




BAUMÜLLER

Textile

Your technology partner
in the textile industry

be in motion



Added value for our customers

A competitive advantage for your machinery: Our drive and automation systems give you more flexibility in your machine layout, and the operator of your machines the productivity and efficiency they need during operation.

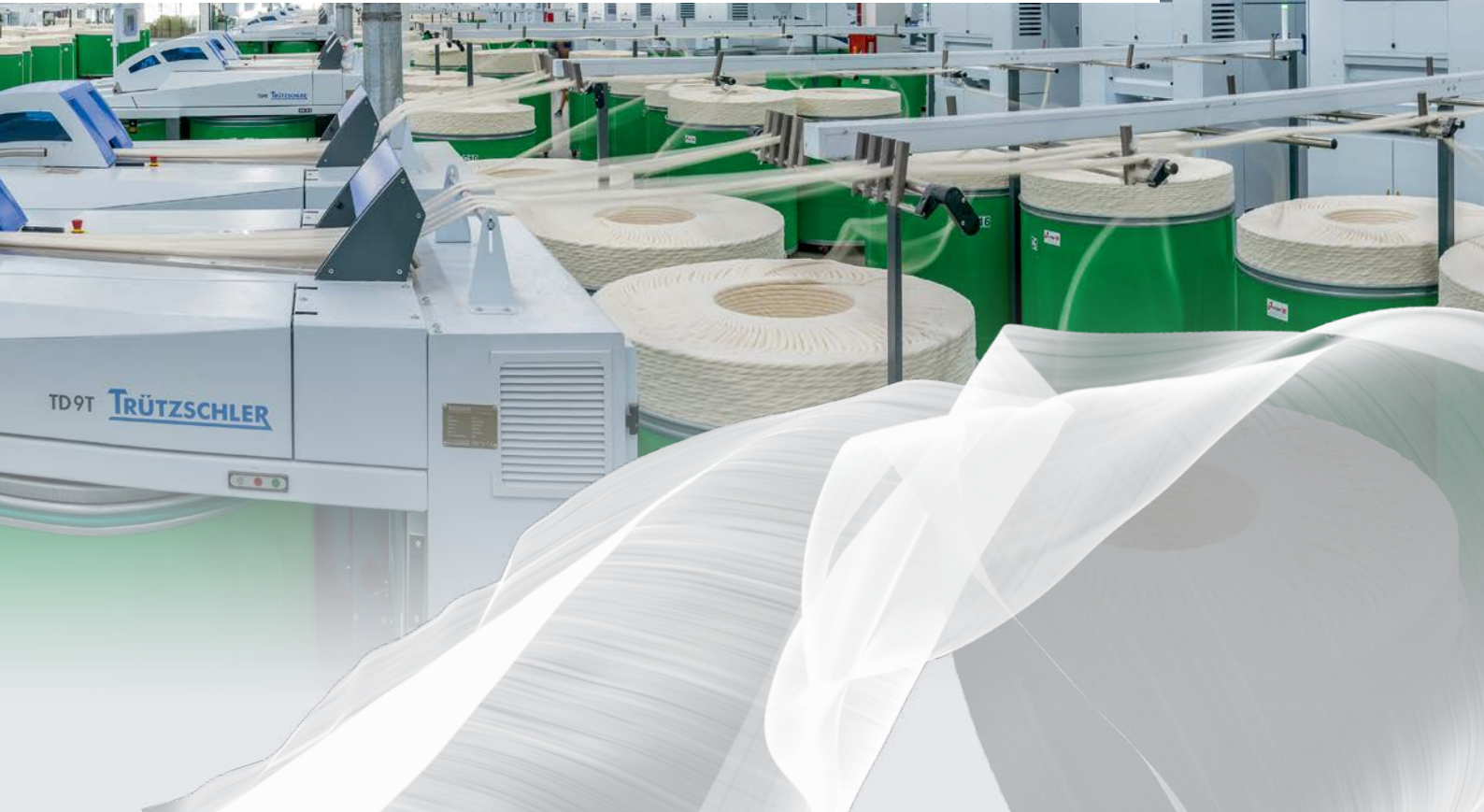
Our developments focus, therefore, not only on the overall system but on the added value that we can achieve with the modularization of machines, the scalability of modules and with technology modules.

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From the extraction of the raw material to the finished end product – the textile chain



Spinning

The textile chain begins with the production of yarns. These are manufactured from different raw materials, such as cotton, linen, hemp, coconut, sheep's wool, goat hair, nylon, polyester, etc. To enable a broad product range, qualitative processing of raw materials varies considerably. Spinning preparatory machinery has the task of forming the fibers in one yarn. For this, bale openers, cleaners, mixers, cards, draw frames and combing machines are needed. Depending on the area of application, different procedures are used for this. Then, the fibers can be spun together into one thread.

Production of textile surfaces

In the next step, the thread is woven, knitted, crocheted or worked into a sheet material, e.g. fabric. Weaving is the dominant way of manufacturing textile surfaces. Before the weaving process can begin, a few preparations must be made. These include, in particular, coiling, twisting, warping and sectional warping, as well as smoothing. Special machines are available for this task, that are specific to the weaving preparation process. Woven textiles have a wide field of application: From clothing to carpet production and the manufacture of technical textiles.



Textile finishing

During textile finishing, the fabric produced gains further properties. It is dyed, printed, made non-iron, waterproofed or given patterns and color. A distinction is made here between wet and dry finishing. Textile finishing takes place either mechanically or by means of chemical substances. Finishing also includes fabric embroidery. With thermal cutting, laser cutting, cording and sequining, it is possible to make very individual and fashionable fabrics. The finished fabric is then processed further by sewing and apparel machines.

Spinning – Combing machines and draw frames



The textile chain begins with the production of yarns. Combing machines and draw frames are part of the preparatory spinning machinery and have the task of forming the fibers into one yarn. Using the drafting system geometry, the fibers are combed and thereby uncurled. It is used after the combing machine to twist the combing belt with regulating lines. The upper roller ensures careful strip deflection at the delivery side of the draw frame, while the adjustable pressure rod in the main draft zone offers controlled routing. When the draft zone widths are adjusted, the upper rollers are guided into the lower roller bearing blocks. This procedure – in conjunction with high-

precision mechanics – enables very good axle parallelism for optimal fiber control. As soon as the winder drums have run out, the machine stops. At a defined point, the lap is separated at all comb heads and the waste is removed by a separate extraction system.

The empty cores are now transferred to the winder cart and the full winder drums taken from this cart. After the winder end has been subsequently prepared, it is precisely positioned at the end of the wadding that is running out, and the combine machine restarts. Then, the fibers can be spun together into one thread.

Benefits for your machine concept

Energy efficiency and economy

- A high degree of efficiency in the speed control range that is typical for these applications
- Increase in power density due to optimized temperature behavior for these applications.
- Optimal material utilization of the valuable raw material cotton

Product and process quality

- Very high smooth-running quality due to field-oriented regulation and servomotors that are almost free of cogging torque.
- The cogging torque can be compensated due to feed forward of the torque current depending on the electrical and mechanical angle

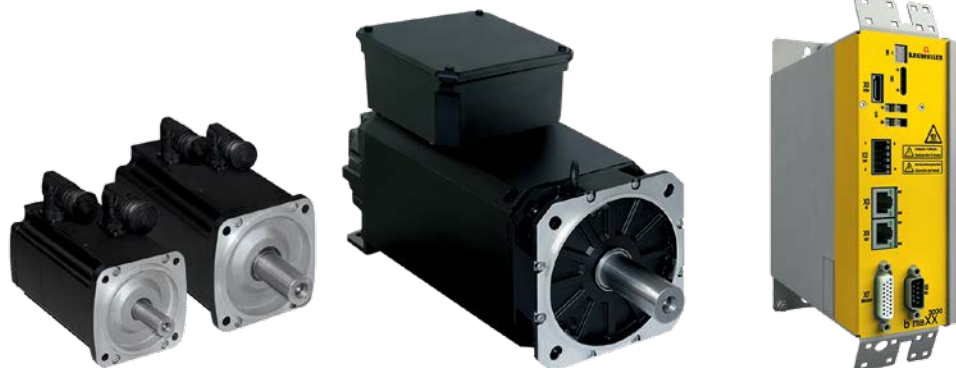
Your benefits

- Greater process speed with better precision for a uniform thread thickness
- Influences quality for further processes



Baumüller products

- DSC1 servo motors
- DS2 servo motors
- DSD2 servo motors
- b maXX 3300 servo controllers



Spinning – Spooling machines



A spooling machine has the task of spooling and unwinding threads. This step follows the thread spinning. From a technical perspective, the focus here is on high speed, i.e. the automation concept must exhibit optimum start-stop qualities and have very good concentricity properties. Disc motors, among other kinds, are ideal for spooling machines. They are characterized, in the first instance, by their especially space-saving, flat structural shape. The shortest model requires only 36.5 millimeters of radial installation space.

Wherever installation space is limited, Baumüller offers a wide range of disc motors in the power range from 16 to 6,300 watts.

Linear motors are also perfectly suited for spooling machines due to their unique synchronous operation quality. The iron-free LSC linear motors from Baumüller achieve maximum current and power increase speeds and are, therefore, ideally suited for highly dynamic applications in the textile industry.

Benefits for your machine concept

Improved design

- Space-saving, flat design
- Low-noise
- Unique operation quality
- Maximum current and power increase speeds
- Almost no cogging torque

Optimized operation

- Low maintenance cost
- High performance with small construction volume and low heat development
- High dynamics due to high overload capability
- For small and medium powers up to 6300 W
- High degree of protection IP 64



Your benefits

- Cost benefits due to increased power density
- Maximum precision and dynamics
- Greater productivity
- Excellent synchronization characteristics

Baumüller products

- GDM disc motors
- LSC linear motors
- b maXX 3300 servo controllers



Production of textile surfaces – Weaving machines



In the next step, the thread is woven, knitted, crocheted or worked into a sheet material, e.g. fabric. Carpet weaving machines have to work very dynamically and precisely to achieve a high product quality. Equipped with a double gripper system with needle delivery, as well as a direct drive system, they achieve a high weave density. This ensures a perfect surface and an exceptional design. Double and triple dot technology allow, for instance, up to 92 color combinations to be made by one machine with 8 heald frames, and depending on the reed thickness, up to 16 colors. In addition, this kind of machine produces carpets

with a high density and carpet rolls with up to 4 million dots/m².

The water-cooled servo motors from Baumüller impress with a low inertia acceleration and compact design. The water-cooled converters can be equipped with a fieldbus as desired, and combined with various safety encoders. The safety modules SAF-001, 002 and 003 ensure that the necessary machine safety and future reliability is ensured in line with the latest standards. The b maXX 5000, with the modules' scalable functionality, optimally fulfills the guidelines laid out by the standards EN ISO 13849 to SIL 3 and EN 62061 to PL_e.

Benefits for your machine concept

Water-cooled servo motors

- High dynamics and power density
- High degree of protection IP 64
- Very compact structural shape
- Low-noise, since no fan unit required
- Simple, targeted heat dissipation
- Robust and virtually maintenance free
- High speed control ranges
- Digital encoders with single-cable solution for greater automation density
- Low surface temperature

Water-cooled converters

- Compact design for space in the control cabinet
- No additional air conditioners
- High power density
- Simple commissioning with graphical user interface
- Short-term power failures are bridged
- All common fieldbus systems are available
- Simulation tool



Your benefits

- Increased process quality due to optimum precision and dynamic cycle times
- Cost benefits due to increased power density
- Space and cost savings due to the use of module systems (smaller control cabinet)
- Higher productivity

Baumüller products

- DSD2 servo motors
- DSC1 servo motors
- DST2 high-torque motors
- DS2 servo motors
- b maXX 5500 servo controllers



Production of textile surfaces – Quilting machines



In order to produce a bedspread, for instance, quilting machines are required. These have the task of unwinding lengths of materials, such as wadding, joining them together – i.e. quilting them – and possibly rolling them up again. The editor makes any type of quilting pattern possible. Using many needles together allows a high stitching speed to be achieved on wide rolls. An integrated sliding hook allows the looper to be adjusted if the transverse drive moves sideways.

For each stitch, a new calculation of the section to be acted on is performed. The winding process must be performed with the moment and speed regulated. The speed of the material length and the web tension force must be constant during the quilting process despite the growing diameter. During winding, when diameter increases, the motor torque must decrease by the same degree in order to ensure a uniform material thickness on the roll.

Benefits for your machine concept

Improved design

- Space and cost savings due to the use of module systems (smaller control cabinet)
- Complete system made up of drive and control technology and software
- Use of coordinated motion for "CNC control" of machine movements via G code

Optimized operation

- Continuous shutdown and dynamic corner running (splines) reduce mechanical stress
- Increased material throughput due to greater speeds
- Increased machine availability due to weaving technology
- Waste prevention by means of safe stop (SS2)

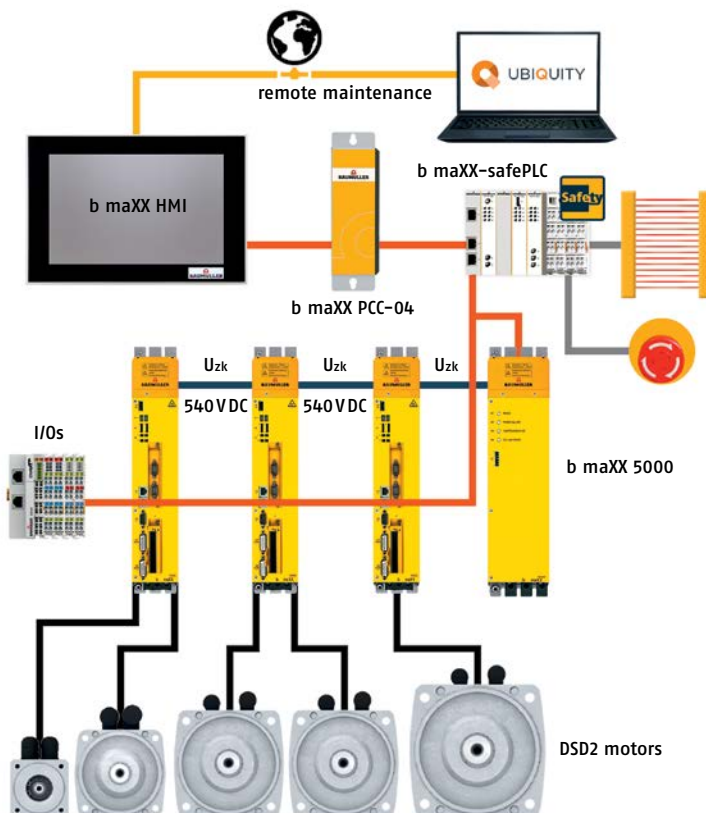
Fast service

- Global access to updates and troubleshooting
- Evaluation and graphic portrayal of shift and production data
- Fast exchange of replacement devices

Flexible use

- Faster sample creation by means of editor with G code generation
- G code generation from graphics files

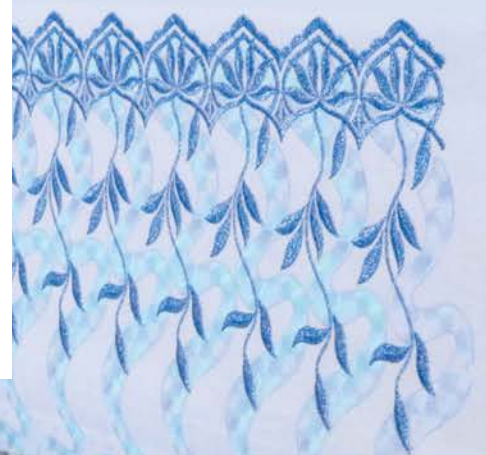
Baumüller brings you complete solutions from a single source



Your benefits

- Flexibility: incorporate individual specifications into the process
- Shorter setup times and, therefore, less expense
- Software-based: Can be replaced mechanically to electrically
- Fewer trained employees required
- Better product quality
- Broad product range can be covered
- Fieldbus can be freely selected

Textile finishing – Embroidery machines



In the last step of the textile chain, the fabric gains additional properties through finishing. On highly-dynamic large embroidery machines, fabric may, for example, be refined with elaborate embroidery. Here, machines are up to 30 meters long and work with up to 720 stitches per minute. They use numerous Baumüller converters from the b maXX series, and Baumüller DSD2 motors. These drives are needed for the needles, thread roller, fabric presser and fabric boring device as well as for the X and Y positioning of the fabric frame.

With regard to dynamics, precision and reliability, Baumüller components fulfill top requirements in 24/7 use. Even the smallest position discrepancy

with a pinhole will be criticized by the textile expert's knowledgeable eye, and may lead to defects in the embroidery pattern. The Baumüller drive components comply with further features of a progressive, innovative overall solution. The single-cable solution used between the converter and servomotor, in conjunction with digital rotary encoders, reduces the tree volume for electrical installation while also increasing functionality. Fast, fault-free production and customer service processes are achieved with the automation options implemented. The digital future is enabled with the automatic drive configuration with data-set/firmware manipulations, automatic drive optimizations, and so on. Efficient, flexible integration in a heterogeneous automation environment is also ensured.

Benefits for your machine concept

Improved design

- Highly-simplified device installation
- Efficient integration in heterogeneous automation environment with various bus interfaces as well as corresponding PLC drive libraries
- Flexible converter baying system with axes from 3 A to 200 A
- Digital encoders with single-cable solution
- Fieldbus can be freely selected

Optimized operation

- During emergency shut off, the machine continues to move to the same position to prevent defects in the embroidery pattern
- Simple device replacement
- Low maintenance cost
- Automated updates
- Error files are uploaded automatically

Your benefits

- Low-cost overall drive solution
- Optimum product reliability
- Very high overall availability
- Optimum dynamics and precision







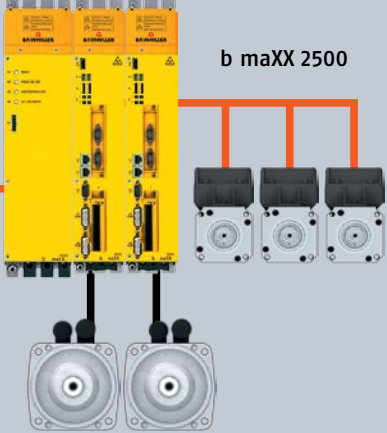
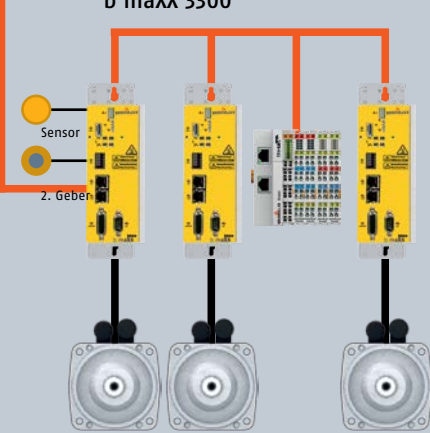


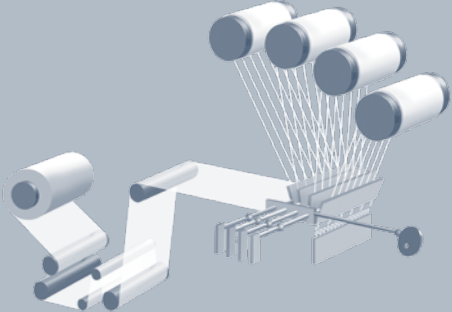
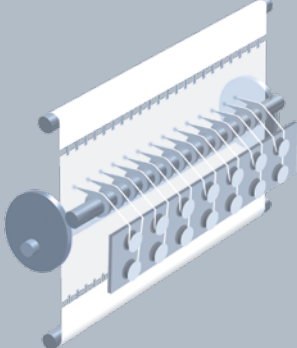
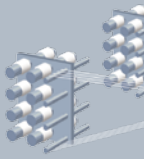


Baumüller products

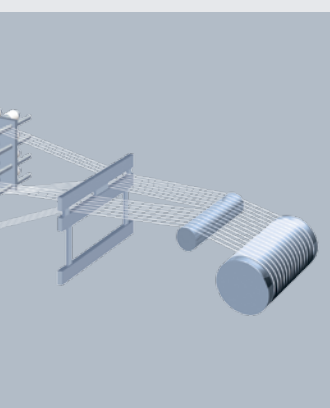
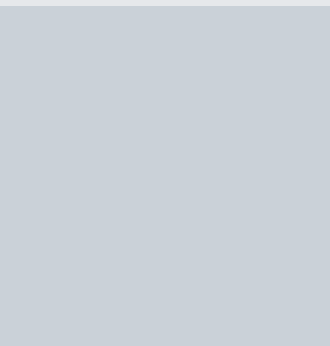
- DSD2 servo motors
- Supply and axis units from the modular b maXX 5000 servo controller family



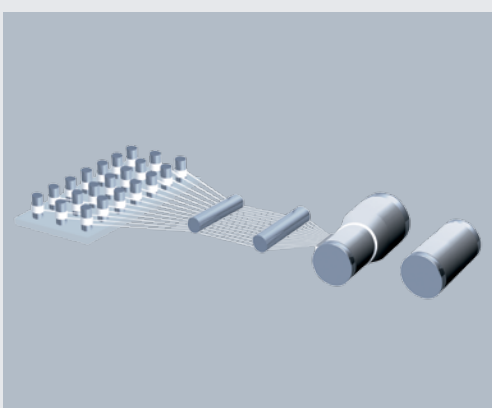
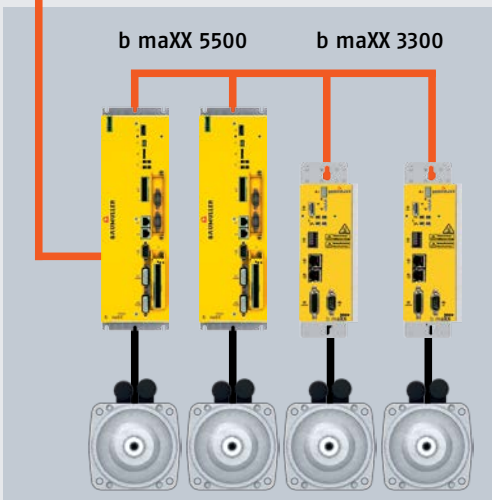
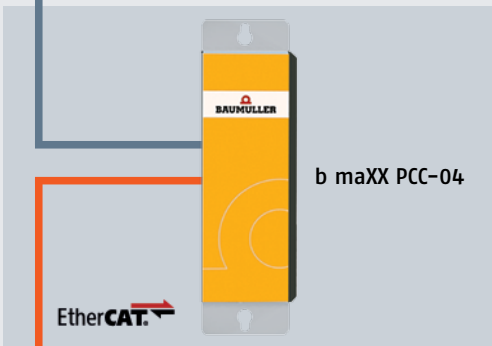
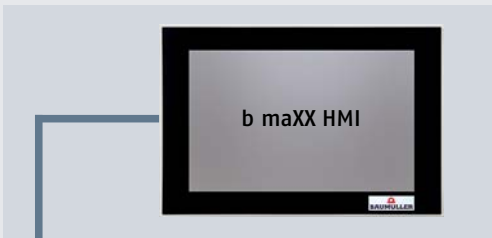
Flexible system solutions

Machine type	Warp knitting machine	Crochet machine	Warp bea
<p>Operation</p>			
<p>Control</p> 	<p>SIL -/SIL3</p>  <p>b maXX PLC02-safe</p> <p>EtherCAT</p>	 <p>b maXX PCC-04</p> <p>EtherCAT</p>	
<p>Drives</p> 	<p>b maXX 5000</p>  <p>b maXX 2500</p>	<p>b maXX 3300</p>  <p>Sensor</p> <p>2. Geber</p>	 <p>PLC INSIDE</p>
<p>Actuators Sensors</p> 			

m production



Warping machine



Web technology

Consistently scalable visualization:
The b maXX HMI series includes a range of various operating units. The sleek design and great functional diversity provide you with all options to make the operation of your machine more efficient. From the smallest HMI to the most complex application, all functions – operating/monitoring/archiving/communicating – occur in an advanced visualization environment.

Safety engineering

Safety control pursuant to EN ISO IEC 61508 covers both the standard and the safety functions up to SIL 3. Drive-integrated, functional safety pursuant to IEC 61800-5-2.

PC-based technology

Greatest performance class on the control, field and communication level for highly synchronized control and visualization tasks in a device.

Safe real-time Ethernet technology

A standardized, high-performance and comprehensive real-time Ethernet system that also integrates safety engineering up to the drive with the safety protocol FSoE.

Servo technology and frequency converters

In power classes from <math><1\text{ kW}</math> to $>315\text{ kW}$, as mono units or as compact rack technology.

Synchronous and asynchronous technology

From highly dynamic servo motors to powerful torque motors with over 80,000 Nm.

Field level

I/O components and encoders

ProMaster Engineering Framework

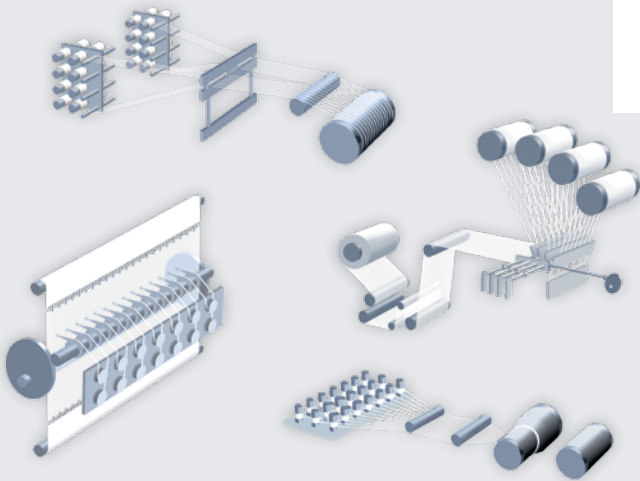


Your requirements

The increasing complexity of machines and systems also increases the requirements on automation. Larger data volumes need to be processed. In addition to functional aspects and changing customer requirements, regional regulations such as the Machine Directive must be taken into account.

The requirements for flexibility, minimum complexity and simultaneous reduction of the engineering effort can only be handled with an integrated approach and systematic procedures. This is the basis for innovative solutions for modern automation tasks.

Motion Libraries



The motion library is a software library developed by Baumüller that can control motion sequences of a system. This is made possible by numerous pre-fabricated modules.

Advanced libraries

The advanced libraries of Baumüller are extensions of the basic libraries representing the individual machine functions. All of the libraries can be combined with one another.

Your process stipulates the cycle for our technology modules. Machines working continuously or inter-

mittently can implement a variety of tasks, such as dosing, sealing, stamping, transporting, shaping, filling, unwinding/rewinding and positioning, using our enhanced libraries. High process quality with time-optimized and smooth movement is achieved in this way.

The mechanics

Our enhanced libraries consider mechanical machine functions such as:

- Linear axes: linear motors, spindles, toothed racks
- Rotational axes: toothed belts, rotary tables, conveyor belts
- Eccentrics: knee levers etc.
- Linked drives, e.g. handling systems, robots

Individualize standardized machine functions

Each application is unique, but that doesn't mean the whole thing should be totally reinvented from scratch – on the contrary. The whole idea behind modular engineering is to reuse the tried-and-true tested modules and concentrate on the specific task at hand.

Baumüller libraries are programmed integrated and are optimally adapted for automation tasks

and are based on one another. The combination of the different modules is facilitated by interfaces. Their acquired know-how can be filed, managed and reused anytime in own libraries. By using international standards (such as PLCopen Motion Control) and technology-specific extensions of Baumüller the greatest possible investment reliability is achieved.

ProSimulation

Immediate access to the simulation

Efficient machine development

Fast commissioning

Baumüller drive technology
as controller models

Extensive library of
common mechanics

CAD import from other
tools available

ProSimulation

Virtual Commissioning

Configuration and virtual
testing of automation systems

 **BAUMÜLLER**

ProSimulation
Virtual Commissioning

Configuration and virtual
testing of automation systems

 **BAUMÜLLER**

Faster to market thanks to shorter development times

ProSimulation simplifies the virtual design, optimization and commissioning of machines and plants. The software extends the range of functions of the ProDrive operating software, which allows for the simple and fast commissioning, parameterization and operation of all b maXX controllers.

ProSimulation – Functions

Simulation platform in ProDrive

- Baumüller drive technology as verified controller models
- Extensive library of common mechanics
- Linking of various existing simulation models for the simulation of machine movements

Display of simulation results in oscilloscope with reference measurement

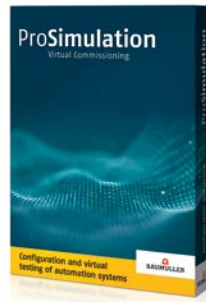
- Direct evaluation and comparison with reality

Parameter settings via virtual controllers

- Virtual commissioning
- Controller optimization and parameter set issuing for real drive

CAD import with 3D animation and machine movements

- Import of existing models from other simulation tools, e.g. Matlab® Simulink®, Modelica®, etc.



Advantages

Time and cost savings during development and commissioning

- The issuing of a real prototype can be optimized or replaced
- Easy import of existing models from other simulation tools
- Simple user interface and operation (ProDrive extension)
- License for further modeling software can be saved

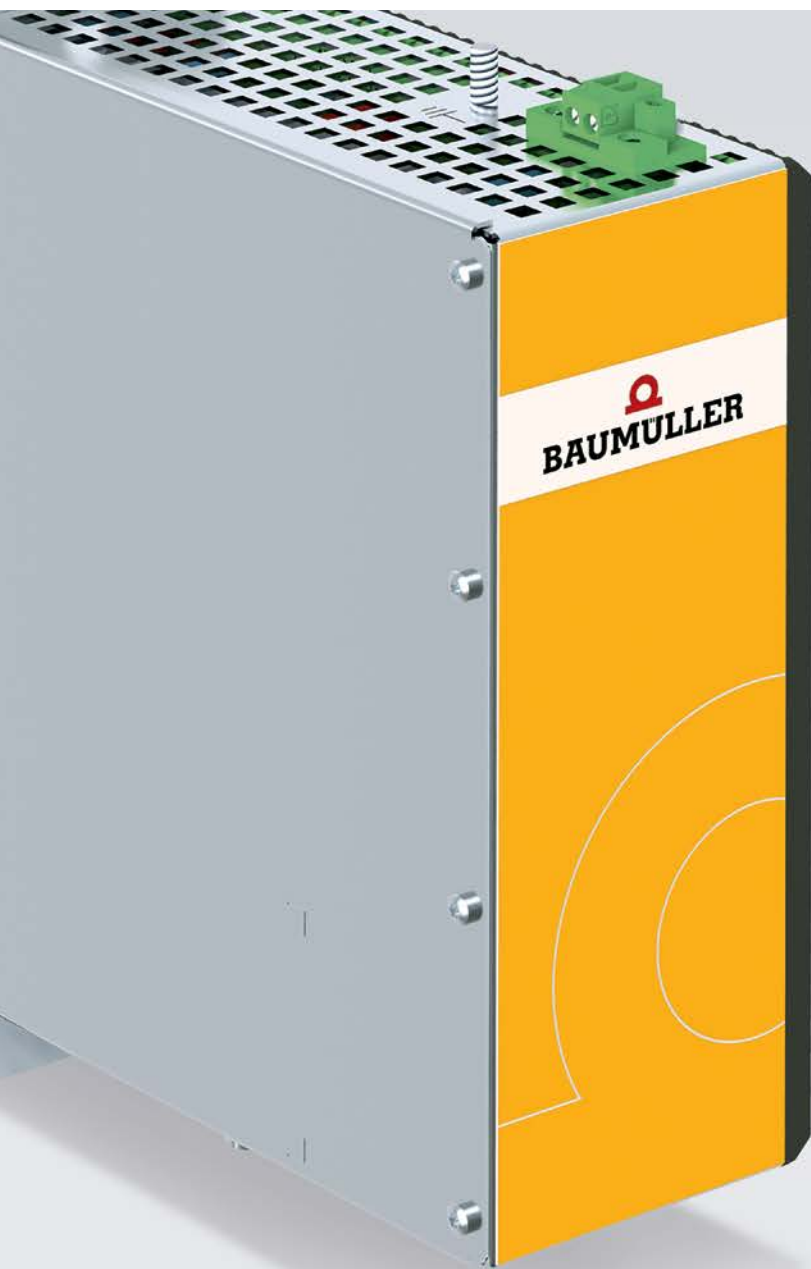
Optimization of existing machines and plants

- Virtual troubleshooting and optimization

Development of simulation know-how in the company

- Easy introduction to the topic of "digital twin"
- Fast creation of own simulations

b maXX PCC-04



Baumüller offers superb performance for motion control applications comprising a range of synchronous drives thanks to state-of-the-art processors. The demands for greater processing power while at the same time reducing power loss are met by the dual-core and quad-core CPUs from

Powerful. Fast. Flexible.

The b maXX PCC-04 is the latest generation of industrial PCs from Baumüller. It offers users a scalable and versatile platform that provides a large number of interfaces, can be expanded, and thus enables a flexible machine design.



Intel®. Thanks to separate cores for Windows and the real-time operating system, the availability of the b maXX PCC-04 is also particularly high. Baumüller also provides the user with 4 GB RAM and 30 GB internal memory as standard.

Baumüller industrial PCs

Baumüller box PCs are based on open standards from the automation and IT world. In addition to programmability according to IEC 61131, all the possibilities that the Windows operating system offers are available.

The b maXX PCC-04 is equipped with a serial interface, a video output, two Ethernet ports and four USB connections by default. An integrated EtherCAT master makes it possible to use the new industrial PC at the highest control level.

In addition, the b maXX-PCC-04 from Baumüller offers all the preconditions to incorporate model-based methods, such as simulation.

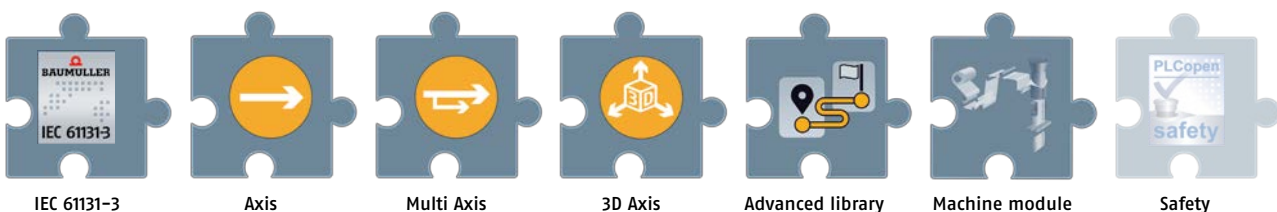


Maximum performance at control and communication level

- For centralized and hybrid control architectures
- Windows 7 embedded operating system with integrated real-time kernel for demanding, highly synchronized control tasks and machine visualization on one module
- Based on industrial PC technology
- High-performance integrated EtherCAT master
- High-precision system synchronization through EtherCAT Distributed Clocks
- IEC 61131-3 programming
- Fully integrated into the ProMaster Engineering Framework

Your benefits

- Use the functions of a controller and the services of an open operating system
- One system for all tasks: PLC, HMI, IT connection
- Open hardware and software platform
- Windows operating systems are in use worldwide
- Backup and restore mechanisms for the entire automation system
- Multi-core processors for computing capacity with defined real-time properties
- Open communication interfaces



b maXX 5000 Servo controller family



b maXX 5000 Side-by-side technology



BM50xx

Supply
units

BM51xx

Regenerative
units

BM53xx

Axis/double
axis units

b maXX 5000 Mono technology



BM55xx

Standard
units

BM56xx

Peak load
units

BM57xx

Nominal load
units

b maXX 5000

The safe, modular servo controller



Baumüller sets standards with the converter generation b maXX 5000. The further development of the successful b maXX series towards modular systems convinces with high-performance power units in air-cooled, water-cooled and cold plate cooling versions and with flexible expandability and the accessibility to an integrated communication concept. Standardized as well as complex automation solutions can be implemented with Baumüller's converters and controllers within a power range between 1 and 90 kW.

The machine and installation requirements with regard to future reliability, flexible expansion possibilities and a simple adjustment to changed production processes were already considered during the preliminary development process stages of the b maXX 5000.

Individual modules easily can be removed or added over an integrated drive connect system without having to disconnect the entire drive system.



b maXX 5000 – the modular servo controller

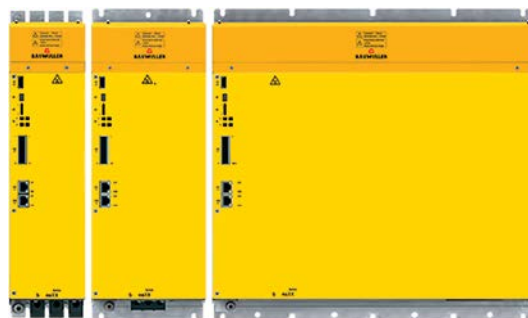
Technical data b maXX 5000 – Supply units



Frame size 3 4

Type	Frame size	DC link power		DC link peak power ¹⁾		Overload factor	Dimensions WxHxD [mm]
		[kW]	[hp]	[kW]	[hp]		
5030	3	5	6.7	7.5	10.1	1.5	75 x 395 x 280 / 210 ²⁾
5031	3	10	13.4	15	20.1	1.5	75 x 395 x 280 / 210 ²⁾
5032	3	18	24.1	27	36.2	1.5	75 x 395 x 280 / 210 ²⁾
5043	4	36	48.2	54	72.4	1.4	100 x 395 x 280 / 210 ²⁾
5044	4	70	93.8	70	93.8	1.0	100 x 395 x 280 / 210 ²⁾

Technical data b maXX 5100 – Regenerative units



Frame size 4 7 9

Type	Frame size	DC link power		DC link peak power ¹⁾		Overload factor	Dimensions WxHxD [mm]
		[kW]	[hp]	[kW]	[hp]		
5143	4	36	48.2	52	69.7	1.4	100 x 395 x 280 / 210 ²⁾
5174	7	64	87	96	130.2	1.5	175 x 395 x 280 / 210 ²⁾
5192	9	150	201	300	402	2	425 x 395 x 280 / 210 ³⁾
5193	9	200	268	300	402	1.5	425 x 395 x 210 ³⁾

Supply units, regenerative units:

Supply voltage: 207 – 528 V ± 0% AC

Supply frequency: 50/60 Hz

Electronics supply: external 24 V DC

Supply rated voltage: 400 V

DC link rated voltage: 540 V (supply unit),
640 V (regenerative unit)

Certification: CE, cUL

1) for 150 seconds

2) depth air cooling / depth cold plate

3) depth water cooling

Height and depth without mounting brackets;

Depth including required bending radius of connecting cables

Subject to alteration

Technical data b maXX 5300 – Axis units



Frame size 2 3 7

Type	Frame size	I _N [A]	I _{MAX} [A]	typ. motor rating		Overload factor	Dimensions WxHxD [mm]
				[kW]	[hp]		
5323	2	2x 3	2x 9	2x 1.6	2x 2.1	3	50 x 395 x 280 / 210 ²⁾
5323 ¹⁾	2	2x 4.5	2x 9	2x 2.4	2x 1.8	2	50 x 395 x 280 / 210 ²⁾
5325	2	2x 6	2x 18	2x 3.2	2x 4.2	3	50 x 395 x 280 / 210 ²⁾
5325 ¹⁾	2	2x 8.5	2x 18	2x 4.6	2x 3.5	2,1	50 x 395 x 280 / 210 ²⁾
5326	2	12	24	6.5	8.7	2	50 x 395 x 280 / 210 ²⁾
5327	2	20	40	10.8	14.5	2	50 x 395 x 280 / 210 ²⁾
5328	2	30	60	16.2	21.7	2	50 x 395 x 280 / 210 ²⁾
5331	3	2x 12	2x 24	2x 6.5	2x 8.7	2	75 x 395 x 280 / 210 ²⁾
5332	3	2x 20	2x 40	2x 10.8	2x 14.5	2	75 x 395 x 280 / 210 ²⁾
5333	3	2x 30	2x 60	2x 16.2	2x 21.7	2	75 x 395 x 280 / 210 ²⁾
5334	3	40	60	21.6	29.0	1.5	75 x 395 x 280 / 210 ²⁾
5335	3	60	90	32.4	43.4	1.5	75 x 395 x 280 / 210 ²⁾
5372	7	90	180	48.6	65.1	2	175 x 395 x 280 / 210 ³⁾
5373	7	120	240	64.8	86.8	2	175 x 395 x 280 / 210 ³⁾
5374	7	150	300	81	108.5	2	175 x 395 x 280 / 210 ³⁾
5375	7	180	360	97.2	130.2	2	175 x 395 x 210 ³⁾
5376	7	150	420	81	105.5	2.8	175 x 395 x 280
5376	7	180	420	92.2	130.2	2.3	175 x 395 x 210 ³⁾

Axis units:

Electronics supply: external 24 V DC

DC link voltage: 540 V rated voltage

Chopping frequency: 4/8 kHz

Certification: CE, cUL

1) Load cycles as per EN 61800

2) depth air cooling / depth cold plate

3) depth water cooling

Height and depth without mounting brackets;

Depth including required bending radius of connecting cables

Subject to alteration

For further information, see the b maXX complete catalog

b maXX 5500 – The servo drive for higher output ratings



The modular converters 5000 have been extended to mono units in the range 5500. This covers power ratings of 10 to 315 kW and higher safety functions

such as SLS (safely limited speed) and SLP (safely limited position) can be integrated up to high power ratings.

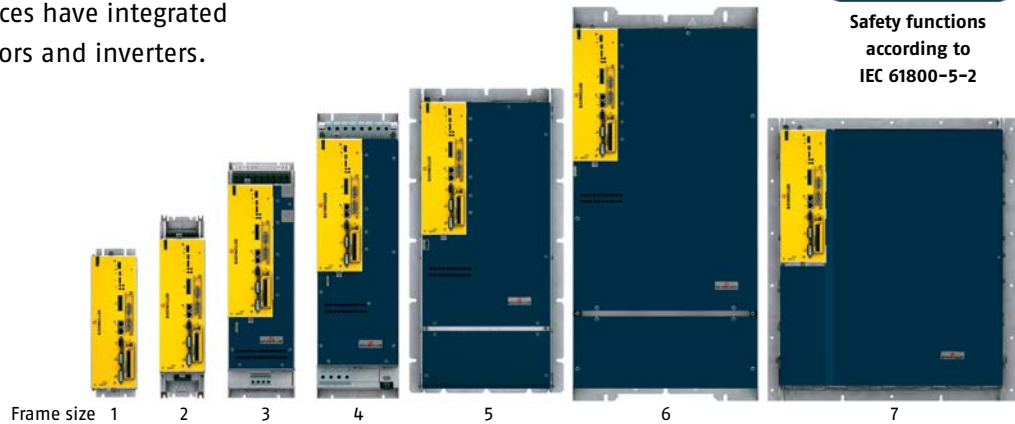
b maXX 5500 converter family

b maXX 5500 offers a performance range from 1.1 kW to 315 kW. All devices have integrated rectifiers, DC link capacitors and inverters.



Safety functions according to IEC 61800-5-2

Technical data b maXX 5500



Type	Frame size	I _N [A]	I _{MAX} [A]	typ. motor rating		Overload factor	Dimensions W x H x D ¹⁾ [mm]
				[kW]	[hp]		
5512	1	2.5	5	1.1	1.5	2	106 x 310 x 263 ⁴⁾
5513	1	4.5	9	2	2.7	2	106 x 310 x 263 ⁴⁾
5522	2	7.5	15	3.4	4.6	2	106 x 428 x 340 / 320
5523	2	11	22	5	6.7	2	106 x 428 x 340 / 320
5524	2	15	30	6.8	9.1	2	106 x 428 x 340 / 320
5525	2	15	40 ³⁾	6.8	9.1	2.6	106 x 428 x 340 / 320
5526 ³⁾	2	22.5	45 ³⁾	6	8.0	2	106 x 428 x 340 / 320
5526	2	22.5	45 ³⁾	10	13.4	2	106 x 428 x 340 / 320
5532	3	22.5	45	10	13.4	2	155 x 510 x 340 / 325
5533	3	30	60	13	17.4	2	155 x 510 x 340 / 325
5534	3	45	90	20	26.8	2	155 x 510 x 340 / 325
5535	3	60	90	28	37.5	1.5	155 x 510 x 340 / 325
5543	4	80	120	36	48	1.5	190 x 624 x 374 / 327
5544	4	100	130	45	60	1.3	190 x 624 x 374 / 327
5545	4	130	170	58	78	1.3	190 x 624 x 374 / 327
5546	4	150	200	75	100	1.3	190 x 624 x 374 / 327
5553	5	150	195	75	100	1.3	307 x 656 x 374 / 321
5554	5	210	260	110	147	1.3	307 x 656 x 374 / 321
5562	6	250	325	132	177	1.3	437 x 815 x 378 / 316
5563	6	300	390	160	215	1.3	437 x 815 x 378 / 316
5566	6	350	450	175	234	1.3	437 x 815 x 378 / 316
5572	7	450	585	225	302	1.3	520 x 600 x 340 ⁵⁾
5573	7	615	800	315	422	1.3	520 x 600 x 340 ⁵⁾

Supply voltage: 207–528 V ± 0% AC
 Supply frequency: 50/60 Hz
 Supply rated voltage: 400 V
 DC link voltage: 540 V rated voltage
 Chopping frequency: 2/4/8 kHz
 Output voltage: 0–95 % of supply voltage

Electronics supply: external 24 V DC (diagnostic capability)
 Fan connection: frame size 1–3: 24 V DC electronics supply,
 frame size 4–7: 230 V AC ± 10 %

Certification: CE, CSA, UL

Subject to alteration

1) Depth air cooling / depth water cooling

2) for 1 second

3) single phase

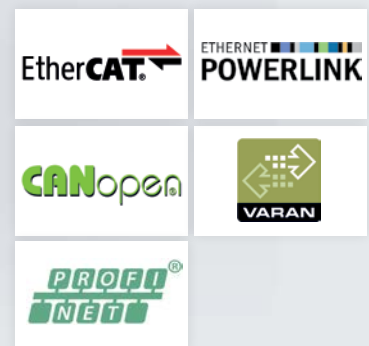
4) air cooling only

5) water cooling only

Height and depth w/o mounting brackets; depth incl. required bending radius of connecting cables

b maXX 3300

Servo controller up to 5 kW



The servo converter b maXX 3300 is a premium-quality servo controller with an integrated position control for the small power range. The b maXX 3300 distinguishes itself with its compact and space-saving construction. The field-oriented control provides an excellent rotational accuracy. Higher-level speed and position control ensure a precise positioning. b maXX 3300 is compatible with servo controllers b maXX 5000 with regards to handling, communication parameter structure, main functionality and operation. b maXX 3300 is parameterized in ProDrive.

The highly dynamic control of b maXX 3300 in conjunction with the highly dynamic small-sized servo

motors of the series DSD increase the cycle-times of the application and increase the production output of machines and installations. The high chopping frequency (16 kHz) reduces noise emission and therefore relieves the burden on the environment.

The servo controller is specifically designed for the operation with the servo motors DSD 28–100 as well as for the Baumüller disc motor series and the linear motor series. The consequent design focus of the controller on efficiency and compact construction form qualifies the b maXX 3300 for applications in the handling or robotics fields as well as for applications within the printing, textile and packing industry.

b maXX 3300 – Compact mini servo controller

The following control types are available for synchronous machines

- Current control (sampling times 62.5 µs)
- Speed control (sampling times 125 µs)
- Position control (sampling times 125 µs)
- Jogging mode
- Referencing

Functions

- 230 V or 400 V mains supply voltage
- Chopping frequency 4/8/16 kHz
- Integrated regenerative switching transistor
- Integrated ballast resistor
- External 24 V supply
- 1 encoder input
- Digital I/Os 24 V/; 2 In; 2 Out
- Analog I/Os ± 10 V; 1 In; 2 Out;
- 7 parameter data sets
- Open loop control
- EtherCAT/CANopen on board

Encoder types

- Resolver
- Rectangle incremental encoder
- SINCOS absolute encoder (single/multiturn)
- SINCOS incremental encoder
- ENDAT 2.1
- SSI-Encoder

Softdrive PLC

- Basic and extended version

Safety Technology

Certified Safety Function STO according to EN ISO 13849 up to PL_e



Frame size 0 1

Technical data b maXX 3300

Type	Frame size	I _N [A]	I _{MAX} [A]	typ. motor rating		max. peak current time [s]	Dimensions WxHxD [mm]
				[kW]	[hp]		
3302	0	1.5	6	0.8	1.07	60	65 x 170 x 170
3303	0	2.7	11	1.4	1.9	60	65 x 170 x 170
3304	0	5.0	15	2.5	3.4	30	65 x 170 x 170
3312	1	6.5	20	3.3	4.4	10	85 x 170 x 170
3313	1	10	20	5.0	6.7	10	85 x 170 x 170

Mains supply voltage: frame size 0: 110 V–243 V, single-phase; supply rated voltage: 230 V
 frame size 0/1: 180 V–528 V, three-phase; supply rated voltage: 400 V

Supply frequency: 50/60 Hz

Chopping frequency: 4/8/16 kHz

Output voltage: 0–85% (single-phase), 0–95% (three-phase) of supply voltage

Electronics supply: external 24 V DC

Data is valid for 4 kHz clock frequency; Dimensions without mounting brackets

Subject to alteration

b maXX 5000/3000 – Single cable solution for power and feedback systems



The single cable technology, with which the Baumüller motors are equipped, saves the user from having to use a feedback cable or an expensive inflexible hybrid cable that is otherwise required in addition to the obligatory motor cable.

Unlike with sensorless control, single cable technology allows for highly accurate positioning. The encoder data, rotor position, multi-turn information as well as the status of the thermal conditions in the motor are reliably transmitted interference-free via a purely digital interface. This results in significant cost savings, since both motor and controller side connectors and cables are omitted. Costly, analog evaluation modules in the drive amplifier can be dispensed with.

The diagnostic capability is also a given. The wiring is significantly simplified, which eliminates possible sources of error and also has a positive effect on the peripheral equipment, since now mobile cable handlers, cable glands and reserved areas for the cables in machines and control cabinets are significantly smaller.

The new technology supports an "electronic type plate." This results in greater degrees of freedom on the motor side: The elimination of a plug connection makes it possible to use the new technology in the smallest of installation sizes too.

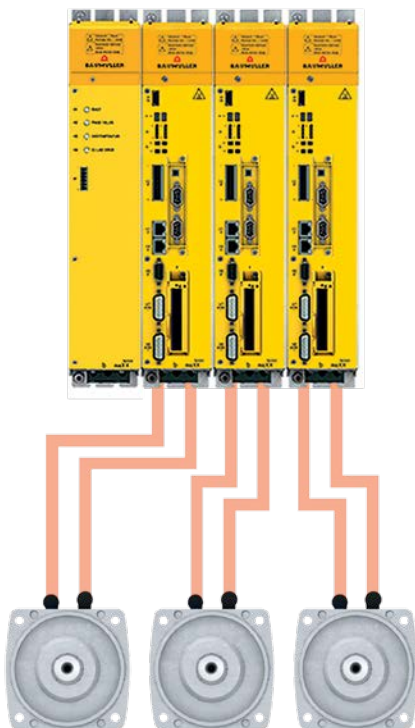
Customer benefits

- Quick and easy commissioning. Wiring and commissioning are simplified due to fewer cables and plugs
- Reduced wiring costs
- Thanks to the change to just one cable now, costs are eliminated for additional plugs and cables
- Efficient feedback control
- Increased performance thanks to digital feedback
- Reliable system
- Data transmission not susceptible to errors
- Supports electronic type plate

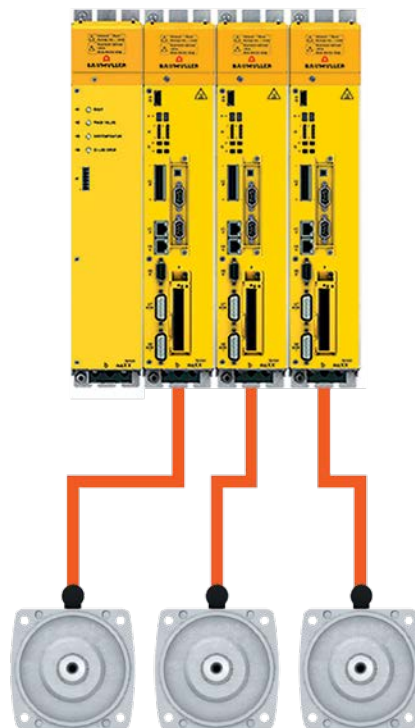
Operative range

- Robotics
- Packaging machines
- Filling plants
- Machine tools
- Paper and processing machines
- and many more

Standard solution



Single cable solution



DSD2 28-132 – Dynamic motors

- Maximum dynamic response due to excellent torque/inertial mass ratio
- Excellent smooth running characteristics
- High overload capability
- Smooth housing surface – not easily soiled
- Sleek, uniform housing design
- Almost no cogging effect
- Permanent magnet synchronous servo motors
- Main connection via turnable connector or terminal box
- IP65 degree of protection, regardless of cooling method
- Encoders: resolver, SinCos (optional), digital encoder (optional)
- All types optionally with brake



Types of cooling



The DSD2 series is available in an uncooled, air-cooled and a water-cooled version.

Spectrum



Capacity



Torque



Acceleration



DSD2 28-132 – Technical data

Type	P _N		n _N [min ⁻¹]	J		M ₀		M _{0MAX}	
	[kW]	[hp]		[kgcm ²]	[lb in ²]	[Nm]	[lbf ft]	[Nm]	[lbf ft]
DSD2-028	0.3-0.6	0.4-0.8	4500-6000	0.13-0.2	0.04-0.07	0.7-1.2	0.5-0.9	2.0-3.9	1.5-2.9
DSD2-036	0.4-0.9	0.5-1.2	4000-6000	0.18-0.4	0.06-0.14	1.2-2.8	0.9-2.1	2.8-8.4	2.1-6.2
DSD2-045	0.7-7.6	0.9-10.1	3000-6000	1.0-1.9	0.34-0.65	2.7-13	2.0-9.6	12-28	8.9-21
DSD2-056	1.3-12	1.7-16	2000-6000	3.6-6.6	1.2-2.3	7-30	5.2-22	25-57	18-42
DSD2-071	3.0-25	4.0-33	2000-6000	12-19	4.0-6.5	17-73	12-54	53-105	39-77
DSD2-100	1.9-42	2.5-56	1200-6000	52-105	18-36	42-210	31-155	105-280	77-206
DSD2-132	16-150	21-201	1000-6000	290-760	99-260	175-770	129-568	380-1080	280-797

Subject to change. The values specified are maximum values.
For details, please refer to the relevant technical documentation.

Subject to change

DSC1 45-100 – Compact motors

- Compact design with high power density
- IP65 degree of protection, regardless of cooling method
- Main connection and encoder connection via rotatable connectors
- Excellent smooth running characteristics
- Smooth housing surface – not easily soiled
- Sleek, uniform housing design
- Permanent magnet synchronous servo motors
- High overload capability
- Almost no cogging effect
- Encoders: resolver, SinCos (optional), digital encoder (optional)
- All types optionally with brake



Types of cooling



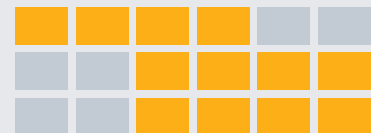
The DSC1 series is available in an uncooled, air-cooled and a water-cooled version.

Spectrum

Capacity

Torque

Acceleration



DSC1 45-100 – Technical data

Type	P _N		n _N	J		M ₀		M _{0MAX}	
	[kW]	[hp]		[kgcm ²]	[lb in ²]	[Nm]	[lbf ft]	[Nm]	[lbf ft]
DSC1-045	0.5-4	0.7-5.4	2000-4000	1.4-3.2	0.48-1.1	2.7-12	2.0-8.9	8.7-26	6.3-20
DSC1-056	0.6-6.5	0.8-8.7	900-4000	4.4-11	1.5-3.6	6.2-26	4.6-19.2	16-49	12-36
DSC1-071	1.2-14	1.6-19	750-4000	12.6-31	4.3-11	12-58	8.9-43	27-82	20-60
DSC1-100	2.3-18	3.1-24	850-3000	46-101	16-35	23-105	17-77	42-125	31-92

Subject to change. The values specified are maximum values.
For details, please refer to the relevant technical documentation.

Subject to change

DS2 100–200 – General Purpose (Synchronous)

- Perfect acceleration characteristics
- High power density
- Excellent smooth running characteristics
- High variability thanks to modular system
- High level of efficiency
- Permanent field servo motors
- Unventilated IP54, ventilated IP23, IP54
- Water-cooled IP54
- Encoders: resolver, SinCos (optional), digital encoder (optional)
- Optionally with brake



Types of cooling



DS2 motors are available as air- and water-cooled models.

Spectrum

Capacity

Torque

Acceleration



DS2 100–200 – Technical data

Type	P_N		n_N	J		M_0		M_{0MAX}	
	[kW]	[hp]		[kgm ²]	[lb ft ²]	[Nm]	[lbf ft]	[Nm]	[lbf ft]
DS2-100	5.3–47	7–63	1000–3000	0.01–0.02	0.24–0.52	48–165	35–122	120–340	89–251
DS2-132	14–105	19–141	1000–3000	0.045–0.08	1.1–2.0	130–375	96–277	305–710	225–524
DS2-160	30–155	40–208	1000–3000	0.15–0.25	3.6–5.9	320–695	236–513	690–1210	509–892
DS2-200	39–295	52–396	500–2700	0.44–0.79	10–19	570–1340	420–988	1130–2190	833–1615

Subject to change. The values specified are maximum values.
For details, please refer to the relevant technical documentation.

Subject to change

DST2 135-560 – The powerful high-torque motors

- Very good smooth running characteristics
- Energy-efficiency is maintained through wide speed/load range
- Suitable for sophisticated direct drive technology
- High torque at low velocities
- Low-noise
- Water cooling in a stainless steel design
- Compact and robust design
- Smooth housing surface – easy to keep clean
- Permanent field high-torque motors
- IP54 type of protection
- Encoders: Resolver, SinCos (option), digital encoder (optional)
- Other encoders on request



Types of cooling



DST2 high-torque motors are available in water-cooled versions.

Spectrum

Capacity



Torque



Acceleration



DST2 135-560 – Technical data

Typ	P _N		n _N [min ⁻¹]	M ₀		M _{0MAX}	
	[kW]	[hp]		[Nm]	[lbf ft]	[Nm]	[lbf ft]
DST2-135	2.7-60	3.6-80	175-1500	140-580	103-427	325-1110	240-819
DST2-200	5.5-126	7.4-169	150-1000	310-2030	229-1497	790-4450	583-3282
DST2-260	20-225	27-302	150-750	1130-4760	833-3510	2410-9800	1778-7228
DST2-315	16-285	21-382	100-600	1200-8600	885-6343	3330-18400	2456-13571
DST2-400	92-530	126-711	100-300	8800-18600	6490-13718	14800-31600	10915-23305
DST2-560 *	435-1150	583-1542	100-300	14800-39500	10916-29134	29900-79800	22053-58857

Subject to change. The values specified are maximum values.
For details, please refer to the relevant technical documentation.

*) on request

Subject to change

GDM – Direct current disc motors

Baumüller direct current disc motors are permanent magnet motors with an ironless rotor and barrel commutator. They are therefore low in inertia and extremely dynamic when running. They are easy to

regulate over their entire speed range and – even at really low speeds of less than one rotation per minutes – they retain exact concentricity.

These motors are primarily characterized by their space-saving, flat design. The shortest design requires only 39.5 mm installation space in the axial direction. This motor, type GDM 12 N, is also the flattest and most compact disc motor in the world based on the ratio between the installation space and the achieved motor power.



	Winding	Ratings			Current	Voltage	Motor constants		
		Torque M [Ncm]	Speed n [min ⁻¹]	Power P [W]			Voltage constant Ke [V/1000 min ⁻¹]	Moment of inertia J [kgcm ²]	Weight m [kg]
GDM12Z*	396/0400	17	1800	32	5.2	12	3.7	2	1.25
	594/0400	23	3000	72	4.8	24	5.5	2.1	1.25
GDM12N*	396/0710	35	3000	110	5.5	24	7.6	2.5	1.65
	1122/0450	70	2000	147	3.7	48	21.6	2.7	1.65
GDM100N*	330/0710	45	2200	105	13.7	12	3.7	1.6	1.8
	528/0630	55	3200	185	10.1	24	5.9	1.6	1.8
GDM100N2*	330/0710	60	4000	250	12.9	24	5.3	1.6	1.8
	528/0630	85	2300	205	11.0	24	8.4	1.6	1.8
GDM120F*	462/0560	35	4000	146	9.9	24	4.3	2.6	2.6
	594/0560	40	3000	125	8.6	24	5.5	2.6	2.6
GDM120N*	330/0800	75	3000	236	13.9	24	6.3	3.6	3.0
	396/0800	85	2500	223	12.8	24	7.5	3.6	3.0
	462/0800	90	2100	198	11.5	24	8.8	3.6	3.0
GDM120N2*	528/0750	100	1800	190	11.1	24	10	3.6	3.0
	264/1000	110	3000	350	17.1	24	7.2	3.6	3.0
	330/0800	135	2200	310	16.4	24	9.0	3.6	3.0
	396/0800	150	1850	290	15.1	24	10.8	3.6	3.0
	462/0800	150	3500	550	13.2	48	12.6	3.6	3.0
	726/0710	200	2100	440	10.9	48	19.9	3.6	3.0

Technical data for continuous operations (S1) at an ambient temperature of 25°C with a sufficient cooling surface.
Insulation class F; protection class IP 44. Other data, operating modes, and protection classes available on request.
All motors are also available as special designs with a tachometer, pulse generator, holding brake, and gearbox.

*Preferred types

Subject to change

Switchgear cabinet production and sheet metal solutions



Individual switchgear cabinets, sheet metal solutions, control desks and machine cladding in stainless steel and black plate

Use individual design to stand out from the crowd. As a system provider of sheet metal and wiring solutions, we manufacture according to your requirements, from the customer-specific sheet metal components to fully-wired electrical systems. We take the strain out of your manufacturing process and supply cost-optimised prototypes, individual parts or complete series.

Products and solutions

- Machine cladding systems
- Control desks and control stands
- Specially designed switchgear cabinets
- Customised engineering designs according to customer requirements
- Wired switchgear systems

Our services

- Design advice
- Planning, development, design – Pro-E, STEP, IGES, PDF, DXF
- Sheet metal processing using state-of-the-art machinery: punching, bending, welding, riveting, press-fitting of ST 1203, ALMG 3 and V2A
- Powder coating – structured or smooth, colour according to customer requirements
- Surface treatment – anodising, coating, labelling, screen printing
- Prefabrication, final assembly, module assembly
- Series wiring in acc. with specified circuit diagrams
- Cable harness manufacturing
- Dispatch, packaging and logistics according to customer requirements

House of Automation



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