

# PRODUCTS + SOLUTIONS





## Responding to your requirements

I'm happy to share with you the new edition of our "Products and Solutions" catalog. It contains the responses to the requirements you are placing on us every day. We are driven by topics that are of relevance to you, such as efficiency and flexibility in assembly and production processes, individual consultation and customized products or energy efficiency. These topics motivate us to continuously improve our portfolio of products and services as well as ourselves.

MOVI-C® – our new modular concept for automation systems offers 100% automation from a single source. Another innovation in our portfolio is the straightforward and efficient ECDriveS® drive system for roller conveyors used in light-duty materials handling technology. But there is also a lot going on in the established product portfolio. For example, we have added the size R127 to our offer of helical gear units, which means there are now 15 sizes of R gear units to choose from. Our main motivation has always been to keep the world in motion – and this is still true after a company history of more than 85 years.

Our offer for you is customized – and perfectly tailored to your needs and requirements. No matter which industry you are coming from. We're there for you. Take your time to go through the new "Products and Solutions" edition. And browse our responses to your requirements regarding drive technology and automation.

Let's discuss your challenges. And drive the world together.

Good luck with your future ventures!  
Sincerely,



Jürgen Blickle  
Managing Partner





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# DRIVING THE WORLD



## GEARMOTORS / GEAR UNITS

### Standard



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Modular brake system and built-in encoders  
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BF./BT.. double brake  
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Diagnostic unit option /DUE  
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Corrosion and surface protection  
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## INDUSTRIAL GEAR UNITS

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Helical gear units/bevel-helical gear units  
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Conveyor drive  
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CMP.. ELVCD decentralized extra-low voltage servo drives  
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ECDriveS® drive system  
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### Control cabinet installation



MOVITRAC® LTE-B\* basic inverters in IP20  
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MOVITRAC® LTP-B standard inverters in IP20  
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MOVITRAC® B standard inverters  
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MOVIDRIVE® B application inverters  
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Servo gearmotors  
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Corrosion and surface protection  
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TorqLOC® hollow shaft mounting system  
Page 265

### Servomotors



Synchronous servomotors  
CMP.. series  
NEW: Without encoder  
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Synchronous servomotors  
CM.. series  
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DRL.. asynchronous servomotors  
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## OPERATION AND STARTUP

### Controller software



Parameterizable solutions (CCU)  
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Operator panels DOP C generation  
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Keypads and interface adapters  
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### Software



MOVITOOLS® Motion-Studio engineering software  
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MOVIVISION® parameterizable plant software  
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LT Shell software  
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**Variable speed gearmotors**



VARIBLOC®  
(wide V-belt)  
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VARIMOT®  
(friction disks)  
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**Servo**



Planetary servo gear units/ gearmotors  
PS.F + PS.C series  
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Helical-bevel servo gear units/ gearmotors  
BS.F series  
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Precision servo gearmotors  
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**Stainless steel**



Stainless steel gear units  
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Bucket elevator drive  
X series  
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Agitator drive  
X series  
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Hoist drive  
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Helical gear units/  
bevel-helical gear units  
MC series  
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Helical gear units  
MACC series  
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Helical gear units  
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MOVIAXIS® multi-axis servo inverters  
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MOVIDRIVE® MDR regenerative power supply units  
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MOVI4R-U® basic inverters in IP54  
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MOVITRAC® LTE-B+ inverters in IP66  
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MOVITRAC® LTP-B standard inverters in IP55  
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MOVIFIT® compact  
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**Linear motion**



Cables and connection options  
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SL2 synchronous linear servomotors  
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Standard CMS.. and modular CSM.. electric cylinders  
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**Inverters – control cabinet installation**



MOVIDRIVE® application inverters  
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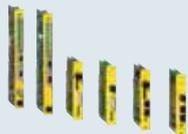
MOVIDRIVE® regenerative power supply units  
Page 296 ff.



MOVIAXIS® multi-axis servo inverters  
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**SAFETY TECHNOLOGY**

**Control cabinet installation**



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MOVIFIT® / MOVIPRO®  
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**CONTACTLESS ENERGY TRANSFER SYSTEM**



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MOVI-DPS® decentralized power supply  
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**Accessories + options**



Corrosion and surface protection  
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TorqLOC® hollow shaft mounting system  
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Oil condition monitoring  
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Vibration analysis  
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**MOTORS**

**AC motors**



Modular motor system  
IE1 to IE4  
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DR... J (LSPM) /  
DRM.. / DRK.. series  
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DAS.. aseptic gearmotors / ASEPTICplus® drive package  
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**Planetary gear units**



Helical gear units/  
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P series  
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**NEW**  
P-X series  
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**NEW**  
XP series  
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**NEW**  
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**Gearmotor with inverter**



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MOVI-SWITCH®  
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MOVIFIT® SC  
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**Decentralized installation: Inverters**



**NEW**  
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MOVIMOT® standard inverters  
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MOVIFIT® MC distributors for MOVIMOT®  
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MOVIFIT® FC inverters  
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**Accessories: Software**

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SEW-EURODRIVE system buses  
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EDR.. series AC motors, CMP.. series servomotors  
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X, MC, P, P-X, M1N series industrial gear units Page 188

**Servomotors**



Synchronous servomotors  
CMP.. series  
**NEW:** Without encoder  
Pages 146 – 148



Synchronous servomotors  
CM.. series  
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Asynchronous servomotors, DRL.. series  
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Cables and connection options  
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**Linear motion**



SL2 synchronous linear servomotors  
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Standard CMS.. and modular CMSM.. electric cylinders  
Page 157 ff.

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Field distributors and fieldbus interfaces  
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Mechatronic drive system  
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Installation topologies:  
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MOVIPRO® standard and application inverters  
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**Accessories: Software**



MOVITOOLS® Motion-Studio engineering software  
Page 254



MOVIVISION® parameterizable plant software  
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**SERVO DRIVE TECHNOLOGY**

**Servo gear units/gearmotors**



Planetary servo gear units/gearmotors  
PS.F + PS.C series  
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Helical-bevel servo gear units/gearmotors  
BS.F series  
Page 260 + 267



**NEW**  
Precision servo gearmotors  
ZN.. series  
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**TECHNOLOGY**



MOVIFIT® FDC-SNI variant  
Page 321



MOVIPRO® ADC variant  
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**Controller for control cabinet installation**



Controller performance class standard  
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Controller performance class advanced  
Page 324



Controller performance class power  
Page 325

**Controller software**



Free programming  
MOVI-PLC®  
Page 328

**ENERGY SAVING SOLUTIONS**



Energy efficiency in the control cabinet and in servo applications  
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➔ Not all the products listed here are available worldwide. If you have any questions on the terms and conditions for delivery, please contact your SEW-EURODRIVE country representative.



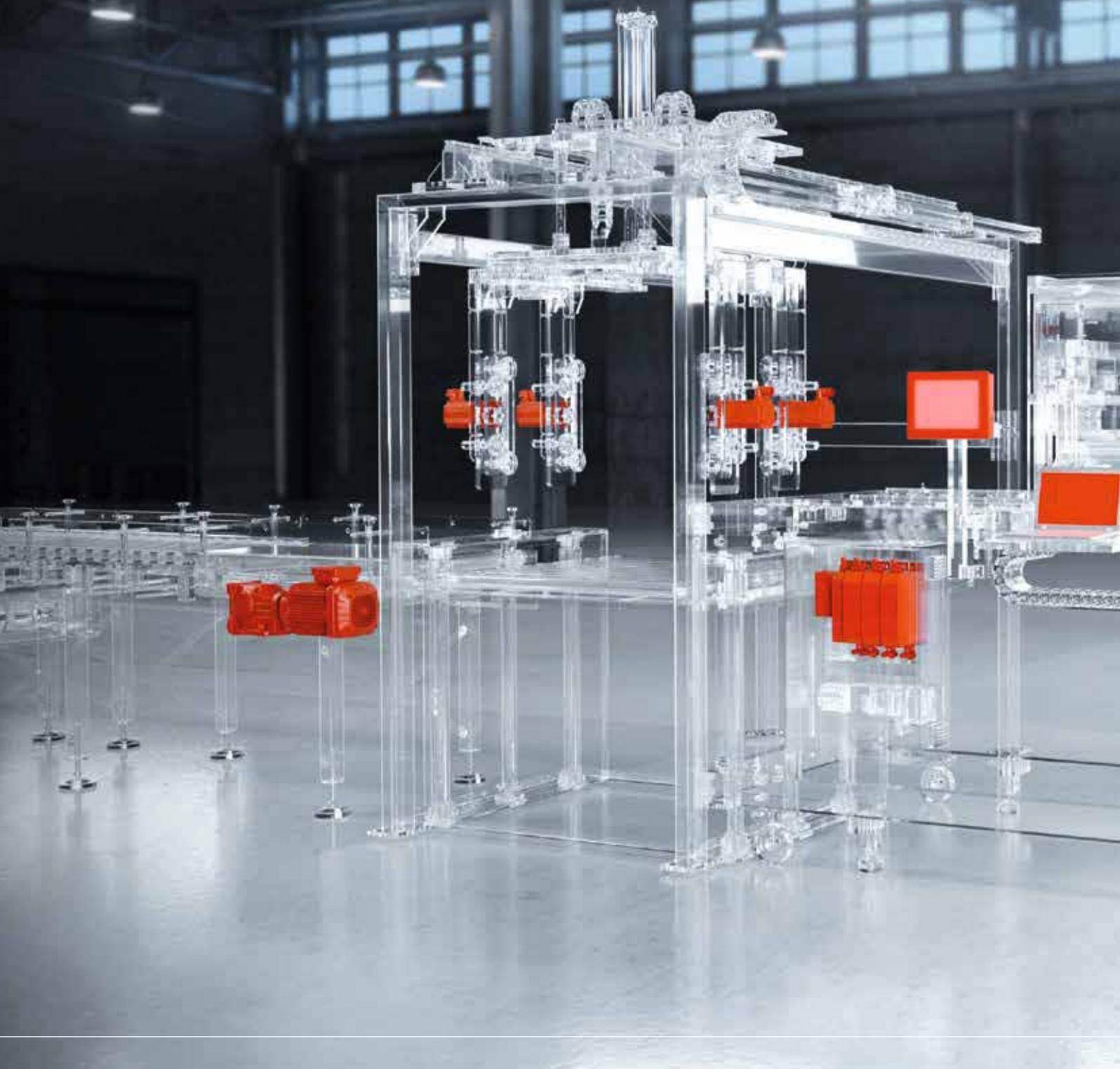
Fast – up-to-date – online:  
product information



**THE BEGINNING  
OF SOMETHING**

**BIG**

# THE FUTURE OF AUTOMATION





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## **MOVI-C®:**

**100% automation from a single source!**

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MOVI-C®, the new modular automation system from SEW-EURODRIVE will launch you into the future of automation.

MOVI-C® combines

- Engineering software
- Control technology
- Inverter technology and
- Drive technology

in a complete solution.

**The future of automation = MOVI-C® =  
100% automation from a single source!**



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[www.sew-eurodrive.de/en/movi-c](http://www.sew-eurodrive.de/en/movi-c)



**Motion solutions for  
every application:**  
Drive technology

**Control every motor:**

MOVIDRIVE®  
inverter technology

**Save time and cut costs:**

Engineering software  
MOVISUITE®

**Cut complexity:**

MOVI-C® CONTROLLER  
control technology

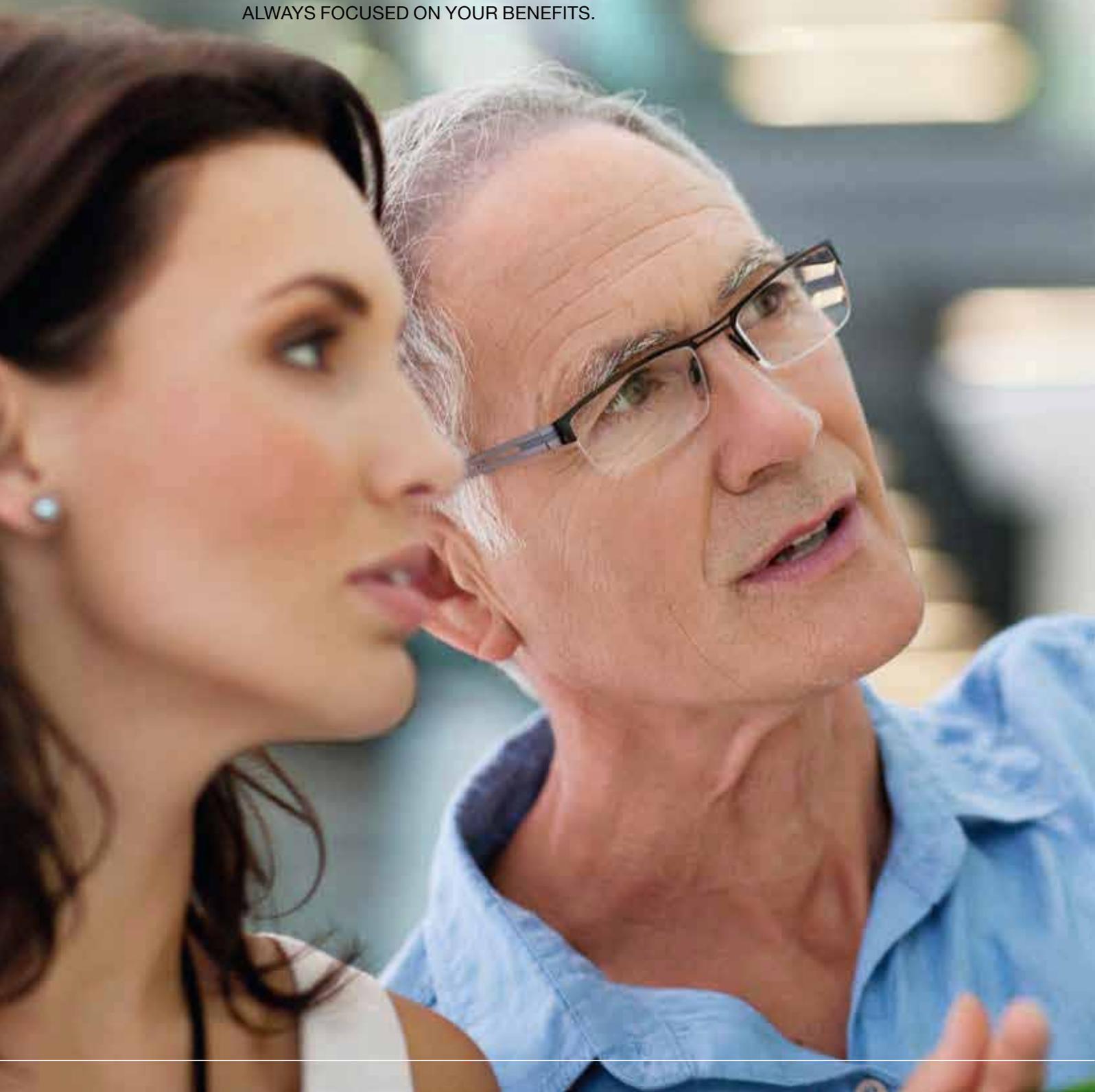


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# YOUR BENEFITS

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STANDSTILL IS NOT AN OPTION - WE ALWAYS KEEP THINGS MOVING.  
ALWAYS FOCUSED ON YOUR BENEFITS.





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## Your benefits: many solutions, one reliable partner

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Keeping things moving – this is the principle we work by at all times and in all locations and it also drives our success. You are the people best placed to know what makes you successful. And you also know that SEW-EURODRIVE delivers real added value. So why is it worth investing in our company, our drive technology and our services?

### Because our flexibility drives your company's growth.

**It's quite simple** – anyone who can respond to fast-paced delivery schedules, cost pressure and increased capacity demands in a fast and individualized way is clearly at an advantage. Both people and systems must be flexible if growing expectations are to be met – and that's

not all. Thinking ahead and making long-term, sustainable choices is also crucially important. We are focused on precisely these issues. The system solutions SEW-EURODRIVE delivers are specifically designed to adapt to changing requirements.

### Because our experience ensures your success.

**In 2017, we are thrilled** to be able to look back on more than 85 years of experience in drive technology. Above all, though, we are looking forward in expectation. With MOVI-C®, we have already opened a new chapter of our success story, in which this new modular system

will launch us into the future of automation. Let SEW-EURODRIVE keep you moving. Talk to us today about your drive and automation plans for the next few years and we will work with you to ensure your success.



**Because our high quality is always to your benefit.**

**We make no compromises** – and the high standards we set ourselves put you at an advantage, too. You benefit from our unconditional commitment to delivering only products and services that meet both our expectations and yours. This is a promise that you can rely on.

Our standards are checked and certified independently every single year, with the result that TÜV has certified SEW-EURODRIVE to ISO 9001.



**Why SEW-EURODRIVE?**

Find out here why you can trust us and our drive technology.

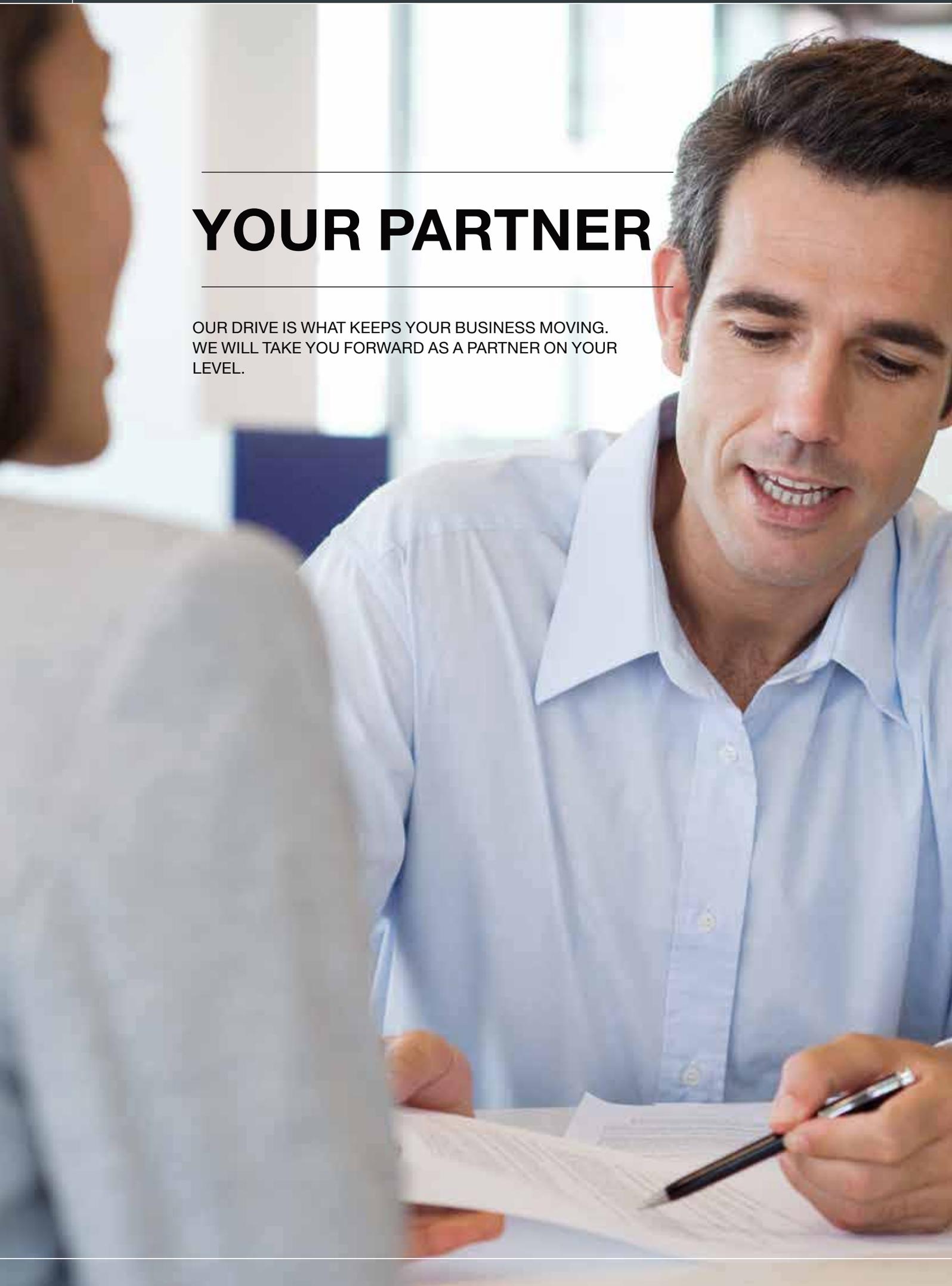
[www.sew-eurodrive.de/why-sew-eurodrive](http://www.sew-eurodrive.de/why-sew-eurodrive)

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# YOUR PARTNER

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OUR DRIVE IS WHAT KEEPS YOUR BUSINESS MOVING.  
WE WILL TAKE YOU FORWARD AS A PARTNER ON YOUR  
LEVEL.





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## Drive, motion, change – you can tell when things are getting somewhere.

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And you know, when something truly gets going, it develops its own dynamism. Harness this energy for your own success. You are headed for the future and SEW-EURODRIVE is with you all the way. As an experienced partner on your level. With support available all over the world. With specialists in your industry, your market and the challenges you face.

## Planning for the future together

**We can keep you moving forward – and that is a promise.** Our closely linked network brings you crucial advantages. Our products are delivered at speed and can be tailored specifically to your needs. Our quality is unique and fully reliable. And

our expertise is at your fingertips – with international experience, detailed specialist knowledge and interlinked know-how.



## A responsible pioneer

Being equipped for the future is a key challenge for you – just as it is for us. This is why we are committed to using the resources available to us responsibly, right down to the finest details. It's also why we attach so much importance to a way of working that truly deserves to be called "sustainable" – from developing and producing

sustainable drive solutions for our customers to cutting-edge SEW-EURODRIVE healthcare management. It goes without saying that we fully appreciate the value of our staff, our customers, our business partners and our environment.

Thinking ahead in a way that takes account of both our business activities, and above all those of our partners, is integral to our company and paves our way to the future. Partnership-based relations lead to long-term, shared success that

benefits everyone involved. This applies to all decision-making and production processes right through to complete drive solutions equipped for today, tomorrow and beyond.



### **SEW-EURODRIVE is a member of the VDMA sustainability initiative BLUE COMPETENCE**

Our reward for consistently focusing on future-oriented, sustainable drive solutions. More information on this initiative for innovative environmental technologies can be found here.

**[www.bluecompetence.net/home](http://www.bluecompetence.net/home)**



### **Our green commitment**

You can find out more about our commitments in our most recent sustainability report.

**[www.sew-eurodrive.de/sustainability](http://www.sew-eurodrive.de/sustainability)**



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## Knowledge that takes you further.

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Sustainability also involves building on our existing knowledge. Your industry-specific requirements provide our motivation, driving us forward to create well-designed and effective automation solutions that take you further within your sector.

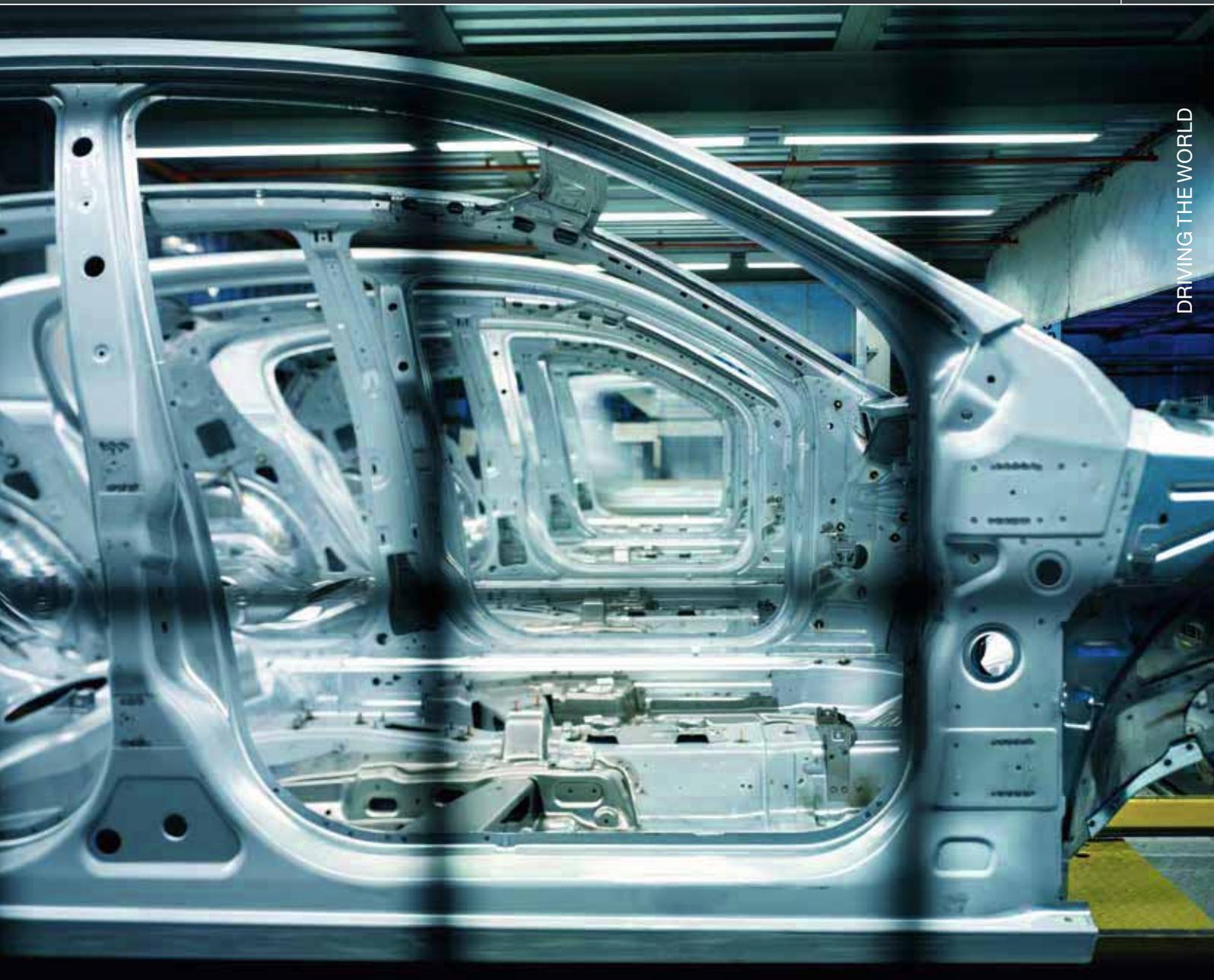
**What's more,** we take both products and requirements into account in producing your ideal solution. How does this work in practice? How are we able to produce millions of different drive variants? The secret lies in speaking to our customers. Dialog generates new understanding

that adds to our many years of experience. The modular principle of our extensive product portfolio is based on this process and gives you the flexibility and freedom you need. We put together the individual building blocks piece by piece to help you progress and reach your goals.

We build on our knowledge on a daily basis in a range of different industries all over the world, setting new market standards and helping you expand into new fields with fast and sustainable results. SEW-EURODRIVE industry-specific solu-

tions ensure smooth and efficient plant operations and minimize downtime.

After all, functionality and investment security are paramount.



Products and systems from SEW-EURODRIVE are used all over the world, including in the automotive, beverage and consumer goods industries. See more industries here. [www.sew-eurodrive.de/industries](http://www.sew-eurodrive.de/industries)

- Argentina
- Australia
- Austria
- Belarus
- Belgium
- Brazil
- Cameroon
- Canada
- Chile
- China
- Colombia
- Côte d'Ivoire
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Ghana
- Hungary
- India
- Italy
- Japan
- Kazakhstan
- Kenya
- Malaysia
- Mexico
- Morocco
- Netherlands
- New Zealand
- Norway
- Paraguay
- Peru
- Poland
- Portugal
- Russia
- Singapore
- Slovakia
- South Africa
- South Korea
- Spain
- Sweden
- Switzerland
- Tanzania
- Thailand
- Turkey
- Ukraine
- United Arab Emirates
- United Kingdom
- United States of America
- Uruguay
- Uzbekistan
- Venezuela



51 countries



15 production plants



More than 16 000 employees



# 77 Drive Technology Centers



Global service



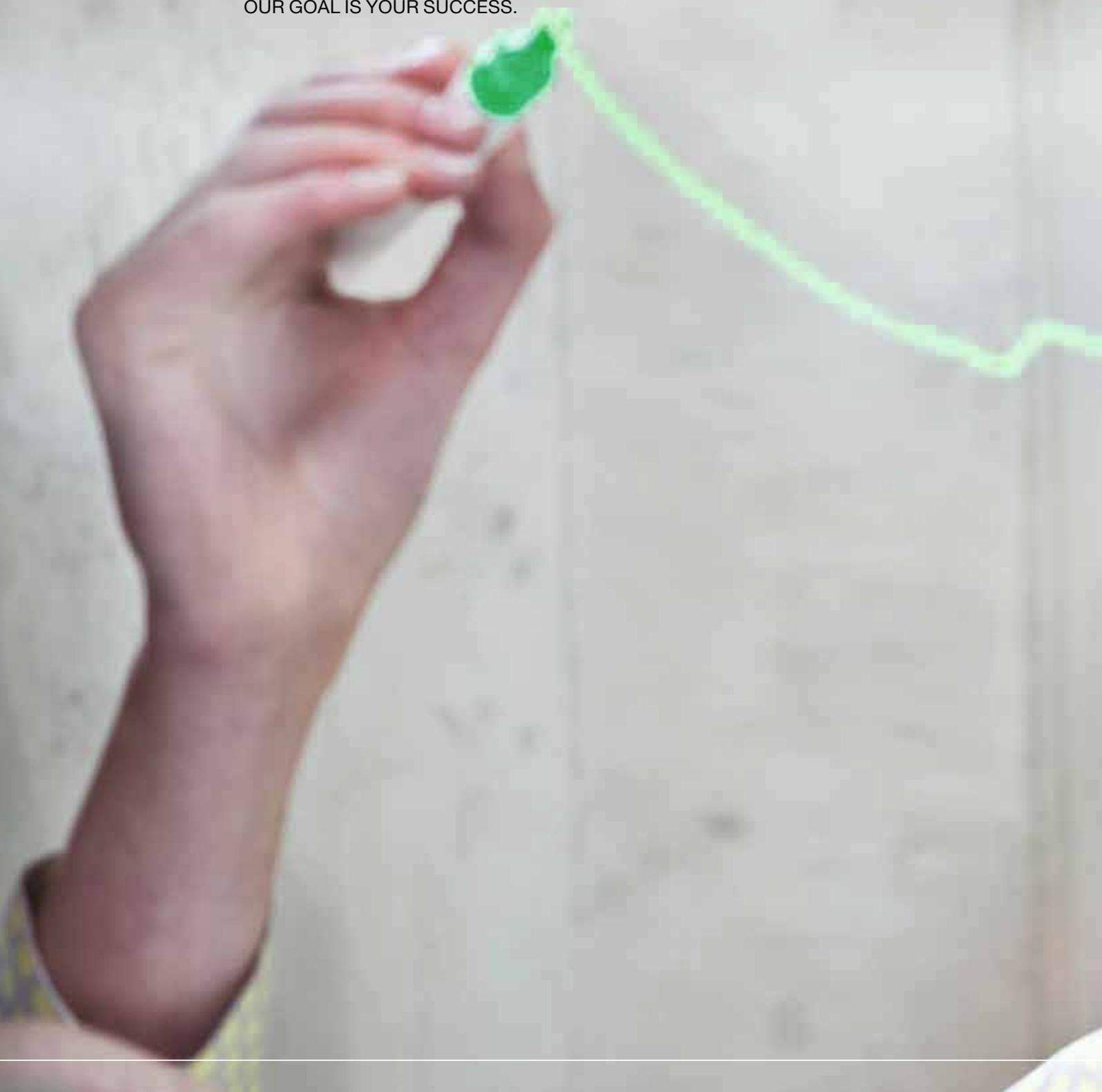
At home in  
numerous industries

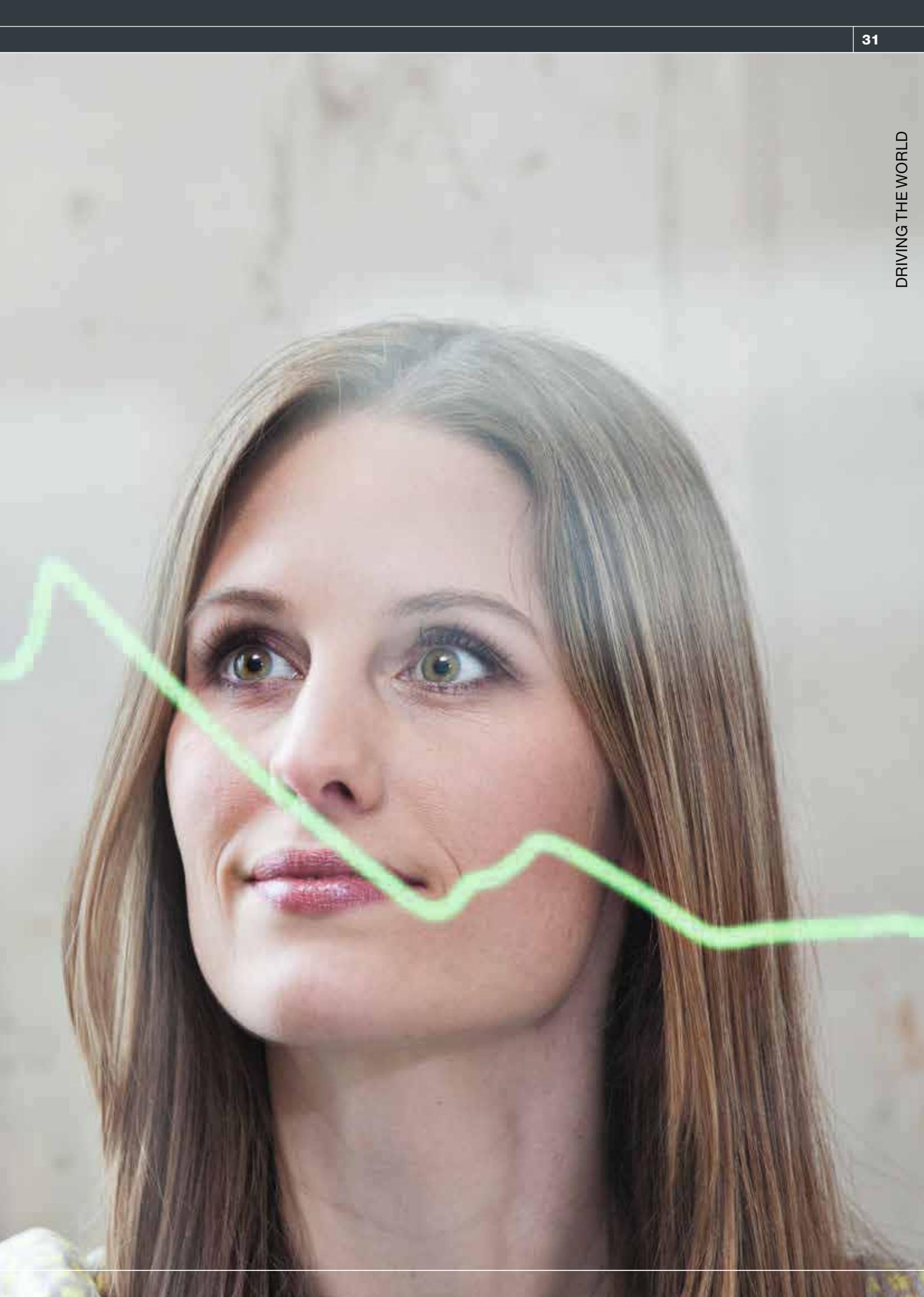
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# YOUR SUCCESS

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WHY WE'RE ON THE SAME TRACK.  
OUR GOAL IS YOUR SUCCESS.





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**4.0 · 4.0 · 4.0 · 4.0 · 4.0 · 4.0 · 4.0 · 4.0 · 4.0**  
**4.0 · 4.0 · 4.0 · 4.0 · 4.0 = SEW-EURODRIVE**

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Industry as a whole is on the brink of massive upheaval shaped by ever-increasing networking and the Internet. This development is so major and fundamental that many experts are calling it a fourth industrial revolution, "Industry 4.0." On the following pages, we want to share our vision of the Factory 2020 with you.

**The real world and virtual world will merge.**

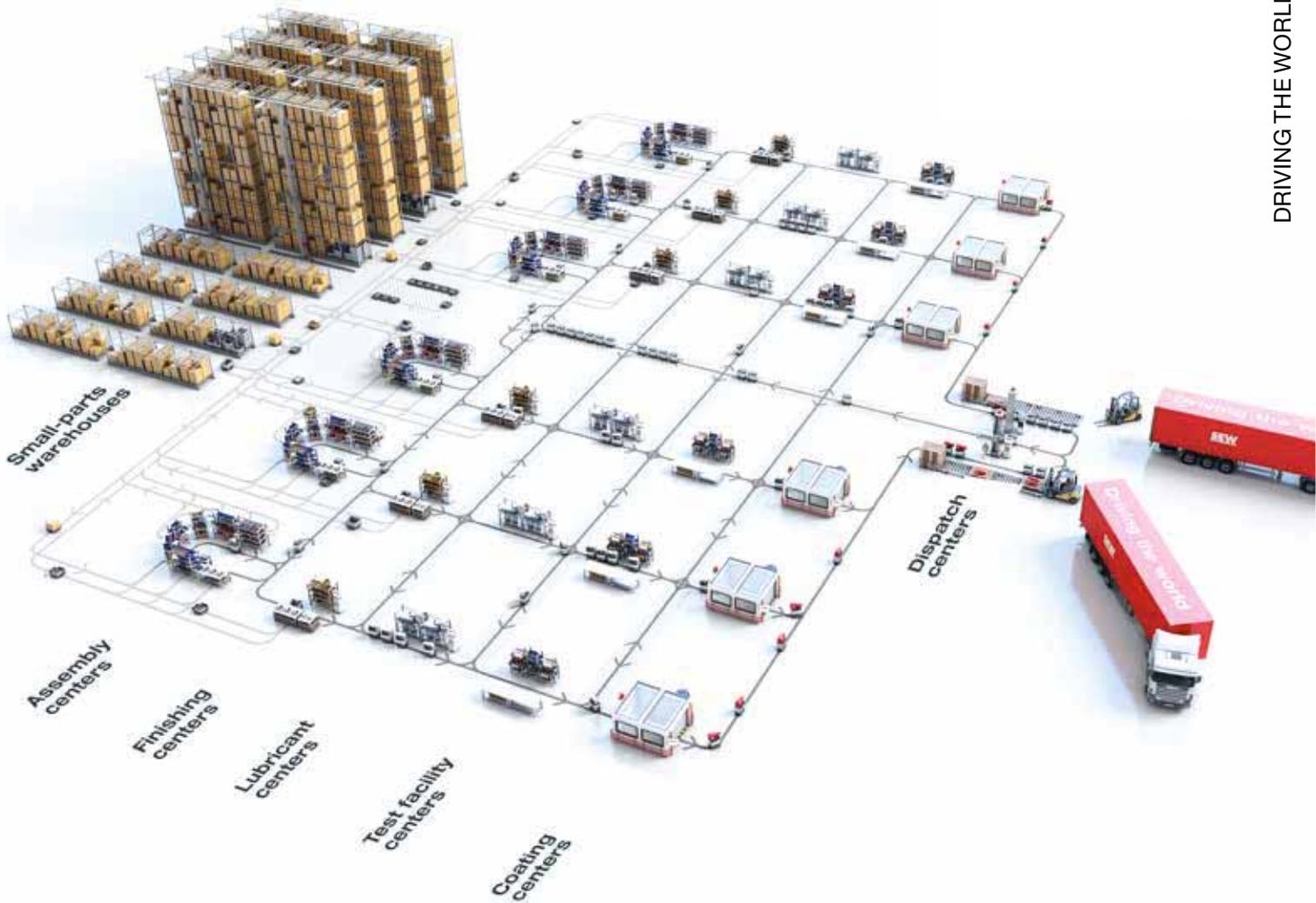
This approach promises to lead to completely new production methods and processes. The new feature of this approach is that, not only do machines and integrated systems communicate with each other, but all systems are intelligently linked through Industry 4.0, allowing them to exchange information with the products to be

manufactured, virtually in real time. Machines will be able to think for themselves and will detect when specific materials need to be replenished.

They will then autonomously report this demand to other systems that will automatically trigger order placement.

The principle of increased intelligent networking delivers significant savings in costs, time and efficiency for companies that adopt a consistent approach. It is estimated that savings of approx-

imately 30 percent compared to conventional production methods can be achieved.



#### Industry 4.0 – Our version of the Sm@rt Factory 2020:

Realizing perfectly implemented lean principles and technology approaches of Industry 4.0 and thus creating factories based on the successful philosophy "Intelligent interaction of people and technology within the work processes". We create value-based, waste-free, flexible, and motivating work processes and support them by means of integrated intelligent automation solutions across all areas. Currently separated functions such as production, assembly, and logistics will be intelligently linked and thus are combined into one integral system with Industry 4.0.

## Increased productivity in plant logistics

The introduction of Integrated Industry will allow us to revolutionize the management of product development and the value creation chain. Rigid production structures in factories will be loos-

ened and transformed into active, autonomous and self-organizing production units. This requires e.g. mobile assembly and logistics assistants.



Taking into account the 'one piece flow' and 'small factory unit' value creation principles, we are currently conducting a project to modernize and optimize material transport at the company's own production plant in Graben-Neudorf.

We at SEW-EURODRIVE have been working for some time on this new modular technology system that enables intelligent, innovative and cost-optimized application solutions. New technical possibilities in transport logistics even as far as robotic systems have been and will be generated primarily through innovations in the

fields of inductive and optical track guidance, contactless energy transfer and energy storage, safety technology, radio and navigation, sensor technology, drive technology and parameterizable control systems.



## Efficient processes save time and money

At SEW-EURODRIVE, we use our own solutions in production and logistics – this means a daily test of our products under real-life conditions. This is also why we focus to a great extent on the energy supply of our application solutions.

Back in the 1990s, we developed the technology for the **MOVITRANS® contactless energy transfer system**. Since then, we have been adapting the system to changing market requirements and working on it continuously, particularly with regard to Industry 4.0.



MOVITRANS® is made up of stationary and mobile components for contactless power supply to moving electrical loads. The required energy is transferred via electromagnetic fields (contactless) from a coil or an insulated stationary conductor via an air gap to the mobile consumers (vehicles) either selectively at specific points or along a track. Compared to conventional energy transfer, e.g. using contact lines or charging

stations, the MOVITRANS® system has particularly low wear, making it maintenance-free. With the contactless energy transfer system, there is no longer need for heavy batteries, which has a long-term effect on the design of the mobile assistance system. The line cables on the main tracks supply the vehicles with energy when they cross them. Charging a battery is no longer required. The vehicles can thus be used in 3-shift operation as

no breaks for charging the battery are required. At the same time, fewer mobile assistants are needed compared to a system with battery-supplied vehicles. Resources are used responsibly, especially regarding the inevitable battery exchange for battery-supplied vehicles.

Another example is **our short-term energy storage system** for flexible travel tracks. To store electric energy, the DC voltage storage unit is expanded with electric capacitors or batteries. This is made possible by energy modules that are made of innovative double layer capacitors. The DC-to-DC converter

connected between the grid connection and the energy modules allows individual control of the stored energy. The storage unit is charged actively and the stored energy can be used by the consumers. Using the short-term energy storage system from SEW-EURODRIVE, application-specific power supply interruptions can be

bridged and extremely flexible plant concepts realized. In regard to the digital factory and the importance of swarm technology, this system plays a central role in creating the future. The reduced installation technology of such systems is particularly useful during power failures or line interruptions.



Find out more information on our Industry 4.0 projects "made by SEW-EURODRIVE".  
[www.sew-eurodrive.de/en/smart-factory](http://www.sew-eurodrive.de/en/smart-factory)

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# OUR LIFE CYCLE SERVICES

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BECAUSE EVERYTHING STARTS WITH YOUR NEEDS –  
CUSTOMIZED SERVICES WHERE AND WHEN YOU NEED THEM.





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## Tailored to your requirements: Services along the system's entire life cycle

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Production processes are becoming ever more complex these days. This has a knock-on effect on services, which have to adapt and grow at the same pace. Customized offers are what is required – throughout the system's entire life cycle. This begins in the orientation phase and continues all the way through to the utilization and modernization of your machinery and systems.

We would like to support you in this by providing you with the service you need right now and giving you the best possible assistance. This might involve personal support with project planning and design during your planning and engineering phase, or it could be a comprehensive range of repair services, including picking up the components, during the utilization phase, if things are urgent.

Our scalable services enable us to offer tailor-made solutions from a single source and thus meet your specific requirements throughout the system's life cycle.





- **Everything from a single source**

You receive services, tools and resources that are closely linked to our product portfolio – and all from a single source.

- **One contact person**

We are there for you, and show personal commitment. Throughout Germany.

- **Reliability**

You receive reliable, rapid assistance that ensures the reliability of your production processes.

- **Expertise and advice**

You can build on expertise in drive and automation technology going back more than 85 years coupled with customized advice.



## Orientation

To ensure we embark on the correct path together.

Before you invest in new systems, components and services you need an overview that is as comprehensive and specific to your situation as possible: What rules and regulations have to be adhered to? Are there any trends and innovations that have to be taken into account? What offering is best suited to my needs? We aim to provide you with helpful information that will make the orientation and decision-making process easier for you.

Our wide-ranging sales and service network means we are always nearby and can support you with customized, personal consulting during this vital phase.

Our website, newsletter and specialist articles may also be able to provide you with the information you're looking for.

The following services are available to you:

### Personal consulting:

- **Current and future trends**  
We have our eyes and ears on the pulse. We would be happy to examine current and future trends with you, particularly in the field of drive and automation technology.
- **Rules and regulations**  
We will be happy to advise you on complying with current standards and legal requirements in terms of energy efficiency, explosion protection and safety technology, for example.
- **Application and industry expertise**  
We are happy for you to benefit from our extensive experience in a range of industry sectors and applications around the world.
- **Knowledge transfer**  
We will provide current information and trends from a number of associations, including the German Engineering Federation (VDMA) and the German Electrical and Electronic Manufacturers' Association (Zentralverband Elektrotechnik- und Elektronikindustrie, ZVEI).
- **Information sharing at innovation level**  
Our sales and product engineers are available to discuss your requirements. If necessary, we can also involve our researchers from the development departments.



Support tools & resources that are available to you:

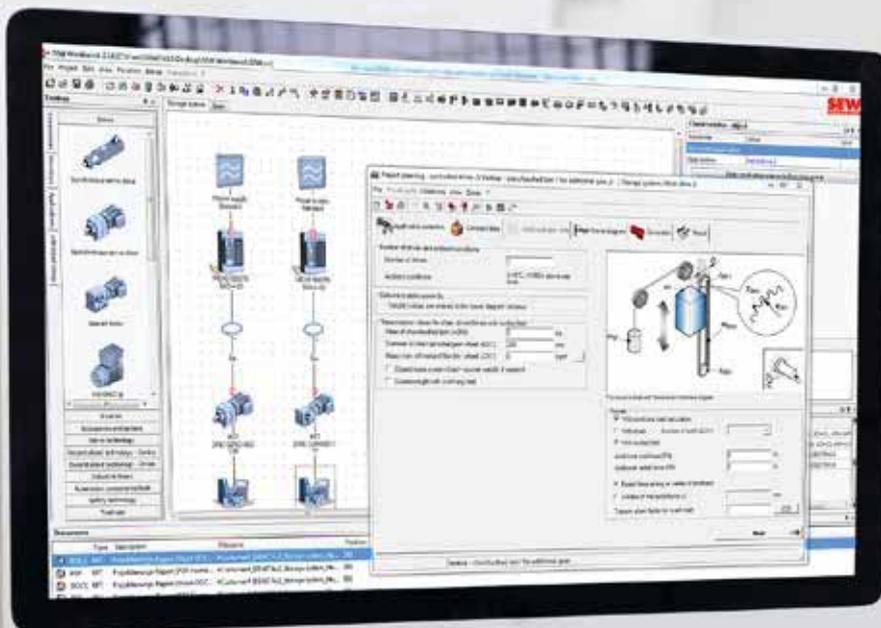
- Website
- Social media channels
- Data and documents
- Trade fairs and customer events
- Specialist articles and newsletters



## Planning & engineering

To enable you to turn your ideas, requirements and concepts into tailor-made drive and automation solutions.

Optimized planning – before you even place your order – is our top priority, with everything monitored by our technical experts who have detailed knowledge of your sector and applications. We are there for you in person, with 41 sales and service sites in Germany alone, to provide direct advice in project planning and engineering issues and answers to how you can effectively cut the maintenance costs for your systems during the utilization phase. If you wish, you can simply use our helpful "Planning and Engineering Tools" from the comfort of your own workplace.



## The following services are available to you:

### ● **Concept development**

We work with you to determine your drive and automation technology needs and develop tailored concepts for your drive, automation and safety technology.

This includes, for example, jointly developing performance specifications for applications programming or defining customized installation and drive safety concepts.

### ● **Project planning and design**

In the planning phase, we help you select and configure your drive components. In addition, we conduct project planning for your complex drive systems, taking into account safety and energy requirements.

You can find all the technical information and CAD data for the selected products at the push of a button. The final plausibility check, preliminary startup and system simulations in this error-free project planning stage save you time and money.

### ● **Engineering**

Whether it be modernization measures, the planning of new systems or implementing MAXOLUTION® system solutions, we always support you with the engineering services you need. From control cabinet planning, creating wiring diagrams and mechanical modifications during modernization measures all the way to project-specific software adjustments, system simulations and complete project management, we work closely as your partner through every stage.

### ● **Maintenance and operating concepts**

We help you in the planning and engineering phase to develop customer-specific maintenance and operating concepts for the utilization phase, and thus lay the foundations for reduced operating and maintenance costs, maximum system availability and even optimized storage costs.

### ● **Training**

Stay at the top of your sector in terms of drive expertise. Our wide-ranging training portfolio ensures you make practical progress. See for yourself what SEW-EURODRIVE's DriveAcademy® has to offer in the way of training.

### ● **Variant management**

We support you in the planning phase to standardize and minimize product variants and simplify your master data management. Comprehensive advice about technical details and filter opportunities in our central database help you to select the suitable product.

## Support tools & resources that are available to you:

- **Product configurator**
- **Energy efficiency tools**
- **Variant management**
- **Safety technology selection aid**
- **Planning and configuration tool (Workbench)**
- **CDM® database**
- **SISTEMA software utility**



## Procurement & delivery

To ensure your procurement processes run smoothly and your logistics outlay is reduced.

We offer extra process efficiency and consulting in the procurement process. You can benefit from our expertise during the procurement and delivery phase and the advantages this provides, such as increased speed and quality in dealing with your inquiries and orders, and ensuring smooth logistical processes. We are happy to support you in person with tailored solutions. Decide which services are right for you.

### The following services are available to you:

- **Delivery service**

With our delivery service, we meet your specific wishes, be it our standard or express shipping or even delivery direct to your construction site by courier. We are happy to accommodate specific packaging requests.

- **Intelligent material flow**

DriveTags are functional barcode labels that are attached to products or packages. They contain data defined by you (e.g. the SEW serial number, your material number or your project number), and ensure simple identification and efficient assignment of products at every process step – from receipt of goods, through storage and on to the downstream stages.

- **Electronic data interchange (EDI)**

We help you manage your entire order management electronically with us – from ordering, order confirmation and notification of dispatch all the way to billing. We advise you on what the best option would be, either using platforms such as MyOpenFactory, Basware, Seeburger AG or via direct link to standard formats such as EDIFACT or XML.

- **Electronic billing**

This service ensures quick availability of your invoices, saves time and helps the environment. Optimize your processing of incoming invoices and your administrative processes – regardless of whether invoices are sent by e-mail, with an additional XML invoice file or using EDI.

- **Electronic notification of dispatch**

Electronic notification of dispatch is a goods notification service. We let you know as soon as your delivery leaves our premises. This keeps you in the picture and enables you to take the necessary steps. As a result, you benefit from optimized resource planning, precise control of production planning and speedy goods receipt processes.



Support tools & resources  
that are available to you:

- [Transaction overview](#)
- [Create a shopping cart/inquiry or order](#)



## Installation & startup

To ensure your drives and systems are up and running quickly, cost-effectively and successfully.

Do you want to do everything right even in the installation and startup phase?

Do you want to ensure your system is operating correctly through an inspection of the installed drive technology?

Do you want to optimize your machinery and system processes using tailor-made, application-specific programming? Or do you want to cut costs and prevent consequential damage with professional support during startup?

The following services are available to you:

- **Installation consulting**

We help you properly install your drive technology. You can benefit from our project experience to shorten your installation time and safeguard your system functionality. We are happy to provide support at every step, from inspecting the mechanical and electrical installation to complete project planning in relation to the drive technology.

- **Application programming**

In many cases, the drive components achieve their full functionality only with the right software solution. Let our experts help you optimize the benefits and functions of your drive technology. We will happily create tailored drive component software for your applications.

- **Startup**

We start up all your drive technology, taking account of current safety regulations and set all parameters to optimize reliability and efficiency. This applies to both new and modernized systems. We are happy to discuss the optimum operation of your drives and systems while you are watching us at work.

Support tools & resources  
that are available to you:

- **MOVITOOLS® MotionStudio**

- **MOVISAFE®**

- **MOVIVISION®**

- **Software LT Shell**

- **MOVISUITE®**

- **Libraries and application modules**

We provide professional support all the way from installation consulting and application programming to startup – either in person through experienced service experts or through user-friendly tools. This saves time, money and nerves.





## Utilization

To ensure your system operates reliably and efficiently – long term.

The utilization phase tends to be the phase within the life cycle of your system that has the greatest impact on the life cycle costs of your machinery and system. We aim to help you keep these costs to a minimum and thus continuously improve the availability and productivity of your system. Prepare to be impressed by our tailored services such as our remote service, our comprehensive range of repair services, including Pick-Up and Delivery Service, and our energy consulting as a support service for your energy management system.



## The following services are available to you:

### ● Production support

Our experts will be pleased to provide you with support during your production startup. This makes it possible to identify problems as soon as they arise and intervene early to remedy them. We will supervise the drive technology during the startup phase, train your staff if necessary, and help you optimize your process sequences.

### ● Remote service

We will use remote access to support you in diagnosing the current status of your drive technology and in appropriate fault evaluation. These and many more services are available to you at any time and worldwide. All you need is an on-site computer with an Internet connection. You do not need to install any additional software. This boosts productivity and minimizes your downtimes.

### ● Repairs

Should repairs be required, we can help. Even for products from other manufacturers. Our repair services are tailored to your needs and range from simple emergency repairs and functional repairs all the way to as-new repair work with a 24-month guarantee on the complete drive. And if things have to be done in a hurry, ask about our rush order repairs and our on-site service.

### ● Inspection & Maintenance

We can raise your operational safety and system availability with our comprehensive range of inspection and maintenance services, including endoscopy for the fast diagnosis of your gear unit or the comprehensive analysis of your gearmotor oil as part of the oil check. We will happily check your entire drive technology in an existing system and give you a 12-month liability for defects on all drive components we have checked and found to be in working order. Simply ask about the SEW quick check.

### ● Spare parts service

Even if you carry out the repairs yourself, in 95% of cases we will dispatch the spare parts required on the same day. No matter whether you contact us personally or use our Online Support to place the order. We guarantee immediate availability and provision of original SEW-EURODRIVE replacement parts.

### ● Pick-Up and Delivery-Service

Our Pick-Up and Delivery Service ensures fast pick-up and delivery of your drive technology coupled with support from our service experts to help you disassemble and reassemble the drive components. Thanks to our wide-ranging network of service sites, we are always nearby, and can ensure quick response times. We will be happy to also take over all the transport logistics. Simply ask about the Pick-Up Box.

### ● Express Assembly

In urgent cases involving replacement or new gearmotors or electronic products, our highly skilled service staff will provide expert assistance. With 41 service sites in Germany alone, our wide-ranging customer support and service network generally enables us to assemble and deliver the drive components on the same day they are ordered. For you, this means greater process reliability and shorter cost-intensive downtimes.

### ● Condition monitoring

Our condition monitoring is based on systematically determining the condition of all drive technology and drive automation. You receive entire concepts, from initial consulting and designing of the optimal analysis method all the way through to installation and diagnostics. Minimize your production downtimes and utilize our brakes diagnosis or SmartCheck vibration sensor, for example.

### ● 24h Service Hotline

Trained technicians and engineers are available for you round the clock – whether to provide technical information or to arrange rush orders for repairs, express assemblies and replacement part dispatch.

### ● Energy management

Our energy experts will help you optimize the energy efficiency of your machinery and systems and decide on the best way to use energy-optimized drive systems. This will enable you to boost the energy-efficiency of your system and reduce your energy costs, and you will also receive an energy report from us to prove the success for your energy management system.

## Support tools & resources that are available to you:

### ● Energy efficiency tools

### ● Variant management

### ● Troubleshooting

### ● Replacement parts or replacement product selection

### ● Scope diagnostic function

### ● CDM® database



## Modernization

To ensure you are using state-of-the-art technology and achieve the best possible productivity, process reliability and performance.

As the service life of a machine or system increases, changes occur in both the framework conditions such as legal and standards requirements and the requirements relating to productivity, system availability, performance and parts availability.

Sooner or later, you will face a decision about whether it is time to consider modernizing a system – or even just parts of it. This can bring with it great economic advantages.

We know that system modernization is an extremely challenging engineering and service undertaking, and we are keen to work closely with you to make it a success.

The following services are available to you:

- **Retrofit**

We update your system with state-of-the-art technology. You boost your productivity and energy efficiency, reduce your maintenance costs by using service-friendly products and receive long-term parts availability. Thanks to our retrofit service, you receive everything from a single source – personal consulting and engineering, cutting-edge drive technology, programming and visualization, and of course complete installation and startup.

Support tools & resources are available to you throughout the entire system life cycle.



## Tools and resources – all in one place in Online Support

Alongside personal advice at every stage of the system life cycle, you can also benefit from our tools and resources. We have brought together the ones that are available online in our Online Support.

Welcome to the Online Support!

**Processes**

Engineering & selection	Inquiry & order	Delivery & material flow	Startup & maintenance
<ul style="list-style-type: none"> <li>Product configurator</li> <li>Variant management</li> <li>Select replacement product</li> <li>Energy efficiency tools</li> <li>Selection guide for functional safety</li> </ul>	<ul style="list-style-type: none"> <li>Create inquiry or order</li> <li>Transaction overview</li> <li>Templates</li> <li>Quotations</li> <li>Orders</li> <li>Service transactions</li> </ul>	<ul style="list-style-type: none"> <li>Order status</li> <li>Request dispatch notification</li> </ul>	<ul style="list-style-type: none"> <li>Select spare part</li> <li>Troubleshooting</li> <li>CDMS database</li> <li>Return process</li> </ul>

**Data & documents**

- CAD data
- Documentation
- Product data
- Software

Individual settings	Related links	Online Support hotline
<ul style="list-style-type: none"> <li>Forgot password?</li> <li>Registration</li> <li>Login</li> <li>Workbench registration</li> </ul>	<ul style="list-style-type: none"> <li>Mobile applications</li> <li>Newsletter</li> </ul>	<p>Please call us or write us an e-mail.</p> <p>+49 7251 75-3232</p> <ul style="list-style-type: none"> <li>online-support@sew-eurodrive.de</li> <li>Brief instructions for Online Support</li> </ul>

They are structured based on the stages of the life cycle and ensure straightforward, direct access to the functions relevant to you.

Many of the functions available can be accessed without a login. You can also register and gain access to more functions. Registered users can change the settings in their own personal area.

**Data & documents** is a simple and fast way to find information on the products – CAD data, product data, software and technical documentation.

Many possibilities, one access:  
Discover SEW-EURODRIVE's Online Support tool.



## Mobile applications

Are you on the road and need help selecting the correct product? Are you unsure about energy efficiency guidelines? Or are you trying to identify faults in SEW-EURODRIVE drive components on-site in your system?

**Our apps make it easy.**



Fast access on the move –  
see for yourself and find out  
about our cell phone apps here.

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# OUR SOLUTIONS

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THINK BIG TO REAP BIG REWARDS.  
OUR SOLUTIONS FOR TOMORROW, AVAILABLE TODAY.





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## Solutions from SEW-EURODRIVE

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Do you have completely new or very specific challenges for us? No matter what your industry, we are there for you worldwide and are constantly improving our components and the modular concept as well as our solutions.



**We at SEW-EURODRIVE create and implement solutions today for the tasks of tomorrow:**

- Predefined application packages
- Tailored system solutions
- Powerful industrial gear units

This will enable us to meet the challenges that lie ahead and always offer you exactly what you need – today, tomorrow and further into the future.



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## Possibilities at a glance – sample applications

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MAXOLUTION® from SEW-EURODRIVE delivers tailor-made system solutions with a built-in guarantee of success. Our MAXOLUTION® system solutions supply all the necessary modules to create customized machinery and systems that ideally match your requirements.

### Innovative, customized MAXOLUTION® system solutions



Cartoning machine with conveyor technology



Automated guided vehicle (AGV)



Safety electrified monorail system (EMS Safety)

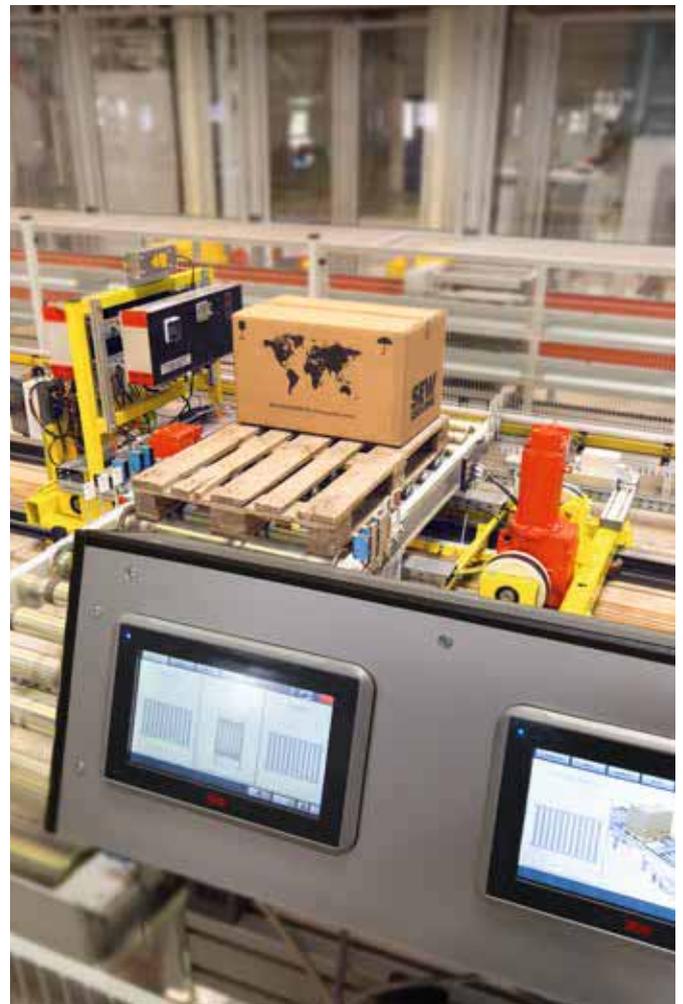
They range from electromechanical drives, controllers, communication, visualization and contactless energy transfer systems to the varied service portfolio that provides you with fast and reliable support from experienced professionals. Our system specialists form a core

team that delivers industry-specific expertise and works closely with the sales and service staff you are already familiar with.

**Your added value:** Everything from a single source. We ensure you receive the best possible advice and support, with fewer interfaces and just one contact for the entire system solution. Fast, straightforward and comprehensive with a constant focus on your needs.



Storage/retrieval system (SRS)



Pallet transfer shuttle

## Customized solutions for the automotive industry – innovative and reliable

The MAXOLUTION® system specialists always have their eyes on the big picture – from problem-solving skills to system availability – utilizing their many years of market knowledge and experience. SEW-EURODRIVE is using the MAXOLUTION® system solutions for the automotive industry again this year to prove its innovative credentials. Check things out for yourself!



### Electrified monorail system – EMS safety

- Intelligent drive control with MOVIVISION® (see EMS Advanced)
- Innovative safety functions:
  - Safe positioning (SLP) and speed (SLS) with just one barcode encoder
  - Safe monitoring (SLS and SLP) of up to three axes (travel, hoist, turn) in combination
  - Reliable communication between all EMSs and the stationary MOVISAFE® HM31 controller using SEW-EURODRIVE slotted waveguides
  - SDM\* (Safe Distance Monitoring) enables dynamic, safe increases in distance in assembly lines

\* The panel of judges for the Handling Awards 2016 was impressed by SDM, awarding it second prize in the category "Quality and Safety"



### Electrified monorail system – EMS Advanced

- Intelligent drive control with absolute positioning
- Reliable WLAN communication
- Flexible, simple configuration with MOVIVISION®, because:
  - MOVIVISION® enables the simulation/emulation of the EMS system before startup
  - "Motion Profile Manager" makes it easier to create and modify travel profiles for up to three axes (travel, hoist and turn)
  - Condition monitoring provides comprehensive diagnostics comparison of your EMS system at any time using the "Timeline Function"



### Electrified monorail system – EMS basic

- Compact system solution for simple transportation tasks
- With half-wave control and configurable functions
- Cost-effective and robust
- Perfect for retrofits



#### Automated guided vehicle (AGV)

- High flexibility without obstructing floor space
- Decentralized drive and positioning control using MOVIPRO® application inverter
- MOVITRANS® contactless energy transfer system
- Reliable WLAN communication



#### Skillet

- Intelligent, decentralized drive control using MOVIVISION® configurable system software
- Absolute positioning
- Reliable WLAN communication
- Contactless energy transfer
- Scalable safety functions (SLP, SLS for hoist, SLP for X-axis; reliable communication)

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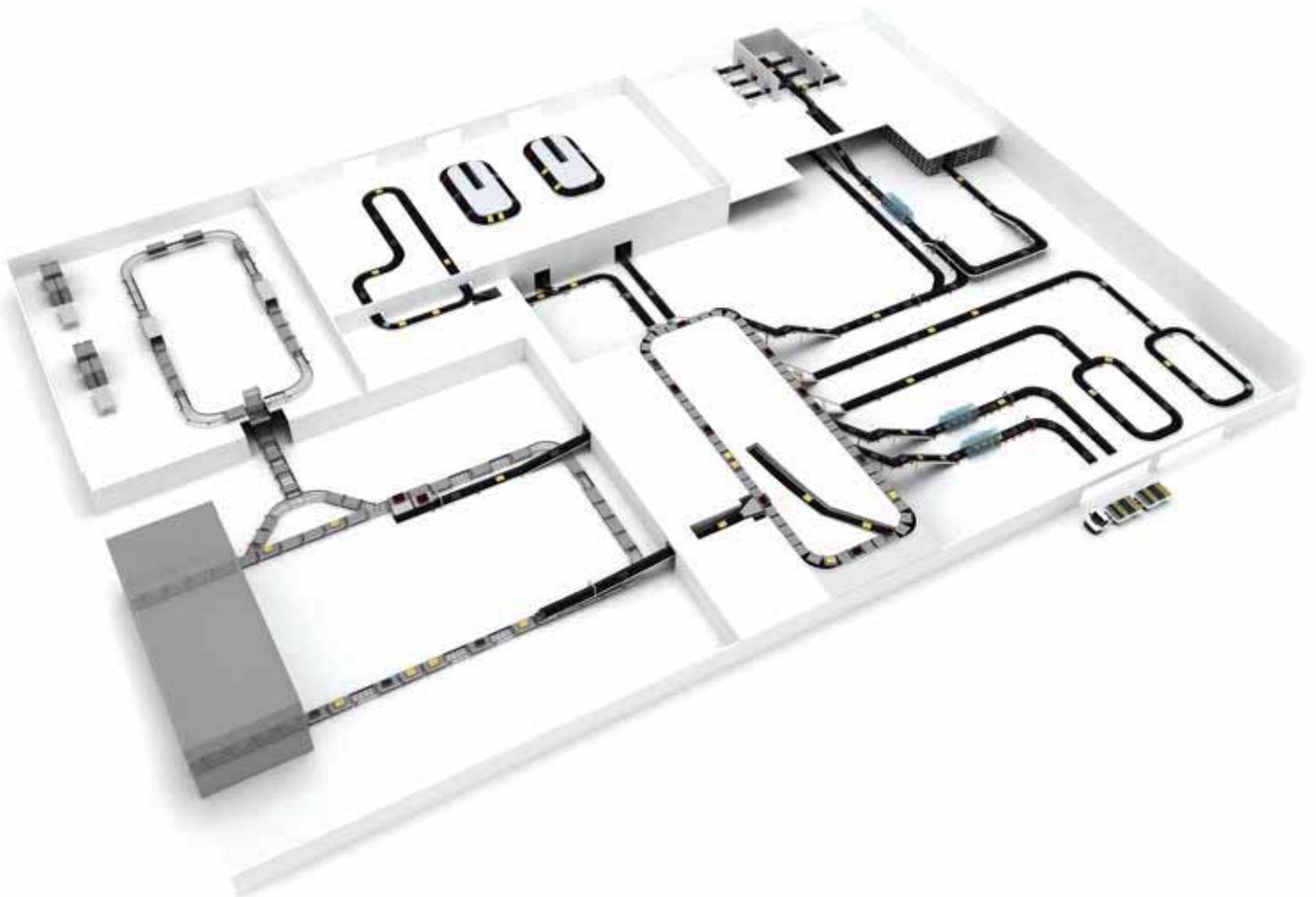
**Any questions? Please do not hesitate to contact our experts:**  
[Maxolution.Automotive@sew-eurodrive.de](mailto:Maxolution.Automotive@sew-eurodrive.de)

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## Customized solutions for the airport industry – **reliable and efficient**

SEW-EURODRIVE is familiar with the requirements of the airport industry: Whether it be baggage or high-speed transportation, baggage sorting or distribution – our highly efficient MOVIGEAR® mechatronic drive system and DRC.. electronic motor, combined with the MOVIFIT® FDC decentralized controller provide greater cost-effectiveness in all airport industry processes.

Drive solutions for baggage handling systems at airports



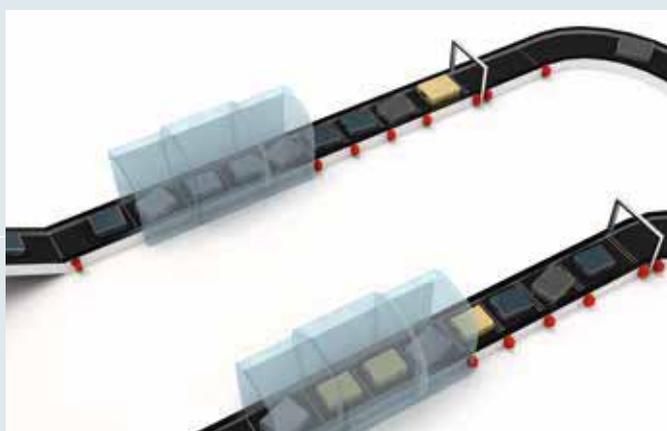


### Standard conveyors

Standard conveyor elements and curved conveyors can be implemented with optimized throughput and energy efficiency.

Your advantages

- A modular approach with up to 10 drives per infrastructure segment
- Quick installation and startup
- Simple diagnostics and drive exchange
- High-performance for efficient material flow



### Baggage processing (gap control & tracking)

The preprocessing of baggage articles at their entry into machines for identifying explosive substances (EDS machines) enables

- Optimized gap control
- Maximized throughput
- High energy savings

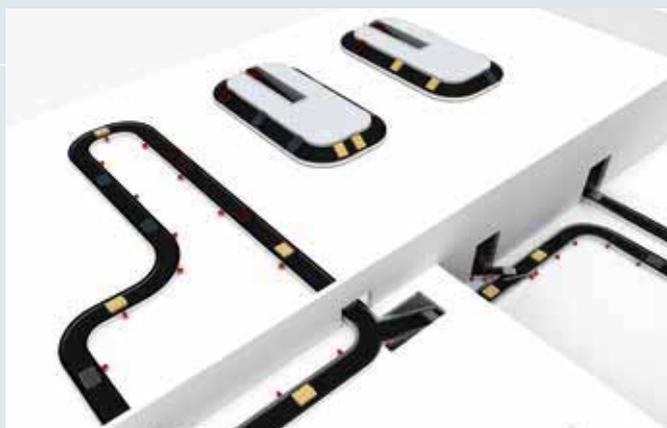


### Vertical distributors

Aid the distribution and collection of baggage articles between two levels.

Your advantages

- Significant improvement of energy-efficiency and throughput
- Reduced installation costs
- High-performance systems thanks to high drive functionality



### Make-up and baggage reclaim

Drive solutions from SEW-EURODRIVE in baggage reclaim ensure smooth, quiet and gentle operations and easy startup thanks to

- A module controller with load distribution function
- Drives without fans
- Modular and configurable solutions

## Customized solutions for transport and warehouse logistics – innovative processes and flexibility for smart factories

**SEW-EURODRIVE's many years of experience make it your perfect partner, especially when it comes to process consulting, including simulation, engineering and programming, all the way to implementation with installation and startup for smart factories.**



### Automated guided vehicle (AGV)

- Pallet, container and material transportation for machinery or assembly lines
- Complete engineering framework for vehicles and logistics coordination
- Energy management with contactless energy transfer, energy storage units or batteries
- Scalable navigation functions
- Ideal for logistics tasks



### Storage/retrieval system

- Complete automation structure with
  - Energy management with energy optimization
  - Motion and logic controller
  - Safety functions - Control of load handling device
- Complete automation of shuttle for pallets
- Direct interface with warehouse management system (WMS)



### Pallet transfer shuttle

- Wear-free, contactless energy transfer
- Intelligent energy management
- Complete modular system covering everything from drives and controllers to the software framework

## Customized solutions for the food and beverage industry – efficient and powerful

Whether disposable or returnable bottles, whether dry, wet or hygienic areas, and whether solid, liquid or bulk materials – SEW-EURODRIVE's customized MAXOLUTION® system solutions provide greater cost-effectiveness, flexibility and throughflow in the food and beverage industry.



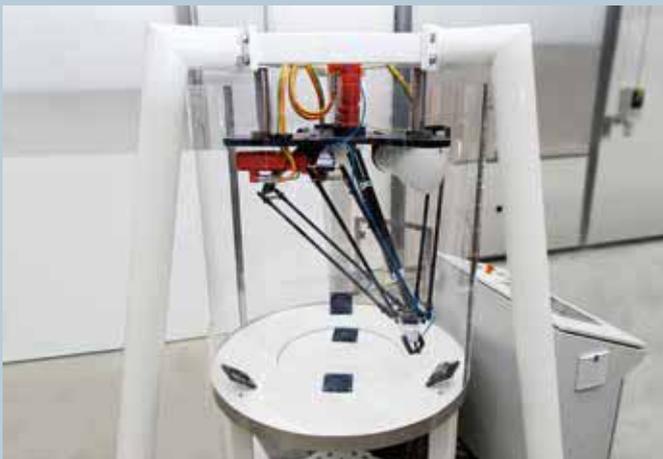
### Bottle and packaging unit transportation

- Specifically designed for use in food and drinks transportation plants
- IE4 motors deliver the highest possible energy efficiency class
- Encapsulated MOVIGEAR® drive system makes the cleaning process easier, even in inaccessible places
- MOVIGEAR® is an optimized mechatronic unit consisting of motor, gear unit and control electronics



### Packer

- Overall functionality of the system based on modular automation system
- Open software platform for customized system design
- Heavy link-chain belts in the feed and removal processes for the crates of bottles are moved by compact MOVIGEAR® mechatronic units
- When required, the centering frame and the portal can be fitted with servo or standard gearmotors with encoders



### Delta robots

- Open software platform for complete automation
- Customized system design in the shortest possible time based on tried-and-tested robot functionalities
- Available as a stand-alone machine or as a component
- Axes can be fitted with servo or standard gearmotors with encoders

## Customized solutions for the food and beverage industry – packaging machines for secondary packaging

As a partner for end customers and OEMs, MAXOLUTION® makes it possible to design machine solutions in an extremely short period of time. Using the most innovative technology available and a toolbox of software modules based on PackML, new packaging systems can be quickly created and old systems modified to meet the goals of high throughflow with low energy consumption.



### Input

- Efficient MGF1..DSM drive unit with an energy-efficiency class IE4 motor
- For conveyor applications with control cabinet installation
- Lower space requirements than gearmotor unit
- Less cleaning required thanks to hygienic product design
- Reduced noise levels



### Packaging unit

- New MOVI-C® control platform enables modular and flexible structure for systems
- Overall functionality is created based on verified, customizable software modules available in the PackML-compatible SEW-EURODRIVE Automation Framework
- Templates available for visualization and control units
- Multi-axis servo modules for efficient system layouts



### Output

- New SEW-EURODRIVE roller drive for simple conveyor tasks
- Ready-made solution for roller conveyors
- Includes software module for control



Cartoning machine with conveyor technology

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## Tailor-made success – system solutions for every movement.

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Our MAXOLUTION® system solutions are just as unique as your ideas and requirements. A few insights will give you an indication of how and where the project-specific solutions are used, but a personal discussion is the best way to provide you with more detailed information and

ideas with regard to the support MAXOLUTION® can offer. No matter what your solution will look like: You will benefit from reduced complexity thanks to perfectly matched system components and consistency.



### Individuality and many years of expertise all over the world

In addition to tailor-made system solutions, MAXOLUTION® also boasts a comprehensive, adaptable modular service concept. Thanks to our years of experience in providing system solutions for projects worldwide, we have built

up a modular service concept for optimizing your project implementation. The portfolio covers every phase of the product life cycle – from consulting, planning and engineering to implementation, start-up and production monitoring.

We offer you a comprehensive solution geared to your specific needs and coordinated with our system solutions.

### MAXOLUTION® modular service portfolio

Customized consulting / engineering

Customer-focused project management

Software programming and startup

Training

Project-specific system modifications and testing

System and machine simulation

Emulation and virtual startup

Process simulation and visualization

Safety services

Energy consulting

Worldwide delivery logistics

Production monitoring



Further information about MAXOLUTION® system solutions is available here.  
[www.sew-eurodrive.de/added-value](http://www.sew-eurodrive.de/added-value)

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## Powerful and intelligent – industrial gear unit solutions from a single source.

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Even an inquiry relating to industrial gear units implies more than an interest in individual components. Heavy-industry plant manufacturers involved in mining, the building of cement works and the construction sector in general have specific solutions in mind and are looking for tailor-made packages. In this case, too, SEW-EURODRIVE offers you more than just products. Benefit from our application know-how and associated process and logistics expertise – from engineering all the way through to service.

**One significant benefit is that** virtually no other supplier on the market offers such a comprehensive portfolio of drive technology from a single source. In other words, the solutions we provide for you are based not only on wide-ranging expertise in mechanical, electrical and electronic drive technology “made by SEW-EURODRIVE” but also, above all, on extras

such as our specialist knowledge of control technology, engineering tools, plant software, machine safety and energy efficiency. When it comes to industrial gear unit solutions, it's the entire package that matters. And that's exactly what we give you.





**SEW-EURODRIVE is your reliable problem solver.**  
From initial and project planning through to startup  
and maintenance, you can read about the solutions  
on offer here.

[www.sew-eurodrive.de/solution-finder](http://www.sew-eurodrive.de/solution-finder)

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## SEW-EURODRIVE as a system supplier

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**Expert advice** is given as far as we are concerned and it forms part of our comprehensive service to you – worldwide. Whether Assembled to Order (ATO) or Engineered to Order (ETO), we are happy to tackle your specific challenges and grow along with your projects. In heavy industry in particular, orders that do not involve any construction work tend to be in the minority. If you choose SEW-EURODRIVE as your partner, our

sales personnel will deal with potential problems locally, for example by analyzing system complexity. Using our international network of local application support personnel and harnessing their experience and industry know-how means we can provide you with assistance wherever you need it, including cross-border support.

**Your added value:** You can rely on our application specialists to listen to, understand and clarify your specific requirements. Our consultants will work with you on the preliminary design from an early stage, using customized co-engineering.

We will also ensure global coordination of the intensive consulting services associated with international projects and involve your local end customers.



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For more information, go to:  
[www.sew-eurodrive.com](http://www.sew-eurodrive.com)

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# OUR PRODUCTS

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TAKING FLEXIBILITY TO A WHOLE NEW LEVEL.  
OUR INNOVATIVE PRODUCTS  
FROM THE UNIQUE MODULAR SYSTEM





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Fast – up-to-date – online:  
Product information

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# 01 GEARMOTORS

## 1.1 Standard gearmotors

<b>NEW:</b> Helical gearmotors, RX../R..DR.. series	82
Parallel-shaft helical gearmotors, F..DR.. series	83
Helical-bevel gearmotors, K..DR.. series	83
Helical-worm gearmotors, S..DR.. series	84
SPIROPLAN® right-angle gearmotors, W..DR.. series	85

## 1.2 Electrified monorail system gearmotors

Light loads, HW series	86
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## 1.3 Variable speed gearmotors

VARIBLOC® (wide V-belt)	88
VARIMOT® (friction disk)	89

## 1.4 Servo gearmotors

Planetary servo gearmotors, PS.F..CMP.. / PS.C..CMP.. series	90
Helical-bevel servo gearmotors, BS.F..CMP.. series	91
<b>NEW:</b> Precision servo gearmotors, ZN..CMP(Z).. / ZN..CM.. series	92
<b>NEW:</b> Helical servo gearmotors, RX../R.CMP.. series	93
Parallel-shaft helical servo gearmotors, F..CMP.. series	94
<b>NEW:</b> Helical-bevel servo gearmotors, K..CMP.. series	95
Helical-worm servo gearmotors, S..CMP.. series	96
SPIROPLAN® right-angle servo gearmotors, W..CMP.. series	97

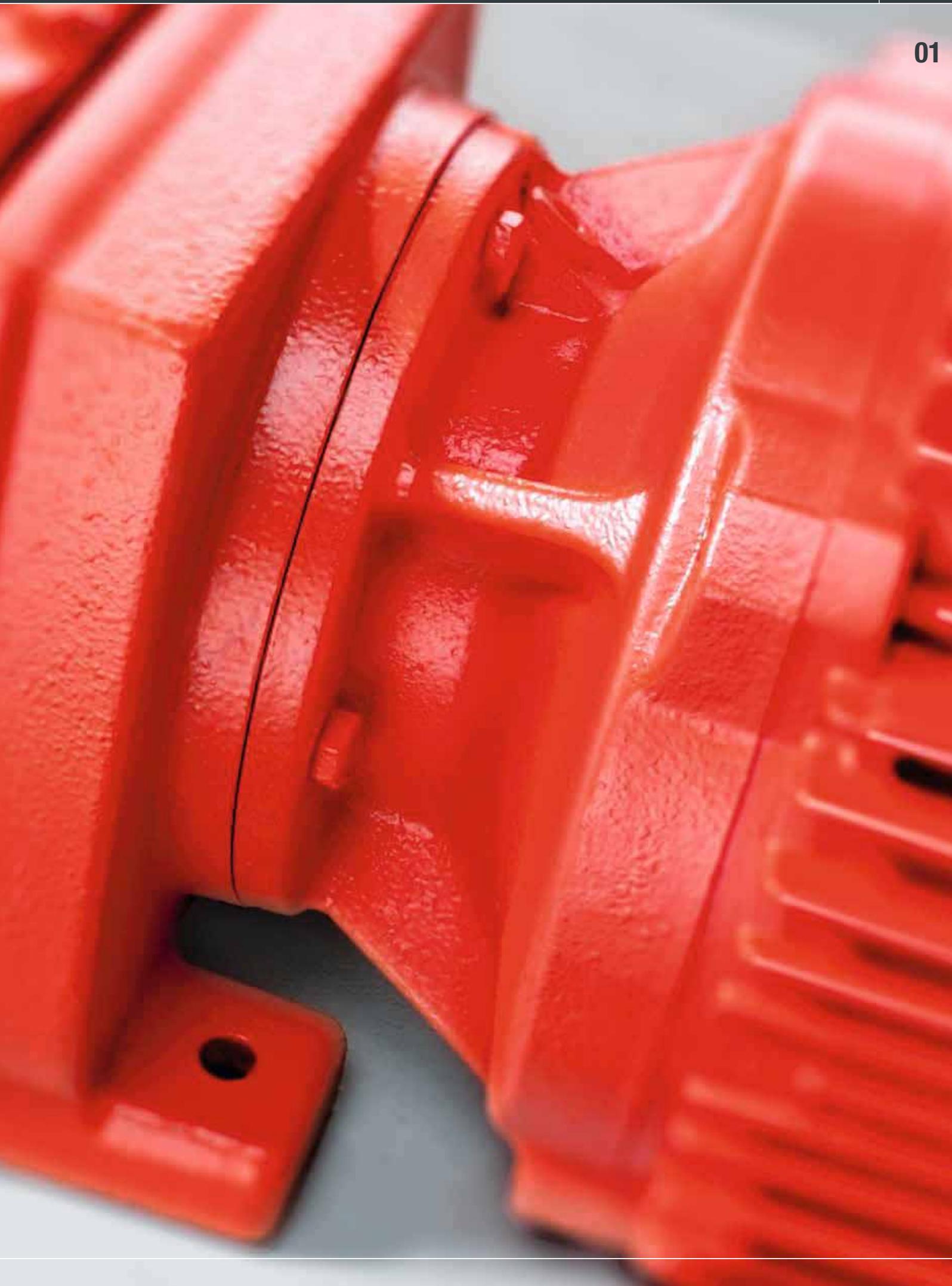
## 1.5 Stainless steel gearmotors

Helical gearmotors RES.. series	98
Helical-bevel gearmotors, KES.. series	98

## 1.6 Explosion-proof gearmotors

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Helical-bevel servo gearmotors, K..CMP.. series	101
Helical-worm servo gearmotors, S..CMP.. series	101
SPIROPLAN® right-angle servo gearmotors, W..CMP.. series	101





## 1.1 Standard gearmotors

### Helical gearmotors



**RX series (one stage)**

Gear unit		Motor	
Gear unit sizes	$M_{\text{amax}}$ gear unit Nm	Energy efficiency class	Power rating kW
RX57 – RX107	69 – 830	–, with 4-pole DR63 motor	0.12 – 0.25
		IE1, with 4-pole DRS.. motor	0.18 – 55
		IE2, with 4-pole DRE.. motor	0.37 – 45
		IE3, with 4-pole DRN.. motor	0.75 – 55
		IE4, with 4-pole DRU.. motor	0.18 – 3



**R series (two and three stages)**

Gear unit		Motor	
Gear unit sizes	$M_{\text{amax}}$ gear unit Nm	Energy efficiency class	Power rating kW
R07 – R167	50 – 18 000	–, with 4-pole DT56/DR63 motor	0.09 – 0.25
<b>NEW:</b> R127	6 000	IE1, with 4-pole DRS.. motor	0.18 – 200
		IE2, with 4-pole DRE.. motor	0.37 – 200
		IE3, with 4-pole DRN.. motor	0.75 – 200
		IE4, with 4-pole DRU.. motor	0.18 – 3

## Parallel-shaft helical gearmotors



**F series (two and three stages)**

Gear unit		Motor	
Gear unit sizes	$M_{amax}$ gear unit Nm	Energy efficiency class	Power rating kW
F27 – F157	130 – 18 000	–, with 4-pole DR63 motor	0.12 – 0.25
		IE1, with 4-pole DRS.. motor	0.18 – 200
		IE2, with 4-pole DRE.. motor	0.37 – 200
		IE3, with 4-pole DRN.. motor	0.75 – 200
		IE4, with 4-pole DRU.. motor	0.18 – 3

## Helical-bevel gearmotors



**K series (two stages / three stages)**

Gear unit		Motor	
Gear unit sizes	$M_{amax}$ gear unit Nm	Energy efficiency class	Power rating kW
K19 – K187	80 – 50 000	–, with 4-pole DR63 motor	0.12 – 0.25
		IE1, with 4-pole DRS.. motor	0.18 – 200
		IE2, with 4-pole DRE.. motor	0.37 – 200
		IE3, with 4-pole DRN.. motor	0.75 – 200
		IE4, with 4-pole DRU.. motor	0.18 – 3

## 1.1 Standard gearmotors

### Helical-worm gearmotors



**S series (two stages)**

Gear unit		Motor	
Gear unit sizes	$M_{\text{amax}}$ gear unit Nm	Energy efficiency class	Power rating kW
S37 – S97	92 – 4 000	–, with 4-pole DR63 motor	0.12 – 0.25
		IE1, with 4-pole DRS.. motor	0.18 – 45
		IE2, with 4-pole DRE.. motor	0.37 – 45
		IE3, with 4-pole DRN.. motor	0.75 – 37

## SPIROPLAN® right-angle gearmotors



**W series (one stage / two stages)**

Gear unit		Motor	
Gear unit sizes	$M_{\text{amax}}$ gear unit Nm	Energy efficiency class	Power rating kW
W10 – W47	25 – 180	–, with 4-pole DT56/DR63 motor	0.09 – 0.25
		IE1, with 4-pole DRS.. motor	0.18 – 5.5
		IE2, with 4-pole DRE.. motor	0.37 – 4
		IE3, with 4-pole DRN.. motor	0.75 – 4
		IE4, with 4-pole DRU.. motor	0.18 – 2.2

- ➔ **Accessories and options for standard gearmotors:**
- Surface and corrosion protection: pages 118 – 120
  - TorqLOC® hollow shaft mounting system: page 121
  - Oil condition monitoring and vibration analysis: pages 122 – 125

## 1.2 Electrified monorail system gearmotors

### HW series – light load range



**HW series**

#### Features

- Compliance with the standards of the C1 Directive (VDI RL-3643)
- Low maintenance
- Smooth running for operation without vibration
- Low-noise, also suitable for manual work stations
- Compact design for space-saving installation

Size	HW10	HW30
Maximum output torque Nm	20	70
Permitted wheel load N	2 500	5 600
Gear ratio i	6.75 – 16.5	8.2 – 75
Shaft d × l mm	14 × 28	20 × 35 25 × 35

## HK series – heavy load range



**HK series**

<b>Features</b>	<ul style="list-style-type: none"> <li>– High efficiency due to the helical-bevel gear unit</li> <li>– Low energy consumption in connection with the MOVITRANS® contactless energy transfer system</li> <li>– Can be switched safely thanks to coupling in the gear unit output stage</li> </ul>			
<b>Size</b>	<b>HK37</b>	<b>HK40</b>	<b>HK50</b>	<b>HK60</b>
<b>Maximum output torque Nm</b>	220	400	600	820
<b>Permitted wheel load N</b>	14 500	18 500	25 000	40 000
<b>Gear ratio i</b>	13.08 – 106.38	12.2 – 131.87	13.25 – 145.14	13.22 – 144.79
<b>Shaft d × l mm</b>	25 × 35	30 × 60 35 × 70	45 × 90	55 × 110

- ➔ **Accessories and options for electrified monorail system gearmotors:**
- Surface and corrosion protection: pages 118 – 120

## 1.3 Variable speed gearmotors

### Wide V-belt variable speed gearmotors



#### VARIBLOC®

#### Wide V-belt variable speed gearmotors

#### Features

- U-shaped or Z-shaped power flow
- Several combination options with reduction gear units
- Easy adaptation to a wide variety of machine designs
- The foot-mounted and flange-mounted designs can also be used without reduction gear unit as machine drive
- Can be combined with motors of the DR.. series
- Flexible due to finely stepped gear ratio ranges of the reduction gear units per size
- Easy to operate with handwheel or remote control

VARIBLOC® Size	Max. motor power 4-pole			Possible power flow	Max. setting range for design	
	DRS.. kW	DRE.. kW	DRN.. kW		Ventilated	Non-ventilated
VU / VZ 01	0.55	–	0.75	U + Z	1:6	–
VU / VZ 11	1.1	0.75	1.5	U + Z	1:8	1:6
VU / VZ 21	3	2.2	3	U + Z	1:8	1:6
VU / VZ 31	5.5	4	4	U + Z	1:8	1:6
VU / VZ 41	11	9.2	–	U + Z	1:6	1:4
VU 51	22	22	–	U only	1:6	–
VU 6	45	45	–	U only	1:4	–

## Friction disk variable speed gearmotors



### VARIMOT®

#### Friction disk variable speed gearmotors

#### Features

- The contact pressure between the drive pulley and the friction ring required for torque transmission is set automatically
- The speed can be adjusted even at standstill
- The foot-mounted and flange-mounted designs can also be used without reduction gear unit as machine drive
- Can be combined with motors of the DR.. series
- Flexible due to finely stepped gear ratio ranges of the reduction gear units per size
- Easy to operate with handwheel or remote control

VARIMOT® Size	Max. motor power kW	Max. setting range
D16	1.1	1:5
D26	2.2	1:5

- ➔ **Accessories and options for variable speed gearmotors:**
- **Surface and corrosion protection: pages 118 – 120**

## 1.4 Servo gearmotors

### Planetary servo gearmotors



**PS.F. series**

with	Torque range $M_{aDyn}$ Nm	PS.F. gear unit sizes
CMP.. motor (high dynamics)	15 – 4 200	PS.F121 – PS.F922
CM.. motor (high inertia)	49 – 4 200	PS.F321 – PS.F922



**PS.C.. series**

with	Torque range $M_{aDyn}$ Nm	PS.C.. gear unit sizes
CMP.. motor (high dynamics)	15 – 425	PS.C221 – PS.C622
CM.. motor (high inertia)	49 – 425	PS.C321 – PS.C622

## Helical-bevel servo gearmotors



**BS.F. series**

with	Torque range $M_{aDyn}$ Nm	BS.F. gear unit sizes
CMP.. motor (high dynamics)	15 – 1 680	BS.F202 – BS.F802
CM.. motor (high inertia)	46 – 1 680	BS.F302 – BS.F802

## 1.4 Servo gearmotors

### NEW: Precision servo gearmotors



**ZN.. series**

#### Features

- Extreme precision
- High overload capacity
- Sturdy bearings
- High power density
- Leave the factory with lifetime lubrication

Gear unit type	Servomotor CMP(Z)..*	Servomotor CM..	Gear ratio i	$M_{amax}$ (5 min <sup>-1</sup> ) Nm	$M_{apk}$ Nm	$M_{aEmergOff}$ Nm	Torsional stiffness Nm/ arcmin	Pull-out rigidity Nm/ arcmin	Perm. pull-out torque Nm	Outer diame- ter mm
ZN..30	50S – 63M		41 – 164.08	341	612	1 225	61	530	784	133
ZN..40	50S – 71M	71S – 71L	41 – 164.08	573	1 029	2 058	113	840	1 660	159
ZN..50	50M – 80L	71S – 90L	41 – 161	834	1 500	3 000	200	1 140	2 000	183
ZN..60	50M – 80M	71S – 90L	41 – 171	1 090	1 960	3 920	212	1 190	2 150	189
ZN..70	63M – 80M	71M – 90L	41 – 161	1 390	2 500	5 000	312	1 400	2 700	208
ZN..80	63L – 80L	71L – 90L	41 – 161	1 703	3 062	6 125	334	1 600	3 430	221
ZN..90	63L – 112L	71L – 112L	41 – 201	2 225	4 000	8 000	490	2 050	4 000	238
ZN..100	71L – 112L	90M – 112H	75 – 185	5 178	9 310	18 620	948	5 200	7 050	295
ZN..110	80L – 112L	112S – 112H	81 – 192.75	6 813	12 250	24 500	1 620	6 850	11 000	325
ZN..120	80L – 112L	112S – 112H	105 – 203.53	9 733	17 500	35 000	2 600	9 000	15 000	395
ZN..130	80L – 112L	112S – 112H	185	12 514	22 500	45 000	3 685	11 790	25 480	440
ZN..140	80L – 112L	112S – 112H	156 – 236	20 460	36 788	73 575	6 320	25 000	44 000	570

\* CMPZ.. is available in sizes 71 to 100

## Helical servo gearmotors



**RX / R series**

<b>Features</b>	<ul style="list-style-type: none"> <li>– The RX57 to RX107 single-stage gear unit series offers compact, space-saving solutions for high output speeds</li> <li>– Thanks to the die-cast aluminum design, multi-stage gear units R07, R17 and R27 are ideal for use as satellite drives and for use in light machine constructions</li> </ul>					
	<b>Synchronous servo gearmotors</b>				<b>Asynchronous servo gearmotors</b>	
	<b>with CMP.. motor (high dynamics)</b>		<b>with CM.. motor (high inertia)</b>		<b>with DRL..motor</b>	
<b>Gear unit sizes</b>	RX57 – RX77	R07 – <b>NEW:</b> R127	RX57 – RX107	R27 – <b>NEW:</b> R127	RX57 – RX107	R17 – R167
<b>Gear ratios</b> <b>i</b>	1.3 – 7.63	3.21 – 216.54	1.3 – 8.23	3.37 – 216.28	1.3 – 8.23	3.37 – 255.71
<b>Torque range M<sub>aDyn</sub></b> <b>Nm</b>	6.6 – 1 120	12 – 6 000	63 – 830	45 – 6 000	63 – 830	45 – 18 000
<b>Rotational clearance (/R option)</b> <b>‘</b>	–	5 – 14	–	5 – 14	–	5 – 14

## 1.4 Servo gearmotors

### Parallel-shaft helical servo gearmotors



**F series**

<b>Features</b>	– This compact gearmotor not only excels by its performance but also by its structural properties		
	<b>Synchronous servo gearmotors</b>		<b>Asynchronous servo gearmotors with DRL..motor</b>
	<b>with CMP.. motor (high dynamics)</b>	<b>with CM.. motor (high inertia)</b>	
<b>Gear unit sizes</b>	F27 – F107	F27 – F107	F27 – F157
<b>Gear ratios <math>i</math></b>	3.77 – 276.77	3.77 – 276.77	3.77 – 276.77
<b>Torque range <math>M_{aDyn}</math> Nm</b>	15 – 8 860	67 – 8 860	87 – 18 000
<b>Rotational clearance (/R option) '</b>	5 – 12	5 – 12	5 – 12

## Helical-bevel servo gearmotors



**K series**

### Features

- Helical-bevel gear units from SEW-EURODRIVE provide a high degree of efficiency in both torque directions and at any input speed
- The gearing is designed for high endurance and makes for a high-torque, wear-free drive
- The remarkably high efficiency of our helical-bevel gearmotors makes them energy-savers
- The long maintenance-free service life is another reason why they can be used with AC asynchronous motors, asynchronous and synchronous servomotors in every application

	Synchronous servo gearmotors		Asynchronous servo gearmotors		
	with CMP. motor (high dynamics)	with CM.. motor (high inertia)	with DRL..motor		
<b>Gear unit sizes</b>	K37 – K107	<b>NEW:</b> K..19 – K..49	K37 – K107	K37 – K187	<b>NEW:</b> K..19 – K..49
<b>Gear ratios i</b>	3.98 – 174.19	2.8 – 75.0	3.98 – 176.05	3.98 – 179.86	2.8 – 75.20
<b>Torque range <math>M_{aDyn}</math> Nm</b>	15 – 9 090	16 – 605	63 – 9 090	125 – 50 000	54 – 605
<b>Rotational clearance (/R option) '</b>	5 – 13	–	5 – 13	5 – 13	–

## 1.4 Servo gearmotors

### Helical-worm servo gearmotors



**S series**

#### Features

- Particularly space-saving when used as angular drive
- The attenuation characteristics are another advantage
- Torque shocks are attenuated as the power transmission to the drive shaft is linear on the input shaft
- The noise level of this type is very low, even when operating the unit at full capacity
- Can be used in stage lifts, for example

	<b>Synchronous servo gearmotors</b>		<b>Asynchronous servo gearmotors with DRL..motor</b>
	<b>with CMP.. motor (high dynamics)</b>	<b>with CM.. motor (high inertia)</b>	
<b>Gear unit sizes</b>	S37 – S67	S37 – S67	S37 – S67
<b>Gear ratios i</b>	3.97 – 75.06	6.80 – 75.06	3.97 – 75.06
<b>Torque range <math>M_{aDyn}</math> Nm</b>	18 – 580	43 – 480	32 – 480

## SPIROPLAN® right-angle servo gearmotors



**W series**

### Features

- SPIROPLAN® right-angle servo gearmotors with directly mounted synchronous CMP.. servomotor are extremely efficient, quiet, and offer customers the greatest possible flexibility
- SPIROPLAN® right-angle gear units W37/W47 achieve high speeds at smallest gear ratios
- Wear-free gearing minimizes friction losses and optimizes the mechanical efficiency
- Areas of application: Ideal drives for simple positioning or conveyor applications
- Gear unit designs:
  - Foot/flange-mounted design
  - B5 flange
  - B14 flange
  - Solid shaft/hollow shaft
  - Directly mounted servomotor
  - Adapter mounting

	Synchronous servo gearmotors		Asynchronous servo gearmotors with DRL..motor
	with CMP.. motor (high dynamics)	with CM.. motor (high inertia)	
<b>Gear unit sizes</b>	W10 – W47	W37 – W47	W37 – W47
<b>Gear ratios</b> $i$	3.2 – 75	3.2 – 51.12	3.2 – 74.98
<b>Torque range <math>M_{\text{abyn}}</math></b> <b>Nm</b>	11 – 215	49 – 215	16 – 215



### Accessories and options for servo gearmotors:

- Surface and corrosion protection: pages 118 – 120
- TorqLOC® hollow shaft mounting system: page 121
- Oil condition monitoring and vibration analysis: pages 122 – 125

## 1.5 Stainless steel gearmotors



<b>Features of stainless steel gear units</b>	<ul style="list-style-type: none"> <li>– For use in areas subject to frequent cleaning</li> <li>– High-quality stainless steel is used</li> <li>– Efficiency-optimized gear units</li> <li>– Easy-to-clean surface thanks to special housing design</li> <li>– Low maintenance with long service life</li> <li>– High grade resistance to acid and alkaline</li> <li>– Recesses where dirt and liquid can accumulate were eliminated as far as possible</li> </ul>	
<b>Type</b>	KES37	RES37
<b>Max. output torque Nm</b>	200	200
<b>Gear unit ratio <math>i</math></b>	3.98 – 106.38	3.41 – 134.83
<b>Features of stainless steel gearmotors</b>	<ul style="list-style-type: none"> <li>– Compact, space-saving design as gearmotor for direct mounting</li> <li>– The entirely stainless steel design efficiently prevents all forms of corrosion</li> <li>– The design without fan allows for easy and reliable cleaning of the directly mounted stainless steel motors</li> </ul>	
<b>Motor power range kW</b>	0.37 – 0.75 (Higher power ratings for adapter mounting are available upon request)	

- ➔ **Accessories and options for stainless steel gearmotors:**
- TorqLOC® hollow shaft mounting system: page 121

## 1.6 Explosion-proof gearmotors

### Explosion-proof gear units



# Ex EAC

<b>Helical gear units, RX, R series</b>	<ul style="list-style-type: none"> <li>– For the European market: Gear units comply with Directive 2014/34/EU (ATEX), equipment group II, equipment category 2, II2GD design</li> <li>– Also accepted in China</li> <li>– Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)</li> </ul>
<b>Parallel-shaft helical gear units, F series</b>	
<b>Helical-bevel gear units, K series</b>	
<b>Helical-worm gear units, S series</b>	
<b>SPIROPLAN® right-angle gear units, W series</b>	
<b>Planetary servo gearmotors, PS.F.CMP. / PS.C.CMP. series</b>	<ul style="list-style-type: none"> <li>– For the European market: Gear units comply with Directive 2014/34/EU (ATEX), equipment group II, equipment category 2, II2GD design</li> <li>– Also accepted in China</li> <li>– Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)</li> </ul>
<b>Helical-bevel servo gearmotors, BS.F.CMP. series</b>	
<b>Helical servo gearmotors, R.CMP. series</b>	
<b>Parallel-shaft helical servo gearmotors, F.CMP. series</b>	
<b>Helical-bevel servo gearmotors, K.CMP. series</b>	
<b>Helical-worm servo gearmotors, S.CMP. series</b>	
<b>SPIROPLAN® right-angle servo gearmotors, W.CMP. series</b>	

## 1.6 Explosion-proof gearmotors

### Explosion-proof motors



#### EDR.. series (AC motor)

Compliant with EC Directive 2014/34/EU (ATEX) and IECEx

- For use in categories 2G, 2GD and 3GD, 3D for zones 1/21 and 2/22
- Also available as brakemotor in category 3
- **NEW:** EDRN.. motors conform to the efficiency class IE3 according to IEC 60034-30-1
- EDRE.. motors conform to the efficiency class IE2 according to IEC 60034-30-1
- In accordance with IECEx to EPL Gb and Db as well as Gc and Dc
- EDRS and EDRE motor types are audited and certified to IECEx "Certified Equipment Scheme" with ExTr, QAR and CoC by PTB; for detailed information on the certification system, refer to the International Electrotechnical Commission website
- Operation on a frequency inverter, also in field weakening operation, for categories 2 and 3 and/or EPL.b and .c
- Certified by the Korean institution KOSHA for South Korea
- Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

Compliant with HazLoc-NA® (NEC500/C22.1)

- Motors are certified to the Class Division System by CSA and thus comply with the explosion protection requirements of the North American market
- Available as CID2 type, for division 2 class I for gas groups A, B, C and D
- Available as CIID2 type, for division 2 class II for dust groups F and G
- Available as type /CICIID2, for division 2 class I for gas groups A, B, C and D, and class II for dust groups F and G
- Also available as brakemotor
- Operation with frequency inverter possible



#### CMP.. series (Synchronous servomotor)

Compliant with Directive 2014/34/EU (ATEX), equipment group II, equipment category 3

- Category II 3GD, suitable for use in zones 2/22
- Category II 3D, suitable for use in zone 22
- In category 3D also available with brake and HIPERFACE® encoder (with electronic nameplate)
- Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

## Explosion-proof standard gearmotors



Gear unit	EDR... motor	
Gear unit sizes	$M_{amax}$ gear unit Nm	Power rating kW
Helical gearmotors, RX57 – RX107 (one stage)	69 – 830	0.12 – 45
Helical gearmotors, RX57 – RX107 (two and three stages)	50 – 18 000	*
Parallel-shaft helical gearmotors, F27 – F157 (two and three stages)	130 – 18 000	*
Helical-bevel gearmotors, K..19 – K..49 (two stages)	80 – 500	0.12 – 7.5
Helical-bevel gearmotors K..37 – K..187 (three stages)	200 – 50 000	*
Helical-worm gearmotors, S37 – S97 (two stages)	92 – 4 000	0.12 – 45
SPIROPLAN® right-angle gearmotors, W20 – W47 (one and two stages)	40 – 180	0.12 – 4

\* The power ratings of the explosion-proof standard gearmotors differ depending on the various applicable directives and standards ATEX, HazLoc-NA®, IECEx, KOSHA, and CSA. The maximum power is specified in the motor data e.g. at [www.sew-eurodrive.com](http://www.sew-eurodrive.com).

## Explosion-proof servo gearmotors



Gear unit	With CMP.. motor (high dynamics)
Gear unit sizes	Torque range $M_{aDyn}$ Nm
Planetary servo gearmotors PS.F121 – PS.F922	15 – 4 200
Helical-bevel servo gearmotors BS.F202 – BS.F802	15 – 1 680
Helical gearmotors, RX57 – RX107	6.6 – 910
Helical servo gearmotors, R07 – R107	12 – 4 360
Parallel-shaft helical gearmotors F27 – F107	15 – 8 860
Helical-bevel servo gearmotors K..19 – K..49	16 – 605
Helical-bevel servo gearmotors K..37 – K..107	15 – 9 090
Helical-worm servo gearmotors S37 – S67	18 – 580
SPIROPLAN® right-angle gearmotors W10 – W47	12 – 215

# 02 GEAR UNITS

## 2.1 Standard gear units

Helical gear units, R series	104
Parallel-shaft helical gear units, F series	105
Helical-bevel gear units, K series	106
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SPIROPLAN® right-angle gear units, W series	109

## 2.2 Servo gear units

Planetary servo gear units, PS.F / PS.C series	110
Helical-bevel servo gear units, BS.F series	112

## 2.3 Stainless steel gear units

Helical gear units, RES series	114
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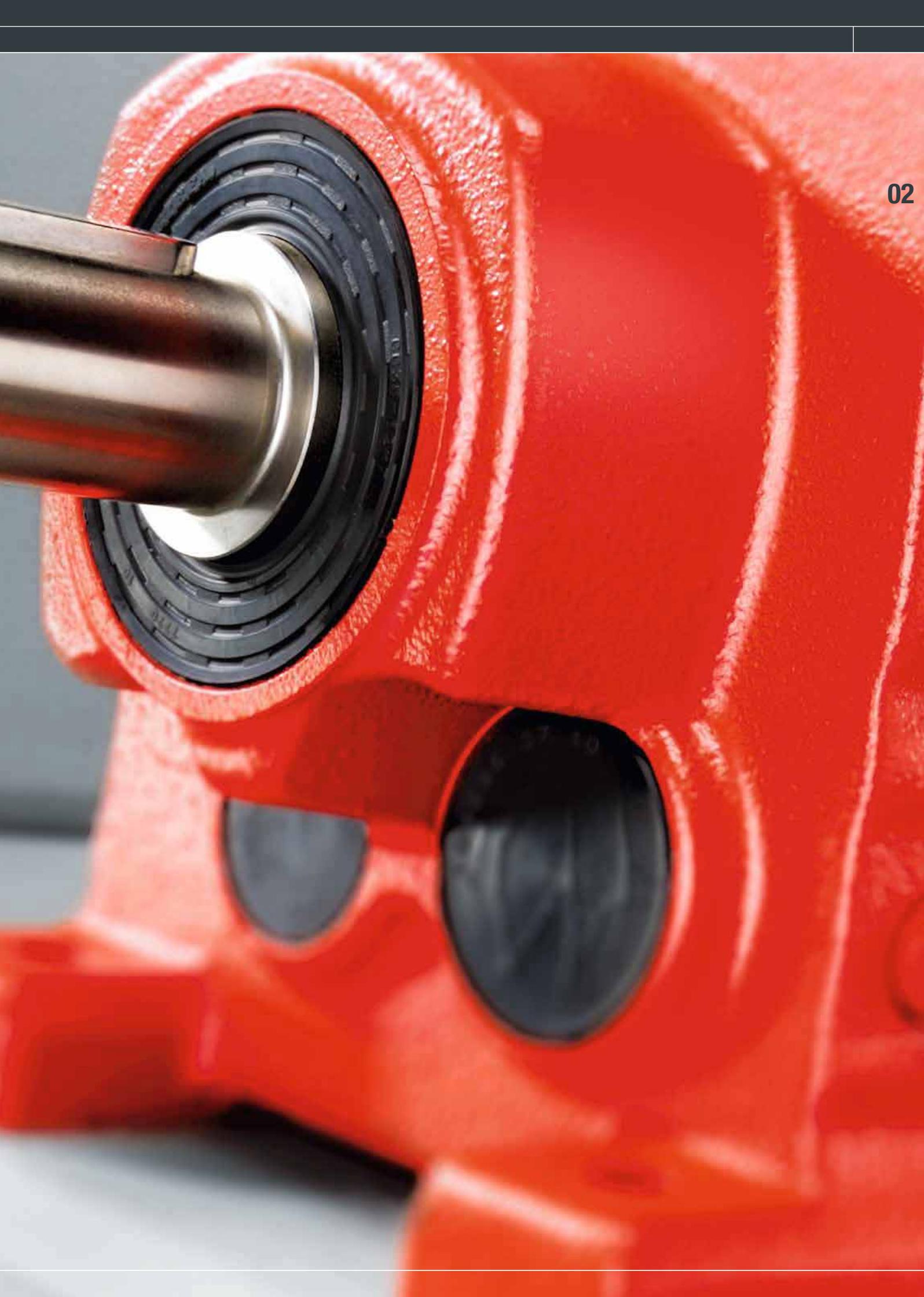
## 2.4 Explosion-proof gear units

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## 2.5 Accessories and options

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## 2.1 Standard gear units

### Helical gear units



#### RX series (one stage)

6 sizes from 69 – 830 Nm

Sizes 57 / 67 / 77 / 87 / 97 / 107

<b>Features</b>	<ul style="list-style-type: none"> <li>– Highly efficient helical gear units</li> <li>– High output speeds</li> <li>– Foot- or flange-mounted design</li> </ul>	
<b>Gear unit ratio</b>	i	1.30 – 8.65
<b>Max. output torque</b>	Nm	69 – 830
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 45



#### R series (two and three stages)

15 sizes from 50 – 18 000 Nm

Sizes 07 / 17 / 27 / 37 / 47 / 57 / 67 / 77 / 87 / 97 / 107 / **NEW: R127 / 137 / 147 / 167**

<b>Features</b>	<ul style="list-style-type: none"> <li>– Optimum ratio between performance and space requirements</li> <li>– Finely stepped sizes and gear ratios</li> <li>– Foot- or flange-mounted design</li> <li>– Also available with reduced backlash</li> </ul>	
<b>Gear unit ratio</b>	i	3.21 – 289.74
<b>Gear unit ratio – compound gear units</b>	i	90 – 27 001
<b>Max. output torque</b> – R07 – R167 – <b>NEW: R127</b>	Nm	50 – 18 000 * 6 000
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 90

\* Also with reduced backlash



### RM series (two and three stages)

10 sizes from 450 – 18 000 Nm

Sizes 57 / 67 / 77 / 87 / 97 / 107 / 127 / 137 / 147 / 167

<b>Features</b>	<ul style="list-style-type: none"> <li>– Helical gear units with extended output bearing hub</li> <li>– Specifically designed for agitating applications</li> <li>– Allow for high overhung and axial loads as well as bending moments</li> </ul>	
<b>Gear unit ratio</b>	i	4.29 – 289.74
<b>Gear unit ratio – compound gear units</b>	I	134 – 27 001
<b>Max. output torque</b>	Nm	450 – 18 000
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 90

## Parallel-shaft helical gear units



### F series (two and three stages)

11 sizes from 130 – 18 000 Nm

Sizes 27 / 37 / 47 / 57 / 67 / 77 / 87 / 97 / 107 / 127 / 157

<b>Features</b>	<ul style="list-style-type: none"> <li>– Slim design for limited installation space</li> <li>– Also available with reduced backlash</li> <li>– Particularly suited for materials handling and process engineering applications</li> <li>– Possible variants: Foot- or flange-mounted design, B5 or B14 flange, solid or hollow shaft, hollow shaft with keyed connection, shrink disk, splining or TorqLOC®</li> </ul>	
<b>Gear unit ratio</b>	i	3.77 – 281.71
<b>Gear unit ratio – compound gear units</b>	i	87 – 31 434
<b>Max. output torque</b>	Nm	130 – 18 000 *
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 90

\* Also with reduced backlash

## 2.1 Standard gear units

### Helical-bevel gear units



#### K series (three stages)

12 sizes from 200 – 50 000 Nm

Sizes 37 / 47 / 57 / 67 / 77 / 87 / 97 / 107 / 127 / 157 / 167 / 187

#### Features

- Their high level of efficiency makes them energy-saving angular drives
- High-endurance gearing makes for high-torque, wear-free drives
- Long maintenance-free service life
- Also available with reduced backlash
- Possible variants:
  - Foot or flange-mounted design
  - B5 or B14 flange
  - Solid or hollow shaft
  - Hollow shaft with keyed connection, shrink disk, splining or TorqLOC®

<b>Gear unit ratio</b>	i	3.98 – 197.37
<b>Gear unit ratio – compound gear units</b>	i	94 – 32 625
<b>Max. output torque</b>	Nm	200 – 50 000 *
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 90

\* Also with reduced backlash



### NEW: Two-stage helical-bevel gear units

4 sizes from 80 – 500

Sizes K..19, K..29, K..39 and K..49

#### Features

- Can be used in all industries and applications, e.g. in lifts or conveyor applications
- Low loss, two-stage design (helical/hypoid gearing)
- Gearing with infinite fatigue strength, which means the drive is almost wear-free
- Can be combined with all motors from SEW-EURODRIVE
- Energy efficiency:
  - Gearing efficiency of more than 90% → low energy consumption
  - Gear unit efficiency allows for smaller motors → compact design
  - Motor energy efficiency classes from IE1 to IE4 can be implemented
- Wide range of designs ensures an optimum connection to the customer machine even in critical mounting situations

		Sizes			
		K..19	K..29	K..39	K..49
<b>Max. output torque</b>	Nm	80	130	300	500
<b>Solid shaft</b>	mm	20	25	30	35
<b>Hollow shaft with key KA..</b>	mm	20	25/30 (30 according to DIN 6885-3)	30/35	35/40
<b>Flange diameter K.F.</b>	mm	120 / 160	160 / 200	160	200
<b>Gear unit ratio</b>	i	4.50 – 58.68	3.19 – 71.93	2.8 – 58	3.5 – 75
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 1.1	0.12 – 2.2	0.12 – 4.0	0.12 – 7.5

## 2.1 Standard gear units

### Helical-worm gear units



#### S series (two stages)

7 sizes from 92 – 4 000 Nm

Sizes 37 / 47 / 57 / 67 / 77 / 87 / 97

#### Features

- Significantly more efficient than plain worm gear units due to helical-worm combinations
- Very low-noise operation
- Possible variants:
  - Foot or flange-mounted design
  - B5 or B14 flange
  - Solid or hollow shaft
  - Hollow shaft with keyed connection, shrink disk, splining or TorqLOC®

<b>Gear unit ratio</b>	i	3.97 – 288.00
<b>Gear unit ratio – compound gear units</b>	i	110 – 33 818
<b>Max. output torque</b>	Nm	92 – 4 000
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 30

## SPIROPLAN® right-angle gear units

02



### W series (one and two stages)

5 sizes from 25 – 180 Nm

Sizes 10 / 20 / 30 / 37 / 47

#### Features

- Robust right-angle gear units with SPIROPLAN® gearing, wear-free and lightweight
- Material combination of steel on steel gearing
- Particular tooth meshing ratio
- Lightweight aluminum housing
- Can be used in any mounting position as the oil fill is independent of the mounting position; no need to change the oil fill quantity
- Possible variants:
  - Foot or flange-mounted design
  - B5 or B14 flange
  - Solid or hollow shaft

<b>Gear unit ratio</b>	i	3.20 – 75.00
<b>Max. output torque</b>	Nm	25 – 180
<b>Motor power range (mounting via AM motor adapter)</b>	kW	0.12 – 3.0

#### → Accessories and options for standard gear units:

- Surface and corrosion protection: pages 118 – 120
- TorqLOC® hollow shaft mounting system: page 121
- Oil condition monitoring and vibration analysis: pages 122 – 125

## 2.2 Servo gear units

### Planetary servo gear units



**PS.F series**

#### Features

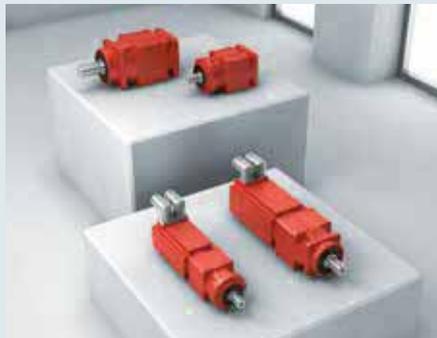
- Low backlash planetary servo gear units
- Designed for nominal torques from 25 Nm to 3 000 Nm
- Available in three output variants:
  - PSF: B5 output flange, smooth solid shaft (without key)
  - PSKF: B5 output flange, solid shaft with key
  - PSBF: B5 output, flange block shaft according to EN ISO 9409
- Life-long lubrication
- High permitted overhung loads

Type	Size one stage / two stages	Torque class Nm	Overhung load range N	Gear ratios i	Rotational clearance ' (one stage / two stages)		
					Standard	Optional	
						Reduced (../R)	Minimized (../M)
<b>PS(K)F</b>	121 / 122	25	1 900 – 2 000	One stage <sup>1)</sup>	8'/10'	4'/6'	2'/3'
	221 / 222	55	1 720 – 2 680	3 <sup>2)</sup> , 4, 5, 7, 10	6'/8'	3'/4'	1'/2'
	321 / 322	110	4 380 – 5 480				
	521 / 522	300	6 150 – 9 610				
	621 / 622	600	13 400 – 14 200	Two stages <sup>1)</sup>	4'/6'	2'/3'	1'/1'
	721 / 722	1 000	25 700 – 35 900	16, 20, 25, 28,			
	821 / 822	1 750	51 400 – 62 800	35, 40, 49, 70,			
	921 / 922	3 000	55 000 – 83 300	100			
<b>PSBF</b>	221 / 222	55	1 530 – 5 000	One stage	6'/8'	3'/4'	1'/2'
	321 / 322	110	8 580 – 25 000	5, 7, 10			
	521 / 522	300	13 900 – 40 000				
	621 / 622	600	20 800 – 60 000	Two stages	4'/6'	2'/3'	1'/1'
	721 / 722	1 000	37 900 – 120 000	15 <sup>3)</sup> , 20, 25, 35,			
	821 / 822	1 750	66 100 – 180 000	49, 70, 100			

<sup>1)</sup> Other gear ratios on request

<sup>2)</sup> Only for PS(K)F 121/521

<sup>3)</sup> Only for PSBF 322/522



### PS.C series

#### Features

- Planetary servo gear units
- Designed for nominal torques between 30 and 320 Nm
- Provide the basis for diverse, dynamic, and above all, **cost-optimized drive solutions**
- Compact, lightweight design
- Any mounting position
- Life-long lubrication
- Four output variants:
  - PSC = B5 output flange, solid shaft
  - PSKC = B5 output flange, solid shaft with key
  - PSCZ = B14-output flange, solid shaft
  - PSKCZ = B14 output flange, solid shaft with key

Type	Size one stage / two stages	Torque class Nm	Overhung load range N	Gear ratios i	Rotational clearance ' (one stage / two stages)
					Standard
PS(K)C PS(K)CZ	221 / 222	30	1 170 – 2 000	One stage	10°/15°
	321 / 322	65	1 710 – 4 000	3 <sup>1)</sup> , 5, 7, 10	
	521 / 522	160	2 900 – 6 750		
	621 / 622	320	5 390 – 11 000	Two stages 15 <sup>1)</sup> , 21 <sup>1)</sup> , 25, 30 <sup>1)</sup> , 35, 49, 50, 70, 100	

<sup>1)</sup> Not for PS(K)C, PS(K)CZ 621 / 622

## 2.2 Servo gear units

### Helical-bevel servo gear units



**BS.F series**

#### Features

- Low-backlash helical-bevel servo gear units
- Designed for torque classes from 40 Nm to 1 220 Nm
- Five output variants:
  - BSF: Solid shaft
  - BSKF: Solid shaft with key
  - BSBF: Flange block shaft (EN ISO 9409)
  - BSHF: Hollow shaft with shrink disk
  - BSAF: Hollow shaft with key (shaft-mounted gear unit)
- All variants with B5 mounting flange; foot-mounting and torque arm are optional (→ can be optimally integrated into the relevant application)
- The rotational clearance remains constantly low over the entire gear unit service life

Size	Torque class Nm	Gear unit ratios i	Rotational clearance <sup>1</sup>
202	40	3 / 4 / 6 / 8 / 10 / 15 / 20 / 25	6' <sup>1)</sup> / 3' <sup>2)</sup>
302	80	3 / 4 / 6 / 8 / 10 / 15 / 20 / 25 / 30	
402	160		
502	320	3 / 4 / 6 / 8 / 10 / 12 / 15 / 20 / 25 / 30 / 35	
602	640	3 / 4 / 6 / 8 / 10 / 12 / 15 / 20 / 25 / 30 / 35 / 40	
802	1 220		

<sup>1)</sup> Standard <sup>2)</sup> Reduced

## Options for servo gear units

<b>Direct motor mounting</b>	Positive direct motor mounting (without terminal adapter) of the CMP.. and CM.. servomotor series from SEW-EURODRIVE
<b>Motor adapter</b>	EPH motor adapter for PS.F and PS.C planetary servo gear units, ECH motor adapter for PS.C planetary servo gear units and EBH motor adapter for BS.F helical-bevel servo gear units
<b>Reduced backlash</b>	Optionally for PS.F planetary servo gear units and BS.F helical-bevel servo gear units with significantly smaller rotational clearance
<b>Minimized rotational clearance</b>	Optionally for PS.F planetary servo gear units with even more reduced rotational clearance

- ➔ **Accessories and options for servo gear units:**
- **Surface and corrosion protection: pages 118 – 120**

## 2.3 Stainless steel gear units

### Stainless steel gear units



#### Features

- For use in areas subject to frequent cleaning:
  - Intralogistics
  - Hygienic applications
  - Food and beverage industry
  - Pharmaceutical industry
  - Permanently humid environments
- Low maintenance with long service life
- Efficiency-optimized gear units
- Available as KES37 helical-bevel gearmotors and RES37 helical gearmotors
- High-quality stainless steel is used
- Easy-to-clean surface thanks to special housing design
- High grade resistance to acid and alkaline
- Recesses where dirt and liquid can accumulate were eliminated as far as possible
- IEC and NEMA adapters, also made of stainless steel, allow for variable motor mounting

Type	Max. output torque Nm	Gear unit ratio i
KES37	200	3.98 – 106.38
RES37	200	3.41 – 134.83

## Stainless steel gearmotor

02

<b>Features</b>	<ul style="list-style-type: none"><li>– Compact, space-saving design as gearmotor for direct mounting</li><li>– The entirely stainless steel design efficiently prevents all forms of corrosion</li><li>– The design without fan allows for easy and reliable cleaning of the directly mounted stainless steel motors</li></ul>
<b>Motor power range kW</b>	0.37 – 0.75 (Higher power ratings for adapter mounting are available upon request)

- ➔ **Accessories and options for stainless steel gear units:**
- TorqLOC® hollow shaft mounting system: page 121

## 2.4 Explosion-proof gear units

Standard gear units



**Ex EAC**

	<b>Certified gear units</b>	<b>Certified protection types</b>
<b>Helical gear units, RX, R, RM series</b>	<ul style="list-style-type: none"> <li>– For the European market: Gear units comply with Directive 2014/34/EU (ATEX), equipment group II, equipment category 2, II2GD design</li> <li>– Also accepted in China</li> <li>– Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)</li> </ul>	<ul style="list-style-type: none"> <li>– Protection type "c": Protected by safe construction (design safety), EN 13463-1 and -5</li> <li>– Protection type "k": Protected by liquid immersion, EN 13463-1 and -8</li> </ul>
<b>Parallel-shaft helical gear units, F series</b>		
<b>Helical-bevel gear units, K series</b>		
<b>Helical-worm gear units, S series</b>		
<b>SPIROPLAN® right-angle gear units, W series</b>		

➔ **Technical data: pages 104 – 109**

## Servo gear units

02



**Ex EAC**

	<b>Certified gear units</b>	<b>Certified protection types</b>
<b>PS.F planetary servo gear units</b>	<ul style="list-style-type: none"> <li>– For the European market: Gear units comply with Directive 2014/34/EU (ATEX), equipment group II, equipment category 2, II2GD design</li> <li>– Also accepted in China</li> <li>– Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)</li> </ul>	<ul style="list-style-type: none"> <li>– Protection type "c": Protected by safe construction (design safety), EN 13463-1 and -5</li> <li>– Protection type "k": Protected by liquid immersion, EN 13463-1 and -8</li> </ul>
<b>BS.F helical-bevel servo gear units</b>		

➔ **Technical data: pages 110 – 112**

## 2.5 Accessories and options

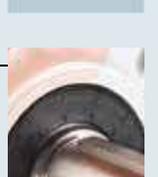
### Corrosion protection (KS) and surface protection (OS)



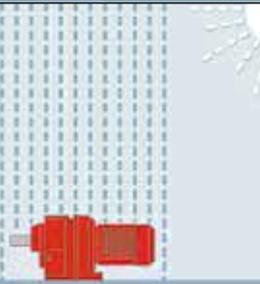
for all standard motors and gear units

<b>Features</b>	To optimally protect motors and gear units that are subject to severe environmental influences, SEW-EURODRIVE offers possibilities to increase the resistance of highly stressed surfaces.
<b>KS corrosion protection</b>	Measures to increase the resistance to corrosion: <ul style="list-style-type: none"> <li>– All retaining screws that are loosened during inspection or maintenance work are made of stainless steel</li> <li>– Nameplates are made of stainless steel and various motor parts are coated with a finishing varnish</li> <li>– The flange contact surfaces and shaft ends are treated with a temporary rust preventive</li> <li>– In addition, clamping straps are used for brakemotors</li> </ul>
<b>OS surface protection</b>	In addition to the standard surface protection, motors and gear units are optionally available with surface protection OS1, OS2, OS3 or OS4. This makes the gearmotors well equipped for operation under various ambient conditions.

#### Measures for interior treatment and standard parts

 <p>Special interior surface coating</p>		 <p>Brakes with pressure plate made of non-corrosive material</p>
 <p>Rustproof nameplates</p>		 <p>Non-corrosive retaining parts</p>
 <p>RS bearing for IP56</p>		 <p>Special interior surface coating</p>
 <p>Special interior surface coating</p>		 <p>Rustproof breather valves</p>
 <p>NOCO® fluid, the contact corrosion inhibitor</p>	 <p>Output shaft made of stainless steel</p>	 <p>Optional coating at the output shaft end (in the area of the radial oil seal seat)</p>

## Surface protection (OS)

Surface protection		Ambient conditions/sample applications
<b>Standard</b>		<p>For machines and systems in buildings and rooms indoors with neutral atmospheres.</p> <ul style="list-style-type: none"> <li>– C1 (negligible)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Machines and systems in the automobile industry</li> <li>– Conveyor systems in logistics areas</li> <li>– Conveyor belts at airports</li> </ul>
<b>OS1</b>		<p>For environments prone to condensation and atmospheres with low humidity or contamination. E.g. outdoor applications under a roof or protection device.</p> <ul style="list-style-type: none"> <li>– C2 (low)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Systems in saw mills</li> <li>– Hall gates</li> <li>– Agitators and mixers</li> </ul>
<b>OS2</b>		<p>For environments with high humidity or moderate atmospheric contamination. E.g. applications outdoors subject to direct weathering.</p> <ul style="list-style-type: none"> <li>– C3 (moderate)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Applications in amusement parks</li> <li>– Funiculars and chair-lifts</li> <li>– Applications in gravel plants</li> <li>– Systems in nuclear power plants</li> </ul>
<b>OS3</b>		<p>For environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasional acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load.</p> <ul style="list-style-type: none"> <li>– C4 (high)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Sewage treatment plants</li> <li>– Port cranes</li> <li>– Mining applications</li> </ul>
<b>OS4</b>		<p>For environments with permanent humidity and severe atmospheric or chemical contamination. Regular acidic and caustic wet cleaning, also with chemical cleaning agents.</p> <ul style="list-style-type: none"> <li>– C5-I (severe)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Drives in malting plants</li> <li>– Wet areas in the beverage industry</li> <li>– Conveyor belts in the food industry</li> </ul>

## 2.5 Accessories and options

### Surface protection (OS)

Surface protection		Ambient conditions/sample applications
<b>Aseptic motors of the DAS.. series</b> Either OS2–OS4		Suitable for dry or wet hygienic areas with average atmospheric contamination. Also suitable for particularly dusty environments. <ul style="list-style-type: none"> <li>– C3 (moderate)*</li> </ul> <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Applications in clean rooms</li> <li>– Machines in the cosmetic and pharmaceutical industry</li> <li>– Systems for processing cereals and flour (without Ex protection)</li> <li>– Conveyor belts in cement plants</li> </ul>
<b>Aseptic motors of the DAS.. series with ASEPTIC<sup>plus</sup>® drive package</b> OS4		For hygienic areas in the food and beverage industry with permanent humidity, regular acidic and caustic wet cleaning using chemical cleaning agents, and cleaning with pressure load. <ul style="list-style-type: none"> <li>– C5-1 (severe)*</li> </ul> <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic conveyors in the beverage industry</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– "Splash zones" in the food industry</li> </ul>
<b>High protection coating</b> HP200		For hygienic areas in the food and beverage industry with regular acidic and caustic wet cleaning. Anti-stick properties support the cleaning process even in inaccessible areas. <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic conveyors in the beverage industry</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– "Splash zones" in the food industry</li> </ul>
<b>Stainless steel gear-motor</b>		For hygienic areas in the food and beverage industry with permanent humidity and extreme acidic and caustic wet cleaning using chemical cleaning agents. <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic applications of all types</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– Food processing machines for the North American market</li> </ul>

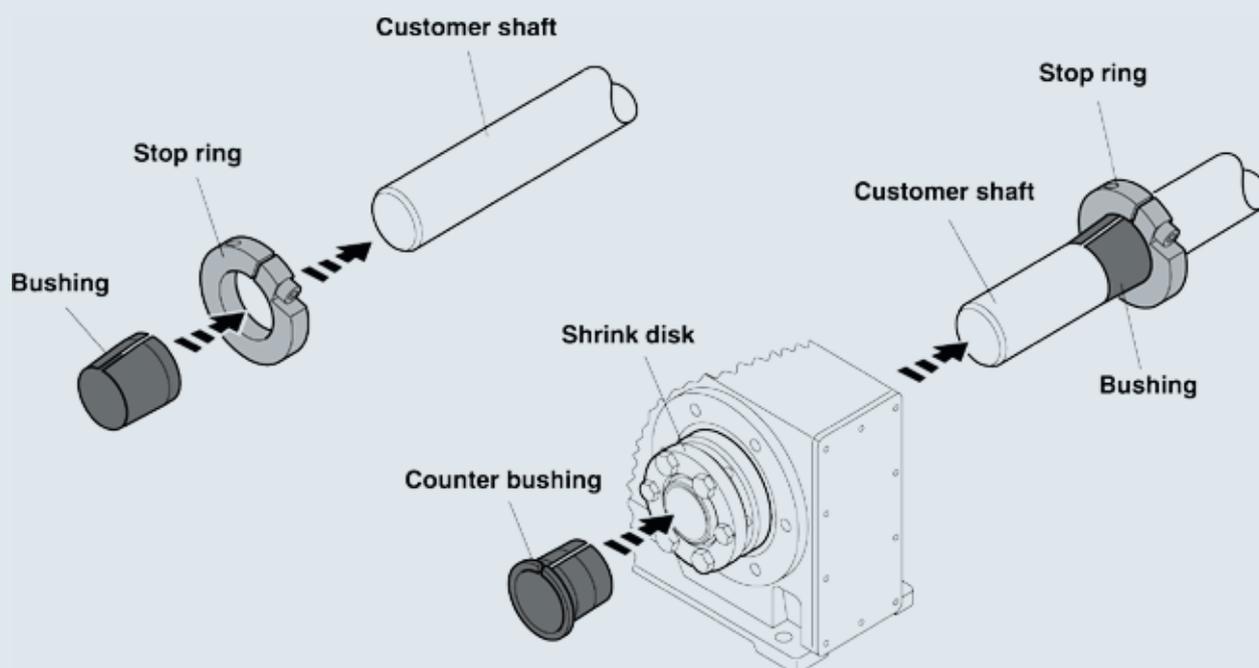
\* In accordance with the corrosivity categories of DIN EN ISO 12944-2

## TorqLOC® hollow shaft mounting system

02



<b>Cost efficient</b>	The TorqLOC® hollow shaft mounting system is used for achieving a non-positive connection between customer shaft and hollow shaft in the gear unit, optional for parallel-shaft helical, helical-bevel or helical-worm gear units. An economic alternative to the previous hollow shaft with shrink disk, hollow shaft with key, and splined hollow shaft.
<b>Simple</b>	The drive can be installed and disassembled easily, even after long periods of operation. The drive is delivered with the matching bushing. The operator will install the clamping ring on the customer shaft and the drive can be mounted and fixed easily.
<b>Economical</b>	The TorqLOC® hollow shaft mounting system makes it possible to use drawn, unprocessed material up to quality level h11 for customer shafts, reducing costs even further. No additional machining of the customer shaft is required.
<b>Flexible</b>	Up to 4 different rated diameters can be adapted with one gear unit size.
<b>Awards</b>	The trade journal "Plant Engineering" awarded the "Product of the Year 2002". The award is given to innovative products which lead to ground-breaking improvements at the production level.



## 2.5 Accessories and options

### Oil aging



#### Oil condition monitoring

<b>Features</b>	<ul style="list-style-type: none"> <li>– The perfect sensor to determine the remaining life of the gear unit oil and reliably indicate the right time for an oil change</li> <li>– A thermal sensor installed in the gear unit measures the oil temperature and sends this information to an evaluation unit, which then calculates the time remaining until the next oil change for the specified oil type</li> <li>– The diagnostic unit takes the oxidation characteristics of the different oils into account under thermal stress</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Reduction in oil costs</li> <li>– Optimum utilization of the oil service life</li> <li>– Startup can be performed directly on the diagnostic unit (without PC)</li> <li>– Simple identification and reading of the time remaining until the next oil change</li> <li>– 5 different oil types can be parameterized</li> <li>– Warning message is issued if predefined limit values are exceeded, such as max. oil temperature</li> <li>– Permanent oil aging monitoring</li> <li>– Maintenance intervals can be planned individually</li> </ul>
<b>Gear unit combinations</b>	<ul style="list-style-type: none"> <li>– Helical gear units, sizes R67 – R167</li> <li>– Parallel-shaft helical gear units, sizes F57 – F157</li> <li>– Helical-bevel gear units, sizes K37 – K187</li> <li>– Helical-worm gear units, sizes S67 – S97</li> </ul> <p>For installation on small sizes or industrial gear units, contact SEW-EURODRIVE.</p>

Technical data	Value	
Types of oil	<ul style="list-style-type: none"> <li>– Mineral oil CLP or bio oil</li> <li>– <math>T_{max} = 100\text{ °C}</math></li> </ul>	
	<ul style="list-style-type: none"> <li>– Synthetic oil CLP HC or CLP PAO</li> <li>– <math>T_{max} = 130\text{ °C}</math></li> </ul>	
	<ul style="list-style-type: none"> <li>– CLP PG polyglycol</li> <li>– <math>T_{max} = 130\text{ °C}</math></li> </ul>	
	<ul style="list-style-type: none"> <li>– Food grade oil</li> <li>– <math>T_{max} = 100\text{ °C}</math></li> </ul>	
Permitted oil temperature	-40 to +130 °C	
Permitted temperature sensors	PT100 or PT1000	
EMC	<ul style="list-style-type: none"> <li>– EN61000-4-2 ESD: 4 kV CD/8 kV AD</li> <li>– EN 61000-4-3 HF emitted: 10 V/m</li> <li>– EN61000-4-4 burst: 2 kV</li> <li>– EN61000-4-6 HF conducted: 10 V</li> </ul>	
Ambient temperature	-25 to +70 °C	
Operating voltage	DC 18 – 28 V <sup>1)</sup>	
Current consumption for DC 24 V	< 90 mA (when display is active)	
Protection class	III	
Degree of protection	IP67 (optionally IP69K)	
Housing materials	Diagnostic unit	V2A; EPDM/X (Santoprene); PBT (Pocan); FPM
	Temperature sensor	V4A
Electrical connection	Diagnostic unit	M12 plug connector
	Temperature sensor	<ul style="list-style-type: none"> <li>– PT1000: M12 plug connector</li> <li>– PT100: Plug connector in line with DIN 43650</li> </ul>

<sup>1)</sup> According to EN 50178, SELV, PELV

## 2.5 Accessories and options

### NEW: Vibration SmartCheck



#### Vibration analysis

<b>Features</b>	<ul style="list-style-type: none"> <li>– The perfect sensor for simple and reliable monitoring of rolling bearings</li> <li>– The frequency spectrum is used to constantly monitor the condition of the rolling bearings</li> <li>– Easy startup, ready for immediate use</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Fewer unplanned downtimes</li> <li>– Comprehensive analysis of the measured values</li> <li>– Continuous monitoring of the drive systems</li> <li>– Intuitive use</li> <li>– Preconfigured system for easy startup</li> <li>– Additional process parameters possible</li> <li>– Integrated web connection for real-time display of the measurement data</li> <li>– Compact size and robust housing of the measuring system</li> <li>– Cost-effective solution</li> </ul>

#### Technical data

##### Internal sensor technology

Vibration	<ul style="list-style-type: none"> <li>– Frequency range 0.8 Hz to 10 kHz</li> <li>– Measuring range <math>\pm 50</math> g</li> <li>– Acceleration sensor (piezoelectric acceleration sensor)</li> </ul>
Ambient temperature	Measuring range -20 to +70 °C

##### Measurement

Measurement function	<ul style="list-style-type: none"> <li>– Acceleration</li> <li>– Speed and distance by integration</li> <li>– Temperature</li> <li>– Process parameters (e.g. speed, load, pressure)</li> </ul>
Diagnostic methods	Time signal, envelope, spectrum and trend analysis, speed and frequency checking

##### Characteristic values (time and frequency range)

Defined characteristic values	DIN/ISO 10816
Calculated characteristic values	<ul style="list-style-type: none"> <li>– RMS, frequency selected RMS, direct component, peak, peak to peak, crest factor, Wellhausen count, carpet level, condition monitoring</li> <li>– Other user-specific characteristic values are possible</li> </ul>

##### Memory

Program and data	64 MB RAM, 128 MB Flash
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**Technical data**
**Inputs and outputs**

Inputs	<ul style="list-style-type: none"> <li>– 2 analog inputs (0-10 V / 0-24 V / 0-20 mA / 3-20 mA), frequency range 0-500 Hz, 12 Bit</li> <li>– 1 digital input (0-30 V, 0,1 Hz – 50 kHz)</li> </ul>
Outputs	<ul style="list-style-type: none"> <li>– 1 analog output (80-10 V / 0-20 mA / 4-20 mA), 12 Bit</li> <li>– 1 switching output (open collector, max. 1 A, 28 V)</li> <li>– Optional galvanic isolation between inputs and outputs</li> </ul>

**Interfaces**

Control elements	2 capacitive pushbuttons (learning mode, alarm reset, restart, factory settings)
Display elements	<ul style="list-style-type: none"> <li>– 1 LED to display status and alarm</li> <li>– 1 LED to acknowledge the pushbuttons</li> <li>– 2 LEDs to display communication</li> </ul>
Communication	<ul style="list-style-type: none"> <li>– Ethernet 100 Mb/s</li> <li>– RS485 (currently not yet supported)</li> </ul>
Electrical connections	3 M12 plug connectors (polarity reversal protected) for supply, RS485, inputs/outputs, and Ethernet

**Other**

Housing	Glass fiber reinforced plastic
Fastening	<ul style="list-style-type: none"> <li>– Hexagon socket head screw M6 × 45</li> <li>– Contact surface on the machine: 25 mm Ø</li> </ul>
Current consumption	< 200 mA at 24 V
Operating temperature	-20 °C to +70 °C
Voltage supply	11-32 VDC or power over Ethernet (PoE) based on 802.3af Mode A
Size	44 mm × 57 mm × 55 mm
Weight	Approx. 210 g
Degree of protection	IP67
Operating system	Embedded Linux
Software	<ul style="list-style-type: none"> <li>– FAG SmartWeb, FAG SmartUtility Light or optional FAG SmartUtility</li> <li>– Languages: German, English, Chinese, Spanish, French</li> </ul>

# 03 MOTORS

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## 3.2 Servomotors

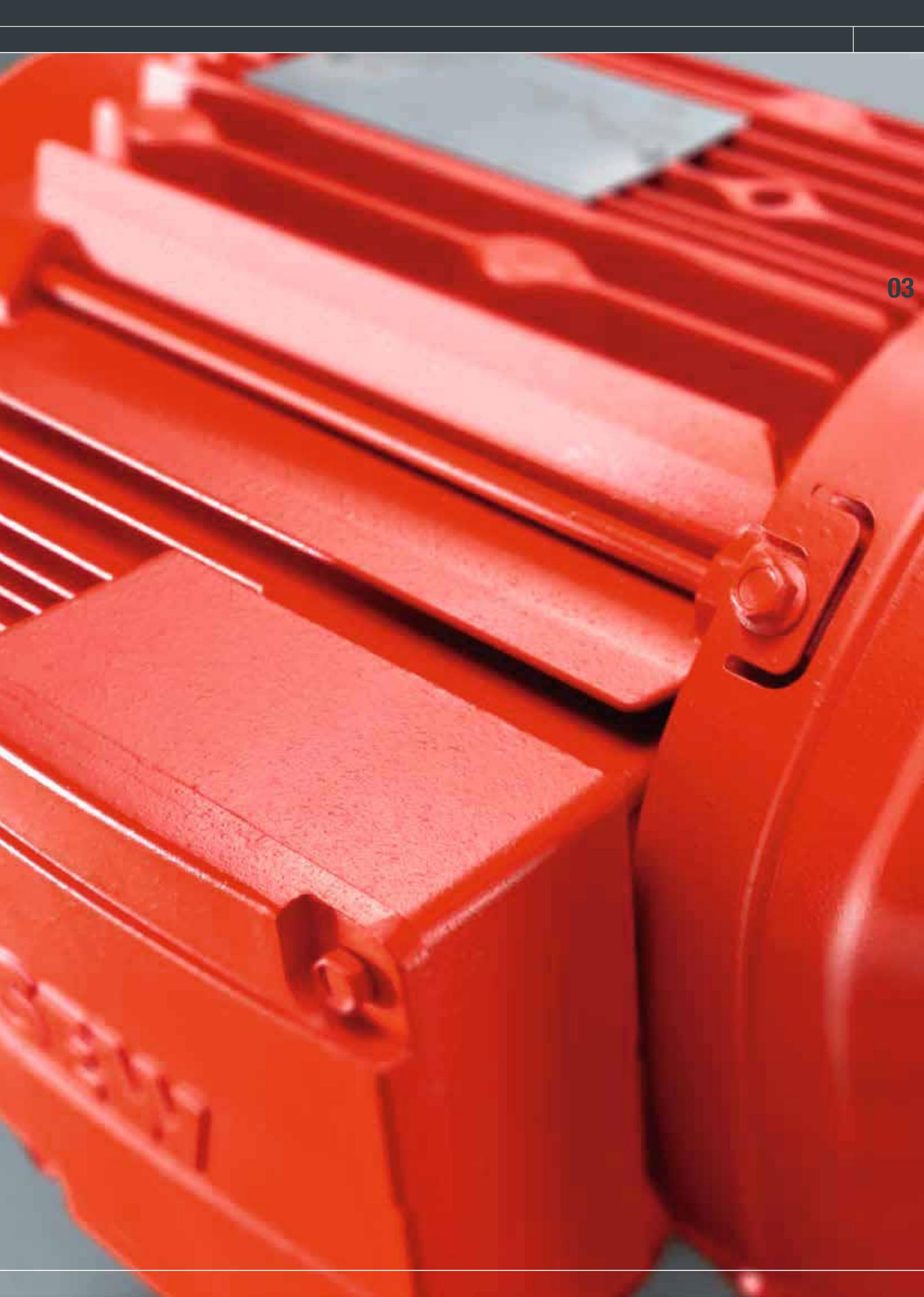
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## 3.1 AC motors

### DR.. AC motors



#### Standard AC motors

#### Well-established and safe – worldwide

<b>Features</b>	<ul style="list-style-type: none"> <li>– Single-speed standard asynchronous motors, well established for many years in a wide variety of applications</li> <li>– Quality, very short delivery times and many expansion options are just three reasons for the worldwide success of these series</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Direct mounting to gear units from SEW-EURODRIVE</li> <li>– Can be delivered with SEW-EURODRIVE single or double brakes of different sizes and braking torque steps</li> <li>– Built-in encoders from SEW-EURODRIVE can be integrated directly in the motors which makes the drives even more compact</li> <li>– As a global motor with many approvals and certifications, it can be used in many markets worldwide without the need to adapt the parts list</li> <li>– Comprehensive offer of options and accessories</li> <li>– Simple installation and startup</li> </ul>		
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Timing belts</li> <li>– Hoists</li> <li>– Pumps</li> <li>– Fans</li> <li>– Logistics facilities</li> </ul>		
<b>safetyDRIVE</b> <b>Functional safety</b>  <b>Optional: Integrated functional safety for DR.. motors</b>	Safety-rated encoders	Up to PL d according to EN ISO 13849-1	ES7S / EG7S AS7W / AG7W AS7Y / AG7Y EI7C FS
	Safety-rated brakes	Up to PL d according to EN ISO 13849-1 Up to PL e according to EN ISO 13849-1	BE.. BF.. / BT..

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**Technical data**

<b>Sizes</b>	DT56, DR63, DR..71S – 315 H
<b>Number of poles</b>	2, 4, 6
<b>Frequency Hz</b>	50, 60
<b>Rated power kW</b>	0.09 – 225
<b>Energy efficiency class</b>	IE1 (DRS.), IE2 (DRE.), IE3 (DRN.)
<b>Duty types</b>	Continuous duty and intermittent duty
<b>Suitable for inverter operation</b>	Yes

## 3.1 AC motors

### DR.. AC motors



**SEW-EURODRIVE's global motor –  
one solution that can be used all around the world**



<b>Features</b>	The global motors from SEW-EURODRIVE are the ideal solution for customers who want to serve many markets with little effort and the lowest possible quantity of part numbers. A global motor has worldwide approvals and certifications and can be used in almost any country in the world thanks to its wide voltage range.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– The motor's part number in the parts list does not depend on the country of use which means that only one design is required for the application</li> <li>– Required approvals and certifications can be selected according to the requested countries of use</li> <li>– Global motors are available throughout the world which ensures short delivery times</li> <li>– Available in combination with the DRS.., DRE.., DRN.. und DRL.. series</li> </ul>
<b>Countries and regions of use (excerpt)</b>	<ul style="list-style-type: none"> <li>– Europe</li> <li>– Russia</li> <li>– USA</li> <li>– Canada</li> <li>– Mexico</li> <li>– Brazil</li> <li>– South Korea</li> <li>– Japan</li> <li>– Australia</li> <li>– New Zealand</li> <li>– China</li> <li>– India</li> <li>– South Africa</li> </ul>

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**Technical data for line operation**

<b>Sizes</b>	71S – 315H
<b>Number of poles</b>	2, 4, 6, 4/2, 8/2, 8/4
<b>Frequency Hz</b>	50, 60
<b>Rated power kW</b>	0.18 – 225
<b>Series</b>	DRS., DRE., DRN., DRL..
<b>Duty types</b>	Continuous duty and intermittent duty
<b>Suitable for inverter operation</b>	Yes



[www.ie-guide.com](http://www.ie-guide.com)

**IE Guide**

**Worldwide efficiency regulations – transparent and always up-to-date**

**Features**

Using energy-efficient motors is of major importance when it comes to increasing the efficiency of automation systems.

SEW-EURODRIVE's IE Guide helps you to determine the relevant efficiency classes and their implementation dates for the country you have selected.

**Web application**

[www.ie-guide.com](http://www.ie-guide.com)

## 3.1 AC motors

### DR...J AC motors with LSPM\* technology



**DR.. series:**

**DR...J design (LSPM\* technology)**

**\* Line Start Permanent Magnet**

#### Features

- The **DR..J** synchronous motor design (LSPM technology) is integrated in the DR.. series modular motor system and is designed in the sizes 71S to 100L. The technology is based on adding permanent magnets below the squirrel cage of AC asynchronous motors
- **No rotor losses** occur during operation: high efficiency from IE2 to IE4
- Compared to series motors with the same power range, the same energy efficiency class is achieved with a smaller size of the DR...J motors (LSPM technology)
- Compact and robust design
- Synchronous running of the motors with operating frequency
- Slip-free speed control without encoder feedback
- DR.. J LSPM motors can be operated with the frequency inverters MOVITRAC® LTE-B and MOVITRAC® LTP-B, MOVITRAC® B, MOVIFIT® FC and MOVIMOT® D
- Can be used as individual or group drive with a frequency inverter
- Many additional features of the modular motor system are available
- Can be combined with the 7-series of the modular gear unit system from SEW-EURODRIVE
- Constant torque CT in the speed setting range without forced cooling fan

**Technical data****Frequency inverter operation / 50 Hz**Constant torque from 300 to 1 500 min<sup>-1</sup> CT 1:5

Design	Energy efficiency class	Size	Power rating P <sub>N</sub> kW
DRE..J	IE2	71S – 100M	0.37 – 4.0
DRP..J	IE3	71S – 100L	0.37 – 4.0
DRU..J	IE4	71S – 100L	0.18 – 3.0

**Frequency inverter operation / 87 Hz**Constant torque from 300 to 2 610 min<sup>-1</sup> CT 1:8.7

Design	Energy efficiency class	Size	Power rating P <sub>N</sub> kW
DRE..J	– *	71S – 100M	0.55 – 5.5
DRP..J	– *	71S – 100L	0.55 – 5.5
DRU..J	– *	71S – 100L	0.25 – 4.0

**Line operation / 50 Hz**Nominal speed: 1 500 min<sup>-1</sup>

Design	Energy efficiency class	Size	Power rating P <sub>N</sub> kW
DRE..J	IE2	71S – 100M	0.37 – 4.0
DRP..J	IE3	71S – 100L	0.37 – 4.0
DRU..J	IE4	71S – 100L	0.18 – 3.0

\* IE classification as per IEC 60034-30-1:2014 is only applicable to 50 Hz or 60 Hz

## 3.1 AC motors

### DRS.. pole-changing AC motors (two speeds)



<b>Features</b>	<ul style="list-style-type: none"> <li>– Operated directly from supply system</li> <li>– Use in applications where two different traveling speeds are to be realized without using an inverter</li> <li>– Available with speed ratios of 1:2 or 1:4 and can be used globally thanks to worldwide approvals and certifications</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Two traveling speeds can be realized with just one motor during line operation</li> <li>– Easy installation as no inverter is needed</li> <li>– Direct mounting to gear units from SEW-EURODRIVE</li> <li>– As a global motor with many approvals and certifications, it can be used in many markets worldwide without the need to adapt the parts list</li> <li>– Comprehensive offer of options and accessories</li> <li>– Simple installation and startup</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Systems for materials handling technology</li> <li>– Hoists</li> <li>– Cranes</li> </ul>

#### Technical data

<b>Sizes</b>	71S – 225M
<b>Number of poles</b>	4/2, 8/2, 8/4
<b>Frequency Hz</b>	50, 60
<b>Duty types</b>	Continuous duty and intermittent duty
<b>Energy efficiency class</b>	None, exempted from energy efficiency regulations

## DRM.. torque motors



### Short movement – Safe Torque Off, permanently

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<b>Features</b>	<ul style="list-style-type: none"> <li>– DRM.. motors are dimensioned for operation on a 3-phase system and have the highest possible and continuously permitted torque at their rating point at speed 0.</li> <li>– Three different rated torque classes are available depending on the operating mode. This drive is preferably used in applications where the target position is reached after a very short rotation and has to be kept safely. For this reason, this motor design is also called torque motor.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– DRM.. motors can be operated continuously even when the rotor is blocked</li> <li>– Direct mounting to gear units from SEW-EURODRIVE</li> <li>– Comprehensive offer of options and accessories</li> <li>– Simple installation and startup</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Pressing tools</li> <li>– Flaps</li> <li>– Switches</li> <li>– Rotary gate valves</li> <li>– Simple winding drives</li> </ul>

### Technical data

<b>Sizes</b>	71S – 132M
<b>Number of poles</b>	12
<b>Frequency Hz</b>	50, 60
<b>Rated torque Nm</b>	0.6 – 8.7 with continuous duty
<b>Duty types</b>	S1, S3/15%
<b>Energy efficiency class</b>	None, exempted from energy efficiency regulations

## 3.1 AC motors

### DRK.. single-phase motors



#### Asynchronous motor for operation on a single-phase AC network

<b>Features</b>	<ul style="list-style-type: none"> <li>– Single-phase asynchronous motors are operated on a single-phase AC network and thus no three-phase current connection is needed</li> <li>– Variable use as the respective connection options are available in industry, craft work and the home</li> <li>– The single-phase motor is operated with a running capacitor. If larger torques are required already during start-up, a start-up capacitor has to be used additionally.</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– The running capacitor is installed safely in the terminal box so that degrees of protection up to IP66 can be realized</li> <li>– Direct mounting to gear units from SEW-EURODRIVE</li> <li>– Comprehensive offer of options and accessories</li> <li>– Simple installation and startup</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Screw conveyors</li> <li>– Conveyor belts</li> <li>– Agitators</li> <li>– Dosers</li> <li>– Pumps</li> <li>– Fans</li> <li>– Compressors</li> </ul>

#### Technical data

<b>Sizes</b>	71S – 90L
<b>Number of poles</b>	4
<b>Rated power kW</b>	0.18 – 1.1
<b>Frequency Hz</b>	50, 60
<b>Duty types</b>	S1
<b>Energy efficiency class</b>	IE1
<b>With running capacitor</b>	ET56, DRK71S – DRK90L
<b>Without running capacitor</b>	ER63

## Excerpt of accessories and options for the DR.. series

A comprehensive selection of accessories and options is available for motors and brakemotors, such as

<b>Mechanical mount-on components</b>	BE..	Single spring-loaded brake with size specification
	<b>NEW:</b> BF..	Double spring-loaded brake with size specification for <b>industrial applications</b>
	<b>NEW:</b> BT..	Double spring-loaded brake with size specification for <b>entertainment technology applications</b>
	HF, HR	Manual brake release, lockable or automatic re-engaging function
	/RS	Backstop instead of a brake
	/MSW	MOVI-SWITCH®, integrated switching and protection function
	/MM..	MOVIMOT®, integrated frequency inverter
<b>Temperature sensor/detection</b>	/TF	3 temperature sensors (PTC thermistor or PTC resistor) in series
	/TH	3 thermostats (bimetallic switches) in series
	/KY	1 temperature sensor KTY84-130
	/PT	1 or 3 temperature sensor(s) PT100
<b>Ventilation</b>	/V	Forced cooling fan
	/Z	Additional flywheel mass
	/AL	Metal fan
	/U	Non-ventilated (without fan)
	/OL	non-ventilated (closed B end)
	/C	Canopy
<b>Bearings</b>	/NS	Relubrication device
	/ERF	Reinforced bearings for high overhung loads (only with NS)
	/NIB	Insulated bearing (B-side)
<b>Connection</b>	/IS	Integrated plug connector
	/AS., etc.	Installed plug connectors of various types
	/KCC	Terminal strip with cage clamps
	/KC1	C1-compliant connection for electrified monorail system (VDI guideline 3643)
<b>Encoders</b>	/ES7., /AS7., /EG7., /AG7.	Add-on encoders
	/XV..	Mounting or mounting device of encoders that are not included in the SEW-EURODRIVE portfolio
<b>Condition monitoring</b>	<b>NEW:</b> Option /DUE	Brake diagnostics with continuous function and wear monitoring
<b>Other options (excerpt)</b>	/DH	Condensation drain hole
	/2W	2nd shaft end on the motor/brakemotor
	/RI	Reinforced winding insulation for frequency inverter operation > AC 500 V
	/RI2	Reinforced winding insulation with increased resistance against partial discharge

## 3.1 AC motors

### Aseptic motors



#### DAS.. series

#### Features

#### For dry hygienic areas

DAS.. series aseptic gearmotors for drive solutions with smooth surfaces and without fans:

- IP66 degree of protection for motors (IP65 for brakemotors)
- Motor corrosion protection: KS internal coating
- Surface protection OS2 to OS4
- Motor protection thermistor in thermal class F, TH (thermo contact) optional
- IS plug connector
- **NEW:** from 0.75 kW on with IE3

#### Type

#### Power in duty type kW

#### S1 = Continuous duty

#### S3 = Intermittent duty

		60%	40%	25%
<b>DAS80K4</b>	0.25	0.3	0.37	0.55
<b>DAS80N4</b>	0.37	0.45	0.55	0.75
<b>DAS90S4</b>	0.55	0.75	0.9	1.1
<b>DAS90L4</b>	0.75 (IE2)	0.98	1.1	1.5
<b>DAS100M4</b>	0.75 / 1.1 (IE3)	1.35	1.7	2.2
<b>DAS100L4</b>	1.5 (IE3)	1.85	2.3	3.0

**ASEPTIC<sup>plus</sup>® drive package****For hygienic production areas**

DAS.. series aseptic motors with ASEPTIC<sup>plus</sup>® drive package:

- IP69K degree of protection for motors (IP65 for brakemotors)
- OS4 surface protection
- Contour recesses filled with rubber
- Double oil seals (if possible) at the output made of FKM (fluorocarbon rubber)
- Stainless steel breather valve
- Pressure compensation membrane at motor terminal box
- Cable entry with screw plugs made of stainless steel
- Gear unit output shaft made of stainless steel as solid shaft, hollow shaft with key or TorqLOC® for the following gear unit types: R17-97, F37-97, K37-97, S37-97 and W30
- All retaining parts on the output shaft, such as screws, key, shrink disk, etc., are made of stainless steel

## 3.1 AC motors

### Explosion-proof motors



#### EDR.. series

compliant with EC Directive 2014/34/EC (ATEX) and IECEx



#### Features

- Compliance with efficiency classes is required in many countries according to the local energy efficiency requirements
- **NEW:** EDRN.. motors conform to the efficiency class IE3 according to IEC 60034-30-1
- EDRE.. motors conform to the efficiency class IE2 according to IEC 60034-30-1
- Approvals for the motor according to the latest internationally applicable directives and standards for explosion protection
  - EU Directive 2014/34/EU (ATEX)
  - IEC/EN 60079-0, gas IEC/EN 60079-7, IEC/EN 60079-15 and dust IEC/EN 60079-31
- The EC type examination certificate of category 2 motors and the conformity with quality assurance of the production process required according to the EU Directive were created by PTB
- EDR.. motors as well as SEW-EURODRIVE were audited and certified by the PTB in compliance with IECEx "Certified Equipment Scheme" with ExTr, QAR and CoC  
The certificates are available at <http://iecex.iec.ch>
- EDRS.. and EDRE.. motors comply with TR CU, the Eurasian Custom Union Russia/Belarus/ Kazakhstan/Armenia in combination with the Ex EAC certificate (successor to GOST-R)
- EDRS.. and EDRE.. are certified by the Korean institution KOSHA for South Korea
- **NEW:** The EDRS.. and EDRE.. motors are certified by the DNV certification authority based on the IECEx certification according to the requirements of the Brazilian authority INMETRO. This also includes certification of the production sites.
- Line operation, switching operation and inverter operation, also in field weakening range operation, enable using the motors in almost every application
- Motors with combined gas and dust approval (design /GD) reduce the motor variance
- Motors according to ATEX and IECEx are identical regarding the most important technical properties (e.g. the same power rating for the same size)
- Many additional features of the modular motor system are available, such as brake, encoder, forced cooling fan, motor protection, etc.
- Can be combined with the standard gear units of the modular gear unit system from SEW-EURODRIVE
- Same compact and performance-oriented characteristics as the standard motors, also in combination with standard gear unit or ATEX gear unit

Design ATEX	Design IECEx	Ex protection	Zone	Type 4-pole / size	IE class	Power range kW
/3D and /3GD	/3Gc and /3GDc	II3G, Ex nA, IIB/IIC, T3, Gc	2	DR63*	–	0.12 – 0.25
		II3D, Ex tc, IIIB/IIIC, T120 °C / T140° C, Dc	22	EDRS 71 – 80 EDRE 80 – 225 EDRE 250 – 315*	IE1 IE2 IE2	0.25 – 0.55 0.75 – 45 55 – 200
/2G and /2GD	/2Gb and /2GDb	II2G, Ex e, IIB/IIC, T3, Gb	1	EDRS 71 – 80 EDRE 80 – 225	IE1 IE2	0.25 – 0.55 0.75 – 37
		II2D, Ex tb, IIIB/IIIC, T120 °C, Db	21			
/2G and /2GD	/2Gb and /2GDb	II2G, Ex e, IIB/IIC, T4, Gb	1	EDRS 71 – 80 EDRE 80	IE1 IE2	0.25 – 0.55 0.75
		II2D, Ex tb, IIIB/IIIC, T120 °C, Db	21			

\* Only acc. to ATEX

### NEW: EDRN80-315

Design ATEX	Design IECEx	Ex protection	Zone	Type 4-pole / size	IE class	Power range kW
/3G, /3D and /3GD	/3G-c, /3D-c and /3GD-c	II3G, Ex ec, IIB/IIC, T3, Gc	2	EDRN80 – 315	IE3	0.75 – 100* 0.75 – 200
		II3D, Ex tc, IIIB/IIIC, T120 °C / T140° C, Dc	22			
/2D /2G and /2GD	2D-c /2G-b and /2GD-b	II2G, Ex eb, IIB/IIC, T1/T2/ T3, Gb	1			
		II2D, Ex tb, IIIB/IIIC, T120 °C, Db	21			
/2G and /2GD	/2G-b and /2GD-b	II2G, Ex eb, IIB/IIC, T4, Gb	1	EDRN80M, EDRN90S		0.75 1.1
		II2D, Ex tb, IIIB/IIIC, T120 °C, Db	21			

\* Motors in /2G, /2GD, 2G-b and /2GD-b design have a reduced power rating as of size 160.

## 3.1 AC motors

### Explosion-proof motors



**EDR.. series according to HazLoc-NA® (Hazardous Locations North America)**



#### Features

- EDRN.. motors not only meet the requirements of efficiency class IE3 according to IEC 60034-30-1 but also comply with EISA 2007 and CSA C390-10 for the North American market and thus meet the requirements of many countries that accept these standards
- The motors are certified according to the Class Division System and thus meet the requirements of the explosion protection regulation on the North American market and the basic standards CSA 22.2 and NEC 500
- Available as gearmotor/motor, /CID2 type, for division 2 class I for gas groups A, B, C and D
- Available as gearmotor/motor, /CIID2 type, division 2 class II for dust groups F and G
- Available as gearmotor/motor, /CICIID2 type, for division 2 class I for gas groups A, B, C and D and Class II for dust groups F and G
- Also available as brakemotor with latch function
- SEW-EURODRIVE is certified to UL and CSA
- Operation on frequency inverter, also in field weakening range operation, possible in both classes
- Same compact and performance-oriented characteristics as the standard drives
- Motors also possible with ATEX gear units (EU directive 2014/34/EU) on request

Division 2	Type 4-pole	IE class	Power range kW
<b>Class I</b> Groups A, B, C, and D T3 for operation on frequency inverter T3C for operation on supply system T3B/C brakemotor on supply system	EDRS 71 – 80 EDNR 80 – 315	IE1 Premium (IE3)	0.18 – 0.55 0.75 – 200
<b>Class II</b> Groups F and G T4A for operation on supply system T3 for operation on frequency inverter			

## Explosion-proof AC asynchronous motors in combination with frequency inverters



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<b>Features</b>	<p>Overview of the advantages of this combination over AC asynchronous motors in protection type "d" (EN 60079-1; flameproof enclosure):</p> <ul style="list-style-type: none"> <li>– High efficiency</li> <li>– Lighter weight</li> <li>– Shortest possible delivery times, high availability</li> <li>– Certified for operation with SEW-EURODRIVE frequency inverters</li> <li>– Also suitable for pump and fan drives</li> <li>– Delivery from a single source, from a manufacturer that offers both components itself</li> <li>– Higher speeds</li> </ul> <p>Strict adherence to guidelines is particularly important in areas with potentially explosive gas/air and dust/air mixtures. Thanks to many years of experience and competency in this area, SEW-EURODRIVE ensures that the relevant guidelines are observed. Furthermore, the company's expertise is continually being expanded to include new and further developments.</p>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>– The 4-pole motors from SEW-EURODRIVE are also suited for operation on frequency inverters according to ATEX, IECEx, and HazLoc-NA®</li> <li>– Category 2 and EPL .b and .c are certified by prototype testing</li> <li>– Motors are certified to HazLoc-NA® by CSA</li> <li>– In category 3, EPL .e and division 2, brakemotors are also available</li> <li>– The suitability for operation on inverters is confirmed on the nameplate</li> <li>– A second nameplate provides all the information required for operation</li> </ul>

Zone	Motor type	Protection type	MOVITRAC® B	MOVIDRIVE® B	MOVIMOT®
1	EDR../2GD	"e", "eb" (EN 60079-7, increased safety)	✓*	✓	–
2	EDR../3GD	"na" (EN 60079-15, non-sparking), "ec" (EN 60079-7, increased safety)	✓*	✓*	–
21	EDR../2GD	"tb" (EN 60079-31, dust explosion protection)	✓*	✓	–
22	EDR../3GD	"tc" (EN 60079-31, dust explosion protection)	✓*	✓*	✓*
	EDR../3D				

\* Also in field weakening range operation

## 3.1 AC motors

### Explosion-proof motors in combination with frequency inverters



#### Features

The extensive product range of SEW-EURODRIVE inverters is available for designing electronically controlled drives:

- **MOVITRAC® MC07B:** Compact and economical standard inverter for the power range 0.25 – 75 kW. Three-phase line connection for AC 380 – 500 V.
- **MOVIDRIVE® MDX60/61B:** High-performance application inverter for dynamic drives in the 0.55 – 315 kW power range. Great diversity of applications due to extensive expansion options with technology and communication options. Three-phase line connection for AC 380 – 500 V.
- **MOVIMOT®** is a successful product in decentralized drive technology. It is the ingeniously simple combination of a gearmotor and a digital frequency inverter. MOVIMOT® in category 3D form a synthesis of EDR.. motors and integrated frequency inverter.

These types are designed specifically for use in areas with potentially explosive dust-air mixtures (zone 22) and are available in the power range of 0.25 to 3 kW, with or without brake, for connection voltages of 400 to 500 V.

<b>Project planning</b>	Project planning is the basic requirement for safe operation of explosion-proof motors. EDR.. motors meet the defined requirements for use in potentially explosive atmospheres of the Directive 2014/34/EU (ATEX), IECEx and HazLoc-NA® Division 2. A device for direct temperature monitoring in combination with the defined parameters of the frequency inverter offers the best possible protection against excessive heating caused by overload.		
<b>Technical data</b>	EDR.. motors 230 / 400 V		
	Connection	Star	Delta
	$P_{line}$ kW	$M_{FI}$ Nm	$M_{FI}$ Nm
Category 2G / 2D / EPL b / Div. 2	0.25 – 37	1.7 – 240	1.7 – 240
Category 3G / 3D / EPL c / Div. 2			
Category 3D with MOVIMOT®	0.25 – 3.0	1.7 – 20.5	1.2 – 9.9

For frequency inverter operation, there is no reduced load value in relation to the nominal line torque to ensure thermally safe operation as is often usual.

## 3.2 Servomotors

### Synchronous servomotors



**CMP.. series (high dynamics) and CMPZ.. series (high inertia)**

#### Features

- Highest dynamic properties due to low-inertia rotor design and high overload capacity of the motors
- Performance-optimized and extremely compact design thanks to the latest winding and magnet technology
- Standstill torques from 0.5 Nm to 95 Nm
- Optional CMPZ.. motor variant with increased rotor inertia for all applications with high load moments of inertia
- Direct motor mounting to gear units from our modular gear unit system



- Europe: CE label
- USA: UR label
- Canada: CSA label
- EAC: Eurasian conformity



- CMP../CMPZ.. motors in sizes 40S to 100L are available in explosion-proof design, in compliance with the 2014/34/EU Directive (ATEX)
- Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

Type	Rated speed min <sup>-1</sup>	Standstill torque $M_0$ Nm	Dynamic limit torque $M_{pk}$ Nm	Mass moment of inertia of the motor $J_{mot}$ kgcm <sup>2</sup>	
				CMP..	CMPZ..
CMP40S	3 000 / 4 500 / 6 000	0.5	1.9	0.10	–
CMP40M	3 000 / 4 500 / 6 000	0.8	3.8	0.15	–
CMP50S	3 000 / 4 500 / 6 000	1.3	5.2	0.42	–
CMP50M	3 000 / 4 500 / 6 000	2.4	10.3	0.67	–
CMP50L	3 000 / 4 500 / 6 000	3.3	15.4	0.92	–
CMP63S	3 000 / 4 500 / 6 000	2.9	11.1	1.15	–
CMP63M	3 000 / 4 500 / 6 000	5.3	21.4	1.92	–
CMP63L	3 000 / 4 500 / 6 000	7.1	30.4	2.69	–

Type	Rated speed min <sup>-1</sup>	Standstill torque M <sub>0</sub> Nm	Dynamic limit torque M <sub>pk</sub> Nm	Mass moment of inertia of the motor J <sub>mot</sub> kgcm <sup>2</sup>	
				CMP..	CMPZ..
CMP71S / CMPZ71S	2 000 / 3 000 / 4 500 / 6 000	6.4	19.2	3.1	9.32
CMP71M / CMPZ71M	2 000 / 3 000 / 4 500 / 6 000	9.4	30.8	4.1	10.37
CMP71L / CMPZ71L	2 000 / 3 000 / 4 500 / 6 000	13.1	46.9	6.1	12.47
CMP80S / CMPZ80S	2 000 / 3 000 / 4 500 / 6 000	13.4	42.1	8.8	27.18
CMP80M / CMPZ80M	2 000 / 3 000 / 4 500 / 6 000	18.7	62.6	11.9	30.3
CMP80L / CMPZ80L	2 000 / 3 000 / 4 500 / 6 000	27.5	107	18.1	36.51
CMP100S / CMPZ100S	2 000 / 3 000 / 4 500	25.5	68.3	19.59	79.76
CMP100M / CMPZ100M	2 000 / 3 000 / 4 500	31	108	26.49	86.66
CMP100L / CMPZ100L	2 000 / 3 000 / 4 500	47	178.8	40.24	100.41
CMP112S	2 000 / 3 000 / 4 500	30	88	74	–
CMP112M	2 000 / 3 000 / 4 500	45	136	103	–
CMP112L	2 000 / 3 000 / 4 500	69	225	163	–
CMP112H	2 000 / 3 000 / 4 500	83	270	193	–
CMP112E	2 000 / 3 000 / 4 500	95	320	222	–

## safetyDRIVE

### Functional safety

#### Optional: Integrated functional safety for CMP../CMPZ.. motors

	Safety-rated encoders	up to PL d according to EN ISO 13849-1	AK0H, AK1H
	Safety-rated brakes	up to PL d according to EN ISO 13849-1	BY

## 3.2 Servomotors

### Synchronous servomotors in encoderless design



**NEW: CMP.40-100 series**

#### Features

- Encoderless synchronous motors for energy-efficient drive solutions in the area of materials handling technology
- Easier installation as the feedback cable is no longer needed
- Standstill torques from 0.5 Nm to 47 Nm
- Optional CMPZ.. motor variant with increased rotor inertia for all applications with high load moments of inertia
- Direct motor mounting to gear units from our modular gear unit system



- Europe: CE label
- USA: UR label (in preparation)
- Canada: CSA label (in preparation)
- EAC: Eurasian conformity

Type	Rated speed min <sup>-1</sup>	Standstill torque $M_0$ Nm	Dynamic limit torque $M_{pk}$ Nm	Mass moment of inertia of the motor $J_{mot}$ kgcm <sup>2</sup>	
				CMP..	CMPZ..
CMP40S	3 000 / 4 500 / 6 000	0.5	1.9	0.10	–
CMP40M	3 000 / 4 500 / 6 000	0.8	3.8	0.15	–
CMP50S	3 000 / 4 500 / 6 000	1.3	5.2	0.42	–
CMP50M	3 000 / 4 500 / 6 000	2.4	10.3	0.67	–
CMP50L	3 000 / 4 500 / 6 000	3.3	15.4	0.92	–
CMP63S	3 000 / 4 500 / 6 000	2.9	11.1	1.15	–
CMP63M	3 000 / 4 500 / 6 000	5.3	21.4	1.92	–
CMP63L	3 000 / 4 500 / 6 000	7.1	30.4	2.69	–
CMP71S / CMPZ71S	2 000 / 3 000 / 4 500 / 6 000	6.4	19.2	3.1	9.32
CMP71M/ CMPZ71M	2 000 / 3 000 / 4 500 / 6 000	9.4	30.8	4.1	10.37
CMP71L / CMPZ71L	2 000 / 3 000 / 4 500 / 6 000	13.1	46.9	6.1	12.47
CMP80S / CMPZ80S	2 000 / 3 000 / 4 500 / 6 000	13.4	42.1	8.8	27.18
CMP80M / CMPZ80M	2 000 / 3 000 / 4 500 / 6 000	18.7	62.6	11.9	30.3
CMP80L / CMPZ80L	2 000 / 3 000 / 4 500 / 6 000	27.5	107	18.1	36.51
CMP100S / CMPZ100S	2 000 / 3 000 / 4 500	25.5	68.3	19.59	79.76
CMP100M / CMPZ100M	2 000 / 3 000 / 4 500	31	108	26.49	86.66
CMP100L / CMPZ100L	2 000 / 3 000 / 4 500	47	178.8	40.24	100.41

## 3.2 Servomotors

### Synchronous servomotors



**CM.. series (high inertia)**

#### Features

- Standstill torques from 5 Nm to 68 Nm
- Compact design with high power density thanks to an optimized magnetic circuit design
- High overload rating and low losses
- Electronic nameplate for quick and easy startup
- Optional: scalable HIPERFACE® encoder and high-performance working brake



- Europe: CE label
- USA: UR label
- Canada: CSA label
- EAC: Eurasian conformity

#### Type

	Rated speed min <sup>-1</sup>	Standstill torque $M_0$ Nm	Dynamic limit torque $M_{pk}$ Nm	Inertia kgcm <sup>2</sup>	
				Mass moment of inertia of the motor $J_{mot}$ Nm	Mass moment of inertia of the brakemotor $J_{bmot}$ Nm
CM71S	2 000 / 3 000 / 4 500 / 6 000	5	16.5	4.99	6.72
CM71M		6.5	21.5	6.4	8.13
CM71L		9.5	31.4	9.21	10.94
CM90S		11	39.6	18.2	22
CM90M		14.5	52.2	23.4	27.2
CM90L		21	75.6	33.7	37.5
CM112S	2 000 / 3 000 / 4 500	23.5	82.3	68.9	84.2
CM112M		31	108.5	88.9	104.2
CM112L		45	157.5	128.8	144.1
CM112H		68	238	188.7	204

## DRL.. asynchronous servomotors



### Dynamic and precise with a high overload capacity

03

<b>Features</b>	<ul style="list-style-type: none"> <li>– Suitable for use in applications with relatively high inertia ratios with high requirements on dynamics and control</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Reliable control in case of high overload</li> <li>– Direct mounting to gear units from SEW-EURODRIVE</li> <li>– Can be delivered with SEW-EURODRIVE single or double brakes of different sizes and braking torque steps</li> <li>– As a global motor with many approvals and certifications, it can be used in many markets worldwide without the need to adapt the parts list</li> <li>– Comprehensive offer of options and accessories</li> <li>– Simple installation and startup</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Gantry order picking robots</li> <li>– Travel axes in palletizers</li> <li>– Winding drives and cutter drums</li> <li>– Lifting axes in gantries</li> <li>– Conveyor applications</li> </ul>
<b>Sizes</b>	71S – 225M
<b>Number of poles</b>	4
<b>Rated speeds min<sup>-1</sup></b>	1200, 1700, 2100, 3000
<b>Rated torque Nm</b>	2.5 – 325
<b>Overload capacity</b>	Up to 3.5 times the rated torque
<b>Control mode</b>	CFC

## 3.2 Servomotors

### Explosion-proof servomotors



**CMP.40 – 100 series**



**Complies with Directive 2014/34/EU (ATEX), equipment group II, equipment category 3**

- Category II 3GD, suitable for use in zones 2/22
- Category II 3D, suitable for use in zone 22
- In category 3D also available with brake and HIPERFACE® encoder (with electronic nameplate)
- Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

**Protection types**

**Dust atmosphere:** Protection type "t" indicates dust explosion protection due to housing according to EN 60079-0 and -31

**Gas atmosphere:** Protection type "nA" indicates

- Protection due to non-sparking according to EN 60079-0 and -15
- Design measures and requirements regarding dimensioning like for protection type "e", but only fault-free (no error) operation is considered

**Dust atmosphere: Degree of protection IP65**

This means:

- Dust-tight housing according to EN 60079-31
- No dust can enter the housing due to the motor housing design
- Continuous monitoring of the surface temperature to exclude this as ignition source

### Explosion-proof CMP.40 – 100 servomotors

- For the European market: comply with Directive 2014/34/EU (ATEX)
- Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

Category	Zone	Ex marking	Product characteristics	Encoder:	Speed class	Brake
II3D	2	II3D Ex tc IIC T150 °C Dc X*	– Overload factor 3 × 10	Brake HIPERFACE®	2 000 3 000	Yes
II3GD	2 and 22	II3G Ex nA IIC T3 Gc X* II3D Ex tc IIC T150 °C Dc X*	– Grounding screw – IP65	Resolver	4 500	–

#### Protection type tc → Protection through housing

The motors are designed in such a way that only harmless quantities of dust can penetrate the unit (IP5X). Or they are designed in such a way that no dust can penetrate the unit under normal operating conditions (IP6X). These drives meet the requirements of zone 22, also for conductive dusts.

The motors are basically designed so that the outer surface does not exceed the specified surface temperature.

#### Protection type nA → Non-sparking design

The motors are designed and dimensioned in such a way that no hot surfaces or sparks are caused in normal operation which may ignite a mixture of gas and air according to the specified temperature class.

\* In conjunction with a matching temperature model in the inverter

## 3.2 Servomotors

### Cables and connection options



**CMP.. servomotor cable connections**

#### Motor cable/brakemotor cable

Motor type	Power connector	Cable routing	Drive electronics
CMP40 – 63	Motor: SM1 (M23)	Fixed installation or cable carrier installation	MOVIDRIVE® application inverter MOVIAXIS® multi-axis servo inverter
	Brakemotor: SB1 (M23)		
CMP71 – 100 CMPZ71 – 100	Motor: SM1 (M23) SMB (M40)		
	Brakemotor: SB1 (M23) SBB (M40)		
CMP112	Motor: SM1 (M23) SMB (M40) SMC (M58)		
	Brakemotor: SB1 (M23) SBB (M40) SBC (M58)		

#### Encoder cable

Motor type	Encoder type	Cable routing	Drive electronics
CMP40 – 112 CMPZ71 – 100	RH1M resolver	Fixed installation or cable carrier installation	MOVIDRIVE® application inverter MOVIAXIS® multi-axis servo inverter
CMP40 – 63	HIPERFACE® AK0H, EK0H, AK1H, EK1H		
CMP71 – 112 CMPZ71 – 100	HIPERFACE® AK0H, EK1H, AK1H		

**DR.. series AC motor cable connections: Direct connection**

Motor type	Encoder type	Encoder connection	Inverter connection
DR71 – DR132	EI7C, EI76, EI72, EI71	Conductor end sleeves	Conductor end sleeves MOVIDRIVE® application inverter
		M12 plug connector	
	ES7S, ES7R, AS7W, AS7Y	Conductor end sleeves	D-sub plug connector MOVIDRIVE® application inverter
		Connection cover	
DR160 – DR225	EG7S, EG7R, AG7W, AG7Y	Conductor end sleeves	
		Connection cover	
DR315	EH7S	M23 plug connectors	
	AH7Y	Conductor end sleeves	

**DR.. series AC motor cable connections: Connection via intermediate sockets**

Motor type	Encoder type	Encoder connection	Adapter plug
DR71 – DR132	ES7S, ES7R, AS7W	Conductor end sleeves	M23 plug connector (coupling)
		Connection cover	
DR160 – DR225	EG7S, EG7R, AG7W	Conductor end sleeves	
		Connection cover	

**Intermediate socket**

M23 plug connector (male connector)	Extension	M23 plug connector (coupling)
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**Intermediate socket**

Intermediate socket		Inverter connection
M23 plug connector (male connector)	Extension	D-sub plug connector MOVIDRIVE® application inverter

### 3.3. Linear motion

#### Synchronous linear servomotors



**SL2 series**

#### Features

- Suitable application areas: highly dynamic, flexible processing machines; material handling; pick and place applications
- No mechanical transmission elements and wear parts are required as linear motion and force are generated directly
- Optimized force-density ratio due to modern winding technology and laminated iron core
- Almost maintenance-free
- High control quality, dynamics and precision
- Available in three designs (SL2 Basic, SL2 Advanced System, SL2 Power System)
- Secondaries are available in various lengths and can easily be lined up

#### Product versions

Product versions	Rated power range N	Rated speed classes m/s
<b>SL2 Basic</b>	125 – 6 000	1 / 3 / 6
<b>SL2 Advanced System</b>	280 – 3 600	
<b>SL2 Power System</b>	400 – 5 500	

#### Options for linear servomotors

#### SL2 Advanced System and SL2 Power System

- The cables of the motor end have matching plug connectors
- EMC-compliant connector housing design
- Plug connectors seal the plug on the cable end with a lamellar seal and ensure strain relief in accordance with EN 61884
- Various accessories for inverter-specific prefabrication

## Standard CMS.. electric cylinders / with grease lubrication



**CMS71 series (with grease lubrication)**

03

<b>Features</b>	<ul style="list-style-type: none"> <li>– Equipped with permanent magnet rotors</li> <li>– Precise, powerful and fast</li> <li>– Combined with drive electronics from SEW-EURODRIVE, this series makes for energy-efficient drive solutions that ensure a high level of process reliability and that can be easily integrated into existing automation systems</li> </ul>
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### Electrical data

<b>Type</b>	<b>CMS71L</b>		
<b>Max. torque Nm</b>	31.4	22.1 <sup>1)</sup>	24.4 <sup>1)</sup>
<b>Standstill torque Nm</b>	9.5		

### Mechanical data

<b>Rated speed <math>n_N</math></b>	2 000 min <sup>-1</sup> 3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup>			
<b>Spindle type</b>	KGT <sup>2)</sup> 32×10	KGT <sup>2)</sup> 32×6	PGT <sup>3)</sup> 24×5	
<b>Max. continuous feed force <sup>4)</sup> N</b>	3 600	6 700	7 200	
<b>Peak feed force N</b>	17 000	20 000	15 000 20 000 <sup>5)</sup>	20 000
<b>Stroke lengths mm</b>	200	200	350	200
<b>Max. velocity mm/s</b>	500	300	200	250

<sup>1)</sup> Maximum permitted torque

<sup>2)</sup> Ball screw

<sup>3)</sup> Planetary roller screw

<sup>4)</sup> Depending on average travel speed

<sup>5)</sup> In case of tensile loads

### 3.3. Linear motion

#### Standard CMS.. electric cylinders / with oil bath lubrication



**CMSB50/63/71 series (with oil bath lubrication)**

#### Features

- Patented maintenance-free oil bath lubrication (lifetime lubrication)
- Very high thermal power density
- Very low-noise operation
- Very small working strokes possible (< 1 mm)
- Combined with drive electronics from SEW-EURODRIVE, this series makes for energy-efficient drive solutions that ensure a high level of process reliability and that can be easily integrated into existing automation systems

#### Electrical data

Type	NEW: CMSB50S	NEW: CMSB50M	NEW: CMSB50L
Max. torque Nm	5.2	7.6 <sup>1)</sup>	7.6 <sup>1)</sup>
Standstill torque Nm	1.3	2.4	3.3

#### Mechanical data

Rated speed $n_N$	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
Spindle type	KGT <sup>2)</sup> 20×5	KGT <sup>2)</sup> 20×5	KGT <sup>2)</sup> 20×5
Max. continuous feed force <sup>4)</sup> N	1 200	2 300	3 200
Peak feed force N	5 300	8 000	8 000
Stroke lengths mm	70 / 100 / 150 / 200 / 300 / 400 / 600		
Max. velocity mm/s	375	375	375

Electrical data				
Type	CMSB63S		CMSB63M	
Max. torque Nm	11.1		11.1 <sup>1)</sup>	
Standstill torque Nm	2.9		5.3	
Mechanical data				
Rated speed $n_N$	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>			
Spindle type	KGT <sup>2)</sup> 25×6	PGT <sup>3)</sup> 20×5	KGT <sup>2)</sup> 25×6	PGT <sup>3)</sup> 20×5
Max. continuous feed force <sup>4)</sup> N	2 400	2 800	4 100	5 200
Peak feed force N	10 000		10 000	
Stroke lengths mm	60 / 100 / 160 / 180 / 200 / 400 / 600	100 / 200	60 / 100 / 160 / 180 / 200 / 400 / 600	100 / 200
Max. velocity mm/s	450	375	450	375

Electrical data			
Type	CMSB71S	CMSB71M	CMSB71L
Max. torque Nm	19.2	25 <sup>4)</sup>	25 <sup>4)</sup>
Standstill torque Nm	6.4	9.4	13.1
Mechanical data			
Rated speed $n_N$	2 000 min <sup>-1</sup> 3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
Spindle type	KGT <sup>2)</sup> 32×6	KGT <sup>2)</sup> 32×6	KGT <sup>2)</sup> 32×6
Max. continuous feed force <sup>4)</sup> N	6 200	8 200	12 000
Peak feed force N	18 000	24 000	24 000
Stroke lengths mm	100 / 160 / 200 / 400 / 600 / 800 / 1 000 / 1 200		
Max. velocity mm/s	450	450	450

<sup>1)</sup> Maximum permitted torque<sup>2)</sup> Ball screw<sup>3)</sup> Planetary roller screw<sup>4)</sup> Depending on average travel speed

### 3.3. Linear motion

#### CMSM.. modular electric cylinders



**CMSMB50 – 71 series / ACH or ACA (axially serial)**

#### Features

- Separately available modular unit (linear gear unit) with the proven oil bath lubrication of the CMSB.. standard electric cylinder series
- Can be combined with the standard servomotors from SEW-EURODRIVE (CMP50/63/71) using ACH/ACA adapters

#### Technical data

Type	<b>NEW: CMSMB50 / ACH or ACA</b>	<b>CMSMB63 / ACH or ACA</b>	<b>CMSMB71 / ACH or ACA</b>
<b>Max. permitted input torque Nm</b>	7	11.1	25
<b>Max. permitted input speed min<sup>-1</sup></b>	4 500	4 500	4 500
<b>Peak feed force N</b>	8 000	10 000	24 000
<b>Stroke lengths mm</b>	70 / 100 / 150 / 200 / 300 / 400 / 600	60 / 100 / 160 / 180 / 200 / 400 / 600	100 / 160 / 200 / 400 / 600 / 800 / 1 000 / 1 200
<b>Spindle type</b>	KGT <sup>1)</sup> 20×5	KGT <sup>1)</sup> 25×6	KGT <sup>1)</sup> 32×6

<sup>1)</sup> Ball screw



**CMSMB50 – 71 series / AP (axially parallel)**

**Features**

- Compact design
- Patented maintenance-free oil bath lubrication (lifetime lubrication)
- Very high thermal power density
- Very low-noise operation
- Optional water cooling
- Use of CMP50/63/71 standard servomotors

**Electrical data**

Type	NEW: CMSMB50/AP and		
	CMP50S	CMP50M	CMP50L
<b>Max. torque Nm</b>	5.2	7.6 <sup>1)</sup>	7.6 <sup>1)</sup>
<b>Standstill torque Nm</b>	1.2	2.3	2.6

**Mechanical data**

<b>Rated speed <math>n_n</math></b>	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
<b>Spindle type</b>	KGT <sup>2)</sup> 20×5		
<b>Max. continuous feed force N</b>	1 100	2 100	2 700
<b>Peak feed force N</b>	5 300	8 000	8 000
<b>Stroke lengths mm</b>	70 / 100 / 150 / 200 / 300 / 400 / 600		
<b>Max. velocity mm/s</b>	375	375	375

<sup>1)</sup> Max. permitted torque

<sup>2)</sup> Ball screw

### 3.3. Linear motion

#### CMSM.. modular electric cylinders



**CMSMB50 – 71 series / AP (axially parallel)**

#### Electrical data

Type	CMSMB63/AP and		
	CMP63S	CMP63M	CMP63L
<b>Max. torque Nm</b>	11.1	11.1 <sup>1)</sup>	11.1 <sup>1)</sup>
<b>Standstill torque Nm</b>	2.9	5.3	7.1

#### Mechanical data

<b>Rated speed <math>n_N</math></b>	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
<b>Spindle type</b>	KGT <sup>2)</sup> 25×6		
<b>Max. continuous feed force N</b>	2 100	3 500	5 000
<b>Peak feed force N</b>	10 000	10 000	10 000
<b>Stroke lengths mm</b>	60 / 100 / 160 / 180 / 200 / 400 / 600		
<b>Max. velocity mm/s</b>	450	450	450

<sup>1)</sup> Max. permitted torque

<sup>2)</sup> Ball screw

**Electrical data**

Type	CMSMB70/AP and		
	CMP71S	CMP71M	CMP71L
<b>Max. torque Nm</b>	19.2	25 <sup>1)</sup>	25 <sup>1)</sup>
<b>Standstill torque Nm</b>	6.4	9.4	13.1

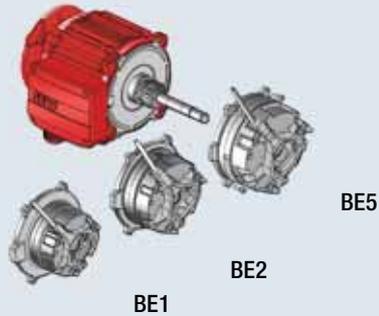
**Mechanical data**

<b>Rated speed <math>n_N</math></b>	2 000 min <sup>-1</sup> 3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
<b>Spindle type</b>	KGT <sup>2)</sup> 32×6		
<b>Max. continuous feed force N</b>	5 000	7 500	10 500
<b>Peak feed force N</b>	18 000	24 000	24 000
<b>Stroke lengths mm</b>	100 / 160 / 200 / 400 / 600 / 800 / 1 000 / 1 200		
<b>Max. velocity mm/s</b>	450	450	450

<sup>1)</sup> Max. permitted torque<sup>2)</sup> Ball screw

## 3.4 Accessories and options

### Modular brake concept



The brake of your choice –  
Extract from the brake combination options

Motor type	Brake type	$W_{insp}$ 10°J	Braking torque steps Nm								
			5	7	10	14	20	28	40	55	
...	...	...	...								
<b>DR..90</b>	BE1	120	5	7	10						
	BE2	165		7	10	14	20				
	BE5	260				14	20	28	40	55	
<b>DR..100</b>	BE2	165		7	10	14	20				
	BE5	260				14	20	28	40	55	
...	...	...	...								

#### Brake combination options

The DR.. motor can be combined with the BE brake that is ideal for your application to match its requirements for the braking torque or braking work. Moreover, brakes mounted on motors larger than size 90 have an additional special feature. The brake itself is mounted on a friction plate, which has to be attached to the end shield. This means that the unit can be removed and changed – for a bigger or smaller brake – without opening the motor.

safetyDRIVE

Functional safety



- Safety-rated BE.. brake up to PL d according to EN ISO 13849-1
- Static and dynamic brake diagnostics for MOVI-PLC® in addition to the brake



### NEW: BF../BT.. double brake for DR.. motors

#### The brake of your choice – Brake combination options

03

Motor type	Brake type	W <sub>insp</sub> 10 <sup>6</sup> J	Braking torque steps Nm									
			2×20	2×28	2×40	2×55	2×80	2×110				
DR.112/132	BF11	2×285										
	BT11	2×190										
DR.160	BF20	2×445			2×40	2×55	2×80	2×110	2×150	2×200		
	BT20	2×300										
DR.180	BF30	2×670					2×75	2×100	2×150	2×200	2×300	
	BT30	2×450										

#### Brake combination options

The DR.. motor can be combined with the BF../BT.. brake that is ideal for your application to match its requirements for the braking torque or braking work.

For design reasons, the motors with double brake from SEW-EURODRIVE are very compact.

The double brake can be used in dusty environments with or without "functional safety". An extremely low-nose BT.. design with functional safety is available to meet the requirements of entertainment technology (DIN 56950-1).

**NEW:** The BF../BT.. double brake can be equipped with the contactless DUE.. function and wear monitoring.

It constantly shows

- the current switching state or if the wear limit is reached and
- it transmits the current air gap.

**safetyDRIVE**  
Functional safety



- **NEW:** Safety-rated BF.. double brake up to PL e according to EN ISO 13849-1
- **NEW:** Safety-rated BT.. double brake up to PL e according to EN ISO 13849-1
- Static and dynamic brake diagnostics for SEW-EURODRIVE control technology (MOVI-PLC® / CCU) in addition to the brake

## 3.4 Accessories and options

### Built-in encoders



<b>Advantage</b>		<p>The available built-in encoder for the DR.. motor series that can be installed on the B-side between endshield and fan wheel are unique. With this solution the user does not have to provide for additional space as it is the case with add-on speed sensors.</p> <p>The MOVITRAC® standard inverter from SEW-EURODRIVE in combination with the "simple positioning" application module can replace applications that, up to now, have been realized with creep/rapid speed switch-over with initiator evaluation.</p>
<b>Built-in encoders</b>		EI7C, EI76, EI72, EI71
<b>Signal type</b>		HTL (push-pull)
<b>Supply voltage</b>		DC 9 – 30 V
<b>Periods per revolution</b>	<b>A, B</b>	EI7C: 24 EI76: 6 EI72: 2 EI71: 1
<b>Motor sizes</b>		<ul style="list-style-type: none"> <li>– DRS., DRE., DRL., DRK., DRM.. 71 – 132</li> <li>– DRN.: 80 – 132S</li> <li>– DRU.: 71 – 100</li> </ul>
<b>Connection</b>		<ul style="list-style-type: none"> <li>– Terminal strip in the terminal box</li> <li>– 8-pin M12 plug connector</li> <li>– 4-pin M12 plug connector</li> </ul>
<b>safetyDRIVE</b> <b>Functional safety</b> 		EI7C FS: Safety-rated built-in encoder up to PL d according to EN ISO 13849-1



**Corrosion protection (KS) and surface protection (OS)  
for all standard motors and gear units**

<b>Features</b>	To optimally protect motors and gear units that are subject to severe environmental influences, SEW-EURODRIVE offers possibilities to increase the resistance of highly stressed surfaces.
<b>KS corrosion protection</b>	Measures to increase the resistance to corrosion: – All retaining screws that are loosened during inspection or maintenance work are made of stainless steel – Nameplates are made of stainless steel and various motor parts are coated with a finishing varnish – The flange contact surfaces and shaft ends are treated with a temporary rust preventive – In addition, clamping straps are used for brakemotors
<b>OS surface protection</b>	In addition to the standard surface protection, motors and gear units are optionally available with surface protection OS1, OS2, OS3 or OS4. This makes the gearmotors well equipped for operation under various ambient conditions.

**Measures for interior treatment and standard parts**

Special interior surface coating

Rustproof nameplates

RS bearing for IP56

Special interior surface coating

NOCO® fluid, the contact corrosion inhibitor

Output shaft made of stainless steel

Optional coating at the output shaft end (in the area of the radial oil seal seat)

Brakes with pressure plate made of non-corrosive material

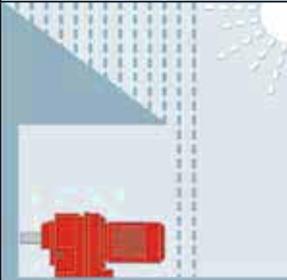
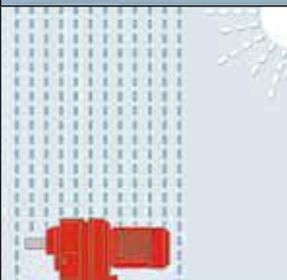
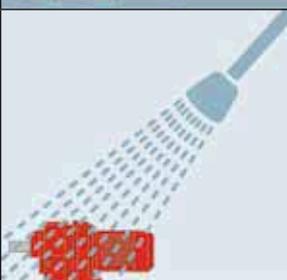
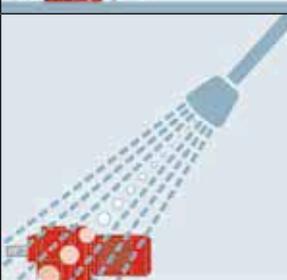
Non-corrosive retaining parts

Special interior surface coating

Rustproof breather valves

## 3.4 Accessories and options

### Surface protection (OS)

Surface protection		Ambient conditions/sample applications
<b>Standard</b>		<p>For machines and systems in buildings and rooms indoors with neutral atmospheres.</p> <ul style="list-style-type: none"> <li>– C1 (negligible)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Machines and systems in the automobile industry</li> <li>– Conveyor systems in logistics areas</li> <li>– Conveyor belts at airports</li> </ul>
<b>OS1</b>		<p>For environments prone to condensation and atmospheres with low humidity or contamination. E.g. outdoor applications under a roof or protection device.</p> <ul style="list-style-type: none"> <li>– C2 (low)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Systems in saw mills</li> <li>– Hall gates</li> <li>– Agitators and mixers</li> </ul>
<b>OS2</b>		<p>For environments with high humidity or moderate atmospheric contamination. E.g. applications outdoors subject to direct weathering.</p> <ul style="list-style-type: none"> <li>– C3 (moderate)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Applications in amusement parks</li> <li>– Funiculars and chair-lifts</li> <li>– Applications in gravel plants</li> <li>– Systems in nuclear power plants</li> </ul>
<b>OS3</b>		<p>For environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasional acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load.</p> <ul style="list-style-type: none"> <li>– C4 (high)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Sewage treatment plants</li> <li>– Port cranes</li> <li>– Mining applications</li> </ul>
<b>OS4</b>		<p>For environments with permanent humidity and severe atmospheric or chemical contamination. Regular acidic and caustic wet cleaning, also with chemical cleaning agents.</p> <ul style="list-style-type: none"> <li>– C5-I (severe)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Drives in malting plants</li> <li>– Wet areas in the beverage industry</li> <li>– Conveyor belts in the food industry</li> </ul>

Surface protection		Ambient conditions/sample applications
<b>Aseptic motors of the DAS.. series</b> Either OS2–OS4		Suitable for dry or wet hygienic areas with average atmospheric contamination. Also suitable for particularly dusty environments. <ul style="list-style-type: none"> <li>– C3 (moderate)*</li> </ul> <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Applications in clean rooms</li> <li>– Machines in the cosmetic and pharmaceutical industry</li> <li>– Systems for processing cereals and flour (without Ex protection)</li> <li>– Conveyor belts in cement plants</li> </ul>
<b>Aseptic motors of the DAS.. series with ASEPTIC<sup>plus</sup>® drive package</b> OS4		For hygienic areas in the food and beverage industry with permanent humidity, regular acidic and caustic wet cleaning using chemical cleaning agents, and cleaning with pressure load. <ul style="list-style-type: none"> <li>– C5-I (severe)*</li> </ul> <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic conveyors in the beverage industry</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– "Splash zones" in the food industry</li> </ul>
<b>High protection coating</b> HP200		For hygienic areas in the food and beverage industry with regular acidic and caustic wet cleaning. Anti-stick properties support the cleaning process even in inaccessible areas. <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic conveyors in the beverage industry</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– "Splash zones" in the food industry</li> </ul>
<b>Stainless steel gear-motor</b>		For hygienic areas in the food and beverage industry with permanent humidity and extreme acidic and caustic wet cleaning using chemical cleaning agents. <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic applications of all types</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– Food processing machines for the North American market</li> </ul>

\* In accordance with the corrosivity categories of DIN EN ISO 12944-2

## 3.4 Accessories and options

### **NEW:** Diagnostic unit option /DUE



#### **Diagnostic Unit Eddy Current**

#### **Brake diagnostics with continuous function and wear monitoring**

#### **Features**

- Ideal sensor to monitor the wear and proper functioning of the brake (BE../ BF.. / BT..)
- Measuring system for contactless monitoring of the working air gap
- The diagnostic unit option /DUE is installed completely assembled and is calibrated in the brakemotor
- DIP switches for setting the sensor size and the maximum permissible wear limit, for optimum adaptation to the application in conjunction with condition monitoring
- If the brake disk must be replaced or if the working air gap must be adjusted in case of wear, the eddy current sensor must not be recalibrated as the installation environment of the sensor does not change

#### **Advantages**

- The measuring system has two functions:
  - Monitoring the brake function and
  - Measuring the brake lining wear.
 Both is possible due to the continuous monitoring of the working air gap of the brake
- Brake lining wear can be detected in good time
- Reliable brake function monitoring
- Contactless and thus wear-free measuring system
- Evaluation directly via SEW-EURODRIVE frequency inverter with corresponding error protocol
- Can be used in damp conditions up to IP66
- Maintenance intervals can be planned individually according to wear

Motor/brake combination	DRN.. motor type	BE.. brake type
<p>The /DUE diagnostic unit is available for the tried and tested DR.. motors both with single brake or the new double brake.</p> <p>Currently, the following combinations are realized.</p>	80M, 90S, 90L, 100L, 100LS, 112M, 132S, 132M, 132L	BE1, BE2, BE5, BE11
	132M, 132L, 160M, 160L, 180M, 180L	BE20
	160M, 160L, 180M, 180L, 200L, 225S, 225M,	BE30, BE32
	200L, 225S, 225M, 250M, 250ME, 280S, 280M	BE60, BE62
	250M, 250ME, 280S, 280M, 315S, 315M, 315ME, 315L, 315H	BE120, BE122

#### Technical data

Evaluation unit		DUE-1K-00 for BE.. brake	DUE-2K-00 for BF../BT.. brake
Signal outputs (2 channels)		BE.. brake Out1: 4 – 20 mA FCT1: DC 24 V (150 mA) WEAR1: DC 24 V (150 mA)	Partial brake 1 for BF../BT.. brake Out1: 4 – 20 mA FCT1: DC 24 V (150 mA) WEAR1: DC 24 V (150 mA)  Partial brake 2 for BF../BT.. brake Out2: 4 – 20 mA FCT2: DC 24 V (150 mA) WEAR2: DC 24 V (150 mA)
Current consumption	Max. mA	190	360
	Min. mA	40	80
Supply voltage		DC 24 V ( $\pm$ 15%)	
Electromagnetic compatibility		DIN EN 61800-3	
Operating temperature range of the evaluation unit		-40 to +105 °C	
Humidity		$\leq$ 90% relative humidity	
Degree of protection		IP20 (in the closed terminal box max. IP66)	
Sensors		DUE-d6-00	DUE-d8-00
Degree of protection		IP66	
Operating temperature range of sensor and cable		-50 to +150 °C	

## 04

# INDUSTRIAL GEAR UNITS

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## 4.3 Planetary gear units

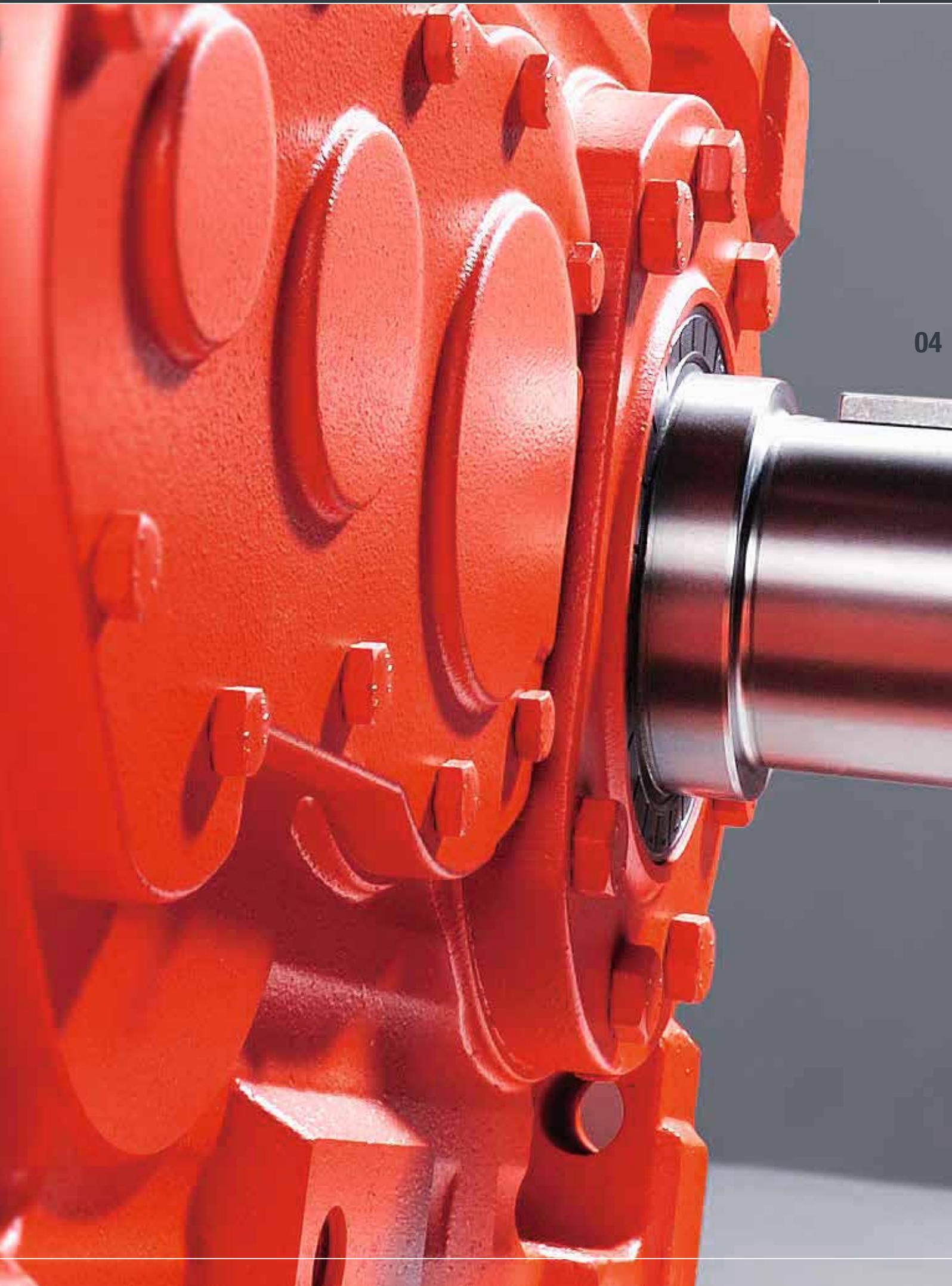
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## 4.5 Explosion-proof industrial gear units

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## 4.1 Helical gear units / bevel-helical gear units

### X series



#### Features

- Independent industrial gear unit platform with 23 sizes
- Single-piece or split gear unit housings
- Invertible gear unit housings
- Universal mounting positions
- Distinctive modular concept technology
- Diverse predefined optional equipment and options
- Customer-specific adaptations
- Areas of application: conveyor systems in various industries, mixers, and agitators, etc.

#### Advantages

- Reduced costs and weight due to high power density and finely stepped sizes
- Extremely robust gear unit housing
- Effective cooling systems
- Flexible mounting options

Gear unit design	Stages	Gear ratio $i$	Nominal torque $M_{N2}$ kNm
Helical gear units X.F	2, 3 and 4 stages	6.3 – 450	6.8 – 475
Bevel-helical gear unit X.K	2, 3 and 4 stages	6.3 – 450	6.8 – 475 <sup>1)</sup>
Bevel-helical gear units X.T	3 and 4 stages	12.5 – 450	6.8 – 175

<sup>1)</sup> 2 stages:  $M_{N2} = 6.8$  to 175 kNm

A project-specific solution can be offered on request for the torque range from 475 to 1 200 kNm. Please contact your local sales representative.

## X series – conveyor drives

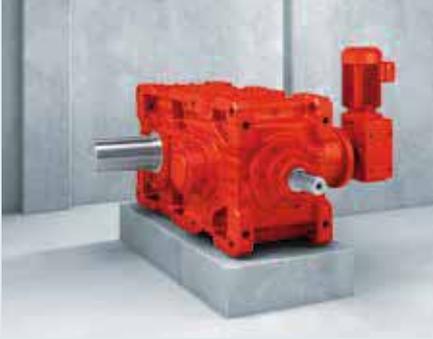


04

<b>Features</b>	<ul style="list-style-type: none"> <li>– Gear unit consists of the tried and tested components of the X series</li> <li>– Three-stage helical-bevel gear unit with increased housing surface area for improved heat dissipation</li> <li>– Increased cooling capacity due to efficient fan concept</li> <li>– Comprehensive range of accessories of the X series</li> <li>– Versatile shaft concepts</li> <li>– Taconite sealing system</li> <li>– Pressure lubrication and splash lubrication available</li> <li>– Also available in ATEX design</li> <li>– Standard backstop; optional torque-limited backstop</li> <li>– Available as a complete package, e.g. including brake, swing bases, rigid flange coupling, condition monitoring, etc.</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Efficient cooling concept eliminates the need for external cooling units and a larger gear unit</li> <li>– Reliability especially in harsh environments</li> <li>– Simplified maintenance – Two-piece housings</li> </ul>		
<b>Gear unit design</b>	<b>Stages</b>	<b>Gear ratio <math>i</math></b>	<b>Nominal torque <math>M_{N2}</math> kNm</b>
<b>Bevel-helical gear units X3K../HT/B</b>	3 stages	12.5 – 90	58 – 475

## 4.1 Helical gear units / bevel-helical gear units

### X series



**X series – bucket elevator drives**

#### Features

- 19 sizes
- Based on the X series with the successful gearmotor from SEW-EURODRIVE as auxiliary drive
- Auxiliary drive adapter with overrunning clutch and incremental encoder
- Mounted backstop
- Areas of application: conveyor systems in the most various industries, in particular for bucket elevators in bulk material handling applications

#### Advantages

- All drive components are perfectly matched
- Reliability thanks to speed monitoring
- High availability thanks to modular concept
- Extensive optional equipment available on request

Gear unit design	Stages	Gear ratio <i>i</i>	Nominal torque $M_{N2}$ kNm
Bevel-helical gear units X3K.B..	3 stages	28 – 80	6.8 – 270



### X series – agitator drives

<b>Features</b>	<ul style="list-style-type: none"> <li>– 8 sizes – gear unit consists of the tried and tested components of the X series</li> <li>– Application-specific rolling bearing concept for absorbing external forces and bending moments</li> <li>– Three-stage helical gear unit design with special vertical housing for optimized heat dissipation</li> <li>– Modular helical and bevel-helical gear unit design based on the universal housing of the X series can be used universally</li> <li>– Foot-mounted and flange-mounted designs available</li> <li>– Efficient sealing system including drywell seal</li> <li>– Available with pressure lubrication or oil bath lubrication</li> <li>– Also available in ATEX design</li> <li>– Areas of application: agitators, surface aerators, flotation cells, etc.</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Gear unit housing is perfectly designed for agitator applications</li> <li>– High availability due to modular and widely used X series</li> <li>– Consumption of high loads directly on the gear shaft possible. The systematical use of additional rolling bearings in the application is not necessary.</li> </ul>		
<b>Gear unit design</b>	<b>Stages</b>	<b>Gear ratio <math>i</math></b>	<b>Nominal torque <math>M_{N2}</math> kNm</b>
<b>Helical gear units with vertical housing</b>	3 stages	20 – 100	22 – 90
<b>Helical and bevel-helical gear units with universal housing</b>	2 to 4 stages	6.3 – 450	22 – 90

## 4.1 Helical gear units / bevel-helical gear units

### NEW: X series – hoist drives



#### Features

- 11 gear unit sizes with extended center distances
- Application-specific single-piece housing
- Optimized gearings
- Standardized brake console for mounting to the gear unit housing
- Designs with foot or torque arm available
- Solid shaft or hollow shaft available
- Optional reinforced shaft with spherical roller bearing, suited for high radial loads and for using a flange coupling
- Splash lubrication
- Oil dipstick, oil drain valve, etc.
- Areas of application: process cranes, port cranes, etc.

#### Advantages

- Gear unit housing is perfectly designed for hoist applications
- Gear unit selection with exact load spectrum calculations
- "U"-shaped gear unit arrangement makes many motor and rope drum combinations possible as the center distances are enlarged

#### Gear unit design

	Stages	Gear ratio $i$	Nominal torque $M_{N2}$ kNm
Helical gear units	3 to 4 stages	14 – 250	12.8 – 112

## MC series



04

<b>Features</b>	<ul style="list-style-type: none"> <li>– Independent industrial gear unit series with 8 sizes</li> <li>– Modular concept</li> <li>– Special solutions can be realized</li> <li>– Block housing without parting line</li> <li>– Universal mounting positions</li> <li>– All commercially available connection elements are possible at input and output side</li> <li>– EBD concept with predefined output bearing types depending on the requirement profile and application</li> <li>– Optional variable flange geometries and "Drywell" design</li> <li>– Areas of application: conveyor systems in various industries, mixers, agitators, shredders and crushers, etc.</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– High power density</li> <li>– Sturdy unit due to block housing</li> </ul>		
<b>Gear unit design</b>	<b>Stages</b>	<b>Gear ratio <math>i</math></b>	<b>Nominal torque <math>M_{N2}</math> kNm</b>
<b>Helical gear units MC.P..</b>	2 and 3 stages	7.1 – 112	6 – 65
<b>Bevel-helical gear units MC.R..</b>	2 and 3 stages	7.1 – 112	6 – 65

## 4.1 Helical gear units / bevel-helical gear units

### MACC series



#### Features

- 5 sizes
- Improved extended housing for motor
- Drywell
- Shaft end pump for pressure lubrication
- Cooling fan
- Backstop, internal design
- Areas of application:  
this gear unit series is tailored for use in air-cooled condensers
- Optional:
  - On request: special gear ratio
  - Explosion protection

#### Advantages

- Optimized thermal rating
- High degree of housing stiffness
- High permitted axial load on output shafts
- Reliable surface treatment for use under aggressive ambient conditions

Gear unit design MACC series	H	W	L	Gear ratio <i>i</i>	Nominal torque $M_{N2}$ kNm
05	484	480	897	9 – 25	21
06	516	530	992		28
07	540	570	1 055		37
08	585.5	716	1 187		51
09	606	730	1 267		66

## M1N series



04

### Features

- 11 sizes
- Foot-mounted helical gear units
- Oil heater available
- Sealing system also for harsh conditions
- Cooling with fan or cooling coil
- Rigid housing design for thermal efficiency and stability
- Optional accessories available
- Areas of application: pump drives or rollers and refiners in the paper industry

### Advantages

- Very easy maintenance due to horizontally split housing design
- Optimized thermal rating
- Gear unit for smaller gear ratios for increased energy efficiency and cost-effectiveness in many applications

Gear unit design	Stages	Gear ratio $i$	Nominal torque $M_{N2}$ kNm
Helical gear units M1N	1 stage	1.25 – 7.1	4.5 – 168

## 4.1 Helical gear units / bevel-helical gear units

### ML series



<b>Features</b>	<ul style="list-style-type: none"> <li>– 5 sizes</li> <li>– Housing in welded construction with parting line</li> <li>– Horizontal mounting position</li> <li>– Areas of application: hoists in crane construction, mill drives in raw material processing, special machines and stand-alone machines, etc.</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Flexible due to the welded construction of the housing</li> <li>– Service friendly due to the parting line</li> </ul>		
<b>Gear unit design</b>	<b>Stages</b>	<b>Gear ratio <i>i</i></b>	<b>Nominal torque <math>M_{N2}</math> kNm</b>
<b>Helical gear units ML.P.</b>	2, 3 and 4 stages	5.6 – 315	180 – 680
<b>Bevel-helical gear units ML.R.</b>	3, 4 and 5 stages	14 – 1 250	180 – 680

## 4.2 Planetary gearmotors

### P series



04

#### Features

- 11 sizes
- Transmission of high torques for powerful movement of large quantities  
**NEW:** with torque increase
- **NEW:** standardized output shaft variants:
  - Solid shaft with splined connection
  - Hollow shaft with splined connection
  - Smooth solid shaft
- Particularly compact design for limited space
- High permitted radial loads
- Primary gear units in helical and bevel-helical version can be combined with the planetary gear unit
- Areas of application: construction materials industry, cement industry, process engineering, steel industry, materials handling, and waste water industry

#### Advantages

- Perfectly matched units (gear unit and motor)
- Large range of options due to the SEW-EURODRIVE modular concept
- Short, compact design as there is no need for couplings and adapter flanges
- Standardized units for ideal cost/benefit ratio and short delivery times
- High gear ratios possible

Gear unit design	Stages	Gear ratio $i$	Nominal torque $M_{N2}$ kNm
Helical planetary gear units (garmotors) P.RF..	4 and 5 stages	100 – 4 000	24 – 630
Bevel-helical planetary gear units (garmotors) P.KF..	5 stages	140 – 4 000	24 – 630

## 4.3 Planetary gear units

### NEW: P-X series



<b>Features</b>	<ul style="list-style-type: none"> <li>– <b>NEW:</b> 11 sizes</li> <li>– <b>NEW:</b> extended gear ratio range from <math>i = 28</math></li> <li>– High transmittable torque and very compact design</li> <li>– Weight-optimized drive</li> <li>– High permitted radial load at the output</li> <li>– Invertible housing</li> <li>– High thermal rating</li> <li>– Shared oil chamber</li> <li>– Areas of application: apron feeders, bucket-wheel reclaimers, boom drives, chip board plants</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Sealing systems and lubrication variants are available to suit specific applications</li> <li>– Reduced space and weight due to the use of a motor scoop or adapter</li> <li>– Reduced costs as no replacement gear unit is needed (invertible housing)</li> <li>– Can be used at very low temperatures</li> </ul>		
<b>Gear unit design</b>	<b>Stages</b>	<b>Gear ratio <math>i</math></b>	<b>Nominal torque <math>M_{N2}</math> kNm</b>
<b>NEW: Bevel planetary gear units P-X1KP</b>	3 stages	28 – 140*	25 – 500*
<b>Bevel-helical planetary gear units P-X2KP</b>	4 stages	160 – 550*	100 – 500*

\* For gear ratios outside this range, contact your local sales representative

**NEW:** XP series

04

**Features**

- 13 sizes
- Transmission of high torques
- Suitable for high motor power
- High power density
- **NEW:** Bevel preliminary stage
- **NEW:** Helical preliminary stage
- Different coupling variants
- Various mounting positions
- Can be combined with primary gear unit
- Areas of application: materials handling, raw material processing, food industry, sugar industry, paper industry, raw material extraction

**Advantages**

- Maximum flexibility makes for customized solutions
- Gear ratio according to customer request
- Wide range of equipment options

<b>Gear unit design</b>	<b>Stages</b>	<b>Gear ratio <math>i</math></b>	<b>Nominal torque <math>M_{N2}</math> kNm</b>
<b>Planetary gear units XP.P</b>	2 and 3 stages	20 – 3 000 *	600 – 5 200
<b>NEW: Bevel-planetary gear units XP.K</b>	4 stages	180 – 1 200	600 – 5 200
<b>NEW: Helical-planetary gear units XP.F</b>	3 stages	45 – 80	600 – 5 200

\* In combination with primary gear units from the modular system for standard gear units of SEW-EURODRIVE

We offer tailor-made project solutions on request.

## 4.4 Segmented girth gears

### NEW: Segmented girth gears



**Segmented girth gears**

#### Features

- Girth gear pitch diameter up to about 16 m\*
- Maximum width 600 mm
- Maximum power 4 000 kW per pinion
- Maximum pitch line velocity 6 m/s
- Girth gear module 20, 25, 30, and 40 mm
- Calculated according to ISO standard 6336 (AGMA on request)

#### Advantages

Highly segmented girth gears, segments

##### 1. Easy casting

The design of the feeders and the use of heat sinks guarantee a seamless casting quality even with critical segments

##### 2. Convenient handling

- The handling of the individual segments and component groups is simplified both in the factory and at the construction site
- No need for special transportation arrangements: segmented girth gears can be transported in standard containers

##### 3. Optimized quality assurance

- The minimized size brings also cost advantages when it comes to the scrapping of blanks
- Flawless blanks can be used without additional welding or oversizing

##### 4. Precise pitch accuracy

- The segmented girth gears from SEW-EURODRIVE guarantee the initial pitch accuracy of ISO 8 (AGMA 9)
- Because of the high pitch accuracy, the vibrations of the girth gears are kept to a minimum

##### 5. Easy replacement

If a segment is damaged, it can be exchanged without dismantling the whole ring

##### 6. Reduced weight

- ADI\*\* has an over-average contact fatigue strength due to its cold work hardening properties
- These properties combined with an appropriate girth gear size enable a compact and lighter design compared to the traditional solution
- The low weight is important for the handling and the assembly of the girth gear as well as the achievable circumferential velocity

##### 7. Increased service life

With the correct dimensioning, load and lubrication, an ADI\*\* girth gear is nearly wear-free

##### 8. Shorter delivery time

The small segments allow for fast production and short delivery times

\* Larger diameters are possible. Contact SEW-EURODRIVE.

\*\* Austempered ductile iron



### Project planning

Thanks to their remarkable material properties, girth gears made of ADI\*\* can have less than half the weight of girth gears made of conventional materials that offer the same performance and safety. Project planning for girth gears by SEW-EURODRIVE is therefore an important requirement for creating customer benefits. The high degree of segmentation ensures that individual customer requirements can be met in an ideal way.

### Applications

Example: mill / application size examples

- Power rating: up to approx. 15 MW
- Diameter: up to approx. 16 m
- Assembly: flange
- Speed of rotation: high (10 to 20 min<sup>-1</sup>)

Example: rotary kiln / application size examples

- Power rating: up to approx. 1 MW
- Diameter: up to approx. 9 m
- Assembly: leaf springs
- Speed of rotation: low (1 to 2 min<sup>-1</sup>)

### Possible scope of delivery

- Segmented girth gears
- Drive pinion and, if required, pedestal bearing
- Fastening parts for the girth gear: mounting springs or mounting flange
- Main gear unit
- Motors
- Auxiliary drives
- Lubrication system
- Foundation or base frame
- Couplings and covers
- Condition monitoring
- Installation as well as startup of the whole drive system

## 4.5 Explosion-proof industrial gear units

### Explosion-proof industrial gear units



#### Explosion protection according to ATEX

#### ATEX designs of industrial gear units

- X series
- X series – agitator drives
- MC series
- P series
- P-X series
- M1N series

**Gear units comply with Directive 2014/34/EU (ATEX), equipment group II, categories 2G, 2D, 3G or 3D for use in zones 1, 2, 21 or 22. The X series is also available for equipment group I, category M2.**

- For use on the European market
- Accepted in China
- Accepted in Russia in conjunction with EAC certificates (successor to GOST-R)

#### Protection types

- Protection type "c": Protected by safe construction (design safety), EN 13463-1 and -5
- Protection type "k": Protected by liquid immersion, EN 13463-1 and -8



## 05

# DECENTRALIZED DRIVES / MECHATRONICS

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- Binary	206
- With AS-Interface	207
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<b>NEW:</b> Option "external braking resistor" mounting kit for MOVIGEAR® and DRC.. electronic motors	210
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## 5.3 Gearmotor with motor starter

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## 5.5 ECDriveS® drive system

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## 5.1 Gearmotors with inverter MOVIMOT®

### Gearmotor with inverter



MOVIMOT®

Speed range min <sup>-1</sup>	Voltage V	Connection	Power kW	Torque Nm	Motor type
280 – 1 400 (1 700) 300 – 1 500	3 x 380 – 500	λ	0.37 – 4.0	2.52 – 27.3 2.35 – 25.5	DRS., DRE., DRN.. DRE..J, DRU..J
290 – 2 900 300 – 2 610	3 x 380 – 500	△	0.55 – 4.0 0.37 – 4.0	1.81 – 13.2 1.35 – 14.6	DRS., DRE., DRN.. DRE..J, DRU..J
280 – 1 700	3 x 200 – 240	λ λ	0.37 – 2.2	2.08 – 12.4	DRE., DRS..
<b>Features</b>		<ul style="list-style-type: none"> <li>– The product of success in decentralized drive technology: an ingenious combination of a gearmotor and an integrated digital frequency inverter</li> <li>– Available in all standard gearmotor variants and mounting positions, with or without brake</li> <li>– MOVIMOT® of the D series can be combined with our DR.. motors series with various efficiency levels as standard:               <ul style="list-style-type: none"> <li>- with DRU.. motors = IE4 Super Premium Efficiency</li> <li>- with DRN.. motors = IE3 Premium Efficiency</li> <li>- with DRE.. motors = IE2 High Efficiency</li> </ul> </li> </ul> <p>In combination with the DRE.., DRN.., and DRU.. motor series, MOVIMOT® complies with the highest efficiency class IES2 for drive systems according to EN 50598-2.</p>			
<b>Degrees of protection</b>		IP54, optionally IP55, IP65 or IP66			
<b>Ambient temperature</b>		–30 °C/–20 °C to +40 °C (depending on motor design)			
<b>Control via binary signals</b>		Inputs for CW/stop, CCW/stop, setpoint changeover, potential-free signal relay, fixed setpoints, acceleration and deceleration ramps			
<b>Control via fieldbus communication</b>		<p>In combination with fieldbus interfaces with and without minicontroller PROFIBUS, INTERBUS, EtherNet/IP™, DeviceNet™, AS-Interface, PROFINET IO and <b>NEW</b> SBus<sup>PLUS</sup>/EtherCAT® (see page 196)</p> <p>Startup modes: Easy, Expert and Central via PLC</p>			

<b>Use in stand-alone applications</b>	In combination with the following options: <ul style="list-style-type: none"> <li>– MLU..A: Local DC 24 V supply</li> <li>– MLG.1A: Local setpoint adjuster with DC 24 V supply</li> <li>– MBG11A: Setpoint adjuster for setting and displaying the setpoint frequency</li> <li>– MWA21A: Setpoint converter for interfacing analog setpoints (0 – 10 V, 0 – 20 mA, 4 – 20 mA) to RS485</li> </ul>			
<b>Use in decentralized installation</b>	In combination with the field distributors: <ul style="list-style-type: none"> <li>– MF.../Z.3.</li> <li>– MF.../Z.6.</li> <li>– MF.../.../Z.7.</li> <li>– MF.../.../Z.8.</li> <li>– MF.../.../Z.9.</li> <li>– And associated hybrid cables</li> </ul>			
<b>Diagnostics</b>	3-color LED to indicate operating and fault states via diagnostic interface, serial interface RS485 and MDG11A option or PC			
<b>Approval</b>	IEC or 			
	In combination with the DRE.. motor type (IE2), MOVIMOT® already meets the requirements of the highest system efficiency class IES2 for a drive system (PDS: Power Drive System) according to EN 50598-2. However, MOVIMOT® is also available with IE3 and IE4 motors.			
<b>safetyDRIVE</b> <b>Functional safety</b>	With the optional safety package, you can realize the following requirements: <ul style="list-style-type: none"> <li>– Performance level d according to EN ISO 13849-1</li> <li>– SIL 2 according to IEC 61 800-5-2</li> </ul> Safety function: Safe Torque Off (STO), optional with safety function STO (Safe Torque Off) up to PL d according to EN ISO 13849-1			
<b>Features of MOVIMOT® in category 3D</b> 	<ul style="list-style-type: none"> <li>– Design: with EDR.. motors and an integrated frequency inverter</li> <li>– Specifically for use in potentially explosive dust/air mixtures</li> <li>– Power range from 0.25 to 3.0 kW, with and without brake for connection voltages of 400 to 500 V</li> </ul>			
Nominal speed min <sup>-1</sup>	Voltage V	Connection	Power rating kW	Torque Nm
1 400	3× 400 – 500	λ	0.25 – 3.0	1.7 – 20.5
2 900	3× 400 – 500	△	0.37 – 3.0	1.2 – 9.9

## 5.1 Gearmotors with inverter MOVIMOT®

### MOVIMOT® communication option with AS-Interface



#### Simple and cost-effective fieldbus connection



#### Features

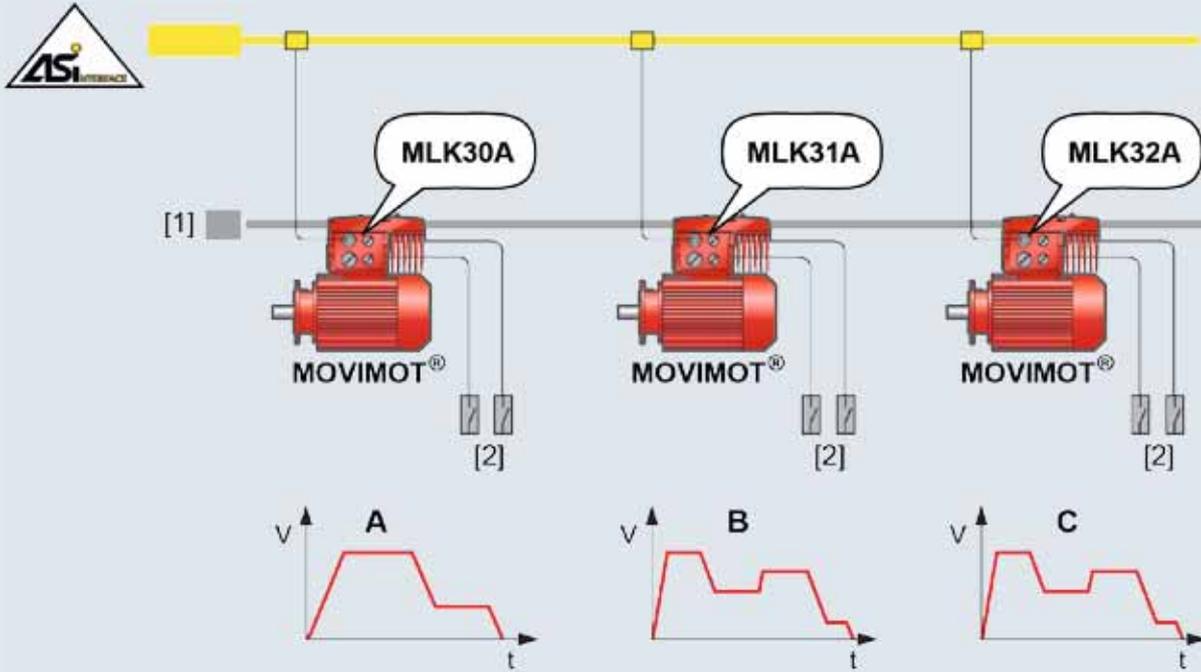
- MLK30A binary slave
  - The AS-Interface slave works like a module with 4 inputs and 4 outputs
  - Max. 31 AS-Interface stations
- MLK31A double slave
  - Double slave according to the AS-Interface specification 3.0
  - Several speed setpoints and ramps
  - Parameterizable via AS-Interface: Reading and writing of MOVIMOT® parameters and display values
  - Max. 31 AS-Interface stations
- **NEW:** MLK32A binary slave
  - Slave according to the AS-Interface specification 3.0
  - Several speed setpoints and ramps
  - Max. 62 AS-Interface stations
  - Optional with safety function STO (Safe Torque Off) up to PL d according to EN ISO 13849-1
- 2 sensor inputs connected directly via the AS-Interface nodes (for all MLK types)

#### Application options

- Simple fieldbus connection
- For applications that require soft startup behavior
- Signal feedback of connected sensors
- For applications that require a lot of space
- Individual parameter access in conjunction with MLK31 directly via AS-Interface

#### Application examples

- Roller conveyors
- Pallet conveyors
- Accumulating roller conveyors
- Rotary tables



05

[1] Supply system

[2] Sensors

A MOVIMOT® drive with MLK30A

B MOVIMOT® drive with MLK31A

(Several speed setpoints and ramps, parameterizable via AS-Interface, max. 31 AS-Interface stations)

C MOVIMOT® drive with MLK32A

(Several speed setpoints and ramps, max. 62 AS-Interface stations, STO optional)

## 5.1 Gearmotors with inverter MOVIMOT®

### Fieldbus interfaces, field distributors and cable systems



#### MF.. and MQ.. fieldbus interfaces



MFE52 fieldbus interface for PROFINET IO

#### Features

- Connection of MOVIMOT® and MOVI-SWITCH® drives to the standardized fieldbus systems PROFIBUS, INTERBUS, DeviceNet™, AS-Interface, PROFINET IO, SBus<sup>PLUS</sup>/EtherCAT® and **NEW** Ethernet/IP™
- Fieldbus interfaces are based on a module terminal box with connecting terminals and a pluggable fieldbus module; these fieldbus interfaces can be mounted directly on the drive, in the field, or in the field distributor
- The adjustable-speed MOVIMOT® drive is connected to the bus using terminals; additional sensors, actuators or MOVI-SWITCH® gearmotors without control can be connected to the bus using terminals or M12 plugs depending on the design
- Easy fault diagnostics via bus in the event of a malfunction by means of diagnostic interfaces and LED signals
- Reading sensor signals
- Controlling actuators via digital input and output terminals
- Degree of protection IP65
- Option package: degree of protection IP66, stainless steel cable glands, pressure compensation fitting, M12 metal plug for fieldbus modules with M12 plug connectors

In addition, optionally integrated controller with the following functions:

- Programmable via IPOS<sup>plus</sup>®
- Simple positioning with EI76 incremental encoder
- Integrated I/O preprocessing and timing elements
- Protocol modification

#### Options for MF../MQ.. fieldbus interfaces

- The **MFG11A keypad** is plugged on any MFZ.. connection module instead of a fieldbus interface for manually controlling a MOVIMOT® drive
- **DBG60B keypad** for manually controlling MOVIMOT® drives; additionally, the process data words can be displayed in monitor mode; direct connection to the diagnostic interface of MOVIMOT® or the MF../MQ.. fieldbus interface

#### Hybrid cables

- Cables that combine energy transfer, control voltage, and communication in one cable sheath (SEW-EURODRIVE in-house development) ensure optimum EMC shielding and impedances
- The hybrid cable for connecting MOVIMOT® to field distributors combines the communication interface and supply and control voltage connections in one cable and is supplied as a pre-fabricated cable with plug connection
- MOVIMOT® drives with connected hybrid cable can be connected to the field distributor in a matter of seconds and are ready for operation
- Simple handling in case of service: The connector can be disconnected without any danger, the drive can be replaced and the new drive re-connected quickly
- Ideal for all systems with high demands on availability



### NEW: Z.9 field distributors with PROFINET communication

Fieldbus/inverter assignment: = 1:3

#### Features

Z.9 field distributor with MFE52B fieldbus module for PROFINET IO

- For three MOVIMOT® inverters 0.37 kW – 1.5 kW
- Star or delta connection switchable
- Pluggable motor connection (length 15 m)
- Optional internal braking resistor
- Optional maintenance switch (with or without feedback)

#### Gearmotors in various designs

- Motor power ratings 0.37 kW – 1.5 kW
- Optional brake
- Optional temperature switch (TH)

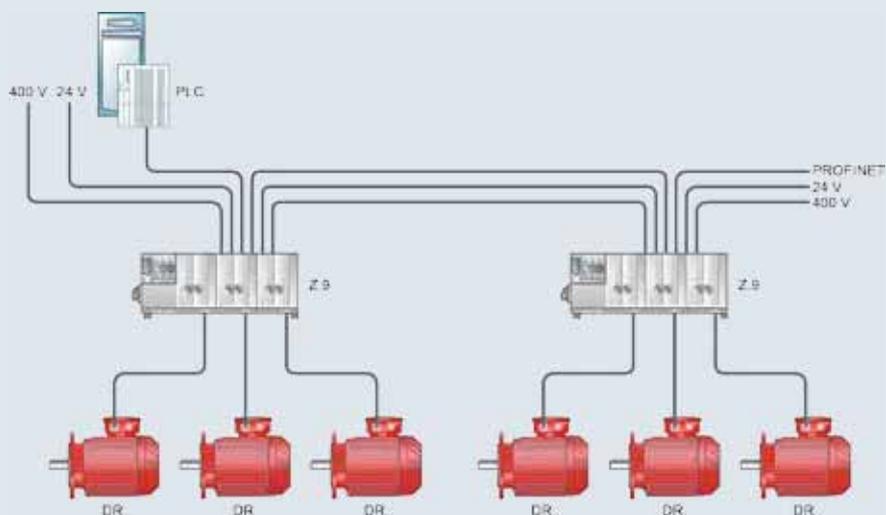
#### Fieldbus/inverter assignment: = 1:3

- One communication module for three drives
- 24 V / 400 V parallel and daisy chain wiring
- 6 DI allow for 2 initiators per axis

#### Application examples

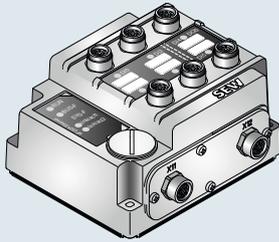
Conveying various loads

- Start/stop and speed adjustments via bus
- Non-time-critical movement without positioning accuracy
- 1 to 2 initiators per conveyor unit



## 5.1 Gearmotors with inverter MOVIMOT®

Fieldbus interfaces, field distributors and cable systems



**MFE62A EtherNet/IP™ fieldbus interface**

### Features

- Connection of MOVIMOT® drives to an Ethernet/IP™ fieldbus system
- Compatible with all existing SEW-EURODRIVE field distributors
- Reading-in of sensor signals via M12 plug connectors
- Control of actuators via M12 plug connectors
- Configurable I/Os (4I/2O or 6I/0O)
- Ideal for retrofitting DeviceNet™ systems
- Supports the DLR redundancy protocol
- Degree of protection IP65

### Seamless networking

- MFE62A allows for easy and economical connectivity between decentralized drives and EtherNet/IP™ masters
- Flexibly adjustable process data configuration



### MFE72A SBus<sup>PLUS</sup> / EtherCAT<sup>®</sup> fieldbus interface

<b>Features</b>	<ul style="list-style-type: none"> <li>– Connection of MOVIMOT<sup>®</sup> drives to an SBus<sup>PLUS</sup> / EtherCAT<sup>®</sup> fieldbus system</li> <li>– Compatible with all existing SEW-EURODRIVE field distributors</li> <li>– Reading-in of sensor signals via M12 plug connectors</li> <li>– Control of actuators via M12 plug connectors</li> <li>– IO update cycle <math>\geq</math> 1 ms</li> <li>– Selectable number of process data (4PD/10PD)</li> <li>– Degree of protection IP65</li> </ul>
<b>Seamless networking</b>	<ul style="list-style-type: none"> <li>– The MFE72A fieldbus interface enables simple and efficient communication between decentralized drives and SBus<sup>PLUS</sup>/EtherCAT<sup>®</sup> masters</li> <li>– Added value due to flexible additional functions such as encoder evaluation and counting input for fast pulse trains</li> </ul>
<b>Integrated additional functions</b>	<ul style="list-style-type: none"> <li>– Integrated encoder evaluation for master-based simple positioning</li> <li>– Compatible with built-in encoder EI7C from SEW-EURODRIVE</li> <li>– Counting input for fast pulse trains, e.g. for product identification using a light barrier</li> </ul>

## 5.2 Energy-efficient mechatronic drives

### DRC.. electronic motors



#### Features / advantages

- Combination of a permanent-field synchronous motor with integrated drive electronics in a completely enclosed housing
- High gear unit flexibility thanks to variable combinations with modular gear unit system of SEW-EURODRIVE
- A completely new mechatronic drive system is generated together with a helical-bevel, helical or parallel-shaft helical gear unit
- The optimized system efficiency offers an energy saving potential of up to 50% and thus a reduction of the TCO due to innovative technology:
  - Permanent-field synchronous motor instead of asynchronous motor
  - Motor efficiency higher than efficiency class IE4 (Super Premium Efficiency) of IEC 60034
  - Surpasses the highest defined energy efficiency class IES2 according to EN 50598-2 for the system made of motor and electronics
  - Electronics integrated into the motor for optimal functionality and minimal losses
  - Optimized electronic components and intelligent control modes
- Overload capacity of up to 250% for high breakaway and acceleration torques prevent oversizing in static operation and reduces the installed system power
- Universal application due to large control range of 1:2000
- Positioning capability on integrated feedback system
- High degree of protection
- Worldwide use due to the large input voltage and frequency range as well as the compliance with all worldwide energy efficiency regulations
- The systematic development of all components ensures high reliability and a long service life, resulting in a high system availability
- Monitoring functions and maintenance are supported
- Quick and simple installation
- Detailed diagnostic options
- Installation topology with SEW-EURODRIVE controller:
  - SNI: Only one cable for power supply and communication; installation effort reduced by up to 60%
  - SBus: for applications with high performance demands
- Installation topology binary or AS-Interface for easy drive functions

#### safetyDRIVE Functional safety

- Integrated functional safety:  
Safe Torque Off (STO) up to PL e according to EN ISO 13849-1

<b>Application options</b>	Perfectly suitable for many industries such as beverages and food, automotive and pharmaceutical industry but also airport logistics, intralogistics in general or construction industry.
<b>Application examples</b>	<ul style="list-style-type: none"> <li>– Inclining tracks and hoists</li> <li>– Belt, chain or roller conveyors</li> <li>– Pallet conveyors and palletizers</li> <li>– Rollover machines</li> <li>– Roller conveyors or ascending conveyors</li> <li>– Areas in front of a machine</li> <li>– Drives for positioning and synchronous operation</li> </ul>
<b>DRC.. performance classes and designs</b> 	<ul style="list-style-type: none"> <li>– DRC..1 with 2.6 Nm nominal torque (power rating 0.55 kW)</li> <li>– DRC..2 with 7.2 Nm nominal torque (power rating 1.5 kW)</li> <li>– DRC..3 with 14.3 Nm nominal torque (power rating 3 kW)</li> <li>– DRC..4 with 19.1 Nm nominal torque (power rating 4 kW)</li> </ul> <p>Speed setting range and positioning performance:</p> <ul style="list-style-type: none"> <li>– Standard control range 1:2000</li> <li>– Single-turn encoder /ECR</li> <li>– Multi-turn absolute encoder /ACR</li> </ul>
<b>Gear unit flexibility</b>	<ul style="list-style-type: none"> <li>– Standard flanges for combination with 7-series gear units from SEW-EURODRIVE</li> <li>– Stand-alone motors with IEC flange</li> </ul>
<b>Application options</b> DRC.. electronic motor with optional digital inputs and outputs 	<ul style="list-style-type: none"> <li>– Reading and processing of digital and analog sensor signals decentralized and close to the drive via GIO12B and GIO13B application options</li> <li>– Fast response to changes of the sensor state due to decentralized processing and response</li> <li>– Reduced effort for cabling and installation</li> </ul> <p><b>GIO12B application option</b></p> <ul style="list-style-type: none"> <li>– 4 digital inputs</li> <li>– 2 digital outputs for actuator control</li> </ul> <p><b>GIO13B application option</b></p> <ul style="list-style-type: none"> <li>– 4 digital inputs (of which 2 can be used as primary frequency inputs)</li> <li>– 1 digital output</li> <li>– 1 analog input</li> <li>– 1 analog output</li> </ul>

## 5.2 Energy-efficient mechatronic drives IE4

### MOVIGEAR®



#### Features / advantages

- Completely integrated, compact design: permanent magnet motor, gear unit and electronics are combined in a single mechatronic drive system
- The optimized system efficiency offers an energy saving potential of up to 50% and thus a reduction of the TCO due to innovative technology:
  - Permanent-field synchronous motor instead of asynchronous motor
  - Motor efficiency higher than efficiency class IE4 (Super Premium Efficiency) of IEC 60034
  - Surpasses the highest defined energy efficiency class IES2 according to EN 50598-2 for the system made of motor and electronics
  - Helical gearing for extremely compact design and highest efficiency
  - Electronics integrated into the motor for optimal functionality and minimal losses
  - Optimized electronic components and intelligent control modes
- Overload capacity of up to 350% for high breakaway and acceleration torques prevent oversizing in static operation and reduces the installed system power
- High degree of protection
- Worldwide use due to the large input voltage and frequency range as well as the compliance with all worldwide energy efficiency regulations
- The systematic development of all components ensures high reliability and a long service life, resulting in a high system availability
- Monitoring functions and maintenance are supported
- Quick and simple installation
- Detailed diagnostic options
- Installation topology with SEW-EURODRIVE controller:
  - SNI: only one cable for power supply and communication; installation effort reduced by up to 60%
  - SBus: for applications with high performance demands
- Installation topology binary or AS-Interface for easy drive functions

#### safetyDRIVE Functional safety

- Integrated functional safety:  
Safe Torque Off (STO) up to PL e according to EN ISO 13849-1



**University of Applied Sciences  
of Kaiserslautern**  
Department of Applied  
Engineering Sciences

**Verified by an independent entity:  
Energy saving potential of up to 50%**

“A comparison of the test results shows a significant efficiency advantage of MOVIGEAR® drives ... over the entire load range.”

### Application options

Perfectly suitable for many industries such as beverages and food, automotive and pharmaceutical industry but also airport logistics, intralogistics in general or construction industry.

### MOVIGEAR® performance classes and designs



MOVIGEAR® is available in two sizes, three performance classes and two mechanical variants:

#### MOVIGEAR® performance classes

- MGF.2 (torque class: 200 Nm, up to 0.8 kW)
- MGF.4 (torque class: 400 Nm, up to 1.6 kW)
- MGF.4/XT (torque class: 400 Nm with extended continuous torque, up to 2.1 kW)

#### MOVIGEAR® variants

- MOVIGEAR® with hollow shaft and key
- **NEW:** Size 2 with 35 mm and 40 mm hollow shaft
- Advantages: - Identical customer shaft for MGF..2 and MGF..4
  - Maximum flexibility
  - Perfect for retrofit projects
- MOVIGEAR® with TorqLOC® hollow shaft mounting system

#### Speed setting range and positioning performance

- Standard control range 1:10
- Extended control range 1:2000
  - Single-turn encoder /ECR
  - Multi-turn absolute encoder /ACR

#### **NEW: Universal design /MU thanks to internal pressure compensation**

- Pressure compensation of the gear unit /PG
- Pressure compensation fitting of the electronics /PE

### Design for special ambient conditions



- Meets all of the requirements for use in hygienic areas
- HP200 coating with optimal anti-adhering properties
  - ECOLAB®-tested chemical and mechanical resistance
  - FDA approval
  - Minimal cleaning effort
- Degree of protection IP66
- Perfectly suited for nearly all applications in clean room environments as it complies with all requirements of clean room drives up to air cleanliness class 2 according to ISO 14644-1 (confirmed by Fraunhofer Institute)
- Pressure compensation fitting
- Stainless steel fitting
- Internal pressure compensation

### Application options

MOVIGEAR® with optional digital inputs and outputs



- Reading and processing of digital and analog sensor signals decentralized and close to the drive via GIO12B and GIO13B application options
- Fast response to sensor signals due to decentralized processing in the drive
- Reduced effort for cabling and installation

#### GIO12B application option

- 4 digital inputs
- 2 digital outputs for actuator control

#### GIO13B application option

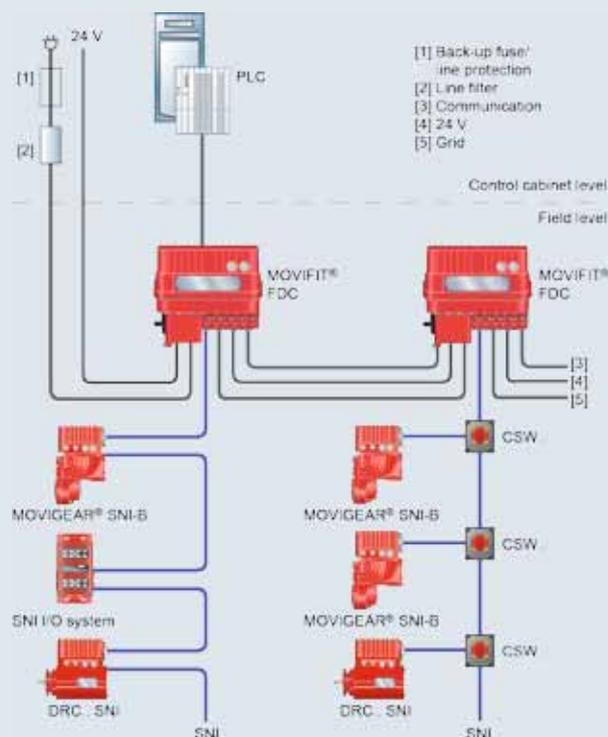
- 4 digital inputs (of which 2 can be used as primary frequency inputs)
- 1 digital output
- 1 analog input
- 1 analog output

## 5.2 Energy-efficient mechatronic drives IE4

### Installation topology with SNI controller

#### Single Line Network Installation

<b>Features</b>	<ul style="list-style-type: none"> <li>- SNI uses the cabling infrastructure of the energy supply as the basis for the transmission of communication signals</li> <li>- Easy installation as only supply cables need to be connected</li> <li>- Drive networks can be implemented with up to 100 m extensions and 10 slaves</li> <li>- Routing of bus cables or 24 V supply to drives not necessary</li> <li>- No risk of hidden faults in the bus cabling</li> <li>- Reduced startup time</li> <li>- Shorter project runtimes/reduction of project costs</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>- Installation topology for easy installing of MOVIGEAR® / DRC.. drive systems for conveyor systems that require variable speeds or local positioning</li> <li>- SNI components in combination with MOVIGEAR® actuators and DRC.. in SNI design as extension to process more distributed sensors without additional infrastructure</li> </ul>
<b>Application examples</b>	<ul style="list-style-type: none"> <li>- Belt conveyors</li> <li>- Pallet conveyors</li> <li>- Roller and wheel conveyors</li> <li>- Screw conveyors</li> <li>- Container and packaging unit transports</li> <li>- Chain and drag-chain conveyors</li> </ul>
<b>SNI components</b>	<ul style="list-style-type: none"> <li>- CSW maintenance switch             <ul style="list-style-type: none"> <li>- Possibility to disconnect single SNI actuators individually</li> <li>- Communication to all other actuators is maintained</li> </ul> </li> <li>- SNI I/O system CIO:             <ul style="list-style-type: none"> <li>- Networking of process-relevant, not directly assigned sensors via the SNI infrastructure</li> <li>- Intelligent preprocessing of sensors and integration into the CCU structure</li> </ul> </li> </ul>



## Installation topology with an SEW-EURODRIVE system bus controller

**SEW-EURODRIVE system bus** High performance and fast bus communication via CAN

### Features

- Line wiring
- Fast communication for short response times
- Hybrid cables for minimum installation effort
- System bus controller for control cabinet or fieldbus installation with integrated PLC

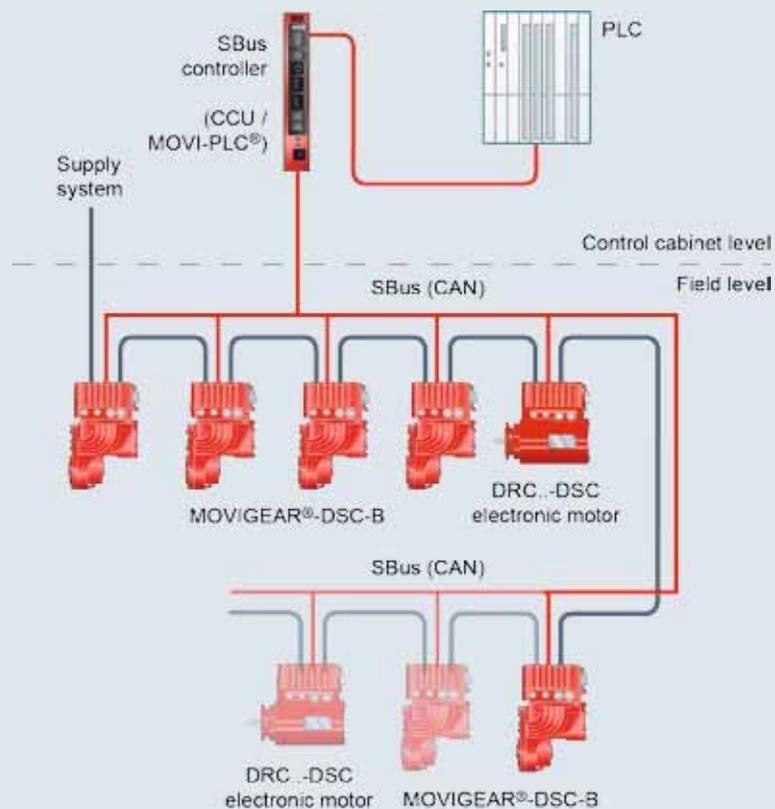
### Application options

- Installation topology for easy installation of MOVIGEAR® / DRC.. drive systems for conveyor systems that are operated dynamically with variable speeds
- For forming intelligent function groups
- As group drive for phase-synchronous operation

### Application examples

- Pallet conveyors
- Machine-integrated conveyor belts
- Feeding conveyors
- Synchronized feeder conveyors
- Reversing drives

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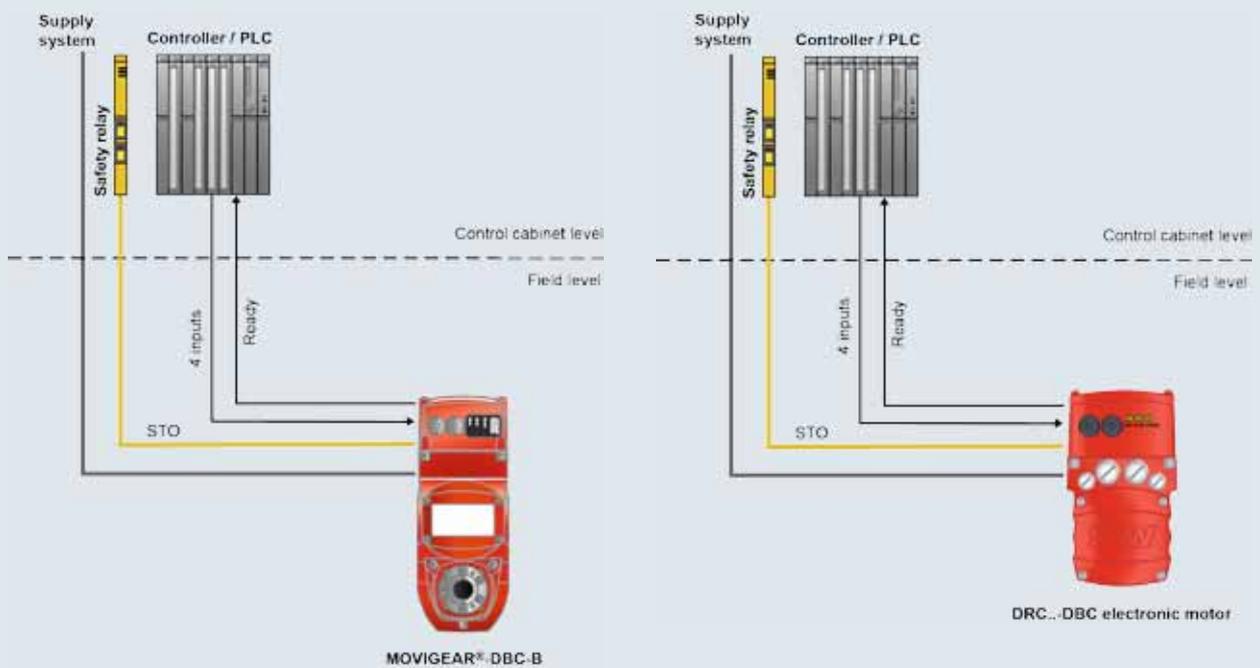


## 5.2 Energy-efficient mechatronic drives IE4

### Binary installation topology

#### Binary stand-alone operation

<b>Features</b>	<ul style="list-style-type: none"> <li>- Fixed speeds/ramps can be set using potentiometers or parameterized with software</li> <li>- Central control using discrete signals from a PLC</li> <li>- Can be started up without a PC</li> <li>- 4 digital inputs</li> <li>- 1 relay signal output</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>- Simple stand-alone applications and single applications</li> <li>- For applications that require soft startup behavior</li> <li>- Applications with two fixed speeds</li> <li>- For applications with high breakaway torques</li> <li>- As a replacement for line-powered drives</li> </ul>
<b>Application examples</b>	<ul style="list-style-type: none"> <li>- Simple conveyors</li> <li>- Rotary tables</li> <li>- Adjustment drives</li> <li>- Agitators and mixers</li> <li>- Crushers and shredders</li> <li>- Presses</li> </ul>

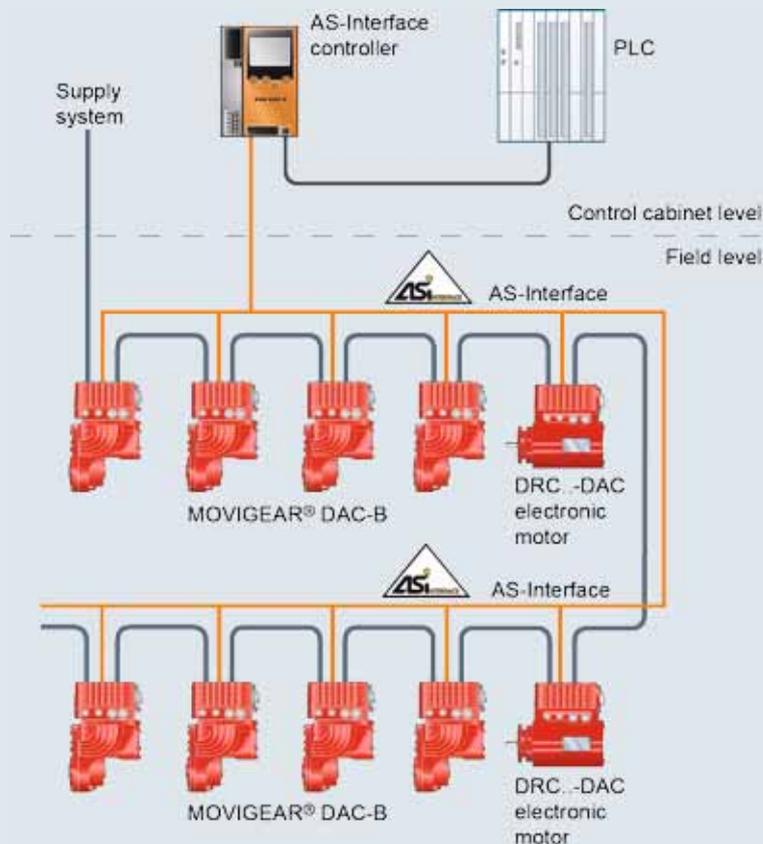


## Installation topology with AS-Interface

**AS-Interface** Simple and economical fieldbus connection

<b>Features</b>	<ul style="list-style-type: none"> <li>- Parameterizable fixed speeds and ramps</li> <li>- 2 designs               <ul style="list-style-type: none"> <li>- Binary slave (GLK30)</li> <li>- Double slave (GLK31)</li> </ul> </li> <li>- 2 sensor inputs connected directly via the AS-Interface nodes</li> <li>- STO (Safe Torque Off) safety function up to PL e according to EN ISO 13849-1</li> <li>- 4 digital inputs for local mode</li> <li>- Expanded startup using the diagnostic interface</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>- Simple fieldbus connection</li> <li>- For applications that require soft startup behavior</li> <li>- Signal feedback of connected sensors</li> <li>- For applications that require a lot of space</li> <li>- Individual parameter access in connection with GLK31</li> </ul>
<b>Application examples</b>	<ul style="list-style-type: none"> <li>- Accumulating roller conveyors</li> <li>- Roller and wheel conveyors</li> <li>- Pallet conveyors</li> <li>- Rotary tables</li> </ul>

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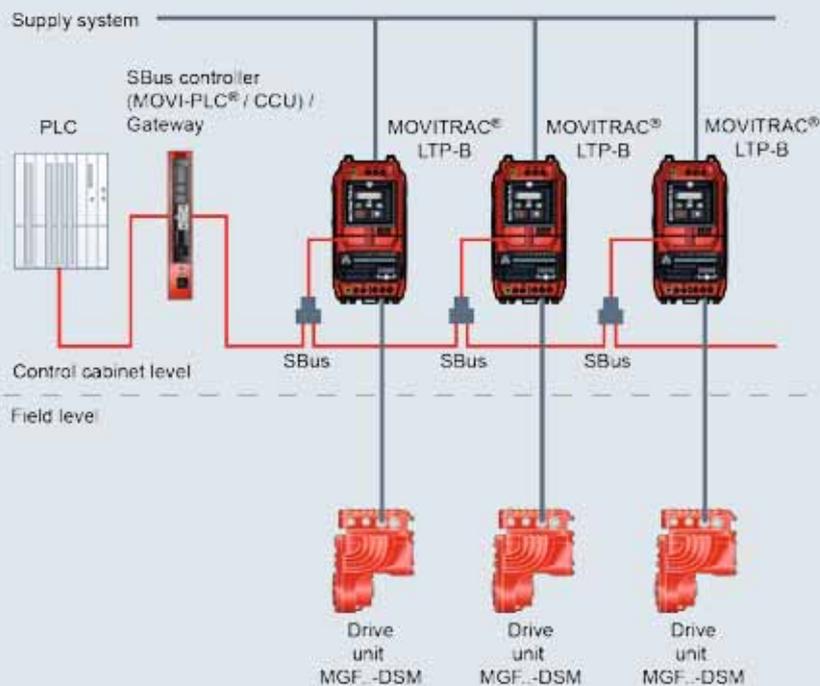


## 5.2 Energy-efficient mechatronic drives IE4

### Central installation topology with control cabinet inverter



<b>Features</b>	<ul style="list-style-type: none"> <li>– MGF.-DSM gearmotor unit as alternative for centralized control cabinet installations</li> <li>– The frequency inverter installed in the control cabinet is connected to the MGF.-DSM drive unit</li> <li>– In combination with MOVITRAC® LTP-B control cabinet inverters easy startup with only two parameters</li> <li>– Parameterizable fixed speeds and ramps</li> <li>– With application controller CCU identical interfaces/functions for speed control to those for decentralized solutions</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Flexibility when planning new systems, particularly for exchange and retrofit projects</li> <li>– As drive for applications with high breakaway and starting torques</li> <li>– Conveyor systems with variable speeds</li> <li>– As a drive for applications that require soft and/or defined start-up behavior</li> </ul>
<b>Application examples</b>	<ul style="list-style-type: none"> <li>– Transport of bottles, packaging units and containers</li> <li>– Belt conveyors</li> <li>– Screw conveyors</li> </ul>



**MGF.-DSM performance classes and designs**

MGF.-DSM is available in two sizes, three performance classes and two mechanical variants:

**MGF.-DSM performance classes**

- **NEW:** MGF.1-DSM (torque class: 100 Nm, up to 0.37 kW)
- MGF.2-DSM (torque class: 200 Nm, up to 0.8 kW)
- MGF.4-DSM (torque class: 400 Nm, up to 2.1 kW)
- MGF.4-DSM/XT (torque class: 400 Nm with extended continuous torque, up to 3 kW)

**MGF.-DSM design types**

- MGF.-DSM with hollow shaft and key
- **NEW:** Size 2 with 35 mm and 40 mm hollow shaft
  - Advantages: - Identical customer shaft for MGF..2 and MGF..4
  - Maximum flexibility
  - Perfect for retrofit projects
- MGF.-DSM with TorqLOC® hollow shaft mounting system

**NEW: Universal design /MU thanks to internal pressure compensation**

- Pressure compensation of the gear unit /PG
- Pressure compensation fitting of the electronics /PE

**Design for special ambient conditions**

- Meets all of the requirements for use in hygienic areas
- HP200 coating with optimal anti-adhering properties
  - ECOLAB®-tested chemical and mechanical resistance
  - FDA approval
  - Minimal cleaning effort
- Degree of protection IP66
- Perfectly suited for nearly all applications in clean room environments as it complies with all requirements of clean room drives up to air cleanliness class 2 according to ISO 14644-1 (confirmed by Fraunhofer Institute)
- Pressure compensation fitting
- Stainless steel fitting
- Internal pressure compensation

## 5.2 Energy-efficient mechatronic drives IE4

**NEW:** Option “external braking resistor” mounting kit



**For MOVIGEAR® and DRC.. electronic motors**

### Features

The mounting kit for external braking resistors for MOVIGEAR® and the DRC.. electronic motor serves applications with high dynamics and high cycle rates. The mounting kit is available for MOVIGEAR® and electronic motors of size DRC..1 and DRC..2 in two sizes and has the option to install a 100 W or 200 W braking resistor.

**NEW:** GBG option**Local operator panel for MOVIGEAR®/DRC.. electronic motors****Features**

The GBG local operator panel allows to operate the drive without a higher-level controller in two directions of rotations and with two speeds. In addition, errors can be acknowledged on site and DynaStop® or the brake can be released manually.

**Drive designs and plug connectors**

The GBG10-11A-00 local operator panel is intended for use with the following drive units:

- MOVIGEAR® DSC-B
- MOVIGEAR® SNI-B
- MOVIGEAR® DAC-B
- DRC..-DSC electronic motor
- DRC..-SNI electronic motor
- DRC..-DAC electronic motor

For the electrical connection, the drive system has to be equipped with the M23 motion control plug connector according to the following table.

Design	Connector code	Function
DSC	X5131	M23 motion control, 12-pin, 0°, female
SNI	X5131	M23 motion control, 12-pin, 0°, female
DAC	X5132	M23 motion control, 12-pin, 0°, female

## 5.3 Gearmotor with motor starter MOVI-SWITCH®

### Gearmotor with motor starter



**MOVI-SWITCH®**

<b>Features</b>	<ul style="list-style-type: none"> <li>– Switching and protection function integrated in the motor terminal box</li> <li>– Compact and robust gearmotor</li> <li>– No further cabling required</li> <li>– No additional control cabinet space is needed</li> <li>– Available in all AC motor and brakemotor combinations of the DR.. series with the matching gear units</li> </ul>		
<b>Number of poles</b>	Power range kW		
	MSW-1E	MSW-1EM	MSW-2S
<b>4</b>	0.37 – 3.0	0.09 – 0.25	0.37 – 3.0
<b>2</b>	0.37 – 3.0	0.12 – 0.37	0.37 – 3.0
<b>6</b>	0.25 – 1.5	–	0.25 – 1.5
<b>Switching function</b>	On/off, one direction of rotation		On/off, two directions of rotation
<b>Switching element</b>	Contactless star bridge switch		Switching element with contact
<b>Direction of rotation</b>	CW or CCW, depending on the phase sequence		CW and CCW, regardless of the phase sequence
<b>Control</b>	<ul style="list-style-type: none"> <li>– Binary control signals RUN / OK</li> <li>– Connection using 1× M12 plug connector</li> </ul>		<ul style="list-style-type: none"> <li>– Binary control signals CW / CCW / OK</li> <li>– Connection using 2× M12 plug connectors</li> <li>– Alternatively with integrated AS-Interface</li> </ul>
	–	Alternatively with integrated AS-Interface	
<b>Brake management</b>	With BGW brake rectifier as standard	With BG brake rectifier as standard	<ul style="list-style-type: none"> <li>– Integrated brake control</li> <li>– Option external control with BGM brake rectifier</li> </ul>
<b>Protection function</b>	Thermal motor protection with integrated evaluation		<ul style="list-style-type: none"> <li>– Thermal motor protection with integrated evaluation</li> <li>– Supply system monitoring (power failure and phase failure)</li> </ul>
<b>Degree of protection</b>	IP54, optionally IP55, IP65 or IP66		
<b>Ambient temperature</b>	-25 °C to +40 °C (to +60 °C)		

➔ **More information on**  
 – fieldbus interfaces, field distributors, cable systems: page 196

## 5.4 Decentralized extra-low voltage servo drive



**CMP. ELVCD**

### Features

- Compact decentralized installation
- High continuous and peak power
- Robust design with convection cooling
- Easy installation with DC 48 V extra-low voltage
- All connections pluggable
- High degree of protection IP65
- UL-approved<sup>1)</sup>
- Integrated braking resistor
- Optional encoder systems and brake
- Flexible gear unit combination
- Integrated engineering with the integration of the MOVI-PLC® controller
- Coordinated multi-axis movements can be realized with our MOVI-PLC® motion and logic controller

05

<sup>1)</sup> In preparation

### Installation topology with the CMP. ELVCD decentralized extra-low voltage drive

- CMP. ELVCD is supplied with DC 24 V (control) and DC 48 V (power supply).
- The drive is controlled via SBus with a controller from SEW-EURODRIVE, which functions as central head station.
- The controller is responsible for the coordination and the higher-level motion control for all connected drives.
- Depending on the power demands and the synchronicity of the drives, several drives can be connected and supplied via one phase winding.
- The used controllers offer conventional interfaces for higher-level automation levels. The automation system can also be operated independently as a module.



## 5.5 ECDriveS® drive system

**NEW:** ECDriveS® drive system for light-load conveyor technology



**Just connect and you're done: "easy drive"**

### Features

- ECDriveS® stands for Electric Commutated Drive System:
  - Brushless DC gearmotor
  - Integrated directly in the conveyor roller and can be used universally
- Simple, efficient and cost-cutting drive solution for roller conveyors:
  - Just connect and you're done: "easy drive"
- DC drives – optimized for the lower power range of roller conveyors used in light-duty materials handling technology
- Easy to use
- High degree of flexibility
- Simple integration and startup
- Impressive durability and long service life
- External commutation electronics with Ethernet-based zone control or binary control; the Ethernet control is characterized by an integrated conveyor logic capable of decentralized realization of zero pressure accumulation and many other handling tasks
- 250% overload capacity at 40 W S1 power
- Optimized gear unit design for long service life also in case of high utilization
- Precise positioning of the material to be conveyed thanks to an integrated encoder

### Application options

- Light-load conveyor technology up to 50 kg
- Perfectly suitable for many industries such as distribution and logistics, food, automotive and pharmaceutical industry
- Application examples:
  - Roller conveyors
  - Rotary tables, small lifting equipment, pushers, transfer units
  - Infeed and discharge belts in machinery construction

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**Technical data**


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**Gearmotor**

	<b>Driven roller, ECDriveS® type ECR</b>	<b>Gearmotor, ECDriveS® type ECG</b>
<b>Number of gear ratios</b> <b>i</b>	11	9
<b>Max. velocity</b>	0.04 – 5 m/s	8.5 – 645 min <sup>-1</sup>
<b>Max. acceleration torque</b> <b>Nm</b>	9.6	14.3
<b>Max. breakaway torque</b> <b>Nm</b>	21	32
<b>Nominal current</b> <b>A</b>	2.5	
<b>Maximum current</b> <b>A</b>	8	
<b>Degree of protection</b>	IP54 (IP66 optional)	
<b>Temperature range</b>	-10 to 40 °C (-30 °C optional)	

**Electronics**

	<b>Direct fieldbus control,</b> <b>ECDriveS® type ECC-DFC</b>	<b>Direct binary control,</b> <b>ECDriveS® type ECC-DBC</b>
<b>Nominal voltage</b> <b>V</b>	24	
<b>Communication</b>	Ethernet protocols: PROFINET, EtherNet/IP™, Modbus/ TCP, EtherCAT®	3 DIs + error output
<b>Configuration</b>	ECDriveS® ECShell PC tool	– DIP switches – 32 speeds, 16 ramps
<b>Functions</b>	<ul style="list-style-type: none"> <li>– Precise ramps</li> <li>– Positioning</li> <li>– Zero pressure accumulation (ZPA), flex zone, merger, tracking</li> <li>– Torque on demand</li> <li>– Automatic configuration</li> <li>– Automatic sensor detection</li> <li>– Diagnostics</li> </ul>	
<b>Degree of protection</b>	IP54	IP20

## 06

# INVERTER TECHNOLOGY

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**SEW**

## 6.1 Control cabinet installation

### MOVITRAC® LTE-B+ basic inverters



**MOVITRAC® LTE-B+**



<b>Features</b>	<ul style="list-style-type: none"> <li>– Standard design for installation in the control cabinet in degree of protection IP20 /NEMA 1</li> <li>– Optionally available in degree of protection IP66 / NEMA 4x field housing for wall mounting</li> </ul>
<b>Line connection</b>	Power range in kW
<b>115 V / 1-phase</b>	0.37 – 1.1
<b>230 V / 1-phase</b>	0.37 – 4.0
<b>230 V / 3-phase</b>	1.5 – 4.0
<b>400 V / 3-phase</b>	0.75 – 11.0
<b>Features</b>	<ul style="list-style-type: none"> <li>– Integrated keypad</li> <li>– Integrated PI controller</li> <li>– Integrated emergency mode/fire mode</li> <li>– Integrated SEW-EURODRIVE system bus, CANopen and Modbus RTU</li> <li>– Preconfigured for corresponding DR.. motor</li> <li>– Energy-saving function</li> <li>– Extra quiet pulsed voltage supply up to 16 kHz</li> <li>– V/f and LVFC motor control (Light Vector Flux Control)</li> <li>– Operation of synchronous motors with LSPM technology (Line Start Permanent Magnet Motor)</li> <li>– Approved in accordance with UL508</li> </ul>
<b>Options</b>	
<b>DFx</b>	Gateways for many standard fieldbus systems
<b>LT BP B</b>	Parameter module for data transmission to/from PC and saving/loading data
<b>LT BG-C</b>	Additional keypad for remote operation
<b>LT NF..</b>	Additional line filter for increased requirements on EMC-compliant installation
<b>LT ND..</b>	Additional line chokes to increase the overvoltage protection
<b>LT HD..</b>	Additional output choke to suppress interference emission and for very long motor cables

## MOVITRAC® LTP-B standard inverters



**MOVITRAC® LTP-B**



<b>Features</b>	Flexible, simple and safe: Housing protection IP20 / NEMA 1 for control cabinet installation
<b>Line connection</b>	Power range in kW
<b>230 V / 1-phase</b>	0.75 – 2.2
<b>230 V / 3-phase</b>	0.75 – 5.5
<b>400 V / 3-phase</b>	0.75 – 11.0
<b>575 V / 3-phase</b>	0.75 – 15.0

➔ More information on MOVITRAC® LTP-B with high degree of protection: page 240

## 6.1 Control cabinet installation

### MOVITRAC® B standard inverters



#### MOVITRAC® B



<b>Features</b>	<ul style="list-style-type: none"> <li>– Compact frequency inverter for space-saving installation for applications in the power range from 0.25 to 75 kW</li> <li>– Its straightforward operation saves time during startup</li> <li>– Versatile device concept</li> <li>– Wide range of communication and expansion options</li> </ul>
<b>Line connection</b>	Power range kW
<b>230 V / 1-phase</b>	0.25 – 2.2
<b>230 V / 3-phase</b>	0.25 – 30
<b>400/500 V / three-phase</b>	0.25 – 75
<b>Standard design</b>	Equipped with integrated IPOS® positioning and sequence control <sup>1)</sup> as standard. The standard basic equipment of the devices can be expanded by various options.
<b>Technology version with application modules</b>	<p>In addition to having the characteristics of the standard version, the devices in the technology version provide access to the “simple positioning” application module.</p> <p>Advantages of the “simple positioning” application module:</p> <ul style="list-style-type: none"> <li>– High functionality and user-friendly user interface</li> <li>– Only the parameters needed for the application must be entered</li> <li>– Guided parameterization instead of complicated programming</li> <li>– All motion functions are controlled directly in MOVITRAC® B</li> </ul>
<b>Energy efficiency</b>	<p>There are various options for improving the energy balance when using MOVITRAC® B:</p> <ul style="list-style-type: none"> <li>– Process adaptation</li> <li>– Energy-saving function</li> <li>– DC link coupling as of size 2</li> <li>– Regenerative power supply as of size 2 in combination with the MOVIDRIVE® MDR regenerative power supply</li> </ul>
	For information on the operation of explosion-proof motors with frequency inverters or drive inverters, refer to page 143.

<sup>1)</sup> With reduced command set

## Options for MOVITRAC® B

<b>Keypad</b> – FBG11B – DBG60B	Standard keypads for parameterization, data management, startup, and diagnostics: – Pluggable basic keypad – Plain text keypad
<b>UBP11A parameter module</b>	Simple data backup with the possibility of serial startup
<b>Communication modules</b> – FSC11B / FSC12B – FSE24B	– SBus / RS485 / CANopen – EtherCAT®
<b>Fieldbus connection</b> – DFE32B – DFE33B – DFE24B – DFP21B – DFD11B	– PROFINET IO – Modbus TCP / EtherNet/IP™ – EtherCAT® – PROFIBUS DPV1 – DeviceNet™
<b>Extension for inputs and outputs</b> – FIO11B – FIO21B	– Analog module with setpoint input, analog output and RS485 interface – Digital module with 7 digital inputs and SBus connection
<b>MBG11A setpoint adjuster</b>	Remote speed control in the range of -100% to +100%
<b>Interface adapter</b> – UWS11A / UWS21B – USB11A	– Signal conversion from RS232 to RS485 – Signal conversion from USB to RS485
<b>Safe communication</b> – DFS11B – DFS21B	– PROFIsafe via PROFIBUS – PROFIsafe via PROFINET
<b>safetyDRIVE</b> <b>Functional safety</b>	Integrated functional safety: STO (Safe Torque Off) safety function up to PL d according to EN ISO 13849-1 The following versions of MOVITRAC® B are equipped with the STO safety function: – 3× AC 230 V: - 0.55 kW to 2.2 kW: in S0 design - 3.7 kW to 75 kW: integrated as standard – 3× AC 400 V: - 0.55 kW to 4 kW: in S0 design - 5.5 kW to 75 kW: integrated as standard – 1× AC 230 V: STO not available
<b>Additional safety options</b> – UCS..B  – <b>Safety-related BST brake module</b>	– Safe torque off: STO – Safe stopping: SS1/ SS2 – Safe operation stop: SOS – Safe motion: SLA / SLS / SDI – Safe positioning: SLP / SLI – Safe signaling: SCA / SSM – Safe brake control: SBC

## 6.1 Control cabinet installation

### MOVIDRIVE® B application inverters



#### MOVIDRIVE® B



<b>Features</b>	<ul style="list-style-type: none"> <li>– Powerful drive inverter for dynamic applications with synchronous and asynchronous motors in the power range from 0.55 to 315 kW</li> <li>– Great diversity of applications due to extensive expansion options with technology and communication options</li> </ul>
<b>Line connection</b>	<b>Power range in kW</b>
200/240 V / three-phase	1.5 – 37
400/500 V / three-phase	0.55 – 315
<b>Standard design</b>	<p>The devices are equipped with the integrated IPOS<sup>plus</sup>® positioning and sequence control system as standard and can be expanded by the options available. “00” at the end of the type designation indicates the standard design.</p>
<b>Technology version with application modules</b>	<p>In addition to the standard version, these devices include the technology functions “electronic cam” and “internal synchronous operation”. The application version is indicated by “0T” following the type designation.</p> <p>The devices in technology version also provide access to the application modules. Standardized control programs for solving technically advanced drive tasks such as synchronized applications, positioning, flying saw, and winding.</p> <p><b>Advantages of the application modules</b></p> <ul style="list-style-type: none"> <li>– High functionality and user-friendly user interface</li> <li>– Only the parameters needed for the application must be entered</li> <li>– Guided parameter setting process instead of complicated programming</li> <li>– No lengthy training or familiarization, which means quick project planning and startup</li> <li>– All motion functions are controlled directly in MOVIDRIVE® B</li> <li>– Decentralized concepts can be implemented more easily</li> </ul>
<b>safetyDRIVE</b> <b>Functional safety</b>	<p>Integrated functional safety: STO (Safe Torque Off) safety function up to PL d according to EN ISO 13849-1</p>
	<p>For information on the operation of Ex motors with our inverter technology, refer to page 143.</p>

## MOVIDRIVE® B options

<b>Type designation</b>	
<b>Keypad DBG60B</b>	Keypad for parameterization, data management, startup, and diagnostics
<b>Encoder interfaces DEH11B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> <li>– External encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> </ul>
<b>DER11B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: Resolver</li> <li>– External encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> </ul>
<b>DEH21B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection TTL, RS422, sin/cos and HIPERFACE® encoders</li> <li>– External encoder connection: SSI absolute encoder</li> </ul>
<b>DEU21B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: TTL, HTL, RS422, sin/cos, HIPERFACE®, SSI, CAN, EnDat 2.1 encoders</li> <li>– External encoder connection: TTL, HTL, RS422, sin/cos, HIPERFACE®, SSI, CAN, EnDat 2.1 encoders</li> </ul>
<b>DIP11A</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> <li>– External encoder connection: SSI absolute encoder</li> </ul>
<b>DIP11B</b>	<ul style="list-style-type: none"> <li>– External encoder connection: SSI absolute encoder</li> <li>– Extension of digital inputs and outputs: 8 × inputs, 8 × outputs</li> </ul>
<b>Fieldbus connections</b>	
– DFE32B / DFE33B	– PROFINET IO / Modbus TCP + EtherNet/IP™
– DFE24B	– EtherCAT®
– DFP21B	– PROFIBUS DPV1
– DFC11B / DFD11B	– CANopen / DeviceNet™
– DFI11B / DFI21B	– INTERBUS / INTERBUS-LWL
– DFS11B / DFS21B	– PROFIsafe via PROFIBUS / PROFIsafe via PROFINET
<b>MOVISAFE® safety monitor</b>	Safe movement/position monitoring, safe inputs and outputs up to PL e according to EN ISO 13849-1 and
– DCS31B	– for “safe motion/position monitoring”
– DCS21B + DFS12B	– for “safe movement/position monitoring and communication” (PROFIsafe/PROFIBUS)
– DCS21B + DFS22B	– for “safe movement/position monitoring and communication” (PROFIsafe/PROFINET)
<b>Safety-related BST brake module</b>	Safe Brake Control (SBC) up to PL d according to EN ISO 13849-1
<b>Extension for inputs and outputs</b>	8 × digital inputs and 8 × digital outputs; 1 × analog differentiation; 2 × analog outputs
– DIO11B	
<b>Other</b>	
– DRS11B	– Synchronous operation card
– USB11A	– Interface adapter for connection to a PC via USB interface
– UWS21B	– Interface adapter for connection to a PC via RS232 interface

## 6.1 Control cabinet installation

### Options for MOVITRAC® B and MOVIDRIVE® B

<b>MOVI-PLC® standard controller</b> – DHE21B – DHF21B – DHR21B	– MOVI-PLC® standard, ETHERNET interface – MOVI-PLC® standard, ETHERNET / PROFIBUS / DeviceNet™ interface – MOVI-PLC® standard, ETHERNET / PROFINET / Modbus TCP- / EtherNet/IP™ interface
<b>MOVI-PLC® advanced controller</b> – DHE41B – DHF41B – DHR41B  – <b>External controller: UHX71B</b>	– MOVI-PLC® advanced, ETHERNET interface – MOVI-PLC® advanced, ETHERNET / PROFIBUS / DeviceNet™ interface – MOVI-PLC® advanced, ETHERNET / PROFINET / Modbus TCP / EtherNet/IP™ interface  – MOVI-PLC® power: IEC-61131-3 programmable motion and logic controller or – CCU power: parameterizable application controller
<b>MOVITOOLS® MotionStudio engineering software</b>	The MOVITOOLS® MotionStudio program package lets you conveniently start up, set parameters and run diagnostics for MOVITRAC® B frequency inverters and MOVIDRIVE® B drive inverters.
<b>Regenerative power supply</b> <b>MOVIDRIVE® MDR60A 15 kW – 160 kW</b> <b>MOVIDRIVE® MDR61B 160 kW – 315 kW</b>	The regenerative power supply can supply multiple devices with power using a central line connection. In regenerative mode, the power is fed back into the supply system. Using the MDR60A/MDR61B saves energy and reduces installation work.
<b>Braking resistors type BW</b>	BW series braking resistors are available for regenerative operation of the MOVITRAC® B frequency inverters and MOVIDRIVE® B drive inverters. Using an integrated temperature sensor, the resistor can be protected without external monitoring.
<b>Line choke type ND</b>	ND series line chokes increase the overvoltage protection of inverters. This is an important characteristic in rough industrial power supply systems, especially if the inverter is installed near a supply transformer.
<b>Line filter type NF</b>	The NF line filter series is available for EMC-compliant installation according to EN 61800-3. They suppress interference emissions on the line side of inverters. These line filters ensure that limit value class C1 is maintained on the supply end.
<b>Output choke type HD</b>	HD series output chokes suppress interference emitted from unshielded motor cables. They enable the motor to meet limit value class C1 requirements in accordance with EN 61800-3 in EMC-compliant installations. Output chokes provide an alternative to shielded motor cables in EMC-compliant installations.
<b>Output filter type HF</b>	HF series output filters are sine filters that smooth out the output voltage of inverters. Output filters are used for group drives to suppress discharge currents in motor cables and for long motor cables to prevent voltage peaks.

## MOVIAXIS® multi-axis servo inverters



### Features

- Multi-axis servo system for highly dynamic applications up to 250 A motor current
- Power supply and regenerative power supply up to 187 kW
- DC link power supply for DC 24 V
- Capacitor and buffer modules
- Connection of all common motor and external encoder
- Fieldbus interfaces, fieldbus gateways and clock-synchronized interfaces
- Scaled motion and logic controller directly at the axis system, speed control, positioning, motion control and kinematics
- Wide range of accessories: Cables, braking resistors, line filters, line chokes, brake control units

### Power supply module type

<b>Line connection V</b>	3× AC 380 – 500
<b>Nominal power kW</b>	10, 25, 50, 75 kW at 250% for 1 s

### Block-shaped power supply and regenerative power supply module

<b>Line connection V</b>	3× AC 380 – 500
<b>Nominal power kW</b>	50, 75 kW at 250% for 1 s

### Sinusoidal power supply and regenerative power supply module

<b>Line connection V</b>	3× AC 380 – 480
<b>Nominal power kW</b>	50, 75 kW at 200% for 1 s

## 6.1 Control cabinet installation

### MOVIAXIS® multi-axis servo inverter

#### DC link power supply unit

<b>Supply</b>	Directly from DC link
<b>Nominal power</b>	3× 10 A, limited to 600 W total power

#### Axis modules

<b>Output current in A at 8 kHz</b>	2, 4, 8, 12, 16, 24, 32, 48, 64, 100 at 250% for 1 s
<b>Communication interfaces</b>	PROFIBUS, EtherCAT®
<b>Encoder interfaces motor encoder</b>	HIPERFACE®, Resolver, TTL, sin/cos, Endat 2.1
<b>Encoder interfaces external encoder</b>	HIPERFACE®, TTL, HTL, sin/cos, Endat 2.1, SSI
<b>safetyDRIVE Functional safety</b>	<ul style="list-style-type: none"> <li>– MXA81: STO (Safe Torque Off), up to PL d according to EN ISO 13849-1</li> <li>– MXA81: STO (Safe Torque Off), up to PL e according to EN ISO 13849-1</li> <li>– MOVISAFE® UCS..B safety module option: Drive safety functions (SLS, SDI, SLP, etc.) according to EN 61800-5-2</li> <li>– Safety-related BST brake module option: SBC (Safe Brake Control) safety function up to PL d according to EN ISO 13849-1</li> </ul>

#### Master module

<b>Communication gateway</b>	DeviceNet™, PROFIBUS, PROFINET, EtherNet/IP™, Modbus TCP
<b>Data management</b>	Via memory card, automatic data set download when replacing the axis module
<b>Integrated motion controller</b>	Programmable in IEC 61131, parameterizable functionalities

## Accessories and options for MOVIAXIS®

<b>Encoder and external encoder card XGH11A</b>	<ul style="list-style-type: none"> <li>– Multi-encoder card for motor and external encoder HIPERFACE®, Endat 2.1, sin/cos</li> <li>– Incremental encoder simulation</li> <li>– ± 10 V analog input</li> <li>– DC 24 V supply</li> </ul>
<b>Encoder and external encoder card XGS11A</b>	<ul style="list-style-type: none"> <li>– Like XGH11A, additional for SSI encoders</li> </ul>
<b>Input/output card XIA11A</b>	<ul style="list-style-type: none"> <li>– 4 DI, 4 DO</li> <li>– 2 AI, 2 AO, 12-bit resolution</li> <li>– DC 24 V supply</li> </ul>
<b>Input/output card XIO11A</b>	<ul style="list-style-type: none"> <li>– 8 DI, 8 DO</li> <li>– DC 24 V supply</li> </ul>
<b>Communication interface XFP11A</b>	PROFIBUS IO fieldbus interface, up to 12 MBaud
<b>Communication interface XFE24A</b>	Fieldbus interface for connection to EtherCAT® networks
<b>Communication interface XSE24A</b>	System bus option card for expansion to EtherCAT-®compatible system bus SBus <sup>PLUS</sup>
<b>MOVI-PLC® controller</b> – DHE41B – DHF41B – DHR41B – UHX71B	<ul style="list-style-type: none"> <li>– MOVI-PLC® advanced, ETHERNET interface</li> <li>– MOVI-PLC® advanced, ETHERNET / PROFIBUS / DeviceNet™ interface</li> <li>– MOVI-PLC® advanced, ETHERNET / PROFINET/ Modbus TCP / EtherNet/IP™ interface</li> </ul> <p>Compact controller:</p> <ul style="list-style-type: none"> <li>– MOVI-PLC® power: IEC-61131-3 programmable motion and logic controller or</li> <li>– CCU power: parameterizable application controller</li> </ul>
<b>MOVITOOLS® MotionStudio engineering software</b>	The MOVITOOLS® MotionStudio program package allows you to conveniently start up, configure and diagnose the MOVIAXIS® multi-axis system.
<b>Braking resistors Type BW</b>	BW series braking resistors are available for the regenerative operation of the MOVIAXIS® multi-axis system. Using an integrated temperature sensor, the resistor can be protected without external monitoring.
<b>Line choke type ND</b>	ND series line chokes increase the overvoltage protection of the MOVIAXIS® multi-axis system. This is an important characteristic in rough industrial power supply systems, especially if the inverter is installed near a supply transformer.
<b>Line filter type NF</b>	The NF line filter series is available for EMC-compliant installation according to EN 61800-3. They suppress interference emissions on the line side of inverters. These line filters ensure that limit value class C1 is maintained on the supply end.

## 6.1 Control cabinet installation

### MOVIDRIVE® MDR61B regenerative power supply units 15 kW – 160 kW



**MOVIDRIVE® MDR**



<b>Can be used with product series</b>	<ul style="list-style-type: none"> <li>– MOVIDRIVE® B: 0.55 – 315 kW</li> <li>– MOVITRAC® B: 5.5 – 75 kW</li> </ul>
<b>Features</b>	<p><b>Energy balance</b></p> <p>Braking energy from the load cycle is no longer converted into heat energy but is fed back into the grid.</p> <p>Energy recovery is particularly interesting for applications with a high energy potential of lowering/ deceleration movements of the load cycle, such as gantry cranes, storage/retrieval systems or lifting/lowering applications.</p>
<b>Regenerative power supply: For central energy supply and recovery</b>	<ul style="list-style-type: none"> <li>– Used for central energy supply and recovery to supply the connected drive inverters with energy</li> <li>– Several inverters are connected in a DC link system</li> <li>– Energy is exchanged between the drive axes and excess braking energy is fed back into the power supply system</li> </ul>
<b>Regenerative power supply: Function as a brake module (only MDR60A0150)</b>	<ul style="list-style-type: none"> <li>– Using the regenerative power supply unit as brake module means the connected inverters are not supplied with energy but only the braking energy is fed back into the power supply system</li> <li>– DC link supplied via the integrated input rectifier of the inverter</li> <li>– Braking energy released during the application is fed back into the power supply system</li> <li>– The regenerative power supply unit is selected based on the braking energy released during the application, inverters are selected based on the motor load → cost-optimized overall system</li> <li>– Example of a product combination: MOVIDRIVE® B application inverter 30 kW with MOVIDRIVE® MDR regenerative power supply unit: 15 kW</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Reduced overall energy consumption</li> <li>– Reduced CO<sub>2</sub> emissions</li> <li>– Reduced energy costs</li> <li>– Cost-efficient installation</li> <li>– No investment in braking resistors</li> <li>– No braking resistors need to be installed outside the control cabinet</li> <li>– No heating of the environment or of the control cabinet through braking resistors</li> <li>– Saves expenditure for control cabinet ventilation</li> <li>– Saves control cabinet space</li> </ul>

**Technical data**

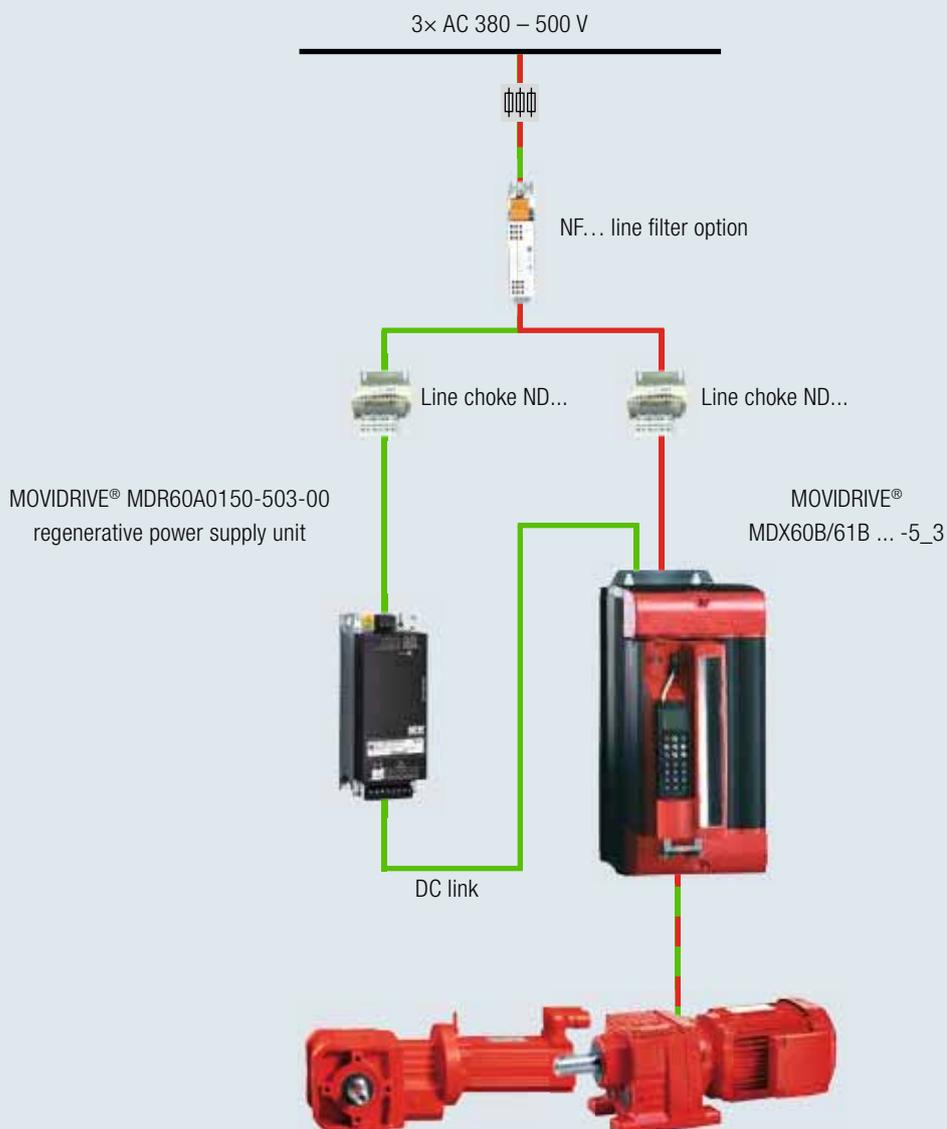
<b>MOVIDRIVE® type MDR..</b>	<b>Connection voltage</b>	<b>Power range kW</b>	<b>Line current I<sub>N</sub> A</b>	<b>Overload capacity</b>
MDR60A0150-503-00 Size 2	3× AC 380 V – 500 V	15	– 15 As a centralized supply and regenerative power supply unit – 22 As a brake module	– 150% for 60 s As a centralized supply and regenerative power supply unit – 37 kW for 50 s As a brake module peak braking power
MDR60A0370-503-00 Size 3		37	66	150% for 60 s
MDR60A0750-503-00 Size 4		75	117	150% for 60 s
MDR60A1320-503-00 Size 6		132 – 160	260 (at 160 kW)	150% for 60 s Max. continuous power, 125%

## 6.1 Control cabinet installation

### Regenerative power supply for MOVIDRIVE® B and MOVITRAC® B

#### Regenerative power supply: Function as a brake module

- Braking energy released during the application is fed back into the power supply system
- The regenerative power supply unit is selected based on the braking energy
- Drive inverters are selected based on the motor load
- DC link supplied via the integrated input rectifier on the drive axis

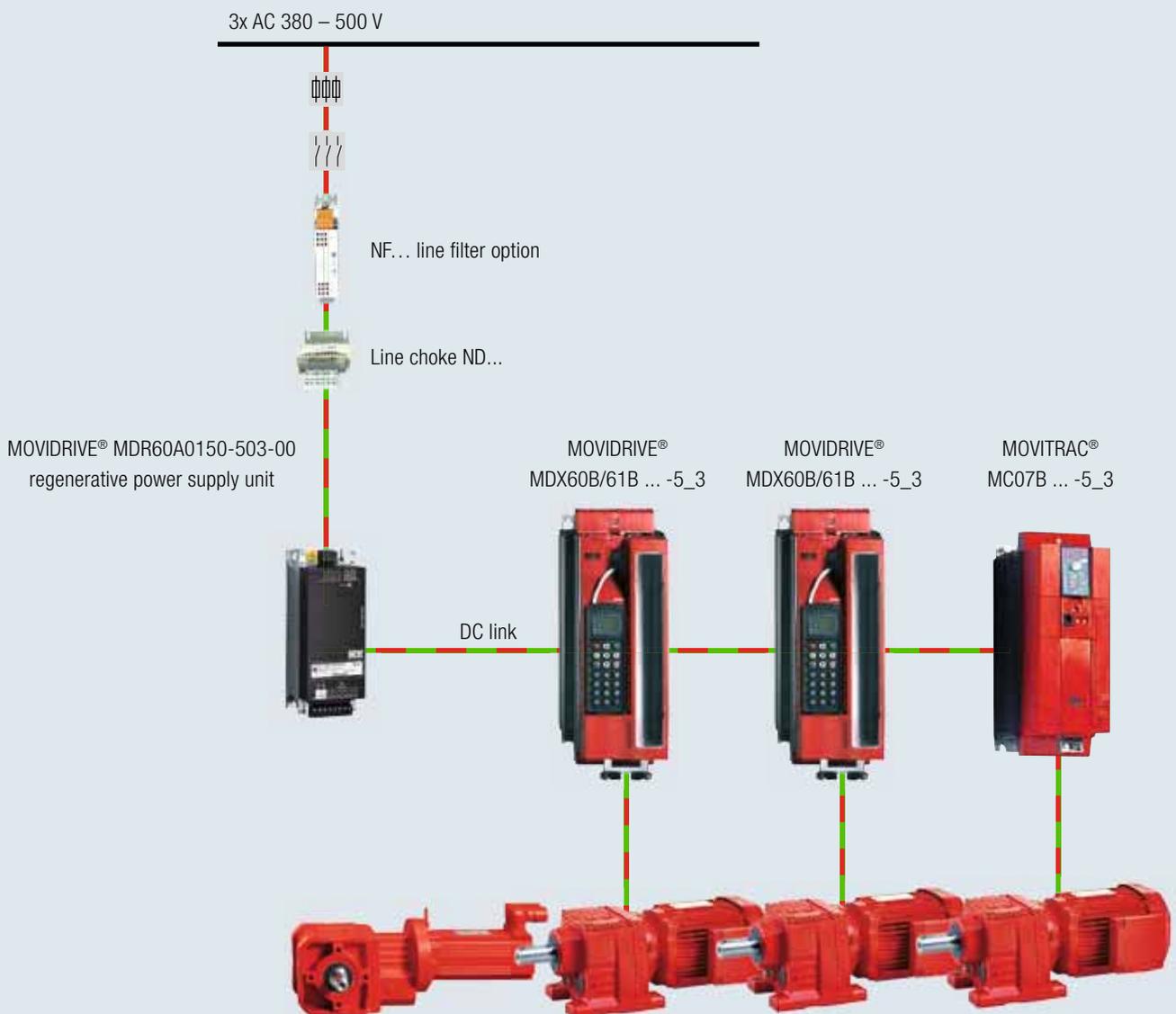


- Reduced overall energy consumption
- Reduced CO<sub>2</sub> emissions
- Reduced energy costs
- Cost-efficient installation
- No investments in braking resistors
- No braking resistors need to be installed outside the control cabinet
- No heating of the environment or of the control cabinet through braking resistors
- Saves expenditure for control cabinet ventilation
- Saves control cabinet space

## Regenerative power supply for MOVIDRIVE® MDR

### Regenerative power supply: Function as a centralized supply and regenerative power supply unit

- Braking energy released during the application is fed back into the power supply system
- The regenerative power supply unit is selected based on the motor load
- The DC link is supplied via regenerative power supply
- Less installation work by connecting several drive axes to a central regenerative power supply
- Central exchange of energy between the drive axes



- Reduced overall energy consumption
- Reduced CO<sub>2</sub> emissions
- Reduced energy costs
- Cost-efficient installation
- No investments in braking resistors
- No braking resistors need to be installed outside the control cabinet
- No heating of the environment or of the control cabinet through braking resistors
- Saves expenditure for control cabinet ventilation
- Saves control cabinet space

## 6.1 Control cabinet installation

### MOVIDRIVE® MDR regenerative power supply units and motor inverters 160 kW – 315 kW



MOVIDRIVE® MDR61B regenerative power supply



<b>Features</b>	<ul style="list-style-type: none"> <li>– Energy-efficient and optimized overall concept: MOVIDRIVE® B product series extended by regenerative power supply units and corresponding motor inverters in the power range from 160 to 315 kW</li> <li>– Particularly interesting for applications with potential energy, such as in hoists, cranes and gantries, or in trolleys with high kinetic energy produced through electrical braking</li> </ul>	
<b>Functions</b>	<ul style="list-style-type: none"> <li>– Used as central regenerative power supply for connected standard inverters or motor inverters</li> <li>– Energy is fed back into the grid when the application is operating as a generator, e.g. during electrical braking</li> <li>– Braking energy is no longer converted into heat but is fed back into the grid for further use</li> </ul>	
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Significant reduction of the overall energy consumption / of CO<sub>2</sub> emissions / of energy costs</li> <li>– No braking resistors are required               <ul style="list-style-type: none"> <li>- No investment costs for braking resistors</li> <li>- No installation effort for external braking resistors</li> <li>- No heating up of the environment through braking resistors</li> </ul> </li> <li>– Sinusoidal line current = controlled energy recovery</li> <li>– With coated printed-circuit boards as standard for demanding ambient conditions</li> <li>– Simple installation and wiring: integrated PWM filter / integrated choke / integrated and automatic DC link precharge / integrated line contactor</li> <li>– Modular power section, which means not the entire unit needs to be replaced in the event of service</li> <li>– EMC limit value class C3 (EN 61800-3) with the standard unit               <ul style="list-style-type: none"> <li>- On supply system end: without any measures → no external line filter necessary</li> <li>- On motor side: with shielded motor cables and output choke</li> </ul> </li> </ul>	
<b>Type designation</b>	MDR61B1600-503-00/L	MDR61B2500-503-00/L
<b>Connection voltage</b>	3× AC 380 V – 500 V	
<b>Nominal power kW</b>	160	250
<b>Line current/nominal motor current I<sub>N</sub> A</b>	250	400
<b>Maximum continuous power</b>	125% I <sub>N</sub>	
<b>Overload capacity</b>	150% I <sub>N</sub> for 60 s	
<b>External accessories for control cabinet installation</b>	<ul style="list-style-type: none"> <li>– Mounting base</li> <li>– Air duct</li> <li>– Connection kit</li> <li>– Touch guard (IP20 kit)</li> <li>– DC link coupling</li> </ul>	



### MOVIDRIVE® MDX62B motor inverters



<b>Features</b>	<ul style="list-style-type: none"> <li>– Energy-efficient and optimized overall concept: MOVIDRIVE® B product series extended by regenerative power supply units and corresponding motor inverters in the power range from 160 to 315 kW</li> <li>– Particularly interesting for applications with potential energy, such as in hoists, cranes and gantries, or in trolleys with high kinetic energy produced through electrical braking</li> </ul>		
<b>Functions</b>	<ul style="list-style-type: none"> <li>– MOVIDRIVE® B standard inverter without input stage for connection to the MOVIDRIVE® B MDR61B regenerative power supply</li> </ul>		
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Cost-optimized MOVIDRIVE® B standard inverter without input subassemblies</li> <li>– Simple installation</li> <li>– DC link connection via conductor rail</li> <li>– All MOVIDRIVE® B option cards can be used</li> </ul>		
<b>Type designation</b>	MDX62B1600-503-4-0T/L	MDX62B2000-503-4-0T/L	MDX62B2500-503-2-0T/L
<b>Connection voltage</b>	Connection to MDR61B regenerative power supply unit		
<b>Nominal power kW</b>	160	200	250
<b>Line current/nominal motor current <math>I_N</math> A</b>	300	380	470
<b>Maximum continuous power</b>	125% $I_N$		
<b>Overload capacity</b>	150% $I_N$ for 60 s		
<b>Internal options</b>	Utilization of all MOVIDRIVE® B option cards for connection to fieldbus systems and evaluation of motor encoders or external encoders (see MOVIDRIVE® B options)		
<b>External accessories for control cabinet installation</b>	<ul style="list-style-type: none"> <li>– Mounting base</li> <li>– Air duct</li> <li>– Connection kit</li> <li>– Touch guard (IP20 kit)</li> <li>– DC link adapter</li> <li>– DC link coupling</li> </ul>		

## 6.1 Control cabinet installation

### effiDRIVE® – Energy efficiency in the control cabinet

 <p>The perfect drive solution for applications from simple speed control to dynamic positioning</p>	Process adaptation	Energy-saving function	DC link coupling	Regenerative power supply	Thermally controlled fans
 <p><b>MOVITRAC® LTE-B</b> – Compact range of functions for simple applications</p>	✓	✓			✓
 <p><b>MOVITRAC® LTP-B</b> – Adjusted range of functions for simple applications</p>	✓	✓	✓		✓
 <p><b>MOVITRAC® B</b> – Compact design with complete range of functions – Cost-efficient choice for standard tasks</p>	✓	✓	✓	✓	✓
 <p><b>MOVIDRIVE® B</b> – High basic functionality with wide range of options – Cost-effective choice for complex systems</p>	✓	✓	✓	✓	✓

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**Process adaptation**

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- Almost every process can be adapted to the actual demand thanks to infinitely variable speed and torque control, which makes the process more energy efficient. Depending on the application, energy savings of up to 70% can be achieved.
- More energy-saving potential can be tapped in applications with periodic acceleration and deceleration through energy-efficient motion sequences. Maximum acceleration, speed and braking deceleration are not always necessary.

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**Energy-saving function**

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- The energy-saving function of MOVITRAC® LTE-B, LTP-B and MOVITRAC® B as well as MOVIDRIVE® B offers advantages when the application has to be operated in the part-load range and dynamic properties are not a main requirement when load changes occur.
- The dynamic adjustment of the magnetization current enables the motor to be operated with optimum efficiency in every operating point. Energy consumption is reduced by up to 30% depending on the application.
- The energy-saving function ensures optimum efficiency of the drive especially in conjunction with an energy-efficient motor.

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**DC link coupling**

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- By connecting the DC links of several inverters, regenerative energy of one drive can be used directly as motor energy in another drive.
- This measure can reduce energy consumption from the supply system if the drive sequences are segmented and suitable travel profiles have been selected.
- MOVI-PLC®: In storage and retrieval systems, the decentralized controller allows for controlling the travel profile in an intelligent manner and in this way achieves optimum energy coupling.

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**Regenerative power supply**

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- A regenerative power supply unit feeds back the regenerative energy of a drive into the supply system.
- The released braking energy is not dissipated via braking resistors but fed back into the supply system, which saves energy.
- This is especially effective in hoists and storage and retrieval units.

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**Thermally controlled fans**

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- The fans are switched on only when actual waste heat is generated. Not only does this lower energy consumption; it also increases the service life of the fan.
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## 6.1 Control cabinet installation

### effiDRIVE® – Energy efficiency in servo applications

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#### Features

The crucial part of energy-efficient operation of servo drive technology is the detailed planning and fulfillment of process and efficiency requirements. With the energy efficiency concept effiDRIVE® for servo applications, SEW-EURODRIVE offers comprehensive consulting during the planning of new plants and the modernization of existing systems. With our great expertise regarding drive technology and the industry, we focus on efficiency already during the first steps of selecting the used technology and products in order to optimize the energy consumption. But it is not sufficient to only combine energy-efficient components. Only looking at the application in its entirety allows for the maximum energy efficiency.

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**Energy-efficient components**

<b>Sine-shaped regenerative power supply modules</b> <b>MXR80A</b>	<ul style="list-style-type: none"> <li>– In regenerative operating states, the braking energy is fed back into the supply system</li> <li>– Energy supply and energy recovery are sinusoidal with <math>\cos \phi = 1</math></li> <li>– Almost complete avoidance of supply harmonics</li> <li>– No interference of sensitive electronic devices in direct vicinity</li> <li>– Determination of energy flow, detailed diagnostic information</li> <li>– Controlled DC link voltage independent of link voltage</li> </ul>
<b>Block-shaped regenerative power supply modules</b> <b>MXR81A</b>	<ul style="list-style-type: none"> <li>– In regenerative operating states, the braking energy is fed back into the supply system</li> <li>– Inexpensive alternative to sinusoidal regenerative power supply if the supply system conditions are stable</li> <li>– Automatic deactivation of the recovery during motoring operation</li> <li>– Emergency braking resistor can be connected</li> </ul>
<b>Capacitor module</b> <b>MXC80A</b>	<ul style="list-style-type: none"> <li>– DC link energy is absorbed or supplied with up to 50 kW</li> <li>– Up to 1000 W can be stored in the module</li> <li>– The module is charged actively via charging connection</li> <li>– With adequate project planning, the braking energy can be completely recycled for the next travel task</li> <li>– There is no need for braking resistors</li> <li>– Especially suited for cycles with small drives</li> </ul>
<b>Compact power supply module</b> <b>MXP81A</b>	<ul style="list-style-type: none"> <li>– Combination of 10 kW power supply module and 250 W capacitor module</li> <li>– Especially cost-effective and space-saving with small systems</li> <li>– Size-optimized braking resistor is already integrated in the module</li> </ul>

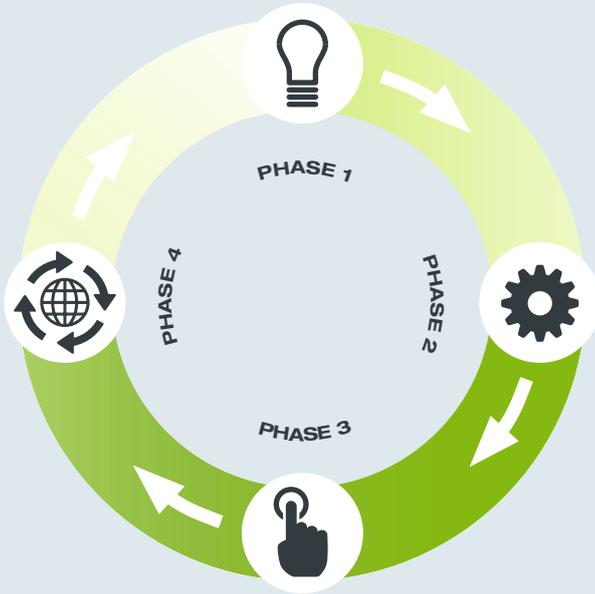
## 6.2 Wall mounting

### MOVI4R-U® basic inverters



**MOVI4R-U® in IP54**

<b>Features</b>	<ul style="list-style-type: none"> <li>– Optimum solution to fulfill the basic requirements in drive technology: simple speed control of asynchronous motors</li> <li>– Intuitive operating concept for short startup times and simple handling</li> <li>– High degree of protection IP54</li> <li>– Modular design for quick device replacement</li> <li>– Fast and simple exchange of the power section in service cases</li> <li>– Guaranteed integration into recycling systems</li> </ul>	
<b>Line connection</b>	Power range kW	
<b>1-phase / 220 – 240 V</b>	0.25 – 0.55	
<b>3-phase / 220 – 240 V</b>	0.25 – 0.55	
<b>3-phase / 380 – 500 V</b>	0.25 – 1.1	
<b>Features</b>	<ul style="list-style-type: none"> <li>– Frequency inverter with V/f control</li> <li>– Control plate with control knob as combination of adjusting knob and push button</li> <li>– Control and setpoint selection:               <ul style="list-style-type: none"> <li>- with digital inputs and fixed setpoints</li> <li>- setpoint selection with analog input</li> <li>- manual mode with control plate</li> </ul> </li> <li>– MOVI4R-U® is based on a sustainable product concept that allows for re-integration into material and raw material cycles. For more information, refer to <a href="http://www.sew-eurodrive.com">www.sew-eurodrive.com</a></li> </ul>	
<b>Options</b>	<b>NF003.. and NF008..</b>	<b>HD..</b>
	Line filter combined with a main switch <ul style="list-style-type: none"> <li>– Facilitates EMC-compliant installation</li> <li>– Simply switch off the inverter individually during maintenance work</li> </ul>	Output filter <ul style="list-style-type: none"> <li>– to suppress magnetization noises at the motor</li> <li>– to improve cable losses and for long motor cables</li> </ul>



**Sustainable product life cycle of MOVI4R-U® for optimum conservation of resources**

<p><b>Phase 1 Development</b></p>	<ul style="list-style-type: none"> <li>- Choice of environmentally friendly materials</li> <li>- Low material and raw material intensity</li> <li>- Reduced material diversity, simple separability</li> </ul>
<p><b>Phase 2 Manufacturing</b></p>	<ul style="list-style-type: none"> <li>- Resource-efficient production and logistics concepts</li> <li>- Use of renewable energies</li> <li>- Low transport intensity thanks to local production</li> <li>- Environment-friendly manufacturing processes</li> </ul>
<p><b>Phase 3 Use</b></p>	<ul style="list-style-type: none"> <li>- High energy efficiency of the operating phase</li> <li>- Optimized product life: durable, maintenance-friendly, expandable</li> <li>- Options for technical upgrades (without replacing the entire device)</li> <li>- effiDRIVE® energy saving consultation for support</li> </ul>
<p><b>Phase 4 Re-integration</b></p>	<ul style="list-style-type: none"> <li>- Design that is suitable for recycling</li> <li>- Re-integration and recycling of components in material and raw material cycles</li> <li>- Environmentally sound waste disposal</li> </ul>

**Recycling processes**



**Today's products are tomorrow's raw materials. We are happy to arrange a homogenous separation and correct re-integration of the materials used in the MOVI4R-U® in the material cycles – feel free to contact us!**

The basic inverter has been scientifically tested in a life-cycle assessment study carried out by the Institute for Industrial Ecology of the Pforzheim University.

MOVI4R-U® achieved first successes and won the "Nachhaltige Produktion Award 2014" (sustainable production award) at the "Industrial Green-Tech-Conference" at HANNOVER MESSE 2014.

## 6.2 Wall mounting

### MOVITRAC® LTE-B<sup>+</sup> basic inverters



**MOVITRAC® LTE-B<sup>+</sup> in IP66**

**Line connection / power range  
kW**

- 115 V / 1-phase: 0.37 – 1.1
- 230 V / 1-phase: 0.37 – 4.0
- 230 V / 3-phase: 1.5 – 4.0
- 400 V / 3-phase: 0.75 – 11.0

➔ More information on MOVITRAC® LTE-B<sup>+</sup> in IP20: page 218

### MOVITRAC® LTP-B standard inverters



**MOVITRAC® LTP-B in IP55/IP66**

**Line connection / power range  
kW**

- 230 V / 1-phase: 0.75 – 2.2
- 230 V / 3-phase: 0.75 – 7.5
- 400 V / 3-phase: 0.75 – 16.0
- 575 V / 3-phase: 0.75 – 11.0

**Features**

- Flexible, simple and safe
- Standard design in degree of protection IP55 / NEMA 12k and IP66 / NEMA 4X housing for wall mounting
- Optionally also available in degree of protection IP20 / NEMA 1 for control cabinet installation

## MOVITRAC® LTP-B standard inverters

<b>Features</b>	<ul style="list-style-type: none"> <li>– <b>NEW:</b> Full text display for devices with high degree of protection</li> <li>– Integrated keypad</li> <li>– PI controller</li> <li>– KTY, motor protection function Pt1000</li> <li>– Emergency mode/fire mode</li> <li>– Fieldbus connection via SEW system bus / CANopen / Modbus RTU in the basic device or via option card / SEW gateway / MOVI-PLC®</li> <li>– Preconfigured for corresponding DR.. motor</li> <li>– Energy-saving function</li> <li>– DC link connection</li> <li>– Extra quiet pulsed voltage supply up to 16 kHz</li> <li>– Overload capacity up to 175%</li> <li>– V/f and VFC speed and torque vector control</li> <li>– Operation of synchronous motors with LSPM technology (Line Start Permanent Magnet Motor)</li> <li>– Safe Torque Off (STO) according to EN ISO 13849-1 PL d</li> <li>– Approved in accordance with UL508</li> </ul>
<b>Options</b>	
<b>LT BG OLED A</b>	Remote full text keypad in IP54 in control cabinet door
<b>LT BG-C</b>	Remote keypad in IP54 in control cabinet door
<b>LT BP-C</b>	Bluetooth® parameter module (parameterization, data backup)
<b>USB11A</b>	Interface adapter for connection to a PC via USB interface
<b>LT OP..</b>	Cable sets for direct fieldbus connection via SEW system bus
<b>DFx.. /UOH..</b>	Gateways for connecting fieldbuses in the control cabinet
<b>LT FP / LT FD / LT FB / LT FE</b>	Option cards for direct connection of single inverters to fieldbuses
<b>LT OB EN..</b>	Option cards for connection of HTL and TTL encoders
<b>LT OB 3ROUT A</b>	Relay option card
<b>LT OB IO A</b>	I/O expansion option card
<b>BW..</b>	Braking resistors
<b>ND LT..</b>	Line chokes
<b>NF LT..</b>	Line filters
<b>HD LT..</b>	Output chokes

## 6.3. Decentralized installation: Motor starters

### NEW: MOVIFIT® compact basic motor starters



#### Features

#### Minimal effort – maximum effect

- FieldPower® contact block\* for energy distribution with modern and reliable connector technology
- Simple connection and wiring technology
- Systematic integration of energy distribution components in the housing of the drive unit
- Consistent use of standard plug connectors for control and motor connection
- Extremely short assembly and installation times
- In connection with AS-Interface, two sensors can, in addition to the drive function, be connected to the unit for direct communication with the system controller (everything included)

#### Technical data

<b>Function</b>	Reversing	Duo	Reversing	Duo
<b>Control</b>	AS-Interface		Binary control signals	
<b>Max. motor power kW</b>	2.2 and 4	2× 2.2	2.2 and 4	2× 2.2
<b>Connection voltage V<sub>AC</sub></b>	AC 3× 380 -10% – 480 +10%			
<b>Line frequency Hz</b>	50 / 60			
<b>Line connection</b>	FieldPower® contact block*			
<b>Line protection</b>	External			
<b>Ambient temperature</b>	-20 °C to +40 °C			
<b>Degree of protection</b>	IP55			
<b>Service interface</b>	For connecting the keypad or the interface for MOVITools® MotionStudio			
<b>Connection control</b>	M12 plug connector 1× male / 2× female		M12 plug connector 2× male / 1× female	
<b>Inputs and outputs</b>	2 digital inputs for connecting external sensors		<ul style="list-style-type: none"> <li>– 3 control inputs</li> <li>– 1 digital output</li> <li>– DC 24 V output</li> </ul>	
<b>Brake control</b>	<ul style="list-style-type: none"> <li>– Supply via motor connection</li> <li>– Brake voltage = line voltage</li> <li>– BG rectifier in motor terminal box</li> </ul>			
<b>Option</b>	Built-in main switch: Simply switch off the inverter individually during maintenance work			
<b>Dimensions L × W × H mm</b>	255 × 150 × 159			

## MOVI-SWITCH® motor starters

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### Features

- Gearmotor with switching and protection function integrated in the motor terminal box
  - 2-, 4- and 6-pole
  - Power range 0.09 to 3.0 kW
- 

- ➔ **More information on**
- **MOVI-SWITCH®: page 212**
  - **Fieldbus interfaces, field distributors, cable systems: page 196**

## 6.3. Decentralized installation: Motor starters

### MOVIFIT® SC motor starters



#### Features

- Electronic (contactless) motor starter with one or two directions of rotation
- Parameterizable soft startup time
- Integrated brake management
- Increased safety through switching of 3 phases
- Integrated power distribution with line protection up to 6 mm<sup>2</sup>
- Optional maintenance switch
- CAN/SBus interface for external components
- Free programming according to IEC 61131
- Integrated parameter memory
- Comprehensive diagnostics via LEDs
- Expanded parameterization and diagnostics via MOVITOOLS® MotionStudio or fieldbus
- Robust aluminum housing
- Degree of protection IP65 (optional IP69K)
- Approval: ,  and 
- Optional: Hygienic<sup>PLUS</sup> design, i.a. degree of protection IP69K

#### Technical data

##### Power range

- When connecting 2 motors (dual-motor starter) → one direction of rotation:  
0.37 kW – 1.5 kW each
- When connecting 1 motor (reversing starter) → two rotation directions:  
0.37 kW – 3.0 kW each

##### Voltage range

3× AC 380 V – 500 V / 50 Hz to 60 Hz

##### Digital inputs/outputs

- 6 DI + 2 DI/O with function level Classic
- 12 DI + 4 DI/O with function level Classic and PROFINET fieldbus
- 12 DI + 4 DI/O with function level Technology

#### Communication

PROFIBUS, PROFINET, PROFIsafe, DeviceNet™, EtherNet/IP™ and Modbus/TCP, PROFINET interface SCRJ / POF

#### Connection variants

- Motor starter consists of EBOX = electronics unit and ABOX = connection box:
- MOVIFIT® standard connection box: via cable glands
  - MOVIFIT® hybrid connection box: with variable connector configuration

**MOVIFIT® function level**

Indicates the functional scope of the software assigned to the MOVIFIT® devices regarding

- Operation
- Local system control
- Diagnostics

**Classic**

Simple functions

- "Easy mode": Easy startup via DIP switches possible
- Standardized drive functions
- Control as fieldbus gateway
- Extended configuration and diagnostics options via gateway configurator

**Technology**

Free programming (MOVI-PLC® /MOVITOOLS® MotionStudio)

- Programming in accordance with IEC 61131 (e. g. in LD, FBD, IL, ST, SFC)
- MOVITOOLS® MotionStudio with PLC Editor, Application Builder, etc.
- Multi-level library concept (application and program modules of the MOVI-PLC® series of controllers)
- Decentralized processing of digital inputs and outputs in the software

## 6.4. Decentralized installation: Inverters

### NEW: MOVIFIT® compact basic inverters



	<b>Simple user interfaces – short installation times</b> FieldPower® contact block* for energy distribution with modern and reliable connector technology <ul style="list-style-type: none"> <li>– Simple connection and wiring technology</li> <li>– Systematic integration of energy distribution components in the housing of the drive unit</li> <li>– Consistent use of standard plug connectors for control and motor connection</li> <li>– Extremely short assembly and installation times</li> <li>– In connection with AS-Interface, two sensors can, in addition to the drive function, be connected to the unit for direct communication with the system controller (everything included)</li> </ul>					
<b>Function</b>	Frequency inverter with parameterizable ramps and up to 4 fixed speeds					
<b>Control</b>	AS-Interface			Binary control signals		
<b>Max. motor power kW</b>	0.75	1.1	1.5	0.75	1.1	1.5
<b>Connection voltage <math>V_{AC}</math></b>	AC 3× 380 -10% – 480 +10%					
<b>Line frequency Hz</b>	50 / 60					
<b>Line connection</b>	FieldPower® contact block*					
<b>Line protection</b>	External					
<b>Ambient temperature</b>	-20 °C to +40 °C					
<b>Degree of protection</b>	IP55					
<b>Service interface</b>	For connecting the keypad or the interface for MOVITOOLS® MotionStudio					
<b>Connection control</b>	M12 plug connector 1x male / 2x female			M12 plug connector 2x male / 1x female		
<b>Inputs and outputs</b>	2 digital inputs for connecting external sensors			<ul style="list-style-type: none"> <li>– 4 control inputs</li> <li>– 1 digital output</li> <li>– DC 24 V output</li> </ul>		
<b>Brake control</b>	<ul style="list-style-type: none"> <li>– Switched power output at the controller</li> <li>– Brake voltage = line voltage</li> <li>– BG rectifier in motor terminal box</li> </ul>					
<b>Options</b>	<ul style="list-style-type: none"> <li>– Built-in EMC filter: Facilitates EMC-compliant installation</li> <li>– Built-in main switch: Simply switch off the inverter individually during maintenance work</li> </ul>					
<b>Dimensions L × W × H mm</b>	255 × 150 × 159					

## MOVIMOT® standard inverters

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<b>Features</b>	The standard inverter for direct mounting to the motor or mounting close to the motor
<b>Power range kW</b>	<ul style="list-style-type: none"> <li>– 3× 380 – 500 V: 0.37 – 4.0</li> <li>– 3× 200 – 240 V: 0.7 – 2.2</li> </ul>

- **More information on**
- **MOVIMOT®: page 192**
  - **Fieldbus interfaces, field distributors, cable systems: page 196**

## 6.4. Decentralized installation: Inverters

### MOVIFIT® MC distributors for MOVIMOT®



	<b>MOVIFIT® MC Classic distributors: for MOVIMOT®</b>	<b>MOVIFIT® MC Technology controllers: for MOVIMOT®</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Power, communication and function distributor for MOVIMOT®</li> <li>– Up to 3 MOVIMOT® devices can be connected via hybrid cable</li> <li>– Integrated power distribution with line protection up to 6 mm<sup>2</sup></li> <li>– Optional maintenance switch</li> <li>– Optional incremental encoder connection</li> <li>– Comprehensive safety functionality</li> <li>– All common bus systems are available</li> <li>– Integrated digital inputs and outputs</li> <li>– Integrated parameter memory</li> <li>– Comprehensive diagnostics via LEDs</li> <li>– Expanded parameterization and diagnostics via MOVITOOLS® MotionStudio or fieldbus</li> <li>– Plug-in interfaces for power, motor (power rating) and I/Os</li> <li>– Robust aluminum housing</li> <li>– Degree of protection IP65</li> <li>– Approval: <b>CE</b>, <b>UL</b> and <b>C</b></li> </ul>	
<b>Technical data</b>	<ul style="list-style-type: none"> <li>– MOVIMOT® power range from 0.37 kW to 4 kW in two sizes</li> <li>– MOVIFIT® MC voltage range 3× 380 V to 500 V / 50 Hz to 60 Hz</li> <li>– 12 DI + 4 DIO (DI = digital input, DIO = digital input/output)</li> </ul>	

<b>Function level</b>	Indicates the functional scope of the software assigned to the MOVIFIT® devices regarding <ul style="list-style-type: none"> <li>– Software functionality</li> <li>– Processing the digital inputs and outputs</li> <li>– Local system control</li> <li>– Startup, operation, and diagnostics</li> </ul>	
	<b>MOVIFIT® MC Classic distributors</b> Simple and standardized functions	<b>MOVIFIT® MC Technology controllers</b> Parameterizable application modules and free programming
<b>safetyDRIVE</b> <b>Functional safety</b>	Safety functions integrated in the MOVIMOT® inverter in accordance with IEC 61800-5-2: <ul style="list-style-type: none"> <li>– Safe disconnection (STO)</li> <li>– Safe stopping SS1 (c)</li> <li>– Approval in accordance with:             <ul style="list-style-type: none"> <li>- Performance level d according to EN ISO 13849-1</li> <li>- SIL 2 according to IEC 61800-5-2</li> </ul> </li> </ul> Safety options S11 and S12 <ul style="list-style-type: none"> <li>– PROFIsafe connection or independent operation (different numbers of safe inputs and outputs)</li> </ul>	
	<ul style="list-style-type: none"> <li>– "Easy mode": Easy startup using DIP switches possible</li> <li>– Standardized drive functions</li> <li>– Control as fieldbus gateway</li> <li>– Extended configuration and diagnostics options via gateway configurator</li> </ul>	<b>Parameterizable application modules – standardized application functions</b> <ul style="list-style-type: none"> <li>– Standardized functions</li> <li>– Control and diagnostics via fieldbus</li> <li>– Parameterization instead of programming</li> <li>– Startup and diagnostics using MOVITOOLS® MotionStudio</li> </ul> <b>Free programming (MOVI-PLC® / MOVITOOLS® MotionStudio)</b> <ul style="list-style-type: none"> <li>– Programming in accordance with IEC 61131 (e.g. in LD, FBD, IL, ST, SFC)</li> <li>– MOVITOOLS® MotionStudio with PLC Editor, Application Builder, etc.</li> <li>– Multi-level library concept (application and program modules of the MOVI-PLC® series of controllers)</li> <li>– PLCopen-certified motion blocks</li> </ul>

## 6.4. Decentralized installation: Inverters

### MOVIFIT® FC inverters



	<b>MOVIFIT® FC Classic standard inverters</b>	<b>MOVIFIT® FC Technology application inverters</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Decentralized frequency inverter with a wide range of functions</li> <li>– Constant speed control, synchronized motion, simple lifting axes</li> <li>– Integrated T distributor for supply and control voltage up to 6 mm<sup>2</sup></li> <li>– Integrated energy-efficient brake management for various brake voltages</li> <li>– Optional internal (integrated in ABOX) or external braking resistor</li> <li>– Optional maintenance switch</li> <li>– Optional incremental encoder connection</li> <li>– All common bus systems are available</li> <li>– Integrated parameter memory</li> <li>– Comprehensive diagnostics via LEDs</li> <li>– Expanded parameterization and diagnostics via MOVITOOLS® MotionStudio or fieldbus</li> <li>– Plug-in interfaces for power, motor (power rating) and I/Os</li> <li>– Robust aluminum housing</li> <li>– Degree of protection IP65 (optional IP69K)</li> <li>– General approvals: <b>CE</b>, <b>UL</b> and <b>C</b></li> </ul>	
<b>Technical data</b>	<ul style="list-style-type: none"> <li>– Power range from 0.37 kW to 4 kW               <ul style="list-style-type: none"> <li>- Size 1: 0.37 kW to 1.5 kW</li> <li>- Size 2: 2.2 kW to 4.0 kW</li> </ul> </li> <li>– Voltage range 3× 380 V to 500 V / 50 Hz to 60 Hz</li> <li>– 12 DI + 4 DI/O with function level Classic and PROFINET fieldbus</li> <li>– 6 DI + 2 DI/O with function level Classic</li> <li>– 12 DI + 4 DI/O (DI = digital input, DI/O = digital input/output) with function level technology</li> </ul>	

<b>Function level</b>	Indicates the functional scope of the software assigned to the MOVIFIT® devices regarding <ul style="list-style-type: none"> <li>– Software functionality</li> <li>– Processing of digital inputs and outputs</li> <li>– Local system control</li> <li>– Startup, operation, and diagnostics</li> </ul>	
	<b>MOVIFIT® FC Classic standard inverters</b> Simple and standardized functions	<b>MOVIFIT® FC Technology application inverters</b> Parameterizable application modules: <ul style="list-style-type: none"> <li>– Standardized functions</li> <li>– Control and diagnostics via fieldbus</li> <li>– Parameterization instead of programming</li> <li>– Startup and diagnostics using MOVITOOLS® MotionStudio</li> </ul>
<b>safetyDRIVE</b> <b>Functional safety</b>	<ul style="list-style-type: none"> <li>– “Easy mode”: Easy startup using DIP switches possible</li> <li>– Standardized drive functions</li> <li>– Control as fieldbus gateway</li> <li>– Extended configuration and diagnostics options via gateway configurator</li> </ul> <b>Free programming (MOVI-PLC® / MOVITOOLS® MotionStudio)</b> <ul style="list-style-type: none"> <li>– Programming in accordance with IEC 61131 (e.g. in LD, FBD, IL, ST, SFC)</li> <li>– MOVITOOLS® MotionStudio with PLC Editor, Application Builder, etc.</li> <li>– Multi-level library concept (application and program modules of the MOVI-PLC® series of controllers)</li> <li>– PLCopen-certified motion blocks</li> </ul> Safety functions integrated in the MOVIMOT® inverter in accordance with IEC 61800-5-2: <ul style="list-style-type: none"> <li>– Safe disconnection (STO)</li> <li>– Safe stopping SS1(a) and SS1(c)</li> <li>– Safe motion (SDI, SLS)</li> <li>– Approval in accordance with:             <ul style="list-style-type: none"> <li>- Performance level d according to EN ISO 13849-1</li> <li>- SIL 2 according to IEC 61800-5-2</li> </ul> </li> </ul> Safety options S11 and S12 <ul style="list-style-type: none"> <li>– PROFIsafe connection or independent operation (different numbers of safe inputs and outputs)</li> </ul>	

## 6.4. Decentralized installation: Inverters

### MOVIPRO® standard and application inverters



**MOVIPRO®**

	<b>MOVIPRO® SDC</b> <b>standard inverters –</b> <b>Decentralized drive inverter with</b> <b>positioning control</b>	<b>MOVIPRO® ADC</b> <b>application inverters –</b> <b>Compact and freely programmable</b> <b>controller for decentralized drive</b> <b>technology</b>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Speed control and positioning</li> <li>– Optional encoder feedback for motor and track</li> <li>– Integrated brake control with different brake voltages</li> <li>– Optional regenerative power supply (only ADC)</li> <li>– Fieldbus interfaces: PROFIBUS, PROFINET, PROFIsafe, EtherNet/IP™, Modbus/TCP, DeviceNet™</li> <li>– Integrated digital inputs and outputs</li> <li>– Optional RS485, SBus, and SBus<sup>PLUS</sup> interfaces for external actuators and sensors</li> <li>– Plug-in interfaces for power, motor (power rating) and encoder (signals)</li> <li>– Local memory for parameters</li> <li>– IP54 degree of protection</li> <li>– Robust aluminum housing</li> <li>– Optional maintenance switch</li> <li>– Optional, separable connection unit for linear power bus</li> </ul>	
<b>Technical data</b>	<ul style="list-style-type: none"> <li>– Power range from 2.2 kW to 22 kW                             <ul style="list-style-type: none"> <li>- Size 0: 2.2 kW</li> <li>- Size 1: 4 kW, 7.5 kW</li> <li>- Size 2: 11 kW, 15 kW, 22 kW</li> </ul> </li> <li>– Voltage range 3× 380 V to 500 V / 50 Hz to 60 Hz</li> <li>– 12 DI + 4 DI/O with function level Classic and PROFINET fieldbus</li> </ul>	
<b>safetyDRIVE</b> <b>Functional safety</b>	<ul style="list-style-type: none"> <li>– Safe Torque Off (STO) up to PL d according to EN ISO 13849-1</li> <li>– Optional: Safe PROFIsafe bus system</li> <li>– Optional only for ADC: Safe brake control (SBC)</li> </ul>	

## Decentralized servo inverters



### MOVIAXIS® MMD60B

#### Features

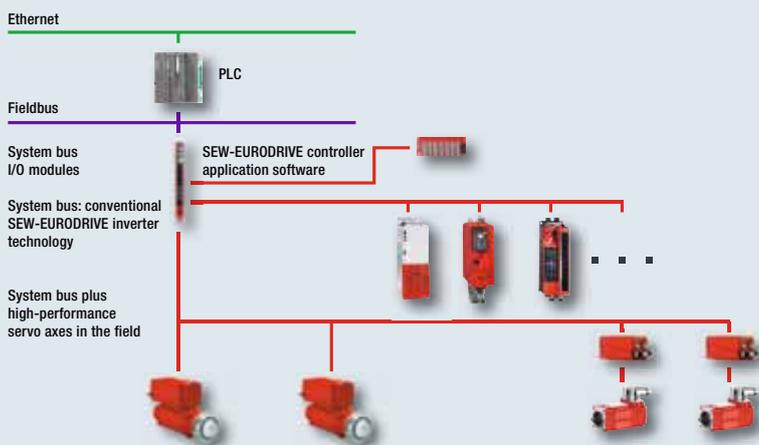
- Compact, powerful performance
- High overload capacity of up to 400%
- Available as decentralized variant installed close to the motor, or with the inverter integrated in the motor
- Fully scalable when installed close to the motor, with CM.., CMP.., and CMPZ.. with all options
- Reduced wiring work
- Direct, decentralized control of 24 V brakes possible
- Saves control cabinet space
- With EtherCAT®-compatible SBUS<sup>PLUS</sup> for very extensive plants

#### Decentralized inverter

Designation	Maximum output current (A)
MMD60B019-5A3-4-00	19.0
MMD60B024-5A3-4-00	24.0
MMD60B036-5A3-4-00	36.0

#### Drive with integrated inverter

Motor	MOVIAXIS® MMD60B designation		
	019	024	036
CM71L, $n_n = 4\,500 \text{ min}^{-1}$	–	X	X
CM90L, $n_n = 4\,500 \text{ min}^{-1}$	–	–	X
CM112L, $n_n = 1\,200 \text{ min}^{-1}$	–	–	X
Decentralized frequency inverter for mounting close to the motor	X	X	X



Automation concept for system and machine modules

## 6.5 Accessories and options

### Software

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#### MOVITOOLS® MotionStudio engineering software

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**Features**

- Modular software concept for consistent engineering:  
Startup, control, diagnostics, communication, and visualization
  - For parameterizing, programming, and diagnosing most inverter series of SEW-EURODRIVE – independent of the device
-



### MOVIVISION® parameterizable plant software

#### Features

- Intuitive software solution for system manufacturers and operators
- Simple and fast startup of a drive system
- Can be used at any time and any place
- No special programming knowledge is required – only parameters have to be entered

➔ More information on the software: pages 326 – 329

## 07

# SERVO DRIVE TECHNOLOGY

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## 7.5 Explosion-proof servo gearmotors

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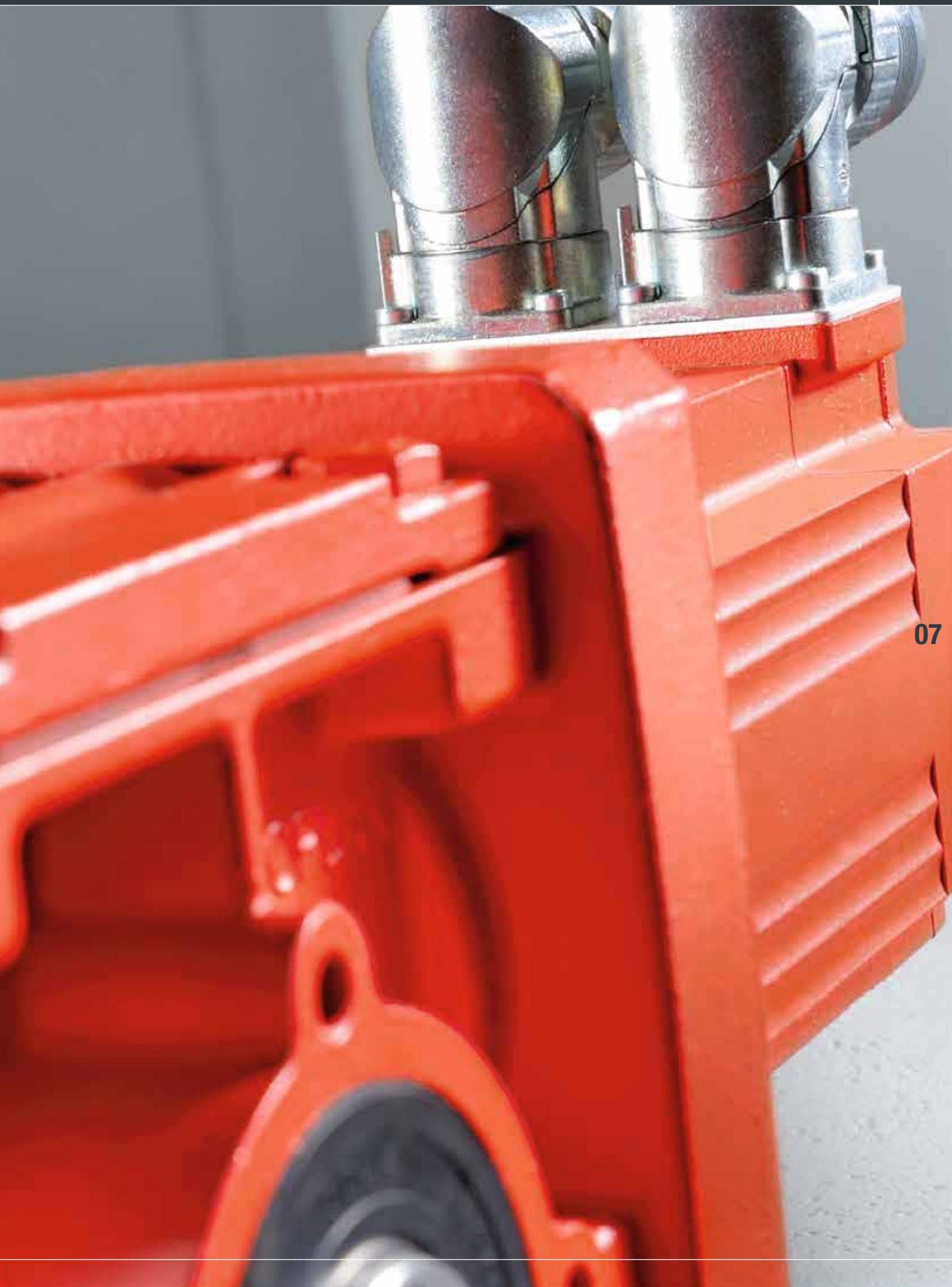
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## 7.1 Servo gear units

### Planetary servo gear units



**PS.F series**

#### Features

- Low backlash planetary servo gear units
- Designed for nominal torques from 25 Nm to 3 000 Nm
- Available in three output variants:
  - PSF: B5 output flange, smooth solid shaft (without key)
  - PSKF: B5 output flange, solid shaft with key
  - PSBF: B5 output, flange block shaft according to EN ISO 9409
- Life-long lubrication
- High permitted overhung loads

Type	Size one stage/two stages	Torque class Nm	Overhung load range N	Gear ratios i	Rotational clearance ' (one stage/two stages)		
					Standard	Optional	
						Reduced (../R)	Minimized (../M)
<b>PS(K)F</b>	121 / 122	25	1 900 – 2 000	One stage <sup>1)</sup>	8'/10'	4'/6'	2'/3'
	221 / 222	55	1 720 – 2 680	3 <sup>2)</sup> , 4, 5, 7, 10	6'/8'	3'/4'	1'/2'
	321 / 322	110	4 380 – 5 480				
	521 / 522	300	6 150 – 9 610				
	621 / 622	600	13 400 – 14 200	Two stages <sup>1)</sup>	4'/6'	2'/3'	1'/1'
	721 / 722	1 000	25 700 – 35 900	16, 20, 25, 28,			
	821 / 822	1 750	51 400 – 62 800	35, 40, 49, 70,			
	921 / 922	3 000	55 000 – 83 300	100			
<b>PSBF</b>	221 / 222	55	1 530 – 5 000	One stage	6'/8'	3'/4'	1'/2'
	321 / 322	110	8 580 – 25 000	5, 7, 10			
	521 / 522	300	13 900 – 40 000				
	621 / 622	600	20 800 – 60 000	Two stages	4'/6'	2'/3'	1'/1'
	721 / 722	1 000	37 900 – 120 000	15 <sup>3)</sup> , 20, 25, 35,			
	821 / 822	1 750	66 100 – 180 000	49, 70, 100			

<sup>1)</sup> Other gear ratios on request

<sup>2)</sup> Only for PS(K)F 121/521

<sup>3)</sup> Only for PSBF 322/522



### PS.C series

#### Features

- Planetary servo gear units
- Designed for nominal torques between 30 Nm and 320 Nm
- Provide the basis for diverse, dynamic, and above all, **cost-optimized drive solutions**
- Compact, lightweight design
- Any mounting position
- Life-long lubrication
- Four output variants:
  - PSC = B5 output flange, solid shaft
  - PSKC = B5 output flange, solid shaft with key
  - PSCZ = B14 output flange, solid shaft
  - PSKCZ = B14 output flange, solid shaft with key

Type	Size one stage/two stages	Torque class Nm	Overhung load range N	Gear ratios i	Rotational clearance ' (one stage/two stages)
					Standard
PS(K)C PS(K)CZ	221 / 222	30	1 170 – 2 000	One stage	10°/15°
	321 / 322	65	1 710 – 4 000	3 <sup>1)</sup> , 5, 7, 10	
	521 / 522	160	2 900 – 6 750		
	621 / 622	320	5 390 – 11 000	Two stages 15 <sup>1)</sup> , 21 <sup>1)</sup> , 25, 30 <sup>1)</sup> , 35, 49, 50, 70, 100	

<sup>1)</sup> Not for PS(K)C, PS(K)CZ 621 / 622

## 7.1 Servo gear units

### Helical-bevel servo gear units



**BS.F series**

#### Features

- Low-backlash helical-bevel servo gear units
- Designed for torque classes from 40 Nm to 1 220 Nm
- Five output variants:
  - BSF: Solid shaft
  - BSKF: Solid shaft with key
  - BSBF: Flange block shaft (EN ISO 9409)
  - BSHF: Hollow shaft with shrink disk
  - BSAF: Hollow shaft with key (shaft-mounted gear unit)
- All variants with B5 mounting flange; foot-mounting and torque arm are optional (→ can be optimally integrated into the relevant application)
- The rotational clearance remains constantly low over the entire gear unit service life

Size	Torque class Nm	Gear unit ratios i	Rotational clearance '
202	40	3 / 4 / 6 / 8 / 10 / 15 / 20 / 25	6' <sup>1)</sup> / 3' <sup>2)</sup>
302	80	3 / 4 / 6 / 8 / 10 / 15 / 20 / 25 / 30	
402	160		
502	320	3 / 4 / 6 / 8 / 10 / 12 / 15 / 20 / 25 / 30 / 35	
602	640	3 / 4 / 6 / 8 / 10 / 12 / 15 / 20 / 25 / 30 / 35 / 40	
802	1 220		

<sup>1)</sup> Standard <sup>2)</sup> Reduced

### Options for servo gear units

<b>Direct motor mounting</b>	Positive direct motor mounting (without terminal adapter) of the SEW servomotor series CMP.. and CM..
<b>Motor adapter</b>	EPH motor adapter for PS.F and PS.C planetary servo gear units, ECH motor adapter for PS.C planetary servo gear units and EBH motor adapter for BS.F helical-bevel servo gear units
<b>Reduced backlash</b>	Optionally for PS.F planetary servo gear units and BS.F helical-bevel servo gear units with significantly smaller rotational clearance
<b>Minimized rotational clearance</b>	Optionally for PS.F planetary servo gear units with even more reduced rotational clearance

## 7.2 Explosion-proof servo gear units

Servo gear units



**Ex EAC**

	<b>Certified gear units</b>	<b>Certified protection types</b>
<b>PS.F planetary servo gear units</b>	<ul style="list-style-type: none"> <li>– For the European market: Gear units comply with Directive 2014/34/EU (ATEX), equipment group II, equipment category 2, II2GD design</li> <li>– Also accepted in China</li> </ul>	<ul style="list-style-type: none"> <li>– Protection type “c”: Protected by safe construction (design safety), EN 13463-1 and -5</li> <li>– Protection type “k”: Protected by liquid immersion, EN 13463-1 and -8</li> </ul>
<b>BS.F helical-bevel servo gear units</b>	<ul style="list-style-type: none"> <li>– Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)</li> </ul>	

➔ **Technical data: pages 110 – 112**

## 7.3 Accessories and options for gear units

### Corrosion protection (KS) and surface protection (OS)



for all servomotors and gear units

<b>Features</b>	To optimally protect motors and gear units that are subject to severe environmental influences, SEW-EURODRIVE offers possibilities to increase the resistance of highly stressed surfaces.
<b>KS corrosion protection</b>	Measures to increase the resistance to corrosion: <ul style="list-style-type: none"> <li>– All retaining screws that are loosened during inspection or maintenance work are made of stainless steel</li> <li>– Nameplates are made of stainless steel and various motor parts are coated with a finishing varnish</li> <li>– The flange contact surfaces and shaft ends are treated with a temporary rust preventive</li> <li>– In addition, clamping straps are used for brakemotors</li> </ul>
<b>OS surface protection</b>	In addition to the standard surface protection, motors and gear units are optionally available with surface protection OS1, OS2, OS3 or OS4. This makes the gearmotors well equipped for operation under various ambient conditions.

#### Measures for interior treatment and standard parts

**Special interior surface coating**

**Brakes with pressure plate made of non-corrosive material**

**Rustproof nameplates**

**Non-corrosive retaining parts**

**RS bearing for IP56**

**Special interior surface coating**

**Special interior surface coating**

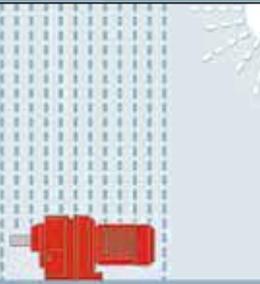
**Rustproof breather valves**

**NOCO® fluid, the contact corrosion inhibitor**

**Output shaft made of stainless steel**

**Optional coating at the output shaft end (in the area of the radial oil seal seat)**

## Surface protection (OS)

Surface protection		Ambient conditions/sample applications
<b>Standard</b>		<p>For machines and systems in buildings and rooms indoors with neutral atmospheres.</p> <ul style="list-style-type: none"> <li>– C1 (negligible)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Machines and systems in the automobile industry</li> <li>– Conveyor systems in logistics areas</li> <li>– Conveyor belts at airports</li> </ul>
<b>OS1</b>		<p>For environments prone to condensation and atmospheres with low humidity or contamination. E.g. outdoor applications under a roof or protection device.</p> <ul style="list-style-type: none"> <li>– C2 (low)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Systems in saw mills</li> <li>– Hall gates</li> <li>– Agitators and mixers</li> </ul>
<b>OS2</b>		<p>For environments with high humidity or moderate atmospheric contamination. E.g. applications outdoors subject to direct weathering.</p> <ul style="list-style-type: none"> <li>– C3 (moderate)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Applications in amusement parks</li> <li>– Funiculars and chair-lifts</li> <li>– Applications in gravel plants</li> <li>– Systems in nuclear power plants</li> </ul>
<b>OS3</b>		<p>For environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasional acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load.</p> <ul style="list-style-type: none"> <li>– C4 (high)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Sewage treatment plants</li> <li>– Port cranes</li> <li>– Mining applications</li> </ul>
<b>OS4</b>		<p>For environments with permanent humidity and severe atmospheric or chemical contamination. Regular acidic and caustic wet cleaning, also with chemical cleaning agents.</p> <ul style="list-style-type: none"> <li>– C5-I (severe)*</li> </ul> <p><b>Sample applications</b></p> <ul style="list-style-type: none"> <li>– Drives in malting plants</li> <li>– Wet areas in the beverage industry</li> <li>– Conveyor belts in the food industry</li> </ul>

## 7.3 Accessories and options for gear units

### Surface protection (OS)

Surface protection		Ambient conditions/sample applications
<b>Aseptic motors of the DAS.. series</b> Either OS2–OS4		Suitable for dry or wet hygienic areas with average atmospheric contamination. Also suitable for particularly dusty environments. <ul style="list-style-type: none"> <li>– C3 (moderate)*</li> </ul> <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Applications in clean rooms</li> <li>– Machines in the cosmetic and pharmaceutical industry</li> <li>– Systems for processing cereals and flour (without Ex protection)</li> <li>– Conveyor belts in cement plants</li> </ul>
<b>Aseptic motors of the DAS.. series with ASEPTIC<sup>plus</sup>® drive package</b> OS4		For hygienic areas in the food and beverage industry with permanent humidity, regular acidic and caustic wet cleaning using chemical cleaning agents, and cleaning with pressure load. <ul style="list-style-type: none"> <li>– C5-1 (severe)*</li> </ul> <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic conveyors in the beverage industry</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– "Splash zones" in the food industry</li> </ul>
<b>High protection coating</b> HP200		For hygienic areas in the food and beverage industry with regular acidic and caustic wet cleaning. Anti-stick properties support the cleaning process even in inaccessible areas. <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic conveyors in the beverage industry</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– "Splash zones" in the food industry</li> </ul>
<b>Stainless steel gearmotor</b>		For hygienic areas in the food and beverage industry with permanent humidity and extreme acidic and caustic wet cleaning using chemical cleaning agents. <b>Sample applications</b> <ul style="list-style-type: none"> <li>– Hygienic and aseptic applications of all types</li> <li>– Systems in cheese dairies and meat processing plants</li> <li>– Food processing machines for the North American market</li> </ul>

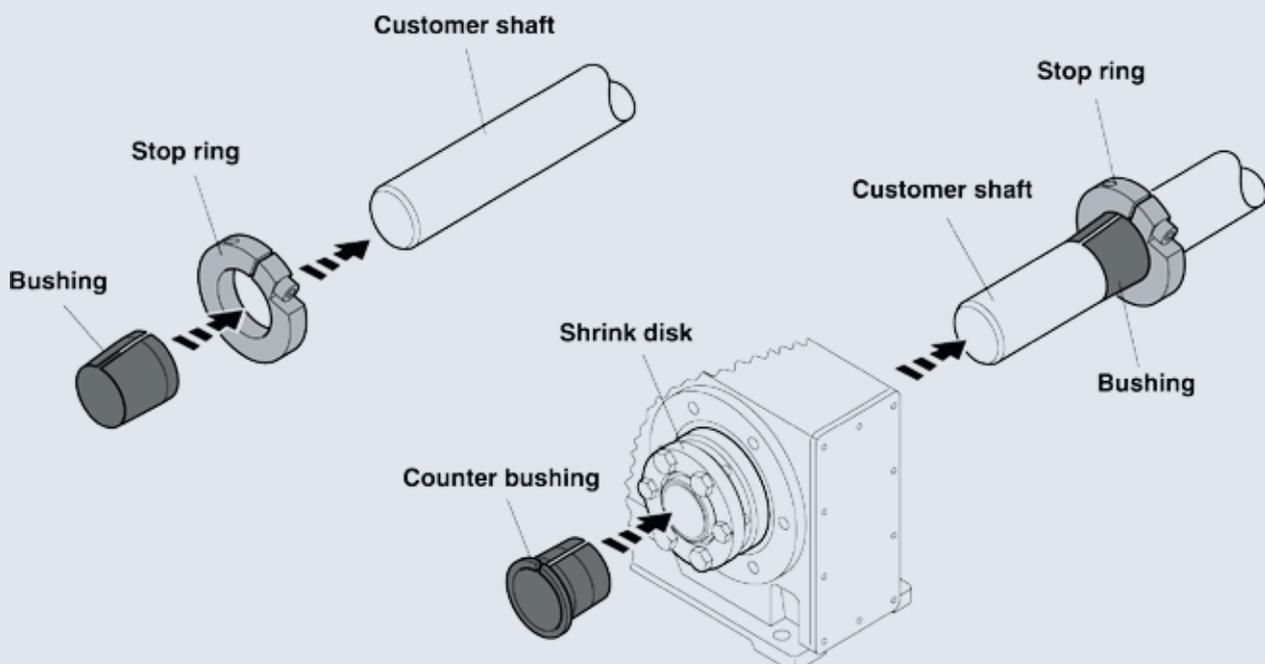
\* In accordance with the corrosivity categories of DIN EN ISO 12944-2

## TorqLOC® hollow shaft mounting system



<b>Cost efficient</b>	The TorqLOC® hollow shaft mounting system is used for achieving a non-positive connection between customer shaft and hollow shaft in the gear unit, optional for parallel-shaft helical, helical-bevel or helical-worm gear units. An economic alternative to the previous hollow shaft with shrink disk, hollow shaft with key, and splined hollow shaft.
<b>Simple</b>	The drive can be installed and disassembled easily, even after long periods of operation. The drive is delivered with the matching bushing. The operator will install the clamping ring on the customer shaft and the drive can be mounted and fixed easily.
<b>Economical</b>	The TorqLOC® hollow shaft mounting system makes it possible to use drawn, unprocessed material up to quality level h11 for customer shafts, reducing costs even further. No additional machining of the customer shaft is required.
<b>Flexible</b>	Up to 4 different rated diameters can be adapted with one gear unit size.
<b>Awards</b>	The trade journal "Plant Engineering" awarded the "Product of the Year 2002". The award is given to innovative products which lead to ground-breaking improvements at the production level.

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## 7.4 Servo gearmotors

### Planetary servo gearmotors



**PS.F. series**

with	Torque range $M_{aDyn}$ Nm	PS.F. gear unit sizes
CMP.. motor (high dynamics)	15 – 4 200	PS.F121 – PS.F922
CM.. motor (high inertia)	49 – 4 200	PS.F321 – PS.F922



**PS.C.. series**

with	Torque range $M_{aDyn}$ Nm	PS.C.. gear unit sizes
CMP.. motor (high dynamics)	15 – 425	PS.C221 – PS.C622
CM.. motor (high inertia)	49 – 425	PS.C321 – PS.C622

## Helical-bevel servo gearmotors



**BS.F. series**

with	Torque range $M_{aDyn}$ Nm	BS.F. gear unit sizes
CMP.. motor (high dynamics)	15 – 1 680	BS.F202 – BS.F802
CM.. motor (high inertia)	46 – 1 680	BS.F302 – BS.F802

## 7.4 Servo gearmotors

### NEW: Precision servo gearmotors



ZN.. series

#### Features

- Extreme precision
- High overload capacity
- Sturdy bearings
- High power density
- Leave the factory with lifetime lubrication

Gear unit type	Servomotor CMP(Z)..*	Servomotor CM..	Gear ratio i	$M_{amax}$ (5 min <sup>-1</sup> ) Nm	$M_{apk}$ Nm	$M_{aEmergOff}$ Nm	Torsional stiffness Nm/ arcmin	Pull-out rigidity Nm/ arcmin	Perm. pull-out torque Nm	Outer dia- meter mm
ZN..30	50S – 63M		41 – 164.08	341	612	1 225	61	530	784	133
ZN..40	50S – 71M	71S – 71L	41 – 164.08	573	1 029	2 058	113	840	1 660	159
ZN..50	50M – 80L	71S – 90L	41 – 161	834	1 500	3 000	200	1 140	2 000	183
ZN..60	50M – 80M	71S – 90L	41 – 171	1090	1 960	3 920	212	1 190	2 150	189
ZN..70	63M – 80M	71M – 90L	41 – 161	1 390	2 500	5 000	312	1 400	2 700	208
ZN..80	63L – 80L	71L – 90L	41 – 161	1 703	3 062	6 125	334	1 600	3 430	221
ZN..90	63L – 112L	71L – 112L	41 – 201	2 225	4 000	8 000	490	2 050	4 000	238
ZN..100	71L – 112L	90M – 112H	75 – 185	5 178	9 310	18 620	948	5 200	7 050	295
ZN..110	80L – 112L	112S – 112H	81 – 192.75	6 813	12 250	24 500	1 620	6 850	11 000	325
ZN..120	80L – 112L	112S – 112H	105 – 203.53	9 733	17 500	35 000	2 600	9 000	15 000	395
ZN..130	80L – 112L	112S – 112H	185	12 514	22 500	45 000	3 685	11 790	25 480	440
ZN..140	80L – 112L	112S – 112H	156 – 236	20 460	36 788	73 575	6 320	25 000	44 000	570

\* CMPZ.. is available in sizes 71 to 100

## Helical servo gearmotors



**RX / R series**

<b>Features</b>	<ul style="list-style-type: none"> <li>– The RX57 to RX107 single-stage gear unit series offers compact, space-saving solutions for high output speeds</li> <li>– Thanks to the die-cast aluminum design, multi-stage gear units R07, R17 and R27 are ideal for use as satellite drives and for use in light machine constructions</li> </ul>					
	<b>Synchronous servo gearmotors</b>				<b>Asynchronous servo gearmotors</b>	
	<b>with CMP.. motor (high dynamics)</b>		<b>with CM.. motor (high inertia)</b>		<b>with DRL.. motor</b>	
<b>Gear unit sizes</b>	RX57 – RX77	R07 – <b>NEW:</b> R127	RX57 – RX107	R27 – <b>NEW:</b> R127	RX57 – RX107	R17 – R167
<b>Gear ratios i</b>	1.3 – 7.63	3.21 – 216.54	1.3 – 8.23	3.37 – 216.28	1.3 – 8.23	3.37 – 255.71
<b>Torque range <math>M_{aDyn}</math> Nm</b>	6.6 – 1 120	12 – 6 000	63 – 830	45 – 6 000	63 – 830	45 – 18 000
<b>Rotational clearance (/R option) ,</b>	–	5 – 14	–	5 – 14	–	5 – 14

## 7.4 Servo gearmotors

### Parallel-shaft servo gearmotors



**F series**

<b>Features</b>	This compact gearmotor not only excels by its performance but also by its structural properties.		
	<b>Synchronous servo gearmotors</b>		<b>Asynchronous servo gearmotors with DRL..motor</b>
	<b>with CMP.. motor (high dynamics)</b>	<b>with CM.. motor (high inertia)</b>	
<b>Gear unit sizes</b>	F27 – F107	F27 – F107	F27 – F157
<b>Gear ratios <math>i</math></b>	3.77 – 276.77	3.77 – 276.77	3.77 – 276.77
<b>Torque range <math>M_{aDyn}</math> Nm</b>	15 – 8 860	67 – 8 860	87 – 18 000
<b>Rotational clearance (/R option) ,</b>	5 – 12	5 – 12	5 – 12

## Helical-bevel servo gearmotors



**K series**

<b>Features</b>	<ul style="list-style-type: none"> <li>– Helical-bevel gear units from SEW-EURODRIVE provide a high degree of efficiency in both torque directions and at any input speed</li> <li>– The gearing is designed for high endurance and makes for a high-torque, wear-free drive</li> <li>– The remarkably high efficiency of our helical-bevel gearmotors makes them energy-savers</li> <li>– The long maintenance-free service life is another reason why they can be used with AC asynchronous motors, asynchronous and synchronous servomotors in every application</li> </ul>				
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	<b>Synchronous servo gearmotors</b>		<b>Asynchronous servo gearmotors</b>		
	<b>with CMP. motor (high dynamics)</b>	<b>with CM.. motor (high inertia)</b>	<b>with DRL..motor</b>		
<b>Gear unit sizes</b>	K37 – K107	<b>NEW:</b> K..19 – K..49	K37 – K107	K37 – K187	<b>NEW:</b> K..19 – K..49
<b>Gear ratios i</b>	3.98 – 174.19	2.8 – 75.0	3.98 – 176.05	3.98 – 179.86	2.8 – 75.20
<b>Torque range <math>M_{aDyn}</math> Nm</b>	15 – 9 090	16 – 605	63 – 9 090	125 – 50 000	54 – 605
<b>Rotational clearance (/R option) ,</b>	5 – 13	–	5 – 13	5 – 13	–

## 7.4 Servo gearmotors

### Helical-worm servo gearmotors



**S series**

<b>Features</b>	<ul style="list-style-type: none"> <li>– Particularly space-saving when used as angular drive</li> <li>– The attenuation characteristics are another advantage</li> <li>– Torque shocks are attenuated as the power transmission to the drive shaft is linear on the input shaft</li> <li>– The noise level of this type is very low, even when operating the unit at full capacity</li> <li>– Can be used in stage lifts, for example</li> </ul>		
	<b>Synchronous servo gearmotors</b>		<b>Asynchronous servo gearmotors with DRL..motor</b>
	<b>with CMP. motor (high dynamics)</b>	<b>with CM.. motor (high inertia)</b>	
<b>Gear unit sizes</b>	S37 – S67	S37 – S67	S37 – S67
<b>Gear ratios <i>i</i></b>	3.97 – 75.06	6.80 – 75.06	3.97 – 75.06
<b>Torque range <math>M_{aDyn}</math> Nm</b>	18 – 580	43 – 480	32 – 480

## SPIROPLAN® right-angle servo gearmotors



**W series**

### Features

- SPIROPLAN® right-angle servo gearmotors with directly mounted synchronous CMP.. servomotor are extremely efficient, quiet, and offer customers the greatest possible flexibility
- SPIROPLAN® right-angle gear units W37/W47 achieve high speeds at smallest gear ratios
- Wear-free gearing minimizes friction losses and optimizes the mechanical efficiency
- Areas of application: Ideal drives for simple positioning or conveyor applications
- Gear unit designs:
  - Foot/flange-mounted design
  - B5 flange
  - B14 flange
  - Solid shaft/hollow shaft
  - Directly mounted servomotor
  - Adapter mounting

	Synchronous servo gearmotors		Asynchronous servo gearmotors with DRL..motor
	with CMP.. motor (high dynamics)	with CM.. motor (high inertia)	
<b>Gear unit sizes</b>	W10 – W47	W37 – W47	W37 – W47
<b>Gear ratios</b> $i$	3.2 – 75	3.2 – 51.12	3.2 – 74.98
<b>Torque range <math>M_{\text{abyn}}</math></b> <b>Nm</b>	11 – 215	49 – 215	16 – 215



### Accessories and options for servo gearmotors:

- Surface and corrosion protection: pages 118 – 120
- TorqLOC® hollow shaft mounting system: page 121
- Oil condition monitoring and vibration analysis: pages 122 – 125

## 7.5 Explosion-proof servo gearmotors



Gear unit	With CMP. motor (high dynamics)
Gear unit sizes	Torque range $M_{\text{aDyn}}$ Nm
Planetary servo gearmotors PS.F121 – PS.F922	15 – 4 200
Helical-bevel servo gearmotors BS.F202 – BS.F802	15 – 1 680
Helical gearmotors, RX57 – RX107	6.6 – 910
Helical servo gearmotors, R07 – R107	12 – 4 360
Parallel-shaft helical gearmotors F27 – F107	15 – 8 860
Helical-bevel servo gearmotors K..19 – K..49	16 – 605
Helical-bevel servo gearmotors K..37 – K..107	15 – 9 090
Helical-worm servo gearmotors S37 – S67	18 – 580
SPIROPLAN® right-angle gearmotors W10 – W47	12 – 215



## 7.6 Servomotors

### Synchronous servomotors



**CMP.. series (high dynamics) and CMPZ.. series (high inertia)**

#### Features

- Highest dynamic properties due to low-inertia rotor design and high overload capacity of the motors
- Performance-optimized and extremely compact design thanks to the latest winding and magnet technology
- Standstill torques from 0.5 Nm to 95 Nm
- Optional CMPZ.. motor variant with increased rotor inertia for all applications with high load moments of inertia
- Direct motor mounting to gear units from our modular gear unit system



- Europe: CE label
- USA: UR label
- Canada: CSA label
- EAC: Eurasian conformity



**Ex EAC**

- CMP../CMPZ.. motors in sizes 40S to 100L are available in explosion-proof design, in compliance with the 2014/34/EU Directive (ATEX)
- Comply with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

Type	Rated speed min <sup>-1</sup>	Standstill torque <b>M<sub>0</sub></b> Nm	Dynamic limit torque <b>M<sub>pk</sub></b> Nm	Mass moment of inertia of the motor <b>J<sub>mot</sub></b> kgcm <sup>2</sup>	
				<b>CMP..</b>	<b>CMPZ..</b>
CMP40S	3 000 / 4 500 / 6 000	0.5	1.9	0.10	–
CMP40M	3 000 / 4 500 / 6 000	0.8	3.8	0.15	–
CMP50S	3 000 / 4 500 / 6 000	1.3	5.2	0.42	–
CMP50M	3 000 / 4 500 / 6 000	2.4	10.3	0.67	–
CMP50L	3 000 / 4 500 / 6 000	3.3	15.4	0.92	–
CMP63S	3 000 / 4 500 / 6 000	2.9	11.1	1.15	–
CMP63M	3 000 / 4 500 / 6 000	5.3	21.4	1.92	–
CMP63L	3 000 / 4 500 / 6 000	7.1	30.4	2.69	–

Type	Rated speed min <sup>-1</sup>	Standstill torque M <sub>0</sub> Nm	Dynamic limit torque M <sub>pk</sub> Nm	Mass moment of inertia of the motor J <sub>mot</sub> kgcm <sup>2</sup>	
				CMP..	CMPZ..
CMP71S / CMPZ71S	2 000 / 3 000 / 4 500 / 6 000	6.4	19.2	3.1	9.32
CMP71M/ CMPZ71M	2 000 / 3 000 / 4 500 / 6 000	9.4	30.8	4.1	10.37
CMP71L / CMPZ71L	2 000 / 3 000 / 4 500 / 6 000	13.1	46.9	6.1	12.47
CMP80S / CMPZ80S	2 000 / 3 000 / 4 500 / 6 000	13.4	42.1	8.8	27.18
CMP80M / CMPZ80M	2 000 / 3 000 / 4 500 / 6 000	18.7	62.6	11.9	30.3
CMP80L / CMPZ80L	2 000 / 3 000 / 4 500 / 6 000	27.5	107	18.1	36.51
CMP100S / CMPZ100S	2 000 / 3 000 / 4 500	25.5	68.3	19.59	79.76
CMP100M / CMPZ100M	2 000 / 3 000 / 4 500	31	108	26.49	86.66
CMP100L / CMPZ100L	2 000 / 3 000 / 4 500	47	178.8	40.24	100.41
CMP112S	2 000 / 3 000 / 4 500	30	88	74	–
CMP112M	2 000 / 3 000 / 4 500	45	136	103	–
CMP112L	2 000 / 3 000 / 4 500	69	225	163	–
CMP112H	2 000 / 3 000 / 4 500	83	270	193	–
CMP112E	2 000 / 3 000 / 4 500	95	320	222	–

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## safetyDRIVE

### Functional safety

#### Optional: Integrated functional safety for CMP../CMPZ.. motors

	Safety-rated encoders	up to PL d according to EN ISO 13849-1	AK0H, AK1H
	Safety-rated brakes	up to PL d according to EN ISO 13849-1	BY

## 7.6 Servomotors

### Synchronous servomotors in encoderless design



**NEW: CMP.40-100 series**

#### Features

- Encoderless synchronous motors for energy-efficient drive solutions in the area of materials handling technology
- Easier installation as the feedback cable is no longer needed
- Standstill torques from 0.5 Nm to 47 Nm
- Optional CMPZ.. motor variant with increased rotor inertia for all applications with high load moments of inertia
- Direct motor mounting to gear units from our modular gear unit system

**CE EAC**

- Europe: CE label
- USA: UR label (in preparation)
- Canada: CSA label (in preparation)
- EAC: Eurasian conformity

Type	Rated speed min <sup>-1</sup>	Standstill torque $M_0$ Nm	Dynamic limit torque $M_{pk}$ Nm	Mass moment of inertia of the motor $J_{mot}$ kgcm <sup>2</sup>	
				CMP..	CMPZ..
CMP40S	3 000 / 4 500 / 6 000	0.5	1.9	0.10	–
CMP40M	3 000 / 4 500 / 6 000	0.8	3.8	0.15	–
CMP50S	3 000 / 4 500 / 6 000	1.3	5.2	0.42	–
CMP50M	3 000 / 4 500 / 6 000	2.4	10.3	0.67	–
CMP50L	3 000 / 4 500 / 6 000	3.3	15.4	0.92	–
CMP63S	3 000 / 4 500 / 6 000	2.9	11.1	1.15	–
CMP63M	3 000 / 4 500 / 6 000	5.3	21.4	1.92	–
CMP63L	3 000 / 4 500 / 6 000	7.1	30.4	2.69	–
CMP71S / CMPZ71S	2 000 / 3 000 / 4 500 / 6 000	6.4	19.2	3.1	9.32
CMP71M/ CMPZ71M	2 000 / 3 000 / 4 500 / 6 000	9.4	30.8	4.1	10.37
CMP71L / CMPZ71L	2 000 / 3 000 / 4 500 / 6 000	13.1	46.9	6.1	12.47
CMP80S / CMPZ80S	2 000 / 3 000 / 4 500 / 6 000	13.4	42.1	8.8	27.18
CMP80M / CMPZ80M	2 000 / 3 000 / 4 500 / 6 000	18.7	62.6	11.9	30.3
CMP80L / CMPZ80L	2 000 / 3 000 / 4 500 / 6 000	27.5	107	18.1	36.51
CMP100S / CMPZ100S	2 000 / 3 000 / 4 500	25.5	68.3	19.59	79.76
CMP100M / CMPZ100M	2 000 / 3 000 / 4 500	31	108	26.49	86.66
CMP100L / CMPZ100L	2 000 / 3 000 / 4 500	47	178.8	40.24	100.41

## 7.6 Servomotors

### Synchronous servomotors



**CM.. series (high inertia)**

#### Features

- Standstill torques from 5 Nm to 68 Nm
- Compact design with high power density thanks to an optimized magnetic circuit design
- High overload rating and low losses
- Electronic nameplate for quick and easy startup
- Optional: scalable HIPERFACE® encoder and high-performance working brake



- Europe: CE label
- USA: UR label
- Canada: CSA label
- EAC: Eurasian conformity

#### Type

	Rated speed min <sup>-1</sup>	Standstill torque $M_0$ Nm	Dynamic limit torque $M_{pk}$ Nm	Inertia kgcm <sup>2</sup>	
				Mass mo- ment of inertia of the motor $J_{mot}$ Nm	Mass mo- ment of inertia of the brakemotor $J_{bmot}$ Nm
CM71S	2 000 / 3 000 / 4 500 / 6 000	5	16.5	4.99	6.72
CM71M		6.5	21.5	6.4	8.13
CM71L		9.5	31.4	9.21	10.94
CM90S		11	39.6	18.2	22
CM90M		14.5	52.2	23.4	27.2
CM90L		21	75.6	33.7	37.5
CM112S	2 000 / 3 000 / 4 500	23.5	82.3	68.9	84.2
CM112M		31	108.5	88.9	104.2
CM112L		45	157.5	128.8	144.1
CM112H		68	238	188.7	204

## DRL.. asynchronous servomotors



### Dynamic and precise with high overload capacity

<b>Features</b>	<ul style="list-style-type: none"> <li>– Suitable for use in applications with relatively high inertia ratios with high requirements on dynamics and control</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Reliable control in case of high overload</li> <li>– Direct mounting to gear units from SEW-EURODRIVE</li> <li>– Can be delivered with SEW-EURODRIVE single or double brakes of different sizes and braking torque steps</li> <li>– As a global motor with many approvals and certifications, it can be used in many markets worldwide without the need to adapt the parts list</li> <li>– Comprehensive offer of options and accessories</li> <li>– Simple installation and startup</li> </ul>
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Gantry order picking robots</li> <li>– Travel axes in palletizers</li> <li>– Winding drives and cutter drums</li> <li>– Lifting axes in gantries</li> <li>– Conveyor applications</li> </ul>
<b>Sizes</b>	71S – 225M
<b>Number of poles</b>	4
<b>Rated speeds min<sup>-1</sup></b>	1200, 1700, 2100, 3000
<b>Rated torque Nm</b>	2.5 – 325
<b>Overload capacity</b>	Up to 3.5 times the rated torque
<b>Control mode</b>	CFC

## 7.6 Servomotors

### Explosion-proof servomotors



**CMP.40 – 100 series**



**Complies with Directive 2014/34/EU (ATEX), equipment group II, equipment category 3**

- Category II 3GD, suitable for use in zones 2/22
- Category II 3D, suitable for use in zone 22
- In category 3D also available with brake and HIPERFACE® encoder (with electronic nameplate)
- Compliance with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

**Protection types**

**Dust atmosphere:** Protection type “t” indicates dust explosion protection due to housing according to EN 60079-0 and -31

**Gas atmosphere:** Protection type “nA” indicates

- Protection due to non-sparking according to EN 60079-0 and -15
- Design measures and requirements regarding dimensioning like for protection type “e”, but only fault-free (no error) operation is considered

**Dust atmosphere: Degree of protection IP65**

This means:

- Dust-tight housing according to EN 60079-31
- No dust can enter the housing due to the motor housing design
- Continuous monitoring of the surface temperature to exclude this as ignition source

### Explosion-proof CMP.40 – 100 servomotors

- For the European market: comply with Directive 2014/34/EU (ATEX)
- Compliance with TR CU, the Eurasian Custom Union Russia/Belarus/Kazakhstan/Armenia in combination with Ex EAC certificate (successor to GOST-R)

Category	Zone	Ex marking	Product characteristics	Encoder	Speed class	Brake
II3D	2	II3D Ex tc IIC T150 °C Dc X*	– Overload factor 3 × 10	Brake HIPERFACE®	2 000 3 000	Yes
II3GD	2 and 22	II3G Ex nA IIC T3 Gc X* II3D Ex tc IIC T150 °C Dc X*	– Grounding screw – IP65	Resolver	4 500	–

#### Protection type tc → Protection through housing

The motors are designed in such a way that only harmless quantities of dust can penetrate the unit (IP5X). Or they are designed in such a way that no dust can penetrate the unit under normal operating conditions (IP6X). These drives meet the requirements of zone 22, also for conductive dusts.

The motors are basically designed so that the outer surface does not exceed the specified surface temperature.

#### Protection type nA → Non-sparking design

The motors are designed and dimensioned in such a way that no hot surfaces or sparks are caused in normal operation which may ignite a mixture of gas and air according to the specified temperature class.

\* In conjunction with a matching temperature model in the inverter

## 7.7 Accessories and options for motors

### Cables and connection options



**CMP.. servomotor cable connections**

#### Motor cable/brakemotor cable

Motor type	Power connector	Cable routing	Drive electronics
CMP40 – 63	Motor: SM1 (M23)	Fixed installation or cable carrier installation	MOVIDRIVE® application inverter MOVIAXIS® multi-axis servo inverter
	Brakemotor: SB1 (M23)		
CMP71 – 100 CMPZ71 – 100	Motor: SM1 (M23) SMB (M40)		
	Brakemotor: SB1 (M23) SBB (M40)		
CMP112	Motor: SM1 (M23) SMB (M40) SMC (M58)		
	Brakemotor: SB1 (M23) SBB (M40) SBC (M58)		

#### Encoder cable

Motor type	Encoder type	Cable routing	Drive electronics
CMP40 – 112 CMPZ71 – 100	RH1M resolver	Fixed installation or cable carrier installation	MOVIDRIVE® application inverter MOVIAXIS® multi-axis servo inverter
CMP40 – 63	HIPERFACE® AK0H, EK0H, AK1H, EK1H		
CMP71 – 112 CMPZ71 – 100	HIPERFACE® AK0H, EK1H, AK1H		

**DR.. series AC motor cable connections: Direct connection**

Motor type	Encoder type	Encoder connection	Inverter connection
DR71 – DR132	EI7C, EI76, EI72, EI71	Conductor end sleeves	Conductor end sleeves MOVIDRIVE® application inverter
		M12 plug connector	
	ES7S, ES7R, AS7W, AS7Y	Conductor end sleeves	D-sub plug connector MOVIDRIVE® application inverter
		Connection cover	
DR160 – DR225	EG7S, EG7R, AG7W, AG7Y	Conductor end sleeves	
		Connection cover	
DR315	EH7S	M23 plug connectors	
	AH7Y	Conductor end sleeves	

**DR.. series AC motor cable connections: Connection via intermediate sockets**

Motor type	Encoder type	Encoder connection	Adapter plug
DR71 – DR132	ES7S, ES7R, AS7W	Conductor end sleeves	M23 plug connector (coupling)
		Connection cover	
DR160 – DR225	EG7S, EG7R, AG7W	Conductor end sleeves	
		Connection cover	

**Intermediate socket**

M23 plug connector (male connector)	Extension	M23 plug connector (coupling)
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**Intermediate socket**

Intermediate socket		Inverter connection
M23 plug connector (male connector)	Extension	D-sub plug connector MOVIDRIVE® application inverter

## 7.8. Linear motion

### Synchronous linear servomotors



**SL2 series**

#### Features

- Suitable application areas: highly dynamic, flexible processing machines; material handling; pick and place applications
- No mechanical transmission elements and wear parts are required as linear motion and force are generated directly
- Optimized force-density ratio due to modern winding technology and laminated iron core
- Almost maintenance-free
- High control quality, dynamics and precision
- Available in three designs (SL2 Basic, SL2 Advanced System, SL2 Power System)
- Secondaries are available in various lengths and can easily be lined up

#### Product versions

Product versions	Rated power range N	Rated speed classes m/s
<b>SL2 Basic</b>	125 – 6 000	1 / 3 / 6
<b>SL2 Advanced System</b>	280 – 3 600	
<b>SL2 Power System</b>	400 – 5 500	

### Options for linear servomotors

#### SL2 Advanced System and SL2 Power System

- The cables of the motor end have matching plug connectors
- EMC-compliant connector housing design
- Plug connectors seal the plug on the cable end with a lamellar seal and ensure strain relief in accordance with EN 61884
- Various accessories for inverter-specific prefabrication

## Standard CMS.. electric cylinders / with grease lubrication



**CMS71 series (with grease lubrication)**

### Features

- Equipped with permanent magnet rotors
- Precise, powerful and fast
- Combined with drive electronics from SEW-EURODRIVE, this series makes for energy-efficient drive solutions that ensure a high level of process reliability and that can be easily integrated into existing automation systems

### Electrical data

Type	CMS71L		
Max. torque Nm	31.4	22.1 <sup>1)</sup>	24.4 <sup>1)</sup>
Standstill torque Nm	9.5		

### Mechanical data

Rated speed $n_N$	2 000 min <sup>-1</sup> 3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup>			
Spindle type	KGT <sup>2)</sup> 32×10	KGT <sup>2)</sup> 32×6	PGT <sup>3)</sup> 24×5	
Max. continuous feed force <sup>4)</sup> N	3 600	6 700	7 200	
Peak feed force N	17 000	20 000	15 000 20 000 <sup>5)</sup>	20 000
Stroke lengths mm	200	200	350	200
Max. velocity mm/s	500	300	200	250

<sup>1)</sup> Maximum permitted torque

<sup>2)</sup> Ball screw

<sup>3)</sup> Planetary roller screw

<sup>4)</sup> Depending on average travel speed

<sup>5)</sup> In case of tensile loads

## 7.8. Linear motion

### Standard CMS.. electric cylinders / with oil bath lubrication



**CMSB50/63/71 series (with oil bath lubrication)**

#### Features

- Patented maintenance-free oil bath lubrication (lifetime lubrication)
- Very high thermal power density
- Very low-noise operation
- Very small working strokes possible (< 1 mm)
- Combined with drive electronics from SEW-EURODRIVE, this series makes for energy-efficient drive solutions that ensure a high level of process reliability and that can be easily integrated into existing automation systems

#### Electrical data

Type	NEW: CMSB50S	NEW: CMSB50M	NEW: CMSB50L
Max. torque Nm	5.2	7.6 <sup>1)</sup>	7.6 <sup>1)</sup>
Standstill torque Nm	1.3	2.4	3.3

#### Mechanical data

Rated speed $n_N$	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
Spindle type	KGT <sup>2)</sup> 20×5	KGT <sup>2)</sup> 20×5	KGT <sup>2)</sup> 20×5
Max. continuous feed force <sup>4)</sup> N	1 200	2 300	3 200
Peak feed force N	5 300	8 000	8 000
Stroke lengths mm	70 / 100 / 150 / 200 / 300 / 400 / 600		
Max. velocity mm/s	375	375	375

Electrical data				
Type	CMSB63S		CMSB63M	
Max. torque Nm	11.1		11.1 <sup>1)</sup>	
Standstill torque Nm	2.9		5.3	
Mechanical data				
Rated speed $n_N$	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>			
Spindle type	KGT <sup>2)</sup> 25×6	PGT <sup>3)</sup> 20×5	KGT <sup>2)</sup> 25×6	PGT <sup>3)</sup> 20×5
Max. continuous feed force <sup>4)</sup> N	2 400	2 800	4 100	5 200
Peak feed force N	10 000		10 000	
Stroke lengths mm	60 / 100 / 160 / 180 / 200 / 400 / 600	100 / 200	60 / 100 / 160 / 180 / 200 / 400 / 600	100 / 200
Max. velocity mm/s	450	375	450	375

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Electrical data			
Type	CMSB71S	CMSB71M	CMSB71L
Max. torque Nm	19.2	25 <sup>4)</sup>	25 <sup>4)</sup>
Standstill torque Nm	6.4	9.4	13.1
Mechanical data			
Rated speed $n_N$	2 000 min <sup>-1</sup> 3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
Spindle type	KGT <sup>2)</sup> 32×6	KGT <sup>2)</sup> 32×6	KGT <sup>2)</sup> 32×6
Max. continuous feed force <sup>4)</sup> N	6 200	8 200	12 000
Peak feed force N	18 000	24 000	24 000
Stroke lengths mm	100 / 160 / 200 / 400 / 600 / 800 / 1 000 / 1 200		
Max. velocity mm/s	450	450	450

<sup>1)</sup> Maximum permitted torque<sup>2)</sup> Ball screw<sup>3)</sup> Planetary roller screw<sup>4)</sup> Depending on average travel speed

## 7.8. Linear motion

### CMSM.. modular electric cylinders



**CMSMB50 – 71 series / ACH or ACA (axially serial)**

#### Features

- Separately available modular unit (linear gear unit) with the proven oil bath lubrication of the CMSB.. standard electric cylinder series
- Can be combined with the standard servomotors from SEW-EURODRIVE (CMP50/63/71) using ACH/ACA adapters

#### Technical data

Type	<b>NEW: CMSMB50 / ACH or ACA</b>	<b>CMSMB63 / ACH or ACA</b>	<b>CMSMB71 / ACH or ACA</b>
<b>Max. permitted input torque Nm</b>	7	11.1	25
<b>Max. permitted input speed min<sup>-1</sup></b>	4 500	4 500	4 500
<b>Peak feed force N</b>	8 000	10 000	24 000
<b>Stroke lengths mm</b>	70 / 100 / 150 / 200 / 300 / 400 / 600	60 / 100 / 160 / 180 / 200 / 400 / 600	100 / 160 / 200 / 400 / 600 / 800 / 1 000 / 1 200
<b>Spindle type</b>	KGT <sup>1)</sup> 20×5	KGT <sup>1)</sup> 25×6	KGT <sup>1)</sup> 32×6

<sup>1)</sup> Ball screw



**CMSMB50 – 71 series / AP (axially parallel)**

**Features**

- Compact design
- Patented maintenance-free oil bath lubrication (lifetime lubrication)
- Very high thermal power density
- Very low-noise operation
- Optional water cooling
- Use of CMP50/63/71 standard servomotors

**Electrical data**

Type	<b>NEW: CMSMB50/AP and</b>		
	<b>CMP50S</b>	<b>CMP50M</b>	<b>CMP50L</b>
<b>Max. torque Nm</b>	5.2	7.6 <sup>1)</sup>	7.6 <sup>1)</sup>
<b>Standstill torque Nm</b>	1.2	2.3	2.6

**Mechanical data**

<b>Rated speed <math>n_n</math></b>	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
<b>Spindle type</b>	KGT <sup>2)</sup> 20×5		
<b>Max. continuous feed force N</b>	1 100	2 100	2 700
<b>Peak feed force N</b>	5 300	8 000	8 000
<b>Stroke lengths mm</b>	70 / 100 / 150 / 200 / 300 / 400 / 600		
<b>Max. velocity mm/s</b>	375	375	375

<sup>1)</sup> Max. permitted torque

<sup>2)</sup> Ball screw

## 7.8. Linear motion

### CMSM.. modular electric cylinders



**CMSMB50 – 71 series / AP (axially parallel)**

#### Electrical data

Type	CMSMB63/AP and		
	CMP63S	CMP63M	CMP63L
<b>Max. torque Nm</b>	11.1	11.1 <sup>1)</sup>	11.1 <sup>1)</sup>
<b>Standstill torque Nm</b>	2.9	5.3	7.1

#### Mechanical data

<b>Rated speed <math>n_N</math></b>	3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
<b>Spindle type</b>	KGT <sup>2)</sup> 25×6		
<b>Max. continuous feed force N</b>	2 100	3 500	5 000
<b>Peak feed force N</b>	10 000	10 000	10 000
<b>Stroke lengths mm</b>	60 / 100 / 160 / 180 / 200 / 400 / 600		
<b>Max. velocity mm/s</b>	450	450	450

<sup>1)</sup> Max. permitted torque

<sup>2)</sup> Ball screw

**Electrical data**

Type	CMSMB70/AP and		
	CMP71S	CMP71M	CMP71L
<b>Max. torque Nm</b>	19.2	25 <sup>1)</sup>	25 <sup>1)</sup>
<b>Standstill torque Nm</b>	6.4	9.4	13.1

**Mechanical data**

<b>Rated speed <math>n_N</math></b>	2 000 min <sup>-1</sup> 3 000 min <sup>-1</sup> 4 500 min <sup>-1</sup> 6 000 min <sup>-1</sup>		
<b>Spindle type</b>	KGT <sup>2)</sup> 32×6		
<b>Max. continuous feed force N</b>	5 000	7 500	10 500
<b>Peak feed force N</b>	18 000	24 000	24 000
<b>Stroke lengths mm</b>	100 / 160 / 200 / 400 / 600 / 800 / 1 000 / 1 200		
<b>Max. velocity mm/s</b>	450	450	450

<sup>1)</sup> Max. permitted torque<sup>2)</sup> Ball screw

## 7.9 Inverter technology

### MOVIDRIVE® B application inverters



#### MOVIDRIVE® B



<b>Features</b>	<ul style="list-style-type: none"> <li>– Powerful drive from inverter for dynamic applications with synchronous and asynchronous motors in the power range from 0.55 to 315 kW</li> <li>– Great diversity of applications due to extensive expansion options with technology and communication options</li> </ul>
<b>Line connection</b>	<b>Power range in kW</b>
<b>200/240 V / three-phase</b>	1.5 – 37
<b>400/500 V / three-phase</b>	0.55 – 315
<b>Standard design</b>	<p>The devices are equipped with the integrated IPOS<sup>plus</sup>® positioning and sequence control system as standard and can be expanded by the options available. "00" at the end of the type designation indicates the standard design.</p>
<b>Technology version with application modules</b>	<p>In addition to the standard version, these units include the technology functions "electronic cam" and "internal synchronous operation". The application version is indicated by "0T" following the type designation.</p> <p>The devices in technology version also provide access to the application modules. Standardized control programs for solving technically advanced drive tasks such as synchronized applications, positioning, flying saw, and winding.</p> <p><b>Advantages of the application modules</b></p> <ul style="list-style-type: none"> <li>– High functionality and user-friendly user interface</li> <li>– Only the parameters needed for the application must be entered</li> <li>– Guided parameter setting process instead of complicated programming</li> <li>– No lengthy training or familiarization, which means quick project planning and startup</li> <li>– All motion functions are controlled directly in MOVIDRIVE® B</li> <li>– Decentralized concepts can be implemented more easily</li> </ul>
<b>safetyDRIVE</b> <b>Functional safety</b>	<p>Integrated functional safety:          STO (Safe Torque Off) safety function up to PL d according to EN ISO 13849-1</p>
	<p>For information on the operation of Ex motors with our inverter technology, refer to page 143.</p>

## MOVIDRIVE® B options

<b>Type designation</b>	
<b>Keypad DBG60B</b>	Keypad for parameterization, data management, startup, and diagnostics
<b>Encoder interface DEH11B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> <li>– External encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> </ul>
<b>DER11B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: Resolver</li> <li>– External encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> </ul>
<b>DEH21B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection TTL, RS422, sin/cos and HIPERFACE® encoders</li> <li>– External encoder connection: SSI absolute encoder</li> </ul>
<b>DEU21B</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: TTL, HTL, RS422, Sin/cos, HIPERFACE®, SSI, CAN, EnDat 2.1 encoders</li> <li>– External encoder connection: TTL, HTL, RS422, Sin/cos, HIPERFACE®, SSI, CAN, EnDat 2.1 encoders</li> </ul>
<b>DIP11A</b>	<ul style="list-style-type: none"> <li>– Motor encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders</li> <li>– External encoder connection: SSI absolute encoder</li> </ul>
<b>DIP11B</b>	<ul style="list-style-type: none"> <li>– External encoder connection: SSI absolute encoder</li> <li>– Extension of digital inputs and outputs: 8× inputs, 8× outputs</li> </ul>
<b>Fieldbus connection</b>	
– DFE32B / DFE33B	– PROFINET IO / Modbus TCP + EtherNet/IP™
– DFE24B	– EtherCAT®
– DFP21B	– PROFIBUS DPV1
– DFC11B / DFD11B	– CANopen / DeviceNet™
– DFI11B / DFI21B	– INTERBUS / INTERBUS-FOC
– DFS11B / DFS21B	– PROFIsafe via PROFIBUS / PROFIsafe via PROFINET
<b>MOVISAFE® safety monitor</b>	Safe movement/position monitoring, safe inputs and outputs up to PL e according to EN ISO 13849-1 and
– DCS31B	– for “safe movement/position monitoring”
– DCS21B + DFS12B	– for “safe movement/position monitoring and communication” (PROFIsafe/PROFIBUS)
– DCS21B + DFS22B	– for “safe movement/position monitoring and communication” (PROFIsafe/PROFINET)
<b>Safety-related BST brake module</b>	Safe Brake Control (SBC) up to PL d according to EN ISO 13849-1
<b>Extension for inputs and outputs</b>	8x digital inputs and 8x digital outputs; 1x analog differentiation; 2x analog outputs
– DIO11B	
<b>Other</b>	
– DRS11B	– Synchronous operation card
– USB11A	– Interface adapter for connection to a PC via USB interface
– UWS21B	– Interface adapter for connection to a PC via RS232 interface

## 7.9 Inverter technology

### MOVIDRIVE® MDR regenerative power supply units 15 kW – 160 kW



**MOVIDRIVE® MDR**



<p><b>Can be used with product series</b></p>	<ul style="list-style-type: none"> <li>– MOVIDRIVE® B: 0.55 – 315 kW</li> <li>– MOVITRAC® B: 5.5 – 75 kW</li> </ul>
<p><b>Features</b></p>	<p><b>Energy balance</b></p> <p>Braking energy from the load cycle is no longer converted into heat energy but is fed back into the grid.</p> <p>Energy recovery is particularly interesting for applications with a high energy potential of lowering/ deceleration movements of the load cycle, such as gantry cranes, storage/retrieval systems or lifting/lowering applications.</p>
<p><b>Regenerative power supply: For central energy supply and recovery</b></p>	<ul style="list-style-type: none"> <li>– Used for central energy supply and recovery to supply the connected drive inverters with energy</li> <li>– Several inverters are connected in a DC link system</li> <li>– Energy is exchanged between the drive axes and excess braking energy is fed back into the power supply system</li> </ul>
<p><b>Regenerative power supply: Function as a brake module (only MDR60A0150)</b></p>	<ul style="list-style-type: none"> <li>– Using the regenerative power supply unit as brake module means the connected inverters are not supplied with energy but only the braking energy is fed back into the power supply system</li> <li>– DC link supplied via the integrated input rectifier of the inverter</li> <li>– Braking energy released during the application is fed back into the power supply system</li> <li>– The regenerative power supply unit is selected based on the braking energy released during the application, inverters are selected based on the motor load → cost-optimized overall system</li> <li>– Example of a product combination: MOVIDRIVE® B application inverter 30 kW with MOVIDRIVE® MDR regenerative power supply unit: 15 kW</li> </ul>
<p><b>Advantages</b></p>	<ul style="list-style-type: none"> <li>– Reduced overall energy consumption</li> <li>– Reduced CO<sub>2</sub> emissions</li> <li>– Reduced energy costs</li> <li>– Cost-efficient installation</li> <li>– No investment in braking resistors</li> <li>– No braking resistors need to be installed outside the control cabinet</li> <li>– No heating of the environment or of the control cabinet through braking resistors</li> <li>– Saves expenditure for control cabinet ventilation</li> <li>– Saves control cabinet space</li> </ul>

**Technical data**

<b>MOVIDRIVE® Type MDR..</b>	<b>Connection voltage</b>	<b>Power range kW</b>	<b>Line current I<sub>N</sub> A</b>	<b>Overload capacity</b>
MDR60A0150-503-00 Size 2	3× AC 380 V – 500 V	15	– 15 As a centralized supply and regenerative power supply unit – 22 As a brake module	– 150% for 60 s As a centralized supply and regenerative power supply unit – 37 kW for 50 s As a brake module peak braking power
MDR60A0370-503-00 Size 3		37	66	150% for 60 s
MDR60A0750-503-00 Size 4		75	117	150% for 60 s
MDR60A1320-503-00 Size 6		132 – 160	260 (at 160 kW)	150% for 60 s Max. continuous power, 125%

## 7.9 Inverter technology

### MOVIDRIVE® MDR regenerative power supply units and motor inverters 160 kW – 315 kW



**MOVIDRIVE® MDR61B regenerative power supply**



<b>Features</b>	<ul style="list-style-type: none"> <li>– Energy-efficient and optimized overall concept: MOVIDRIVE® B product series extended by regenerative power supply units and corresponding motor inverters in the power range from 160 to 315 kW</li> <li>– Particularly interesting for applications with potential energy, such as in hoists, cranes and gantries, or in trolleys with high kinetic energy produced through electrical braking</li> </ul>
<b>Functions</b>	<ul style="list-style-type: none"> <li>– Used as central regenerative power supply for connected standard inverters or motor inverters</li> <li>– Energy is fed back into the grid when the application is operating as a generator, e.g. during electrical braking</li> <li>– Braking energy is no longer converted into heat but is fed back into the grid for further use</li> </ul>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Significant reduction of the overall energy consumption / of CO<sub>2</sub> emissions / of energy costs</li> <li>– No braking resistors are required             <ul style="list-style-type: none"> <li>- No investment costs for braking resistors</li> <li>- No installation effort for external braking resistors</li> <li>- No heating up of the environment through braking resistors</li> </ul> </li> <li>– Sinusoidal line current = controlled energy recovery</li> <li>– With coated printed-circuit boards as standard for demanding ambient conditions</li> <li>– Simple installation and wiring: integrated PWM filter / integrated choke / integrated and automatic DC link precharge / integrated line contactor</li> <li>– Modular power section, which means not the entire unit needs to be replaced in the event of service</li> <li>– EMC limit value class C3 (EN 61800-3) with the standard unit             <ul style="list-style-type: none"> <li>- On supply system end: without any measures → no external line filter necessary</li> <li>- On motor side: with shielded motor cables and output choke</li> </ul> </li> </ul>

<b>Type designation</b>	MDR61B1600-503-00/L	MDR61B2500-503-00/L
<b>Connection voltage</b>	3× AC 380 V – 500 V	
<b>Nominal power kW</b>	160	250
<b>Line current/nominal motor current <math>I_N</math> A</b>	250	400
<b>Maximum continuous power</b>	125% $I_N$	
<b>Overload capacity</b>	150% $I_N$ for 60 s	
<b>External accessories for control cabinet installation</b>	<ul style="list-style-type: none"> <li>– Mounting base</li> <li>– Air duct</li> <li>– Connection kit</li> <li>– Touch guard (IP20 kit)</li> <li>– DC link coupling</li> </ul>	

## 7.9 Inverter technology

### MOVIAXIS® multi-axis servo inverters



#### Features

- Multi-axis servo system for highly dynamic applications up to 250 A motor current
- Power supply and regenerative power supply up to 187 kW
- DC link power supply for DC 24 V
- Capacitor and buffer modules
- Connection of all common motor and external encoders
- Fieldbus interfaces, fieldbus gateways and clock-synchronized interfaces
- Scaled motion and logic controller directly at the axis system, speed control, positioning, motion control and kinematics
- Wide range of accessories: Cables, braking resistors, line filters, line chokes, brake control units

#### Power supply module type

<b>Line connection V</b>	3x AC 380 – 500
<b>Nominal power kW</b>	10, 25, 50, 75 kW at 250% for 1 s

#### Block-shaped power supply and regenerative power supply module

<b>Line connection V</b>	3x AC 380 – 500
<b>Nominal power kW</b>	50, 75 kW at 250% for 1 s

#### Sinusoidal power supply and regenerative power supply module

<b>Line connection V</b>	3x AC 380 – 480
<b>Nominal power kW</b>	50, 75 kW at 200 % for 1 s

<b>DC link power supply unit</b>	
<b>Supply</b>	Directly from DC link
<b>Nominal power</b>	3× 10 A, limited to 600 W total power

<b>Axis modules</b>	
<b>Output current in A at 8 kHz</b>	2, 4, 8, 12, 16, 24, 32, 48, 64, 100 at 250% for 1 s
<b>Communication interfaces</b>	PROFIBUS, EtherCAT®
<b>Encoder interfaces motor encoder</b>	HIPERFACE®, Resolver, TTL, sin/cos, Endat 2.1
<b>Encoder interfaces external encoder</b>	HIPERFACE®, TTL, HTL, sin/cos, Endat 2.1, SSI
<b>safetyDRIVE Functional safety</b>	<ul style="list-style-type: none"> <li>– MXA81: STO (Safe Torque Off), up to PL d according to EN ISO 13849-1</li> <li>– MXA81: STO (Safe Torque Off), up to PL e according to EN ISO 13849-1</li> <li>– MOVISAFE® UCS..B safety module option: Drive safety functions (SLS, SDI, SLP, etc.) according to EN 61800-5-2</li> <li>– Safety-related BST brake module option: SBC (Safe Brake Control) safety function up to PL d according to EN ISO 13849-1</li> </ul>

<b>Master module</b>	
<b>Communication gateway</b>	DeviceNet™, PROFIBUS, PROFINET, EtherNet/IP™, Modbus TCP
<b>Data management</b>	Via memory card, automatic data set download when replacing the axis module
<b>Integrated motion controller</b>	Programmable in IEC 61131, parameterizable functionalities

## 7.9 Inverter technology

### Accessories and options for MOVIAXIS®

<b>Encoder and external encoder card XGH11A</b>	<ul style="list-style-type: none"> <li>– Multi-encoder card for motor and external encoder HIPERFACE®, Endat 2.1, Sin/Cos</li> <li>– Incremental encoder simulation</li> <li>– ± 10 V analog input</li> <li>– DC 24 V supply</li> </ul>
<b>Encoder and external encoder card XGS11A</b>	– Like XGH11A, additional for SSI encoders
<b>Input/output card XIA11A</b>	<ul style="list-style-type: none"> <li>– 4 DI, 4 DO</li> <li>– 2 AI, 2 AO, 12-bit resolution</li> <li>– DC 24 V supply</li> </ul>
<b>Input/output card XIO11A</b>	<ul style="list-style-type: none"> <li>– 8 DI, 8 DO</li> <li>– DC 24 V supply</li> </ul>
<b>Communication interface XFP11A</b>	PROFIBUS IO fieldbus interface, up to 12 MBaud
<b>Communication interface XFE24A</b>	Fieldbus interface for connection to EtherCAT® networks
<b>Communication interface XSE24A</b>	System bus option card for expansion to EtherCAT-®compatible system bus SBus <sup>PLUS</sup>
<b>MOVI-PLC® controller</b> – DHE41B – DHF41B – DHR41B – UHX71B	<ul style="list-style-type: none"> <li>– MOVI-PLC® advanced, ETHERNET interface</li> <li>– MOVI-PLC® advanced, ETHERNET / PROFIBUS / DeviceNet™ interface</li> <li>– MOVI-PLC® advanced, ETHERNET / PROFINET / Modbus TCP / EtherNet/IP™ interface</li> </ul> <p>Compact controller:</p> <ul style="list-style-type: none"> <li>– MOVI-PLC® power: IEC-61131-3 programmable motion and logic controller or</li> <li>– CCU power: parameterizable application controller</li> </ul>
<b>MOVITOOLS® MotionStudio engineering software</b>	The MOVITOOLS® MotionStudio program package allows you to conveniently start up, configure and diagnose the MOVIAXIS® multi-axis system.
<b>Braking resistors Type BW</b>	BW series braking resistors are available for the regenerative operation of the MOVIAXIS® multi-axis system. Using an integrated temperature sensor, the resistor can be protected without external monitoring.
<b>Line choke type ND</b>	ND series line chokes increase the overvoltage protection of the MOVIAXIS® multi-axis system. This is an important characteristic in rough industrial power supply systems, especially if the inverter is installed near a supply transformer.
<b>Line filter type NF</b>	The NF line filter series is available for EMC-compliant installation according to EN 61800-3. They suppress interference emissions on the line side of inverters. These line filters ensure that limit value class C1 is maintained on the supply end.

## effiDRIVE® – Energy efficiency in servo applications



### Features

The crucial part of energy-efficient operation of servo drive technology is the detailed planning and fulfillment of process and efficiency requirements. With the energy efficiency concept effiDRIVE® for servo applications, SEW-EURODRIVE offers comprehensive consulting during the planning of new plants and the modernization of existing systems. With our great expertise regarding drive technology and the industry, we focus on efficiency already during the first steps of selecting the used technology and products in order to optimize the energy consumption. But it is not sufficient to only combine energy-efficient components. Only looking at the application in its entirety allows for the maximum energy efficiency.

### Energy-efficient components

#### Sine-shaped regenerative power supply modules MXR80A

- In regenerative operating states, the braking energy is fed back into the supply system
- Energy supply and energy recovery are sinusoidal with  $\cos \phi = 1$
- Almost complete avoidance of supply harmonics
- No interference of sensitive electronic devices in direct vicinity
- Determination of energy flow, detailed diagnostic information
- Controlled DC link voltage independent of link voltage

#### Block-shaped regenerative power supply modules MXR81A

- In regenerative operating states, the braking energy is fed back into the supply system
- Inexpensive alternative to sinusoidal regenerative power supply if the supply system conditions are stable
- Automatic deactivation of the recovery during motoring operation
- Emergency braking resistor can be connected

#### Capacitor module MXC80A

- DC link energy is absorbed or supplied with up to 50 kW
- Up to 1000 W can be stored in the module
- The module is charged actively via charging connection
- With adequate project planning, the braking energy can be completely recycled for the next travel task
- There is no need for braking resistors
- Especially suited for cycles with small drives

#### Compact power supply module MXP81A

- Combination of 10 kW power supply module and 250 W capacitor module
- Especially cost-effective and space-saving with small systems
- Size-optimized braking resistor is already integrated in the module

## 7.9 Inverter technology

### Decentralized servo inverters



**MOVIAxis® MMD60B**

**Features**

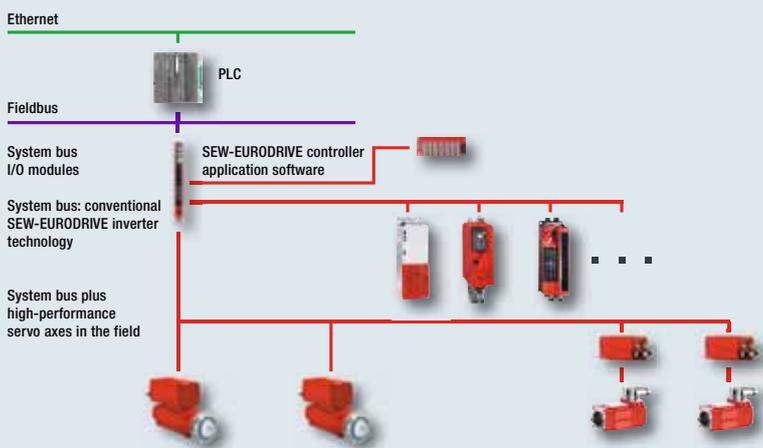
- Compact, powerful performance
- High overload capacity of up to 400%
- Available as decentralized variant installed close to the motor, or with the inverter integrated in the motor
- Fully scalable when installed close to the motor, with CM..., CMP..., and CMPZ.. with all options
- Reduced wiring work
- Direct, decentralized control of 24 V brakes possible
- Saves control cabinet space
- With EtherCAT®-compatible SBus<sup>PLUS</sup> for very extensive plants

**Decentralized inverter**

Designation	Maximum output current (A)
MMD60B019-5A3-4-00	19.0
MMD60B024-5A3-4-00	24.0
MMD60B036-5A3-4-00	36.0

**Drive with integrated inverter**

Motor	MOVIAxis® MMD60B designation		
	019	024	036
CM71L, $n_n = 4\,500\text{ min}^{-1}$	–	X	X
CM90L, $n_n = 4\,500\text{ min}^{-1}$	–	–	X
CM112L, $n_n = 1\,200\text{ min}^{-1}$	–	–	X
Decentralized frequency inverter for mounting close to the motor	X	X	X



Automation concept for system and machine modules

## Software



### MOVITOOLS® MotionStudio engineering software

#### Features

- Modular software concept for consistent engineering:  
Startup, control, diagnostics, communication, and visualization
- For parameterizing, programming, and diagnosing most inverter series of SEW-EURODRIVE – independent of the device



### MOVIVISION® parameterizable plant software

#### Features

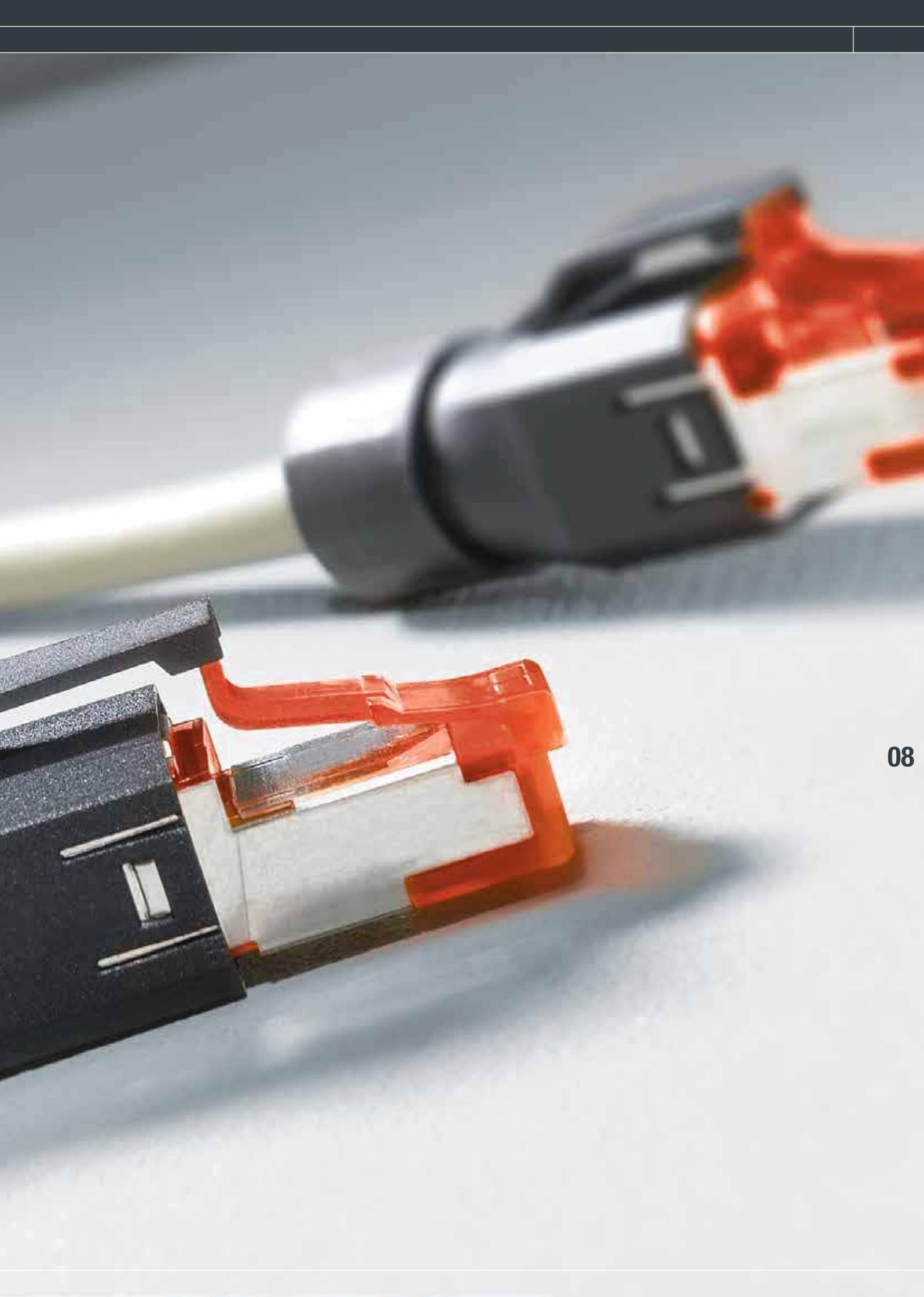
- Intuitive software solution for system manufacturers and operators
- Simple and fast startup of a drive system
- Can be used at any time and any place
- No special programming knowledge is required – only parameters have to be entered

➔ More information regarding software: pages 326 – 329

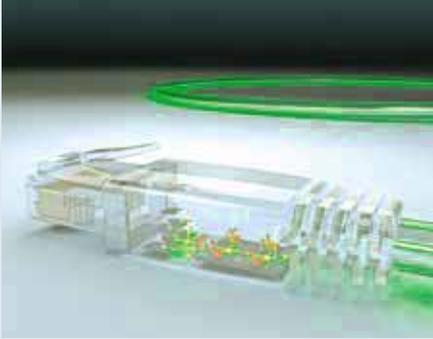
## 08

# INDUSTRIAL COMMUNICATION

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## 8.1 Industrial ETHERNET



**Industrial ETHERNET**

<p><b>One cable – numerous possibilities</b></p>	<ul style="list-style-type: none"> <li>– High transmission rate</li> <li>– Widespread medium</li> <li>– Enables the use of IT technology, such as e-mail for notification if an error occurs, and diagnostics for the implemented components using the Internet Explorer</li> <li>– Ensures vertical data communication with the control level with high bandwidth as well as horizontal process data communication between controller and application (e.g. drive inverters)</li> <li>– Comprehensive service from SEW-EURODRIVE for process data communication</li> </ul>
<p><b>Advantages</b></p>	<ul style="list-style-type: none"> <li>– Vertical and horizontal communication using Industrial ETHERNET</li> <li>– Real-time capable process data communication between controller and drive technology components (soft real time) with 10 process data words (each direction)</li> <li>– Fast data transfer at 100 Mbit/s</li> <li>– Diagnostics of drive technology via Internet Explorer, for example</li> <li>– Programming and diagnostics for the drive technology can be carried out via ETHERNET, which makes remote maintenance easy to handle</li> <li>– Broadband data communication between the control level and field level</li> <li>– Control and engineering combined in one bus system, saving costs for installation and maintenance</li> <li>– Fast system integration</li> </ul>
<p><b>Functions</b></p>	<ul style="list-style-type: none"> <li>– Process data communication by means of protocol, either PROFINET IO/RT, EtherNet/IP™, MODBUS TCP or EtherCAT®, for simple and fast data exchange between the control and field levels</li> <li>– Control and diagnostics via Ethernet – local operation, diagnostics, and maintenance at the field level</li> <li>– Integrated web server (not EtherCAT®) to diagnose the drive technology via Internet Explorer</li> <li>– Central data backup at control level</li> <li>– Parameterization and programming using MOVITOOLS® MotionStudio via Ethernet</li> <li>– Reduction of installation costs and maintenance due to installation of only one diagnostic bus or engineering bus system</li> </ul>

### Overview of fieldbus options

<b>Industrial ETHERNET</b>	<b>PROFINET®</b> 	<b>EtherNet/IP™</b> 	<b>Modbus TCP</b> 	<b>EtherCAT®</b> 
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### Inverter technology control cabinet installation and wall mounting

<b>MOVITRAC® LTE basic inverter</b>	DFE32B/UOH option	DFE33B/UOH option	DFE33B/UOH option	DFE24B/UOH option
<b>MOVITRAC® LTP standard inverter</b>	Options – DFE32B/UOH – DHR controller – LTFE32A	Options – DFE33B/UOH – DHR controller – LTFE33A	Options – DFE33B/UOH – DHR controller – LTFE31A	Options – DFE24B/UOH – LTFE24A

### Inverter technology control cabinet installation

<b>MOVITRAC® B standard inverter</b>	Options – DFE32B – DFE32B/UOH – DFS21B/PROFIsafe	Options – DFE33B – DFE33B/UOH	Options – DFE33B – DFE33B/UOH	Options – FSE24B – DFE24B – DFE24B/UOH
<b>MOVIDRIVE® B application inverter</b>	Options – DFE32B – DFS21B/PROFIsafe	DFE33B option	DFE33B option	DFE24B option
<b>Multi-axis servo inverter MOVIAXIS®</b>	Options – UFR41B – DHR controller	Options – UFR41B – DHR controller	Options – UFR41B – DHR controller	XFE24A option

## 8.1 Industrial ETHERNET

### Overview of fieldbus options

Industrial ETHERNET	<b>PROFINET®</b> 	<b>EtherNet/IP™</b> 	<b>Modbus TCP</b> 	<b>EtherCAT®</b> 
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### Decentralized inverters

<b>Standard inverter MOVIMOT®</b>	Options – MFE52A – Optional MOVIFIT® MTM PROFIsafe	MOVIMOT® MTM option – MFE62	MOVIMOT® MTM option	MFE72A option
– <b>MOVIFIT® SC motor starter</b> – <b>MOVIFIT® MC distributor for MOVIMOT®</b> – <b>MOVIFIT® FC standard inverter</b>	On-board interface PROFIsafe (optional)	On-board interface	On-board interface	
<b>Standard inverter MOVIPRO®</b>	On-board interface PROFIsafe (optional)	On-board interface	On-board interface	

### Decentralized drives / mechatronics

<b>Gearmotor with integrated MOVIMOT® inverter</b>	Options – MFE52A – Optional MOVIFIT® MTM PROFIsafe	MOVIMOT® MTM option – MFE62	MOVIMOT® MTM option	MFE72A option
<b>MOVIGEAR® SNI and DRC...SNI electronic motor</b>	On-board interface in MOVIFIT® FDC	On-board interface in MOVIFIT® FDC	On-board interface in MOVIFIT® FDC	
<b>MOVIGEAR® DSC and DRC...DSC electronic motor</b>	Options – DFE32B/UOH – DFS21B/PROFIsafe	DFE32B/UOH option	DFE32B/UOH option	DFE24B/UOH option
<b>Fieldbus gateway</b>	Options – UFR41B – DFE32B/UOH	Options – UFR41B – DFE33B/UOH	Options – UFR41B – DFE33B/UOH	DFE24B/UOH option
<b>MOVI-PLC® controller and CCU (Configurable Control Unit) as well as MOVIFIT® FDC</b>	On-board interface DHR	On-board interface DHR	On-board interface DHR	

## 8.2 Conventional fieldbuses

<b>Features</b>	<ul style="list-style-type: none"> <li>– Smooth communication on all levels of the system structure</li> <li>– Basis for efficient, flexible automation concepts, allow for economic startups and smooth production processes</li> <li>– Global standard as conventional fieldbuses are used worldwide</li> </ul>
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### Overview of fieldbus options

<b>Conventional fieldbuses</b>	<b>PROFIBUS®</b> 	<b>INTERBUS</b> 	<b>DeviceNet™</b> 	<b>CANopen</b> 	<b>AS-Interface</b> 
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### Inverter technology control cabinet installation and wall mounting

<b>MOVITRAC® LTE basic inverter</b>	DFP21B/UOH option	UFI11A option	DFD11B/UOH option	UFO11A option	
<b>MOVITRAC® LTP standard inverter</b>	Options – DFP21B/UOH – DHF controller – LTFP11A	UFI11A option	Options – DFD11B/UOH – DHF controller – LTFD11A	On-board interface	

### Inverter technology control cabinet installation

<b>MOVITRAC® B standard inverter</b>	Options – DFP21B – DP21B/UOH – DFS11B/PROFIsafe	UFI11A option	Options – DFD11B – DFD11B/UOH	On-board interface	
<b>MOVIDRIVE® B application inverter</b>	Options – DFP21B – DFS11B/PROFIsafe	DFD11B/21B option	Option DFD11B	On-board interface	
<b>Multi-axis servo inverter MOVIAXIS®</b>	Options – XP11A – UFF41B – DHF controller		Options – XP11A – DHF controller		

## 8.2 Conventional fieldbuses

### Overview of fieldbus options

Conventional fieldbuses	<b>PROFIBUS®</b> 	<b>INTERBUS</b> 	<b>DeviceNet™</b> 	<b>CANopen</b> 	<b>AS-Interface</b> 
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### Decentralized inverters

<b>Standard inverter MOVIMOT®</b>	MFP/MQP option	MFI option	Options – MDF/MQD – MOVIMOT® MTM		On-board interface
– <b>MOVIFIT® SC motor starter</b> – <b>MOVIFIT® MC distributor for MOVIMOT®</b> – <b>MOVIFIT® FC standard inverter</b>	On-board interface, PROFIsafe optional		On-board interface		On-board interface in MOVIFIT® basic
<b>Standard inverter MOVIPRO®</b>	On-board interface, PROFIsafe optional		On-board interface		

### Decentralized drives / mechatronics

<b>Gearmotor with integrated MOVIMOT® inverter</b>	MFP/MQP option	MFI option	Options – MDF/MQD – MOVIMOT® MTM		On-board interface
<b>MOVIGEAR® SNI and DRC..-SNI electronic motor</b>	Options – UFF41B/OMG42 – On-board interface in MOVIFIT® FDC		Options – UFF41B/OMG42 – On-board interface in MOVIFIT® FDC		
<b>MOVIGEAR® DSC and DRC..-DSC electronic motor</b>	Options – DFP21B – DFS11B/PROFIsafe	UF111A option	DFD11B/UOH option	UF011A option	On-board interface
<b>Fieldbus gateway</b>	Options – UFF41B – DFP21B/UOH	UF111A option	Options – UFF41B – DFD21B/UOH	UF011A option	
<b>MOVI-PLC® controller and CCU (Configurable Control Unit) as well as MOVIFIT® FDC</b>	On-board interface DHP/DHF		On-board interface DHF		

## 8.3 SEW-EURODRIVE system buses

<b>Features</b>	<ul style="list-style-type: none"> <li>– SEW-EURODRIVE system bus technologies especially designed for control and drive technology from SEW-EURODRIVE: Can be used in centralized and decentralized system concepts</li> <li>– SEW-EURODRIVE system buses are perfectly designed and preset for drive electronics and controllers             <ul style="list-style-type: none"> <li>- Reduced installation work as interfaces are avoided or completely integrated</li> <li>- Fast data exchange</li> <li>- Integrated diagnostics concept</li> </ul> </li> </ul>
<b>Technologies</b>	<p><b>SNI (Single Line Network Installation)</b></p> <p>Combines the advantages of reduced installation work with the technology of Ethernet-based communication in one innovative drive infrastructure solution</p> <ul style="list-style-type: none"> <li>– Use of the electrical energy infrastructure as basis for the transmission of Ethernet-based communication signals</li> <li>– Ethernet-based access to all individual stations from a central point</li> <li>– Significantly reduced installation effort as only supply cables need to be connected</li> <li>– Maximum expansion of the line topology for up to 10 drives with a total of 100 m cable length</li> <li>– Installation with shielded standard cables according to the SEW-EURODRIVE regulations; no special cables are necessary</li> </ul> <hr/> <p><b>SBus (CAN-based SEW-EURODRIVE system bus)</b></p> <p>The CAN technology was developed for mobile applications and is also used in automation applications</p> <ul style="list-style-type: none"> <li>– Consistent use of the multi-master functionality of the CAN for data exchange between the drives; in some projects without any additional controller possible</li> <li>– The SBus allows for applications that require hard real-time conditions for the communication. The clock-synchronous transmission of setpoint and actual values between the drives or within the network with a controller makes for applications such as “Electronic gear unit” and “multi-axis MotionControl”.</li> <li>– Inexpensive networking due to use of standard CAN bus cables, in the control cabinet with separable screw connection, in decentralized solutions with the M12 plug connectors standardized for DeviceNet™ or CANopen</li> <li>– Maximum expansion of the line topology up to 500 m. The number of drives and peripheral components is limited to 64, but is usually less than 20</li> </ul> <hr/> <p><b>SBus<sup>PLUS</sup> (EtherCAT®)</b></p> <p>In addition to the ideal integration, SBus<sup>PLUS</sup> offers additional functions in networks with our controllers and drive technology that allow for an easy and simple startup</p> <ul style="list-style-type: none"> <li>– EtherCAT® is a hard real time-capable communication technology that can be flexibly installed</li> <li>– Star, tree and line topologies can be implemented with stub lines nearly without any performance losses</li> <li>– For further information refer to ETG (EtherCAT Technology Group) <a href="http://www.ethercat.org">http://www.ethercat.org</a></li> </ul>

## 8.3 SEW-EURODRIVE system buses

Device family	Decentralized controller MOVIFIT® FDC-SNI variant		DHx21 control card		DHx41 control card			UHX71B control card	
	CCU software: parameterizable solutions	MOVI-PLC® software: free programming	CCU software: parameterizable solutions	MOVI-PLC® software: free programming	CCU software: parameterizable solutions	MOVI-PLC® software: free programming		MOVI-PLC® software: free programming	
<b>System bus</b>	SBus (CAN) and SNI		SBus (CAN)			SBus (CAN)	SBus <sup>PLUS</sup> (EtherCAT®)	SBus <sup>PLUS</sup>	SBus on OSC71B

### Control cabinet

MOVITRAC® B			via FSC	via FSC	via FSC	Yes	via FSE24B	via FSE24B	FSC
MOVIDRIVE® B			Yes	Yes	Yes	Yes	via DFE24B	via DFE24B	
MOVITRAC® LTX			Yes	Yes	Yes	Yes			Yes
MOVIAXIS®					Yes	Yes	via XFE/XSE	via XFE/XSE	

### Control cabinet and decentralized installation

MOVITRAC® LTE-B	Yes <sup>1)</sup>	Yes	Yes <sup>1)</sup>	Yes	Yes <sup>1)</sup>	Yes			Yes
MOVITRAC® LTP-B	Yes <sup>1)</sup>	Yes	Yes <sup>1)</sup>	Yes	Yes <sup>1)</sup>	Yes			Yes

### Decentralized drives / mechatronics

MOVIGEAR® SNI	Yes	Yes							
MOVIGEAR® DSC	Yes	Yes	Yes	Yes	Yes	Yes			Yes
MOVIFIT® slave	Yes	Yes		Yes		Yes			
MOVIAXIS® MD							Yes		

### Accessories

I/O system		via OCC		via OCC		via OCC	via OCE	via OCE	
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<sup>1)</sup>Only 3PD speed control

## 8.4 Communication modules and fieldbus tools

<b>Features</b>	Simplify communication between control and drive components and establishing communication structures.
<b>Communication modules</b>	Are offered in several technology program packages. This example of SEW-EURODRIVE is a free of charge, non-binding service and shows the basic procedure for creating a PLC program. SEW-EURODRIVE is not liable for the content of the sample program.
<b>Fieldbus tools</b>	Do not hesitate to contact us: We will be happy to provide easy Ethernet master for the process and parameter exchange <ul style="list-style-type: none"> <li>– from Windows PCs with Ethernet interface</li> <li>– to devices from SEW-EURODRIVE with EtherNet/IP™ or MODBUS TCP interface using the fieldbus tools.</li> </ul>

## 8.5 Safe communication



### Certified to (IEC 61508) SIL 3, (EN ISO 13489-1) PL e

The safety functions Safe Torque Off (STO) and Safe Stop (SS1) according to IEC 61800-5-2 can be activated for **MOVIDRIVE® B** application inverters and **MOVITRAC® B** standard inverters via the following options.

- MOVISAFE® DFS11B for connecting MOVIDRIVE® B / MOVITRAC® B: PROFIsafe on PROFIBUS DP
- MOVISAFE® DFS21B for connecting MOVIDRIVE® B / MOVITRAC® B: PROFIsafe on PROFINET IO

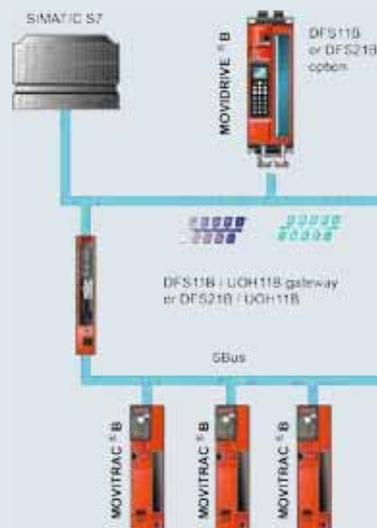
These components come equipped with a safety-related output used for the safe disconnection of individual MOVIDRIVE® B / MOVITRAC® B inverters or a group of MOVIDRIVE® B / MOVITRAC® B inverters.

**MOVIMOT®** gearmotors with integrated inverter can be controlled using PROFIBUS/PROFIsafe when the gearmotors are used together with MQS../Z.6F field distributors. Field distributors with integrated MOVIMOT® inverter of the MQS../Z.7F and MQS../Z.8F type are also equipped with a PROFIBUS/PROFIsafe interface.

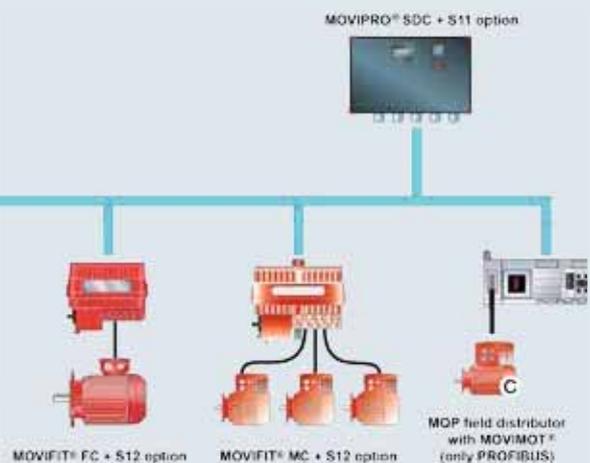
The decentralized **MOVIFIT®** drive controller can also be controlled via PROFIsafe in connection with MOVIFIT® MC or FC with the S12 safety option. The S12 safety option, certified to IEC 61800-5-2 and EN ISO 13849-1, is an integrated and parameterizable option card with safe inputs and outputs (F-DI, F-DO) that can also evaluate safety-related motor encoders.

These functions allow you to connect safety technology sensors for disconnection purposes and monitoring functions for speed and direction of rotation.

### Control cabinet drive technology: Functional safety integrated in the inverter



### Decentralized installation

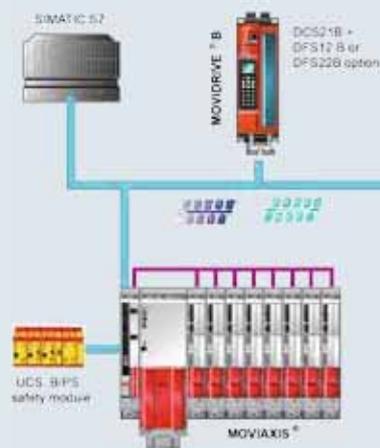


### Certified to (IEC 61508) SIL 3, (EN ISO 13489-1) PL e

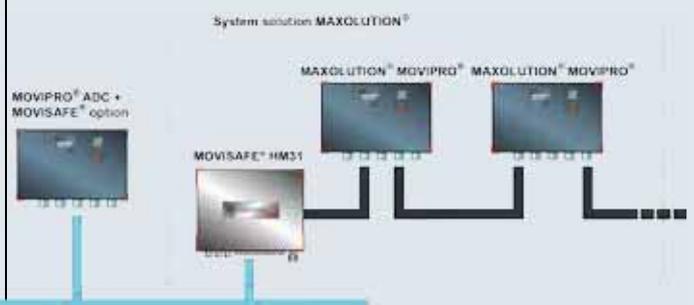
- Additional safe motion functions according to IEC 61800-5-2 can be implemented for **MOVIDRIVE® B** application inverters from size 1. These functions are SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SCA, and SLP.
  - Combining the **MOVISAFE®** DCS21B or DCS22B option card with the DFS12B (PROFIBUS) or DFS22B (PROFINET IO) fieldbus interface enables control via PROFIsafe.
  - The UCS..B safety module has all the safety functions for monitoring the movements of **MOVIAXIS®** multi-axis servo inverters. Safe data is exchanged with the controller via PROFIsafe.
- The modular **MOVIPRO®** concept comprises the following safety options:
- Control via PROFIsafe with PROFIsafe option S11
  - The integrated PROFIsafe option S11 comes equipped with 4 safety-related inputs for connecting safe sensors and two safety-related outputs
  - Optional, safety-related brake disconnection (SBC)
  - Decentralized MOVISAFE® HM31 safety controller for independent, safety-relevant control of application solutions, with integrated safe master-slave communication

08

### Control cabinet drive technology: Modular safety in inverters



### Decentralized installation



\* MOVIPRO® ADC with MOVISAFE® HM31 option only in connection with MAXOLUTION® system solutions

## 09

# CONTROL TECHNOLOGY

## 9.1 Controller hardware

Decentralized controllers	
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## 9.2 Controller software

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## 9.1 Controller hardware

### Decentralized controllers



#### MOVIFIT® MTx Technology

#### Features

- MOVIFIT® function level Technology
- With integrated basic control card
- For decentralized field installation up to degree of protection IP69
- As a freely programmable motion and logic controller (MOVI-PLC®) with libraries and program modules specifically for materials handling technology applications
- As parameterizable configurable control unit (CCU) with special application modules for materials handling applications, such as cam or simple positioning

#### Technical data

- PROFIBUS slave DP-V1, PROFINET, EtherNet/IP™
- 2 CAN interfaces, 1 of which is electrically isolated
- 1 RS485 interface
- 8 digital I/Os (inputs/outputs)
- Status display for controller (programmable logic controller) and fieldbus



### MOVIFIT® FDC-SNI

#### Features

- MOVIFIT® FDC-SNI with integrated control card available in standard and advanced performance class
- Module controller for up to 16 axes via SBus or a maximum of 10 MOVIGEAR® SNI
- As a freely programmable motion and logic controller (MOVI-PLC®) with libraries and program modules specifically for materials handling technology applications
- As a configurable control unit (CCU) with special application modules for materials handling such as rapid/creep speed positioning, bus positioning or universal module
- Motion and logic controller for response times > 10 ms
- Single-axis motion control libraries and program modules
- SD memory card for easy device replacement and recipe management
- Fast engineering via USB and Ethernet

#### Technical data

- 1 × Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3
- 1 × CAN, electrically isolated
- 1 × SNI
- 1 × RS485, electrically isolated
- USB interface
- PROFINET slave, EtherNet/IP™ slave, Modbus TCP/IP slave
- 12 digital inputs and 4 digital inputs/outputs
- Status display for PLC and fieldbus
- Real-time clock
- 2 MB program memory, 6 MB data memory
- 32 kB retain variables, 24 kB system variables (retain)
- Free-running task (min. 10 ms), 1 cyclic task (10 to 10 000 ms)
- PC-readable memory card for firmware and application program

## 9.1 Controller hardware

### Decentralized controllers



**MOVIPRO® ADC advanced**

#### Features

- MOVIPRO® ADC with integrated advanced control card
- For compact performance with decentralized field installation up to IP54
- As a freely programmable motion and logic controller with libraries and program modules specifically for materials handling technology applications
- As a configurable control unit (CCU) with special application modules for materials handling and positioning applications, such as universal mode and rapid/creep speed positioning
- Motion and logic controller for very short response times
- Technology motion control libraries and program modules, such as electronic gear unit, electronic cam
- SD memory card for easy device replacement
- Fast engineering via USB and Ethernet

#### Technical data

- 1 × Ethernet interface (10/100 BaseT) for engineering tasks or TCP/IP and UDP via IEC 61131-3
- 1 × Ethernet as SBus<sup>PLUS</sup> (EtherCAT®) master
- 1 × CAN interface, electrically isolated
- 1 × RS485 interface, electrically isolated
- PROFIBUS slave DP-V1, DeviceNet™ slave (DHF41B)
- PROFINET slave, EtherNet/IP™ slave, Modbus TCP/IP slave
- 12 digital inputs and 4 digital inputs/outputs
- Status display for PLC and fieldbus
- PC-readable memory card for firmware and application program

## Controllers for control cabinet installation



### Controller performance class “standard”

#### Control card standard DHx21B

<b>Variants</b>	<ul style="list-style-type: none"> <li>– DHE21B with Ethernet interface</li> <li>– DHF21B with additional PROFIBUS and DeviceNet™ slave interface</li> <li>– DHR21B with additional PROFINET/Ethernet/IP™/Modbus TCP/IP slave interface</li> </ul>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Motion and logic controller for medium response times</li> <li>– MultiMotion Light motion operating system</li> <li>– Motion control for up to 16 axes via SBus</li> <li>– MOVI-PLC® I/O system via SBus</li> <li>– SD memory card for easy device replacement and recipe management</li> <li>– Fast engineering via USB and Ethernet</li> </ul>
<b>Technical data</b>	<ul style="list-style-type: none"> <li>– 1 × Ethernet interface (10/100 BaseT) for engineering tasks or TCP/IP and UDP via IEC 61131-3</li> <li>– 2 CAN interfaces, 1 of which is electrically isolated</li> <li>– 2 RS485 interfaces, 1 of which is electrically isolated</li> <li>– USB device</li> <li>– DHF21B version with PROFIBUS slave DP-V1, DeviceNet™ slave</li> <li>– DHR21B version with PROFINET slave, EtherNet/IP™ slave, Modbus TCP/IP slave</li> <li>– 8 digital I/Os (inputs/outputs)</li> <li>– Status display for PLC and fieldbus</li> <li>– Real-time clock</li> <li>– 2 MB program memory, 6 MB data memory</li> <li>– 32 kB retain variables, 24 kB system variables (retain)</li> <li>– Free-running task (min. 10 ms), 1 cyclic task (10 to 10 000 ms)</li> <li>– PC-readable memory card for firmware and application program</li> </ul>

## 9.1 Controller hardware

### Controller for control cabinet installation



#### Controller performance class “advanced”

#### DHx41B control card

#### Variants

- DHE41B with Ethernet interface
- DHF41B with additional PROFIBUS and DeviceNet™ slave interface
- DHR41B with additional PROFINET/Ethernet/IP™/Modbus TCP/IP slave interface

#### Features

- Motion and logic controller for short response times
- MultiMotion motion operating system and technology module
- Motion control for up to 64 axes via SBus, or high performance with SBus<sup>PLUS</sup>
- MOVI-PLC® I/O system via SBus, or high-performance implementation with SBus<sup>PLUS</sup>
- SD memory card for easy device replacement and recipe management
- Fast engineering via USB and Ethernet

#### Technical data

- 1 × Ethernet interface (10/100 BaseT) for engineering tasks or TCP/IP and UDP via IEC 61131-3
- 1 x Ethernet interface as SBus<sup>PLUS</sup> (EtherCAT®) master
- 2 CAN interfaces, 1 of which is electrically isolated
- 2 RS485 interfaces, 1 of which is electrically isolated
- USB device
- DHF41B version with PROFIBUS slave DP-V1, DeviceNet™ slave (DHF41B)
- DHR41B version with PROFINET slave, EtherNet/IP™ slave, Modbus TCP/IP slave
- 8 digital I/Os (inputs/outputs)
- Status display for PLC and fieldbus
- 4 MB program memory, 12 MB data memory
- 32 kB retain variables, 24 kB system variables (retain)
- Free-running task (min. 10 ms), 8 cyclic task (1 to 10 000 ms)
- PC-readable memory card for firmware and application program



### Controller performance class “power”

#### UHX71B control card

<b>Variants</b>	<ul style="list-style-type: none"> <li>– UHX71B with Ethernet interface</li> <li>– UHX71B-OSP71B version with additional PROFIBUS slave interface</li> <li>– UHX71B-OSR71B version with additional PROFINET/EtherNet/IP™/Modbus TCP/IP slave-interface</li> </ul>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Available in version T0 – T25</li> <li>– Reduced interfaces, meaning all functions are controlled by one controller <ul style="list-style-type: none"> <li>- Demanding technology functions, such as cams or electronic gear unit</li> <li>- 3D robotics functions with up to 8 degrees of freedom</li> </ul> </li> <li>– Simple high-performance implementation of most complex machines</li> <li>– Up to 32 centrally calculated Motion Control axes in one millisecond</li> <li>– Sufficient processing power available even for the most demanding application programs</li> <li>– Fast clock-synchronous SBus<sup>PLUS</sup> for coordination of the drives</li> <li>– CFast memory card for firmware, application and user data facilitates easy device replacement and enables extremely quick data access</li> </ul>
<b>Technical data</b>	<ul style="list-style-type: none"> <li>– Intel Core2Duo 2.2 GHz processor</li> <li>– 1 × GB Ethernet (10/100 BaseT) for engineering tasks or TCP/IP and UDP via IEC 61131-3</li> <li>– 1 × Ethernet interface for SBus<sup>PLUS</sup></li> <li>– 6 MB program memory, 64 MB data memory</li> <li>– 32 kB retain variables, 24 kB system variables (retain)</li> <li>– Free-running tasks and 8 cyclical tasks (1 to 10 000 ms)</li> <li>– PC-readable memory card for firmware and application program</li> <li>– CAN interface as an option OSC71B</li> </ul>

## 9.1 Controller hardware

### Accessories and options for controllers



#### Memory cards

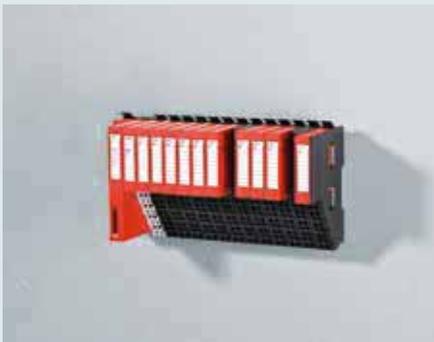
#### Memory cards for “standard” and “advanced” performance-class controllers

- OMH41B
- OMC41B
- OMH71B
- OMW71B / OMW72B

#### ORV71B dongle for UHX71B

#### Dongle for visualization runtime

Implement high-performance visualization solutions using HMI-Builder.PRO and the Windows® operating system in MOVI-PLC® power.



#### I/O expansions

#### I/O expansions for control cabinet installation and decentralized installation

- MOVI-PLC® I/O system B
  - MOVI-PLC® I/O system C
  - SNI I/O system
- I/O expansions for automating your machine modules and entire systems



## Interfaces

### **CAN interface OSC71B for UHX71B**

The OSC71B expands the variety of interfaces of MOVIPLC® power by one CAN bus interface. This way, even stations without SBus<sup>PLUS</sup> (MOVIGEAR®) can be operated on the MOVI-PLC® power.

## 9.2 Controller software

### Free programming MOVI-PLC®



#### Efficient engineering with MultiMotion motion control platform

#### Advantages

- Universal platform: We provide support for all controllers in all performance classes as well as the entire range of drive electronics
- Extensive functionality: Thanks to the integration of a wide range of motion control functions
- Convenient parameterization: Graphical tools are provided for configuration and diagnostics
- Efficient engineering: Many functions can be implemented after simple parameterization

#### MultiMotion motion control platform

- For MOVI-PLC® advanced and MOVI-PLC® power as of technology level T2
- Supports up to 64 axes
- Single axis functions: Positioning, referencing, velocity control and tracking
- Touchprobe function
- Processing of external encoders
- Technology functions: Synchronous operation, electronic cam functions, and interpolation with different engagement and disengagement mechanisms
- Cam switch for up to 8 cam tracks

#### MultiMotion Light motion control platform

- For MOVI-PLC® standard, MOVI-PLC® advanced and MOVI-PLC® power as of technology level T0
- Supports up to 64 axes
- Single axis functions: Positioning, referencing, velocity control and tracking
- Touchprobe function
- Processing of external encoders

#### Technology modules

- HandlingKinematics
- Kinematics
- effiSRS energy-saving storage/retrieval system
- Winder

## Parameterizable solutions CCU



### Parameterize rather than program, using CCU (Configurable Control Unit)

#### Advantages

- **Parameterization instead of programming**  
Graphical configurators allow you to parameterize predefined application and technology modules that can be run directly.
- **Easy startup**  
Our standardized application modules allow for quick startup, without the need for time-consuming programming.
- **Optimize the application**  
We provide a wide range of diagnostics tools for optimizing your applications.

#### Configure applications quickly and easily using our Application Configurator for CCUs:

- Graphical configuration of the modules via PC
- Standardized single-axis and multiple-axis application modules can be configured and run directly
- Control of the modules via a standardized process data interface
- Pre-startup without higher-level PLC (programmable logic controller) via a special control mode
- Shorter response times when coordinating multiple axes
- Integrated diagnostics for a fast and straightforward startup

#### Single-axis application modules

- Speed control
- Universal module: Speed, positioning, modulo, remaining travel
- Universal module Technology, additionally with phase-synchronous operation
- Rapid/creep speed positioning

#### Multi-axis application modules

- HandlingKinematics: Implementation of kinematics and handling applications
- effiSRS: Energy-optimized coordination of drive and lifting axes for storage/retrieval systems
- Winder: For effortless winding and unwinding of materials
- SyncCrane: For easy control of crane bridges and lifts

#### Function module

- The function module enhances the functionality of the respective application module
- Brake diagnostics: Testing the functional effectiveness and performance of electromechanical brakes

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# 10 OPERATION AND STARTUP

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## 10.1 Operator panels

DOP11C operator panel

Keypads

Interface adapters

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## 10.2 Software

MOVITOOLS® MotionStudio

engineering software

MOVIVISION® plant software

LT Shell software

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## 10.1 Operator panels

### Visualization and diagnostics



**Operator panels of the DOP11C generation**

#### Features

- Standardized, modern panel series with touchscreen, high resolution color display and wide viewing angle
- Consistent product portfolio with screen sizes from 4.3" to 15"
- Optimized on-screen keyboard makes it easier to enter text, even for smaller panels
- Faster processors with improved performance
- More RAM gives you the scope to carry out even the most sophisticated visualization projects
- Option to expand memory by means of an SD card or USB stick, e.g. for logging visualization data
- Flexible communication connections due to sophisticated interfaces and driver protocols
- The new Windows-based platform MOVI-PLC® power is now available for the most demanding visualization tasks for use with durable 12" and 15" monitors. To use this, you have to activate runtime visualization in HMI-Builder.PRO with a USB dongle
- Uniform appearance for both Windows-based and panel-based systems
- Housing:
  - DOP11C40/70/100/120 and 150 made of die-cast aluminum
  - DOP11C51, more cost-efficient due to plastic housing

#### HMI-Builder.PRO operating software



- Optimal interaction between visualization and SEW-EURODRIVE control technology
- Perfect system integration as an integral component of MOVITOOLS® MotionStudio
- Consistent development environment for the entire C series (from the small 4.3" panel through to high-end 15" visualization supported by MOVI-PLC® power)
- Minimal configuration effort thanks to modern, efficient program design
- Numerous integrated HMI functions such as recipe management, alarm management, integrated Web server and much more increase operating security and reduce development costs
- For complex visualization tasks, the open scripting functionality in C# offers the full flexibility of .NET Framework architecture
- Integrated simulation mode allows you to configure and test visualization tasks in advance – even without hardware

**Operator panels of the DOP11C generation**

Panel type	Display	Operation	Interfaces	Processor/memory
<b>DOP11C-40</b>	4.3", 480 × 272 pixels, 65k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	ARM9 (400 MHz) – RAM: 128 MB (DDR2) – Application memory: 80 MB
<b>DOP11C-51</b>	5", 800 × 480 pixels 65k colors	Touch display panel (resistive) Limited functionality	RS232, RS422/RS485 inter- face, Ethernet, USB	ARM9 (400 MHz) – RAM: 128 MB (DDR2) – Application memory: 200 MB
<b>DOP11C-70</b>	7", 800 × 480 pixels, 65k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	ARM9 (400 MHz) – RAM: 128 MB (DDR2) – Application memory: 80 MB
<b>DOP11C-100</b>	10.4", 640 × 480 pixels, 65k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	ARM9 (400 MHz) – RAM: 128 MB (DDR2) – Application memory: 80 MB
<b>DOP11C-120</b>	12.1", 1280 × 800 pixels, 262k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	Intel Atom (1.1 GHz) – RAM: 1 GB (DDR2) – Application memory: > = 1.4 GB
<b>DOP11C-150</b>	15.4", 1280 × 800 pixels, 262k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	Intel Atom (1.1 GHz) – RAM: 1 GB (DDR2) – Application memory: > = 1.4 GB
<b>Monitor type (MOVI-PLC® power)</b>				
<b>OPT71C-120</b>	12" display, 1280 × 800 pixels, 16 million colors	Touch display monitor in connection with MOVI-PLC® power	DVI, USB interface for touch functionality	
<b>OPT71C-150</b>	15" display, 1280 × 800 pixels, 16 million colors	Touch display monitor in connection with MOVI-PLC® power	DVI, USB interface for touch functionality	
<b>Device type license (MOVI-PLC® power)</b>				
<b>ORV71C</b>	USB license dongle for using the visualization runtime integrated in HMI-Builder.PRO without a time limit			

## 10.1 Operator panels

### Keypads



**Keypads for inverters**

<b>Features</b>	<ul style="list-style-type: none"> <li>– Keypads for MOVITRAC® B and MOVIDRIVE® B inverters</li> <li>– Fast and convenient startup, diagnostics, or status display without PC</li> </ul>	
	FBG11B basic keypad for MOVITRAC® B	DBG60B keypad for MOVITRAC® B and MOVIDRIVE® B
<b>Functions</b>	<ul style="list-style-type: none"> <li>– Visualization of process values and status</li> <li>– Fault memory queries and fault reset</li> <li>– Display and setting of parameters</li> <li>– Data backup and transfer of parameter sets</li> <li>– Easy-to-use startup menu for SEW-EURODRIVE and third-party motors</li> <li>– Manual control of MOVITRAC® B</li> </ul>	<ul style="list-style-type: none"> <li>– Visualization of process values and status</li> <li>– Status displays of the digital inputs and outputs</li> <li>– Fault memory queries and fault reset</li> <li>– Display and setting of parameters and service parameters</li> <li>– Data backup and transfer of parameter sets to other MOVITRAC® B or MOVIDRIVE®</li> <li>– Easy-to-use startup menu for VFC mode with the MOVIDRIVE® B</li> <li>– Manual control of MOVITRAC® B and MOVIDRIVE® B as well as the decentralized MOVIMOT® standard inverters (gearmotor with integrated frequency inverter)</li> </ul>
<b>Features</b>	<ul style="list-style-type: none"> <li>– 5-digit 7-segment display / 6 keys / 8 pictograms / setpoint adjuster</li> <li>– Selection of quick menu or complete menu</li> <li>– Can be plugged onto the inverter (during operation)</li> <li>– IP20 degree of protection (EN 60529)</li> <li>– LED display when IPOS® program is started</li> </ul>	<ul style="list-style-type: none"> <li>– Illuminated plain text display: choice of up to 7 languages with MOVITRAC® B and more than 12 languages with MOVIDRIVE® B</li> <li>– Keypad with 21 keys</li> <li>– Selection of quick menu and complete menu; for MOVIDRIVE® B choice between user menu, detailed parameter menu and startup menu in VFC mode</li> <li>– Can be plugged onto the inverters (during operation)</li> <li>– Can be connected via extension cable DKG60B (5 m)</li> <li>– IP40 degree of protection (EN 60529)</li> </ul>

## Interface adapters



### Interface adapters for inverters

<b>Features</b>	<ul style="list-style-type: none"> <li>– “Translation aid” for communication between the drive technology components on all system levels and during engineering</li> <li>– Adapt signal levels and coding of the different communication technologies</li> <li>– Immediate data access</li> </ul>
<b>Types</b>	<ul style="list-style-type: none"> <li>– USBxxA to RS485</li> <li>– USBxxA to SBus</li> <li>– RS232 to RS485</li> </ul>

## 10.2 Software

### Engineering software



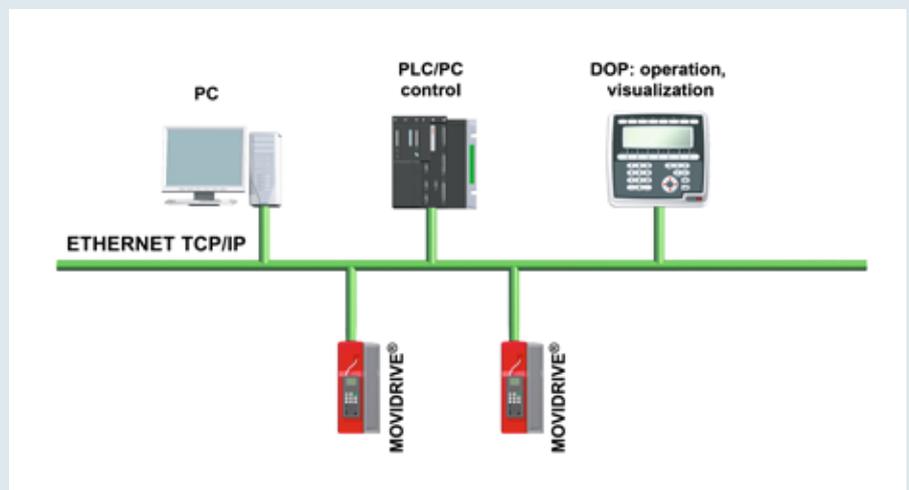
#### MOVITOOLS® MotionStudio

#### Features

- Modular software concept for consistent engineering:  
Startup, control, diagnostics, communication, and visualization
- For parameterizing, programming, and diagnosing most inverter series of SEW-EURODRIVE – independent of the device
- Convenient drive startup and parameter setting
- Drive diagnostics using the built-in oscilloscope function
- Creation of application and user programs in high-level language C, assembler or IEC 61131-3
- View status of connected devices
- Fieldbus communication diagnostics via bus monitor
- Controlling technology functions
- Ready-to-use modules for various applications
- Electronic nameplates of SEW-EURODRIVE gearmotors are used for automatic motor adjustment

#### Communication interfaces

- MOVITOOLS® MotionStudio supports engineering via:
- Ethernet TCP/IP, PROFINET IO, EtherNet/IP™, MODBUS TCP
  - EtherCAT®
  - PROFIBUS DPV1, CAN, DeviceNet™
- and the non-proprietary software interface **TCI Tool Calling Interface**



Tool	Functionality
	<p><b>Startup</b></p> <ul style="list-style-type: none"> <li>– Configuration and startup: To adapt the inverter to the connected motor and optimize current, speed and position controllers</li> <li>– Manual mode: The tool allows for manually controlling the devices directly from the PC</li> </ul>
	<p><b>Parameterization</b></p> <ul style="list-style-type: none"> <li>– Parameter tree: Standardized editor for parameterization of various device types</li> <li>– PDO editor: A process data object editor for graphic configuration of process data for the MOVIAXIS® multi-axis servo inverter</li> <li>– Gateway configurator: Uniform tool for diagnostics and configuration of the fieldbus gateways UFx41B, DFX and MOVIFIT® with Classic and Technology function levels</li> </ul>
	<p><b>Diagnostics and visualization</b></p> <ul style="list-style-type: none"> <li>– Status: Support for unit diagnostics, communicates general unit status information, manual unit reset possible</li> <li>– Application Builder: Editor for designing application-specific visualization and application-specific diagnostics. Visualization is connected via file download with the IPOS® inverter program and the parameter settings</li> <li>– Fieldbus monitor: Tool for running diagnostics on the communication between the fieldbus and the device (monitor mode), and the setpoint selection on the device independently of the control (control mode)</li> <li>– Scope: Diagnostics are performed by using an oscilloscope program for all SEW-EURODRIVE inverters</li> </ul>
	<p><b>Programming</b></p> <ul style="list-style-type: none"> <li>– PLC Editor: Programming MOVI-PLC® controllers using application programs written once; can be applied independently of the device</li> <li>– IPOS® assembler and compiler</li> </ul>

## 10.2 Software

### Parameterizable plant software



#### MOVIVISION® parameterizable plant software

#### Features

- Parameterization instead of programming
- Track outline
- Integrated track visualization and operation
- Manual operation
- Virtual pre-startup using plant simulation (2D, 3D)
- Decentralized installation with central data management
- Access authorization management
- Automatic sequence of motion coordination (collision protection, synchronous travel)
- Ensuring independent production flows (routing management, specified targets)
- Parameterizable data exchange with higher-level controller
- Inclusion of production/part data
- Exchanging production-relevant data with higher-level systems
- Special additional functionalities thanks to technological functions (TecUnits)
- Support for safety technology

#### Advantages

- **Simple planning and configuration**  
Thanks to parameterizable conveyor functions in combination with virtual configuration, startup, and simulation
- **Simple startup**  
Thanks to parameterization that does not require special knowledge of programming
- **High flexibility in the event of changes in the production**  
Thanks to the intuitive operation and parameterization
- **Precise troubleshooting**  
Thanks to logging, simulation, virtual diagnostics and root cause resolution. External support via VPN possible.
- **Increased productivity**  
Thanks to fast diagnostics, remote maintenance and simple on-site maintenance

#### Application examples

- Single-axis applications such as roller conveyors
- Single or multi-axis applications such as rotary tables, lateral conveyors, lifting/lowering stations, conveyor trolleys
- MAXOLUTION® system solutions such as skillets with lift tables, electrified monorail systems and automated guided vehicle systems

<b>Functions</b>	
	<ul style="list-style-type: none"> <li>– Designing and project planning of the system</li> </ul>
	<ul style="list-style-type: none"> <li>– Plant data management and administration</li> </ul>
	<ul style="list-style-type: none"> <li>– Plant parameterization</li> <li>– Plant startup</li> <li>– Simplified plant maintenance</li> </ul>
	<ul style="list-style-type: none"> <li>– Diagnostics of the system</li> <li>– Plant operation and monitoring</li> <li>– Simulation</li> </ul>
<b>MOVIVISION® parameter and diagnostics tool</b>	<ul style="list-style-type: none"> <li>– Windows-based parameter and diagnostics tool</li> <li>– User access to the central database of the MOVIVISION® server</li> </ul>
<b>MOVIVISION® server</b>	<ul style="list-style-type: none"> <li>– All data is stored in one central database</li> <li>– Establishes a link to the connected decentralized control components</li> <li>– Data is exchanged between server and decentralized control components via fieldbus and/or networks</li> <li>– Parameters are set or changed only in this database</li> <li>– Management and supervision of access authorizations</li> <li>– High degree of data security and user-friendliness</li> <li>– Data exchange between the server and decentralized components via fieldbuses and/or networks</li> <li>– Activation of automatic parameter download during device replacement</li> <li>– Error analysis possible with logging</li> <li>– Catalog functions</li> </ul>
<b>MOVIVISION® client</b>	<ul style="list-style-type: none"> <li>– The interface displays the data of the decentralized control components visually</li> <li>– Parameterization and diagnostics on different levels up to the inverter</li> <li>– The data for every device is visualized separately for parameterization and diagnostics data</li> <li>– It is possible to grant different access rights to users, e.g. for monitoring, for parameterizing, for initial startup, for device replacement, etc.</li> </ul>

## 10.2 Software

### LT Shell software



**LT Shell software**

#### Features

- Function-related software for fast startup with parameter management and network monitoring with the aid of a PC
- Multi-language programming tool for MOVITRAC® LTE-B basic inverters, MOVITRAC® LTP-B standard inverters, and the MOVIFIT® basic decentralized inverter via RS485 data exchange

#### Functions

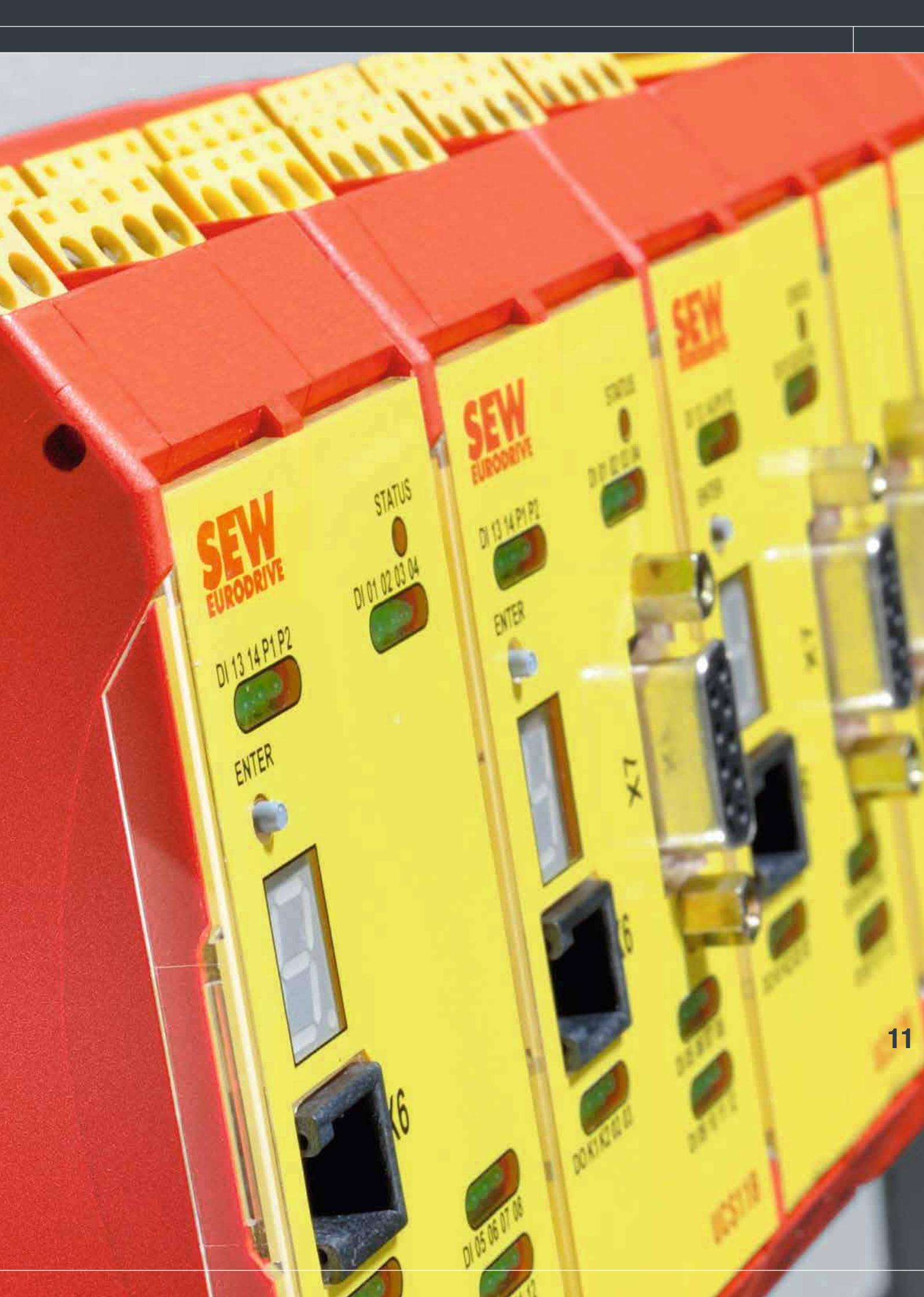
- Uploading and downloading parameters
- Saving parameters
- Exporting inverter parameters
- Controlling the inverter
- Monitoring the state of the motor and inputs/outputs



# 11 SAFETY TECHNOLOGY

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## 11.1 Safe systems

### safetyDRIVE: Functional safety

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Continuous further development and automation are the basis for progress and growth in machine and plant manufacturing. At the same time, they often pose new challenges for this industry sector: Guaranteeing the safety of all employees and preventing work accidents while ensuring trouble-free production processes are demands placed on all production areas. The installed drive technology makes a significant contribution to the “Functional safety” of a machine or plant.

This is where safetyDRIVE, the safety technology concept from SEW-EURODRIVE, comes into play – and not only since the Machinery Directive 2006/42/EC has become effective. safetyDRIVE allows for flexible and economic solutions to allow employees to work in protected areas and to ensure plant operation. Comprehensive safety functions for switching off, stopping and holding as well for monitoring movements and positions increase the safety in your system. Diagnostic functions monitor the functional effectiveness and performance of safety-relevant components and round off your safety concept.



Modular control cabinet installation



Integrated control cabinet installation



Decentralized installation



Brake control



Motor options brake / encoder



Motor options double brake

## 11.2 Control cabinet installation

safetyDRIVE: Functional safety in control cabinets



### With safe communication

<b>DFS11B/21B for stop functions</b>	<ul style="list-style-type: none"> <li>– Optimized stop monitoring for all drive components</li> <li>– This simplifies the planning and implementation of every type of system</li> </ul>
<b>DFS12B/22B for safe communication</b>	<ul style="list-style-type: none"> <li>– Perfectly designed for motion and position monitoring</li> <li>– Easy and compact integration into the MOVIDRIVE® B drive inverter</li> </ul>
<b>MOVISAFE® DCS22B for motion monitoring</b>	<ul style="list-style-type: none"> <li>– Extensive and safe monitoring of motion sequences</li> <li>– Designed for compact integration into MOVIDRIVE® B drive inverters, sizes 1 to 7</li> </ul>
<b>MOVISAFE® DCS21B for motion and position monitoring</b>	<ul style="list-style-type: none"> <li>– Extensive and safe monitoring of motion and positioning sequences</li> <li>– Easy and compact integration into the MOVIDRIVE® B drive inverter</li> </ul>
<b>Safety functions according to IEC 61800-5-2</b>	<ul style="list-style-type: none"> <li>– MOVISAFE® DFS11B/21B: STO, SS1</li> <li>– MOVISAFE® DCS21B: STO, SS1, SS2, SOS, SLS, SDI, SSR, SSM, SLI, SCA, SLP</li> <li>– MOVISAFE® DCS22B: STO, SS1, SS2, SOS, SLS, SDI, SSR, SSM</li> </ul>
<b>PROFIsafe via PROFIBUS DP or PROFINET IO</b>	<ul style="list-style-type: none"> <li>– MOVISAFE® DFS11B/21B: Communication via PROFIBUS DP or PROFINET IO</li> <li>– MOVISAFE® DCS21B: <ul style="list-style-type: none"> <li>- DFS12B – Communication via PROFIBUS DP</li> <li>- DFS22B – Communication via PROFINET IO</li> </ul> </li> <li>– MOVISAFE® DCS22B: <ul style="list-style-type: none"> <li>- DFS12B – Communication via PROFIBUS DP</li> <li>- DFS22B – Communication via PROFINET IO</li> </ul> </li> </ul>
<b>Number of inputs/outputs</b>	<ul style="list-style-type: none"> <li>– MOVISAFE® DFS11B/21B: <ul style="list-style-type: none"> <li>- 1 safe digital output</li> </ul> </li> <li>– MOVISAFE® DCS..B: <ul style="list-style-type: none"> <li>- 8 safe digital inputs</li> <li>- 3 safe digital outputs</li> <li>- Installed axis monitoring function</li> <li>- Designed for integration into the drive inverter</li> </ul> </li> <li>– MOVISAFE® DFS11B/21B for MOVIDRIVE® B drive inverters (sizes 0 to 7) and for MOVITRAC® B frequency inverters (sizes 0 to 5)</li> <li>– MOVISAFE® DFS12B/22B for MOVIDRIVE® B drive inverters (sizes 1 to 7)</li> <li>– MOVISAFE® DCS..B for MOVIDRIVE® B drive inverters (sizes 1 to 7)</li> </ul>
<b>Application areas for DFS..B and DCS..B safety cards in control cabinet drive technology</b>	<ul style="list-style-type: none"> <li>– Storage and retrieval systems</li> <li>– Trolleys</li> <li>– Cranes</li> <li>– Handling gantries</li> <li>– Baggage handling systems</li> <li>– Assembly sections: press plant, body shop, paint, final assembly</li> </ul>



### Independent safety technology

#### MOVISAFE® DCS31B for motion and position monitoring

- Safety functions according to IEC 61800-5-2: STO, SS1, SS2, SOS, SLS, SDI, SSR, SSM, SLI, SCA, SLP
- 8 safe digital inputs
- 3 safe digital outputs
- Installed axis monitoring function
- Integrated logic processing for connecting inputs/outputs as required
- Designed for integration in MOVIDRIVE® B drive inverters (sizes 1 to 7)

#### MOVISAFE® DCS32B for motion monitoring

- Safety functions according to IEC 61800-5-2: STO, SS1, SS2, SOS, SLS, SDI, SSR, SSM
- 8 safe digital inputs
- 3 safe digital outputs
- Installed axis monitoring function
- Integrated logic processing for connecting inputs/outputs as required
- Designed for integration in MOVIDRIVE® B drive inverters (sizes 1 to 7)

#### Application areas for DCS..B safety cards in control cabinet drive technology

- Storage and retrieval systems
- Trolleys
- Cranes
- Handling gantries
- Baggage handling systems
- Assembly sections: press plant, body shop, paint, final assembly

## MOVISAFE®: Functional safety integrated in the inverter

### Features

#### Advantages

- Profit from the flexibility as our safetyDRIVE components can be individually assembled for every type of system
- Minimize operational risks by eliminating all sources of danger with the safetyDRIVE functional safety
- Drive your system efficiently as the safetyDRIVE safety components save you costs for external safety systems
- Ensure standardized operation as all safetyDRIVE modules comply with the applicable statutory provisions

#### MOVISAFE®: Modular safety in inverters

- MOVISAFE® DCS..B option cards for the MOVIDRIVE® B drive inverter
- MOVISAFE® UCS..B safety modules for all control cabinet inverters MOVIAxis®, MOVITRAC®, MOVIDRIVE®
- UCS..B multi-axis logic modules as integrated logic processing for connecting inputs/outputs as required

## 11.2 Control cabinet installation

### Modular safety technology for the inverter



**Safety modules – compact (for up to two axes)**

	<ul style="list-style-type: none"> <li>– UCS10B safety module</li> <li>– UCS10B/PS safety module: PROFIsafe via PROFIBUS DP/PROFINET IO</li> <li>– UCS11B safety module</li> <li>– UCS11B/PS safety module: PROFIsafe via PROFIBUS DP/PROFINET IO</li> <li>– UCS12B safety module</li> <li>– UCS12B/PS safety module: PROFIsafe via PROFIBUS DP/PROFINET IO</li> <li>– UCS14B/PS safety module: PROFIsafe via PROFIBUS DP/PROFINET IO</li> <li>– UCS26B communication module for optional PROFIBUS DP communication</li> <li>– UCS27B communication module for optional PROFINET IO communication</li> </ul>
<p><b>Features</b></p>	<ul style="list-style-type: none"> <li>– Integrated logic processing for connecting inputs/outputs as required</li> <li>– Axis monitoring function:             <ul style="list-style-type: none"> <li>- UCS10B, UCS10B/PS: without encoder evaluation</li> <li>- UCS11B, UCS11B/PS: for one axis</li> <li>- UCS12B, UCS12B/PS: for up to two axes</li> <li>- UCS14B/PS: for up to two axes with up to two encoders per axis</li> </ul> </li> <li>– Safety functions according to IEC 61800-5-2:             <ul style="list-style-type: none"> <li>- UCS10B, UCS10B/PS: STO, SS1c</li> <li>- UCS11B, UCS11B/PS, UCS12B, UCS12B/PS, UCS14B/PS: STO, SS1, SS2, SOS, SLS, SDI, SSR, SSM, SLI, SCA, SLP</li> </ul> </li> <li>– PROFIsafe via PROFIBUS DP and PROFINET IO for all UCS..B safety modules</li> <li>– Can be extended by input/output modules:             <ul style="list-style-type: none"> <li>- Up to 56 safe digital inputs</li> <li>- Up to 23 safe outputs</li> </ul> </li> </ul>
<p><b>Areas of application</b></p>	<ul style="list-style-type: none"> <li>– Scara robots</li> <li>– Application storage/retrieval systems</li> <li>– Handling gantries</li> <li>– Special machine design</li> <li>– Palletizers</li> </ul>



### Safety modules – multi-axis (for up to 12 axes)

	<ul style="list-style-type: none"> <li>– UCS50B safety module</li> <li>– UCS50B/PS safety module: PROFIsafe via PROFIBUS DP/PROFINET IO</li> <li>– UCS51B safety module</li> <li>– UCS51B/PS safety module: PROFIsafe via PROFIBUS DP/PROFINET IO</li> <li>– Safety module UCS50B/DP with PROFIBUS DP</li> <li>– Safety module UCS50B/PN with PROFINET IO</li> <li>– UCS61B safety module</li> <li>– UCS62B safety module</li> <li>– UCS63B safety module</li> </ul>
<b>Features</b>	<ul style="list-style-type: none"> <li>– Integrated logic processing for connecting inputs/outputs as required</li> <li>– Axis monitoring function for up to twelve axes</li> <li>– Safety functions according to IEC 61800-5-2: SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SCA, SLP</li> <li>– PROFIsafe via PROFIBUS DP and PROFINET IO for all UCS..B safety modules</li> <li>– Can be extended by input/output modules             <ul style="list-style-type: none"> <li>- Up to 150 digital inputs/outputs</li> <li>- Up to 54 outputs</li> </ul> </li> </ul>
<b>Areas of application</b>	<ul style="list-style-type: none"> <li>– Scara robots</li> <li>– Application storage/retrieval systems</li> <li>– Handling gantries</li> <li>– Special machine design</li> <li>– Palletizers</li> </ul>

## 11.3. Decentralized installation

safetyDRIVE: Functional safety



### Decentralized installation with a decentralized MOVIFIT® MC or FC drive controller and integrated functional safety

#### Features and advantages

- Comprehensive safety functionality for disconnection, speed and direction of rotation monitoring (STO, SS1, SLS, SDI)
- Reduced wiring work through the integration of functional safety technology
- Short total response times of the application due to direct monitoring and disconnection
- Fast startup with simple parameterization of complete safety functions
- Easy and guided validation of safety functionality
- Stand-alone safety solutions in independent operation without external safety controller possible
- Long product life of the safety components due to long service life (20 years)
- Easy integration of safe drive technology in existing plants with PROFIsafe communication
- Universal application in a PROFIsafe network via PROFIBUS and PROFINET IO via S12 safety option
- Certified according to EN ISO 13849-1 PL d

#### S12 safety option

- Control via PROFIsafe with S12 safety option
- Safety functions according to IEC 61800-5-2
  - Safe Torque Off (STO)
  - Safe stopping (SS1(c) and SS1(a))
  - Safe motion (SLS, SDI)
- Approvals
  - Up to SIL 3 according to IEC 61508
  - Up to PL e according to EN ISO 13849-1
- S12A variant
  - 4 safe inputs F-DI (OSSD-capable)
  - 2 pulse outputs
  - 2 safe outputs F-DO (2-pole)
  - 1 safe output, internal, STO (2-pole)
- S12B variant
  - 8 safe inputs F-DI (OSSD-capable)
  - 2 pulse outputs
  - 1 safe output, internal, STO (2-pole)

#### Application examples

- Roller conveyors
- Accumulating conveyors
- Corner transfer units
- Transfer units
- etc.



**MOVISAFE® HM31 decentralized safety controller  
can be used with MOVIPRO®**

**Features and advantages**

- Scalable safety technology for decentralized application inverter for simple and complex safety functions
- Reduced wiring work through the integration of functional safety technology
- Short total response times of the application due to direct monitoring and disconnection
- Very easy startup and validation of axis safety functions
- Flexible configuration and validation of complex, application-specific safety functions
- Stand-alone safety solutions in independent operation without external safety controller possible
- Long product life of the safety components due to long service life (20 years)
- Easy integration of safe drive technology in existing plants with PROFIsafe communication
- Universal application in a PROFIsafe network via PROFIBUS and PROFINET IO
- Certified to (IEC 61508) SIL 3, (EN ISO 13849-1) PL e

**Simple project planning with  
MOVIPRO® SDC / ADC**

- Control via PROFIsafe with PROFIsafe option S11
- Optional, safety-related brake disconnection (SBC)
- The integrated PROFIsafe option S11 comes equipped with four safety-related inputs for connecting safe sensors and two safety-related outputs

**Specific MOVIPRO® design with expanded  
functions as drive and system controller for  
MAXOLUTION® system solutions**

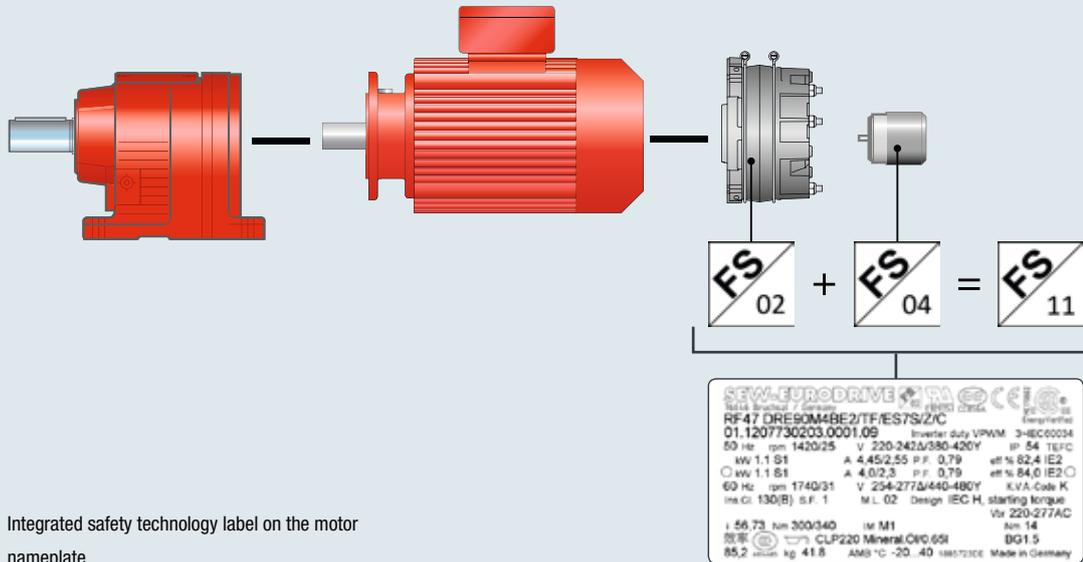
- Decentralized MOVISAFE® HM31 safety controller
  - Free programming according to IEC 61131-3 per “drag & drop” using certified function modules (Motion Library PFF-HM31) and the “SILworX” engineering tool
  - Ready-to-use drive and application modules (Motion Library, SIL 3 or PL e certified) are available based on IEC 61800-5-2 for mobile materials handling technology
    - SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SLP
    - Safe disconnection and stopping
    - Safe range changeover
    - Safe movement and position detection
- Hardware assignment
- 24 safe digital inputs (8 OSSD-capable) and 8 safe sinking/sourcing digital outputs
  - Safe counter inputs (HTL, TTL)
  - CAN and RS485 interfaces
- Certification
- SIL 3 according to IEC 61508
  - PL e according to EN ISO 13849-1
- Safe communication
- safeethernet (SIL 3, master & slave), also possible via WLAN
  - PROFINET, PROFIsafe (controller/host & device/device)

**Application examples**

Electrified monorail systems for heavy loads, automated guided vehicle systems, scissor lift tables, lifting/lowering conveyors, lifting stations, transfer carriages, rotary feeders, rotary indexing tables, high-speed horizontal conveyors with positioning

## 11.4 Motor options

safetyDRIVE: Integrated safety technology



### Features and advantages

Drives from SEW-EURODRIVE are equipped with integrated safety technology as an option. Encoders or brakes can be integrated in the drive as safety-related components either individually or in combination. SEW-EURODRIVE indicates the safety technology integrated in the drive via the FS logo on the motor nameplate. This way, you can recognize the use of safety technology at one glance during inspection and maintenance work and can react appropriately. This helps to ensure that the functional safety features remain valid in the future as well. Our functionally safe drive components are enhanced continuously and for this reason we are able to provide the entire safety system for your plants.

### Integrated safety technology

	<p><b>Certified safety brake</b></p>
	<p><b>Certified safety encoder</b></p>
	<p><b>Combination of certified safety brake and certified safety encoder</b></p>

## Integrated safety technology for DR.. AC motors



### Certified safety encoders

#### Add-on encoders

<b>Features</b>	Our <b>add-on encoders</b> are available in functional safety design as an option. In combination with our safety modules such as UCS..B or DCS..B, comprehensive safety functions for monitoring movements and positions are available.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Use of a functionally safe encoder</li> <li>– Safety assessment of the encoder mounting according to EN ISO 13849-1</li> <li>– Fulfillment of the requirements regarding documentation</li> <li>– High production quality for the higher requirements in functional safety areas</li> <li>– Indication of the characteristic safety values for easily determining the reached performance level</li> <li>– TÜV-certified for suitability of the encoders in safety-relevant applications</li> </ul>
<b>Designs</b>	<p><b>For motor type DR..71 to DR..132 / DRN80 to DRN132S</b></p> <ul style="list-style-type: none"> <li>– ES7S: safe sin/cos interface</li> <li>– AS7W: RS485 interface (MultiTurn) + safe sin/cos interface</li> <li>– AS7Y: SSI interface (MultiTurn) + safe sin/cos interface</li> </ul> <p><b>For motor type DR..160 to DR..280 / DRN132M to DRN280</b></p> <ul style="list-style-type: none"> <li>– EG7S: safe sin/cos interface</li> <li>– AG7W: RS485 interface (MultiTurn) + safe sin/cos interface</li> <li>– AG7Y: SSI interface (MultiTurn) + safe sin/cos interface</li> </ul>
<b>Classification/underlying standards</b>	<ul style="list-style-type: none"> <li>– SIL 2 according to EN 62061</li> <li>– PL d according to EN ISO 13849-1</li> </ul>
<b>Safety functions according to IEC 61800-5-2</b>	SS1, SS2, SOS, SLS, SDI, SLI, SLA, SSR, SSM

## 11.4 Motor options

### Integrated safety technology for DR.. AC motors



#### Certified safety encoders

#### Built-in encoders

<b>Features</b>	Our <b>built-in encoders</b> are available in functional safety design as an option. In combination with our S12 safety option in MOVIFIT®, comprehensive safety functions for monitoring movements are available.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Use of a functionally safe encoder</li> <li>– Safety assessment of the encoder mounting according to EN ISO 13849-1</li> <li>– Fulfillment of the requirements regarding documentation</li> <li>– High production quality for the higher requirements in functional safety areas</li> <li>– Indication of the characteristic safety values for easily determining the reached performance level</li> <li>– TÜV-certified for suitability of the encoders in safety-relevant applications</li> </ul>
<b>Designs</b>	<p><b>For motor type DR..71 to DR..132 / DRN80 to DRN132S</b></p> <p>EI7C FS: HTL interface (push-pull)</p>
<b>Classification/underlying standards</b>	<ul style="list-style-type: none"> <li>– SIL 2 according to EN 61800-5-2</li> <li>– PL d according to EN ISO 13849-1</li> </ul>
<b>Safety functions according to IEC 61800-5-2</b>	SS1, SLS, SDI



### Certified safety brake

#### BE.. (single) brake

<b>Features</b>	Our electromechanical (single) brakes are available in functional safety design as an option.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– High production quality for the higher requirements in functional safety areas</li> <li>– Long operating time (<math>T_{100}</math> value) of the brake due to the high <math>B_{100}</math> values</li> <li>– High <math>B_{100}</math> values allow a higher performance level</li> <li>– TÜV-certified for suitability of the brakes in safety-relevant applications</li> </ul>
<b>Designs</b>	<b>For motor type DR..71 to DR..225 / DRN80 to DRN225</b> BE05 to BE32
<b>Nominal braking torques</b>	1.8 Nm to 600 Nm
<b>Options</b>	<ul style="list-style-type: none"> <li>– Manual brake release HR, automatic disengaging function</li> <li>– Function and wear monitoring DUB / DUE</li> </ul>
<b>Classification/underlying standards</b>	Category 1 (Cat. 1) according to EN ISO 13849-1
<b>Safety functions</b>	<ul style="list-style-type: none"> <li>– SBA<sup>1)</sup> (Safe Brake Actuation): Safe brake actuation with the electromechanical brake</li> <li>– SBH<sup>1)</sup> (Safe Brake Hold): Safe brake hold with the electromechanical brake</li> </ul>

<sup>1)</sup>Safety functions SBA and SBH were defined by SEW-EURDORIVE in accordance with the standard EN 61800-5-2.

## 11.4 Motor options

### Integrated safety technology for DR.. AC motors



#### Certified safety brake

#### BF./BT.. double brake

<b>Features</b>	Our electromechanical double brakes are available in functional safety design as an option.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– High production quality for the higher requirements in functional safety areas</li> <li>– Long operating time (<math>T_{100}</math> value) of the brake due to the high <math>B_{100}</math> values</li> <li>– High <math>B_{100}</math> values allow a higher performance level</li> <li>– TÜV-certified for suitability of the brakes in safety-relevant applications</li> </ul> <p>Further advantages of the BT11 to BT30 double brakes for applications in the entertainment technology sector</p> <ul style="list-style-type: none"> <li>– Fulfillment of the specific requirements of entertainment technology (DIN 56950-1)</li> <li>– Extremely low-noise design for noise-sensitive environments</li> </ul>
<b>Designs</b>	<p><b>For motor types DR..112 to DR..180</b></p> <ul style="list-style-type: none"> <li>– For industrial applications: BF11 to BF30</li> <li>– For applications in the event technology sector: BT11 to BT30</li> </ul>
<b>Nominal braking torques</b>	$2 \times 20 \text{ Nm}$ to $2 \times 300 \text{ Nm}$
<b>Options</b>	<ul style="list-style-type: none"> <li>– Manual brake release HR, automatic disengaging function. The two partial brakes can be released simultaneously with a lever</li> <li>– Manual brake release HT, automatic disengaging function. The two partial brakes can be released simultaneously or separately with a lever</li> <li>– Continuous function and wear monitoring DUE</li> </ul>
<b>Classification/underlying standards</b>	Category 3 <sup>1)</sup> (Cat. 3) according to EN ISO 13849-1
<b>Safety functions</b>	<ul style="list-style-type: none"> <li>– SBA<sup>2)</sup> (Safe Brake Actuation): Safe brake actuation with the electromechanical brake</li> <li>– SBH<sup>2)</sup> (Safe Brake Hold): Safe brake hold with the electromechanical brake</li> </ul>

<sup>1)</sup>According to the standard, category 3 requires brake diagnostics of the double brake. This is not part of the double brake and must be realized within the braking system.

<sup>2)</sup> Safety functions SBA and SBH were defined by SEW-EURDORIVE in accordance with the standard EN 61800-5-2.

## Integrated safety technology for CMP.. servomotors



### Certified safety encoders

<b>Features</b>	Our encoders are available in functional safety design as an option. In combination with our safety modules such as UCS..B or DCS..B, comprehensive safety functions for monitoring movements and positions are available.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Use of a functionally safe encoder</li> <li>– Safety assessment of the encoder mounting according to EN ISO 13849-1</li> <li>– Fulfillment of the requirements regarding documentation</li> <li>– High production quality for the higher requirements in functional safety areas</li> <li>– Indication of the characteristic safety values for easily determining the reached performance level</li> <li>– TÜV-certified for suitability of the encoders in safety-relevant applications</li> </ul>
<b>Designs</b>	<p><b>For motor types CMP..40 to CMP..112S/M</b> AKOH: RS485 interface (HIPERFACE® MultiTurn) + safe sin/cos interface</p> <p><b>For motor types CMP..50 to CMP..112</b> AK1H: RS485 interface (HIPERFACE® MultiTurn) + safe sin/cos interface</p>
<b>Classification/underlying standards</b>	<ul style="list-style-type: none"> <li>– SIL 2 according to EN 62061</li> <li>– PL d according to EN ISO 13849-1</li> </ul>
<b>Safety functions according to IEC 61800-5-2</b>	SS1, SS2, SOS, SLS, SDI, SLI, SLA, SSR, SSM

## 11.4 Motor options

### Integrated safety technology for CMPZ.. servomotors



#### Certified safety brake

#### BY.. (single) brake

<b>Features</b>	Our electromechanical (single) brakes are available in functional safety design as an option.
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– High production quality for the higher requirements in functional safety areas</li> <li>– Long operating time (<math>T_{100}</math> value) of the brake due to the high <math>B_{100}</math> values</li> <li>– High <math>B_{100}</math> values allow a higher performance level</li> <li>– TÜV-certified for suitability of the brakes in safety-relevant applications</li> </ul>
<b>Design</b>	<b>For motor types CMPZ71 to CMPZ100</b> BY2 to BY8
<b>Nominal braking torques</b>	7 Nm to 80 Nm
<b>Option</b>	Manual brake release HR, automatic disengaging function
<b>Classification/underlying standards</b>	Category 1 (Cat. 1) according to EN ISO 13849-1
<b>Safety functions</b>	<ul style="list-style-type: none"> <li>– SBA<sup>1)</sup> (Safe Brake Actuation): Safe brake actuation with the electromechanical brake</li> <li>– SBH<sup>1)</sup> (Safe Brake Hold): Safe brake hold with the electromechanical brake</li> </ul>

<sup>1)</sup>Safety functions SBA and SBH were defined by SEW-EURDORIVE in accordance with the standard EN 61800-5-2.

## 11.5 Safe brake control

### safetyDRIVE: BST safety-related brake module



**BST safety-related brake module  
for control cabinet installation**

<b>Features</b>	Brake control for safe disconnection of our electromechanical brake
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Simple installation in the control cabinet on the mounting rail</li> <li>– Aligned for safe switching of our brakes</li> <li>– The BST as electronic switching element achieves:             <ul style="list-style-type: none"> <li>- Wear-free switching off of the brake in normal operation as well as for emergency stop braking operations</li> <li>- Elimination of the consideration of permitted operating cycles, such as for relays</li> <li>- Elimination of the contact monitoring (feedback) in the higher-level safe logic, e.g. for relays</li> <li>- Elimination of the <math>MTTF_d</math> calculation due to the confirmation of the characteristic safety value from SEW-EURODRIVE</li> </ul> </li> <li>– Status display of the switching status of the brake control directly at the BST</li> <li>– TÜV-certified for suitability of the brakes in safety-relevant applications</li> </ul>
<b>Voltage supply</b>	The BST is supplied via the DC link of the inverter
<b>Brake voltage</b>	Available for brake voltages <ul style="list-style-type: none"> <li>– 230 V</li> <li>– 400 V</li> <li>– 460 V</li> </ul>
<b>Brakes</b>	<ul style="list-style-type: none"> <li>– Suited for our brakes with 3-wire connection <math>\leq 120</math> W</li> <li>– Compatible brakes at the DR.. asynchronous motor             <ul style="list-style-type: none"> <li>- BE05 to BE32</li> <li>- BF11 to BF30</li> </ul> </li> <li>– Compatible brakes at the CMP.. synchronous motor             <ul style="list-style-type: none"> <li>- BY2 to BY14</li> </ul> </li> </ul>
<b>Safety functions according to IEC 61800-5-2</b>	Safe Brake Control (SBC) safety function up to PL d according to EN ISO 13849-1

## 11.6 Brake diagnostics

### Software function brake diagnostics



#### Software function brake diagnostics

<b>Features</b>	Testing the functional effectiveness and performance of your electromechanical brakes
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Easy startup thanks to our standardized software function for controllers</li> <li>– Function expansion for your MOVIDRIVE® B application inverter or your MOVIAXIS® multi-axis servo inverter</li> <li>– Evaluation of your safety system through the diagnostic coverage of the brake diagnostics (DCavg value)</li> <li>– Fulfillment of normative requirements to your safety system allows solutions up to performance level e (PL e)</li> <li>– Increase of the system availability by detecting functional or performance limits very early as well as optimization of maintenance work</li> </ul>
<b>Static brake diagnostics</b>	<ul style="list-style-type: none"> <li>– Diagnoses your electromechanical brake by checking the switching capability and the existing braking torque</li> <li>– Separate diagnostics for each brake</li> <li>– Diagnostics takes place wear-free for the brake</li> <li>– The integrated dynamic load recognition automatically recognizes the current load situation A separate test load is no longer necessary for diagnostics</li> </ul>
<b>Dynamic brake diagnostics</b>	<ul style="list-style-type: none"> <li>– Checks the permitted stopping distance</li> <li>– Supplements the static brake diagnostics</li> </ul>

## 11.7 Safety Configuration Library (SCL®)



**Safety Configuration Library (SCL®)**

The Safety Configuration Library (SCL®) is a guide for selecting SEW-EURODRIVE drive technology components for functional safety technology. Using the navigation, you can conveniently select/configure your required safety concept. With each selection, a corresponding conceptual drawing is generated. This drawing is greatly simplified and provides an overview of the essential components. At the end of the configuration you will obtain a complete conceptual drawing and an overview of the safety functions that can be realized. This conceptual drawing can be downloaded and saved as a PDF file. Our conceptual drawings have been certified by TÜV SÜD.

### Features

The Safety Configuration Library (SCL®) is available in three languages.

Start the SCL® online at:

- German: <http://scl.sew-eurodrive.de>
- English: <http://scl.sew-eurodrive.com>
- French: <http://scl.usocome.com>

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# 12

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# ENERGY TRANSFER / POWER SUPPLY

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12.1	MOVITRANS® contactless energy transfer system	364
12.2	MOVI-DPS® decentralized power supply	368



## 12.1 MOVITRANS® contactless energy transfer system



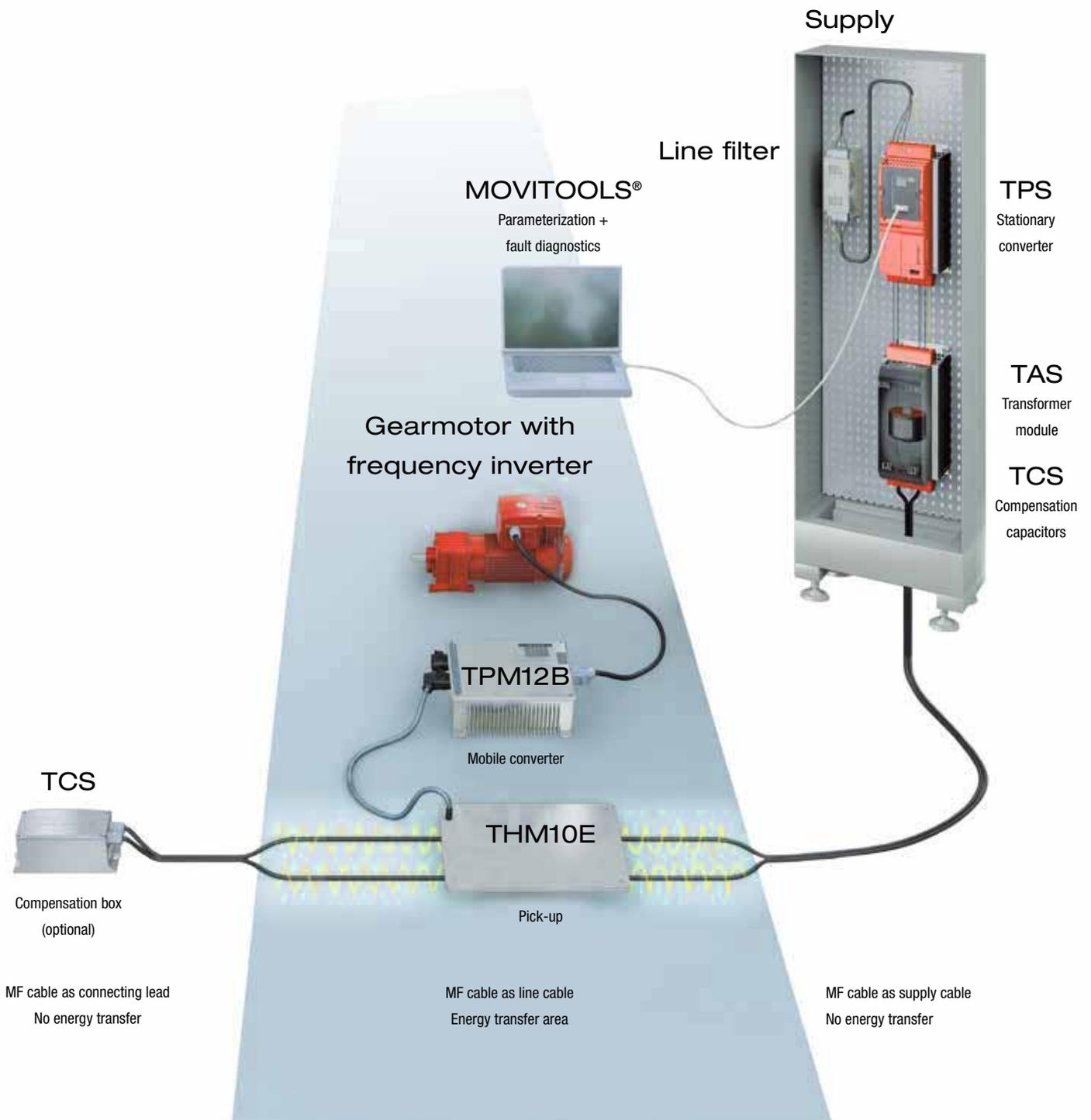
<b>Features</b>	<ul style="list-style-type: none"> <li>– MOVITRANS®, the contactless energy transfer system from SEW-EURODRIVE, works on the principle of inductive energy transfer</li> <li>– Electrical energy is transferred without contact from a fixed conductor to one or more mobile consumers</li> <li>– The electromagnetic connection is made via an air gap and is not subject to wear; it is therefore maintenance-free</li> <li>– Contactless energy transfer is emission-free and resistant to contamination from external sources</li> <li>– Tested according to BGV B11</li> </ul>
<b>Areas of application</b>	<ul style="list-style-type: none"> <li>– Perfect supply system for all mobile applications</li> <li>– Long distances are covered at high speed</li> <li>– When maintenance-free operation is required</li> <li>– When additional environmental contaminants are not permitted in sensitive areas</li> <li>– In wet and humid areas</li> </ul>
<b>Stationary components</b>	
TPS stationary converter	<ul style="list-style-type: none"> <li>– Power: 4.0 kW or 16.0 kW</li> <li>– <math>V_{\text{line}}</math>: 380 V – 500 V <math>\pm</math> 10%</li> <li>– Degree of protection: IP20</li> </ul>
TAS transformer module	<ul style="list-style-type: none"> <li>– Power: 4.0 kW or 16.0 kW</li> <li>– <math>I_A</math>: 60 A or 85 A</li> <li>– Degree of protection: IP10</li> </ul>
TCS compensation capacitors	<ul style="list-style-type: none"> <li>– Capacitance values: 2 <math>\mu</math>F, 4 <math>\mu</math>F, 8 <math>\mu</math>F, 16 <math>\mu</math>F or 32 <math>\mu</math>F</li> <li>– Output current: 60 A or 85 A</li> <li>– Degree of protection: IP00</li> </ul>

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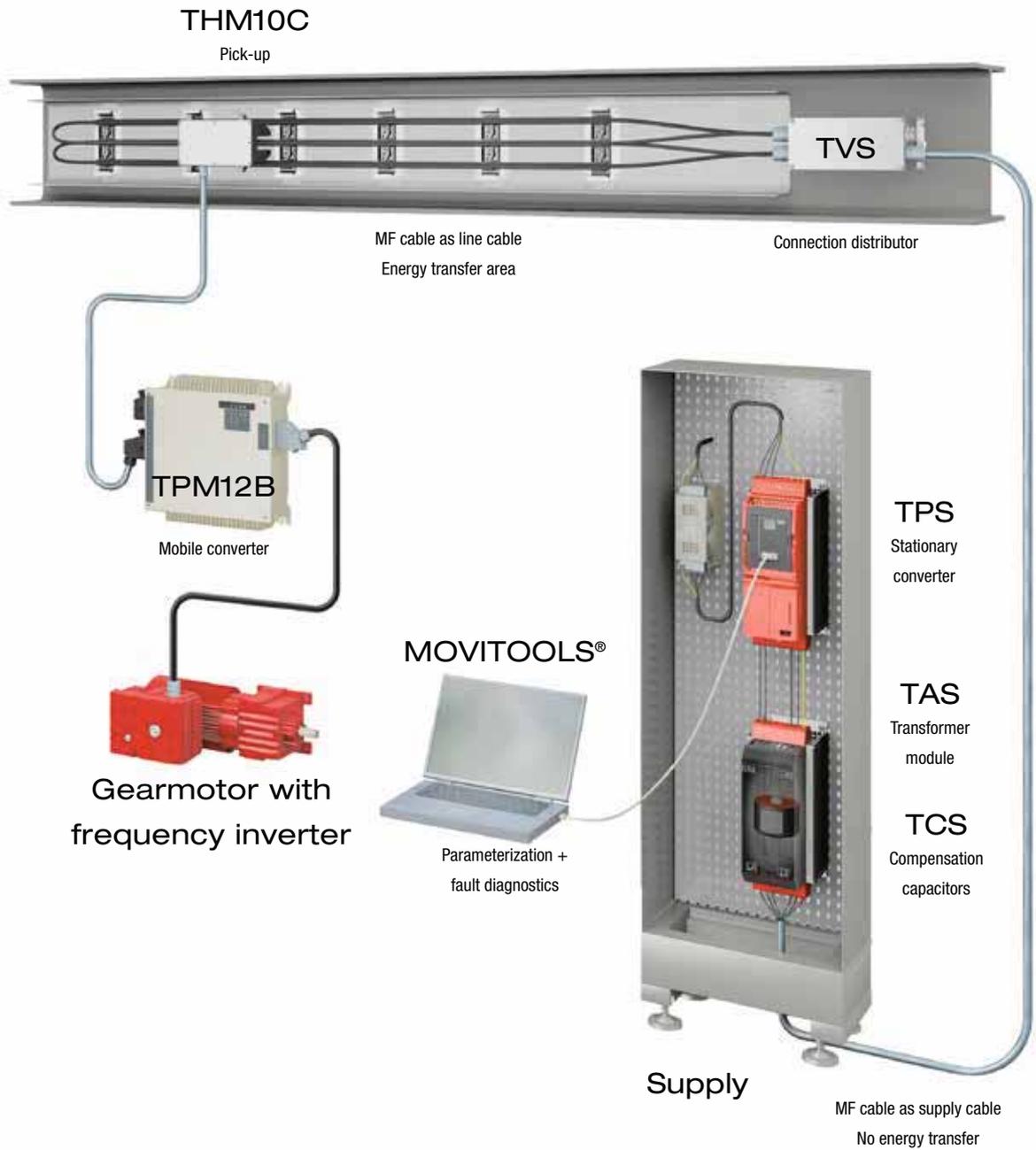
**Mobile components**

TPM21B mobile converter	<ul style="list-style-type: none"> <li>– Nominal output power:             <ul style="list-style-type: none"> <li>– When 4 THM10C units are connected: max. 3.6 kW</li> <li>– When 2 THM10E units are connected: max. 3.0 kW</li> </ul> </li> <li>– Output voltage: DC 500 V</li> <li>– Additional output voltage: 24 V, max. 2 A</li> <li>– Degree of protection: IP65</li> </ul>
THM10E pick-up	<ul style="list-style-type: none"> <li>– Power: 1.5 kW</li> <li>– Degree of protection: IP65</li> </ul>
THM10C pick-up	<ul style="list-style-type: none"> <li>– Nominal power: 0.8 kW</li> <li>– Peak power: 0.9 kW</li> <li>– Degree of protection: IP65</li> </ul>
TVS connection distributor	<ul style="list-style-type: none"> <li>– Degree of protection: IP65</li> <li>– Output current: 60 A or 85 A</li> </ul>
TCS compensation box	<ul style="list-style-type: none"> <li>– Degree of protection: IP65</li> <li>– Output current: 60 A or 85 A</li> <li>– Compensates a travel distance of 25 to 30 m</li> </ul>

## 12.1 MOVITRANS® contactless energy transfer system



MOVITRANS® with flat pick-up (THM10E)



MOVITRANS® with U-shaped  
pick-up (THM10C)

**TIS**  
Installation components  
for line cable routing



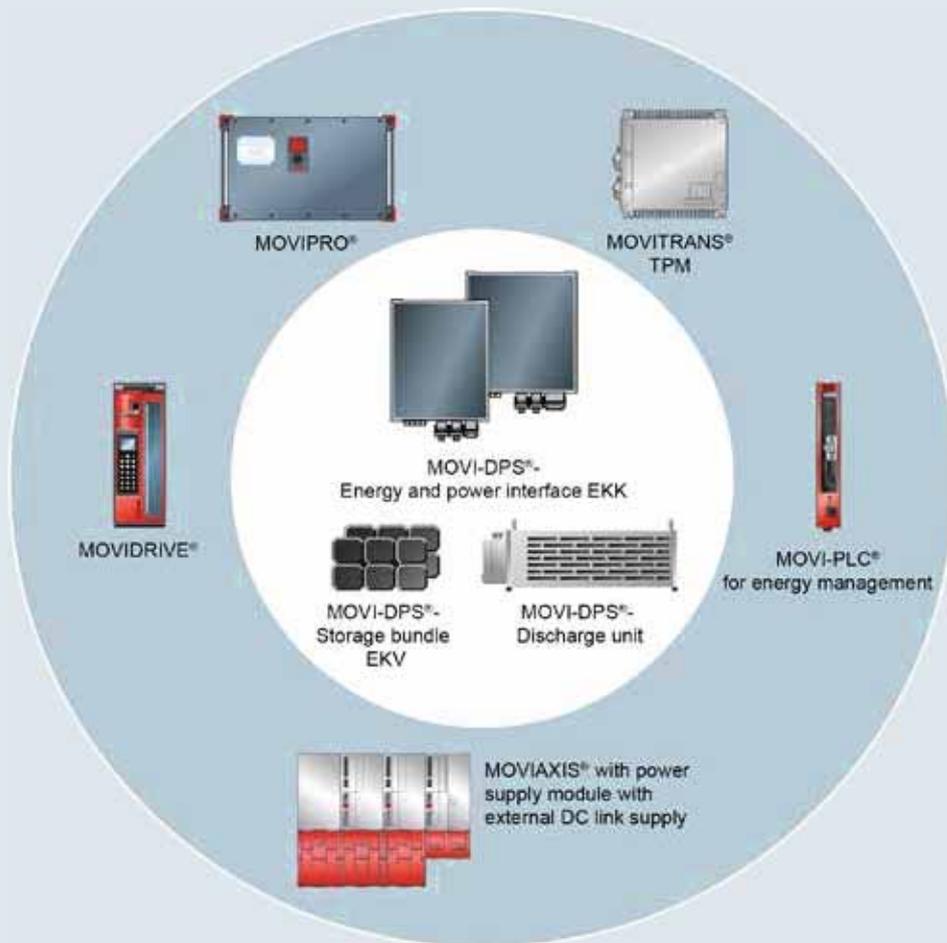
## 12.2 MOVI-DPS® decentralized power supply



	<b>MOVI-DPS® in energy mode</b>	<b>MOVI-DPS® in power mode</b>
<b>Features</b>	<p>In energy mode, MOVI-DPS® can supply applications with energy from the MOVI-DPS® storage bundle continuously over several minutes. For example, this allows for an automated guided vehicle (AGV) to leave the MOVITRANS® line cable and travel a section without external power supply.</p> <p>In addition, the peak power of the AGV can be increased with power supply via MOVITRANS®.</p>	<p>With MOVI-DPS® in power mode you can realize very dynamic applications with travel cycles of 1 – 60 seconds. The intelligent energy management significantly reduces the input power.</p>
<b>Advantages</b>	<ul style="list-style-type: none"> <li>– Decentralized energy storage</li> <li>– Decentralized energy supply</li> <li>– Energy optimization of applications and systems</li> <li>– Reduction of overall operation costs</li> <li>– Reduction of costs for supply system infrastructure</li> <li>– Increase of the process reliability in case of power failure</li> </ul>	
<b>Application options</b>	<ul style="list-style-type: none"> <li>– Reducing the peak loads taken from the supply system</li> <li>– Voltage stabilization</li> <li>– UPS function:               <ul style="list-style-type: none"> <li>- Fire protection applications</li> <li>- Storage/retrieval systems, handling devices</li> <li>- Maintaining the DC 24 V supply</li> </ul> </li> </ul>	
<b>Applications</b>	<ul style="list-style-type: none"> <li>– Automated guided vehicle systems (AGVS)</li> <li>– Electrified monorail systems (EMS)</li> <li>– Shuttles, satellites for small-parts or pallet warehouses</li> <li>– Storage and retrieval systems</li> <li>– Vertical conveyors</li> <li>– Pallet transfer shuttle</li> <li>– Lifting conveyors</li> </ul>	

**Component overview**

The MOVI-DPS® components are compatible with the current standard components from SEW-EURODRIVE. This way you receive all modules for your application from one source – and only have one contact person.

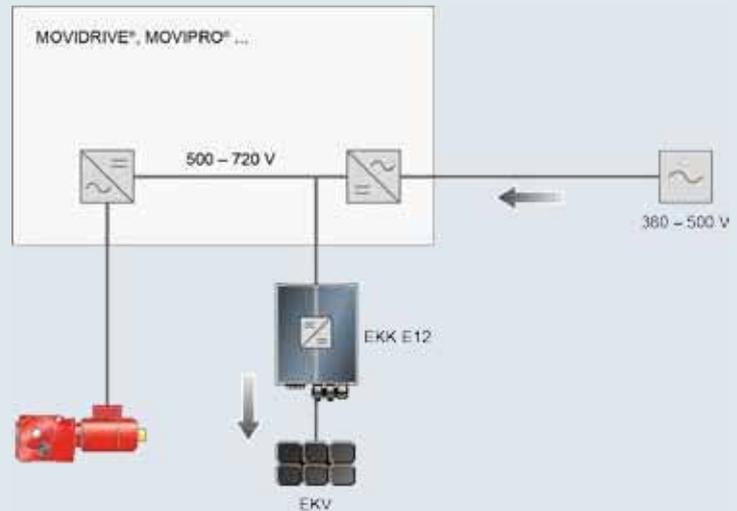


## 12.2 MOVI-DPS® decentralized power supply

### Energy mode

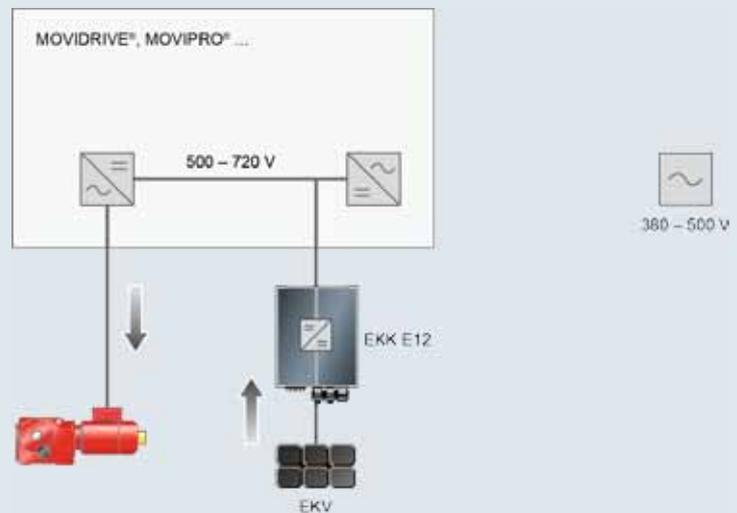
#### Load

The MOVI-DPS® storage bundle is loaded from the supply system.



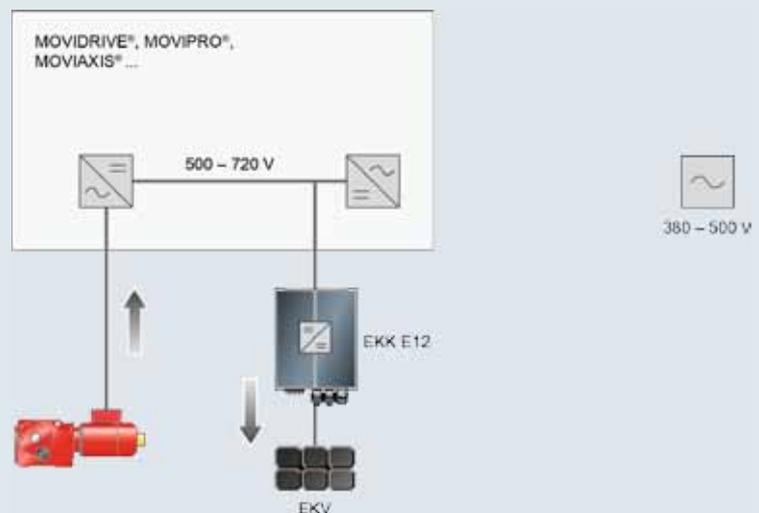
#### Travel

The storage bundle takes over the power supply for a defined time frame in case there is no supply system.



#### Brake

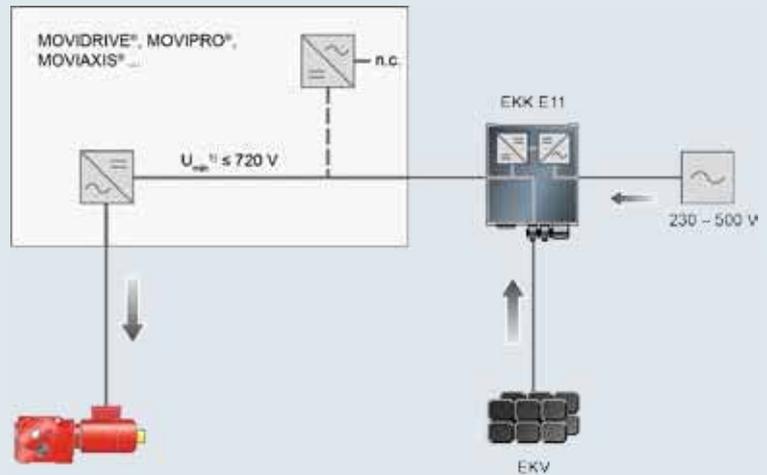
The storage bundle saves the regenerative energy during braking.



## Power mode

### Accelerate

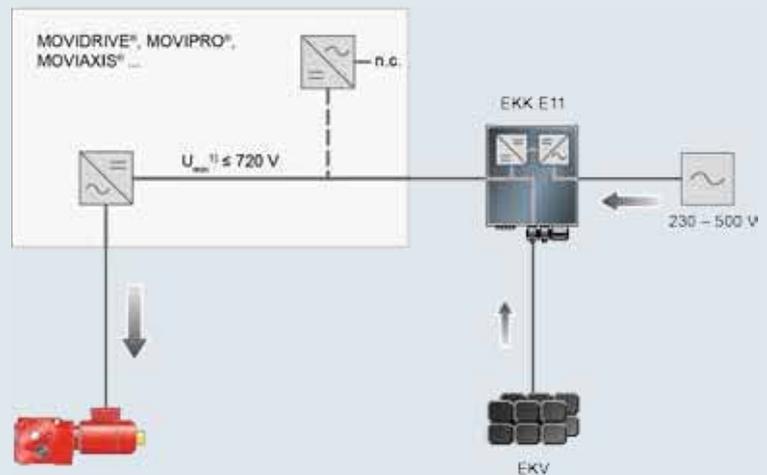
The peak load for the acceleration procedure is fully provided from the storage bundle. Only the losses due to the system efficiency are taken from the supply system. This way, energy consumption from the supply system is limited and the grid load is considerably reduced.



<sup>1)</sup> Depends on application configuration

### Travel

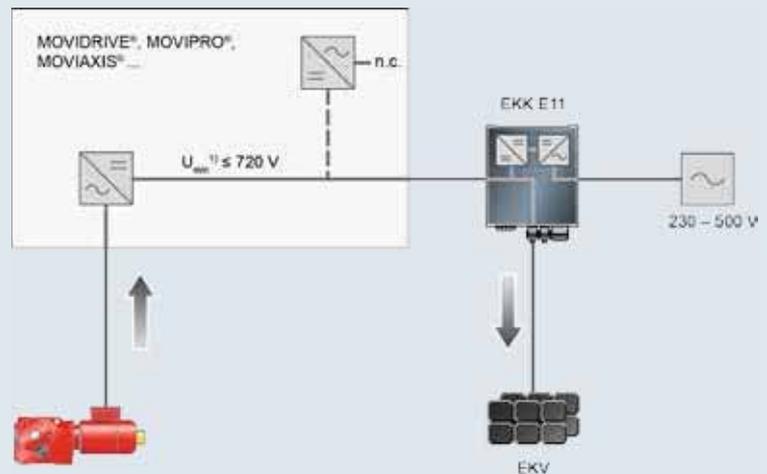
During constant travel, the required nominal power for balancing the system losses are taken from the supply system. In addition, it would be possible to load the storage bundle through the supply system.



<sup>1)</sup> Depends on application configuration

### Brakes

The regenerative energy is stored directly in the storage bundle and is thus available for the application again. At the same time, heat transmission by the braking resistor that is no longer necessary is avoided. In addition, the supply system is not strained by the additional reactive power and harmonics.



<sup>1)</sup> Depends on application configuration

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# 13 DIDACTICS MODULES

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## 13.1 Didactics modules for electromechanics

### Electromechanics – comprehensible and safe



#### Electromechanics

Subject area 8: Selecting and integrating drives, perfect for all trainings regarding electromechanics and mechatronics

The modular didactics concept Electromechanics was especially designed for the learning field-oriented training in drive technology for electronics engineers. It combines practical exercises for the operation of AC motors at the supply system and with frequency inverters. Further, the modular model concept allows for flexible education and training of specialists. For example, a master-slave situation with known functions (speed control, direction control, measuring functions) can be simulated with a higher-level PLC.

#### Modules

##### (Didactics product series electromechanics)

- MOVIDRIVE® B drive inverter module (MDX)
- MOVIDRIVE® operating box (BMD)
- MOVITRAC® B frequency inverter module (MCB)
- MOVI4R-U® frequency inverter module (M4U)
- MOVIFIT® drive inverter module (MTF)
- Polymer optical fiber module (POF)
- Brake control module (BMV)
- Brake control module (BMV)
- DRS.. motor series
- DRS.. brakemotor series
- CMP.. motor series
- CMP.. brakemotor series
- Motor load brake module (MLB)
- Motor circuit breaker module (MSS)
- Reversing contactor switch module (WSS)
- Star/delta switchover module (SDU)
- Motor load diagnostics module (MLD)

#### Advantages

- Flexible and modular test setup
- Easy integration possibilities in existing laboratory concepts
- Realistic measurements of electric and mechanical values
- Industry standard, safe and reproducible



#### MOVIDRIVE® B drive inverter module (MDX)

##### Design

- Line voltage 3× 400 V
- Control via digital and analog signals
- Optional control via PROFIBUS or PROFINET
- Braking resistor connection routed outside
- Available with application inverter in size 0M or 1
- Easy introduction to safety functions such as STO
- Suitable for AC asynchronous motors and AC synchronous motors (synchronous servomotors)
- Acoustic protection cover monitoring in combination with MLB
- Option: MOVIDRIVE® operating box (BMD)



#### MOVIDRIVE® operating box (BMD)

##### Design

- I/O extension for MOVIDRIVE® MDX module
- Control voltage 24 VDC
- Seven digital inputs (latching/spring-return)
- Five digital outputs
- One analog input in the form of a potentiometer
- Incl. connection lead



#### MOVITRAC® B frequency inverter module (MCB)

##### Design

- Line voltage 1× 230 V or 3× 400 V
- Control via digital and analog signals
- Optional control via PROFIBUS or PROFINET
- Braking resistor connection routed outside
- Suitable for AC asynchronous motors
- Acoustic protection cover monitoring in combination with MLB



#### MOVI4R-U® frequency inverter module (M4U)

##### Design

- Line voltage 1× 230 V
- Easy and fast startup and parameterization
- Very robust due to aluminum housing
- Control via digital and analog signals
- Suitable for AC asynchronous motors



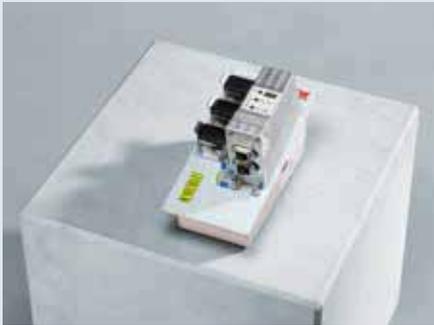
#### MOVIFIT® drive inverter module (MTF)

##### Design

- Line voltage 3× 400 V
- Standard: Control via digital and analog signals
- Optional control via PROFIBUS or PROFINET
- Optional with S11/S12 safety function
- Braking resistor connection routed outside
- Size 1
- Suitable for AC asynchronous motors
- Acoustic protection cover monitoring in combination with MLB
- Option: Polymer optical fiber module (POF)

## 13.1 Didactics modules for electromechanics

### Electromechanics – comprehensible and safe



#### **Polymer optical fiber module (POF)**

Design

- Coupling module from fiber optic cable signal to PROFINET
- Extension of the MOVIFIT® (MTF) application inverter



#### **Brake control module (BMV)**

Design

- Suitable for DRS.. brakemotor series
- Brake control (BMKB 1.5)
- One-way rectifier with electronic switching function
- DC 24 V control input
- Separation on DC side with LED ready for operation display
- 3-step rotary switch



#### **Brake control module (BMV)**

Design

- Suitable for CMP.. brakemotor series
- Brake control (BMV 5)
- Brake control unit with electronic switching function
- DC 24 V control input
- External DC 24 V required for brake voltage
- 3-step rotary switch



#### **Motor load brake module (MLB)**

Design

- AC asynchronous motor type DRS71S4
  - Nominal power 0.37 kW
  - Voltage 230 V / 400 V
  - Insulation class F
- Temperature sensor
- EI7C built-in encoder
- Acoustic protection cover monitoring in combination with MCB, MDX or MTF



#### DRS.. motor series

##### Design

- AC asynchronous motor type DRS71S4
- Nominal power 0.37 kW
- Voltage 230 V / 400 V
- Insulation class F
- Temperature sensor
- EI7C built-in encoder (optional)
- Various add-on encoders (optional)
- Stands securely due to aluminum plate with rubber base
- Easy and safe handling
- Aluminum flywheel with cover



#### DRS.. brakemotor series

##### Design

- AC asynchronous motor (servomotor) type DRS71S4BE..
- Nominal power 0.37 kW
- Voltage 230 V / 400 V
- Insulation class F
- Temperature sensor
- Brake voltage 400 V
- Braking torque 5 Nm
- EI7C built-in encoder (optional)
- Various add-on encoders (optional)
- Stands securely due to aluminum plate with rubber base
- Easy and safe handling
- Aluminum flywheel with cover



#### CMP.. motor series

##### Design

- AC synchronous motor type CMP50M
- Nominal torque 2.40 Nm
- Voltage 400 V
- Insulation class F
- Temperature sensor
- EK1H encoder HIPERFACE® single-turn
- Stands securely due to aluminum plate with rubber base
- Easy and safe handling
- Aluminum flywheel with cover



#### CMP.. brakemotor series

##### Design

- AC synchronous motor with brake (servomotor), type CMP50M/BK
- Nominal torque 2.4 Nm
- Voltage 400 V
- Current max. 9.60 A
- Insulation class F
- Brake voltage 24 V
- Braking torque 4.3 Nm
- Stands securely due to aluminum plate with rubber base
- Easy and safe handling
- Aluminum flywheel with cover

## 13.2 Didactics modules for gear unit technology

### Gear units – modular and practical



#### Helical, helical-bevel and helical-worm gear units

Ideal for all trainings for employees working with metal, mechanotricians and industrial mechanics for the subject area 10 – Gear unit technology.

A standard helical gear unit, a helical-bevel gear unit and a helical-worm gear unit were adapted especially for this didactic purpose. This allows for easy assembly and disassembly of different gear unit parts without expensive pressing tools.

#### Advantages

- All components have corrosion protection
- Gear units can be easily assembled and disassembled (reproducible and wear-free)
- Clear presentation of all components and tools (short preparation and follow-up times)
- Industrial tool for retaining rings and screws optionally available
- Board with wheels (optional) for easy transportation



#### R57FAD2 helical gear unit

#### Features

- Gear unit with 2 or 3 stages
- Documentation included
- Safe assembly and disassembly of the machine elements without pressing tools
- Secure position due to foot/flange-mounted design
- Function test with handwheel
- Close-to-production design
- Clearly structured and integrated in robust plastic cases

#### Gear ratio (in theory)

- $i = 16.79$  (2 stages)
- $i = 26.97$  (3 stages)



**K47AD2 helical-bevel gear unit**

**Features**

- Setting the gear backlash and bearing clearance of the bevel gear and the pinion shaft
- Documentation included
- Safe assembly and disassembly of the machine elements without pressing tools
- Secure position due to foot-mounted design
- Function test with handwheel
- Close-to-production design
- Clearly structured and integrated in robust plastic cases

**Gear ratio (in theory)**

- $i = 35.39$  (3 stages)



**SF47AD2 helical-worm gear unit**

**Features**

- Setting the gear backlash and bearing clearance of the worm gear and the worm
- Documentation included
- Safe assembly and disassembly of the machine elements without pressing tools
- Secure position due to foot/flange-mounted design
- Function test with handwheel
- Close-to-production design
- Clearly structured and integrated in robust plastic cases

**Gear ratio (in theory)**

- $i = 29$  (2 stages)

## 13.2 Didactics modules for gear unit technology

### Gear units – modular and practical



**R57FAD2 helical gear unit demo cabinet**

#### Features

- Gear unit with 2 or 3 stages
- Documentation included
- Safe assembly and disassembly of the machine elements without pressing tools
- Secure position due to foot/flange-mounted design
- Function test with handwheel
- Close-to-production design
- All components such as tools and gear unit parts are clearly structured and integrated in foam inlays in the lockable assembly trolley
- Available with different table heights

#### Gear ratio (in theory)

- $i = 16.79$  (2 stages)
- $i = 26.97$  (3 stages)



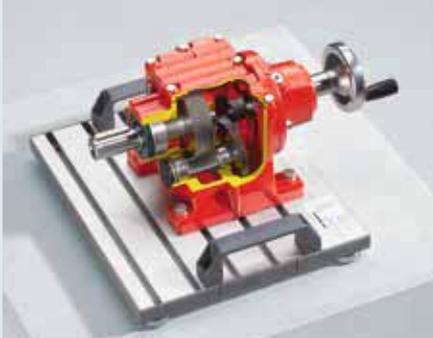
**K47AD2 helical-bevel gear unit demo cabinet**

#### Features

- Setting the gear backlash and bearing clearance
- Documentation included
- Safe assembly and disassembly of the machine elements without pressing tools
- Secure position due to foot-mounted design
- Function test with handwheel
- Close-to-production design
- All components such as tools and gear unit parts are clearly structured and integrated in foam inlays in the lockable assembly trolley
- Available with different table heights

#### Gear ratio (in theory)

- $i = 35.39$  (3 stages)



**R27AD1 cut-away model helical gear unit**

**Features**

- Shows the structure of a helical gearing in motion
- Stands securely due to aluminum plate with rubber base
- Easy transport
- Function test with handwheel
- Nameplate for easy gear unit calculations available
- Close-to-production design
- Gears, pinion shafts and shafts are protected against corrosion
- Plastic cases with foam inlays for safe storage (optional)

**Gear ratio (in theory)**

$i = 90.96$  (3 stages)



**K37AD1 cut-away model helical-bevel gear unit**

**Features**

- Shows the structure of a bevel gearing in motion
- Stands securely due to aluminum plate with rubber base
- Easy transport
- Function test with handwheel
- Nameplate for easy gear unit calculations available
- Close-to-production design
- Gears, pinion shafts and shafts are protected against corrosion
- Plastic cases with foam inlays for safe storage (optional)

**Gear ratio (in theory)**

$i = 97.81$  (3 stages)

## 13.2 Didactics modules for gear unit technology

### Gear units – modular and practical



**S47AD1 cut-away model helical-worm gear unit**

#### Features

- Shows the structure of a helical-worm gearing in motion
- Stands securely due to aluminum plate with rubber base
- Easy transport
- Function test with handwheel
- Nameplate for easy gear unit calculations available
- Close-to-production design
- Gears, pinion shafts and shafts are protected against corrosion
- Plastic cases with foam inlays for safe storage (optional)

#### Gear ratio (in theory)

$i = 29$  (2 stages)

## 13.3 Systems



### Multi function model

#### Design

- Ideal concept for professional schools and for advanced vocational training
- Drives and power electronics are designed according to customer specifications and delivered on a transportable aluminum frame
- Applications such as conveyor line, lifting axis can be equipped with different types of sensors, e.g. inductive, capacitive, limit switch with roller lever etc.



### MOVIGEAR® function model

#### Design

- Compact training concept and test stand for employees responsible for maintenance and startup
- All tools, prefabricated cables, operating box and handwheel are included in the delivery (handwheel for explaining the DynaStop® function)
- Line voltage 3× 400 V / 50 Hz
- Plastic cases with foam inlays for safe storage (optional)
- Board with wheels (optional) for easy transportation



### Conveyor line didactics

#### Design

- Easy and safe handling
- Possible to mount direct distance encoder
- Optional sensor technology
  - Inductive/capacitive proximity switch
- Position detection
  - RFID write and read head for product detection
  - Light barrier to detect height of product
  - Distance measurement
- Belt conveyor
- Alternative motor mounting
  - AC asynchronous motor (type WA10DT56L4)
  - Synchronous servomotor (type WA10CMP40M)

## 13.4 Documentation



### Gear unit technology DVD

- Quick start package
- R57F AD2 helical gear unit
- K47 AD2 helical-bevel gear unit

#### Contents

- Part drawings
- Application clips
- Tasks
- Dimension sheets and spare parts lists
- Documentation
- CAD data



### NEW: USB stick

#### Contents

- Assembly instructions for all demo gear unit types
- Technical drawings
- CAD file in STEP format
- Tasks
- Documentation



### Exercise book

Technical calculation (edition for pupils/apprentices)

#### Features

- Exercise book, bound copy, printed in black/white
- Set of exercises on the basics of drive technology (AC asynchronous motor)
- Sample exercises e.g. on energy efficiency



### Exercise book

Technical calculation (edition for trainers/teachers)

#### Features

- Exercise book, bound copy, color print
- Set of exercises on the basics of drive technology (AC asynchronous motor) with correct answers
- Including a CD with a digital version of the exercises and solutions



### Exercise book

Gear unit technology basics (edition for pupils/apprentices)

#### Features

- Exercise book, bound copy, color print
- Training documents on introduction to gear unit technology incl. exercises



### **NEW:** Exercise book

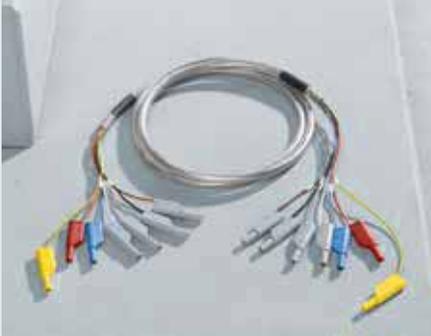
Gear unit technology basics (edition for trainers/teachers)

#### Features

- Exercise book, bound copy, color print
- Training documents on introduction to gear unit technology incl. exercises with solutions
- Including a CD with a digital version of the exercises and solutions

## 13.5 Connection leads (cables)

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**Connection leads for didactics modules**

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### Features

- Various connection leads and cables, matching the electromechanics didactics modules
  - Shielded cables for EMC-compliant connections e.g. supply system cables 230 V / 400 V with 4 mm shrouded plugs
  - Motor connection cables, optionally 4 mm shrouded plugs or standard industrial plugs
  - Can be combined with different didactics modules and laboratory benches
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