which formed the framework for requirements for the environmentally responsible design of energy-using products (EuPs).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 product
- 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 P_N between 0.12 kW and 1000 kW
- Rated voltage U_N over 50 V up to and including 1,000 V
- are designed for continuous operation ($S1$, $S3 \geq 80\%$ ED, $S6 \geq 80\%$ 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 starting 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:
S04LA4 - S09XA4	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
	460 V Y / 60 HZ
from S11SA4	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 Hz
	460 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 S04 to S..11 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).

BAUER

73734 Esslingen
Made in Germany

3-Mot.-No E 11242943 - 1

A/ 188Z9641

11/2021

Type BF80Z-44/S09SA4-TF/C2-SP

PMSM 2p=4	U-VSD 380...500V 50/60 HZ	IE4-89,2 %	F/155 °C	50 HZ		
1,5 kW	n _r 1500 1/rev	n ₀ 1,3 1/rev	M ₀ 1200 Nm	IB 0,94 2,9 A		
Hz	kW	A	n ₁ [1/rev]	M ₁ [Nm]	n ₀ [1/rev]	M ₀ [Nm]
5	0,13	2,6	150	8,5	0,13	9500
16,66	0,52	3,1	500	10	0,44	11200
33,33	1,05	3,1	1000	10	0,85	11200
50	1,5	2,9	1500	10	1,3	11200
60	1,9	3,1	1800	10	1,6	11200

IM H4/V2 15°

IP65

21/1,2 L CPL 220

PTC

tamb -20... 40 °C

S1

i1124

Ld/Lq E4, 1/1000,0 mH

R-St.4,950 Ω

Ke 208 V/1000 min-1

kt 3,20 Nm/A

IE4 acc. IEC 60034-30-2 TS:2/1813/CD

339,9 kg

CE

EN 60034
SCH1B

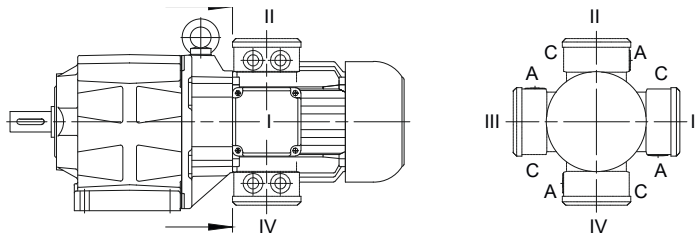
PMSM Permanent Magnet Synchron Motor

USE WITH VARIABLE SPEED DRIVE
INVERTER DUTY

Mot-Nr: 11242943

Terminal box

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

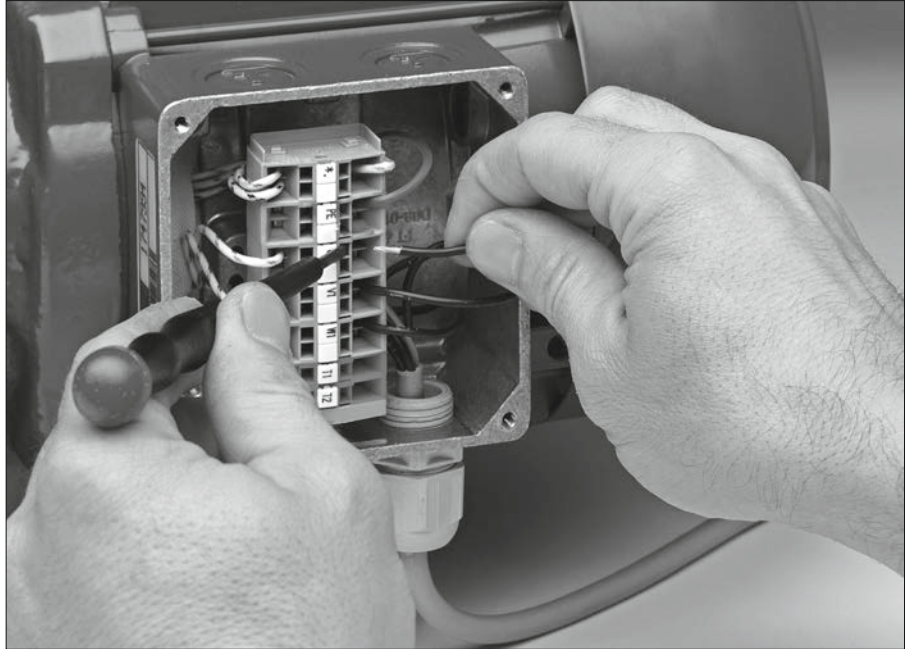


The standard position for the motor terminal box is shown in the dimensional drawings for the geared motors (see chapter 10,11,12 and 13). The terminal box can be installed at any of 3 other positions on request, if on-site space is restricted. The 4 possible positions are 90° off-sets around the axis 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 (TBL...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 mm² to 25 mm².

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

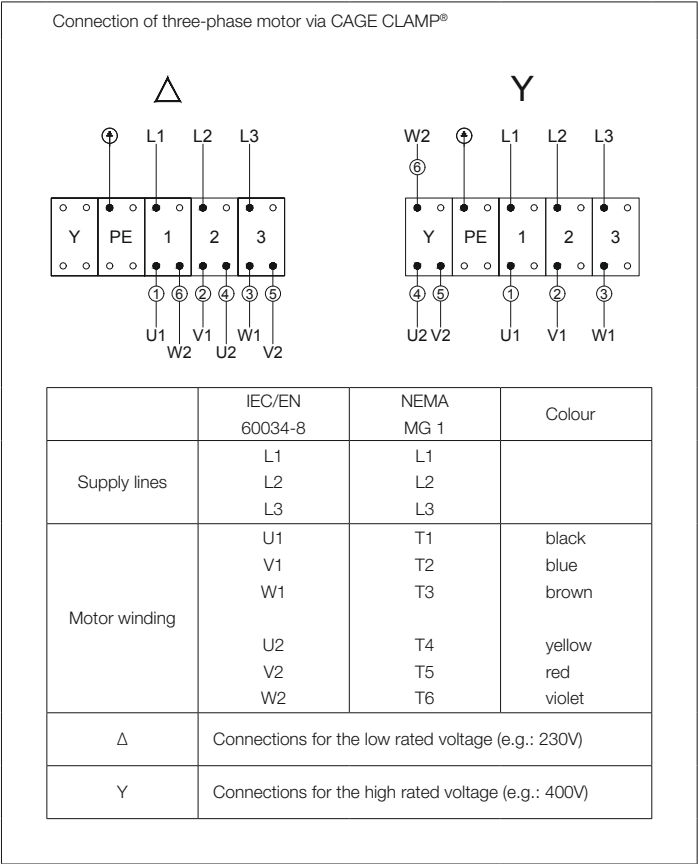
Vibration and shock result neither in conductor damage nor in a measurable contact interruption. The connection is service free.

Type of conductors

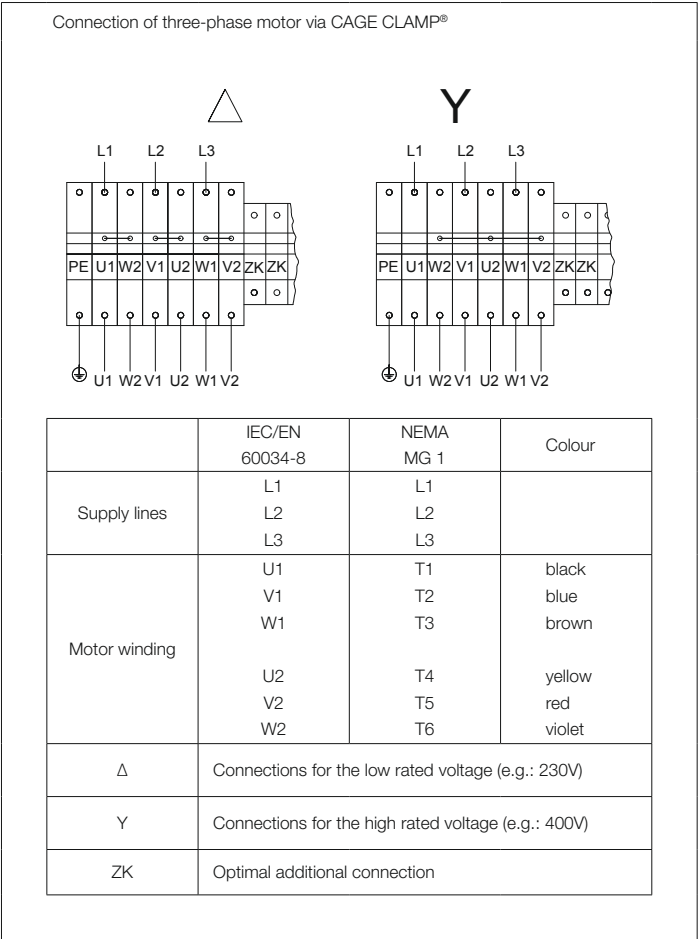
The CAGE CLAMP®-connector can clamp fine stranded, stranded and solid cores wires.

Terminal connections for single speed
motors

Standard connection of three phase motors via CAGE CLAMP®.
S04.. - S..09..

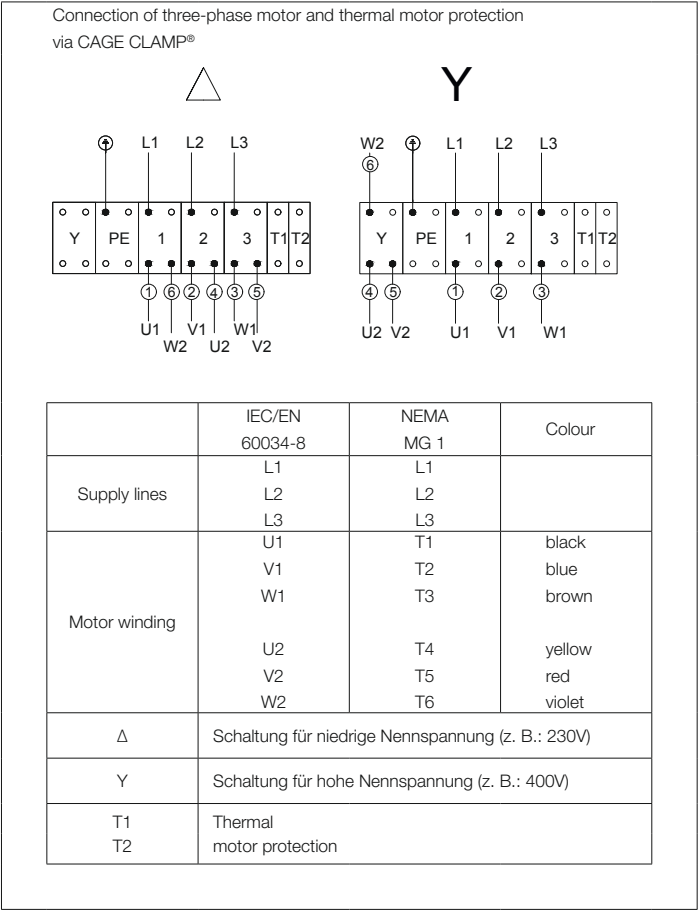


S..11

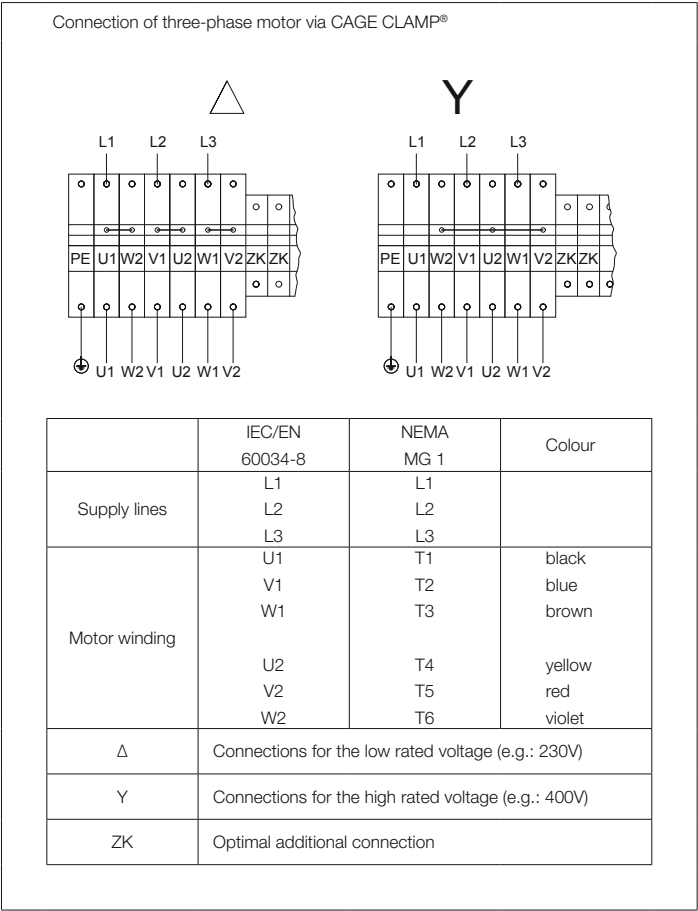


Terminal connections for single speed motors with thermal motor protection

Standard connection of three phase motors with thermal motor protection via CAGE CLAMP®. S04.. - S..09..

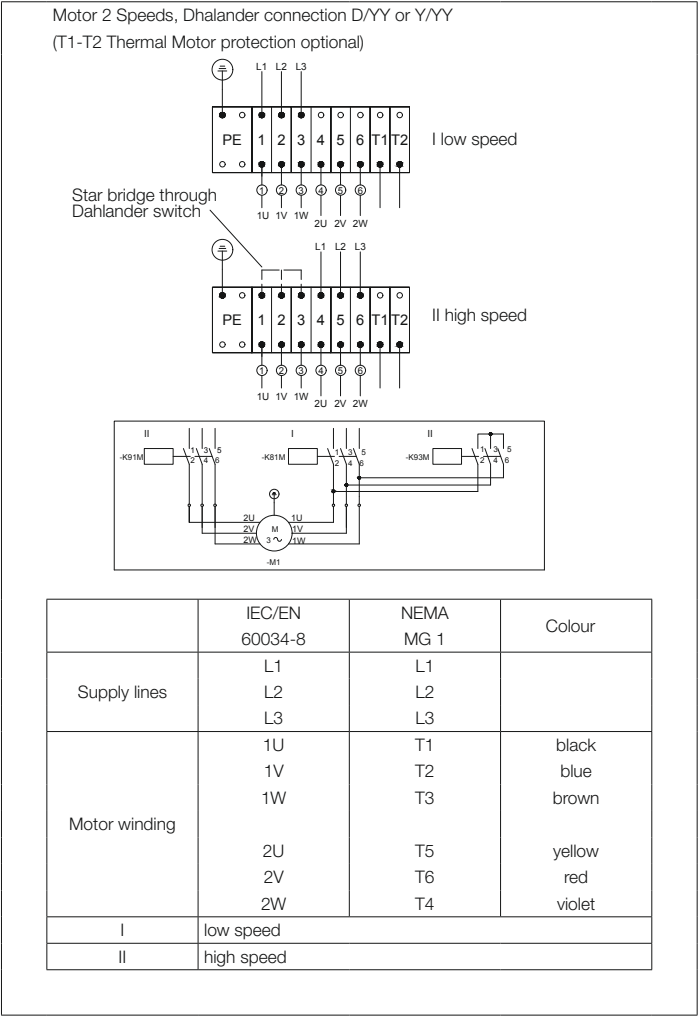


S..11

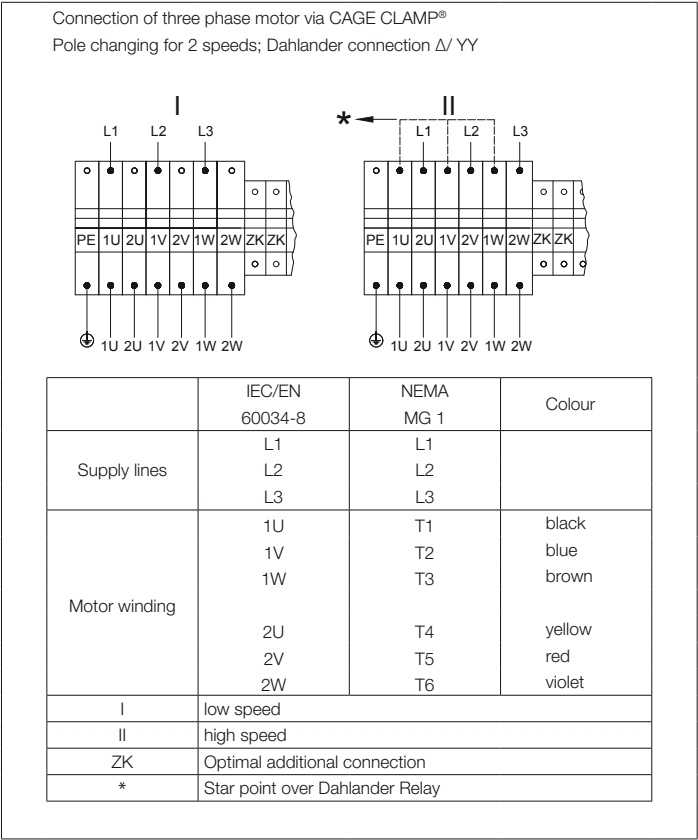


Terminal connections for pole
changing motors in Dahlander
connection (Δ/YY or Y/YY)

Standard connection of three phase motors without motor protection via CAGE CLAMP®.
S04.. - S..09..



S..11



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®.
S..04.. - S..09..

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

I: slow speed

II: high speed

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

S..11..

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

I

II

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

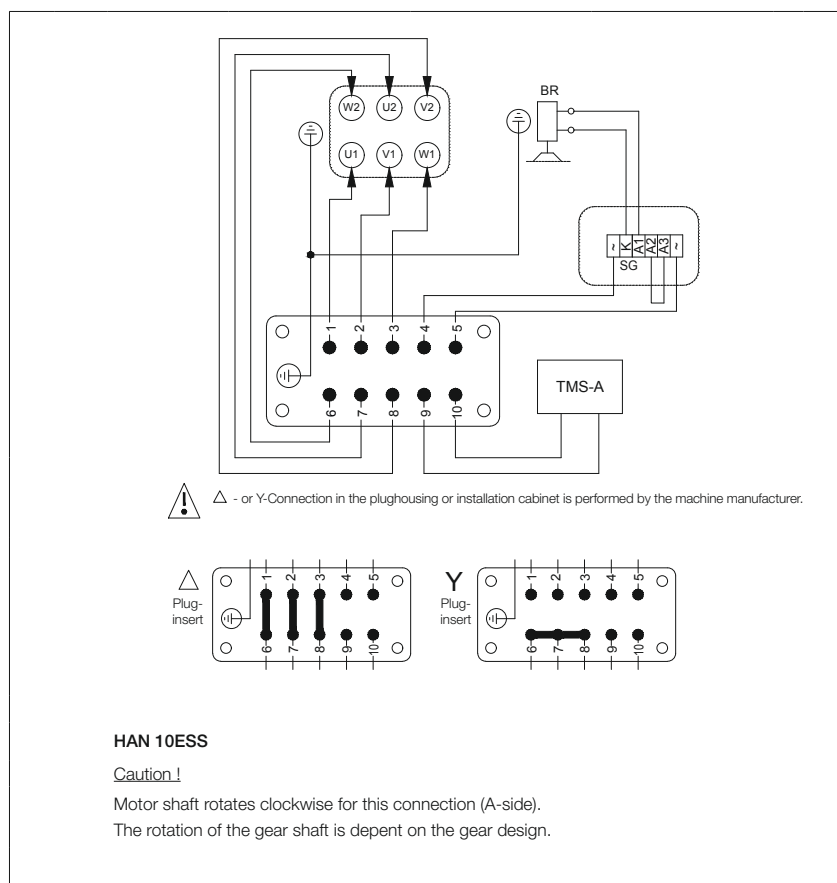
Plug-and-socket connection

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 16 "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.

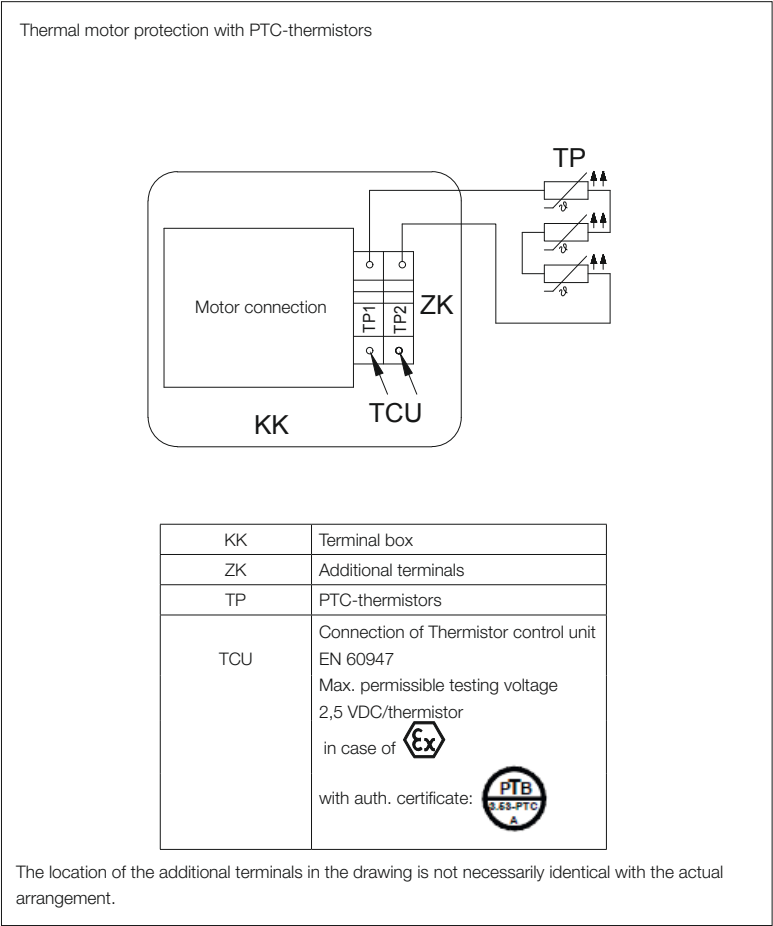
Bauer motors from S..08.. with motor-mounted brake are also available with plug-in brake connection. This means that if it requires attention, the brake can be replaced on site with no loss of time.

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.

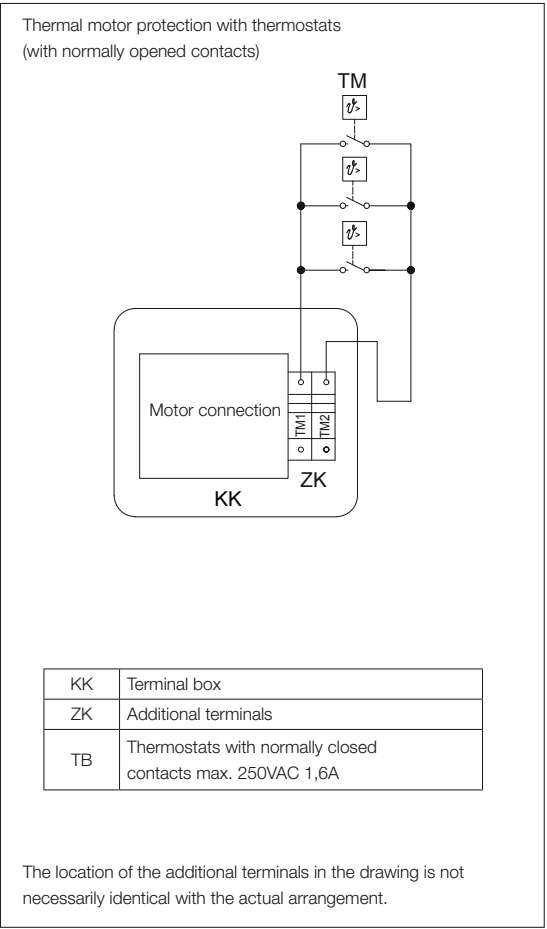
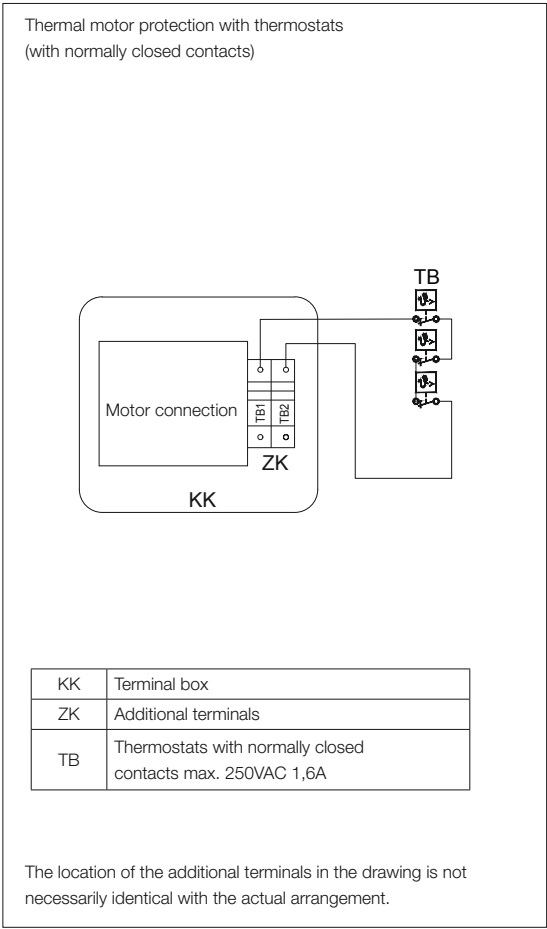
Thermistors (PTC)

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.



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 (S..11..).

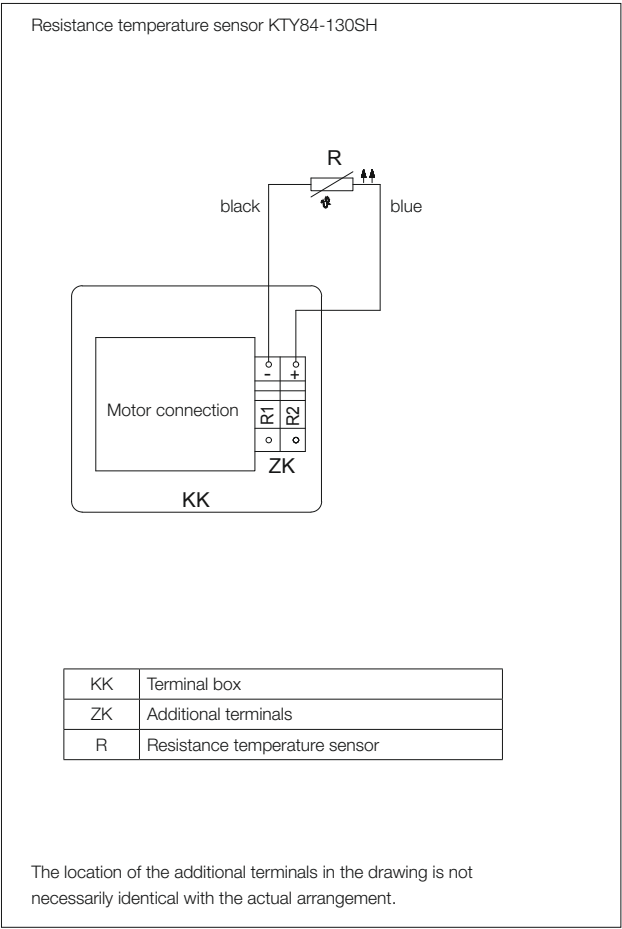


KTY sensors

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 84-130 SH: 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.



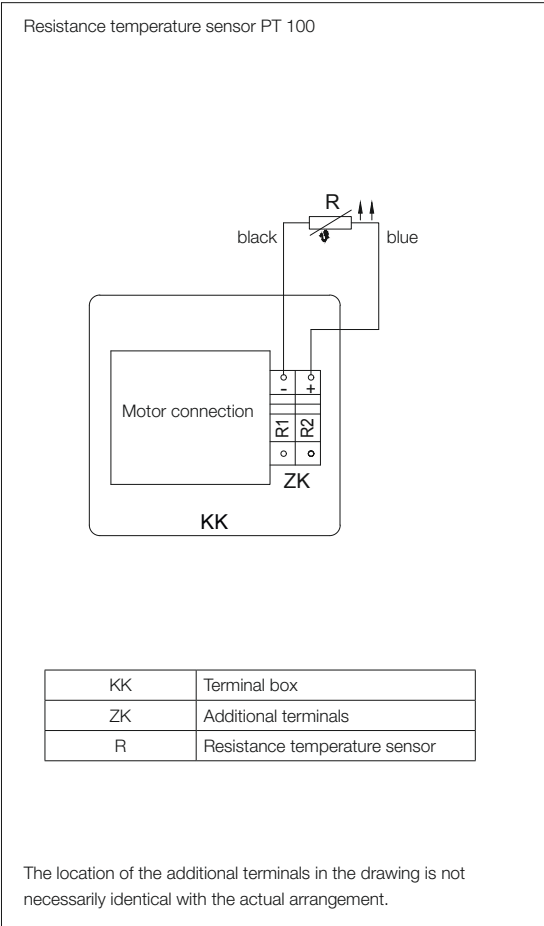
PT100 sensors

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.



Insulation

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

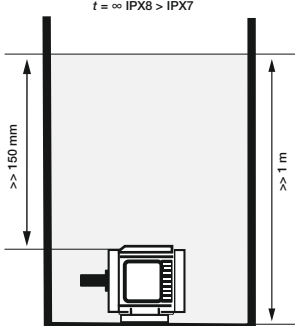
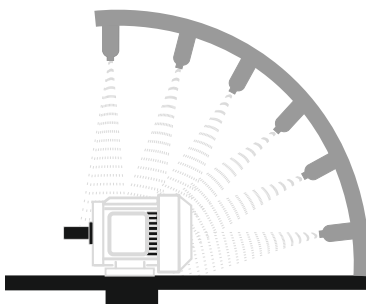
4-pole motors S..07.. and S..09XA4 (2.2 kW) to S..18XA4 (30 kW) and all multi-speed motors are rated in Temperature Class F as standard.
Insulation Class F bestows the winding a multiple protection against high humidity, acidic gases and heavy tropical influences while making the same shock resistant 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 S..06.. are manufactured to IP65 degree of protection as standard. Motor sizes S..04.. and S..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 $\geq 1.0\text{ mm}$			4	Splash water		
5	Dustproof		Wire	5	Jet water		
6	Dust tight			6	Strong Jet water		
				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  $t = \infty$ IPX8 > IPX7 $\gg 150$ mm ≥ 1.5 m x = 5 m (Standard) or by agreement
		6 (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 

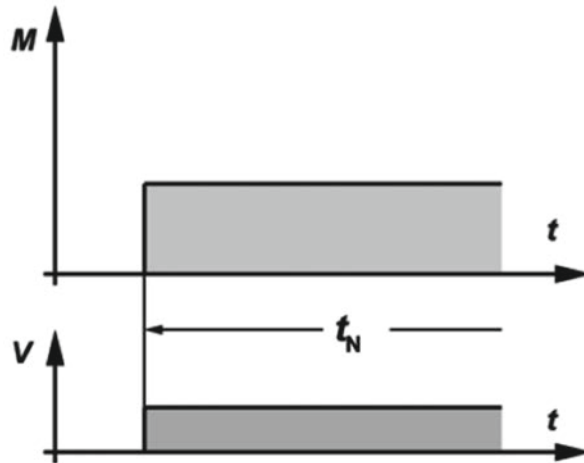
Speed of output shaft

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.

General

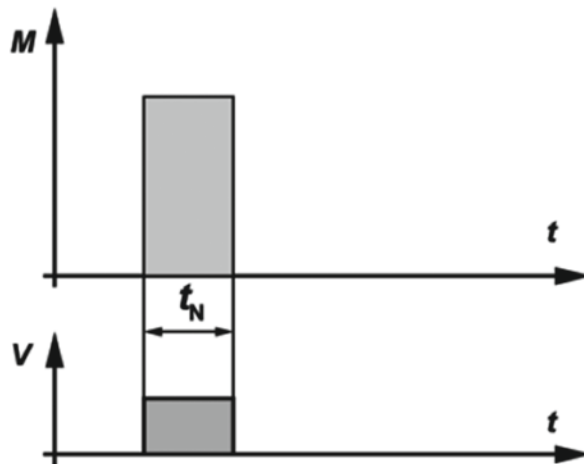
Aside from special drives (such as lifting equipment), standard motors are always designed for continuous running duty. If the drive is operated with frequent on/off cycles, it may be necessary to select a larger motor with a special design. On the other hand, with pronounced short-time duty it is often 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.

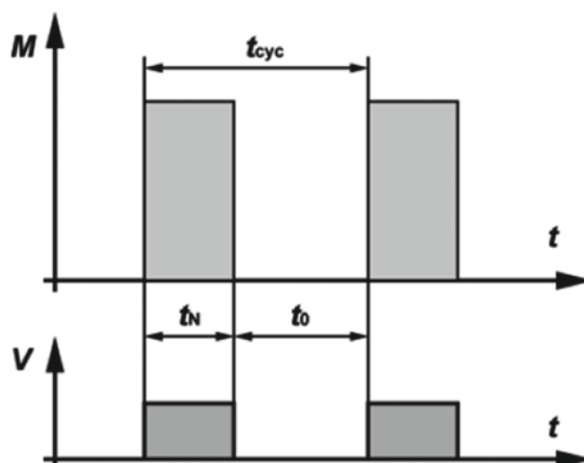
Short-time duty (S2)



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.

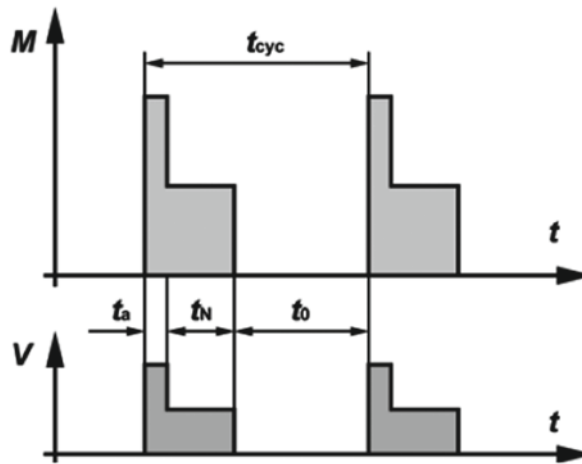
Intermittent periodic duty means that a state of thermal equilibrium is not reached during the load interval.

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%

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.

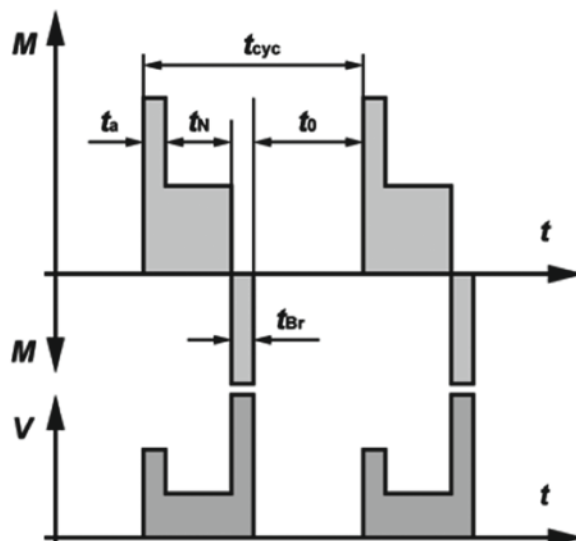
The load cycle corresponds to mode S3, but with additional heating during the starting time that must be taken into account.

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 %, $J_M = 0.15 \text{ kgm}^2$

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.

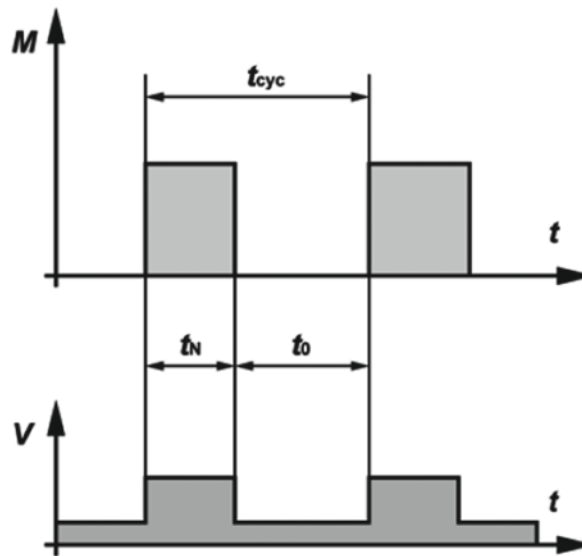
The duty cycle can be determined as follows:

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

Example: S5 – 25%; $J_M = 0.15 \text{ kgm}^2$, $J_{ext} = 0.7 \text{ kgm}^2$

(J_M Moment of inertia of the motor / J_{ext} Moment of inertia of the load)

Continuous-operation periodic duty (S6)



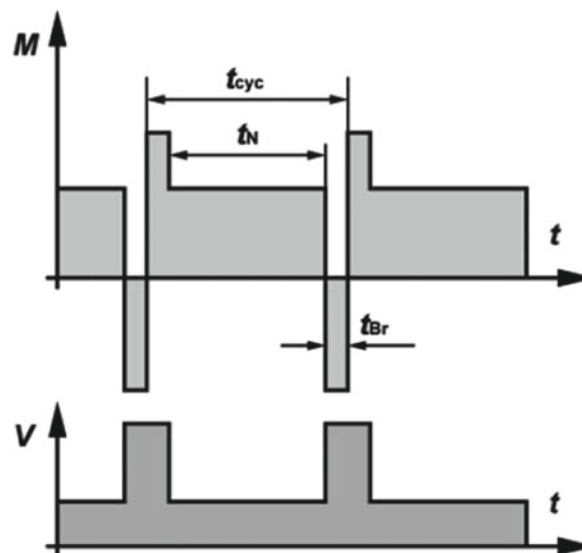
This type of duty corresponds to S3, with the exception that the equipment remains energised during the rest periods. In other words, it operates with no load during these periods. The duty cycle and cycle duration are specified the same way as for S3 duty.

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)



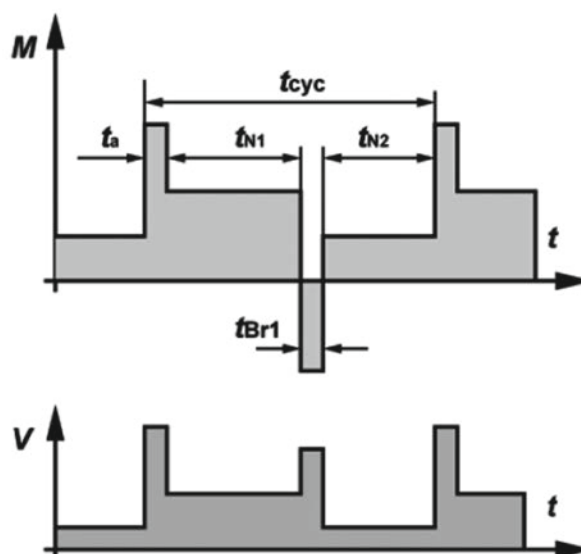
The machine starts up, operates under load, and then is braked electrically, for example by feeding it from a DC power source. Following this, it starts up again immediately. The machine can operate continuously in this manner if the specified moments of inertia of the motor J_M and of the load J_{Ext} 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 – $J_M = 0.4 \text{ kgm}^2$, $J_{Ext} = 7.5 \text{ kgm}^2$

(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 m^2 , the acceleration characteristics are the same as with a mass of 1 kg at a distance of 1 m from the axis of rotation).

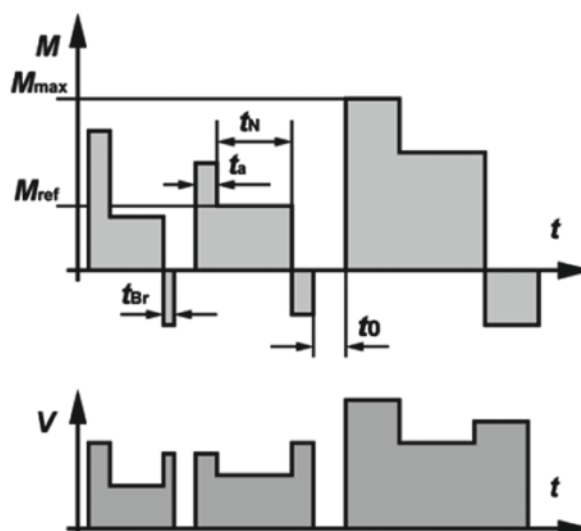
The duty cycle can be determined as follows:

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

Example: S8 – $J_M = 0.5 \text{ kgm}^2$, $J_{Ext} = 6 \text{ kgm}^2$

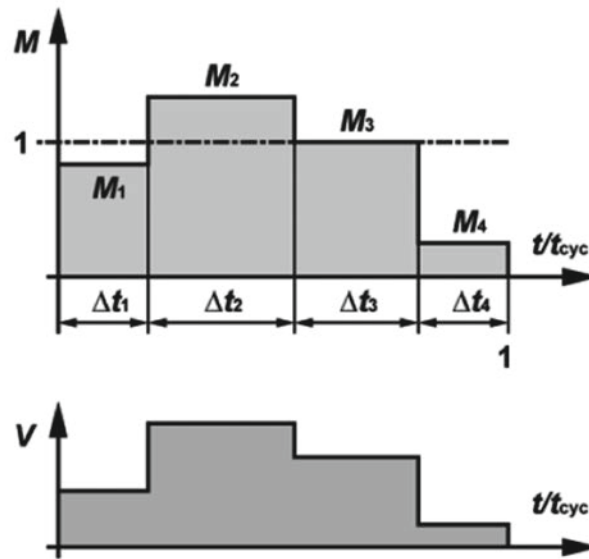
(J_M Moment of inertia of the motor / J_{Ext} Moment of inertia of the load)

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 requirement approximate
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 S..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.

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 (S..04..-S..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.

General

The gears described in this catalogue are suitable for use in explosion hazard areas of zones 1, 2, 21 and 22. An **EC Declaration of Conformity** is available upon request; it is based on an „assessment of the explosion risk“, which has been recorded with a notified body (PTB). The ignition protection type of the corresponding **motors** is determined by the zone in which they are to be used and by the duty type (e.g. operation on a converter). The motor parts are in some cases larger compared to the normal design shown in this catalogue, or in the case of pressurised enclosures, they are designed entirely differently. However, the modular system shown in section 3 allows, in the majority of cases, the retention of the gear size and the connection dimensions laid out in this catalogue.

ATEX

The term **ATEX** is derived from **At**mosphères **ex**plosibles. The designations **95** and **137** relate to the renumbering of the article of the first Treaty establishing the EU. **ATEX 95:** Directive 94/9/EC to approximate the laws of the Member States for devices and protection systems for intended use in potentially explosive atmospheres; mandatory for **bringing to market** since 1 July 2013 **ATEX 137:** Directive 1999/92/EC on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres; mandatory for the **operation** of new systems since 1 July 2003 and mandatory for the adaptation of the operating regulations of existing plants from 1 July 2006. Safety guidelines for the operation of explosion-protected gear motors can be found in BA170...

Frequency converters

Frequency converters used must comply with the requirements set out in the EC Type Examination Certificate.

For the corresponding motor type, the EC Type Examination Certificate contains the maximum possible torques depending on the frequency, the corresponding rated current, converter settings and other requirements for the converter.

The pulse voltage at the motor terminals must be limited to a maximum permissible pulse voltage of $1.556 \text{ V} (2 \times \sqrt{2} \times 550 \text{ V})$ by selecting a suitable frequency converter and/or using filters. The maximum permissible frequency converter input voltage is 500 V.

Protective device

The motor is protected against unacceptable heating by the defined frequency converter setting, as well as by the integrated thermistor sensor in accordance with DIN 44081 / 44082. Response temperature **140 °C**. Analysis of the built-in thermal winding protection must be done by using a trip unit with Ex-mark II (2) G or II (2) D that fulfils the requirements of Directive 94/9/EC.

Voltages

The voltages at the motor terminals depend on the input voltage of the frequency converter, the voltage loss at the filter and in the motor supply cable, and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the case of reduced voltages at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account for the sizing of the motor, the parameterisation of the converter and for the minimum converter input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz. Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate. Max. permissible ambient temperature range -20 °C to +50 °C

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	Up to 180 Hz, depending on motor design
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes

Gears with non-electrical explosion protection

As of 1 July 2003, only mechanical equipment („devices“) which comply with the requirements of ATEX 95 may be placed on the market. The ATEX and ExVO define the following: „Equipment includes machines, apparatus, fixed or mobile devices, control components and instrumentation thereof and detection or prevention systems which, separately or jointly, are intended for the generation, transfer, storage, measurement, control and conversion of energy and/or the processing of material and which are capable of causing an explosion through their own potential sources of ignition.“ The definition therefore applies to the gear component of a gear motor; but also to the process machinery and equipment being driven, if these are installed in explosion hazard areas. An „**Assessment of the Ignition Hazard**“ must be carried out and documented by the manufacturer for the „**Declaration of Conformity**“ for the machine being driven; this task is simplified if a dedicated assessment is carried out for the „gear motor“ components. The assessment can only be undertaken in accordance with the ATEX requirements; the „Presumption of Conformity“ applies in favour of the product, however, if a standard or draft standard is taken as a basis.

When difficult conditions combine (e.g. ambient temperature > 40 °C, speed > 1500 r/min, vertical arrangement of the motor component, temperature class T4), there may be restrictions on the selection of gears in the upper power range.

The following standards, among others, were observed for the assessment of the Bauer gears:

- EN 1127 Explosion Protection; basic concepts and methodology
- EN 13463 Non-electrical equipment for use in potentially explosive atmospheres
- EN 13463-1 Basic method
- EN 13463-5 Constructional safety
- EN 13463-8 Liquid immersion

Standard Motors

Motors with rated speed 1500 1/min

M _n Nm	IE Class	Type	P _n kW	I _n A	2p	n _n 1/min	f Hz	η %	Conne- tion	R ₂₀ Ω	R _{s20} Ω	L _d mH	L _q mH	ke V/1000 1/min	kt Nm/A	M _{max} (60s) Nm	I _{max} (60s) A	J kgm ²
0.76	4	S4E04SA4-1	0.12	0.41	4	1500	50	IE4-67.4	Y	154	77.2	268	412	120	1.85	1.6	0.86	0.00014
0.76	3	SPEU04SA4-1	0.12	0.42	4	1500	50	IE3-66	Y	154	77.2	268	412	120	1.8	1.2	0.67	0.00014
1	2	SHE04SA4-1	0.157	0.54	4	1500	50	IE2-61.4	Y	154	77.2	268	412	120	1.85	1.6	0.86	0.00014
1.15	5	S5EU06MA4	0.18	0.49	4	1500	50	IE5-80.8	Y	79	39.5	171	271	152	2.35	2.6	1.1	0.0002
1.3	5	S5E06MA4	0.2	0.55	4	1500	50	IE5-79.6	Y	79	39.5	171	271	152	2.4	3.8	1.6	0.0002
1.3	5	S5EU06MA4	0.2	0.55	4	1500	50	IE5-79.1	Y	79	39.5	171	271	152	2.35	2.6	1.1	0.0002
1.6	4	S4E06MA4	0.25	0.67	4	1500	50	IE4-76.6	Y	79	39.5	171	271	152	2.4	3.8	1.6	0.0002
1.6	4	S4EU06MA4	0.25	0.68	4	1500	50	IE4-75.5	Y	79	39.5	171	271	152	2.35	2.6	1.1	0.0002
1.6	5	S5EU06LA4	0.25	0.7	4	1500	50	IE5-85.5	Y	37.2	18.6	99.5	133	148	2.3	3.8	1.7	0.000295
2.4	1	SSE06MA4	0.37	1	4	1500	50	IE1-66.1	Y	79	39.5	171	271	152	2.4	3.8	1.6	0.0002
2.4	4	S4EU06LA4	0.37	1.05	4	1500	50	IE4-80	Y	37.2	18.6	99.5	133	148	2.3	3.8	1.7	0.000295
2.6	4	S4E06LA4	0.4	1.12	4	1500	50	IE4-79.8	Y	37.2	18.6	99.5	133	148	2.3	5.6	2.4	0.000295
3.5	1	SSE06LA4	0.55	1.5	4	1500	50	IE1-74.1	Y	37.2	18.6	99.5	133	148	2.3	5.6	2.4	0.000295
3.5	5	S5EU08MA4	0.55	1.28	4	1500	50	IE5-87.2	Y	18.7	9.35	97	170	180	2.7	10	3.7	0.00115
5	4	S4E08MA4	0.78	1.8	4	1500	50	IE4-85.7	Y	18.7	9.35	97	170	180	2.8	10	3.7	0.00115
5	5	S5EU08LA4	0.78	1.9	4	1500	50	IE5-86.9	Y	11	5.5	70	117	171	2.6	15	5.6	0.0015
7	3	SPE08LA4	1.1	2.6	4	1500	50	IE3-85.4	Y	11	5.5	70	117	171	2.75	15	5.6	0.0015
7	5	S5EU09SA4	1.1	2.2	4	1500	50	IE5-90.8	Y	9.9	4.95	64.1	110	208	3.2	20	6.4	0.00245
10	1	SSE08LA4	1.55	3.6	4	1500	50	IE1-80.5	Y	11	5.5	70	117	171	2.8	15	5.6	0.0015
10	4	S4E09SA4	1.55	3	4	1500	50	IE4-88.2	Y	9.9	4.95	64.1	110	208	3.3	20	6.4	0.00245
10	5	S5EU09XA4	1.55	3.1	4	1500	50	IE5-89.9	Y	5.25	2.63	41.2	70.1	209	3.2	30	10	0.0038
14	2	SHE09SA4	2.2	4.3	4	1500	50	IE2-83.9	Y	9.9	4.95	64.1	110	208	3.3	20	6.4	0.00245
14	5	S5E09XA4	2.2	4.2	4	1500	50	IE5-90.3	Y	5.25	2.63	41.2	70.1	209	3.35	31	10	0.0038
14	5	S5EU11SA6	2.2	4.4	6	1500	75	IE5-91.3	Y	3.52	1.76	20	30	210	3.1	40	13	0.012
20	3	SPE09XA4	3.1	5.9	4	1500	50	IE3-88	Y	5.25	2.63	41.2	70.1	209	3.35	31	10	0.0038
19	4	S4E11SA6	3	5.9	6	1500	75	IE4-90.1	Y	3.52	1.76	20	30	210	3.2	35	11	0.012
20	5	S5EU11MA6	3.1	6.4	6	1500	75	IE5-93.3	Y	1.78	0.892	12	18.4	206	3.1	55	17	0.0175
25.5	3	SPE11SA6	4	8	6	1500	75	IE3-87.7	Y	3.52	1.76	20	30	210	3.2	35	11	0.012
25.5	5	S5EU11LA6	4	8.1	6	1500	75	IE5-93.2	Y	1.21	0.605	9.3	13.9	210	3.1	75	23	0.0215
26.5	5	S5E11MA6	4.2	8.3	6	1500	75	IE5-92.5	Y	1.78	0.892	12	18.4	206	3.15	55	17	0.0175
35	5	S5E11LA6	5.5	10.8	6	1500	75	IE5-93.2	Y	1.21	0.605	9.3	13.9	210	3.25	75	23	0.0215
35	4	S4E11MA6	5.5	11	6	1500	75	IE4-90.8	Y	1.78	0.892	12	18.4	206	3.15	55	17	0.0175
48	3	SPE11LA6	7.5	14.7	6	1500	75	IE3-91.4	Y	1.21	0.605	9.3	13.9	210	3.25	75	23	0.0215

M _n	Rated torque
P _n	Rated power
I _n	Rated current
2p	No. of Motor Poles
n _n	Rated speed
f	Nominal Frequency
η	Motor efficiency
R ₂₀	Phase Resistance U-V
R _{s20}	Winding Resistance
L _d	Inductance D-Axis
L _q	Inductance Q-Axis
ke	Voltage constant
kt	Torque constant
M _{max} (60s)	Peak Torque
I _{max} (60s)	Peak Current
J	Moment of inertia

All motors: converter supply voltage 380 to 500 V

Motors

Technical data

Rated speed 1500 1/min

Rated speed 1500 1/min																				
η ₁₀₀ (100%-Load)	η ₇₅ (75%-Load)	η ₅₀ (50%-Load)	IE Class	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	n _n	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)						
%	%	%					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100
67.4	n.A	n.A	IE4	1)	S4E04SA4-1	4	0.76	0.12	50	380	1500	2)	3)	25/25	39.2	5.0	12.2	41.1	14.2	43.9
66.0	n.A	n.A	IE3	1)	SPEU04SA4-1	4	0.76	0.12	50	380	1500	2)	3)	4.1	42.8	5.2	13.0	44.8	15.2	46.6
61.4	n.A	n.A	IE2	1)	SHE04SA4-1	4	1	0.157	50	380	1500	2)	3)	4.5	54.3	5.4	15.6	55.2	17.3	56.7
80.8	n.A	n.A	IE5	1)	S5EU06MA4	4	1.15	0.18	50	380	1500	2)	3)	2.3	18.9	3.3	6.7	19.8	8.5	21.5
79.6	n.A	n.A	IE5	1)	S5E06MA4	4	1.3	0.2	50	380	1500	2)	3)	2.5	20.6	3.5	7.2	21.6	9.1	23.5
79.1	n.A	n.A	IE5	1)	S5EU06MA4	4	1.3	0.2	50	380	1500	2)	3)	2.8	21.8	3.6	7.1	22.7	8.6	24.3
76.6	n.A	n.A	IE4	1)	S4E06MA4	4	1.6	0.25	50	380	1500	2)	3)	2.2	24.8	3.0	7.5	25.6	9.6	27.7
75.5	n.A	n.A	IE4	1)	S4EU06MA4	4	1.6	0.25	50	380	1500	2)	3)	2.4	27.4	3.0	8.0	28.2	9.3	29.4
85.5	n.A	n.A	IE5	1)	S5EU06LA4	4	1.6	0.25	50	380	1500	2)	3)	1.9	12.8	2.8	5.1	13.6	6.6	15.3
66.1	n.A	n.A	IE1	1)	SSE06MA4	4	2.4	0.37	50	380	1500	2)	3)	3.1	45.5	3.7	11.6	46.2	13.3	47.1
80.0	n.A	n.A	IE4	1)	S4EU06LA4	4	2.4	0.37	50	380	1500	2)	3)	2.0	21.4	2.5	6.4	21.9	7.4	22.9
79.8	n.A	n.A	IE4	1)	S4E06LA4	4	2.6	0.4	50	380	1500	2)	3)	2.2	20.5	3.0	6.7	21.5	8.5	23.2
74.1	n.A	n.A	IE1	1)	SSE06LA4	4	3.5	0.55	50	380	1500	2)	3)	1.5	10.6	2.5	4.4	11.6	5.9	13.2
87.2	n.A	n.A	IE5	1)	S5EU08MA4	4	3.5	0.55	50	380	1500	2)	3)	2.3	29.7	2.9	8.2	30.2	9.4	31.4
85.7	n.A	n.A	IE4	1)	S4E08MA4	4	5	0.78	50	380	1500	2)	3)	1.4	13.4	1.9	4.4	14.0	5.5	15.2
86.9	n.A	n.A	IE5	1)	S5EU08LA4	4	5	0.78	50	380	1500	2)	3)	1.7	10.4	2.8	4.7	11.7	6.6	13.7
85.4	n.A	n.A	IE3	1)	SPE08LA4	4	7	1.1	50	380	1500	2)	3)	1.4	12.7	2.2	4.4	13.7	6.3	15.4
90.8	n.A	n.A	IE5	1)	S5EU09SA4	4	7	1.1	50	380	1500	2)	3)	0.9	7.7	1.2	2.7	8.3	3.5	9.1
80.5	n.A	n.A	IE1	1)	SSE08LA4	4	10	1.55	50	380	1500	2)	3)	1.6	21.2	2.3	6.3	21.8	7.5	22.2
88.2	n.A	n.A	IE4	1)	S4E09SA4	4	10	1.55	50	380	1500	2)	3)	1.2	10.4	1.7	3.7	11.1	4.9	12.2
89.9	n.A	n.A	IE5	1)	S5EU09XA4	4	10	1.55	50	380	1500	2)	3)	1.6	7.1	2.7	3.9	8.3	5.9	10.3
83.9	n.A	n.A	IE2	1)	SHE09SA4	4	14	2.2	50	380	1500	2)	3)	1.3	15.9	1.7	4.7	16.4	5.6	17.3
90.3	n.A	n.A	IE5	1)	S5E09XA4	4	14	2.2	50	380	1500	2)	3)	1.1	7.6	1.8	3.2	8.4	4.4	9.6
91.3	n.A	n.A	IE5	1)	S5EU11SA6	6	14	2.2	50	380	1500	2)	3)	1.0	6.3	1.7	2.9	7.1	4.4	8.6
88.0	n.A	n.A	IE3	1)	SPE09XA4	4	20	3.1	50	380	1500	2)	3)	1.0	11.4	1.4	3.5	11.7	4.2	12.5
90.1	n.A	n.A	IE4	1)	S4E11SA6	6	19	3	75	380	1500	2)	3)	1.0	7.4	1.7	3.1	8.3	4.7	9.9
93.3	n.A	n.A	IE5	1)	S5EU11MA6	6	20	3.1	75	380	1500	2)	3)	0.8	5.0	1.4	2.2	5.6	3.3	6.6
87.7	n.A	n.A	IE3	1)	SPE11SA6	6	25.5	4	75	380	1500	2)	3)	1.0	10.9	1.5	3.4	11.5	4.6	12.7
93.2	n.A	n.A	IE5	1)	S5EU11LA6	6	25.5	4	75	380	1500	2)	3)	0.8	4.5	1.4	2.2	5.3	3.4	6.5
92.5	n.A	n.A	IE5	1)	S5E11MA6	6	26.5	4.2	75	380	1500	2)	3)	0.7	5.5	1.2	2.3	6.2	3.4	7.2
93.2	n.A	n.A	IE5	1)	S5E11LA6	6	35	5.5	75	380	1500	2)	3)	0.8	5.0	1.3	2.3	5.6	3.4	6.6
90.8	n.A	n.A	IE4	1)	S4E11MA6	6	35	5.5	75	380	1500	2)	3)	0.8	7.7	1.2	2.6	8.2	3.5	9.1
91.4	n.A	n.A	IE3	1)	SPE11LA6	6	48	7.5	75	380	1500	2)	3)	0.7	7.2	1.1	2.4	7.7	3.3	8.5

Dimensioned according to IEC TS 60034-30-2

*Dimensioned according to IEC TS 60034-30-2

1) Manufacturer:	Bauer Gear Motor GmbH	2) Type of motor:	Three-phase permanent magnet excited synchronous motor	3) Installation altitude above sea level (m):	1000
Commercial register number:	HRB 736269			Ambient temperature:	-20 °C to +40 °C
Address:	Eberhard-Bauer-Str. 37, 73734 Esslingen / Germany				

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 %).

Motor torques in the adjusting range 150 1/min - 1800 1/min. duty type S1

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
0.76	0.12	S4E04SA4-1	150	0.76	0.012	0.41	5	Y
			500	0.76	0.04	0.41	16.67	Y
			1000	0.76	0.08	0.41	33.33	Y
			1500	0.76	0.12	0.41	50	Y
			1800	0.76	0.143	0.41	60	Y
0.76	0.12	SPEU04SA4-1	150	0.76	0.012	0.42	5	Y
			500	0.76	0.04	0.42	16.67	Y
			1000	0.76	0.08	0.42	33.33	Y
			1500	0.76	0.12	0.42	50	Y
			1800	0.76	0.143	0.42	60	Y
1	0.157	SHE04SA4-1	150	0.76	0.012	0.41	5	Y
			500	0.85	0.045	0.46	16.67	Y
			1000	1	0.105	0.54	33.33	Y
			1500	1	0.157	0.54	50	Y
			1800	1	0.188	0.54	60	Y
1.15	0.18	S5EU06MA4	150	1.15	0.018	0.49	5	Y
			500	1.15	0.06	0.49	16.67	Y
			1000	1.15	0.12	0.49	33.33	Y
			1500	1.15	0.18	0.49	50	Y
			1800	1.15	0.217	0.49	60	Y
1.3	0.2	S5E06MA4	150	1.3	0.02	0.55	5	Y
			500	1.3	0.068	0.55	16.67	Y
			1000	1.3	0.136	0.55	33.33	Y
			1500	1.3	0.2	0.55	50	Y
			1800	1.3	0.245	0.55	60	Y
1.3	0.2	S5EU06MA4	150	1.3	0.02	0.55	5	Y
			500	1.3	0.068	0.55	16.67	Y
			1000	1.3	0.136	0.55	33.33	Y
			1500	1.3	0.2	0.55	50	Y
			1800	1.3	0.245	0.55	60	Y
1.6	0.25	S4E06MA4	150	1.6	0.025	0.67	5	Y
			500	1.6	0.092	0.67	16.67	Y
			1000	1.6	0.168	0.67	33.33	Y
			1500	1.6	0.25	0.67	50	Y
			1800	1.6	0.3	0.67	60	Y
1.6	0.25	S4EU06MA4	150	1.6	0.025	0.68	5	Y
			500	1.6	0.084	0.68	16.67	Y
			1000	1.6	0.168	0.68	33.33	Y
			1500	1.6	0.25	0.68	50	Y
			1800	1.6	0.3	0.7	60	Y
1.6	0.25	S5EU06LA4	150	1.6	0.025	0.7	5	Y
			500	1.6	0.084	0.7	16.67	Y
			1000	1.6	0.168	0.7	33.33	Y
			1500	1.6	0.25	0.7	50	Y
			1800	1.6	0.3	0.7	60	Y
2.4	0.37	SSE06MA4	150	1.8	0.028	0.75	5	Y
			500	2	0.105	0.84	16.67	Y
			1000	2.2	0.23	0.93	33.33	Y
			1500	2.4	0.37	1	50	Y
			1800	2.4	0.45	1	60	Y

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
2.4	0.37	S4EU06LA4	150	2.4	0.038	1.05	5	Y
			500	2.4	0.126	1.05	16.67	Y
			1000	2.4	0.25	1.05	33.33	Y
			1500	2.4	0.37	1.05	50	Y
			1800	2.4	0.45	1.05	60	Y
2.6	0.37	S4E06LA4	150	2.5	0.04	1.07	5	Y
			500	2.6	0.136	1.12	16.67	Y
			1000	2.6	0.27	1.12	33.33	Y
			1500	2.6	0.4	1.12	50	Y
			1800	2.6	0.5	1.12	60	Y
3.5	0.55	SSE06LA4	150	2.5	0.04	1.07	5	Y
			500	2.9	0.15	1.25	16.67	Y
			1000	3.5	0.37	1.5	33.33	Y
			1500	3.5	0.55	1.5	50	Y
			1800	3.5	0.66	1.5	60	Y
3.5	0.55	S5EU08MA4	150	3.5	0.06	1.28	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			1500	3.5	0.55	1.28	50	Y
			1800	3.5	0.66	1.28	60	Y
5	0.78	S4E08MA4	150	5	0.08	1.8	5	Y
			500	5	0.26	1.8	16.67	Y
			1000	5	0.52	1.8	33.33	Y
			1500	5	0.78	1.8	50	Y
			1800	5	0.9	1.8	60	Y
5	0.78	S5EU08LA4	150	5	0.08	1.9	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			1500	5	0.78	1.9	50	Y
			1800	5	0.9	1.9	60	Y
7	1.1	SPE08LA4	150	6.5	0.1	2.4	5	Y
			500	7	0.37	2.6	16.67	Y
			1000	7	0.73	2.6	33.33	Y
			1500	7	1.1	2.6	50	Y
			1800	7	1.3	2.6	60	Y
7	1.1	S5EU09SA4	150	7	0.11	2.2	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			1500	7	1.1	2.2	50	Y
			1800	7	1.3	2.2	60	Y
10	1.55	SSE08LA4	150	6.5	0.1	2.4	5	Y
			500	8	0.42	2.9	16.67	Y
			1000	10	1.05	3.6	33.33	Y
			1500	10	1.55	3.6	50	Y
			1800	10	1.9	3.6	60	Y
10	1.55	S4E09SA4	150	8.5	0.13	2.6	5	Y
			500	10	0.52	3	16.67	Y
			1000	10	1.05	3	33.33	Y
			1500	10	1.55	3	50	Y
			1800	10	1.9	3	60	Y
10	1.55	S5EU09XA4	150	10	0.16	3.1	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			1500	10	1.55	3.1	50	Y
			1800	10	1.9	3.2	60	Y

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
14	2.2	SHE09SA4	150	8.5	0.13	2.6	5	Y
			500	10	0.52	3.1	16.67	Y
			1000	14	1.47	4.3	33.33	Y
			1500	14	2.2	4.3	50	Y
			1800	14	2.6	4.5	60	Y
14	2.2	S5E09XA4	150	13	0.2	3.9	5	Y
			500	14	0.73	4.2	16.67	Y
			1000	14	1.47	4.2	33.33	Y
			1500	14	2.2	4.2	50	Y
			1800	14	2.6	4.5	60	Y
14	2.2	S5EU11SA6	150	14	0.22	4.4	7.5	Y
			500	-	-	-	-	Y
			1000	-	-	-	-	Y
			1500	14	2.2	4.4	75	Y
			1800	14	2.6	4.4	90	Y
19	3	S4E11SA6	150	19	0.3	5.9	7.5	Y
			500	19	1	5.9	25	Y
			1000	19	2	5.9	50	Y
			1500	19	3	5.9	75	Y
			1800	19	3.6	5.9	90	Y
20	3.1	SPE09XA4	150	13	0.2	3.9	5	Y
			500	16	0.84	4.8	16.67	Y
			1000	20	2.1	5.9	33.33	Y
			1500	20	3.1	5.9	50	Y
			1800	20	3.8	6.7	60	Y
20	3.1	S5EU11MA6	150	20	0.31	6.4	7.5	Y
			500	-	-	-	-	Y
			1000	-	-	-	-	Y
			1500	20	3.1	6.4	75	Y
			1800	20	3.8	6.4	90	Y
25.5	4	SPE11SA6	150	19	0.3	5.9	7.5	Y
			500	22	1.2	6.9	25	Y
			1000	25.5	2.7	8	50	Y
			1500	25.5	4	8	75	Y
			1800	25.5	4.8	8	90	Y
25.5	4	S5EU11LA6	150	25.5	0.4	8.1	7.5	Y
			500	-	-	-	-	Y
			1000	-	-	-	-	Y
			1500	25.5	4	8.1	75	Y
			1800	25.5	4.8	8.1	90	Y
26.5	4.2	S5E11MA6	150	26.5	0.42	8.3	7.5	Y
			500	26.5	1.4	8.3	25	Y
			1000	26.5	2.8	8.3	50	Y
			1500	26.5	4.2	8.3	75	Y
			1800	26.5	5	8.3	90	Y
35	5.5	S5E11LA6	150	35	0.55	10.8	7.5	Y
			500	35	1.8	10.8	25	Y
			1000	35	3.7	10.8	50	Y
			1500	35	5.5	10.8	75	Y
			1800	35	6.6	10.8	90	Y
35	5.5	S4E11MA6	150	26.5	0.42	8.3	7.5	Y
			500	30	1.6	9.5	25	Y
			1000	35	3.7	11	50	Y
			1500	35	5.5	11	75	Y
			1800	35	6.6	11	90	Y

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
48	7.5	SPE11LA6	150	35	0.55	10.8	7.5	Y
			500	40	2.1	12.3	25	Y
			1000	48	5	14.7	50	Y
			1500	48	7.5	14.7	75	Y
			1800	48	9	14.7	90	Y

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{1500/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Motors with rated speed 2250 1/min

M _n Nm	IE Classe	Type	P _n kW	I _n A	2p	n _n 1/min	f Hz	η %	Connection	R ₂₀ Ω	R _{s20} Ω	L _d mH	L _q mH	ke V/1000 1/min	kt Nm/A	M _{max (60s)} Nm	I _{max (60s)} A	J kgm ²
3.5	5	S5EU08MA4	0.82	2.25	4	2250	75	IE5-88.4	D	6.23	9.35	34	57	103	1.4	10	6.4	0.00115
5	5	S5E08MA4	1.18	3.1	4	2250	75	IE5-87.9	D	6.23	9.35	34	57	103	1.6	10	6.4	0.00115
5	5	S5EU08LA4	1.18	3.6	4	2250	75	IE5-86.5	D	3.67	5.5	24	39	99	1.4	14	9.5	0.0015
7	4	S4E08LA4	1.65	4.7	4	2250	75	IE4-85.9	D	3.67	5.5	24	39	99	1.5	14	9.5	0.0015
7	3	SPE08MA4	1.65	4.3	4	2250	75	IE3-83.8	D	6.23	9.35	34	57	103	1.6	10	6.4	0.00115
7	5	S5EU09SA4	1.65	3.75	4	2250	75	IE5-91.3	D	3.3	4.95	21.4	36.6	120	1.85	20	11	0.00245
10	1	SSE08LA4	2.35	6.6	4	2250	75	IE1-81.4	D	3.67	5.5	24	39	99	1.5	14	9.5	0.0015
10	5	S5E09SA4	2.35	5.3	4	2250	75	IE5-89.3	D	3.3	4.95	21.4	36.6	120	1.9	20	11	0.00245
10	5	S5EU09XA4	2.35	5.5	4	2250	75	IE5-90.6	D	1.75	2.63	13.8	24.4	120	1.8	30	16	0.0038
13	3	SPE09SA4	3	6.9	4	2250	75	IE3-86.8	D	3.3	4.95	21.4	36.6	120	1.9	20	11	0.00245
17.5	4	S4E09XA4	4.1	9.2	4	2250	75	IE4-89.4	D	1.75	2.63	13.8	24.4	120	1.9	29	16	0.0038

M _n	Rated torque
P _n	Rated power
I _n	Rated current
2p	No. of Motor Poles
n _n	Rated speed
f	Nominal Frequency
η	Motor efficiency
R ₂₀	Phase Resistance U-V
R _{s20}	Winding Resistance
L _d	Inductance D-Axis
L _q	Inductance Q-Axis
ke	Voltage constant
kt	Torque constant
M _{max (60s)}	Peak Torque
I _{max (60s)}	Peak Current
J	Moment of inertia

All motors: converter supply voltage 380 to 500 V

Rated speed 2250 1/min

Rated speed 2250 1/min																				
η (100 % -Load)	η (75 %-Load)	η (50 %-Load)	IE Class	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	nN	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)						
%	%	%					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100
88.4	n.A	n.A	5	1)	S5EU08MA4	4	3.5	0.82	75	380	2250	2)	3)	1.6	8.5	2.6	4.1	9.8	6.0	12.0
87.9	n.A	n.A	5	1)	S5E08MA4	4	5	1.18	75	380	2250	2)	3)	1.1	9.9	1.7	3.5	10.8	4.9	12.3
86.5	n.A	n.A	5	1)	S5EU08LA4	4	5	1.18	75	380	2250	2)	3)	2.5	10.1	3.8	5.4	11.5	7.7	14.0
85.9	n.A	n.A	4	1)	S4E08LA4	4	7	1.65	75	380	2250	2)	3)	2.2	11.0	3.3	5.2	12.3	7.4	14.8
83.8	n.A	n.A	3	1)	SPE08MA4	4	7	1.65	75	380	2250	2)	3)	1.3	15.2	1.7	4.6	16.1	5.7	17.4
91.3	n.A	n.A	5	1)	S5EU09SA4	4	7	1.65	75	380	2250	2)	3)	1.2	6.4	2.1	3.3	7.3	3.6	8.5
81.4	n.A	n.A	1	1)	SSE08LA4	4	10	2.35	75	380	2250	2)	3)	2.2	17.6	3.0	6.2	18.6	8.1	20.5
89.3	n.A	n.A	5	1)	S5E09SA4	4	10	2.35	75	380	2250	2)	3)	1.4	8.0	1.7	3.3	9.1	4.7	10.8
90.6	n.A	n.A	5	1)	S5EU09XA4	4	10	2.35	75	380	2250	2)	3)	1.3	6.0	2.4	3.4	7.3	5.3	9.4
86.8	n.A	n.A	3	1)	SPE09SA4	4	13	3	75	380	2250	2)	3)	1.2	11.4	1.8	3.9	12.5	5.2	14.0
89.4	n.A	n.A	4	1)	S4E09XA4	4	17.5	4.1	75	380	2250	2)	3)	1.1	8.1	1.8	3.3	9.1	4.8	10.7
*Dimensioned according to IEC TS 60034-30-2																				

*Dimensioned according to IEC TS 60034-30-2

1) Manufacturer:	Bauer Gear Motor GmbH	2) Type of motor:	Three-phase permanent magnet excited synchronous motor	3) Installation altitude above sea level (m):	1000
Commercial register number:	HRB 736269			Ambient temperature:	-20 °C to +40 °C
Address:	Eberhard-Bauer-Str. 37, 73734 Esslingen / Germany				

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 %).

Motor torques in the adjusting range 150 1/min - 3600 1/min. duty type S1

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
3.5	0.82	S5EU08MA4	150	3.5	0.06	2.25	5	D
			500	-	-	-	16.66	D
			1000	-	-	-	33.33	D
			2250	3.5	0.82	2.25	75	D
			2600	3.5	1	2.25	87	D
5	1.18	S5E08MA4	150	5	0.08	3.1	5	D
			500	5	0.26	3.1	16.66	D
			1000	5	0.52	3.1	33.33	D
			2250	5	1.18	3.1	75	D
			2600	5	1.4	3.1	87	D
5	1.18	S5EU08LA4	150	5	0.08	3.6	5	D
			500	-	-	-	16.66	D
			1000	-	-	-	33.33	D
			2250	5	1.18	3.6	75	D
			2600	5	1.4	3.6	87	D
7	1.65	S4E08LA4	150	6.5	0.1	4.4	5	D
			500	7	0.37	4.7	16.66	D
			1000	7	0.73	4.7	33.33	D
			2250	7	1.65	4.7	75	D
			2600	7	1.9	4.7	87	D
7	1.65	SPE08MA4	150	5	0.08	3.1	5	D
			500	5.9	0.31	3.7	16.66	D
			1000	7	0.73	4.3	33.33	D
			2250	7	1.65	4.3	75	D
			2600	7	1.9	4.3	87	D
7	1.65	S5EU09SA4	150	7	0.11	3.75	5	D
			500	-	-	-	16.66	D
			1000	-	-	-	33.33	D
			2250	7	1.6	3.75	75	D
			2600	7	1.9	3.75	87	D
10	2.35	SSE08LA4	150	6.5	0.1	4.3	5	D
			500	8	0.42	5.3	16.66	D
			1000	10	1.05	6.6	33.33	D
			2250	10	2.35	6.6	75	D
			2600	10	2.7	6.6	87	D
10	2.35	S5E09SA4	150	8.5	0.13	4.5	5	D
			500	10	0.52	5.3	16.66	D
			1000	10	1.05	5.3	33.33	D
			2250	10	2.35	5.3	75	D
			2600	10	2.7	5.3	87	D
10	2.35	S5EU09XA4	150	10	0.16	5.5	5	D
			500	-	-	-	16.66	D
			1000	-	-	-	33.33	D
			2250	10	2.35	5.5	75	D
			2600	10	2.7	5.5	87	D
13	3	SPE09SA4	150	8.5	0.13	4.5	5	D
			500	10	0.52	5.3	16.66	D
			1000	13	1.36	6.9	33.33	D
			2250	13	3	6.9	75	D
			2600	13	3.5	6.9	87	D

Motors

Technical data

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
17.5	4.1	S4E09XA4	150	13	0.2	6.9	5	D
			500	16	0.84	8.4	16.66	D
			1000	17.5	1.83	9.2	33.33	D
			2250	17.5	4.1	9.2	75	D
			2600	17.5	4.8	9.2	87	D

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{2250/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	120 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Motors with rated speed 3000 1/min

M _n Nm	IE Class	Type	P _n kW	I _n A	2p	n _n 1/min	f Hz	η %	Connection	R ₂₀ Ω	R _{s20} Ω	L _d mH	L _q mH	ke V/1000 1/min	kt Nm/A	M _{max} (60s) Nm	I _{max} (60s) A	J kgm ²
0.38	5	S5EU04SA4-1	0.12	0.33	4	3000	100	IE5-82.2	Y	70.6	35.3	120	185	80	1.2	1	0.85	0.00014
0.58	5	S5EU04SA4-1	0.18	0.49	4	3000	100	IE5-80	Y	70.6	35.3	120	185	80	1.2	1	0.85	0.00014
0.65	5	S5E04SA4-1	0.2	0.52	4	3000	100	IE5-80.3	Y	70.6	35.3	120	185	80	1.25	1.6	1.3	0.00014
0.65	5	S5EU04SA4-1	0.2	0.54	4	3000	100	IE5-79.1	Y	70.6	35.3	120	185	80	1.2	1	0.85	0.00014
0.8	5	S5E04SA4-1	0.25	0.64	4	3000	100	IE5-78.5	Y	70.6	35.3	120	185	80	1.25	1.6	1.3	0.00014
0.8	5	S5EU06MA4	0.25	0.63	4	3000	100	IE5-87.8	Y	24.6	12.3	52.3	83.3	84	1.3	2.8	2.2	0.0002
1	4	S4E04SA4-1	0.315	0.8	4	3000	100	IE4-74.5	Y	70.6	35.3	120	185	80	1.25	1.6	1.3	0.00014
1.2	5	S5EU06MA4	0.37	0.93	4	3000	100	IE5-86.6	Y	24.6	12.3	52.3	83.3	84	1.3	2.8	2.2	0.0002
1.3	5	S5E06MA4	0.4	1	4	3000	100	IE5-86.2	Y	24.6	12.3	52.3	83.3	84	1.3	3.8	3	0.0002
1.3	5	S5EU06MA4	0.4	1	4	3000	100	IE5-86.3	Y	24.6	12.3	52.3	83.3	84	1.3	2.8	2.2	0.0002
1.75	5	S5E06MA4	0.55	1.35	4	3000	100	IE5-84	Y	24.6	12.3	52.3	83.3	84	1.3	3.8	3	0.0002
1.75	5	S5EU06LA4	0.55	1.45	4	3000	100	IE5-87.9	Y	11.5	5.75	29.4	40.1	80.3	1.2	3.8	3.2	0.000295
2.4	3	SPE06MA4	0.75	1.85	4	3000	100	IE3-78.6	Y	24.6	12.3	52.3	83.3	84	1.3	3.8	3	0.0002
2.4	5	S5E06LA4	0.75	1.9	4	3000	100	IE5-88.3	Y	11.5	5.75	29.4	40.1	80.3	1.25	5.6	4.5	0.000295
3.5	4	S4E06LA4	1.1	2.8	4	3000	100	IE4-84	Y	11.5	5.75	29.4	40.1	80.3	1.25	5.6	4.5	0.000295
3.5	5	S5EU08MA4	1.1	2.55	4	3000	100	IE5-90.8	Y	4.73	2.36	24.7	43.5	90	1.4	10	7.5	0.00115
5	5	S5E08MA4	1.55	3.5	4	3000	100	IE5-91.2	Y	4.73	2.36	24.7	43.5	90	1.45	10	7.5	0.00115
5	5	S5EU08LA4	1.55	3.9	4	3000	100	IE5-88.9	Y	2.82	1.41	16.8	29.6	87	1.3	15	11.2	0.0015
7	5	S5E08LA4	2.2	5.2	4	3000	100	IE5-89.2	Y	2.82	1.41	16.8	29.6	87	1.35	15	11.2	0.0015
7	4	S4E08MA4	2.2	4.8	4	3000	100	IE4-88.8	Y	4.73	2.36	24.7	43.5	90	1.45	10	7.5	0.00115
7	5	S5EU09SA4	2.2	4.45	4	3000	100	IE5-91.9	Y	2.42	1.21	15.5	27.6	103	1.6	20	12.5	0.00245
10	3	SPE08LA4	3.1	7.4	4	3000	100	IE3-86.9	Y	2.82	1.41	16.8	29.6	87	1.35	15	11.2	0.0015
10	5	S5EU09XA4	3.1	6.3	4	3000	100	IE5-92.8	Y	1.31	0.66	12.7	17.9	102	1.6	30	20	0.0038
10	5	S5EU11SA6	3.1	6.6	6	3000	150	IE5-91.5	Y	0.89	0.447	5	7.7	106	1.52	40	25	0.012
13	4	S4E09SA4	4	8	4	3000	100	IE4-89.7	Y	2.42	1.21	15.5	27.6	103	1.63	20	12.5	0.00245
12.75	5	S5EU11SA6	4	8.4	6	3000	150	IE5-91.9	Y	0.89	0.447	5	7.7	106	1.52	40	25	0.012
13	5	S5EU11MA6	4	8.6	6	3000	150	IE5-92.5	Y	0.43	0.217	3	4.6	104	1.52	55	35	0.0175
17.5	5	S5E09XA4	5.5	10.5	4	3000	100	IE5-92.5	Y	1.31	0.66	12.7	17.9	102	1.67	30	20	0.0038
17.5	4	S4E11SA6	5.5	11	6	3000	150	IE4-91.2	Y	0.89	0.447	5	7.7	106	1.55	40	25	0.012
17.5	5	S5EU11LA6	5.5	11.5	6	3000	150	IE5-91.9	Y	0.3	0.15	2.4	3.5	105	1.52	75	48	0.0215
17.5	5	S5EU11MA6	5.5	11.5	6	3000	150	IE5-93.3	Y	0.43	0.217	3	4.6	104	1.52	55	35	0.0175
20	5	S5E09XA4	6.3	12	4	3000	100	IE5-92	Y	1.31	0.66	12.7	17.9	102	1.67	30	20	0.0038
24	5	S5E11MA6	7.5	15.4	6	3000	150	IE5-93.2	Y	0.43	0.217	3	4.6	104	1.55	55	35	0.0175
24	4	S4E11SA6	7.5	15.2	6	3000	150	IE4-90.8	Y	0.89	0.447	5	7.7	106	1.55	40	25	0.012
23.9	5	S5EU11LA6	7.5	15.7	6	3000	150	IE5-93.3	Y	0.3	0.15	2.4	3.5	105	1.52	75	48	0.0215
30	5	S5E11LA6	9.5	18.5	6	3000	150	IE5-93.8	Y	0.3	0.15	2.4	3.5	105	1.6	75	48	0.0215
30	5	S5E11MA6	9.5	19.3	6	3000	150	IE5-93.2	Y	0.43	0.217	3	4.6	104	1.55	55	35	0.0175
35	5	S5E11LA6	11	21.5	6	3000	150	IE5-94.1	Y	0.3	0.15	2.4	3.5	105	1.6	75	48	0.0215
35	4	S4E11MA6	11	22.5	6	3000	150	IE4-93.1	Y	0.43	0.217	3	4.6	104	1.55	55	35	0.0175
48	5	S5E11LA6	15	30	6	3000	150	IE5-93.8	Y	0.3	0.15	2.4	3.5	105	1.6	75	48	0.0215

M _n	Rated torque
P _n	Rated power
I _n	Rated current
2p	No. of Motor Poles
n _n	Rated speed
f	Nominal Frequency
η	Motor efficiency
R ₂₀	Phase Resistance U-V
R _{s20}	Winding Resistance
L _d	Inductance D-Axis
L _q	Inductance Q-Axis
ke	Voltage constant
kt	Torque constant
M _{max} (60s)	Peak Torque
I _{max} (60s)	Peak Current
J	Moment of inertia

All motors: converter supply voltage 380 to 500 V

Motors

Technical data

Rated speed 3000 1/min

Rated speed 3000 1/min																					
η (100 % -Load)	η (75 %-Load)	η (50 %-Load)	IE	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	n _N	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)							
%	%	%					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100	
82.2	n.A	n.A	5	1)	S5EU04SA4-1	4	0.38	0.12	100	380	3000	2)	3)	3.5	12.5	6.0	7.9	15.1	12.1	19.5	
80	n.A	n.A	5	1)	S5EU04SA4-1	4	0.58	0.18	100	380	3000	2)	3)	3.0	18.0	4.5	7.8	19.8	10.9	22.8	
80.3	n.A	n.A	5	1)	S5E04SA4-1	4	0.65	0.2	100	380	3000	2)	3)	2.9	17.7	4.5	7.7	19.5	11.0	22.6	
79.1	n.A	n.A	5	1)	S5EU04SA4-1	4	0.65	0.2	100	380	3000	2)	3)	2.8	20.1	4.1	7.8	21.8	10.3	24.3	
78.5	n.A	n.A	5	1)	S5E04SA4-1	4	0.8	0.25	100	380	3000	2)	3)	2.6	20.7	3.9	7.6	22.3	10.5	24.8	
87.8	n.A	n.A	5	1)	S5EU06MA4	4	0.8	0.25	100	380	3000	2)	3)	2.1	7.8	3.8	5.0	9.5	8.2	12.6	
74.5	n.A	n.A	4	1)	S4E04SA4-1	4	1	0.315	100	380	3000	2)	3)	2.8	27.2	3.8	8.9	28.5	11.7	30.9	
86.6	n.A	n.A	5	1)	S5EU06MA4	4	1.2	0.37	100	380	3000	2)	3)	1.8	11.0	3.0	4.8	12.1	7.1	14.2	
86.2	n.A	n.A	5	1)	S5E06MA4	4	1.3	0.4	100	380	3000	2)	3)	1.7	10.5	3.0	4.9	11.8	7.9	14.7	
86.3	n.A	n.A	5	1)	S5EU06MA4	4	1.3	0.4	100	380	3000	2)	3)	1.7	11.6	2.7	4.7	12.7	6.6	14.6	
84	n.A	n.A	5	1)	S5E06MA4	4	1.75	0.55	100	380	3000	2)	3)	1.6	14.0	2.5	5.0	15.0	7.3	17.2	
87.9	n.A	n.A	5	1)	S5EU06LA4	4	1.75	0.55	100	380	3000	2)	3)	1.8	8.8	3.0	4.5	10.2	6.7	12.5	
78.6	n.A	n.A	3	1)	SPE06MA4	4	2.4	0.75	100	380	3000	2)	3)	1.8	22.3	2.6	6.5	22.9	8.3	24.7	
88.3	n.A	n.A	5	1)	S5E06LA4	4	2.4	0.75	100	380	3000	2)	3)	1.2	9.6	1.8	3.4	10.2	5.1	11.9	
84	n.A	n.A	4	1)	S4E06LA4	4	3.5	1.1	100	380	3000	2)	3)	1.3	15.3	1.9	4.4	16.0	5.7	17.2	
90.8	n.A	n.A	5	1)	S5EU08MA4	4	3.5	1.1	100	380	3000	2)	3)	1.5	6.2	2.4	3.4	7.2	5.3	9.1	
91.2	n.A	n.A	5	1)	S5E08MA4	4	5	1.55	100	380	3000	2)	3)	0.9	6.7	1.4	2.6	7.3	4.1	8.8	
88.9	n.A	n.A	5	1)	S5EU08LA4	4	5	1.55	100	380	3000	2)	3)	1.9	7.0	3.3	4.5	8.7	7.1	11.5	
89.2	n.A	n.A	5	1)	S5E08LA4	4	7	2.2	100	380	3000	2)	3)	1.4	7.2	2.5	3.8	8.5	6.0	10.9	
88.8	n.A	n.A	4	1)	S4E08MA4	4	7	2.2	100	380	3000	2)	3)	0.9	9.7	1.3	3.1	10.2	4.1	11.3	
91.9	n.A	n.A	5	1)	S5EU09SA4	4	7	2.2	100	380	3000	2)	3)	1.1	5.2	2.1	3.0	6.2	4.6	7.9	
86.9	n.A	n.A	3	1)	SPE08LA4	4	10	3.1	100	380	3000	2)	3)	1.5	10.7	2.4	4.4	11.8	6.3	13.8	
92.8	n.A	n.A	5	1)	S5EU09XA4	4	10	3.1	100	380	3000	2)	3)	1.3	4.2	2.2	2.8	5.3	4.7	7.1	
91.5	n.A	n.A	5	1)	S5EU11SA6	6	10	3.1	150	380	3000	2)	3)	1.4	3.7	3.0	3.5	5.4	6.6	8.5	
89.7	n.A	n.A	4	1)	S4E09SA4	4	13	4	100	380	3000	2)	3)	1.1	8.0	1.8	3.2	8.9	4.8	10.6	
91.9	n.A	n.A	5	1)	S5EU11SA6	6	12.75	4	150	380	3000	2)	3)	1.2	4.2	2.4	3.1	5.6	5.5	8.0	
92.5	n.A	n.A	5	1)	S5EU11MA6	6	13	4	150	380	3000	2)	3)	1.5	2.8	3.2	3.3	4.5	6.3	7.5	
92.5	n.A	n.A	5	1)	S5E09XA4	4	17.5	5.5	100	380	3000	2)	3)	0.8	5.1	1.5	2.4	5.9	4.0	7.3	
91.2	n.A	n.A	4	1)	S4E11SA6	6	17.5	5.5	150	380	3000	2)	3)	1.0	4.4	2.2	3.0	5.7	5.9	8.7	
91.9	n.A	n.A	5	1)	S5EU11LA6	6	17.5	5.5	150	380	3000	2)	3)	1.3	2.3	3.0	3.1	4.0	7.1	7.9	
93.3	n.A	n.A	5	1)	S5EU11MA6	6	17.5	5.5	150	380	3000	2)	3)	1.1	3.0	2.3	2.6	4.2	4.7	6.5	
92	n.A	n.A	5	1)	S5E09XA4	4	20	6.3	100	380	3000	2)	3)	0.8	5.9	1.4	2.4	6.5	3.7	7.8	
93.2	n.A	n.A	5	1)	S5E11MA6	6	24	7.5	150	380	3000	2)	3)	0.9	2.9	1.9	2.4	4.1	4.8	6.6	
90.8	n.A	n.A	4	1)	S4E11SA6	6	24	8	150	380	3000	2)	3)	0.9	5.9	1.8	2.8	7.0	5.0	9.2	
93.3	n.A	n.A	5	1)	S5EU11LA6	6	24	8	150	380	3000	2)	3)	1.0	2.3	2.2	2.5	3.6	5.3	6.5	
93.8	n.A	n.A	5	1)	S5E11LA6	6	30	10	150	380	3000	2)	3)	0.8	2.5	1.7	2.2	3.5	4.4	5.9	
93.2	n.A	n.A	5	1)	S5E11MA6	6	30	10	150	380	3000	2)	3)	0.8	3.4	1.6	2.2	4.4	4.2	6.6	



Rated speed 3000 1/min

Rated speed 3000 1/min		Power losses in % at operating points (Speed/Torque)									
		25/25	25/100	50/25	50/50	50/100	90/50	90/100	90/100	90/100	90/100
η (100 %-Load)	%	94.1	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A
η (75 %-Load)	%	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A
η (50 %-Load)	%	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A	n.A
IE Class		5	4	5	4	5	4	5	4	5	4
Manufacturer data		1)	1)	1)	1)	1)	1)	1)	1)	1)	1)
Type		S5E11LA6	S4E11MA6	S5E11LA6	S4E11MA6	S5E11LA6	S4E11MA6	S5E11LA6	S4E11MA6	S5E11LA6	S4E11MA6
Number of poles		6	6	6	6	6	6	6	6	6	6
M_n	Nm	35	35	48	35	35	48	35	35	48	35
P	kW	11	11	15	11	11	15	11	11	15	11
Frequency	Hz	150	150	150	150	150	150	150	150	150	150
Voltage	V	380	380	380	380	380	380	380	380	380	380
nN	1/min	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
Type of motor		2)	2)	2)	2)	2)	2)	2)	2)	2)	2)
Operating conditions		3)	3)	3)	3)	3)	3)	3)	3)	3)	3)

*Dimensioned according to IEC TS 60034-30-2

1) Manufacturer:	Bauer Gear Motor GmbH	2) Type of motor:	Three-phase permanent magnet excited synchronous motor	3) Installation altitude above sea level (m):	1000
Commercial register number:	HRB 736269			Ambient temperature:	-20 °C to +40 °C
Address:	Eberhard-Bauer-Str. 37, 73734 Esslingen / Germany				

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 %).

Motor torques in the adjusting range 150 1/min - 3600 1/min. duty type S1

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
0.38	0.12	S5EU04SA4-1	150	0.38	0.006	0.33	5	Y
			500	0.38	0.02	0.33	16.67	Y
			1000	0.38	0.04	0.33	33.33	Y
			3000	0.38	0.12	0.33	100	Y
			3600	0.38	0.14	0.33	120	Y
0.58	0.18	S5EU04SA4-1	150	0.58	0.009	0.49	5	Y
			500	0.58	0.03	0.49	16.67	Y
			1000	0.58	0.06	0.49	33.33	Y
			3000	0.58	0.18	0.49	100	Y
			3600	0.58	0.22	0.49	120	Y
0.65	0.2	S5E04SA4-1	150	0.65	0.01	0.52	5	Y
			500	0.65	0.034	0.52	16.67	Y
			1000	0.65	0.068	0.52	33.33	Y
			3000	0.65	0.2	0.52	100	Y
			3600	0.65	0.245	0.52	120	Y
0.65	0.2	S5EU04SA4-1	150	0.65	0.01	0.54	5	Y
			500	0.65	0.034	0.54	16.67	Y
			1000	0.65	0.068	0.54	33.33	Y
			3000	0.65	0.2	0.54	100	Y
			3600	0.65	0.245	0.54	120	Y
0.8	0.25	S5E04SA4-1	150	0.76	0.012	0.61	5	Y
			500	0.8	0.042	0.64	16.67	Y
			1000	0.8	0.084	0.64	33.33	Y
			3000	0.8	0.25	0.64	100	Y
			3600	0.8	0.3	0.64	120	Y
0.8	0.25	S5EU06MA4	150	0.8	0.013	0.63	5	Y
			500	0.8	0.042	0.63	16.67	Y
			1000	0.8	0.084	0.63	33.33	Y
			3000	0.8	0.25	0.63	100	Y
			3600	0.8	0.3	0.63	120	Y
1	0.315	S4E04SA4-1	150	0.76	0.012	0.61	5	Y
			500	0.85	0.045	0.68	16.67	Y
			1000	1	0.105	0.8	33.33	Y
			3000	1	0.315	0.8	100	Y
			3600	1	0.38	0.8	120	Y
1.2	0.37	S5EU06MA4	150	1.2	0.019	0.93	5	Y
			500	1.2	0.063	0.93	16.67	Y
			1000	1.2	0.126	0.93	33.33	Y
			3000	1.2	0.37	0.93	100	Y
			3600	1.2	0.45	0.93	120	Y
1.3	0.4	S5E06MA4	150	1.3	0.02	1	5	Y
			500	1.3	0.068	1	16.67	Y
			1000	1.3	0.136	1	33.33	Y
			3000	1.3	0.4	1	100	Y
			3600	1.3	0.5	1	120	Y
1.3	0.4	S5EU06MA4	150	1.3	0.02	1	5	Y
			500	1.3	0.068	1	16.67	Y
			1000	1.3	0.136	1	33.33	Y
			3000	1.3	0.4	1	100	Y
			3600	1.3	0.5	1	120	Y

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
1.75	0.55	S5E06MA4	150	1.75	0.027	1.35	5	Y
			500	1.75	0.092	1.35	16.67	Y
			1000	1.75	0.183	1.35	33.33	Y
			3000	1.75	0.55	1.35	100	Y
			3600	1.75	0.66	1.35	120	Y
1.75	0.55	S5EU06LA4	150	1.75	0.027	1.45	5	Y
			500	1.75	0.092	1.45	16.67	Y
			1000	1.75	0.183	1.45	33.33	Y
			3000	1.75	0.55	1.45	100	Y
			3600	1.75	0.66	1.45	120	Y
2.4	0.75	SPE06MA4	150	1.8	0.028	1.38	5	Y
			500	2	0.105	1.51	16.67	Y
			1000	2.2	0.23	1.68	33.33	Y
			3000	2.4	0.75	1.85	100	Y
			3600	2.4	0.9	1.85	120	Y
2.4	0.75	S5E06LA4	150	2.4	0.038	1.9	5	Y
			500	2.4	0.126	1.9	16.67	Y
			1000	2.4	0.25	1.9	33.33	Y
			3000	2.4	0.75	1.9	100	Y
			3600	2.4	0.9	1.9	120	Y
3.5	1.1	S4E06LA4	150	2.5	0.04	2	5	Y
			500	2.9	0.15	2.3	16.67	Y
			1000	3.5	0.37	2.8	33.33	Y
			3000	3.5	1.1	2.8	100	Y
			3600	3.5	1.3	2.8	120	Y
3.5	1.1	S5EU08MA4	150	3.5	0.06	2.55	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			3000	3.5	1.1	2.55	100	Y
			3600	3.5	1.3	2.55	120	Y
5	1.55	S5E08MA4	150	5	0.08	3.5	5	Y
			500	5	0.26	3.5	16.67	Y
			1000	5	0.52	3.5	33.33	Y
			3000	5	1.55	3.5	100	Y
			3600	5	1.9	3.5	120	Y
5	1.55	S5EU08LA4	150	5	0.08	3.9	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			3000	5	1.55	3.9	100	Y
			3600	5	1.9	3.9	120	Y
7	2.2	S5E08LA4	150	6.5	0.1	4.8	5	Y
			500	7	0.37	5.2	16.67	Y
			1000	7	0.73	5.2	33.33	Y
			3000	7	2.2	5.2	100	Y
			3600	7	2.6	5.2	120	Y
7	2.2	S4E08MA4	150	5	0.08	3.5	5	Y
			500	5.9	0.31	4.1	16.67	Y
			1000	7	0.73	4.8	33.33	Y
			3000	7	2.2	4.8	100	Y
			3600	7	2.6	4.8	120	Y
7	2.2	S5EU09SA4	150	7	0.11	4.45	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			3000	7	2.2	4.45	100	Y
			3600	7	2.6	4.45	120	Y

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
10	3.1	SPE08LA4	150	6.5	0.1	4.8	5	Y
			500	8	0.42	5.9	16.67	Y
			1000	10	1.05	7.4	33.33	Y
			3000	10	3.1	7.4	100	Y
			3600	10	3.8	7.4	120	Y
10	3.1	S5EU09XA4	150	10	0.16	6.3	5	Y
			500	-	-	-	16.67	Y
			1000	-	-	-	33.33	Y
			3000	10	3.1	6.3	100	Y
			3600	10	3.8	6.3	120	Y
10	3.1	S5EU11SA6	150	10	0.16	6.6	7.5	Y
			500	-	-	-	25	Y
			1000	-	-	-	50	Y
			3000	10	3.1	6.6	150	Y
			3600	10	3.8	6.6	180	Y
13	4	S4E09SA4	150	8.5	0.13	5.3	5	Y
			500	10	0.52	6.2	16.67	Y
			1000	13	1.36	8	33.33	Y
			3000	13	4	8	100	Y
			3600	13	4.9	8.7	120	Y
12.75	4	S5EU11SA6	150	12.75	0.2	8.4	7.5	Y
			500	-	-	-	25	Y
			1000	-	-	-	50	Y
			3000	12.75	4	8.4	150	Y
			3600	12.75	4.8	8.4	180	Y
13	4	S5EU11MA6	150	13	0.2	8.6	7.5	Y
			500	-	-	-	25	Y
			1000	-	-	-	50	Y
			3000	13	4	8.6	150	Y
			3600	13	4.9	8.6	180	Y
17.5	5.5	S5E09XA4	150	13	0.2	7.8	5	Y
			500	16	0.84	9.6	16.67	Y
			1000	17.5	1.83	10.5	33.33	Y
			3000	17.5	5.5	10.5	100	Y
			3600	17.5	6.6	11.1	120	Y
17.5	5.5	S4E11SA6	150	17.5	0.27	11	7.5	Y
			500	17.5	0.9	11	25	Y
			1000	17.5	1.8	11	50	Y
			3000	17.5	5.5	11	150	Y
			3600	17.5	6.6	11	180	Y
17.5	5.5	S5EU11MA6	150	17.5	0.27	11.5	7.5	Y
			500	-	-	-	25	Y
			1000	-	-	-	50	Y
			3000	17.5	5.5	11.5	150	Y
			3600	17.5	6.6	11.5	180	Y
17.5	5.5	S5EU11LA6	150	17.5	0.27	11.5	7.5	Y
			500	-	-	-	25	Y
			1000	-	-	-	50	Y
			3000	17.5	5.5	11.5	150	Y
			3600	17.5	6.6	11.5	180	Y
20	6.3	S5E09XA4	150	13	0.2	7.8	5	Y
			500	16	0.84	9.6	16.67	Y
			1000	20	2.1	12	33.33	Y
			3000	20	6.3	12	100	Y
			3600	17.5	6.6	11.1	120	Y

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
24	7.5	S4E11SA6	150	19	0.3	12	7.5	Y
			500	21.5	1.1	13.6	25	Y
			1000	24	2.5	15.2	50	Y
			3000	24	7.5	15.2	150	Y
			3600	24	9	15.2	180	Y
24	7.5	S5E11MA6	150	24	0.38	15.4	7.5	Y
			500	24	1.3	15.4	25	Y
			1000	24	2.5	15.4	50	Y
			3000	24	7.5	15.4	150	Y
			3600	24	9	15.4	180	Y
23.9	7.5	S5EU11LA6	150	23.9	0.38	15.7	7.5	Y
			500	-	-	-	25	Y
			1000	-	-	-	50	Y
			3000	23.9	7.5	15.7	150	Y
			3600	23.9	9	15.7	180	Y
30	9.5	S5E11MA6	150	26.5	0.42	17	7.5	Y
			500	30	1.6	19.3	25	Y
			1000	30	3.1	19.3	50	Y
			3000	30	9.5	19.3	150	Y
			3600	30	11	19.3	180	Y
30	9.5	S5E11LA6	150	30	0.47	18.5	7.5	Y
			500	30	1.6	18.5	25	Y
			1000	30	3.1	18.5	50	Y
			3000	30	9.5	18.5	150	Y
			3600	30	11	18.5	180	Y
35	11	S4E11MA6	150	26.5	0.42	17	7.5	Y
			500	30	1.6	19.3	25	Y
			1000	35	3.7	22.5	50	Y
			3000	35	11	22.5	150	Y
			3600	35	13	22.5	180	Y
35	11	S5E11LA6	150	35	0.55	21.5	7.5	Y
			500	35	1.8	21.5	25	Y
			1000	35	3.7	21.5	50	Y
			3000	35	11	21.5	150	Y
			3600	35	13	21.5	180	Y
48	15	S5E11LA6	150	35	0.55	21.5	7.5	Y
			500	40	2.1	25	25	Y
			1000	48	5	30	50	Y
			3000	48	15	30	150	Y
			3600	40	15	25.8	180	Y

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{3000/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	120 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Aseptic-Motors

Aseptic motors with rated speed 1500 1/min

M _n Nm	IE Classe	Type	P _n kW	I _n A	2p	n _n 1/min	f Hz	η %	Conne- tion	R ₂₀ Ω	Rs ₂₀ Ω	L _d mH	L _q mH	ke V/1000 1/min	kt Nm/A	M _{max} (60s) Nm	I _{max} (60s) A	J kgm ²
3.5	5	SA5E08MB4	0.55	1.3	4	1500	50	IE5-86.5	Y	18.7	9.35	97	170	180	2.7	10	3.7	0.00115
5	5	SA5E08LB4	0.78	1.85	4	1500	50	IE5-88.4	Y	11	5.5	70	117	171	2.7	15	5.6	0.0015
7	5	SA5E09SB4	1.1	2.2	4	1500	50	IE5-89.2	Y	9.9	4.95	64.1	110	208	3.2	20	6.4	0.00245
10	5	SA5E09XB4	1.55	3.1	4	1500	50	IE5-91	Y	5.25	2.63	41.2	70.1	209	3.2	30	10	0.0038

Aseptic motors torques in the adjusting range 150 1/min - 1800 1/min. duty type S1

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
3.5	0.55	SA5E08MB4	150	3.5	0.06	1.3	5	Y
			1500	3.5	0.55	1.3	50	Y
			1800	3.5	0.66	1.3	60	Y
5	0.78	SA5E08LB4	150	5	0.08	1.85	5	Y
			1500	5	0.78	1.85	50	Y
			1800	5	0.94	1.85	60	Y
7	1.1	SA5E09SB4	150	7	0.11	2.2	5	Y
			1500	7	1.1	2.2	50	Y
			1800	7	1.3	2.2	60	Y
10	1.55	SA5E09XB4	150	10	0.16	3.1	5	Y
			1500	10	1.55	3.1	50	Y
			1800	10	1.9	3.1	60	Y

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{1500/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Aseptic motors with rated speed 1500 1/min

Aseptic motors with rated speed 1500 1/min																				
η (100 % -Load)	η (75 %-Load)	η (50 %-Load)	IE Class	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	n _N	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)						
%	%	%					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100
86.5	n.A	n.A	5	1)	SA5E08MB4	4	3.5	0.55	50	380	1500	2)	3)	1.3	11.2	2.0	4.2	12.0	5.9	14.0
88.4	n.A	n.A	5	1)	SA5E08LB4	4	5	0.78	50	380	1500	2)	3)	1.4	9.5	2.3	4.0	10.5	5.8	11.9
89.2	n.A	n.A	5	1)	SA5E09SB4	4	7	1.1	50	380	1500	2)	3)	1.6	8.0	2.5	3.5	9.0	5.2	10.9
91	n.A	n.A	5	1)	SA5E09XB4	4	10	1.55	50	380	1500	2)	3)	1.1	6.6	2.0	3.1	7.6	4.6	9.0
*Dimensioned according to IEC TS 60034-30-2																				
1) Manufacturer: Bauer Gear Motor GmbH Commercial register number: HRB 736269 Address: Eberhard-Bauer-Str. 37, 73734 Esslingen / Germany					2) Type of motor: Three-phase permanent magnet excited synchronous motor					3) Installation altitude above sea level (m): Ambient temperature: -20 °C to +40 °C										

Aseptic motors with rated speed 3000 1/min

M _n Nm	IE Classe	Type	P _n kW	I _n A	2p	n _n 1/min	f Hz	η %	Conne- tion	R ₂₀ Ω	Rs ₂₀ Ω	L _d mH	L _q mH	ke V/1000 1/min	kt Nm/A	M _{max} (60s) Nm	I _{max} (60s) A	J kgm ²
2.5	5	SA5E08MB4	0.78	1.85	4	3000	100	IE5-90.2	Y	4.73	2.36	24.7	43.5	90	1.35	10	7.5	0.00115
3.5	5	SA5E08LB4	1.1	2.6	4	3000	100	IE5-92.3	Y	2.82	1.41	16.8	29.6	87	1.35	15	11.5	0.0015
4.8	5	SA5E08LB4	1.5	3.55	4	3000	100	IE5-91.8	Y	2.82	1.41	16.8	29.6	87	1.35	15	11.5	0.0015
5	5	SA5E09SB4	1.55	3.3	4	3000	100	IE5-90.7	Y	2.42	1.21	15.5	27.6	103	1.5	20	12.5	0.00245
7	5	SA5E09XB4	2.2	4.5	4	3000	100	IE5-92.9	Y	1.31	0.66	12.7	17.9	102	1.56	30	20	0.0038
9.55	5	SA5E09XB4	3	6.1	4	3000	100	IE5-92.5	Y	1.31	0.66	12.7	17.9	102	1.56	30	20	0.0038

Aseptic motor torques in the adjusting range 150 1/min - 3600 1/min. duty type S1

M _n Nm	P _n kW	Type	Speed	Torque	Power	Current	Frequency	Connection
			1/min	Nm	kW	A	Hz	
2.5	0.78	SA5E08MB4	150	2.5	0.04	1.85	5	Y
			3000	2.5	0.78	1.85	100	Y
			3600	2.5	0.94	1.85	120	Y
3.5	1.1	SA5E08LB4	150	3.5	0.06	2.6	5	Y
			3000	3.5	1.1	2.6	100	Y
			3600	3.5	1.3	2.6	120	Y
4.8	1.5	SA5E08LB4	150	4.8	0.08	3.55	5	Y
			3000	4.8	1.5	3.55	100	Y
			3600	3.5	1.3	2.6	120	Y
5	1.55	SA5E09SB4	150	5	0.08	3.3	5	Y
			3000	5	1.55	3.3	100	Y
			3600	5	1.9	3.3	120	Y
7	2.2	SA5E09XB4	150	7	0.11	4.5	5	Y
			3000	7	2.2	4.5	100	Y
			3600	7	2.6	4.5	120	Y
9.55	3	SA5E09XB4	150	9.55	0.15	6.1	5	Y
			3000	9.55	3	6.1	100	Y
			3600	-	-	-	120	Y

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{3000/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	120 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Aseptic motors with rated speed 3000 1/min

Aseptic motors with rated speed 3000 1/min																				
η (100 % -Load)	η (75 %-Load)	η (50 %-Load)	IE Class	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	n _N	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)						
%	%	%					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100
90.2	n.A	n.A	5	1)	SA5E08MB4	4	2.5	0.78	100	380	3000	2)	3)	1.7	5.2	3.2	4.1	6.9	6.9	9.9
92.3	n.A	n.A	5	1)	SA5E08LB4	4	3.5	1.1	100	380	3000	2)	3)	1.2	4.3	2.4	3.0	5.4	5.0	7.6
91.8	n.A	n.A	5	1)	SA5E08LB4	4	4.8	1.5	100	380	3000	2)	3)	1.0	5.5	2.0	2.9	6.4	4.6	8.1
90.7	n.A	n.A	5	1)	SA5E09SB4	4	5	1.55	100	380	3000	2)	3)	1.7	4.6	3.2	4.0	6.4	7.2	9.4
92.9	n.A	n.A	5	1)	SA5E09XB4	4	7	2.2	100	380	3000	2)	3)	1.2	3.4	2.4	2.8	4.6	5.0	6.8
92.5	n.A	n.A	5	1)	SA5E09XB4	4	9.55	3	100	380	3000	2)	3)	1.0	4.3	1.9	2.7	5.4	4.7	7.3
*Dimensioned according to IEC TS 60034-30-2																				

1) Manufacturer:	Bauer Gear Motor GmbH	2) Type of motor:	Three-phase permanent magnet excited synchronous motor	3) Installation altitude above sea level (m): Ambient temperature:	1000 -20 °C to +40 °C
Commercial register number:	HRB 736269				
Address:	Eberhard-Bauer-Str. 37, 73734 Esslingen / Germany				

Stainless Steel Motors

Stainless steel motors with rated speed 1500 1/min

M _n	IE	Type	P _n	I _n	2p	n _n	f	η	Conne- ction	R ₂₀	Rs ₂₀	L _d	L _q	ke	kt	M _{max} (60s)	I _{max} (60s)	J
Nm	Classe		kW	A		1/min	Hz	%		Ω	Ω	mH	mH	V/1000 1/min	Nm/A	Nm	A	kgm ²
1.6	5	SA5E08MA4	0.25	0.56	4	1500	50	IE5-88.2	Y	18.7	9.35	97	170	180	2.8	5.6	2.1	0.00115
2.4	5	SA5E08MA4	0.37	0.86	4	1500	50	IE5-88	Y	18.7	9.35	97	170	180	2.8	5.6	2.1	0.00115
2.4	5	SA5E09SA4	0.37	0.75	4	1500	50	IE5-89.2	Y	9.9	4.95	64.1	110	208	3.2	7.7	2.4	0.00245
3.5	5	SA5E08MA4	0.55	1.3	4	1500	50	IE5-85.5	Y	18.7	9.35	97	170	180	2.7	5.6	2.1	0.00115
3.5	5	SA5E09SA4	0.55	1.1	4	1500	50	IE5-90.3	Y	9.9	4.95	64.1	110	208	3.2	7.7	2.4	0.00245
3.5	5	SA5E09XA4	0.55	1.1	4	1500	50	IE5-89.9	Y	5.25	2.63	41.2	70.1	209	3.2	11.2	3.7	0.0038
4.8	5	SA5E09SA4	0.75	1.5	4	1500	50	IE5-90.5	Y	9.9	4.95	64.1	110	208	3.2	7.7	2.4	0.00245
4.8	5	SA5E09XA4	0.75	1.6	4	1500	50	IE5-91.2	Y	5.25	2.63	41.2	70.1	209	3	11.2	3.7	0.0038
7	5	SA5E09XA4	1.1	2.3	4	1500	50	IE5-91.4	Y	5.25	2.63	41.2	70.1	209	3	11.2	3.7	0.0038

Stainless steel motors torques in the adjusting range 150 1/min - 1800 1/min. duty type S1

M _n	P _n	Type	Speed	Torque	Power	Current	Frequency	Connection
Nm	kW		1/min	Nm	kW	A	Hz	
1.6	0.25	SA5E08MA4	150	1.6	0.025	0.56	5	Y
			1500	1.6	0.25	0.56	50	Y
			1800	1.6	0.3	0.56	60	Y
2.4	0.37	SA5E08MA4	150	2.4	0.037	0.86	5	Y
			1500	2.4	0.37	0.86	50	Y
			1800	2.4	0.45	0.86	60	Y
2.4	0.37	SA5E09SA4	150	2.4	0.037	0.75	5	Y
			1500	2.4	0.37	0.75	50	Y
			1800	2.4	0.45	0.75	60	Y
3.5	0.55	SA5E08MA4	150	3.5	0.055	1.3	5	Y
			1500	3.5	0.55	1.3	50	Y
			1800	3.5	0.66	1.3	60	Y
3.5	0.55	SA5E09SA4	150	3.5	0.055	1.1	5	Y
			1500	3.5	0.55	1.1	50	Y
			1800	3.5	0.66	1.1	60	Y
3.5	0.55	SA5E09XA4	150	3.5	0.055	3.5	5	Y
			1500	3.5	0.55	3.5	50	Y
			1800	3.5	0.66	3.5	60	Y
4.8	0.75	SA5E09SA4	150	4.8	0.075	1.5	5	Y
			1500	4.8	0.75	1.5	50	Y
			1800	4.8	0.9	1.5	60	Y
4.8	0.75	SA5E09XA4	150	4.8	0.075	1.6	5	Y
			1500	4.8	0.75	1.6	50	Y
			1800	4.8	0.9	1.6	60	Y
7	1.1	SA5E09XA4	150	7	0.11	2.3	5	Y
			1500	7	1.1	2.3	50	Y
			1800	7	1.32	2.3	60	Y

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{1500/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Stainless steel motors with rated speed 1500 1/min

Stainless steel motors with rated speed 1500 1/min																									
η (100 % -Load)	η (75 %-Load)	η (50 %-Load)	IE ClassKlasse	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	n _N	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)											
%	%	%					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100					
88.2	n.A	n.A	5	1)	SA5E08MA4	4	1.6	0.25	50	380	1500	2)	3)	1.7	6.1	3.0	4.2	7.9	8.7	12.1					
88	n.A	n.A	5	1)	SA5E08MA4	4	2.4	0.37	50	380	1500	2)	3)	1.4	8.3	2.3	3.9	9.5	7.2	12.5					
89.2	n.A	n.A	5	1)	SA5E09SA4	4	2.4	0.37	50	380	1500	2)	3)	2.0	4.3	4.0	4.3	6.4	9.4	11.1					
85.5	n.A	n.A	5	1)	SA5E08MA4	4	3.5	0.55	50	380	1500	2)	3)	1.3	12.1	2.0	4.4	13.0	6.3	15.3					
90.3	n.A	n.A	5	1)	SA5E09SA4	4	3.5	0.55	50	380	1500	2)	3)	1.4	4.9	2.7	3.4	6.3	6.8	9.7					
89.9	n.A	n.A	5	1)	SA5E09XA4	4	3.5	0.55	50	380	1500	2)	3)	2.2	3.7	4.2	4.1	5.8	8.4	10.1					
90.5	n.A	n.A	5	1)	SA5E09SA4	4	4.8	0.75	50	380	1500	2)	3)	1.1	6.1	2.1	3.1	7.1	5.6	9.5					
91.2	n.A	n.A	5	1)	SA5E09XA4	4	4.8	0.75	50	380	1500	2)	3)	1.5	4.1	2.9	3.4	5.6	6.5	8.7					
91.4	n.A	n.A	5	1)	SA5E09XA4	4	7	1.1	50	380	1500	2)	3)	1.2	5.1	2.5	3.4	6.2	5.3	8.4					
*Dimensioned according to IEC TS 60034-30-2																									
1) Manufacturer:					Bauer Gear Motor GmbH					2) Type of motor:					Three-phase permanent magnet excited synchronous motor					3) Installation altitude above sea level (m): Ambient temperature:					
Commercial register number:					HRB 736269															1000					
Address:					Eberhard-Bauer-Str. 37, 73734 Esslingen / Germany															-20 °C to +40 °C					

Stainless steel motors with rated speed 3000 1/min

M _n Nm	IE Classe	Type	P _n kW	I _n A	2p	n _n 1/min	f Hz	η %	Conne- tion	R ₂₀ Ω	Rs ₂₀ Ω	L _d mH	L _q mH	ke V/1000 1/min	kt Nm/A	M _{max} (60s) Nm	I _{max} (60s) A	J kgm ²
1.2	5	SA5E08MA4	0.37	0.9	4	3000	100	IE5-87.5	Y	4.73	2.36	24.7	43.5	90	1.33	3.8	2.9	0.00115
1.75	5	SA5E08MA4	0.55	1.32	4	3000	100	IE5-89.7	Y	4.73	2.36	24.7	43.5	90	1.33	3.8	2.9	0.00115
2.4	5	SA5E08MA4	0.75	1.8	4	3000	100	IE5-90.5	Y	4.73	2.36	24.7	43.5	90	1.33	3.8	2.9	0.00115
2.4	5	SA5E09SA4	0.75	1.6	4	3000	100	IE5-89.3	Y	2.42	1.21	15.5	27.6	103	1.5	7.7	5.1	0.00245
3.5	5	SA5E09SA4	1.1	2.3	4	3000	100	IE5-91.3	Y	2.42	1.21	15.5	27.6	103	1.5	7.7	5.1	0.00245

Stainless steel motors torques in the adjusting range 150 1/min - 3000 1/min. duty type S1

M _n Nm	P _n kW	Type	Speed 1/min	Torque Nm	Power kW	Current A	Frequency Hz	Connection
1.2	0.37	SA5E08MA4	150	1.2	0.019	0.9	5	Y
			3000	1.2	0.37	0.9	100	Y
1.75	0.55	SA5E08MA4	150	1.75	0.027	1.32	5	Y
			3000	1.75	0.55	1.32	100	Y
2.4	0.75	SA5E08MA4	150	2.4	0.038	1.8	5	Y
			3000	2.4	0.75	1.8	100	Y
2.4	0.75	SA5E09SA4	150	2.4	0.038	1.6	5	Y
			3000	2.4	0.75	1.6	100	Y
3.5	1.1	SA5E09SA4	150	3.5	0.055	2.3	5	Y
			3000	3.5	1.1	2.3	100	Y

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _{3000/min}
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	120 Hz
Permissible operating time below f _{min} :	60 s (in open loop mode)

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Non-standard operating conditions on request.

All motors: converter supply voltage 380 to 500 V

Stainless steel motors with rated speed 3000 1/min

Stainless steel motors with rated speed 3000 1/min																				
η	η	η	IE Class	Manufacturer data	Type	Number of poles	M _n	P	Frequency	Voltage	n _N	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)						
(100 % -Load)	(75 % -Load)	(50 % -Load)					Nm	kW	Hz	V	1/min			25/25	25/100	50/25	50/50	50/100	90/50	90/100
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
IE5-87.5	n.A	n.A	5	1)	SA5E08MA4	4	1.2	0.37	100	380	3000	2)	3)	2.5	4.2	5.6	5.8	7.4	11.7	13.2
IE5-89.7	n.A	n.A	5	1)	SA5E08MA4	4	1.75	0.55	100	380	3000	2)	3)	1.4	4.0	3.3	3.9	5.9	8.3	10.4
IE5-90.5	n.A	n.A	5	1)	SA5E08MA4	4	2.4	0.75	100	380	3000	2)	3)	1.1	4.8	2.5	3.3	6.2	6.5	9.4
IE5-89.3	n.A	n.A	5	1)	SA5E09SA4	4	2.4	0.75	100	380	3000	2)	3)	1.9	3.3	4.1	4.3	5.7	9.8	10.9
IE5-91.3	n.A	n.A	5	1)	SA5E09SA4	4	3.5	1.1	100	380	3000	2)	3)	1.3	3.4	3.0	3.3	5.0	6.9	8.6
*Dimensioned according to IEC TS 60034-30-2																				
1) Manufacturer:					2) Type of motor:					3) Installation altitude above sea level (m):					1000					
Bauer Gear Motor GmbH					Three-phase permanent magnet excited synchronous motor					Ambient temperature:					-20 °C to +40 °C					
Commercial register number:																				
Address:																				
HRB 736269																				
Eberhard-Bauer-Str. 37,																				
73734 Esslingen / Germany																				

Motors

Technical data

Atex-Motors

Rated speed 1500 1/min
-Type S.XE.08MA4-..

Rated data of the motor

Type: **S.XE.08MA4-..** Ignition protection type: Increased Safety
S.XC.08MA4-.. Dust explosion protection – Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C – T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	1.0	1.75	kW
Rated torque M _n	6.5	6.5	Nm
Rated current I _n	2.3	4.0	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	9.35*		Ohm
Strang-Inductance D-Axis L _d	97*		mH
Strang-Inductance Q-Axis L _q	170*		mH
Voltage constant k _e	180	103	V / 1000 1/min
Torque constant k _t	2.82	1.62	Nm / A
Peak Torque M _{max} (60s)	10	10	Nm
Peak Current I _{max} (60s)	3.7	6.4	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

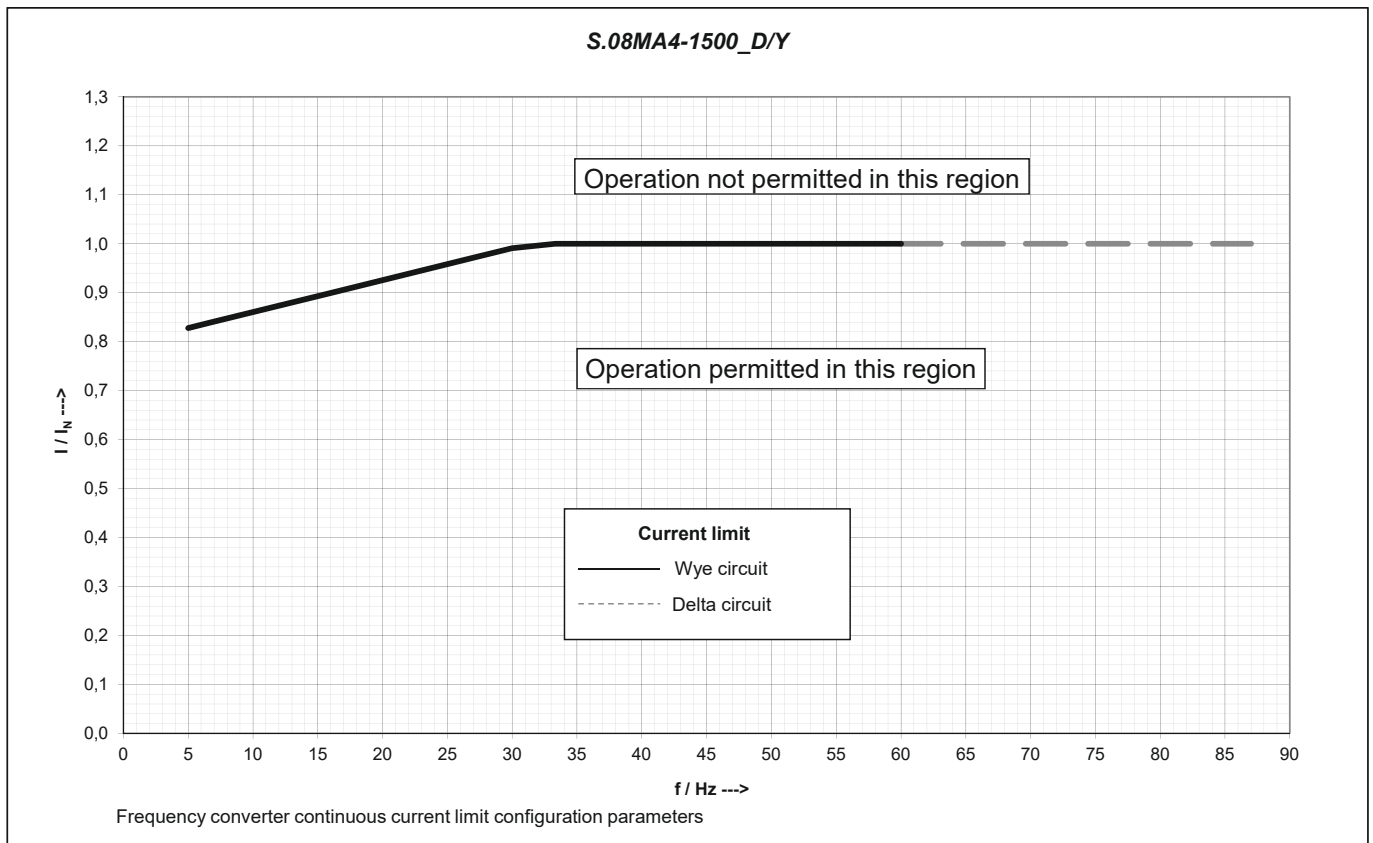
Torque	5.0	5.6	6.5	6.5	6.5	Nm
Power	0.08	0.29	0.68	1.0	1.2	kW
Voltage *	66	138	243	340	378	V
Current	1.9	2.1	2.3	2.3	2.3	A
Frequenz	5	16.66	33.33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	5.0	5.6	6.5	6.5	6.5	Nm
Power	0.08	0.29	0.68	1.0	1.75	kW
Voltage *	38	79	142	198	320	V
Current	3.3	3.6	4.0	4.0	4.0	A
Frequenz	5	16.66	33.33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 1500 1/min
-Type S.XE.08LA4-..

Rated data of the motor

Type: **S.XE.08LA4-..** Ignition protection type: Increased Safety
S.XC.08LA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3**

Labelling:  **II 2 D Ex tb IIC T 120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	1.50	2.45	kW
Rated torque M _n	9.55	9.0	Nm
Rated current I _n	3.5	5.9	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	5.5 *		Ohm
Strang-Inductance D-Axis L _d	70 *		mH
Strang-Inductance Q-Axis L _q	117 *		mH
Voltage constant k _e	171	99	V / 1000 1/min
Torque constant k _t	2.73	1.52	Nm / A
Peak Torque M _{max} (60s)	15	14	Nm
Peak Current I _{max} (60s)	5.6	9.5	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

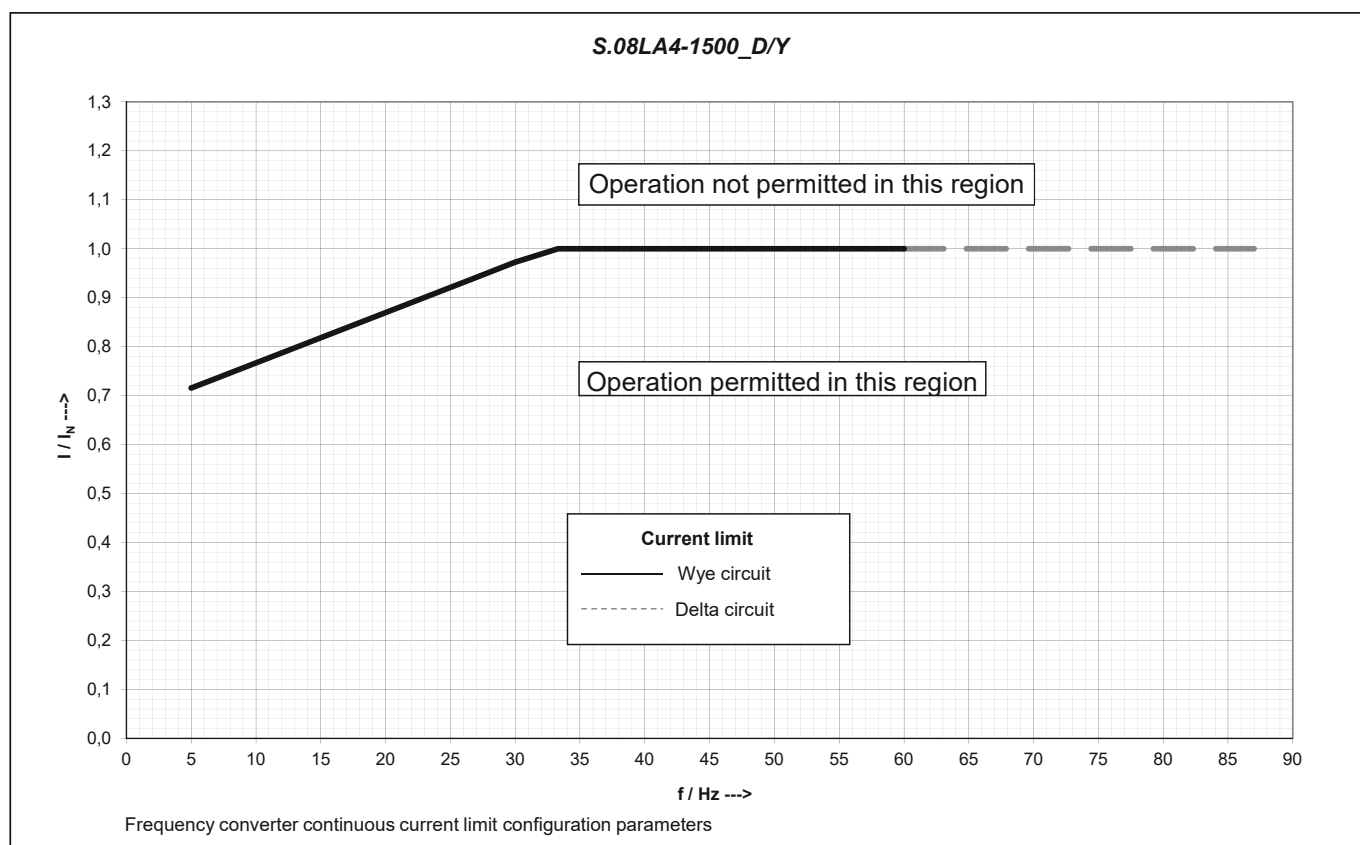
Torque	6.5	8.0	9.55	9.55	9.55	Nm
Power	0.1	0.42	1.0	1.5	1.8	kW
Voltage *	55	125	225	315	378	V
Current	2.5	3.0	3.5	3.5	3.5	A
Frequenz	5	16.66	33.33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	6.25	8.0	9.0	9.0	9.0	Nm
Power	0.10	0.39	0.94	1.4	2.45	kW
Voltage *	33	72	131	182	300	V
Current	4.3	5.0	5.9	5.9	5.9	A
Frequenz	5	16.66	33.33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 1500 1/min
-Type S.XE.09SA4-..

Rated data of the motor

Type: **S.XE.09SA4-..** Ignition protection type: Increased Safety
S.XC.09SA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	2.0	3.5	kW
Rated torque M _n	13	13	Nm
Rated current I _n	4.0	7.0	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	4.95*		Ohm
Strang-Inductance D-Axis L _d	64.1*		mH
Strang-Inductance Q-Axis L _q	109.8*		mH
Voltage constant k _e	208	120	V / 1000 1/min
Torque constant k _t	3.2	1.85	Nm / A
Peak Torque M _{max} (60s)	20	20	Nm
Peak Current I _{max} (60s)	6.4	11.0	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

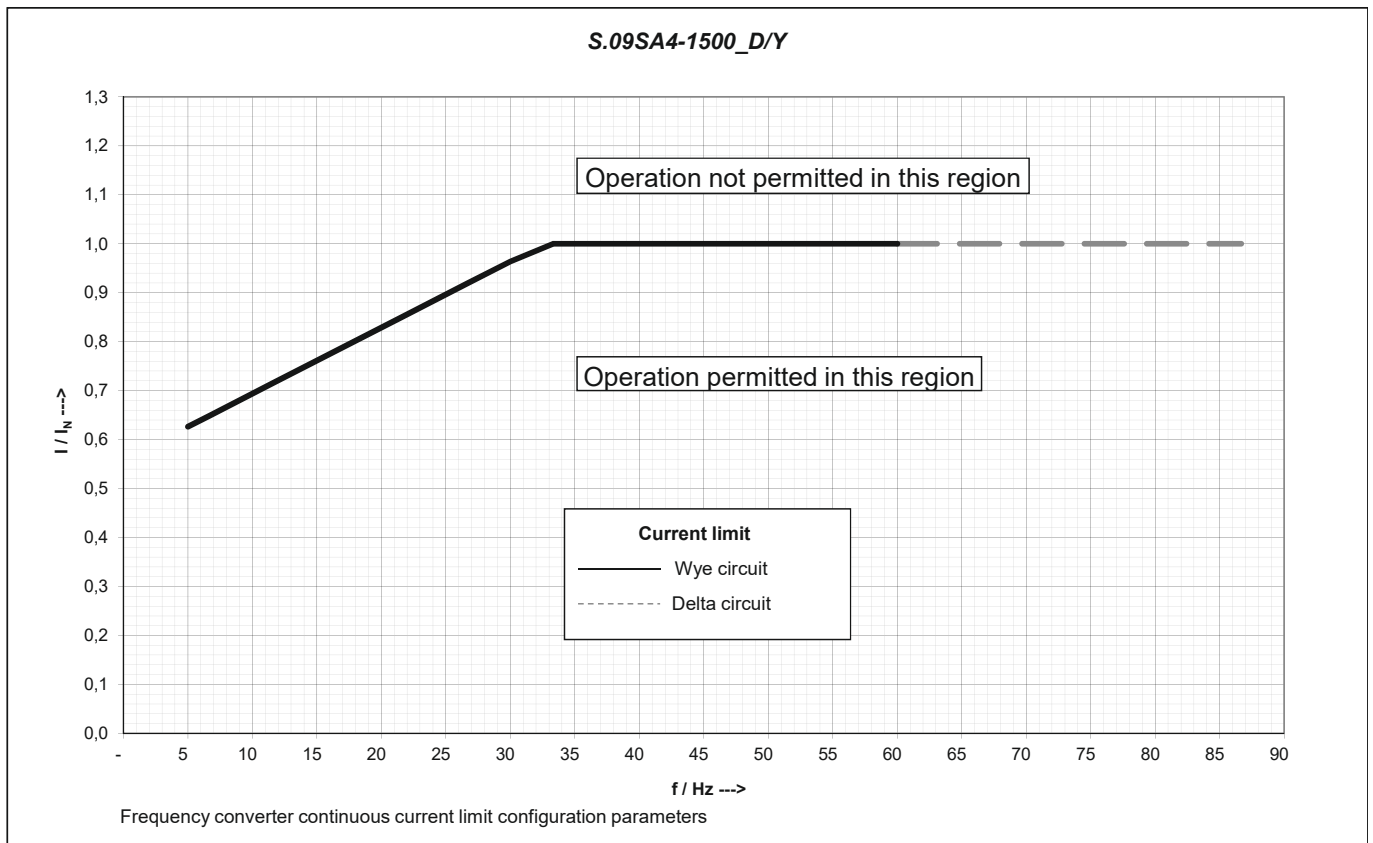
Torque	8	10	13	13	11.5	Nm
Power	0.13	0.53	1.36	2	2.2	kW
Voltage *	56	140	258	370	375	V
Current	2.5	3.2	4.0	4.0	4.0	A
Frequenz	5	16.66	33.33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	8	10	13	13	13	Nm
Power	0.13	0.53	1.36	2	3.5	kW
Voltage *	33	81	149	214	370	V
Current	4.3	5.5	7.0	7.0	7.0	A
Frequenz	5	16.66	33.33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 1500 1/min
-Type S.XE.09XA4-..

Rated data of the motor

Type: **S.XE.09XA4-..** Ignition protection type: Increased Safety
S.XC.09XA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	3.1	5.5	kW
Rated torque M _n	20	20	Nm
Rated current I _n	6.3	10.9	A
No. of Motor Poles 2p	4	4	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	50	87	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	2.625*		Ohm
Strang-Inductance D-Axis L _d	41.2*		mH
Strang-Inductance Q-Axis L _q	70.1*		mH
Voltage constant k _e	209	120	V / 1000 1/min
Torque constant k _t	3.2	1.85	Nm / A
Peak Torque M _{max} (60s)	31	29	Nm
Peak Current I _{max} (60s)	10	16	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

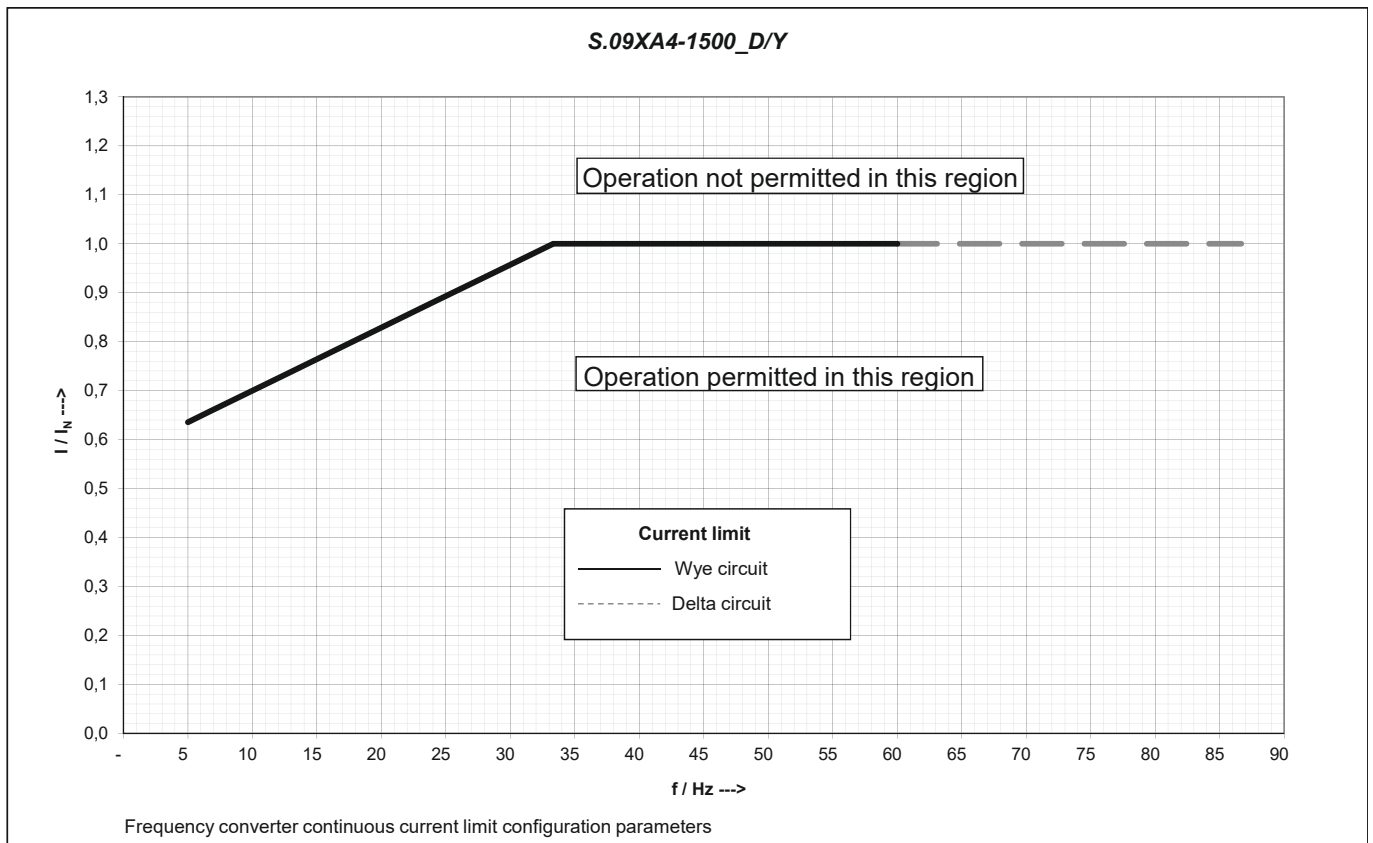
Torque	13	16	20	20	19	Nm
Power	0.20	0.84	2.1	3.1	3.6	kW
Voltage *	53	134	253	364	380	V
Current	4.0	5.0	6.3	6.3	6.3	A
Frequenz	5	16.66	33.33	50	60	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	13	16	20	20	20	Nm
Power	0.2	0.84	2.1	3.1	5.5	kW
Voltage *	31	78	146	210	348	V
Current	7.0	8.7	10.9	10.9	10.9	A
Frequenz	5	16.66	33.33	50	87	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V + 10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 1500 1/min
-Type S.XE.11SA6-..

Rated data of the motor

Type: **S.XE.11SA6-..** Ignition protection type: Increased Safety
S.XC.11SA6-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **III 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	3.5	6.1	kW
Rated torque M _n	22.5	22.5	Nm
Rated current I _n	7.0	12.5	A
No. of Motor Poles 2p	6	6	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	75	130	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	1.76*		Ohm
Strang-Inductance D-Axis L _d	20*		mH
Strang-Inductance Q-Axis L _q	30*		mH
Voltage constant k _e	210	121	V / 1000 1/min
Torque constant k _t	3.20	1.80	Nm / A
Peak Torque M _{max} (60s)	35	35	Nm
Peak Current I _{max} (60s)	11	19	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

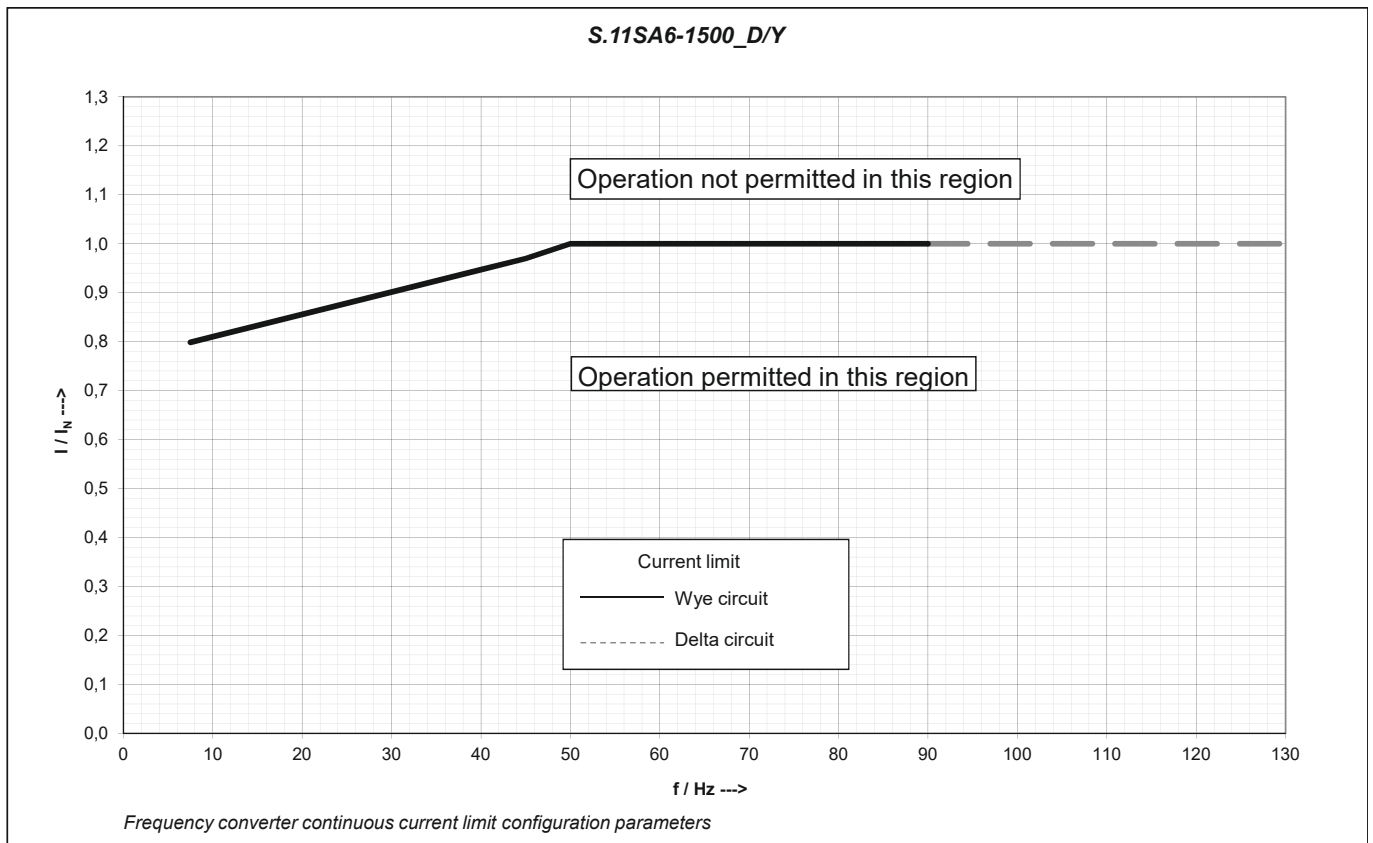
Torque	18	20	22.5	22.5	22.5	Nm
Power	0.28	1.0	2.4	3.5	6.1	kW
Voltage *	54	132	245	351	381	V
Current	5.6	6.2	7.0	7.0	7.0	A
Frequenz	7.5	25	50	75	90	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	18	20	22.5	22.5	22.5	Nm
Power	0.28	1.0	2.4	3.5	6.1	kW
Voltage *	31	76	142	203	341	V
Current	10	11	12.5	12.5	12.5	A
Frequenz	7.5	25	50	75	130	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V + 10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 1500 1/min
-Type S.XE.11MA6-..

Rated data of the motor

Type: **S.XE.11MA6-..** Ignition protection type: Increased Safety
S.XC.11MA6-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIC T120 °C – T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	5.50	9.50	kW
Rated torque M _n	35	35	Nm
Rated current I _n	11.0	19.1	A
No. of Motor Poles 2p	6	6	
Rated speed n _n	1500	3600	1/min
Nominal Frequency	75	130	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	0.892*		Ohm
Strang-Inductance D-Axis L _d	12*		mH
Strang-Inductance Q-Axis L _q	18.4*		mH
Voltage constant k _e	206	117	V / 1000 1/min
Torque constant k _t	3.15	1.79	Nm / A
Peak Torque M _{max} (60s)	55	55	Nm
Peak Current I _{max} (60s)	17	30	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

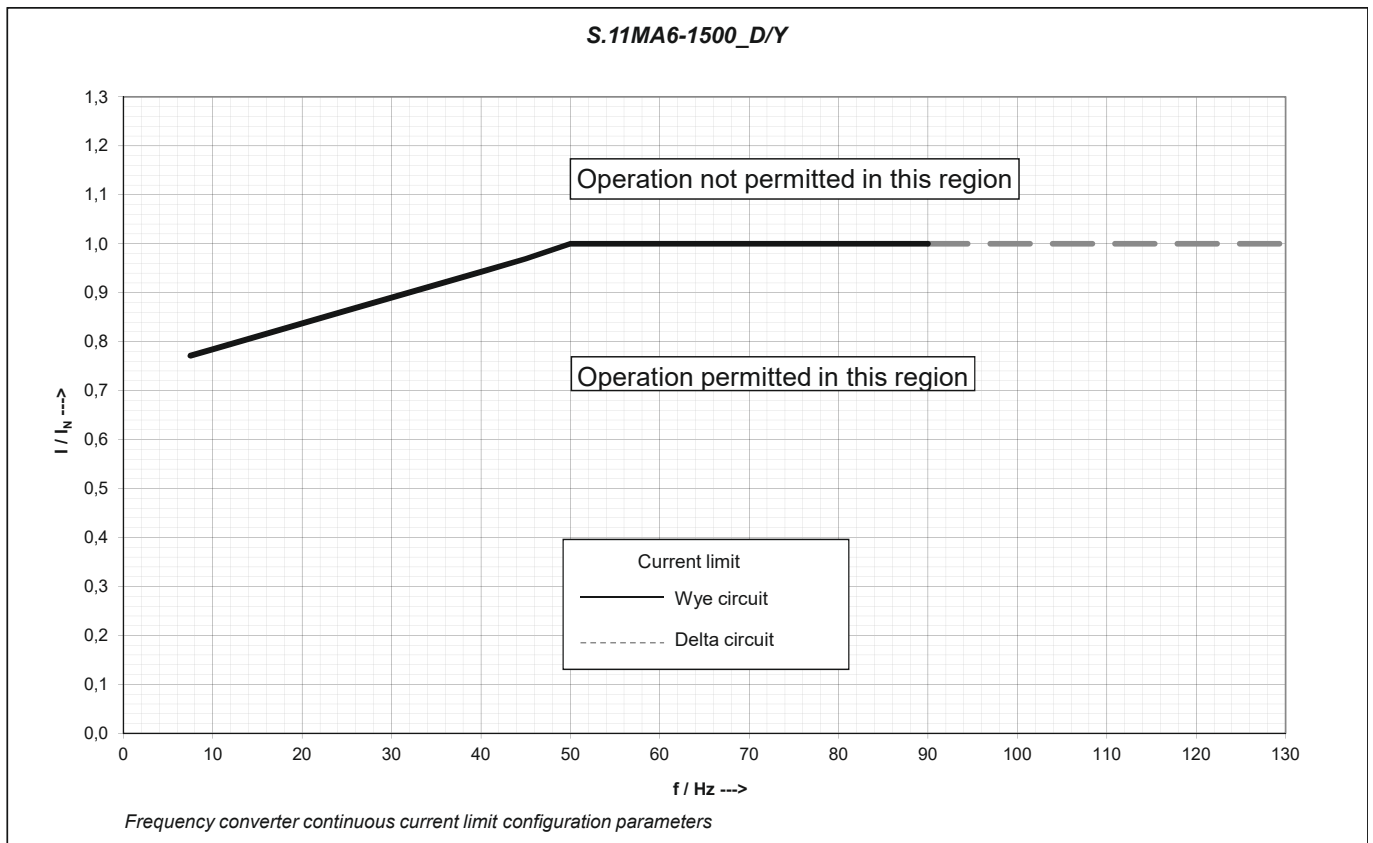
Torque	26.5	30	35	35	35	Nm
Power	0.42	1.6	3.7	5.5	6.5	kW
Voltage *	46	121	229	331	377	V
Current	8.5	9.5	11.0	11.0	11.0	A
Frequenz	7.5	25	50	75	90	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	26.2	30	35	35	35	Nm
Power	0.41	1.6	3.7	5.5	9.5	kW
Voltage *	27	70	132	190	321	V
Current	14.7	16.7	19.1	19.1	19.1	A
Frequenz	7.5	25	50	75	130	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 1500 1/min
-Type S.XE.11LA6-..

Rated data of the motor

Type: **S.XE.11LA6-..** Ignition protection type: Increased Safety
S.XC.11LA6-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

Rated power P _n	7.50	13	kW
Rated torque M _n	48	48	Nm
Bemessungsstrom I _n	14.7	26	A
No. of Motor Poles 2p	6	6	
Rated speed n _n	1500	2600	1/min
Nominal Frequency	75	130	Hz
Motorcircuit	Wye circuit	Delta circuit	
Strang-Resistance R _{s20}	0.605*		Ohm
Strang-Inductance D-Axis L _d	9.3*		mH
Strang-Inductance Q-Axis L _q	13.9*		mH
Voltage constant k _e	210	121	V / 1000 1/min
Torque constant k _t	3.25	1.84	Nm / A
Peak Torque M _{max} (60s)	75	75	Nm
Peak Current I _{max} (60s)	23	40	A
Converter supply voltage	380 - 500		V

Δ * Input value Danfoss Frequency converter FC302 => delta circuit 1/3 of the phase value

Data operation with frequency converter S1 operation. wye circuit

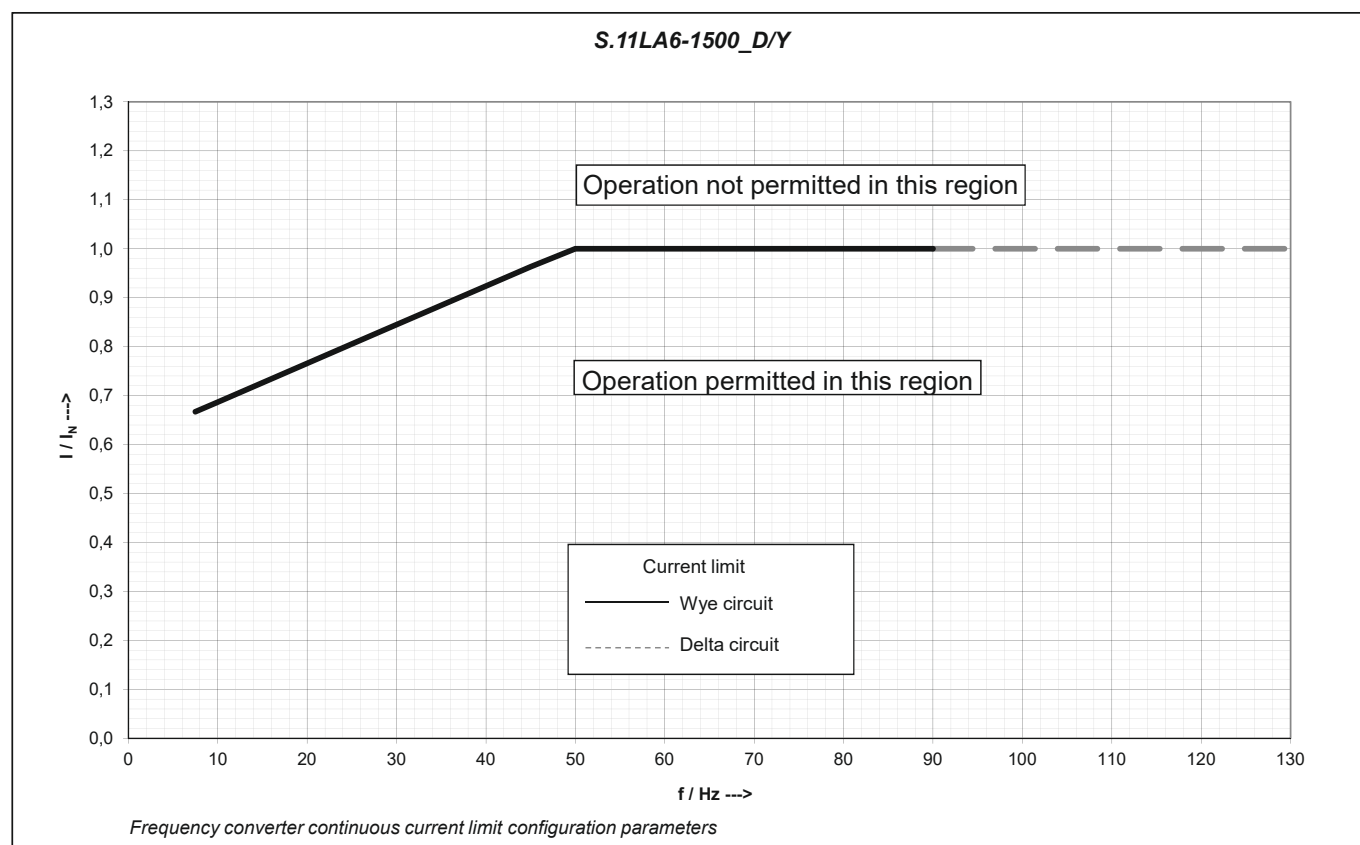
Torque	32.5	39.4	48	48	47.5	Nm
Power	0.51	2.0	5.0	7.5	9.0	kW
Voltage *	44	121	231	338	375	V
Current	9.8	12.0	14.7	14.7	14.7	A
Frequenz	7.5	25	50	75	90	Hz
Speed	150	500	1000	1500	1800	1/min
Duty type	S1					

Data operation with frequency converter S1 operation. delta circuit

Torque	32.5	39.5	48	48	48	Nm
Power	0.51	2.0	5.0	7.5	13	kW
Voltage *	26	71	134	197	328	V
Current	17.6	21.1	26	26	26	A
Frequenz	7.5	25	50	75	130	Hz
Speed	150	500	1000	1500	2600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V + 10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.08MA4-..

Rated data of the motor

Type: **S.XE.08MA4-..** Ignition protection type: Increased Safety
S.XC.08MA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C – T160 °C Db IP6x**

Rated parameters and data of the motor

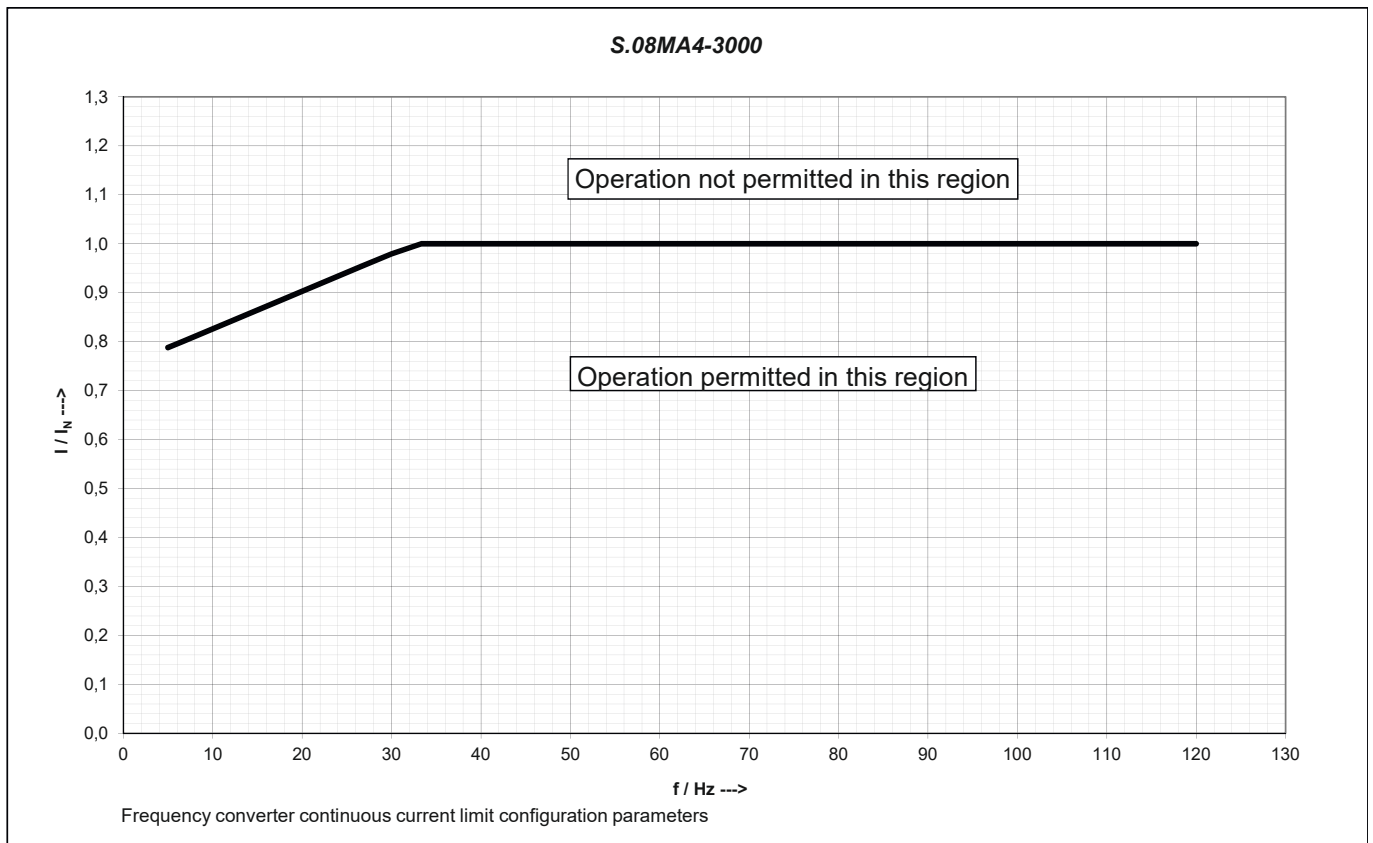
Rated power P _n	2.0	kW
Rated torque M _n	6.50	Nm
Rated current I _n	4.7	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motorcircuit	Wye circuit	
Strang-Resistance R _{s20}	2.36	Ohm
Strang-Inductance D-Axis L _d	24.7	mH
Strang-Inductance Q-Axis L _q	43.5	mH
Voltage constant k _e	90	V / 1000 1/min
Torque constant k _t	1.28	Nm / A
Peak Torque M _{max} (60s)	10	Nm
Peak Current I _{max} (60s)	7.5	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	5.0	5.6	6.5	6.5	6.5	Nm
Power	0.08	0.29	0.68	2.0	2.5	kW
Voltage *	34	68	119	308	372	V
Current	3.7	4.1	4.7	4.7	4.7	A
Frequenz	5	16.66	33.33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I_n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f_{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.08LA4-..

Rated data of the motor

Type: **S.XE.08LA4-..** Ignition protection type: Increased Safety
S.XC.08LA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

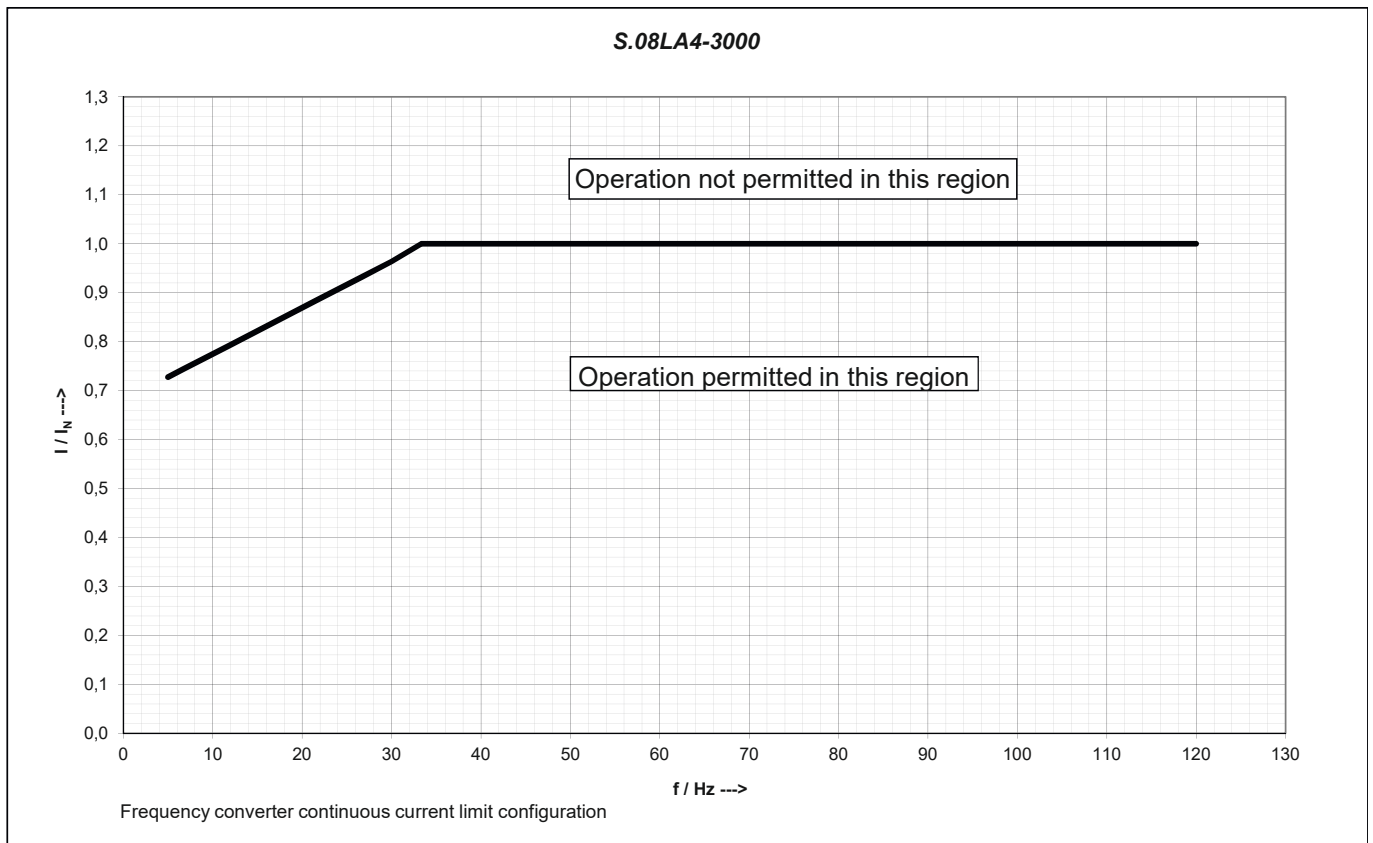
Rated power P _n	3.0	kW
Rated torque M _n	9.55	Nm
Rated current I _n	7.0	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motorcircuit	Wye circuit	
Strang-Resistance R _{s20}	1.41	Ohm
Strang-Inductance D-Axis L _d	16.8	mH
Strang-Inductance Q-Axis L _q	29.6	mH
Voltage constant k _e	87	V / 1000 1/min
Torque constant k _t	1.36	Nm / A
Peak Torque M _{max} (60s)	15	Nm
Peak Current I _{max} (60s)	11.2	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	6.5	8.0	9.55	9.55	9.55	Nm
Power	0.1	0.42	1.0	3.0	3.6	kW
Voltage *	28	63	114	296	358	V
Current	5.2	5.9	7.0	7.0	7.0	A
Frequenz	5	16.66	33.33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V + 10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I_n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f_{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.09SA4-..

Rated data of the motor

Type: **S.XE.09SA4-..** Ignition protection type: Increased Safety
S.XC.09SA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

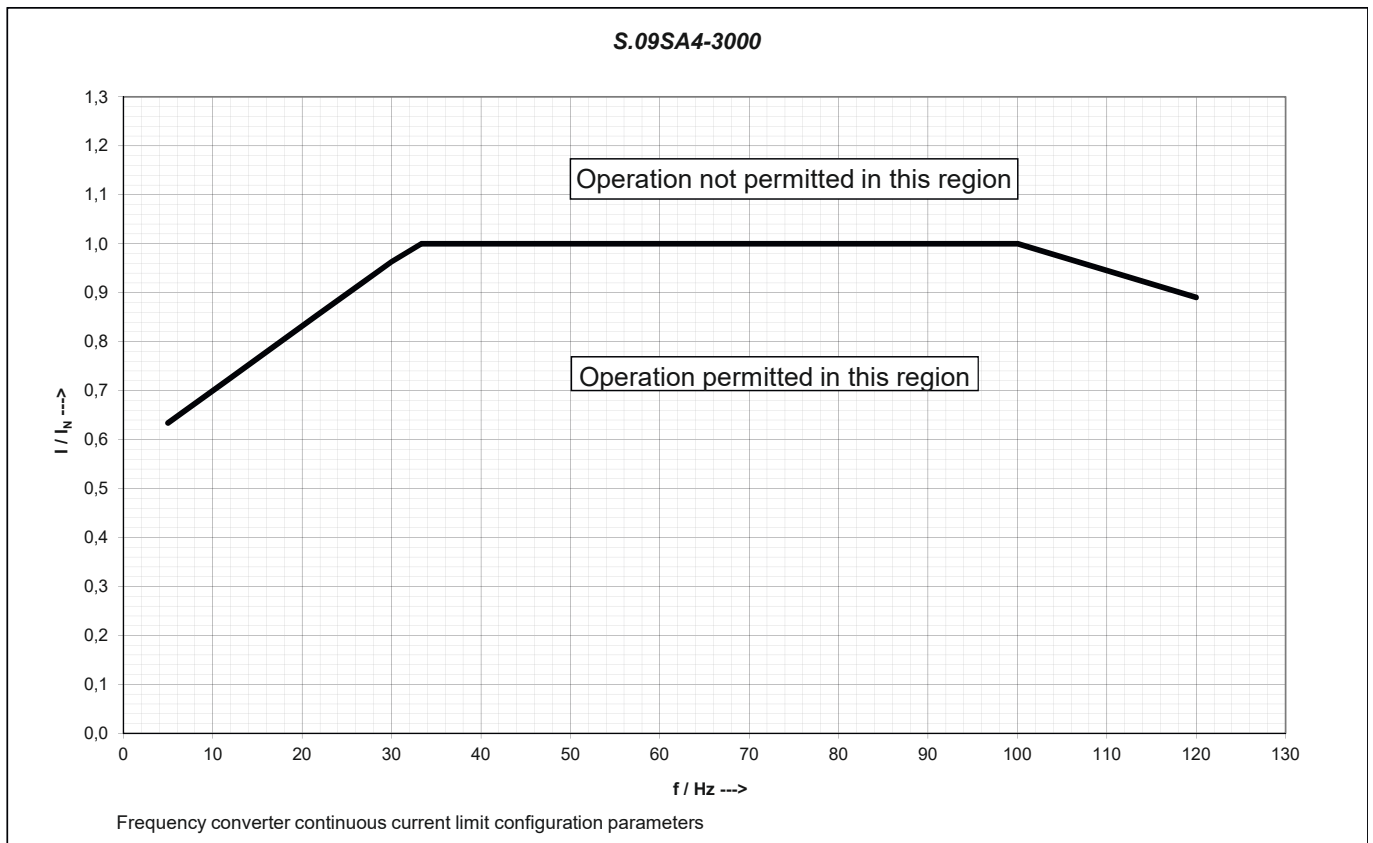
Rated power P _n	6.3	kW
Rated torque M _n	20	Nm
Rated current I _n	12.5	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motorcircuit	Wye circuit	
Phase Resistance U-V R ₂₀	1.305	Ohm
Strang-Resistance R _{s20}	0.653	Ohm
Strang-Inductance D-Axis L _d	12.7	mH
Strang-Inductance Q-Axis L _q	17.9	mH
Voltage constant k _e	102	V / 1000 1/min
Torque constant k _t	1.60	Nm / A
Peak Torque M _{max} (60s)	30	Nm
Peak Current I _{max} (60s)	20	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	12.5	15.7	20	20	14.5	Nm
Power	0.196	0.84	2.1	6.3	5.5	kW
Voltage *	26	66	124	334	380	V
Current	8	9.9	12.5	12.5	9.2	A
Frequenz	5	16.66	33.33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I_n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f_{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.09XA4-..

Rated data of the motor

Type: **S.XE.09XA4-..** Ignition protection type: Increased Safety
S.XC.09XA4-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

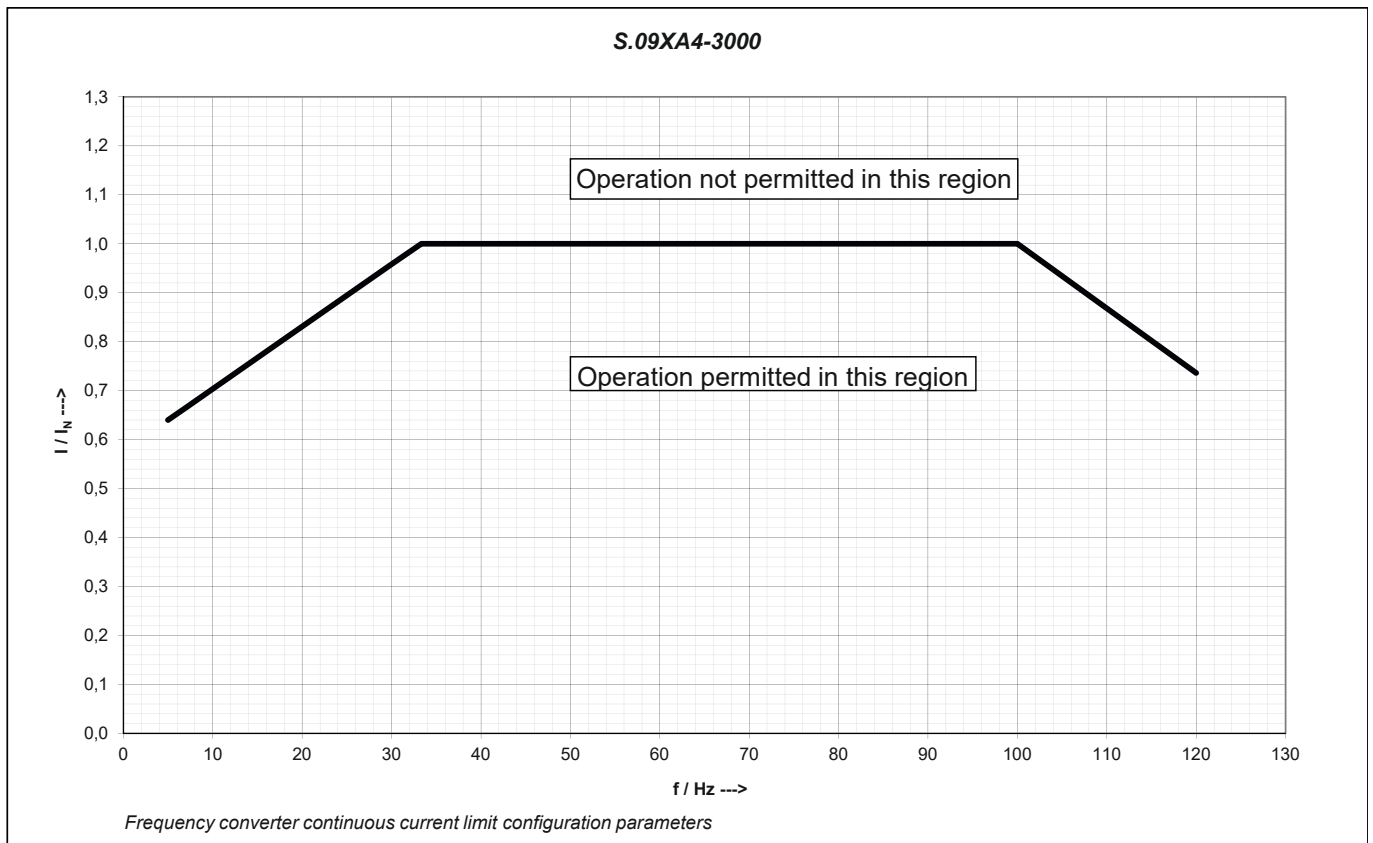
Rated power P _n	6.3	kW
Rated torque M _n	20	Nm
Rated current I _n	12.5	A
No. of Motor Poles 2p	4	
Rated speed n _n	3000	1/min
Nominal Frequency	100	Hz
Motorcircuit	Wye circuit	
Phase Resistance U-V R ₂₀	1.305	Ohm
Strang-Resistance R _{s20}	0.653	Ohm
Strang-Inductance D-Axis L _d	12.7	mH
Strang-Inductance Q-Axis L _q	17.9	mH
Voltage constant k _e	102	V / 1000 1/min
Torque constant k _t	1.60	Nm / A
Peak Torque M _{max} (60s)	30	Nm
Peak Current I _{max} (60s)	20	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	12.5	15.7	20	20	14.5	Nm
Power	0.196	0.84	2.1	6.3	5.5	kW
Voltage *	26	66	124	334	380	V
Current	8	9.9	12.5	12.5	9.2	A
Frequenz	5	16.66	33.33	100	120	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V + 10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.11SA6-..

Rated data of the motor

Type: **S.XE.11SA6-..** Ignition protection type: Increased Safety
S.XC.11SA6-.. Staubexplosionsschutz - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C – T160 °C Db IP6x**

Rated parameters and data of the motor

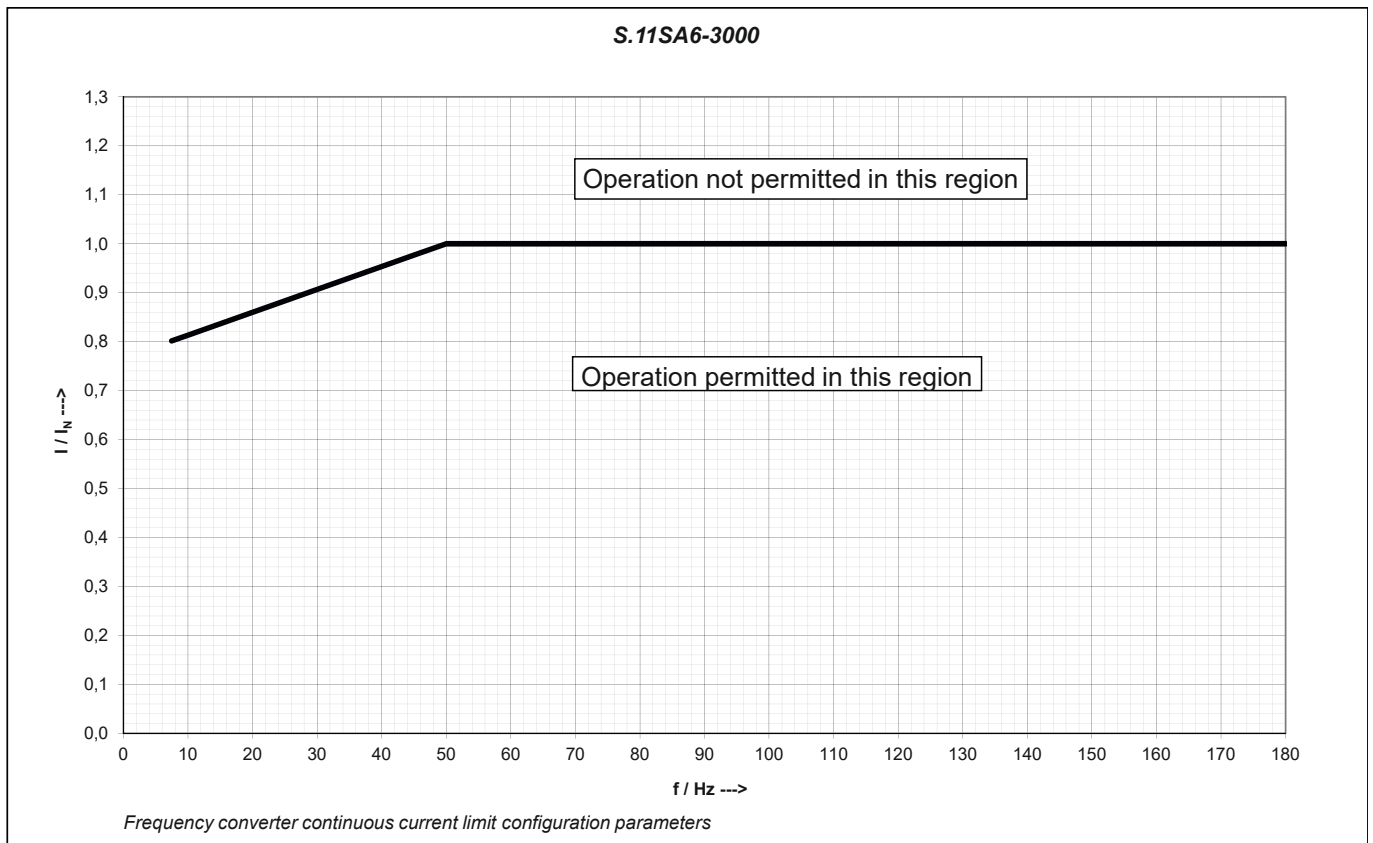
Rated power P _n	7.1	kW
Rated torque M _n	22.5	Nm
Rated current I _n	15.0	A
No. of Motor Poles 2p	6	
Rated speed n _n	3000	1/min
Nominal Frequency	150	Hz
Motorcircuit	Wye circuit	
Strang-Resistance R _{s20}	0.447	Ohm
Strang-Inductance D-Axis L _d	5.0	mH
Strang-Inductance Q-Axis L _q	7.7	mH
Voltage constant k _e	106	V / 1000 1/min
Torque constant k _t	1.55	Nm / A
Peak Torque M _{max} (60s)	35	Nm
Peak Current I _{max} (60s)	23	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	18	20	22.5	22.5	22.5	Nm
Power	0.28	1.0	2.4	7.1	8.5	kW
Voltage *	28	66	122	333	368	V
Current	12	13.3	15	15	15	A
Frequenz	7.5	25	50	150	180	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.11MA6-..

Rated data of the motor

Type: **S.XE.11MA6-..** Ignition protection type: Increased Safety
S.XC.1MA6-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C – T160 °C Db IP6x**

Rated parameters and data of the motor

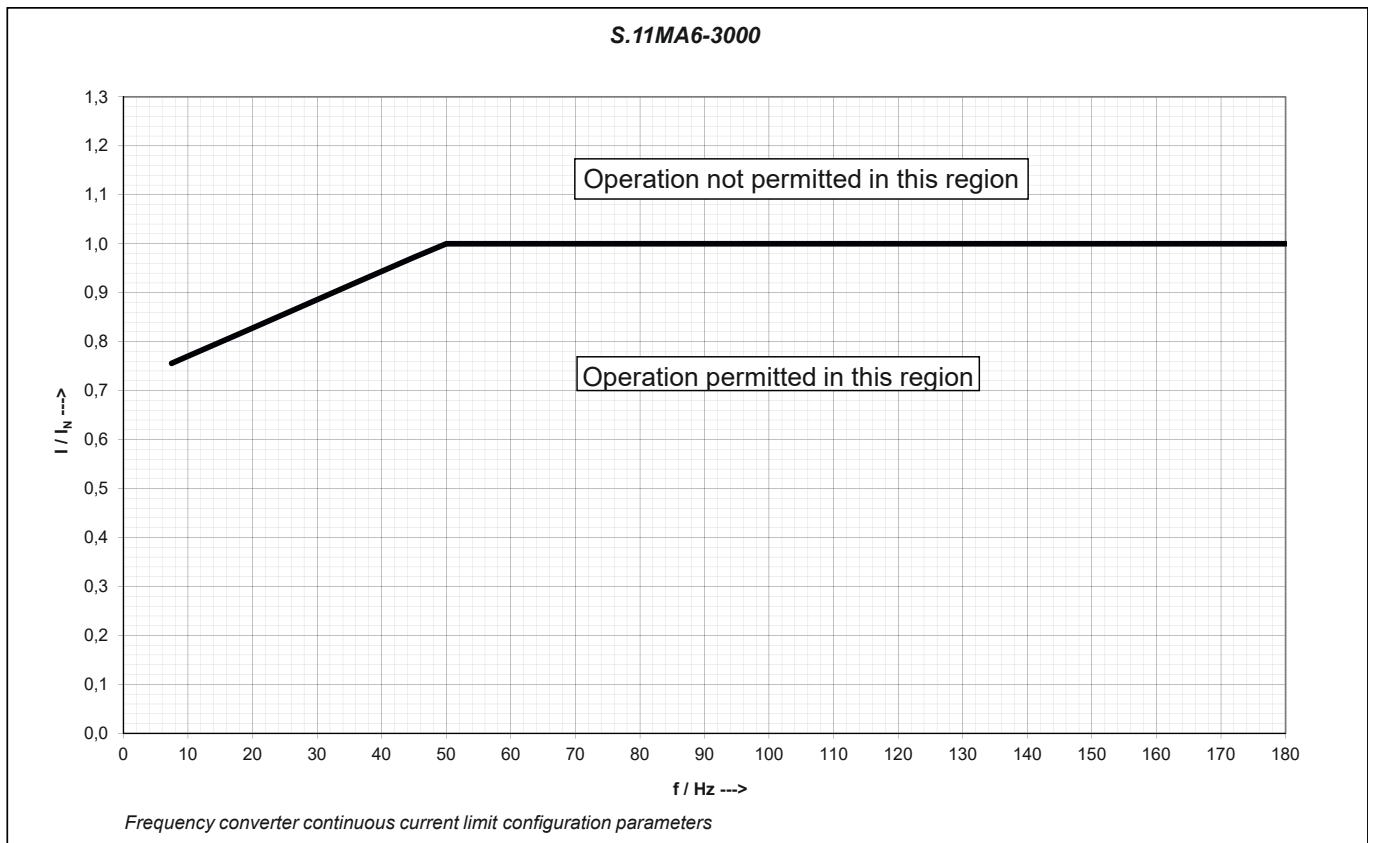
Rated power P _n	11.0	kW
Rated torque M _n	35	Nm
Rated current I _n	22.5	A
No. of Motor Poles 2p	6	
Rated speed n _n	3000	1/min
Nominal Frequency	150	Hz
Motorcircuit	Wye circuit	
Strang-Resistance R _{s20}	0.217	Ohm
Strang-Inductance D-Axis L _d	3.0	mH
Strang-Inductance Q-Axis L _q	4.6	mH
Voltage constant k _e	104	V / 1000 1/min
Torque constant k _t	1.55	Nm / A
Peak Torque M _{max} (60s)	55	Nm
Peak Current I _{max} (60s)	35	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	26.5	30	35	35	34.3	Nm
Power	0.42	1.6	3.7	11	12.9	kW
Voltage *	23	61	115	320	368	V
Current	17	19.3	22.5	22.5	22.5	A
Frequenz	7.5	25	50	150	180	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

Rated speed 3000 1/min
-Type S.XE.11LA6-..

Rated data of the motor

Type: **S.XE.11LA6-..** Ignition protection type: Increased Safety
S.XC.11LA6-.. Dust explosion protection - Zone 21

Labelling:  **II 2 G Ex e IIC T1 - T3 Gb**

Labelling:  **II 2 D Ex tb IIIC T120 °C - T160 °C Db IP6x**

Rated parameters and data of the motor

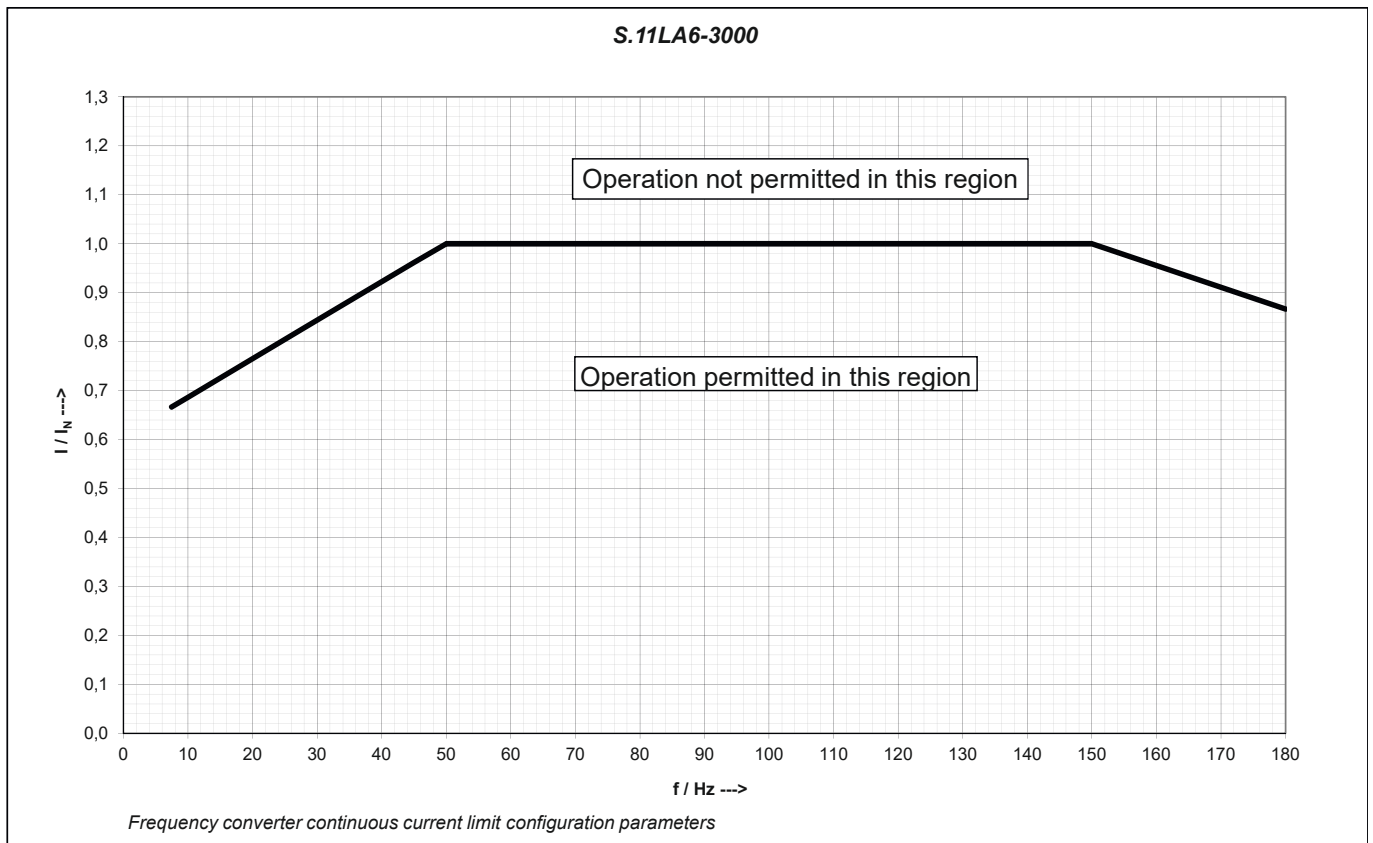
Rated power P _n	15.0	kW
Rated torque M _n	48	Nm
Rated current I _n	30	A
No. of Motor Poles 2p	6	
Rated speed n _n	3000	1/min
Nominal Frequency	150	Hz
Motorcircuit	Wye circuit	
Strang-Resistance R _{s20}	0.150	Ohm
Strang-Inductance D-Axis L _d	2.4	mH
Strang-Inductance Q-Axis L _q	3.5	mH
Voltage constant k _e	105	V / 1000 1/min
Torque constant k _t	1.59	Nm / A
Peak Torque M _{max} (60s)	75	Nm
Peak Current I _{max} (60s)	48	A
Converter supply voltage	380 - 500	V

Data operation with frequency converter

Torque	32.5	39.4	48	48	40	Nm
Power	0.5	2.1	5.0	15.0	15.0	kW
Voltage *	22.6	61.4	116	327	368	V
Current	20	24	30	30	25.8	A
Frequenz	7.5	25	50	150	180	Hz
Speed	150	500	1000	3000	3600	1/min
Duty type	S1					

* Basic oscillation at the motor terminals (output voltage of the frequency converter)

Frequency converter continuous current limit configuration parameters



The voltage at the motor terminals depends on the input voltage from the frequency converter, the loss of voltage at the filter and in the motor supply cable and may not fall below the rated value by more than 10 % according to IEC 60034 - 1 Range „B“, even with minimum input voltage from the frequency converter. In the event of reduced voltage at the motor terminals, the permissible motor torque must be reduced proportionally to the change in voltage. This must be taken into account when sizing the motor, and the parameterisation of the converter and for the converter minimum input voltage.

The maximum permissible frequency converter input voltage is 500 V +10 %, 50/60 Hz.

Max. permissible ambient temperature range -20 °C to +50 °C

Changes to the rated values (torque, speed adjusting range) within the permissible operating range are permissible and are determined by the manufacturer. Permissible continuous current limit, torque and speed adjusting range are specified on the nameplate.

Converter Settings:

Minimum clock frequency:	3 kHz
Short-term current limit:	160 % * I _n
Maximum overload time:	60 s
Minimum frequency:	5 Hz
Maximum frequency:	60 Hz
Permissible operating time below f _{min} :	60 s

All other settings must be selected according the requirements of the drive.

The maximum overload time and the permissible operating time below f_{min} are based on an interval of 10 minutes.

