

Table of contents

1 General	13
Advantages of Bauer-Geared Motors	15
Bauer-electric overhead conveyors systems	15
Bauer Gearboxes	15
Bauer Motors	15
Bauer Brakes	15
2 Product Description	17
Selection of geared motors	19
Installed positions of geared motors	19
Notes on safety	19
Guards for rotating parts	19
Touch protection	19
Operating noise	19
Painting and corrosion protection	19
Description of BM geared motors	20
Five unit sizes to handle every load	20
3 Type Designations	21
Significance of type designation	23
Significance of type designation	23
Electric overhead conveyors series BM	24
Versions and options	25
Gear unit designs	25
Type designation and components of the BM-series geared motors	25
Motor	26
Three-phase motor	26
Motor protection	26
Brake rectifier in motor terminal box	26
Plug connector	26
Heavy-duty fan	26
Protective cover	26
Motor Mounted Components	27
Brake	27
Reverse rotation block	27
Encoders	27
Second shaft end	27
Forced ventilation	27
Overall design	27
4 Gear Motor Selection	29
Project planning advice	31
Procedure for selecting BM-series geared motors	31
Carriage design	34
Selection of geared motors	36
5 Gearboxes & Lubrication	39
Geared motor selection	41
Standard fitting position of BM geared motors	41
Position of the terminal box and the cable glands	41
Lubricants	42
Lubricants	42
Lubricant quantities	43
Lubricant quantities, BM-series gears	44
Lubricant quantity the primary stage (Z) for installation type H1	45
Gear ventilation	45
Threaded plugs	46
Position of threaded plugs	
- BM-series gears	46
- pre-stage gears (Z)	47
- in the System Cover Design with Standard Geared Motor	48

Energy Efficient Geared Motors

Table of contents

6 Selection tables ASM-IE1	49
Selection table asynchronous motors ASM IE1	51
7 Selection tables ASM-IE2	63
Selection table asynchronous motors ASM IE2	65
8 Selection tables ASM IE2	75
Selection table asynchronous motors ASM IE2	77
9 Selection tables PMSM IE4	89
Selection table asynchronous motors PMSM IE4 1500 ¹ / _{min}	91
Selection table asynchronous motors PMSM IE4 3000 ¹ / _{min}	101
10 Electric overhead conveyors series BM - Dimension	111
Dimension - Standard	113
BM09	113
BM10-BM10X	114
BM20-BM20Z	116
BM30-BM30Z	118
BM40-BM40Z	120
Additional Dimension Sheet	122
Standard terminal box	122
Plug-connector terminal box	123
Standard brakes	124
“Heavy-Duty“- brake	125
Motors with back stop	126
Motors with second shaft end	127
Motors with brake and second shaft end	128
Motors with “heavy duty“ brake and second shaft end	129
Motors with protective hood	130
Motors with independent fan	131
Motors with brake and independent fan	132
Motors with encoder and built-on independent fan	133
Motors with brake and encoder with built-on independent fan	134
Motors with standard encoder	135
Motors with “heavy duty“ encoder	136
Motors with brake and encoder	137
Motors with “heavy duty“ brake and encoder	138
Motors in IEC design	139
11 Motors - ASM	141
General	143
ErP Directive 2009/125/EC	143
Regulation (EU) 2019/1781	144
Torques	146
Line voltages	146
Line frequencies	147
Rating plate	147
Terminal box	147
Motor connections	148
Terminal connections for single speed motors without motor protection	149
Terminal connections for single speed motors with motor protection	150
Terminal connections for pole changing motors in Dahlander connection (Δ/YY or Y/YY)	151
Terminal connections for pole changing motors with two separate windings (Y/Y or Δ/Δ)	152
Plug-and-socket connection	153
Motor protection	154
Thermistors (PTC)	154
Thermostatic protection	155
KTY sensors	156
PT100 sensors	157
Insulation	158
IP – Protection classes	158
Degrees of protection provided by enclosures for electrical equipment	158
Speed of output shaft	159

Duty types as defined by EN 60034	160
General	160
Continuous running duty (S1)	160
Short-time duty (S2)	160
Intermittent periodic duty (S3)	161
Intermittent periodic duty with starting (S4)	162
Intermittent periodic duty with electric braking (S5)	163
Continuous-operation periodic duty (S6)	164
Continuous-operation periodic duty with electric braking (S7)	164
Continuous-operation periodic duty with relative load/speed changes (S8)	165
Duty with non-periodic load and speed variations (S9)	165
Duty with discreet constant loads and speeds (S10)	166
Operation with frequency converter	167
Notes on design	167
Increased torque with reduced duty factor	167
Increased torque with external fan	167
Energy-saving function	168
Regeneration	168
Notes on operation with other-make frequency inverters	168
Technical data	169
Technical data of the 50 Hz motors	169
4-pole IE1 motors for continuous operation S1, line frequency 50 Hz.....	169
4-pole IE2 motors for continuous operation S1, line frequency 50 Hz.....	170
4-pole IE2 motors for continuous operation S1, mains frequency 50 Hz.....	171
4-pole IE3 motors for continuous operation S1, line frequency 50 Hz.....	172
4-pole IE3 motors for continuous operation S1, mains frequency 50 Hz.....	173
4 pole motors for periodic duty S3/S6-75 %, Mains Frequency 50 Hz.....	174
4 pole motors for periodic duty S3/S6, Mains Frequency 50 Hz	175
4/2-pole Δ /YY motors for continuous running duty (S1) and 50 Hz mains frequency	176
8/4-pole Δ /YY motors for continuous running duty (S1) and 50 Hz mains frequency	177
8/2-pole Y/Y motors for intermittent periodic duty S3 25/75 % and 50 Hz mains frequency	178
12/2-pole Y/Y motors for intermittent periodic duty S3 25/75 % and 50 Hz mains frequency	179
Technical data of the 60 Hz motors	180
4-pole IE1 motors for continuous operation S1, mains frequency 60 Hz.....	180
4-pole IE2 motors for continuous operation S1, mains frequency 60 Hz.....	181
4-pole IE2 motors for continuous operation S1, mains frequency 60 Hz.....	182
4-pole IE3 motors for continuous operation S1, line frequency 60 Hz.....	183
4-pole IE3 motors for continuous operation S1, mains frequency 60 Hz.....	184
4-pole motors for intermittent periodic duty (S3/S6 75 %) and 60 Hz mains frequency.....	185
4-pole motors for intermittent periodic duty (S3/S6) and 60 Hz mains frequency	186
4/2-pole motors Δ /YY for continuous operation S1, line frequency 60 Hz.....	187
8/4-pole motors Δ /YY for continuous operation S1, line frequency 60 Hz.....	188
8/2-pole Y/Y motors for intermittent periodic duty S3 25/75 % and 60 Hz mains frequency	189
12/2-pole motors Y/Y for intermittent periodic duty S3-25/75 %, line frequency 60 Hz.....	190
Operation with frequency converter, 50 Hz	191
IE1 Motor torques for frequency-converter range 5 Hz - 70 Hz, line frequency 50 Hz	191
IE1 Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz	192
IE2 Motor torques for frequency-converter range 5 Hz - 70 Hz, line frequency 50 Hz	193
IE2 Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz	194
IE3 Motor torques for frequency-converter range 5 Hz - 70 Hz, line frequency 50 Hz	195
IE3 Motor torques for frequency-converter range 5 Hz - 100 Hz, line frequency 50 Hz	196
Operation with frequency converter, 60 Hz	197
IE1 Motor torques for frequency-converter range 6 Hz - 84 Hz, line frequency 60 Hz	197
IE1 Motor torques for frequency-converter range 6 Hz - 120 Hz, line frequency 60 Hz	198
IE2 Motor torques for frequency-converter range 5 Hz - 80 Hz, line frequency 60 Hz	199
IE2 Motor torques for frequency-converter range 5 Hz - 120 Hz, line frequency 60 Hz	200
IE3 Motor torques for frequency-converter range 5 Hz - 80 Hz, line frequency 60 Hz	201
IE3 Motor torques for frequency-converter range 5 Hz - 120 Hz, line frequency 60 Hz	202
12 Motors - BM	203
Motor configuration	205
Torque-speed characteristic	205
Motor configuration	206
Technical data	209

Energy Efficient Geared Motors

Table of contents

Standard Motors	209
Motors with rated speed 1500 1/min	209
Rated speed 1500 1/min	210
Motor-Drehmomente bei Stellbereich 150 1/min - 1800 1/min, Betriebsart S1	211
Motors with rated speed 2250 1/min	215
Rated speed 2250 1/min	216
Motor-Drehmomente bei Stellbereich 150 1/min - 2600 1/min, Betriebsart S1	217
Motors with rated speed 3000 1/min	219
Rated speed 3000 1/min	220
Motor torques in the adjusting range 150 1/min - 3600 1/min, duty type S1	222
13 Motor Mounted Components	227
Brake	229
Functional description	229
Product description of type ES(X) spring-actuated brakes	229
Product description of type ZS(X) spring-actuated brakes	230
Brake selection and sizing	231
Electrical connection	234
Specifications of holding brakes with emergency stop capability	237
Specifications of working brakes	238
Connection	240
DC connection via terminals (K)	240
Standard rectifier (S)	241
Rectifier for electronic rapid shutdown (E)	242
Rectifier for overexcitation and rapid shutdown (M)	243
Brake connection, operation with frequency converter	245
Brake connection, pole-changing motors	245
Manual release (HA, HN)	245
Explosion protection	245
Back stop (RR, RL)	245
Second motor shaft extension (ZW, ZV)	246
Protective fan cowl (D)	246
Motor-independent fan (FV)	246
Technical Data Motor-independent fan	246
Encoder System	247
Shaft encoder (G)	247
Incremental rotary encoder	248
Functional description	248
Electrical specifications	248
Plug end view with male pin insert	248
Signal assignments	248
Functional description	249
Profibus DP interface	249
Absolute rotary encoders	250
SSI interface	250
14 BAUER global	253
North America	255
Latin America	256
Europe	257
Eastern Europe	260
Middle East & Africa	261
APAC	262
China	263

Energy Efficient Geared Motors

Electric overhead conveyors series BM

Energy Efficient Geared Motors

Bauer Gear Motor - profile

Innovation since 1927

During its 90-year history, Bauer Gear Motor has developed to become the preferred international provider of high-quality and extremely reliable geared motors. A great deal of knowledge has been accrued over the decades, and this has continually been built upon and shared. Bauer has pioneered many new geared motor solutions and will continue to do so in the future. Our engineers develop technically-advanced solutions that feature energy-efficient motors paired with optimal gearboxes so that we can offer our customers the lowest possible operating costs. It is not without reason that the Bauer brand has become world famous; this is because our geared motor solutions are the driving power in drive technology.



Competent and customer-focused

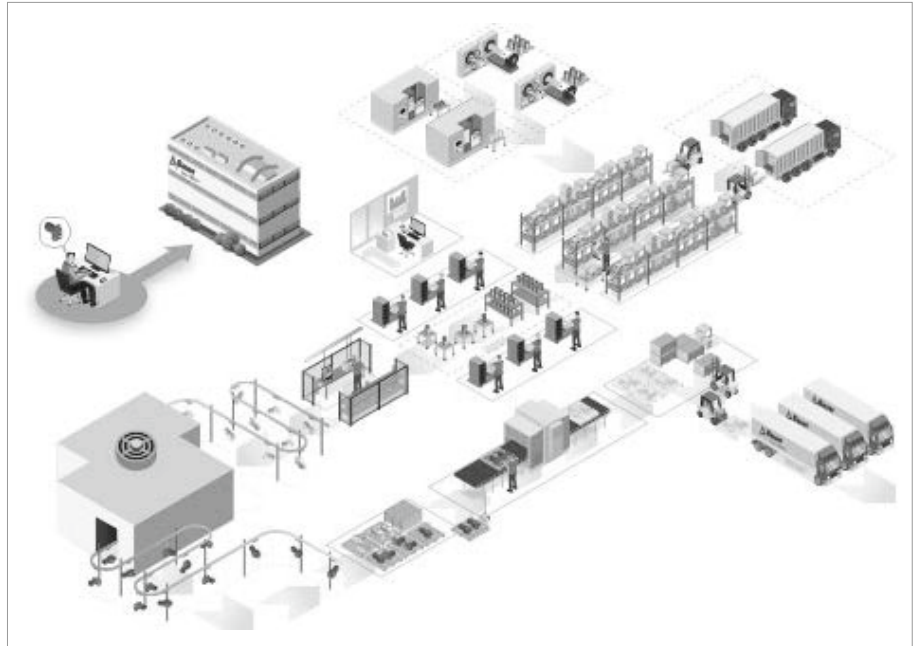
We see ourselves as the value adding partner for individual drive technology solutions along the entire customer value chain ... **Uncomplicated ... Competent ... Enduring.** With our global sales and expertise, we are there to support you side by side- right from the design of your drive. Our employees will ensure that you have the optimum geared motor solution for your application

Our quick response time to requests ensures that you receive the required offer within 24 hours. After your order has arrived, we check your order details and you will receive a confirmation of the order within 24 hours. This means that you will have the details for your own production planning process by the following day.

As we concentrate our production in regional factories, we are also able to deliver customised solutions from the factory reliably and directly, with an extremely short delivery period.

Energy Efficient Geared Motors

Bauer Gear Motor - profile



Closer to the customer's needs thanks to greater flexibility

Orders are processed immediately and passed on to our production team. By reducing set-up times, we are able to start producing the order specific parts right away. This is synchronised with assembly, ensuring that the parts are available according to just-in-time principles.

The entire manufacturing processes starting from the production of the motor, the mechanical geared motor parts and the electrical components, are perfectly coordinated to ensure greater process reliability and availability. This means that a high delivery reliability of over 95% can be achieved, while maintaining Bauer's high quality.

The product range



Energy Efficient Geared Motors

Bauer Gear Motor - profile

Helical Geared Motors

- Power range from 0.03 kW to 75 kW
- 13 gear sizes for torques ranging from 20 Nm to 18500 Nm
- New attachment possibilities with low design height
- High efficiency through 2-stage base design
- High protection rating of IP65 as standard

Shaft Mounted Geared Motors

- Power range from 0.03 kW to 75 kW
- 10 gear sizes for torques ranging from 90 Nm to 18500 Nm
- Gearbox housing with integral torque arm
- High efficiency through 2-stage base design
- High protection rating of IP65 as standard

Bevel Geared Motors

- Power range from 0.03 kW to 75 kW
- 10 gearbox sizes for torques ranging from 80 Nm to 18500 Nm
- Right angle with universal, space-saving mounting options
- High efficiency through 2-stage base design
- High protection rating of IP65 as standard

Worm Geared Motors

- Power range from 0.03 kW to 5.5 kW
- 8 gearbox sizes for torques ranging from 25 Nm to 1000 Nm
- Hollow shaft version available from 25 Nm
- Heavy duty worm gearing for a long service life
- High protection rating of IP65 as standard

Monorail Geared Motor Drives

- Torque rating from 30 Nm to 680 Nm
- Radial force up to 25,000 N
- Gearboxes with a wide range of mounting options
- High protection rating of IP65 as standard
- Improved efficiency
- low energy consumption - ideal for travel drives
- Reverse motion of gearbox possible with released brake

AsepticDRIVE

- Motor without cooling ribs and fan
- Available with helical, shaft-mounted, bevel and worm gearboxes
- Motor winding with thermistors and ISO class F as standard
- IP67 and IP69K protection ratings with alkali and acid-resistant coating as standard.
- Motor connection through standard, round stainless steel connector

CleanDRIVE

- Motor without cooling ribs and fan
- Available with helical, shaft-mounted, bevel and worm gearboxes
- Motor winding with thermistors and ISO class F as standard
- Motor connection through a standard terminal box or stainless steel cable gland

HiflexDRIVE

BK04 gearbox

- Torque 80 Nm
- Gear reductions 7.25 – 63.33

BK08 gearbox

- Torque 200 Nm
- Gear reductions 4.44 - 102.5

BK17 gearbox

- Torque 330 Nm
- Gear reductions 4.54 - 108.6

Motors

- Output power 0.12 kW ... 3.0 kW
- Efficiency classes no rating and IE1 to IE4
- Enclosure IP65 (standard)
IP67 / IP69K (optional)

Energy-efficient motor solutions

Mains Supply

- IE1 asynchronous technology 0.12 kW – 45 kW
- IE2 asynchronous technology 0.12 kW – 45 kW
- IE3 asynchronous technology 0.12 kW – 45 kW
- IE4 asynchronous technology 0.55 kW – 4 kW

Inverter Duty

- IE3 PMSM-technology 1.5 kW – 15 kW
- IE4 PMSM-technology 0.55 kW – 11 kW

Energy-efficient motor solutions for explosion hazard areas

The S series in permanent magnet synchronous motors (PMSMs) offers variable-speed geared motors in efficiency class IE4 for use in explosion hazard areas^[1].

- Design torque M_N : 5 Nm – 48 Nm
- Rated power P_N : 0.75 kW – 15 kW
- Increased safety for zone 1 II 2 G Ex e IIC T1 - T3 Gb
- Dust explosion protection – Zone 21 II 2 D Ex tb IIIC T 160°C ... 120° Db

^[1] Individual motor designs can show lower efficiency classes than IE4 at rated torque.

EtaK2.0 Decentral Solutions

- PMSM enabled
- Integrated safety technology and field bus communication according to specific needs
- Modular structure minimises spare parts stock
- Energy savings of up to 30 % possible under partial load conditions
- Suited to extremely harsh environments thanks to IP65 enclosure rating
- 200 % overload current (3 s)
- Sensorless vector control
- CANopen, Profibus, Profinet, EtherCAT, EtherNet/IP and AS-Interface
- STO safety function

Energy Efficient Geared Motors

Bauer Gear Motor - profile

Submersible Solutions

- **Special sealing concepts** for maximum leakage protection
- **Reinforced bearings** for higher strength and longer service life
- **Shafts** available on request in V4A steel or coating
- **Motor Connection**
 - Standard with cast terminal box
 - Optional with special plug connection
- **Additional features:**
 - Special design for continuous submersible operation
 - Electronic leakage detection available on request
 - Brakes available in IP68 design
 - Water depths of 5m (deeper on request)
- **Corrosion category Im2** based on DIN ISO 12944-5

Customised geared motor solutions for all applications

- Special applications
- Special adaptations
- Special environments
- Series production

Based on our modular, geared motor programme, we offer specific solutions for applications in all key markets such as, for example, food & beverage, energy, wastewater, concrete, metals and material handling in applications such as washdown conveyor systems, rolling mills, monorail systems and overhead conveyors, sludge thickeners, cranes, fans and blowers and turbines. Our aim is to provide our customers with products tailored to their needs. At the same time, we take care to ensure that a geared motor solution will prove to be especially profitable throughout its entire life cycle.

We already equip our geared motors with highly efficient permanent magnet motors to achieve low life cycle costs because low energy consumption will be particularly important in the future. We are very confident that we are once again pioneers in this sector

Learn more about Bauer Gear Motor, its products and philosophy at www.bauergears.com.