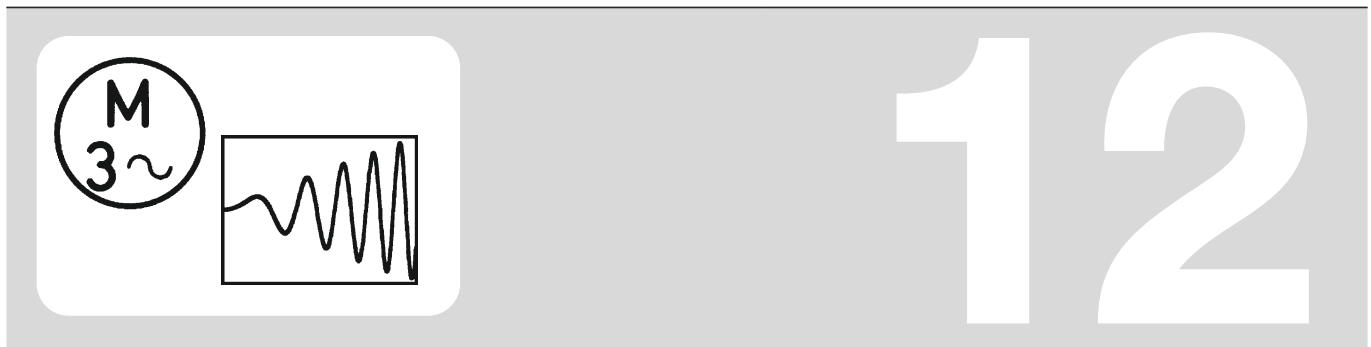




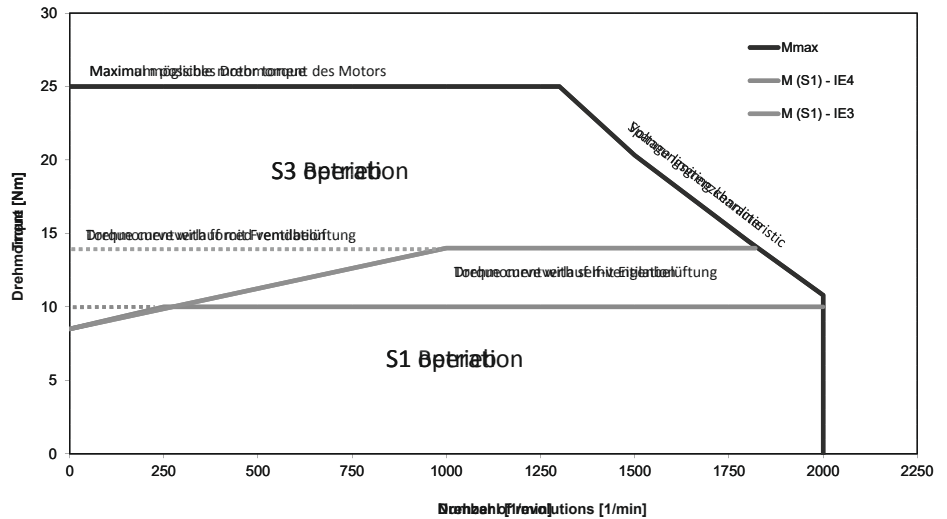
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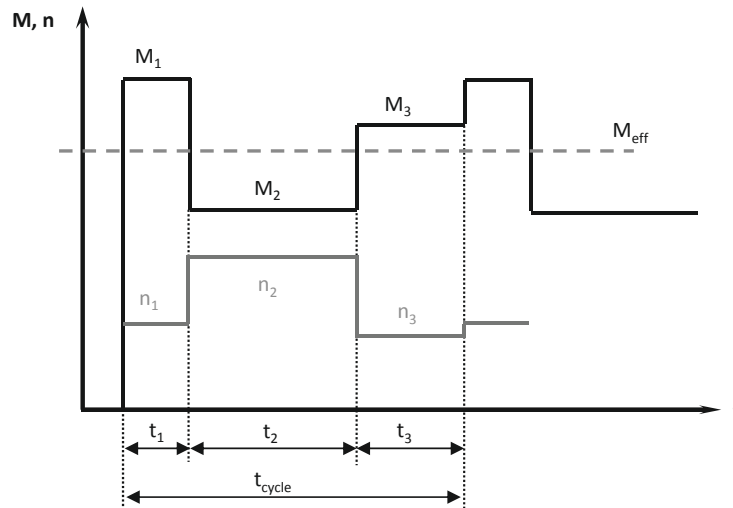
Torque-speed characteristic

The torque versus speed curve shows the operating characteristics of the PMSM. The reference points shown schematically on the torque versus speed curve are significant criteria for motor selection.

Torque vs. Speed Curve



The motor is determined by the effective motor torque and the average motor speed. Both values M_{eff} and n_{eff} must be below the S1 limit characteristic curve of the motor to be selected.



Effective torque

$$M_{\text{eff}} = \sqrt{\frac{M_1^2 \cdot t_1 + M_2^2 \cdot t_2 + M_3^2 \cdot t_3 + \dots + M_n^2 \cdot t_n}{t_1 + t_2 + t_3 + \dots + t_n}}$$

Effective rpm

$$n_{\text{eff}} = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + n_3 \cdot t_3 + \dots + n_n \cdot t_n}{t_1 + t_2 + t_3 + \dots + t_n}$$

Acceleration

Dynamic power

The dynamic power is the power that accelerates the entire system (load, transmission components, gears and motor)

$$P_{\text{dyn}} = \frac{m \times a \times v}{\eta}$$

P_{dyn}	Dynamic power [W]
m	Mass [kg]
a	Acceleration [m/s ²]
v	Speed [m/s]
η	Level of efficiency

Dynamic load torque

$$M_{\text{dyn}_1} = m \cdot a \cdot \frac{1}{\eta} \cdot \frac{D}{2} \cdot \frac{1}{i}$$

D	Impeller diameter
i	Gear reduction ratio

Constant speed

Static performance

The static power takes into account all forces that occur in the unaccelerated state. These include: rolling friction, frictional forces, lifting capacity on slopes and wind force.

$$P_s = \frac{F_F \times v}{\eta}$$

P_s	Static power [W]
F_F	Driving resistance [N]

Static load torque (simplified)

$$M_{\text{statt}} = m \cdot g \cdot \frac{1}{\eta} \cdot \frac{D}{2} \cdot \frac{1}{i}$$

g	Acceleration due to gravity
-----	-----------------------------

Deceleration

Deceleration torque

$$M_{dyn2} = m \cdot (-a) \cdot \eta_L \cdot \frac{D}{2} \cdot \frac{1}{i}$$

$$M_{VER} = M_{stat} + M_{dyn2}$$

M_{Verz} Deceleration torque

Load torques in the driving cycle

Acceleration phase

$$M_{Motor} = M_{stat} + M_{dyn1}$$

Constant speed

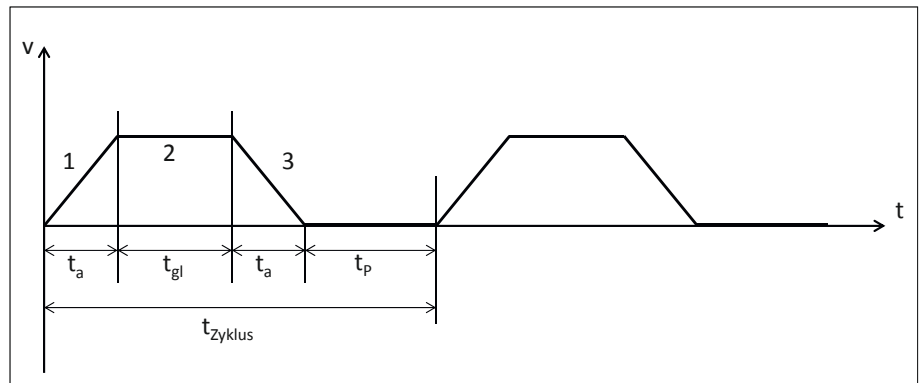
$$M_{Motor} = M_{stat}$$

Braking phase

$$M_{Motor} = M_{stat} + M_{dyn2}$$

Motor selection

Example:



Required dynamic torque on the motor (acceleration):

$$M1 = 20\text{Nm}$$

Required static torque on the motor:

$$M2 = 8,0\text{Nm}$$

Deceleration torque:

$$M3 = 10\text{Nm}$$

Acceleration time/deceleration time

$$t_a = 0,5\text{s}$$

Duration constant travel

$$t_{gl} = 5\text{s}$$

Cycle time

$$t_{Zykl} = 10\text{s}$$

Motor speed for constant travel

$$n = 1450 \text{ 1/min}$$

Effective motor torque and moderate motor speed

$$M_{eff} = \sqrt{\frac{M_1^2 \cdot t_a + M_2^2 \cdot t_{gl} + M_3^2 \cdot t_a}{t_{Zykl}}} = 7,55 \text{ Nm}$$

$$n_{eff} = \frac{n \cdot t_a + n \cdot t_{gl} + n \cdot t_a}{t_{Zykl}} = \frac{n \cdot (2 \cdot t_a + t_{gl})}{t_{Zykl}} = 870 \text{ min}^{-1}$$

Motors - BM

Motor configuration

The following motor is selected:

Type: SSE08LA4

Rated power $P_n = 1,55 \text{ kW}$

Rated torque $M_n = 10 \text{ Nm}$

Rated speed $n_n = 1500 \text{ min}^{-1}$

With proper utilisation of the gears by doubling the reduction and increasing the revs of the motor to 3000 min^{-1} , the torque requirement for the motor can be halved, and this makes it possible to decrease the size of the motor.

Instead of the S08LA4, the following motor could be selected in this case:

Type: S5E08MA4

Rated power $P_n = 1,55 \text{ kW}$

Rated torque $M_n = 5 \text{ Nm}$

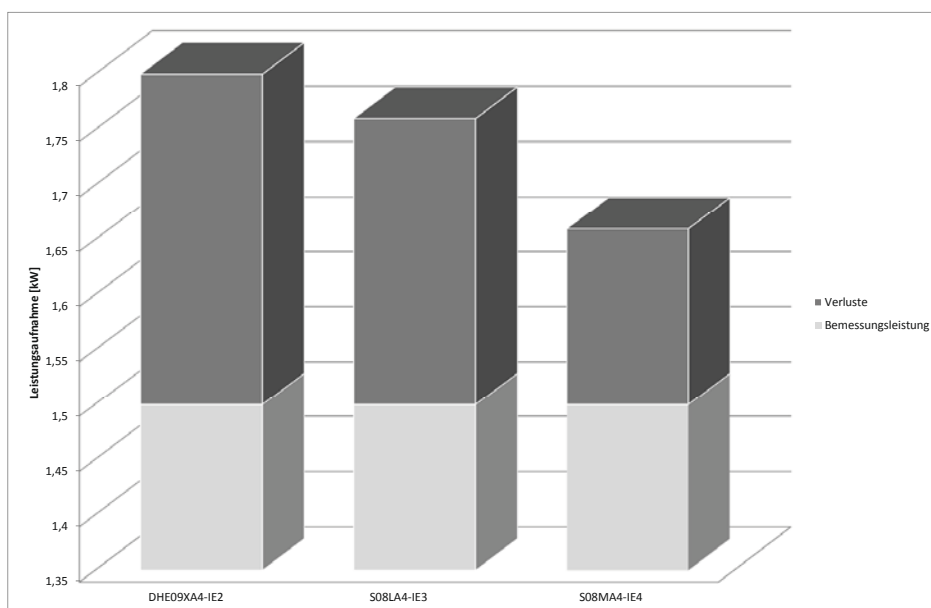
Rated speed $n_n = 3000 \text{ min}^{-1}$

This increases the efficiency of the motor on the one hand, while also reducing the package length. The result is a cheaper drive with increased energy savings.

The diagram below shows the potential energy savings of using the different IE efficiency motors.

With the utilisation of the gears and the **use** of the **S08MA4 IE4** motor, **compared** with the **IE3 S08LA4** the **power loss can be reduced by 36.24%** and **by 45.58%** compared with the **IE2 DHE09XA4**.

With 8 hours of operation, 5 days a week and 50 weeks of the year, this results in an **energy saving of 187.37 kW/h** compared with the **IE3 S08LA4** and **276.14 kW/h** compared with the **IE2 DHE09XA4**.



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	0.167	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

Rated speed 1500 1/min

Rated speed 1500 1/min										(Speed/Torque)											
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	25/25	25/100	50/25	50/50	50/100	90/50	90/100	
%	%	%	%				Nm	kW	Hz	V	1/min										
67.4	n.A	n.A	IE4	1)	S4E04SA4-1	4	0.76	0.12	50	380	1500	2)	3)	4.1	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)	S6E11MA6	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-Drehmomente bei Stellbereich 150 1/min - 1800 1/min, Betriebsart S1

M _n Nm	P _n kW	Typ	Drehzahl 1/min	Drehmoment Nm	Leistung kW	Strom A	Frequenz Hz	Schaltung
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																				
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																				

1) Manufacturer: Commercial register number: Address:	Bauer Gear Motor GmbH HRB 736269 Eberhard-Bauer-Str. 37, 73734 Fßslingen / Germany	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
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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-Drehmomente bei Stellbereich 150 1/min - 2600 1/min, Betriebsart S1

M _n Nm	P _n kW	Typ	Drehzahl 1/min	Drehmoment Nm	Leistung kW	Strom A	Frequenz Hz	Schaltung
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

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

Rated speed 3000 1/min

Rated speed 3000 1/min	η (100 % -Load)	η (75 % -Load)	η (50 % -Load)	IE Class	Manufacturer data	Type	Number of poles	M _n Nm	P kW	Frequency Hz	Voltage V	n _N 1/min	Type of motor	Operating conditions	Power losses in % at operating points (Speed/Torque)						
															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	90/50	90/100	90/100
Operating conditions		3)	3)	3)	3)	3)	3)	3)	3)	3)	3)
Type of motor		2)	2)	2)	2)	2)	2)	2)	2)	2)	2)
nN		1/min	3000	3000	3000	3000	3000	3000	3000	3000	3000
Voltage		V	380	380	380	380	380	380	380	380	380
Frequency		Hz	150	150	150	150	150	150	150	150	150
P		kW	11	11	11	15	15	15	15	15	15
M _n		Nm	35	35	35	48	48	48	48	48	48
Number of poles			6	6	6	6	6	6	6	6	6
Type			S5E11LA6	S4E11MA6	S5E11LA6	S5E11LA6	S5E11LA6	S5E11LA6	S5E11LA6	S5E11LA6	S5E11LA6
Manufacturer data			1)	1)	1)	1)	1)	1)	1)	1)	1)
IE Class			5	4	5	5	5	5	5	5	5
η (50 %-Load)		%	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
η (100 %-Load)		%	94.1	93.1	93.8	94.1	93.1	93.8	94.1	93.1	93.8

*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

Motors - BM

Technical data

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

