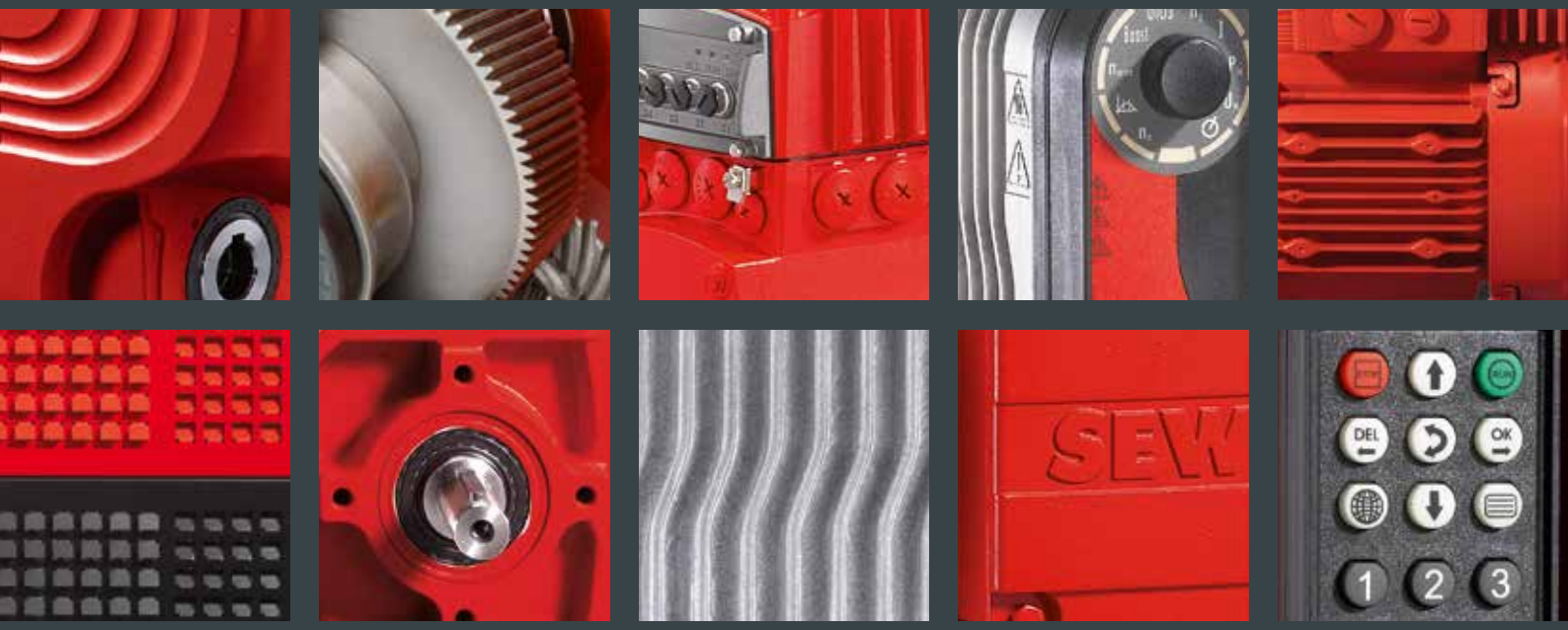
SEW EURODRIVE

Products and Innovations

April 2014 Issue

PRODUCTS



INNOVATIONS

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effiDRIVE®

Energy saving solutions
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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.

Servo drive systems

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NEW

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MOVIAXIS® MMD60B
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Smart Servo Package
incl. MOVITRAC® LTX

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DR…J (LSPM) / DRL.. /
NEW: DRK.. / DRM..
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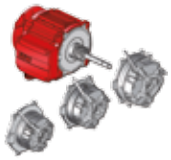

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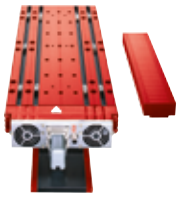

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mechatronic drive system
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DRC.. electronic motor
fulfills IE4 requirements
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frequency inverter
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MOVI-SWITCH®
gearmotor with inte-
grated switching and
protection function
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NEW

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MOVIFIT® basic
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MOVIFIT® decentralized
drive controller
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MOVIPRO® SDC/ADC
decentralized drive,
positioning and
application controller
Pages 194 + 195

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MOVITRANS®
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safetyDRIVE

Functional safety
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NEW

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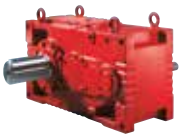

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NEW

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Project planning tools
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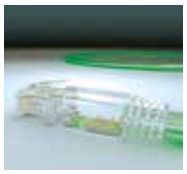

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safetyDRIVE

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safetyDRIVE
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SEW
EURODRIVE

Driving the world

Motion has been our driving force – for over 80 years

Motion is created wherever there is energy. Wherever knowledge and technology complement one another in an ideal way. Wherever SEW-EURODRIVE is, motion is created.
Our product is motion. Decades of experience in drive engineering are the basis for this.
Our origin is that of one of the major family enterprises of the world. When we say “We can do it,” it means “We will do it”. This is what you can count on all over the world since the founding of the company in 1931.

Our claim:
Leading Drive Solutions of the World

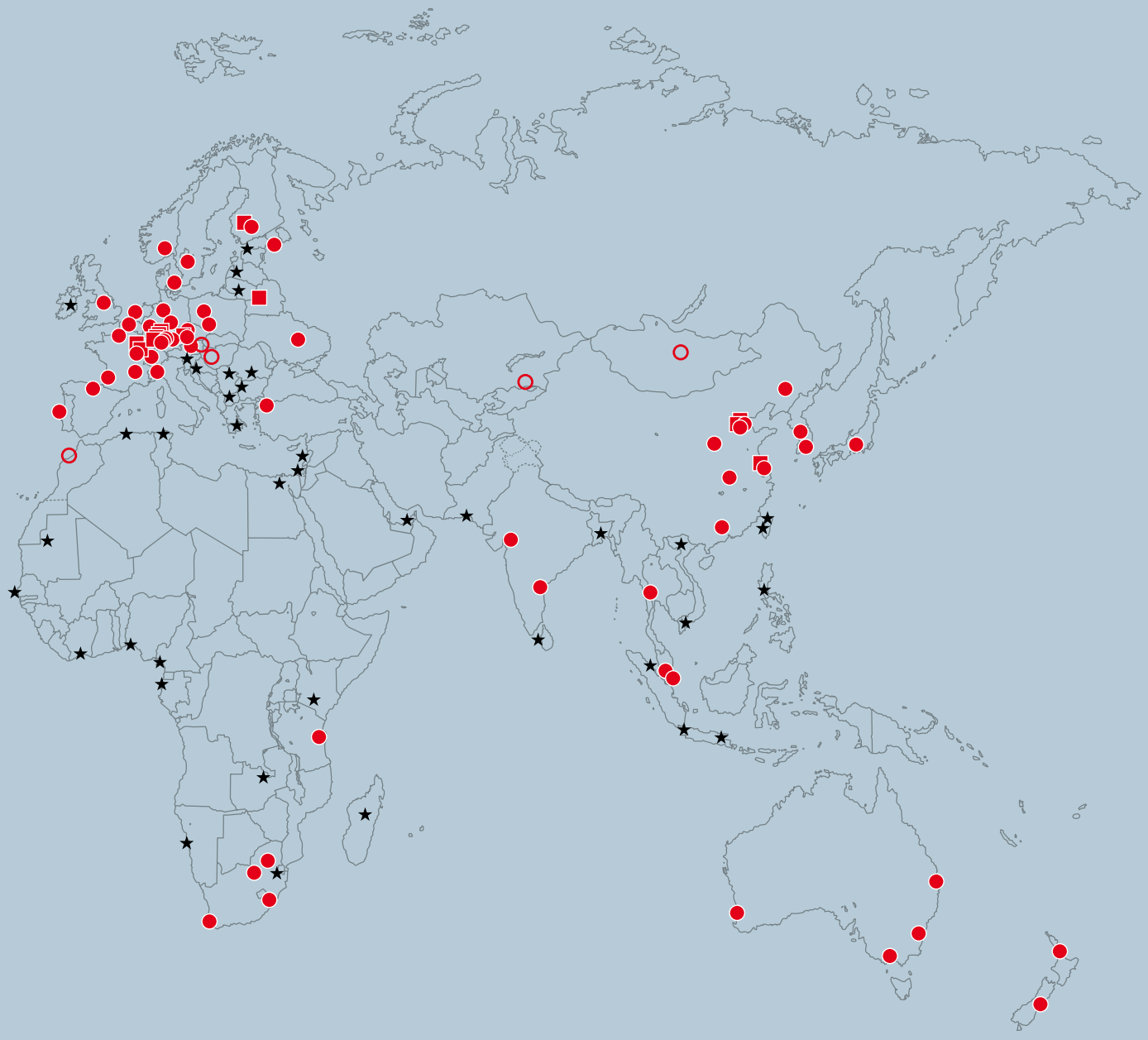
SEW-EURODRIVE offers technical progress all over the world with presence in 48 countries. All components are prefabricated at 15 production plants; 77 Drive Technology Centers take care of sales and service and ensure short and reliable delivery times of the assembled end products designed to meet regional requirements. This network creates important additional benefits: short product delivery times, uniform quality standards, and international application experience.

SEW-EURODRIVE worldwide

- Production plants
- Drive Technology Center
- Sales companies
- ★ Authorized Representatives

The boundaries and names shown and the designation used on this map do not imply official endorsement or acceptance by the United Nations. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed by the parties.

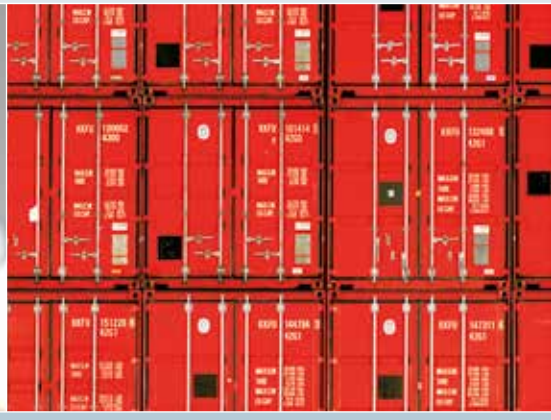
Argentina Australia **Austria** Belarus **Belgium** Brazil **Canada** Chile **China** Colombia **Czech Republic** Denmark **Finland** France **Germany** Great Britain **Hong Kong** Hungary **India** Italy **Japan** Kazakhstan **Malaysia** Mexico



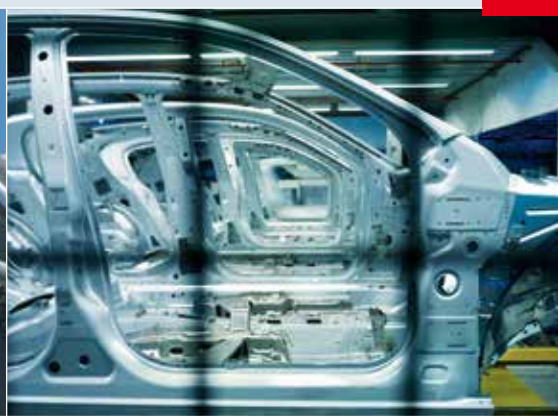
Mongolia Morocco **Netherlands** New Zealand **Norway** Paraguay **Peru** Poland **Portugal** Russia **Singapore** Slovakia
South Africa South Korea **Spain** Sweden **Switzerland** Tanzania **Thailand** Turkey **Ukraine** Uruguay **USA** Venezuela

We meet the challenges of industry-specific requirements

We are working with enthusiasm on new solutions for our customers that will help them set things in motion in their industry. Products and requirements must match: Thinking in terms of perfect solutions means to combine individual modules in such a way that they enhance the specific application.



Our industry-specific and effective automation solutions are based on a comprehensive range of products that can be combined to form millions of different drive variants due to the power density and reliability. And we seek the dialog with our customers. With the insights gained from customer contacts and our practical experience, we deepen our expertise of the most various industries worldwide. This is how we set new standards in the market. Standards that help our customers to establish themselves quickly in new lines of business.



SEW-EURODRIVE is a supplier of drive technology worldwide – a global partner who solves problems and provides answers to any challenge.

The right drive ensures that good ideas are implemented

Products and systems from SEW-EURODRIVE are used all over the world: In industries such as automotive, building and building materials, beverage or food and consumer goods, metal processing or wood processing, transportation and logistics, in ports and airports, and many more. The decision to use drive technology “made by SEW-EURODRIVE” means reliability for function and investment.

Ensuring smooth and reliable plant operation, minimizing the maintenance effort, and maximizing the added value for our customers are the objectives of SEW-EURODRIVE when talking about industry-specific solutions. We want to make sure that you operate your machines and systems in a safe and efficient manner at any time so that unproductive downtimes are avoided.

Sustainability: Goal and responsibility

For SEW-EURODRIVE, responsible use of all resources is essential in all decision-making and production processes all the way to the ready-to-use, sustainable drive solution. Sustainability also includes the future viability of our products. SEW-EURODRIVE is convinced that sustainable and above all future-oriented drive solutions not only have a positive effect on our own business activities but also on those of our customers.

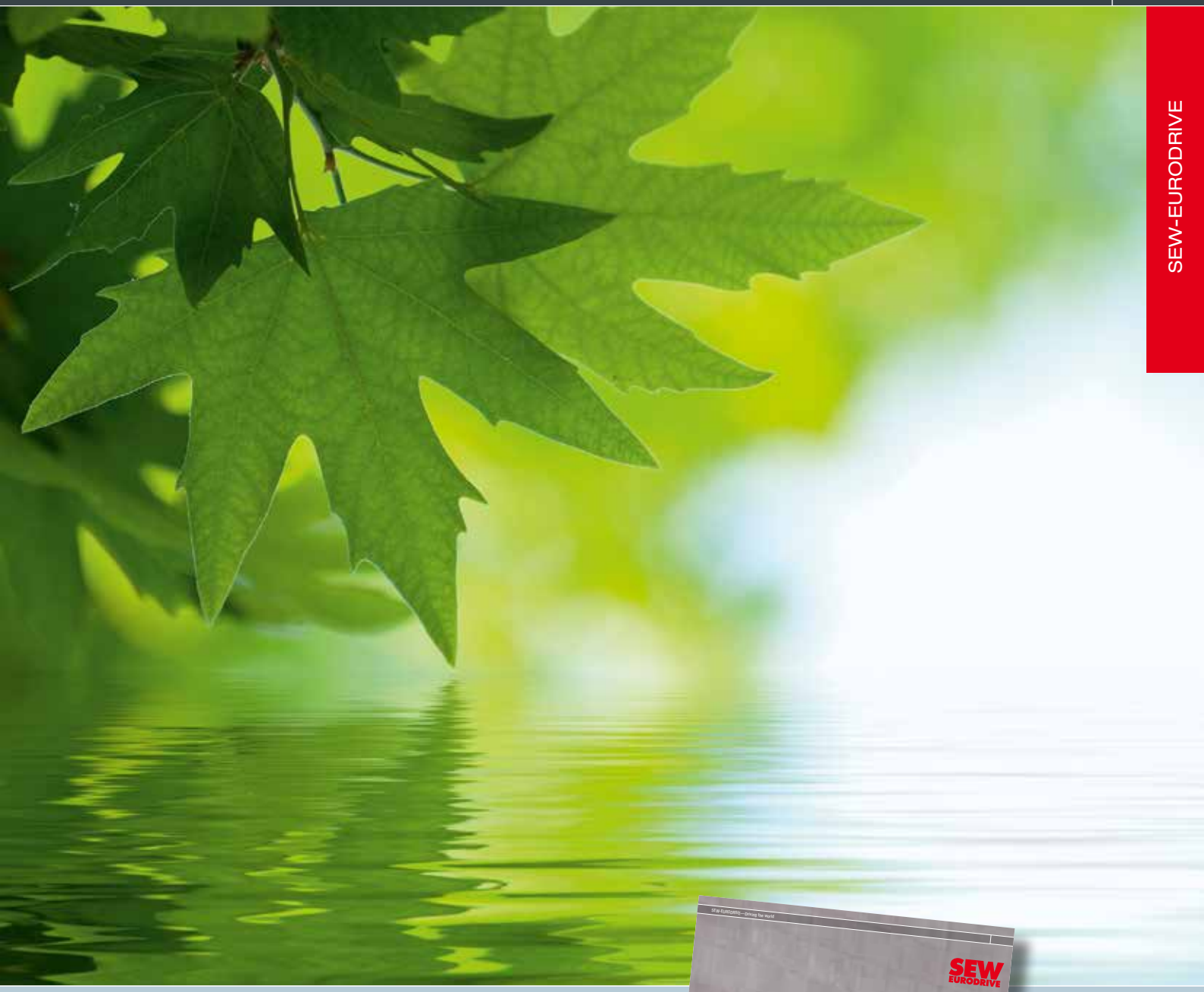
This concept is what made SEW-EURODRIVE eligible for the VDMA sustainability initiative "BLUECOMPETENCE".

This initiative has set itself the aim of becoming the leading initiative for ecological product and production design and for innovative environmental technologies in the mechanical and plant engineering sector. Only selected partner companies obtain the BLUE COMPETENCE brand on the basis of verifiable criteria. A prerequisite is that these companies are committed to promoting the topic of sustainability with environmentally friendly, energy efficient technologies and solutions.

The following eight topics are at the focus of the initiative aiming at mechanical and systems engineering:

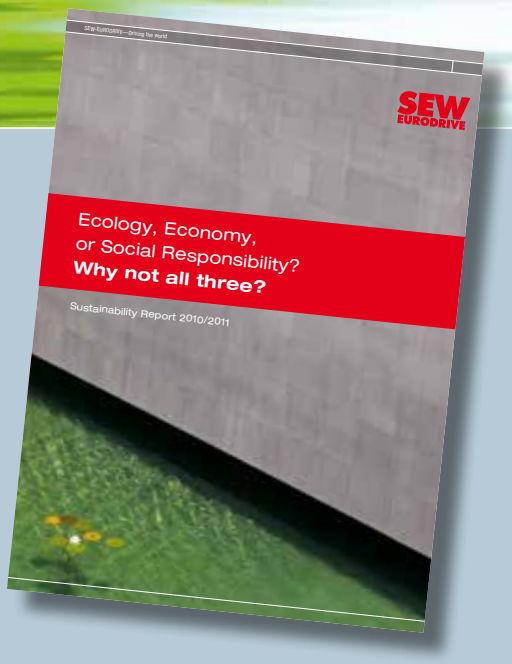
- Energy efficiency
- Energy sources
- Raw materials
- Emissions
- Future mobility
- Waste and recycling management
- Life cycle costs
- Quality of life

Our participation in the BLUECOMPETENCE initiative clearly shows how comprehensively we have already been implementing sustainable ideas. And we have already reached many goals: from developing energy efficient drive solutions for our customers through to environmentally friendly processes in our production and assembly plants.



For information on SEW-EURODRIVE's commitment to sustainability beyond the VDMA initiative, refer to our latest sustainability report.

http://www.sew-eurodrive.com/s_sustainability



BLUECOMPETENCE: You find more information on the products and solutions of SEW-EURODRIVE and on the topic of energy efficiency at http://www.bluecompetence.net/pages/en

Driving flexibility forward

Variety and quality from the unique modular system

The modular concept of SEW-EURODRIVE stands for product variety, quality, reliability, and innovation. Characteristics that all our products have in common and that have made SEW-EURODRIVE one of the leading manufacturers of drive technology.

Drive components from SEW-EURODRIVE have become firmly established in the international machine and plant engineering industry. They will provide the perfect basis for selecting the proper drive for any application also in the future.

No matter whether these are mechanical, electronic, or mechatronic components, they are used depending on the speed and torque range, space, and ambient conditions required by the specific application. Drive technology from SEW-EURODRIVE implements an infinite number of customized drive solutions matching the specific requirement profiles.

Gearmotors and frequency inverters

Servo drive systems

Decentralized drive systems

Industrial gear units

Other system components

Gearmotors and frequency inverters

Our gear units and gearmotors are available in many sizes and gear ratios. They offer an unmatched fine graduation of power ranges and excellent economical requirements for use in machines and systems. The modular concept offers millions of combinations and, as a result, provides the perfect condition for choosing the drive that optimally suits the specific application.

Overview of mechanical components

- Helical gear units / gearmotors (R series)
- Parallel-shaft helical gear units / gearmotors (F series)
- Helical-bevel gear units / gearmotors (K series)
- Helical-worm gear units / gearmotors (S series)
- SPIROPLAN® right-angle gearmotors (W series)
- Drives for electrified monorail systems (HW../HK.. series)
- Aseptic gearmotors (DAS series)
- Stainless steel gearmotors (KES../RES.. series)
- Modular motor system (DR.. series)
- Explosion-proof motors and gearmotors, and many more

The electronic components

- MOVITRAC® LTE-B, LTP-B and MOVITRAC® B frequency inverters
- MOVI4R-U®, the frequency inverter based on a sustainable product concept, and
- drive inverters of the MOVIDRIVE® B series

enhance the gearmotors, forming a combination that blends perfectly with the existing range of SEW-EURODRIVE systems. As in the case for mechanical systems, the development, production and assembly is also carried out completely by SEW-EURODRIVE. In combination with our drive electronics, these drives provide the utmost in flexibility.

Servo drive systems

Servo drive systems convince by their dynamic performance, high flexibility, and significant cost-efficiency. Their design features make them the optimum drive solution for all applications that require an even balance of power and precision.

Also the product portfolio of the servo drive systems is characterized by the modular concept and impresses with its variety and practical orientation. These components solve many tasks from single or multi-axis applications to synchronized process sequences and provide exact movements for any system architecture.

- MOVIAXIS® multi-axis servo inverters
- MOVIAXIS® MMD60B decentralized servo inverter
- Smart Servo Package incl. universal servo inverter MOVITRAC® LTX
- Synchronous servomotors of the CMP, CM and CMDV series as well as synchronous linear servomotors, SL2 series
- Efficient electric cylinders modular and standard, CMS series
- Planetary servo gear units of the PS.C and PS.F series as well as helical-bevel servo gear units, BS.F series
- Explosion-proof servo drive technology
- System solutions with servo gearmotors: helical, parallel-shaft helical, helical-bevel, helical-worm, and SPIROPLAN® servo gearmotors
- Cable management and connection options

Decentralized drive systems

For economical, decentralized installations, SEW-EURODRIVE offers components from the decentralized drive systems that are independent of a control cabinet. They fulfill the three most important criteria for use in automation applications: they are modular, flexible and economical.

Another advantage is that they make it possible to significantly save costs for the extremely time-consuming wiring of motors, sensors and actuators. Decentralized drive systems considerably reduce the space required in the control cabinet, and they support any commerical bus system.

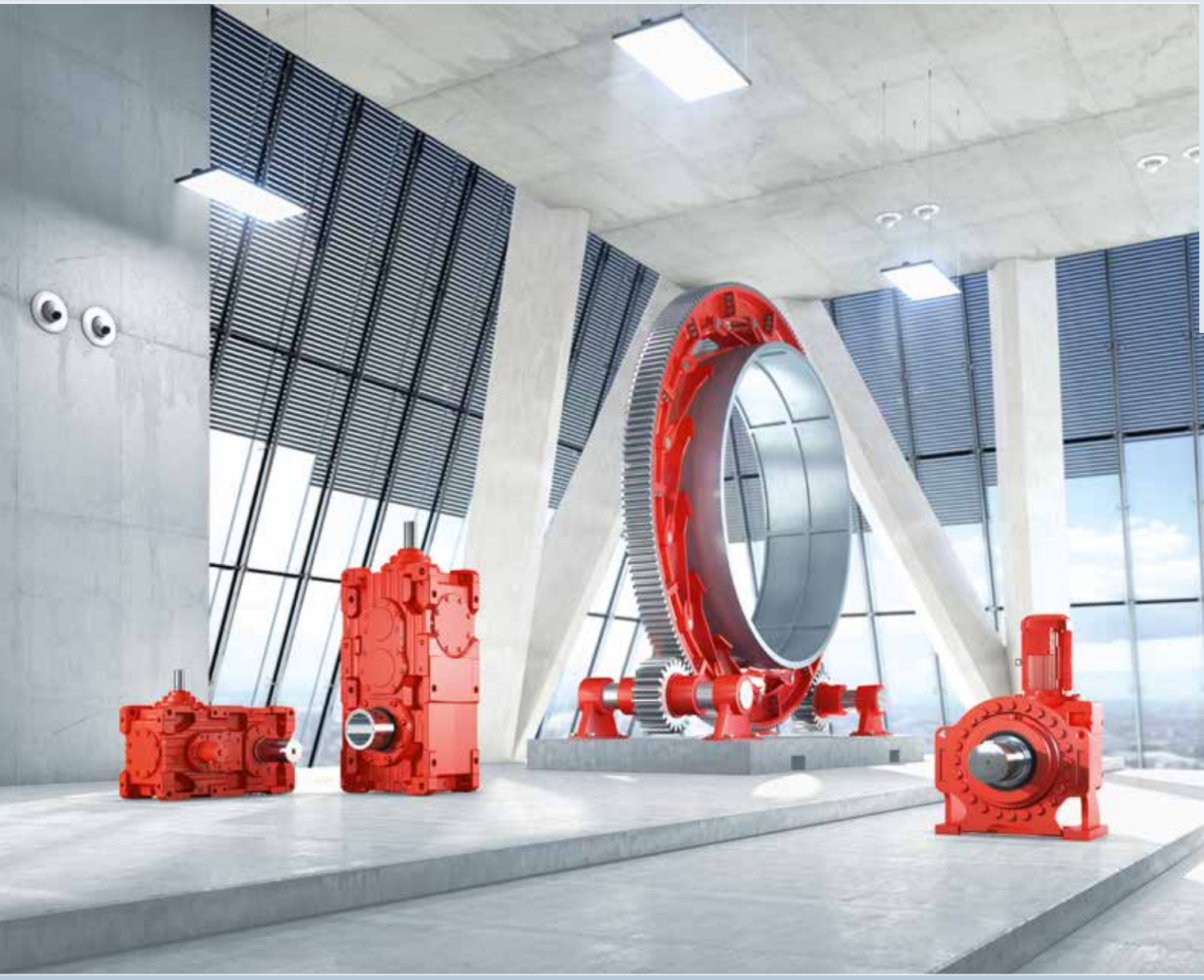
- MOVIGEAR®, the mechatronic drive system with high energy efficiency (IE4) and an energy-saving potential of up to 50%
- DRC.. electronic motor (IE4), a permanent-field synchronous motor with integrated drive electronics, which completes the range of mechatronic drive systems
- MOVIFIT® basic, the decentralized drive unit for simple requirements
- MOVIFIT®, the decentralized drive controller opens up more installation perspectives
- MOVIPRO® SDC/ADC, the drive, positioning and application controller for compact performance
- Have proven their worth in practice for years:
  - MOVIMOT®, the gearmotor with integrated frequency inverter, and
  - MOVI-SWITCH®, the gearmotor with integrated switching and protection function and
  - specifically developed hybrid cables
- MOVITRANS®, the reliable and wear-free system components for contactless energy transfer

Industrial gear units

SEW-EURODRIVE offers the suitable industrial gear unit where extremely large torque ratings are required to carry out extremely large movements. These industrial gear units combine power, quality and sturdy design and meet all the technical customer requirements of conveying and processing raw materials, of process engineering, of the energy, timber, and mineral industries, or of process manufacturing, for example. Standardized but always flexible due to the modular concept, industrial gear units can even be operated under difficult conditions.

All the series at a glance

- **X series** – robust industrial gear unit platform up to 475 kNm with finely stepped sizes
- **MC series** – compact gear unit series designed for the small torque range up to 65 kNm
- **MACC series** – special gear unit series for air cooled condensers
- **ML series** – versatile gear unit series for the specific requirements in the upper torque range from 180 … 680 kNm offering a high level of flexibility and variability
- **P series** – standardized planetary gearmotors that achieve high torques and convince by their compact design



- **P.MC series** – a perfectly matched combination of planetary gear unit and primary gear unit from the successful MC series
- **XP series** – individual drive solution that is particularly suited for high-torque applications
- **M1 series** – single-stage gear unit for applications with small gear ratios up to 7.1 i and a maximum nominal torque of 168 kNm
- **Segmented girth gears** – the flexible solution with a diameter of up to 16 m is tailored to customer requirements and can be perfectly combined with our basic gear units

Other system components

In addition to powerful and flexible drive technology, industry and customer oriented solutions and services, SEW-EURODRIVE also offers the matching system accessories, such as:

- Control technology
- Remote maintenance
- Operator terminals
- Project planning tools
- Startup software
- and many more

The result are individual application solutions in coordination with system designers and system operators that ensure the required functionality and efficiency in all project phases: from planning and project development to startup, operation and production reliability as well as maintenance and service measures.


SEW
EURODRIVE
effiDRIVE
IE4
effiDRIVE
effiDRIVE

Solutions

Practice-oriented solutions, available worldwide

Drive technology from SEW-EURODRIVE has been setting things in motion for over 80 years and stands for reliability and efficiency. To also meet future requirements, we not only continuously develop these components and the modular concept but also our solution approaches. We create and implement solutions today for the tasks of tomorrow – worldwide.

TCO

effiDRIVE®

VARIOLUTION®

SEW-EURODRIVE offers the following functional, efficient, and practice-oriented solutions to face any new or specific task independent of the application or industry:

- Solutions for reducing the total cost of ownership
- effiDRIVE® energy-saving solutions that pay off
- Industry-specific VARIOLUTION® packages
- Customer-specific MAXOLUTION® system solutions
- safetyDRIVE functional safety
- and explosion-proof drives

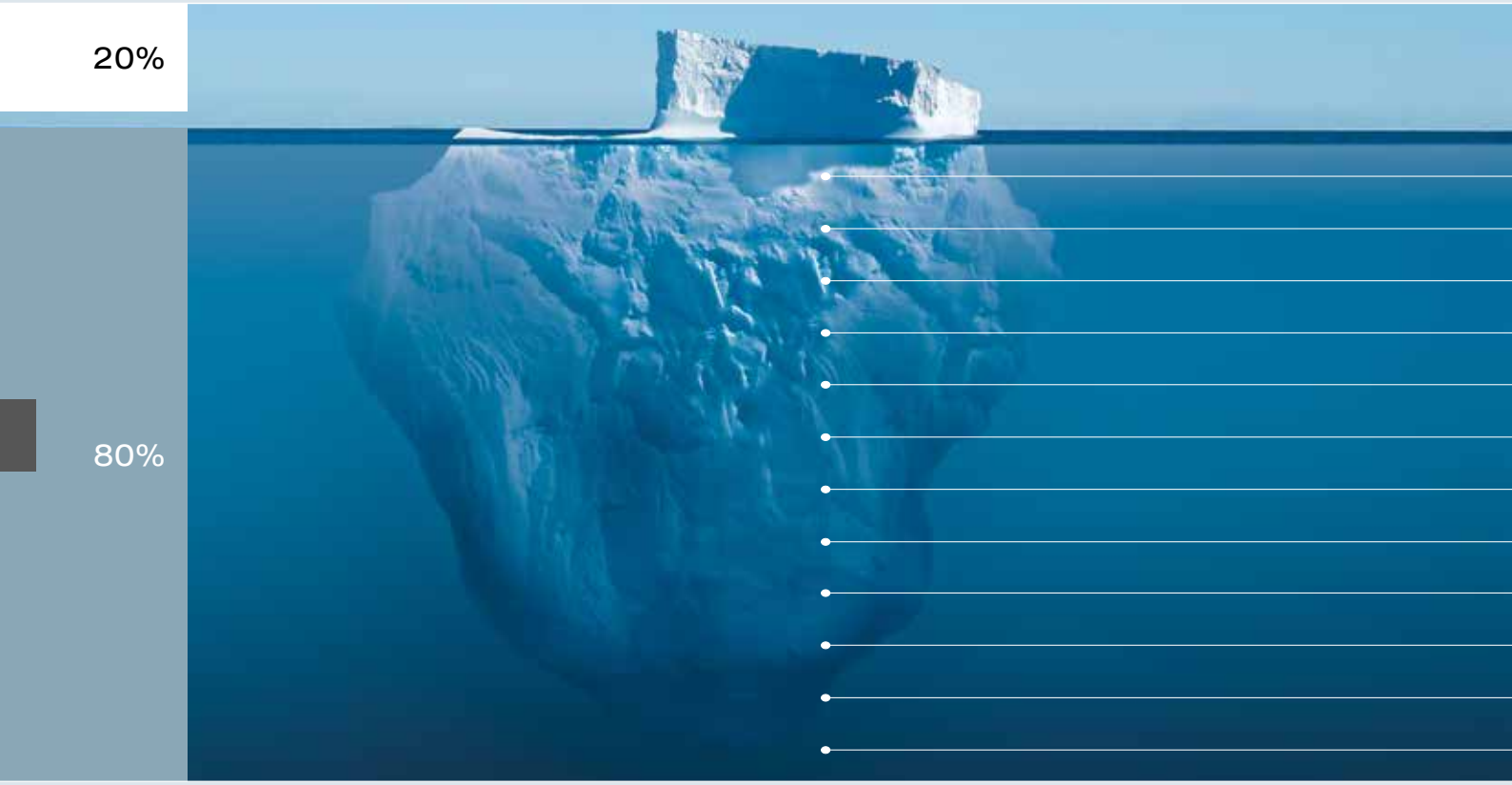
MAXOLUTION®

safetyDRIVE

Ex-proof

Solutions for reducing the total cost of ownership

The decision to buy a product in the global competition is increasingly influenced by the follow-up costs arising from the purchase, utilization, and disposal of the product and no longer only by mere investment costs.



Total Cost of Ownership (TCO)

Investment costs

- Startup
- Training
- Additional equipment
- Spare parts
- Maintenance/service
- Staff
- Tax
- Insurance
- Energy
- Provision of replacement systems
- Retrofitting
- Disposal

The drive technology components installed in a machine or system influence these follow-up costs as well by factors such as

- operational functions and effectiveness,
- expenses for maintenance and repair, energy costs, and
- costs resulting from unplanned and planned downtimes

You can actively change and improve one of these cost factors, i.e. the energy costs, with the effiDRIVE® energy saving solutions – for more information, refer to the following pages.

Discover hidden costs and minimize them:
TCO solutions of SEW-EURODRIVE give you cost transparency and let you act in a forward-looking manner. They increase the efficiency of your processes and significantly contribute to reducing CO_2 emissions sustainably.

effiDRIVE®: Energy saving solutions that pay off

During ongoing operation, it is not possible for many companies to pinpoint energy-saving potential. The obvious energy consumers, such as production machines and plants, are of course monitored and optimized. However, finding “hidden” energy consumers, calculating their saving potential, and developing alternative solutions is much more complex and always involves a great deal of time and effort.

Our service for you – “SEW energy saving aid”: Energy consulting, tools and resources

Energy consulting “made by SEW-EURODRIVE” can be tailored to meet individual needs. We support you in gaining more cost transparency and making your processes more efficient. Are you interested? You find more information on energy consulting in the next chapter “Services”.

At http://www.sew-energy-saving.com you find tools and resources available round the clock, such as

1. Energy saving calculator

The energy saving calculator is free of charge. This software tool calculates the energy saving potential when using energy-efficient motors. You can compare the energy consumption of standard motors with that of energy-efficient motors with just one mouse click and calculate the amortization time for the investment. The calculation log can be downloaded in PDF format.

2. Energy consumption analysis

The energy consumption analysis is a new function of the “SEW Workbench” project planning tool that lets you exactly calculate and document the possible energy saving potential of effiDRIVE® energy saving solutions. The “energy report” generated during the analysis, which is certified by TÜV SÜD, shows the total energy consumption for the specific application as well as the configured drive train and forms the basis for selecting the most energy-efficient drive technology.

3. IE Guide

The new iPhone app “IE Guide” from SEW-EURODRIVE, or its web application lets you retrieve all the information about the topic of “worldwide efficiency regulations” quickly and user friendly: **www.ie-guide.de**

Available on the App Store

Modular energy saving system:
The product portfolio for more energy efficiency

1. Gearmotors and frequency inverters:
- MOVIDRIVE® and MOVITRAC® inverters with intelligent DC link coupling or optional regenerative power supply unit for recycling released energy
- Motors of the series DR.. meet energy efficiency classes IE2, IE3 and IE4

2. Decentralized drive systems:
- The mechatronic drive system MOVIGEAR® meets energy efficiency class IE4 (Super Premium Efficiency; "Energy-Efficient Plant Technology" certified by TÜV SÜD standard) just like the DRC.. electronic motor
- Energy-efficient decentralized controllers, such as MOVIFIT® or MOVIPRO®

3. Servo drive systems:
- Such as MOVIAXIS® multi-axis servo inverter, combined with regenerative power supply modules, storage or compact supply modules (energy recycling)

Scalable application solutions from one source: VARIOLUTION® packages

With the new VARIOLUTION® packages, SEW-EURODRIVE has succeeded in developing scalable solutions for industry-specific drive tasks. These complete technical solutions support machine and plant manufacturers already in the planning phase and in this way contribute to optimizing the value creation chain.

We focus on your requirements

In addition to drive technology, we provide the software matching the application with warranty of proper functioning, optimized order and delivery processes as well as user-specific documentation. The range of services matching the specific package, such as startup or customizing the software module, provides even more added value for project planners and operators.

VARIOLUTION® packages:
Innovative and comprehensive

- Proven drive and automation technology
- Function-oriented software modules
- Optimized order and delivery processes
- Application-specific documentation
- Individual adaptations are possible

Your added value using VARIOLUTION® packages:

- Scalable solutions
- Reliable plant planning
- Faster implementation
- Optimized process costs

VARIOLUTION® packages

VARIOLUTION® conveyor line
This package is characterized by its modularity and high efficiency and was designed to meet the requirements of modern conveyor lines. It consists of decentralized technology with energy-saving drive technology and satisfies all the requirements of flexible system design.

VARIOLUTION® corner transfer unit
Corner transfer units are an integral part of conveyor lines for the most various products. Whether for rotary table applications or change of direction by means of lifting or transverse movement, this package offers the optimal drive and control concept for all kinds of requirements.

VARIOLUTION® item transport
This package takes account of the special aspects for transporting different containers in filling systems. Optimized for applications in wet areas, it meets the hygienic properties and resistance against cleaning agents.

VARIOLUTION® packaging unit transport
This package type allows for universal but still flexible solutions for transporting empties, packages, and pallets. And the mechatronic drive system MOVIGEAR® lets you significantly reduce installation costs.

VARIOLUTION® storage/retrieval system
Whether for small-parts or pallet warehouses, the variants of this package solve many requirements. The integration of a regenerative power supply module in the VARIOLUTION® storage/retrieval system can reduce energy consumption by up to 50% thanks to the combination of software and regeneration.

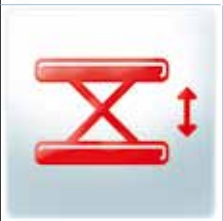
VARIOLUTION® FFS machine
This package comprises the main functions of an FFS machine. The dynamic servo drives are controlled by the modular software concept “MultiMotion packaging machine” and connect all functions via standardized interfaces.

VARIOLUTION® packing/unpacking

Package for gentle and dynamic packing and unpacking. Integrated software modules meet these requirements while at the same time allowing for flexible product positioning.

VARIOLUTION® vertical conveyor

Depending on the application, lifting applications can be designed with control cabinet or decentralized technology. The integrated function enables accurate positioning of both axes. This package is characterized by safe lifting and flexible positioning.



VARIOLUTION® scissor lift table

Scissor lift tables are used for lifting heavy loads within the work area. These packages allow for concepts with control cabinet or decentralized technology. Simple positioning is possible with just two lifting heights but several levels are also possible.

VARIOLUTION® bridge crane

Whether large or small, manual or automated bridge, overhead or bracket cranes, the variants of the VARIOLUTION® "bridge crane" package meet many requirements. The predefined solution of the package prevents swinging of the load and positions it accurately.

NEW: VARIOLUTION® pallet transfer shuttle

This package comprises the typical requirements of pallet transfer shuttles. The MOVIPRO® decentralized drive, positioning, and application controller makes for a compact design while the standardized software module "Pallet transfer shuttle" ensures functionality and at the same time allows for project-specific adjustments.

Practical example: VARIOLUTION® storage/retrieval system with functional safety technology

This package solution was designed for storage/retrieval systems and complies with the standard requirements imposed on such systems. All persons involved, system manufacturers and suppliers benefit from the safety functions integrated in the drive system as well as from the safety-related services offered by SEW-EURODRIVE.

Limiting the velocity in the end areas of the aisle to 70% (SLS/SLP), for example, allows for reducing the end buffers and shortening the deceleration distance of the storage/retrieval system. This means a gain in storage space. The integrated brake test for the automated diagnostics of safe brake systems reduces the maintenance effort and makes it possible to completely replace the end buffers.

The safety of persons and the system which is required for manually operating the system is implemented by limiting the speed and the directions of movement (SLS/SDI). An application module, whose parameters can be set, coordinates the various motion axes.

Advantages of the package solution

- System manufacturers benefit from the package solution as they can integrate functional safety technology already in the design phase.
- Operators benefit from the package solution as not only functional operational safety is ensured but also optimized space and safe operation.

Software

- Up to 25% of energy can be saved through optimized movements
- Axes are synchronous when switched off
- Safe condition of the drives after switch-off (STO / SS1 / SS2)

Safety technology

- Support in selecting the drive technology components according to the new normative requirements
- Minimized risk thanks to the expertise and experience of SEW-EURODRIVE
- Safety-related services during the project from the concept through to startup

MAXOLUTION® –
Individual system solutions for every movement

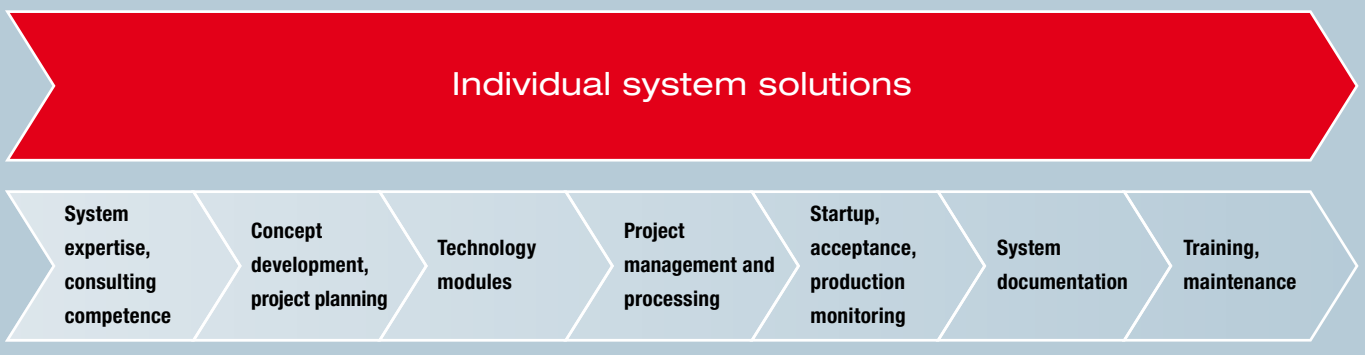
MAXOLUTION® from SEW-EURODRIVE stands for individual system solutions with the guarantee of success. MAXOLUTION® system solutions offer all the components needed to optimally implement customer-specific machine and system solutions. These components comprise among others electromechanical drives, controllers, communication, visualization, contactless energy transfer, and the versatile service portfolio.

From planning to maintenance – Everything from one source

System specialists with industry-specific expertise make up the core team that cooperates closely with your contact partners from the Sales and Service teams. This is how we ensure optimum consulting and support from project planning to maintenance: competent and fast, straightforward and comprehensive.

Advantages that speak for themselves

- Project-specific system solutions tailored specifically to the respective requirements
- Reduced complexity by using optimally matching system components
- Standardization and continuity: from energy supply to communication and control up to the drive system
- Comprehensive, scalable service package that meets all demands
- Everything from one source: reduced interfaces as there is only one contact for the entire system solution



MAXOLUTION® system solutions at a glance

System solution for …	Brief description
Automated guided vehicle systems AGV	– Variant 1: Track-guided AGV system for heavy load with inductive energy transfer. – Variant 2: Track guided hybrid AGV with Drive Power Solution and inductive energy charging.
Skillet	The skillet system solution allows for adjusting the working height of mounting platforms in a flexible and ergonomical manner. Energy is transmitted wear-free and contactless.
Transfer carriage	Transfer carriage system solution with wear-free, contactless energy transfer and decentralized drive control.
Electrified monorail system EMS advanced	The EMS advanced system solution comprises drive control with positioning, and wireless communication. This system solution convinces by its simplicity and flexible configuration.
Electrified monorail system EMS safety	The EMS safety system solution comprises drive control with positioning, wireless communication, and safety technology. Configuration is simple and flexible.
Electrified monorail system EMS basic	Compact system solution EMS basic for simple transportation tasks with half-wave control and parameterizable functions.

You find more information on MAXOLUTION® at www.sew-maxolution.com and in the Technical Data chapter.

NEW: Drive Power Solution
Application examples in MAXOLUTION® system solutions

- Drive Power Solution for
  - stationary applications and
  - mobile applications
- Environmentally friendly thanks to optimized energy utilization:
  Regenerative energy is not converted to heat, but stored temporarily and then released again
- Modular design allows for adaptation of performance and energy as needed
- Implementation of modern factory concepts thanks to increased flexibility for retrofitting
- Components are optimized for recycling
- Increased process reliability in case of power failures

Application examples in MAXOLUTION® system solutions

Stationary applications with Drive Power Solution	Mobile applications with Drive Power Solution
– Lifting/lowering conveyors – Hoists	– Automated guided vehicle systems – Shuttles
Operating mode: Peak power operation	**Operating mode: Power supply operation**
Benefits in the application – Local storage of regenerative energy – Direct, local supply of required peak power – Smoothing of supply system input and reduced load on supply system – Retrofitting without adapting the supply system infrastructure – Controlled shutdown of the application in case of a power failure	**Benefits in the application** – Continuous power supply – Fast charging via supply system or contactless energy transfer – Increased vehicle availability – Less maintenance required compared to battery operation

Lifting/lowering conveyors

Automated guided vehicle systems

safetyDRIVE: Functional safety

Avoiding industrial accidents while maintaining trouble-free and economical system operation is the central challenge of today's safety concepts. With safetyDRIVE, SEW-EURODRIVE offers consistent products and solutions for "Functional Safety" (FS) that can be integrated easily and reliably in many machines and systems used in the most various industries.

The MOVISAFE® safety cards and safety modules provide the SEW-EURODRIVE drive electronics with all the important safe motion and position functions. Downtimes are reduced by selective shutdown, costs are reduced by prefabricated products and the elimination of external protection devices.

All these measures increase the productivity in the production and operation of plants. It is particularly in mobile materials handling equipment that safe control technology solves many complex tasks.

The **FS marking** on the nameplate indicates which components in the drive are safety-related. For example, the functional safety code "FS01" stands for the inverter close to the motor (e.g. MOVIMOT® up to PL d according to EN ISO 13849-1), "FS02" for brake (e.g. BE11 up to PL c according to EN ISO 13849-1) or "FS04" for rotary encoder (e.g. ES7S up to PL d according to EN ISO 13849-1). The result:
A consistent solution with safe drive technology.

To enable plant manufacturers and operators to meet the requirements of EN ISO 13849-1, our **FS services** provide support in selecting the proper safety concept, in calculating the actual performance level of all safety functions in the plant, and finally in taking the system into operation with subsequent validation.

To take the first steps in selecting the safety concept free of charge, go to **http://scl.sew-eurodrive.com/**.
The performance level is calculated using the SISTEMA tool of the Institute for Occupational Safety and Health of the German Social Accident Insurance (IFA; www.dguv.de/ifa), which is available free of charge. You find more information in the "Services" chapter.

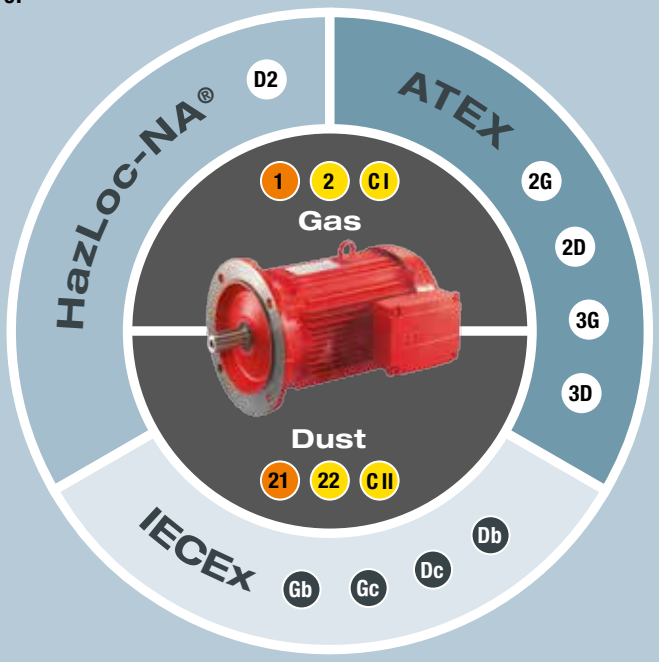
The DriveAcademy®, the central training institute of SEW-EURODRIVE, offers year-round training courses on the topic of “safetyDRIVE functional safety” as well as seminars on how to design machines and systems under safety-relevant aspects.

More information and dates at:
www.driveacademy.sew-eurodrive.de

Explosion-proof drives available worldwide: according to 94/9/EC (ATEX), IECEx or HazLoc-NA®

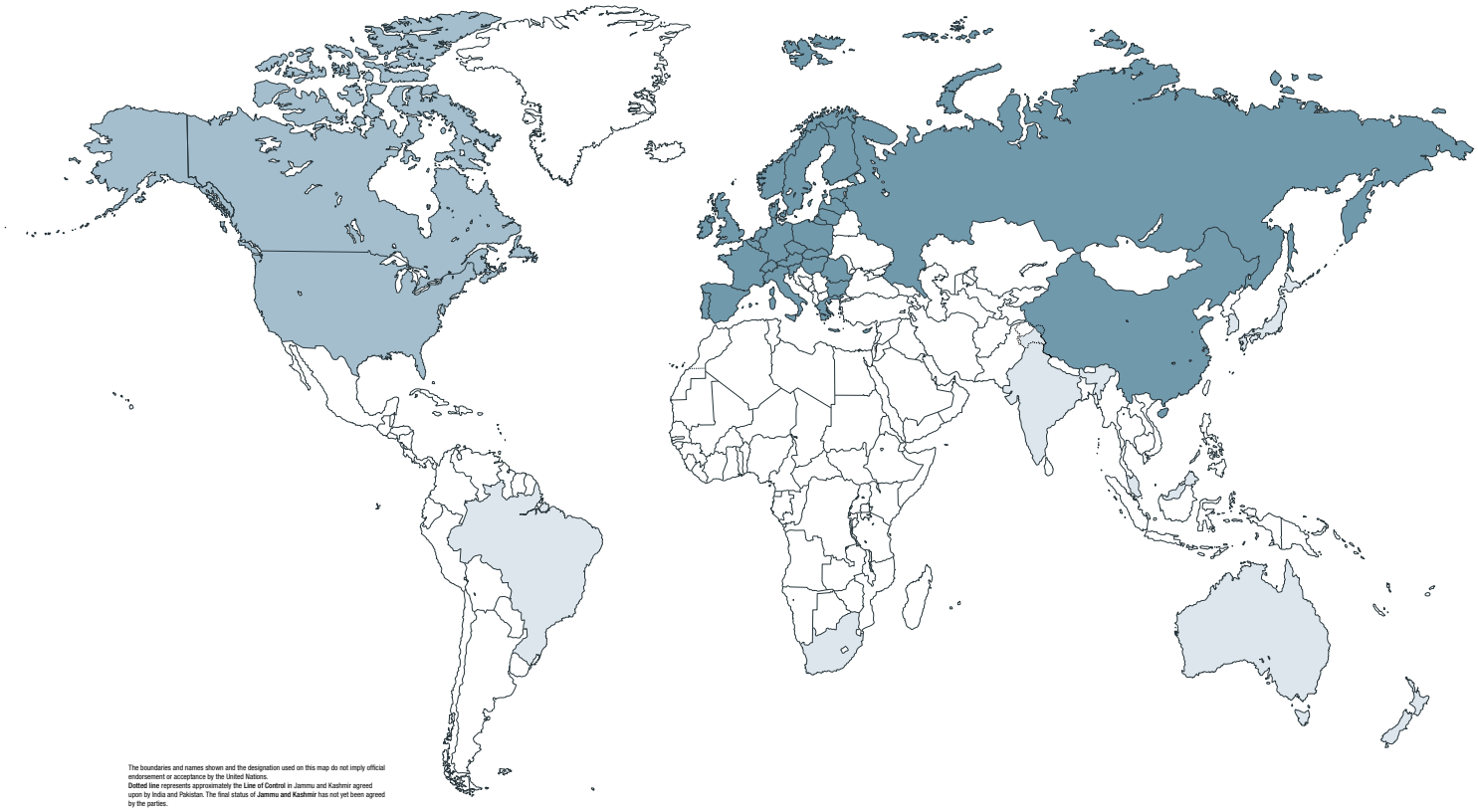
The complex, internationally applicable requirements for use of gearmotors, motors or drive electronics in potentially explosive applications are defined in the most important guidelines and standards for the world market, that is in directives 94/9/EC (ATEX), IECEx, NEC500, NEC505 and C22. Explosion-proof drive technology "made by SEW-EURODRIVE" meets these requirements and has been used all over the world reliably in applications such as in chemical plants, power plants, paint shops or wood processing centers, and many other applications in the field of logistics.

Structure of zones and assignment of equipment categories and EPL



Zones
Suitable categories
EPL

SEW-EURODRIVE does not offer units for zones 0 and 20.



The boundaries and names shown and the designation used on this map do not imply official endorsement or acceptance by the United Nations.
Dotted line represents approximately the **Line of Control** in Jammu and Kashmir agreed upon by India and Pakistan. The final status of **Jammu and Kashmir** has not yet been agreed by the parties.

HazLoc-NA®

ATEX

– China accepts Directive 94/9/EC (ATEX)
– Russia accepts Directive 94/9/EC (ATEX) in conjunction with GOST-R/-TR

IECEx

Overview of directives and standards

94/9/EC (ATEX)

Area of application

Directive 94/9/EC specifies regulations for explosion protection for all types of devices for the European market.
This directive applies to gearmotors and motors and has been in effect since 1 July 2003 without restrictions. Other European countries, such as Switzerland, have also adopted this regulation.

SEW-EURODRIVE was among the first manufacturers to offer the matching gear units and motors when this directive was introduced.
At present, these are the EDR.. series motors.

Revision of the standards

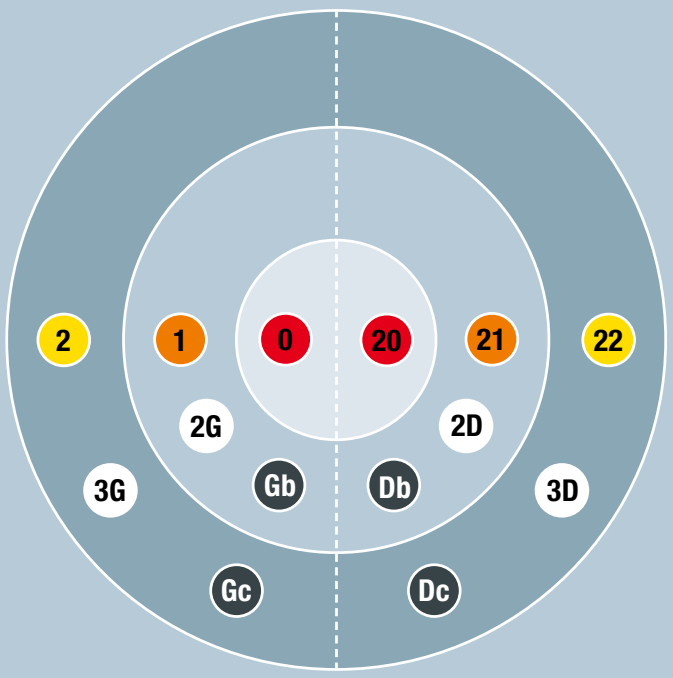
New designations have been implemented internationally (IEC) with the revision of the explosion protection standards, the so-called EPL (Equipment Protection Level). In parallel to the explosion protection categories, this EPL specifies the applicability of an equipment according to the zone categorization for potentially explosive atmospheres.

With the revision of EN 60079-0:2009, the EPL were also adopted to European standards.
With the revision of the EN 60079 standard series, dust explosion protection has been integrated into this set of standards as part 31.
Equipment group III for dust has been implemented as part of this integration comparable to group II for gas.

Structure of zones and assignment of equipment categories and EPL

Gas

Dust



Equipment of category 2 may also be used in areas where category 3 is required.

- Zones
- Suitable categories
- EPL

SEW-EURODRIVE does not offer units for zones 0 and 20.

IECEx

The IECEx certification agreement serves as a worldwide platform for the mutual recognition of test results for obtaining certification or approval for explosion-proof electrical equipment.
The agreement is based on the "IECEx 01 IEC Scheme for the Certification to Standards for Electrical Equipment for Explosive Atmospheres (IECEx Scheme) – Basic Rules" and "IECEx 02 IEC Scheme for the Certification to Standards for Electrical Equipment for Explosive Atmospheres (IECEx Scheme) – Rules of Procedure". Both documents as well as other IECEx documents are available free of charge in the IEC webstore at **www.iecex.com**.

Objectives of the IECEx agreement
The agreement serves to promote international trade with explosion-proof electrical equipment by eliminating double tests and certifications, which were required so far.
The basis of the agreement is to verify the adherence of IEC standards for electrical equipment in potentially explosive atmospheres in an internationally recognized form.
It must be ensured that these standards are implemented by test laboratories (ExTL, Ex-Testing Laboratories) and certification bodies (ExCB, Ex-Certification Bodies) so that the assessment of a product provides the same result with regard to fulfillment of the standards in any country.
Products from SEW-EURODRIVE are certified by the PTB as ExCB and are available in EPL .b and .c.

HazLoc-NA®
(Hazardous Location – North America)

Unlike ATEX and IECEx where the areas in which a potentially explosive atmosphere may be present are divided into zones (0, 1, 2, 20, 21, 22), NEC500 and C22.2 make a distinction between division 1 and division 2 as well as between class I for gas and class II for dust. Products from SEW-EURODRIVE for the North American market for use in potentially explosive atmospheres in division 2 are certified by CSA and bear the respective logo.

The CSA C/US mark is relevant for the North American market. It certifies that a product has been tested and meets applicable standards for safety and/or performance, including the applicable standards written or administered by the

- American National Standars Institute – ANSI,
- Underwriters Laboratories (UL),
- Canadian Standars Association (CSA),
- National Sanitation Foundation International (NSF),
- and others.

CSA marks are used and accepted by many manufacturers, retailers, regulators and inspectors in the electrical, gas, building and plumbing fields across the U.S.A. and Canada.

You find all the technical data of explosion-proof drive technology “made by SEW-EURODRIVE” in chapter “Technical data”.

Services

Our service portfolio:
As individual as your requirements

For decades, SEW-EURODRIVIE has been standing for quality, worldwide availability and short delivery times of drive technology. With our solution expertise and comprehensive range of pre-sales and after-sales services, we face the future challenges of the markets and, what is most important, meet the individual requirements of our customers.
Test SEW-EURODRIVE and take us at our word:

DRIVE BENEFITS

DRIVE ACADEMY®

DriveBenefits
Optimize your entire value creation chain: You can combine the DriveBenefits modules individually and in this way contribute to creating your own customized process solution.

DriveAcademy®
The central training institute of SEW-EURODRIVE not only provides training to our employees but also offers product training courses and consulting services to customers and business partners – at many SEW locations all over the world.

CDS® – Complete Drive Service
For SEW-EURODRIVE, service is best described by proximity. Our service experts at our 24-hour service hotline are available seven days a week.

Support
You need support with your energy management and are looking for comprehensive energy consulting services? You need operating instructions or the address of a contact near you? You find answers to these and many more questions at **www.sew-eurodrive.com**. You can also download the apps of SEW-EURODRIVE from this site free of charge.

CDS® – Complete Drive Service

➡ **www.sew-eurodrive.com**

DriveBenefits – Customized process solutions for your entire value creation chain

DriveBenefits from SEW-EURODRIVE offer a variety of practice-oriented possibilities to accelerate processes in every value creation phase, to simplify these processes, and to handle them in a cost-optimized manner. Selecting the suitable DriveBenefit modules and combining them to form an overall concept will give you sustainable benefits.

Overview of benefits

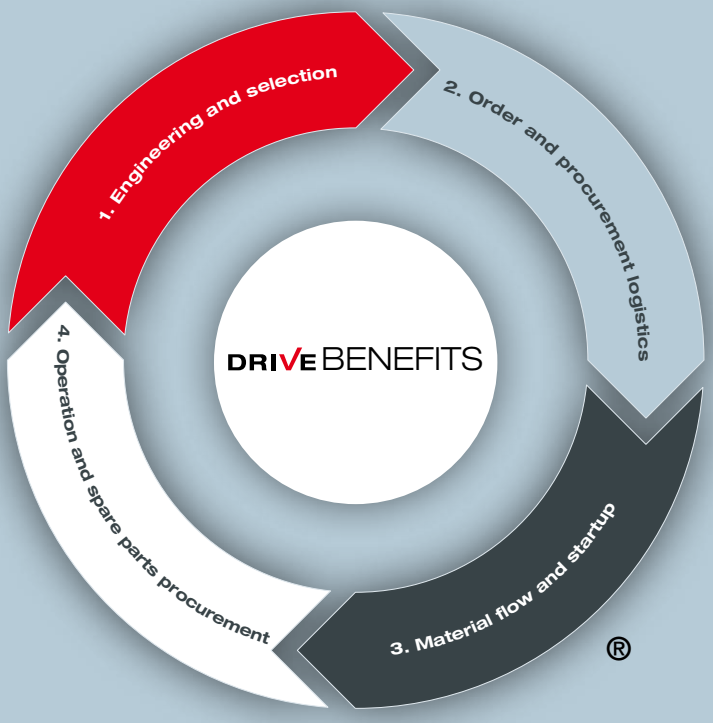
- Measurable cost savings
- Less expenditure of time
- Increased process safety
- Increased efficiency
- Enhanced process automation

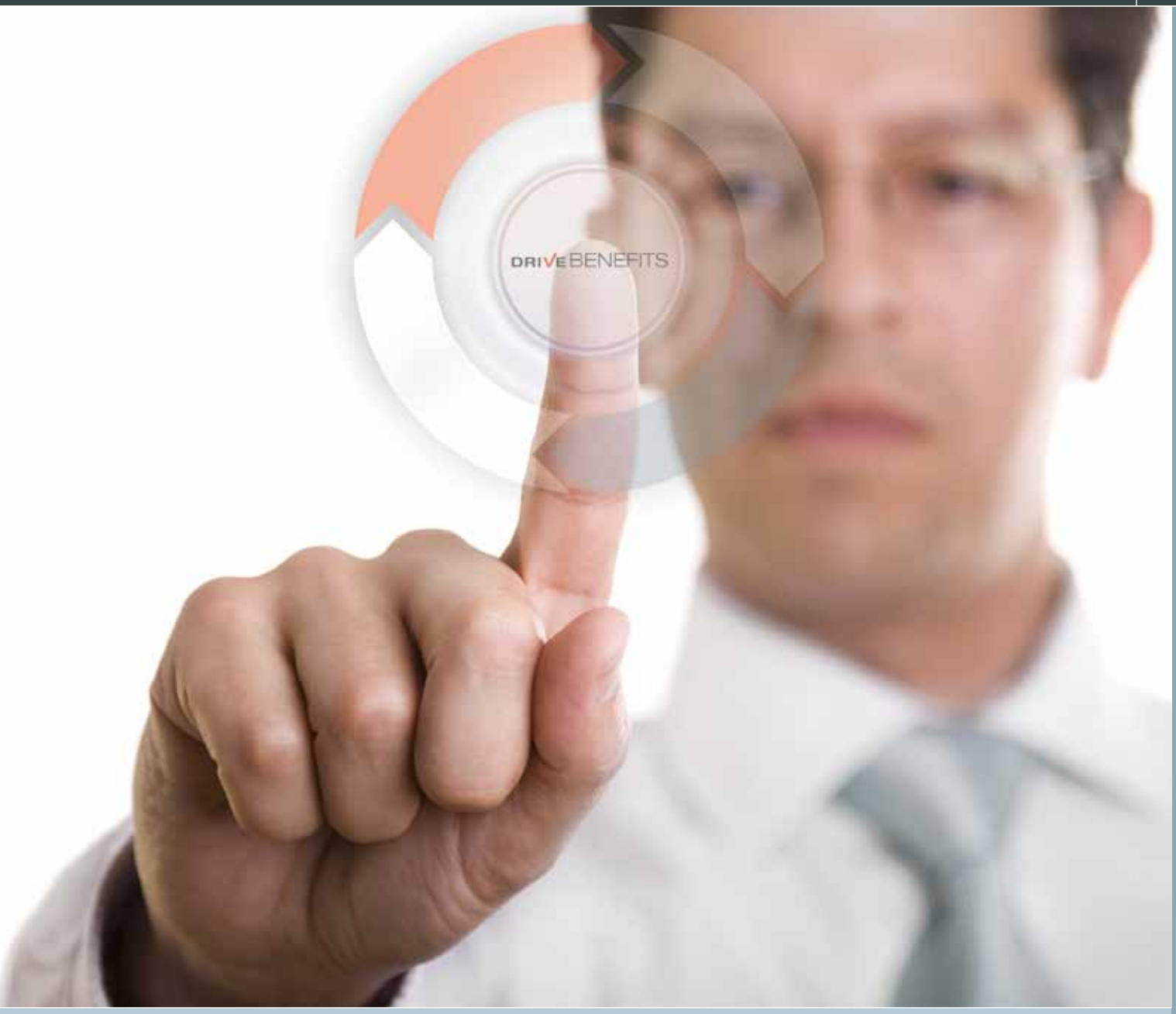
New DriveBenefits modules available for you

- Efficient variant management with new functions in the DriveConfigurator
- Compact overview of technical product data with the SEW Product ID

Consistent and integrative

DriveBenefits – an integrative and comprehensive portfolio from which the matching modules can be selected in a flexible manner to suit the various requirements.





Overview of DriveBenefits modules

1. Engineering and selection
- DriveConfigurator*
- DriveCAD*
- SEW Workbench*
- EPLAN® macros

2. Order and procurement logistics
- Electronic data interchange – EDI
- Customized procurement logistics
- Electronic invoicing

3. Material flow and startup
- Order-specific documentation*
- Order tracking*
- Intelligent material flow – DriveTag

4. Operation and spare parts procurement
- Ordering spare parts*
- Inquiring replacement drives*
- SEW Product ID

* Available via the DriveGate® customer portal

You find more information on DriveBenefits at www.sew-eurodrive.com/drivebenefits and in the "DriveBenefits Customized Process Solutions" brochure.

Engineering and selection

DriveConfigurator, SEW Workbench, DriveCAD, and EPLAN® macros enable planners and designers to conveniently plan their systems by offering them a wide selection of CAD models in 2D or 3D. These DriveBenefits modules make your daily work easier already before placing an order.

DriveConfigurator

The DriveConfigurator is the ideal tool for selecting drive components. Its clear structure and guided operation lets customers not only find a suitable drive quickly and easily but also enables them to reduce product variants using the variant management.

Advantages

- Advanced powerful functions to efficiently reduce the number of variants
- Simple and guided online configuration of drives
- Convenient transfer of CAD models to your CAD environment
- Direct online inquiry
- and much more

Order and procurement logistics

Purchase is where profit is made. This statement also holds true for the process world. Benefit from our expertise in the introduction of electronic data interchange, electronic dispatch of invoices, or customized procurement logistics.

This is where potential can be tapped. Make use of the resulting advantages and save precious time, avoid mistakes in order processing, and increase your efficiency.

Electronic data interchange (EDI)
Easy, direct, intelligent! Electronic data interchange (EDI) lets you handle your entire order management with SEW-EURODRIVE in an electronic manner – all the way from placing your order to delivery and invoicing.

Advantages
- Increased process safety
- Cost saving potential for order processes
- Competent advice also in the event of connection via external EDI platforms
- and much more

Material flow and startup

The DriveBenefits modules “order processing”, “order-specific documentation” and “DriveTag” offer a variety of options for accelerating material flow processes and startup, and make them both easier and more efficient. If you want to be up to date on your orders or benefit from customized documentation packages, our offer is the perfect solution for you.

DriveTag

DriveTags are functional labels with bar codes printed on them. These labels are attached to drives or pieces of packages. Using DriveTag, you can automate your goods incoming processes and optimize the internal material flow.

Advantages

- Quick and efficient sorting of deliveries using a barcode scanner
- Simple product identification throughout the entire product life cycle
- Less expenditure of time and reduced error rate
- and much more

Operation and spare parts procurement

With the process solutions offered through DriveBenefits, SEW-EURODRIVE goes far beyond the mere delivery of products. Directly ordering spare parts or inquiring replacement products, requesting relevant product information with the SEW product ID – all this is no problem with DriveBenefits. Convince yourself!

Ordering spare parts
Obtain spare parts quickly and reliably. How? Just enter the serial number of your drive to access a parts list with all the parts of your drive. All you have to do is select the required parts and submit your request!

Advantages
- Convenient online ordering
- Efficient spare parts procurement
- Fast processing by entering the serial number
- and much more

DriveGate®
The DriveGate® customer portal lets you retrieve various DriveBenefits modules and other online solutions, such as the SEW Newsletter, in a quick and convenient manner. Customers all over the world can use DriveGate® free of charge, 24 hours a day. All they have to do is register once at www.drivegate.biz/com/.

Energy consulting:
Our support for your energy management

An important basis of our corporate philosophy is to provide our customers with optimally matched components and individual solutions. This principle of SEW-EURODRIVE also applies to services. “Energy consulting” is a new and comprehensive service that is above all a customizable service.

The key to success?
Systematic energy efficiency

The secret of success is simple: Recognize and realize the right strategy at the right time. To being able to reduce energy costs in the long term, you have to know your energy saving potential and detect hidden energy consumers. Only then can analyses and calculations be made and the results be verified in measurable figures. Take us at our word and test the energy consulting services of SEW-EURODRIVE.

Your benefits:
- Achieve more cost transparency
- Increase process efficiency
- Contribute sustainably to reducing CO_2 emissions
- Certified consumption analysis

Energy consulting – overview of services

1. Identifying and evaluating the potential for saving energy
- Collecting application-specific customer data
- Consulting on normative and legal requirements
- Identifying energy saving potential
- Prioritizing measures (package of measures)

2. Developing an optimization concept
- Detailed analysis and determining the exact saving potentials
- Defining the necessary investment
- Calculating the profitability
- Documenting the consultation results (optimization concept)

3. Verifying the energy saving solution in addition to the technical implementation of the measures
- Checking the result by verifying the predicted saving potentials (performance review)
- Suggesting additional measures for improvement, if necessary


Energy report

Customer data

Calculation bases

Drive data

Energy demand analysis

TÜV SÜD certification "Energy-efficient plant technology"

With the certification "Energy-Efficient Plant Technology" for the SEW energy report, TÜV SÜD (German Technical Control Board) documents the correct analysis of the energy consumption of individual drive components. The determined energy demand, energy costs and CO_2 emissions are the basis for generating a customized, energy-efficient drive solution.

Set the course for an energy optimized future in your company and contact us for a non-binding energy consulting meeting.

Safety services made by SEW-EURODRIVE

Many different aspects come into play when designing safe machines and systems. SEW-EURODRIVE offers certified safety components and the relevant safety characteristics according to EN ISO 13849-1 in the form of data sheets and a SISTEMA library. This ensures consistent validation of the safety functions. Modular safety service packages certified by the German Technical Association (TÜV) round out the services of SEW-EURODRIVE.


Zertifikat / Certificate

FSSP (TÜV Rheinland)
Functional Safety Service Provider (TÜV Rheinland)

TÜVRheinland

SEW-EURODRIVE has successfully implemented every phase of the safety life cycle together with the German Technical Inspection Association (TÜV). In addition to functional safety components, our safety services related to the Machinery Directive include the configuration and validation of safety functions and startup. Certified SEW staff with years of experience offer assistance and consulting for questions related to risk assessment and the CE conformity process.

Advantages that will impress anyone with practical experience in this field

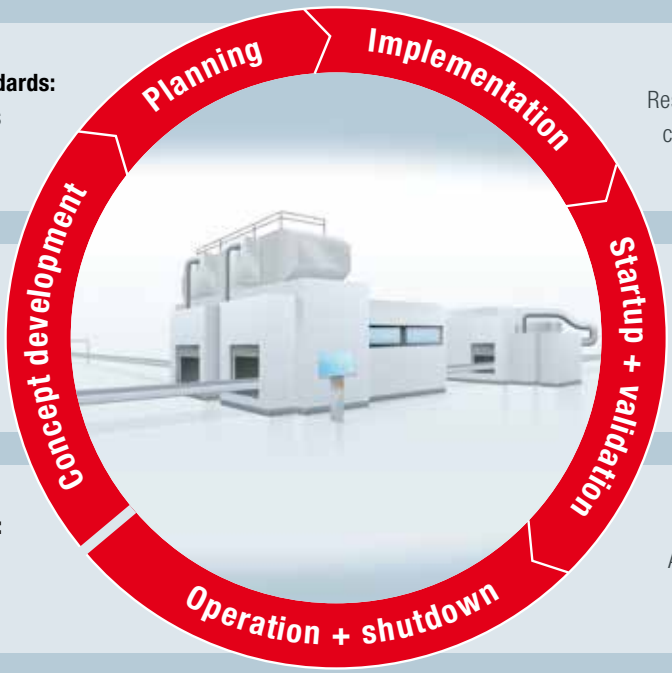
- One partner for the entire product life cycle of your machine or plant
- Quality and legal security due to comprehensive functional safety management and observance of the required steps
- Modular and individually adaptable services for safe drive technology
- Support from certified SEW staff with years of experience
- Professional consulting reduces the need for modifications or reworks

Complete solutions of certified safety services from one source!

Research for directives and standards:
Researching the applicable directives and standards for the product

Risk assessment:
Support for the preparation of risk assessments

Development of a safety concept:
Developing a safety concept during the planning stage



Validation of safety functions:
Researching safety characteristics and calculating the PL of safety functions according to EN ISO 13849-1+2

Startup:
Starting up the system including safety functions on site

CE support:
Advice on necessary measures in the run-up to the project planning stage

Important:
Compliance with EN ISO 13849-1 has become mandatory since January 1, 2012!

CDS® – Complete Drive Service
The modular service concept

CDS® – Complete Drive Service from SEW-EURODRIVE offers system operators a complete range of services for all aspects relevant to drive technology. CDS® reliably meets all the service requirements of machines and systems throughout the entire product life cycle of the drive components and enables optimal planning and long-term calculations.

Green light for your production

The individual CDS® system modules can be combined freely to form an individual service package. In this way, we provide exactly the modules you need to meet your specific requirements. The result will be higher system availability with downtimes reduced to a minimum. In other words, green light for your production.

The CDS® system modules – Our services at a glance

24-hour service hotline
Permanent availability (24 h/7 days)
of our SEW experts

Installation consulting service
Visual inspection of the installation situation
of all drive engineering components

Startup service
On site startup and
production support

Application programming service
Creating customized drive-component
software

Inspection and maintenance service
Complete package for permanent and
plannable drive availability

Repair service
Maintenance and overhaul work
of components from SEW-EURODRIVE
and products of other manufacturers

Spare parts service
Original parts of the manufacturer –
individual parts or the entire set

Express assembly service
Quick provision of complete gear units,
motors, gearmotors, and electronics

Industrial gear unit service
Complete service from one supplier also
for large gear units

Collection and delivery service
Entire logistics coordinated

Retrofit service
Individually matched successor and
retrofit packages

Condition monitoring service
Systematic condition analysis using
the latest measuring methods

CDM® maintenance management
Comprehensive concept:
Entire drive technology is collected >
central web database >
support for drive technology

Training service
Customized training on site
or at SEW-EURODRIVE

DriveAcademy® – Training made by SEW-EURODRIVE

As the central educational institute at SEW-EURODRIVE, the DriveAcademy® offers a flexible and versatile range of training courses that meet the highest standards. In an ideal learning environment and with state-of-the-art equipment, the DriveAcademy® optimally prepares your employees for the professional challenges to come.
Instead of at the DriveAcademy®, the training courses can also be carried out at our Drive Technology Center in your vicinity or directly on your premises.

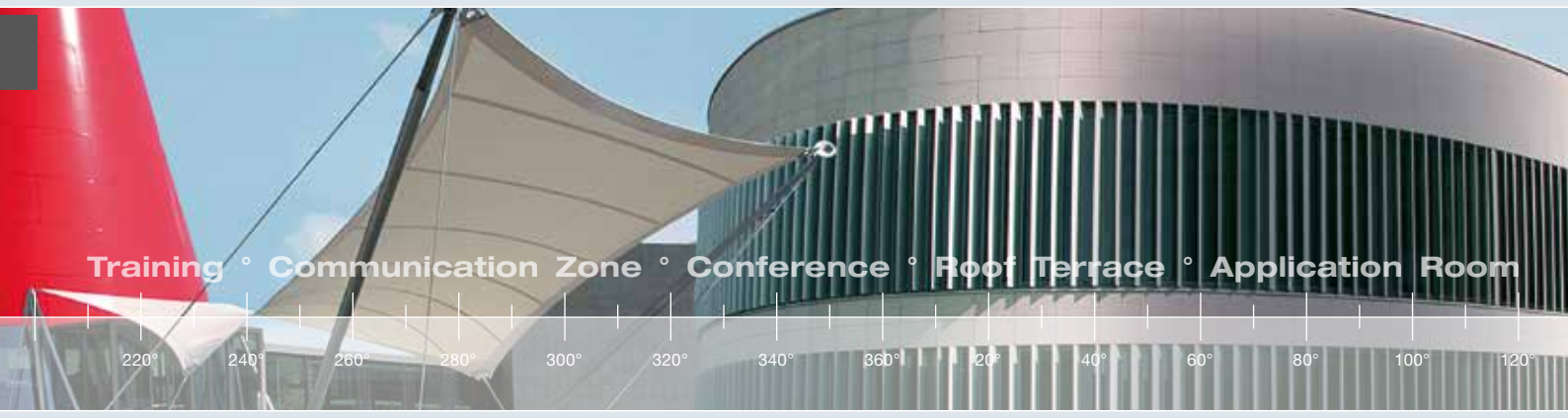
What the DriveAcademy® offers

- Product training, technical training for project planners, design engineers, planners, service engineers, startup engineers, repair staff, as well as trainers and teachers
- Product training covering all relevant topics for SEW employees worldwide
- Individual training and consulting by our WIEPROconsulting experts both for customers and employees of SEW-EURODRIVE

Product training

Product training offered by the DriveAcademy® provides ideal conditions for hands-on experience with modern drive technology. The training courses are based on the latest methods for better learning success and they are customer-oriented to make the training more efficient.

Your benefits at a glance
- More efficient planning of systems
- Optimized system utilization
- Cost savings due to fewer system downtimes
- Standardized knowledge and working methods



WIEPROconsulting

The consideration of a company as a unit made up of technology, organization, economics and people marks the wholistic approach of WIEPRO-consulting, the in-house consulting services of SEW-EURODRIVE. Their focus is on the practice-oriented and continuous improvement of business processes.

Qualification is a central core element of the service portfolio of WIEPROconsulting. Specialized all-rounders hold basic training courses and method workshops in which knowledge is taught in the fields of production, assembly, logistics, and indirect areas – important fields as part of the value creation chain.

Mobile applications – Overview of SEW-EURODRIVE apps

SEW-EURODRIVE goes mobile: The apps from SEW-EURODRIVE let you easily have practical information and services available on your mobile phone. Whether you want to know more about the latest efficiency regulations or the CDS® service portfolio, you need trouble-shooting assistance or want to download technical data of your drive components, our new apps provide all this information. Convince yourself!

Apps from SEW-EURODRIVE:
- Simple operation
- Always available and up-to-date
- Ideal on-the-go solution
- Intuitive navigation

Available on the App Store

effiDRIVE®

SEW IE Guide

Use the IE Guide to obtain information quickly and easily about the following topics:
– Global energy efficiency regulations
– Potential energy savings and avoided CO_2 emissions
– Technical data of energy efficient motors

DriveBenefits

SEW Product ID

Whether you need specific documentation or want to visually check the mounting position, this app provides you with all the important information for you product. Just enter the serial number printed on the nameplate.

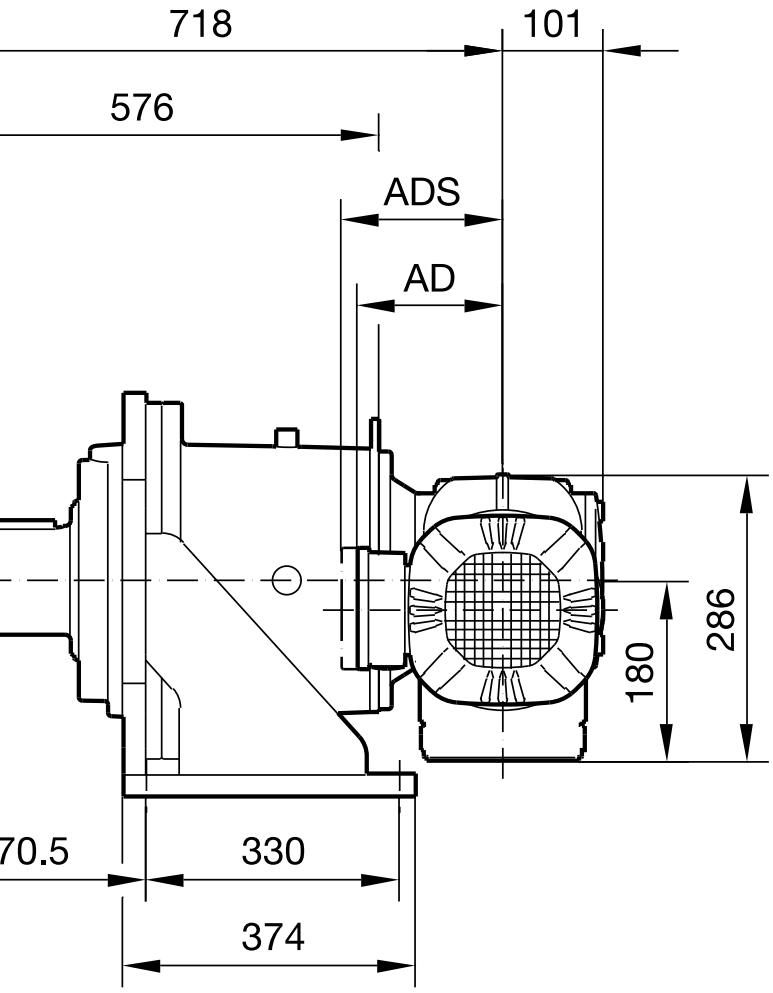
SEW Diagnostics

This app supports you quickly and conveniently in diagnosing drive inverter faults. When you enter the error code, you will obtain the possible causes of the failure and the matching solutions to solve the problem.

Service

SEW Service CDS®

This app provides you with a comprehensive overview of our entire service portfolio, which presently comprises 14 system modules. The app also shows you the nearest Drive Technology Center, Drive Center and Service Competence Center.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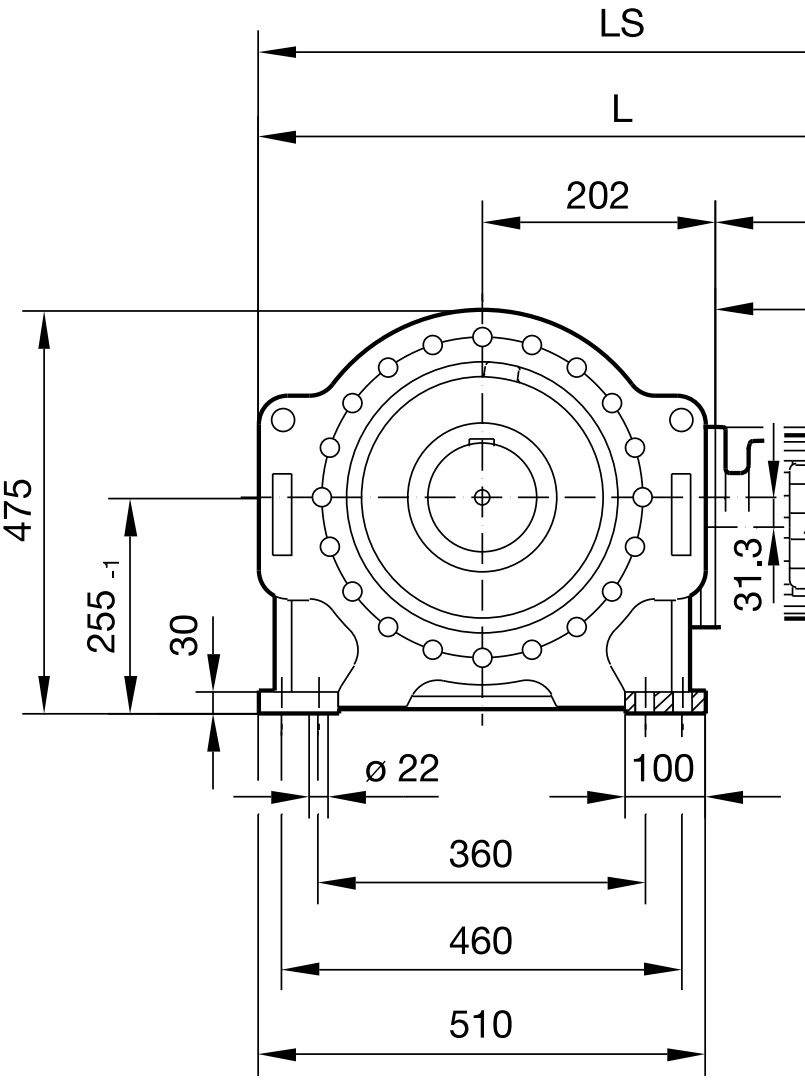
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HIER die Seite 10 mm abschneiden, damit das Register auf den nächsten Seiten sichtbar wird!!!

Standard gear units / standard gearmotors

Helical gear units / helical gearmotors (R)

RX series (single-stage)

Features	– Highly efficient helical gear units – High output speeds – Foot or flange mounted	
Gear unit reduction ratio	[i]	1.30 ... 8.65
Output torque	[Nm]	36 ... 830
Motor power range	[kW]	0.12 ... 45

R series (two and three stages)

Features	– Optimum ratio between performance and space requirements – Finely stepped sizes and gear ratios – Foot or flange mounted – Also available with reduced backlash	
Gear unit reduction ratio	[i]	3.21 ... 289.74
Multi-stage gear unit reduction ratio	[i]	90 ... 27001
Output torque	[Nm]	31 ... 18000
Motor power range	[kW]	0.09 ... 160

RM series (two and three stages)

Features	– RM gearmotors with extended output bearing hub – Specifically designed for agitating applications – Allows for high overhung and axial loads as well as bending moments	
Gear unit reduction ratio	[i]	4.29 ... 289.74
Multi-stage gear unit reduction ratio	[i]	134 ... 27001
Output torque	[Nm]	270 ... 18000
Motor power range	[kW]	0.12 ... 160

Parallel-shaft helical gear units / parallel-shaft helical gearmotors

F series (two and three stages)

Features	– Lean design for limited space – Also available with reduced backlash – Particularly suited for materials handling and process engineering applications – Available variants: - Foot or flange mounted - B5 or B14 flange - Solid shaft or hollow shaft - Hollow shaft with keyed connection, shrink disk, splining or TorqLOC®	
Gear unit reduction ratio	[i]	3.77 ... 281.71
Multi-stage gear unit reduction ratio	[i]	87 ... 31434
Output torque	[Nm]	87 ... 18000
Motor power range	[kW]	0.12 ... 200

Standard gear units / standard gearmotors

Helical-bevel gear units / helical-bevel gearmotors

K series (three stages)

Features	– Their high efficiency makes them energy-efficient right-angle drives – High-endurance gearing makes for high-torque, wear-free drives – Long maintenance-free service life – Also available with reduced backlash – Available variants: - Foot or flange mounted - B5 or B14 flange - Solid or hollow shaft - Hollow shaft with keyed connection, shrink disk, splining or TorqLOC®	
Gear unit reduction ratio	[i]	3.98 ... 197.37
Multi-stage gear unit reduction ratio	[i]	94 ... 32625
Output torque	[Nm]	125 ... 50000
Motor power range	[kW]	0.12 ... 200

NEW: 2-stage helical-bevel gear units of size K..19 + K..29

Features

- Used in many different industries and applications, e.g. in hoists (small loads) or material handling equipment
- Low-loss, two-stage design (helical/hypoid gearing)
- Gearing with infinite fatigue strength, which means the drive is almost wear-free
- Lightweight and compact design ➡ aluminum housing
- Can be combined with the complete range of motors from SEW-EURODRIVE
- Energy efficiency:
  - Gear unit efficiency: over 90% ➡ low energy consumption
  - Efficient gear units can be used with smaller motors ➡ compact and light overall drive
  - Motor energy efficiency classes from IE1 to IE4 can be realized
- Large number of variants ensures an optimum connection to the customer machine even in critical mounting situations

		Size K..19	Size K..29
M_{amax}	[N_m]	80	130
F_{Ramax}	[N]	4500	6000
Shaft height	[mm]	50	63
Solid shaft	[mm]	20	25
Hollow shaft with key KA	[mm]	20	25/30 (30 according to DIN 6885-3)
Hollow shaft with shrink disk KH	[mm]	20	25
Flange diameter KF	[mm]	120 / 160	160 / 200
Gear ratio	[i]	4.50 … 58.68	3.19 … 71.93

Standard gear units / standard gearmotors

Helical-worm gear units / helical-worm gearmotors

S series (two stages)

Features	– Significantly more efficient than plain worm gear units due to helical/worm combinations – Particularly low-noise – Available variants: - Foot or flange mounted - B5 or B14 flange - Solid or hollow shaft - Hollow shaft with keyed connection, shrink disk, splining or TorqLOC®	
Gear unit reduction ratio	[i]	6.80 ... 288.00
Multi-stage gear unit reduction ratio	[i]	110 ... 33818
Output torque	[Nm]	43 ... 4000
Motor power range	[kW]	0.12 ... 22

SPIROPLAN® right-angle gearmotors

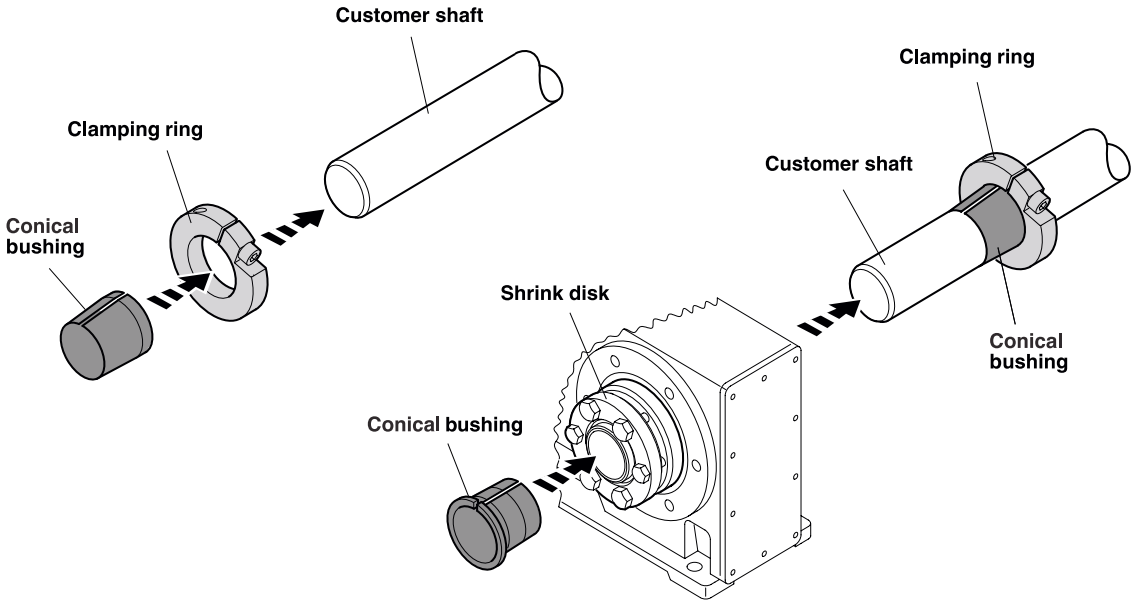
W series (one and two stages)

Features	– Robust right-angle gearmotors with SPIROPLAN® gearing, wear-free, very quiet running and lightweight – Material combination of steel on steel gearing – Particular tooth meshing ratio – Light 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 - B5 or B14 flange - Solid or hollow shaft	
Gear unit reduction ratio	[i]	3.20 ... 75.00
Output torque	[Nm]	12 ... 180
Motor power range	[kW]	0.09 ... 3.0

Accessories and options

TorqLOC® hollow shaft mounting system

Cost efficient	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 economical alternative to the previous hollow shaft with shrink disk, hollow shaft with key, and splined hollow shaft.
Simple	The drive can be installed and removed easily, even after long periods of operation. The drive is delivered with the matching bushing. The operator installs the clamping ring on the customer shaft and the drive can be mounted and fixed easily.
Economical	The TorqLOC® 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.
Flexible	Up to 4 different rated diameters can be adapted with one gear unit size.
Awards	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. SEW-EURODRIVE received the “Silver Award” for TorqLOC® in the category “Power Transmission”. The “Silver Award” was handed out at the National Plant Engineering Show in Chicago in March 2003.



Drives for electrified monorail systems

HWxx series drives for light loads

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

Type	Maximum torque [Nm]	Permitted wheel load [N]	Gear ratio	Shaft d x l [mm]
HW 10	20	2500	6.75 … 16.5	14 x 28
HW 30	70	5600	8.2 … 75	20 x 35 25 x 35

HKxx series drives for heavy loads

Features	
	– High efficiency due to the helical-bevel gear unit – Low energy consumption in connection with MOVITRANS® contactless energy transfer – Safe switching through coupling in the gear unit output stage

Type	Max. torque [Nm]	Permitted wheel load [N]	Gear ratio	Shaft d x l [mm]
HK 37	220	14500	13.08 … 106.38	25 x 35
HK 40	400	18500	12.2 ... 131.87	30 x 60 35 x 70
HK 50	600	25000	13.25 ... 145.14	45 x 90
HK 60	820	40000	13.22 ... 144.79	55 x 110

Aseptic gearmotors

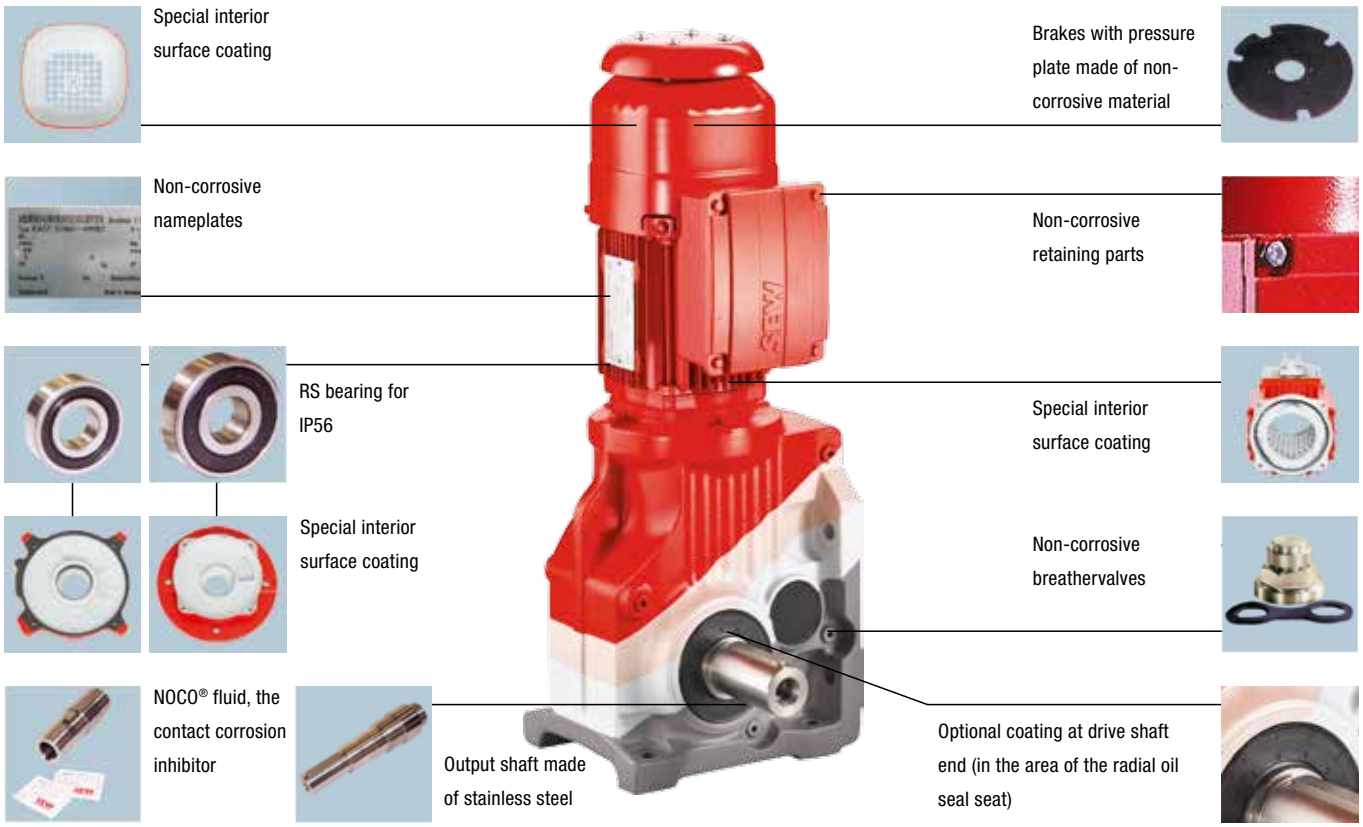
DAS series

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 – OS2 to OS4 surface protection (see also pages 96 + 97) – Motor protection TF thermistor in thermal class F, TH optional (thermo contact) – IS plug connectors			
Type	**Power [kW] in duty cycle**			
	S1 = Continuous duty	**S3 = Intermittent duty**		
		60%	**40%**	**25%**
DAS80K4	0.25	0.3	0.37	0.55
DAS80N4	0.37	0.45	0.55	0.75
DAS90S4	0.55	0.75	0.9	1.1
DAS90L4	0.75	0.95	1.1	1.5
DAS100M4	1.1	1.35	1.7	2.2
DAS100L4	1.5	1.85	2.3	3.0
Drive package ASEPTIC^{plus}	**For hygienic production areas** DAS aseptic motors with ASEPTIC^{plus} drive package: – IP69K degree of protection for motors (IP65 for brakemotors) – OS4 surface protection – Contour recesses filled with rubber – Double oil seals (where technically feasible) at the output made of FKM (Viton®) – Stainless steel breather valve – Pressure compensation membrane – 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, keys, shrink disk, etc., are made of stainless steel			

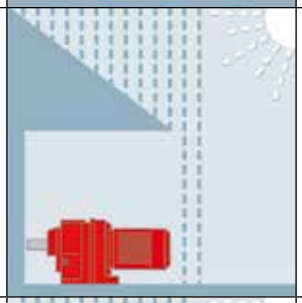
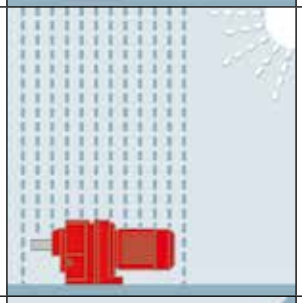
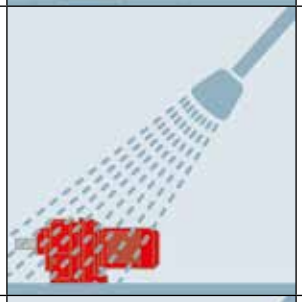
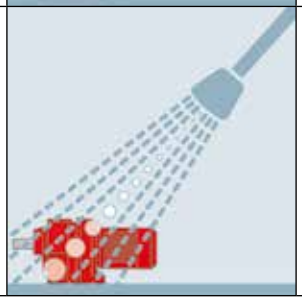
Corrosion protection (KS) and surface protection (OS) for all standard motors and gear units

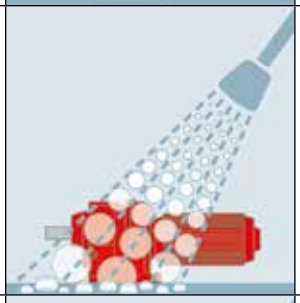
Features	SEW-EURODRIVE offers optional corrosion and surface protection measures for operating motors and gear units under special ambient conditions; in combination, they ensure optimum protection of motors and gear units.
KS corrosion protection	KS corrosion protection measures for motors: – All retaining screws that are loosened during operation are made of stainless steel – The nameplates are made of stainless steel. A top coating is applied to various motor parts – The flange contact surfaces and shaft ends are treated with a temporary anti-corrosion agent – Band clamps as additional measures for brakemotors
OS surface protection	Motors and gear units are optionally available with surface protection OS1, OS2, OS3 or OS4 instead of the standard surface protection. This makes the gearmotors well equipped for operation under various ambient conditions.

Measures for internal treatment and standard parts



Surface protection (OS)

Surface protection		Ambient conditions/sample applications
Standard		For machines and systems in buildings and rooms indoors with neutral atmospheres. – C1 (negligible)* **Sample applications:** – Machines and systems in the automobile industry – Conveyor systems in logistics areas – Conveyor belts at airports
OS1		For environments prone to condensation and atmospheres with low humidity or contamination, such as applications outdoors under roof or protective equipment. – C2 (low)* **Sample applications:** – Systems in saw mills – Hall gates – Agitators and mixers
OS2		For environments with high humidity or mean atmospheric contamination, such as outdoor applications subject to direct weathering. – C3 (moderate)* **Sample applications:** – Applications in amusement parks – Funiculars and chair-lifts – Applications in gravel plants – Systems in nuclear power plants
OS3		For environments with high humidity and occasionally severe atmospheric and chemical contamination. Occasionally acidic or caustic wet cleaning. Also for applications in coastal areas with moderate salt load. – C4 (high)* **Sample applications:** – Sewage treatment plants – Port cranes – Mining applications
OS4		For environments with permanent humidity or severe atmospheric or chemical contamination. Regular acidic or caustic wet cleaning also with chemical cleaning agents. – C5-I (severe)* **Sample applications:** – Drives in malting plants – Wet areas in the beverage industry – Conveyor belts in the food industry

Surface protection		Ambient conditions/sample applications
Aseptic motors of the DAS series OS2 – OS4 as option		For dry or humid hygienic areas with mean atmospheric contamination. Also suitable for particularly dusty environments. – C3 (moderate)* **Sample applications:** – Applications in clean rooms – Machines in the cosmetic and pharmaceutical industry – Systems for processing cereals and flour (without Ex protection) – Conveyor belts in cement plants
Aseptic motors of the DAS series with drive package ASEPTIC^{plus} 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. – C5-I (severe)* **Sample applications:** – Hygienic and aseptic conveyors in the beverage industry – Systems in cheese dairies and meat processing industries – “Splash zones” in the food industry
High Protection surface 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. **Sample applications:** – Hygienic and aseptic conveyors in the beverage industry – Systems in cheese dairies and meat processing industries – “Splash zones” in the food industry
Stainless steel gearmotor		For hygienic areas in the food and beverage industry with permanent humidity and extreme acidic and caustic wet cleaning using chemical cleaning agents. **Sample applications:** – Hygienic and aseptic applications of all types – Systems in cheese dairies and meat processing industries – Food processing machines for the North American market

* According to corrosivity categories of DIN EN ISO 12944-2

Stainless steel gearmotors

Stainless steel gear units

Features	– For applications in areas subject to frequent cleaning: - Intralogistics - Hygienic applications - Food and beverage industry - Pharmaceutical industry - Permanently humid environments – Long life and low maintenance – Efficiency-optimized gear units – Available as KES37 helical-bevel gearmotors and RES37 helical gearmotors – High-quality steel is used – Easy-to-clean surface thanks to special housing design – Highly resistant against acids and alkaline solutions – Recesses where dirt and liquid can accumulate were eliminated as far as possible

Type	Max. output torque [Nm]	Gear unit reduction ratio [i]
KES37	200	3.98 … 106.38
RES37	200	3.41 … 134.83

Stainless steel motors for direct mounting

Features	– Compact and space-saving as directly mounted gearmotor – The entirely stainless steel design efficiently prevents all forms of corrosion – Directly mounted stainless steel motors are designed without fan so they can be cleaned easily and reliably – IEC and NEMA adapters, also made of stainless steel, allow for variable motor mounting
Power [kW]	0.37 … 0.75 (Higher power ratings for adapter mounting on request)

Explosion protection

Standard gear units / standard gearmotors according to ATEX and IECEx

Features	– EDRE.. motors meet the IE2 efficiency class according to IEC 60034-30 making them suitable for use worldwide – Compliance with efficiency levels required in many countries according to the local MEPS requirements – The gearmotors/brakemotors meet the requirements of EU Directive 94/9/EC, IECEx, and soon also of cCSAus – Available as gearmotor/motor in IECEx according to EPL Gb and Db as well as Gc and Dc – Available as gearmotor/motor in ATEX in categories 2G, 2GD and 3GD, 3D for zones 1/21 and 2/22 – In catagory 3 also available as brakemotor – SEW-EURODRIVE has been audited and certified to 94/9/EC – EDRS.. and EDRE.. motors as well as SEW-EURODRIVE have been audited and certified by PTB according to IECEx “Certified Equipment Scheme” with ExTr, QAR and CoC; the certificates are available at http://iecex.iec.ch – Operation on a frequency inverter, also in the field-weakening range, for categories 2 and 3, and EPL.b and c respectively – Approvals for the motor were performed according to the latest European standards applicable to explosion protection: General requirements IEC/EN 60079-0, gas IEC/EN 60079-7, IEC/EN 60079-15 and dust IEC/EN 60079-31 – Compliance with the internationally applicable Equipment Protection Level EPL – EDR.. motors comply with the most important standards and meet IEC motor standard 60034 – Gear units according to ATEX meet standards EN 13463-1, 5 and 8 – Same compact and power-oriented characteristics as the standard drives

Gearmotor performance range

Category / zone	Type	Power range [kW]
II3G T3 II3D IIIB – IIIC / 120 °C / 140 °C Zone 2 / 22	Helical gearmotors R..II2GD.EDR../3GD* Parallel-shaft helical gearmotors F..II2GD.EDR../3GD* Helical-bevel gearmotors K..II2GD.EDR../3GD*	DR 63**: 0.12 ... 0.25 EDR 71 – 225: 0.25 ... 45 DVE 250 – 280*: 55 ... 75
	Helical-worm gearmotors S..II2GD.EDR../3GD*	DR 63**: 0.12 ... 0.25 EDR 71 – 200: 0.25 ... 22
	SPIROPLAN® gearmotors W..II2GD.EDR../3GD*	DR 63**: 0.12 ... 0.25 EDR 71 – 132: 0.25 ... 4
II2G T3 II2D IIIC / 120 °C Zone 1 and 21	Helical gearmotors R..II2GD.EDR../2GD* Parallel-shaft helical gearmotors F..II2GD.EDR../2GD* Helical-bevel gearmotors K..II2GD.EDR./2GD*	eDR 63**: 0.12 ... 0.25 EDR 71 – 225: 0.25 ... 37
	Helical-worm gearmotors S..II2GD.EDR../2GD*	EDR 71 – 200: 0.25 ... 22
	SPIROPLAN® gearmotors W..II2GD.EDR../2GD*	EDR 71 – 132: 0.25 ... 4

* Motors are labeled as follows: 3GD for ATEX / 3GD-c for IECEx, 2GD for ATEX / 2GD-b for IECEx (IECEx: Explosion-proof gear unit design not mandatory)

** According to ATEX only

Motor performance range

Category	Zone	Type 4-pole	IE class	Power range [kW]
II3G T3	2	DR 63*	–	0.12 ... 0.25
		EDRS 71 – 80	IE1**	0.25 ... 0.55
II3D IIIB – IIIC / T120 °C / T140 °C	22	EDRE 80 – 225	IE2	0.75 ... 45
		DVE 250 – 280*	–	55 ... 75
II2G T3	1	eDR 63*	–	0.12 ... 0.25
		EDRS 71 – 80	IE1**	0.25 ... 0.55
II2D IIIC / T120 °C	21	EDRE 80 – 225	IE2	0.75 ... 22
II2G T4	1	EDRS 71 – 80	IE1**	0.25 ... 0.55
		EDRE 80	IE2	0.75
II2D IIIC / T120 °C	21			

* according to ATEX only ** designation possible if required by customer

Explosion protection

Standard gearmotors according to HazLoc-NA®

MC170602

Features	– In addition to efficiency class IE2 according to IEC 60034-30, EDRE.. motors meet the requirements according to EISA 2007 and CSA C390 -10 for the North American market and in this way also meet the requirements of many other countries that recognize these standards – The motors are certified according to the class division system making them compliant with the explosion protection requirements of the North American market – Available as gearmotor/motor, type /CID2, for divison 2 class I for gas groups A, B, C and D – Available as gearmotor/motor, type /CIID2, divison 2 class II for dust groups F and G – Available as gearmotor/motor, type /CICIID2, for divison 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 holding function – SEW-EURODRIVE is certified according to UL and CSA – Operation on a frequency inverter, also in the field-weakening range, possible in both classes – The same compact and power-oriented features of the standard drives are provided – On request, the motors are also possible with gear unit according to ATEX (EU-RL 94/4/EC)

Gearmotor performance range

Division 2	Type	Power range [kW]
Class I Groups A, B, C and D T3 for operation on FI T3C for operation on the grid T3B/C brakemotor on the grid **Class II** Groups F and G	Helical gearmotors R..EDR../C..D2 Parallel-shaft helical gearmotors F..EDR../C..D2 Helical-bevel gearmotors K..EDR../C..D2	EDR 71 – 225: 0.18 ... 45
	Helical-worm gearmotors S..EDR../C..D2	EDR 71 – 180: 0.25 ... 22
	SPIROPLAN® gearmotors W..EDR../C..D2	EDR 71 – 132: 0.25 ... 4

Motor performance range

Division 2	Type 4-pole	IE class	Power range [kW]
Class I Groups A, B, C and D T3 for operation on FI T3C for operation on the grid T3B/C brakemotor on the grid **Class II** Groups F and G	EDRS 71 – 80 EDRE 80 – 225	IE1* High (IE2)	0.18 ... 0.55 0.75 ... 45

Operation on the inverter	– Operation of EDRE.. motors according to HazLoc-NA® on SEW frequency inverters has been thoroughly tested – Whether star, delta or double star, MOVITRAC® and MOVIDRIVE® inverters can be operated up to 3000 rpm – Operation is possible in class I as well as in class II in division 2 – Power reduction is not necessary – Operation on non-SEW inverters is also possible taking account of the derating curves up to a line voltage of 575 V

* designation possible if required by customer

Explosion protection

Explosion-protected asynchronous AC motors in combination with frequency inverters

Features	Overview of the advantages of this combination over asynchronous AC motors in explosion protection type “d” (EN 60079-1; flameproof enclosure): – High efficiency – Lighter weight – Shortest possible delivery times, high availability – Certified for operation with SEW frequency inverters – Suitable for pump and fan drives – Delivery from a single source, from a manufacturer that offers both components itself – Higher speeds Strict adherence to guidelines is particularly important in areas with potentially explosive air/gas and gas/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.
Categories	– The 4-pole motors from SEW-EURODRIVE are also suited for operation on frequency inverters according to ATEX, IECEx and HazLoc-NA®. – Category 2 and EPL b and c are certified by prototype testing – Motors according to HazLoc-NA® are certified by CSA – Brakemotors are available in category 3 and division 2 – The suitability for operation on inverters is confirmed on the nameplate – A second nameplate provides all the information required for operation

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

* also in the field-weakening range

Safe operation of motors on frequency inverters

Features

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

- **MOVITRAC® MC07B:** Compact and inexpensive frequency inverter for the power range 0.25 ... 75 kW. 3-phase line connection for AC 380 ... 500 V.
- **MOVIDRIVE® MDX60/61B:** High-performance drive inverter for dynamic drives in the power range 0.55 ... 250 kW. Great diversity of applications due to extensive expansion options with technology and communication options. 3-phase line connection for AC 380 ... 500 V.
- **MOVIMOT®** is the success product in decentralized drive engineering: the ingeniously simple combination of a gearmotor and a digital frequency inverter. MOVIMOT® category 3D are the synthesis of EDR.. motors and integrated frequency inverter. These types are specifically designed for use in areas with potentially explosive dust/air mixtures (zone 22) and are available in the power range of 0.25 kW to 3 kW, with or without brake, for supply voltages of 400 V to 500 V.

Project planning

Project planning is the basic requirement for the safe operation of explosion-proof motors. EDRS.. and EDRE.. motors meet the requirements for equipment intended for use in potentially-explosive areas as defined in directive 94/9/EC (ATEX 95), IECEx as well as HazLoc-NA® Div. 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.

Technical data

	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.

Standard AC motors and energy efficient motors of efficiency class IE

Features	– DR.. motors comply with all international standards and meet the new parts of the motor standard IEC 60034 – Independent of the required energy efficiency class, the whole range of DR.. motor options or variants is available for all efficiency levels – The modular motor system of the series DR.. offers: - Four energy-efficient motor variants that are marked with IE1, IE2, IE3 or IE4 according to IEC 60034-30 - A perfect brake concept, i.e. up to three different brake sizes for each motor size - Cost-optimized encoders integrated in the motor - Significant time savings thanks to optimized motor selection, ordering, and logistics processes

Efficiency class	**IE1 Standard Efficiency**	**IE2 High Efficiency**	**IE3 Premium Efficiency**	**IE4 Super Premium Efficiency**
Variant	DR**S..**	DR**E..**	DR**P..**	DR**U..**
Size	71 … 315	71 … 315	71 … 315	71 ... 100
Power rating 2-pole [kW]	0.18 … 9.2	0.75 … 9.2	0.75 … 5.5	–
Power rating 4-pole [kW]	0.18 … 225	0.25 … 225	0.75 … 160	0.18 ... 3.0
Power rating 6-pole [kW]	0.18 … 7.5	0.25 … 5.5	0.75 … 4	–
Frequency [Hz]	50, 60, 50/60	50, 60, 50/60	50, 60	50, 60
Energy efficiency marks	International: IE1 EU Europe: IE1 Switzerland: IE1 PR China: Grade 3 Japan: JIS	International: IE2 EU Europe: IE2 Switzerland: IE2 Turkey: IE2 Canada: EER USA: ee Brazil: ENCE PR China: Grade 2 South Korea: KEL Japan: JIS	International: IE3 EU Europe: IE3 Switzerland: IE3 Turkey: IE3 Canada: EER USA: ee Brazil: ENCE PR China: Grade 1	International: IE4 EU Europe: IE4 Switzerland: IE4 Turkey: IE4 Canada: EER
More information		For IE2, IE3 and IE4, please also note the motor variants of the DR…J motor (LSPM technology) on pages 110 + 111. Observe the changes for Europe according to Commission Regulation No 640/2009 and other planned changes to the energy efficiency law and regulations after January 1, 2015.		

The variant for use around the world. Efficient, powerful and usable worldwide

Features	– The DR.. motor combines many different variants within one drive. For this reason, the nameplate indicates 50/60 Hz and the elements required by specific countries – Due to the wide voltage range, the various voltages all over the world can be covered by one motor – This global motor from SEW-EURODRIVE complies with the design specifications IEC EN 60034, NEMA MG1, CSA C22.2, ABNT, NCh 3086 and energy efficiency regulations. Europe: Directive 2009/125/EC (ErP), USA: EISA 2007, Canada: EER, Brazil: PN 553, China: GB 18613 – Significant time savings thanks to optimized motor selection, ordering, and logistics processes

Excerpt from the technical description

Voltage	220 ... 242 / 380 ... 420 V or 380 ... 420 / 660 ... 725 V	254 ... 277 / 440 ... 480 V or 440 ... 480 / – V
Frequency	50 Hz	60 Hz
Power rating	– 2-pole: DRS..: 0.55 kW (0.75 hp) DRE..: 0.75 kW (1.0 hp) ... 7.5 kW (10 hp) – 4-pole: DRS..: 0.18 kW (0.25 hp) ... 0.55 kW (0.75 hp) DRE..: 0.75 kW (1.0 hp) ... 45 kW (60 hp) – 6-pole: DRE..: 0.25 kW (0.34 hp) ... 5.5 kW (7.5 hp)	
Energy saving information on the nameplate	– IE classification with the numerical efficiency for mains operation for 50 and 60 Hz – USA: ee mark (by DoE, Department of Energy, EISA 2007) – Canada: CSA (Energy Verified) mark (EER 2010) – China: CEL mark (GB 18613) – Brazil: ENCE mark	
Additional information on the nameplate	– According to US design specification NEMA MG1 - TEFC, TEBC, TENV depending on the type of ventilation - K.V.A. code, letter designation of the short circuit apparent power - M.L. (Mounting Location), four-digit code for UL-registered mounting location - Design code, code letters for startup and breakdown torque and startup current ratio – Temperature range, according to the Canadian design specification CSA C22.2, SEW-EURODRIVE approval up to + 40 °C, efficiency level to CSA C390 – Conformity and certification logo of - Europe: CE mark - USA: UR mark (by UL) - Canada: CSA mark - China: CCC mark, if necessary	

Different voltages and energy classes worldwide but nevertheless only one motor

	Europe 	Switzerland 	Turkey 	USA 	Canada 
Line voltage (3x ...)	400 V	400 V	380 V 400 V	480 V	480 V 575 V
Line voltage tolerance	± 10%	± 10%	± 10%	± 10%	± 10%
LIne frequency	50 Hz	50 Hz	50 Hz	60 Hz	60 Hz

Energy efficiency laws/regulations*

In effect	**June 16, 2011**	**July 1, 2011**	**February 4, 2012**	**December 20, 2010**	**January 1, 2011**
Mandatory	– IE2	– IE2	– IE2	– Premium (IE3) – High (IE2) from 160 kW	– Premium (IE3) – High (IE2) from 160 kW
Voluntary	– IE3	– IE3	– IE3	– Super Premium (IE4)	– Super Premium (IE4)
Comment	Various exceptions	Exceptions	Exceptions	Various exceptions	Various exceptions
In the future	**January 1, 2015**	**January 1, 2015**	**January 2, 2015**	**December 19, 2015**	
Mandatory	IE3 from 7.5 kW	IE3 from 7.5 kW	IE3 from 7.5 kW	Premium	
Comment	Jan. 1, 2017 > 0.75 kW IE3 mandatory Exceptions	Jan. 1, 2017 > 0.75 kW IE3 mandatory Exceptions	Jan. 1, 2017 > 0.75 kW IE3 mandatory Exceptions	few exceptions	
DR motor can be used IE2	Yes	Yes	Yes	Yes, as gearmotor and as flange motor	Yes (for 480 V), as gearmotor and as flange motor

Brazil 	**Australia/ New Zealand** 	**South Korea** 	**China** 	**India** 	**Chile** 
220 V 380 V 440 V	400 V 415 V	220 V 380 V 440 V	380 V	415 V	380 V 400 V
± 10%	± 5%			± 5%	± 5%
60 Hz	50 Hz	60 Hz	50 Hz	50 Hz	50 Hz

Since 2009	**Since 2006**	**July 1, 2010**	**September 1, 2012**	**Since 2002**	**Since 2011**
– ~IE2	– IE2	– IE2	– Grade 3 (~IE2)		D (~<IE1)
	– IE3		– Grade 2 (~IE3)	– IE1 – IE2 – IE3	C (~IE1) B (~IE2) A (~IE3)
Execeptions, special labeling	Exceptions	Special labeling	– from 0.75 kW special labeling	Voluntary agreement, special labeling	Exceptions, special labeling
	in discussion	**January 1, 2015**		**since June 2011**	
		IE3 ≥ 37 kW		IE2 voluntary	
		January 1, 2016 IE3 ≥ 15 kW January 1, 2017 IE3 ≥ 0.75 kW		January 30, 2014 IE3 voluntary	
Yes		In preparation	Yes	Yes	Yes

AC motors
DR...J (LSPM technology) / DRL / DRK / DRM

DR series:

Type DR…J (LSPM* technology)

*** Line Start Permanent Magnet Motor**

Features	– The synchronous motor variant **DR…J** (LSPM technology) is integrated in the modular DR motor system and is available in sizes 71S to 100L. The technology is based on the addition of permanent magnets underneath the squirrel cage of synchronous AC motors – One motor – three variants – three energy efficiency classes: DR…J motors are available in energy efficiency versions DRE..J (IE2), DRP..J (IE3) and in DRU..J (IE4) in LSPM technology – They are indicated by the character J following the length designation – Compared to a series motor with the same power rating, smaller sizes of the DR...J (LSPM technology) motors achieve the same energy efficiency class – Compact and sturdy design. – Motors run with the synchronous speed of the supply frequency – Slip-free speed control without encoder feedback – No rotor losses occur during operation: - High efficiency from IE2 up to IE4 - More compact design compared to standard asynchronous motors – DR…J LSPM motors can be operated on the grid or on frequency inverters 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 in the speed setting range (CT) without forced cooling fan

Technical data

Mains operation / 50 Hz

Rated speed: 1500 rpm

Series	Energy efficiency class	Size	Power P_N [kW]
DRU..J	IE4	71S ... 100L	0.18 ... 3.0
DRP..J	IE3	71S ... 100L	0.37 ... 4.0
DRE..J	IE2	71S ... 100M	0.37 ... 4.0

FI operation / 50 Hz

Constant torque at 300 ... 1500 rpm [CT 1:5]

Series	Energy efficiency class	Size	Power P_N [kW]
DRU..J	IE4	71S ... 100L	0.18 ... 3.0
DRP..J	IE3	71S ... 100L	0.37 ... 4.0
DRE..J	IE2	71S ... 100M	0.37 ... 4.0

FI operation / 87 Hz

Constant torque at 300 ... 2610 rpm [CT 1:8.7]

Series	Energy efficiency class	Size	Power P_N [kW]
DRU..J	IE4	71S ... 100L	0.25 ... 4.0
DRP..J	–*	71S ... 100L	0.55 ... 5.5
DRE..J	–*	71S ... 100M	0.55 ... 5.5

* IE2 and IE3 according to IEC 60034:30 applies only to a frequency of 50 Hz.

AC motors
DR...J (LSPM) / DRL.. / DRK.. / DRM..

DR.. series: DRL.. variant

Features	The **DRL..** variant has **high rated torques** and is suited for **high dynamic loads**. This means **DRL..** motors fulfill all the properties of an asynchronous servomotor.
Torque M_N [Nm]	2.5 ... 290
Dynamics package 1	~ 200% M_{dyn} / M_N; normal pinion shaft end for direct gear unit mounting
Dynamics package 2	~ 300% M_{dyn} / M_N; reinforced pinion shaft end for direct gear unit mounting
Sizes	71 … 225
Lengths	S, M, MC, L, LC
Speed classes [rpm]	1200, 1700, 2100, 3000

NEW DR.. series: DRK.. variant

Features	The DRK.. variant can be operated at a single-phase grids **220 V / 50 Hz, 230 V / 50 Hz, 220 V / 60 Hz or 230 V / 60 Hz**. The running capacitor installed in the terminal box allows for operation in demanding ambient conditions. SEW-EURODRIVE also offers ET56 and ER63.		
Sizes	Power [kW]	Frequency [Hz]	Energy efficiency class [1]
DRK 71S4	0.25	50	IE1
DRK 80S4	0.37	50	IE1
DRK 80M4	0.55	50	IE1
DRK 90M4	0.75	50	IE1
DRK 90L4	1.1	50	IE1
ET56	90 Watt		With running capacitor
ER63	90 / 120 / 180 Watt		Without capacitor

[1] according to IEC 60034-30 Ed2

DR.. series: DRM.. variant

Features	The **DRM..** variant is a 12-pole motor that can be operated continuously and thermally safe on a three-phase system even when the rotor is blocked. The designation **"torque motor"** is also maintained for DRM.. motors. Every torque motor is available with three rated torques. Consequently, all requirements of the application can be easily fulfilled – Many additional features of the modular system for AC motors are available – Can be combined with the 7-Series of the modular gear unit system from SEW-EURODRIVE
Standstill torque, rating 1 M_0 [Nm]	0.6 ... 3.6
Cyclic duration factor rating 1	S1, continuous duty

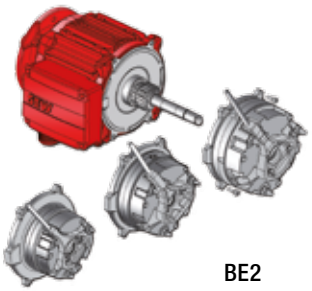
Standstill torque, rating 2 M_0 [Nm]	1.8 … 10.8
Cyclic duration factor rating 2	S3/15%, intermittend duty with a cyclic duration factor of 15%

Standstill torque, rating 3 M_0 [Nm]	1.5 … 8.7
Cyclic duration factor rating 3	S1, continuous duty with forced cooling fan

Sizes	71 … 132
Lengths	S, M, L
Frequency [Hz]	50, 60

Modular brake concept

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



Motor type	Brake type	W_{tot} [10^6J]	Braking torques [Nm]							
…	…	…	…							
DR..90	BE1	120	5	7	10					
	BE2	165		7	10	14	20			
	BE5	260				14	20	28	40	
DR..100	BE2	165			10	14	20			
	BE5	260				14	20	28	40	55
…	…	…	…							

Brake combination options

Depending on the braking torque or braking work required, the DR.. motor can be combined with the ideal BE brake. Brake mounting to motors size 90 and larger offers another special feature. The brake itself is mounted on a friction plate, which only has to be attached to the endshield. This means that the unit can be removed and changed, for a bigger or smaller brake, without opening the motor.

safetyDRIVE
Functional safety
FS

NEW FS safety-rated brake BE..(FS02) in horizontal operation up to PL d and in vertical operation up to PL c according to EN ISO 13849-1 with indication of the size

NEW Static and dynamic brake diagnostics for MOVI-PLC® to supplement the brake

Built-in encoders

Advantage		The built-in encoders are unique in the modular motor system of the series DR..! Instead of an external encoder mounted to the fan guard of the non-drive end, the encoder can now be installed between the endshield and the fan. This eliminates any extra length caused by mounted encoders. When used with the standard inverter MOVITRAC®, for example, in combination with the "simple positioning" application module, applications can be replaced that were previously implemented using rapid/creep speed changeover with initiator evaluation.
Built-in encoders		EI7C, EI76, EI72, EI71
Signal type		HTL (push-pull)
Periods per revolution	**A, B**	24 6 2 1
DR.. motor sizes		71 … 132
Connection		– Terminal strip in the terminal box – 8-pin M12 plug connector – 4-pin M12 plug connector
safetyDRIVE **Functional safety**		FS safety-rated encoder up to PL d according to EN ISO 13849-1 Encoder types: – ES7S / EG7S – AS7W / AG7W – AS7Y / AG7Y

Accessories

The accessories of the motor and brakemotor series DR.. are diverse and extensive.
They are combined in groups to provide a better overview.

Other options	Description	
Mechanical attachments	All variants that can be mounted to the DR.. motor using additional elements:	
	HF, HR	Manual brake release, lockable or automatic disengaging
	/RS	Backstop instead of a brake
	/MSW	MOVI-SWITCH®, integrated switching and protection function
	/MM..	MOVIMOT®, integrated frequency inverter
Thermistor/ temperature detection	All variants that are offered with additional elements in the winding:	
	/TF	3 temperature sensors (positive coefficient thermistor or PTC resistor) connected in series
	/TH	3 thermostats (bimetallic switches) in series
	/KY	1 temperature sensor KTY84-130
	/PT	1 or 3 temperature sensors PT100
Ventilation	All variants in conjunction with cooling/ventilation on the DR.. motor:	
	/V	Forced cooling fan, IP66, AC voltage range or DC
	/Z	Additional flywheel mass (flywheel fan)
	/AL	Metal fan
	/U	Non-ventilated (only without fan)
	/OL	Non-ventilated (closed B side)
	/LF	Air filter
	/C	Canopy

Bearings	All variants in conjunction with bearings for size DR..315:	
	/NS	Relubrication device
	/ERF	Reinforced bearing for high overhung loads (only with NS)
	/NIB	Insulated bearing (B-side)
Connection	All variants in conjunction with connection options:	
	/IS	Integrated plug connector
	/AS.. etc.	Installed plug connectors of all kinds
	/KCC	Terminal strip with cage clamps
	/KC1	C1-compliant connection for electrified monorail systems (VDI guideline 3643)
Encoders	All variants in conjunction with add-on encoders for various electrical interfaces:	
	/ES7.	Add-on encoders DR..71 ... 132
	/EG7.	Add-on encoders DR..160 ... 225
	/XV..	Mounting or mounting device of encoders that are not included in the SEW portfolio
Sensors	All variants in conjunction with condition monitoring:	
	/DUB	Brake monitoring for function and/or wear
	/DUV	Vibration monitoring
Other	Other variants:	
	/DH	Condensation drain hole
	/2W	Second shaft end on the motor/brakemotor
	/RI	Reinforced winding insulation for frequency inverter operation > AC 500 V

MOVITRAC® LTE-B frequency inverter

MOVITRAC® LTE-B

Features	– Standard version for installation in the control cabinet – Either degree of protection IP20/NEMA 1 (control cabinet) or degree of protection IP66 / NEMA 4x housing for field installation
Power supply	Power range [kW]
115 V / single-phase	0.37 ... 1.1
230 V / single-phase	0.37 ... 4.0
230 V / 3-phase	0.37 ... 4.0 (IP20) 1.5 ... 4.0 (IP66)
400 V / 3-phase	0.75 ... 7.5 (IP20 up to 11 kW)
Equipment	– 40 configurable parameters – Degree of protection IP20/NEMA 1 (control cabinet) – Degree of protection IP66/NEMA 4x housing for field installation – Integrated keypad for simple operation – Pull-out help card
Options	
DFx../UOH…	Can be connected to all available fieldbuses using the SEW gateway
LT BP-B	Parameter module for data transfer
BW...	Braking resistors
NF LT...	Line filters
ND LT...	Line chokes
HD LT...	Output chokes

MOVITRAC® LTP-B frequency inverter

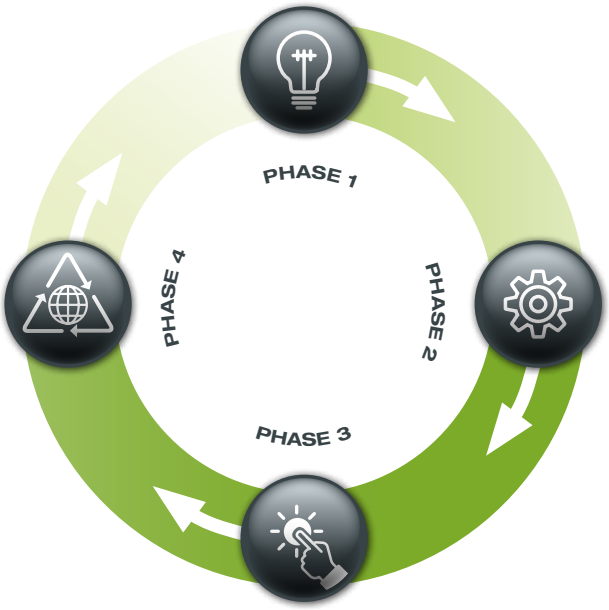
MOVITRAC® LTP-B

Features	– The all-rounder for field applications: connect – power – up and running! – Available in 6 sizes for the power range 0.75 … 160 kW
Power supply	Power range [kW]
230 V / 1-phase	0.75 ... 2.2
230 V / 3-phase	0.75 ... 90
380 V / 3-phase	0.75 ... 160
Equipment	– Degrees of protection: IP55 / NEMA 12k housing up to 160 kW – Optional: Sizes 2 and 3 also in IP20 / NEMA 1 housing – Energy saving function in the partial-load range – Sleep mode at speed 0 – Integrated EMC filter – Integrated help card – Adjusted overload capacity for the respective application
Options	
LT BG-C	Integrated keypad for easy operation
LT BP-C	Parameter module for data backup
USB11A	Interface adapter
DFx.. /UOH…	Gateways for connection to fieldbuses
BW..	Braking resistors
ND..	Line chokes
HD..	Output chokes
LTZ SB LTX	Shield terminal for IP20 / NEMA 1 housing

NEW: MOVI4R-U® frequency inverter

MOVI4R-U® in IP54

Features	– Optimum solution to fulfill the basic requirements in drive technology: simple speed control of asynchronous motors – Intuitive operating concept for short startup times and simple handling – High degree of protection IP54 – Modular design for quick unit replacement – Guaranteed integration into recycling systems
Power supply	Power range [kW]
1-phase / 220 ... 240 V	0.25 … 0.55
3-phase / 220 ... 240 V	0.25 … 0.55
3-phase / 380 ... 500 V	0.25 … 1.1
Features	– Frequency inverter with V/f control – Degree of protection of IP54 for wall mounting outside the control cabinet – Control plate with control knob as combination of adjusting knob and push button – Control: - via digital inputs - with the unit control plate – Setpoint selection - via analog input - fixed speed setpoint - manual mode with control plate – NEW: MOVI4R-U® is based on a sustainable product concept that allows for re-integration into material and raw material cycles. More informationare available at www.sew-eurodrive.com



Sustainable product life cycle of MOVI4R-U®

for optimum conservation of resources

Phase 1 **development**	– Selection of environmentally-friendly materials – Reduced material and raw material intensity – Reduced material diversity, separability
Phase 2 **manufacturing**	– Resource-efficient production and logistics concepts – Use of renewable energies – Low transport intensity due to local production – Environmentally friendly manufacturing processes
Phase 3 **use**	– High energy efficiency during the operating phase – Optimized product life: durable, maintenance-friendly, expandable – Possibility of technical upgrades (without unit replacement) – effiDRIVE® energy saving consultation for support
Phase 4 **recylcling**	– Design that is suitable for recycling – Recycling and reuse of component parts in materials and natural cycles – Environmentally sound disposal

MOVITRAC® B frequency inverters

MOVITRAC® MC07B

Features	– Compact and inexpensive frequency inverter for the power range 0.25 … 75 kW – Versatile unit concept – Extensive communication and expansion options – Extremely simple operation and startup
Power supply	**Power range [kW]**
230 V / 1-phase	0.25 ... 2.2
230 V / 3-phase	0.25 ... 30
400/500 V / 3-phase	0.25 ... 75
Standard version	IPOS [1] positioning and sequence control integrated as standard. The basic equipment of the standard version can be expanded by various options.
Technology version with application modules	In addition to the features of the standard version, the technology version offers access to application modules. Standardized control programs solve technically demanding drive tasks. Advantages of application modules: – High functionality and user-friendly operator interface – Only parameters needed for the application have to be entered – Guided parameter setting instead of complicated programming – Control of all movement functions is performed directly in MOVITRAC® MC07B
Energy efficiency	The energy balance of MOVITRAC® MC07B can be improved in various ways: – Process adjustment – Energy saving function – DC link coupling – Regenerative power supply from size 2 (5.5 kW, MOVIDRIVE® MDR regenerative module)
safetyDRIVE **Functional Safety**	As standard: Safe torque off (STO) and safe stop (SS1)[2] up to PL d according to EN ISO 13849-1 for 3x AC 230 V / 400 V units from 0.55 to 75 kW (optionally 230 V to 2.2 kW and 400 V to 4 kW)
Ex	For information on operating Ex motors with frequency/drive inverters, see pages 104/105.

[1] with reduced command set

[2] with suitable external control

Options for MOVITRAC® MC07B

Type designation	
Keypad **– FBG11B** **– DBG60B**	Standard keypads for parameter setting, data management, startup and diagnostics: – Pluggable user-friendly keypad – Plaintext keypad
Parameter module UBP11A	Simple data backup with possibility of series startup
Communication modules **– FSC11B / FSC12B** **– FSE24B**	 – SBus / RS485 / CANopen – EtherCAT®
Fieldbus connections **– DFE32B** **– DFE33B** **– DFE24B** **– DFP21B** **– DFD11B**	 – PROFINET IO – Modbus TCP / EtherNet/IP – EtherCAT® – PROFIBUS DPV1 – DeviceNet (CANopen integrated in the basic unit)
Input/output expansion **– FIO11B** **– FIO21B**	 – Analog module with setpoint input, analog output and RS485 interface – Digital module with 7 binary inputs and SBus connection
Setpoint adjuster MBG11A	Remote speed adjustment in the range of –100% to +100%
Interface adapter **– UWS11A / UWS21B** **– USB11A**	 – Signal conversion from RS232 into RS485 – Signal conversion from USB into RS485
Safe communication **– DFS11B** **– DFS21B**	 – PROFIsafe via PROFIBUS – PROFIsafe via PROFINET
Other safety options **– UCS..B** **– BST brake module**	 – Safe torque off: STO – Safe standstill: SS1/ SS2 – Safe stop: SOS – Safe movement: SLA / SLS / SDI – Safe positioning: SLP / SLI – Safe mounting: SCA / SSM – Safe brake control: SBC
Controller MOVI-PLC® basic **– DHP11B / UOH11B**	Control technology – Controller performance class basic: programmable in IEC 61131 with powerful libraries. The DHP11B option is available either integrated in the inverter or externally as compact controller in its own housing
Controller MOVI-PLC® advanced **– DHE21B/DHE41B** **– DHF21B/DHF41B** **– DHR21B/DHR41B**	Control technology – Controller performance class advanced: – MOVI-PLC® advanced, Ethernet interface – MOVI-PLC® advanced, Ethernet/PROFIBUS/DeviceNet interface – MOVI-PLC® advanced, Ethernet/PROFINET/Modbus TCP/ Ethernet/IP interface

MOVIDRIVE® B inverter

MOVIDRIVE® B

Features	– Powerful drive inverter for dynamic applications in the power range 0.55 to 315 kW – Great diversity of applications due to extensive expansion options with technology and communication options
Power supply	**Power range [kW]**
200/240 V / 3-phase	1.5 ... 37
400/500 V / 3-phase	0.55 ... 315
Standard version	The units are equipped with IPOS$^{plus®}$ integrated positioning and sequence control as standard and can be expanded by the options available. “00” at the end of the type designation indicates the standard version.
Technology version with application modules	In addition to the standard version, these units include the technology functions “electronic cam” and “internal synchronous operation”. The technology version is indicated by “0T” following the type designation. Technology version inverters also provide access to the application modules: Standardized control program for solving technically demanding drive tasks: Synchronized applications, positioning, flying saw, and winding. **Advantages of application modules:** – High functionality and user-friendly operator interface – Only parameters needed for the application have to be entered – Guided parameter setting process instead of complicated programming – No lengthy training, therefore quick project planning and startup – Control of all movement functions is performed directly in MOVIDRIVE® – Decentralized concepts can be implemented more easily
safetyDRIVE **Functional Safety**	MOVISAFE®: Integrated functional safety Standard design Safe Torque Off (STO) up to PL d according to EN ISO 13849-1
Ex	For information on operating Ex motors with frequency or drive inverters, see pages 104/105.

MOVIDRIVE® MDR regenerative power supply

MOVIDRIVE® MDR

Suitable for product series	– MOVIDRIVE® B: 0.55 … 315 kW – MOVITRAC® MC07B: 5.5 … 75 kW
Features	**Energy balance:** Braking energy from the load cycle is no longer converted into heat energy but is fed back into the grid. 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.
Regenerative power supply: **For central energy supply and recovery**	– Used for central energy supply and recovery to supply the connected inverters with energy – Several MOVIDRIVE® B inverters are connected in a DC link system – Energy is exchanged between the drive axes and excess braking energy is fed back into the power supply system
Regenerative power supply: **Function as a brake module** **(only MDR60A0150)**	– Using the regenerative power supply unit as a brake module means the connected inverters are not supplied with energy but only the braking energy is fed back into the power supply system – The DC link is supplied via the integrated input rectifier of the drive axis – Braking energy released during the application is fed back into the power supply system – Energy recovery is selected based on the braking energy released during the application; drive inverters are selected based on the motor load ➡ cost-optimized overall system – Example: - Power rating of drive inverters: 30 kW - Power rating of energy recovery: 15 kW
Benefits	– Reduced overall energy consumption – Reduced CO_2 emissions – Reduced energy costs – Cost-efficient installation – No investment 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 control cabinet space and expenditure for ventilation

MOVIDRIVE® MDR regenerative power supply

Power range 15 kW

Type designation	MDR60A0150-503-00 (size 2)
Features	Used for central energy supply and recovery / Used as brake module
Supply voltage	3x AC 380 V … 500 V
Nominal power [kW]	– 15 kW as central energy supply/regeneration – 22 kW as brake module
Line current I_{line} [A]	– 29 A as central energy supply/regeneration – As brake module: depending on regenerative load
Overload capacity	– As central energy supply/recovery: 150% for 60 s – As braking module: Peak braking power 37 kW for 50 s

Power range 37 kW

Type designation	MDR60A0370-503-00 (size 3)
Features	Used for central energy supply and regeneration
Supply voltage	3x AC 380 V … 500 V
Nominal power [kW]	37
Line current I_{line} [A]	66
Overload capacity	150% for 60 s

Power range 75 kW

Type designation	MDR60A0750-503-00 (size 4)
Features	Used for central energy supply and recovery
Supply voltage	3x AC 380 V … 500 V
Nominal power [kW]	75
Line current I_{line} [A]	117
Overload capacity	150% for 60 s

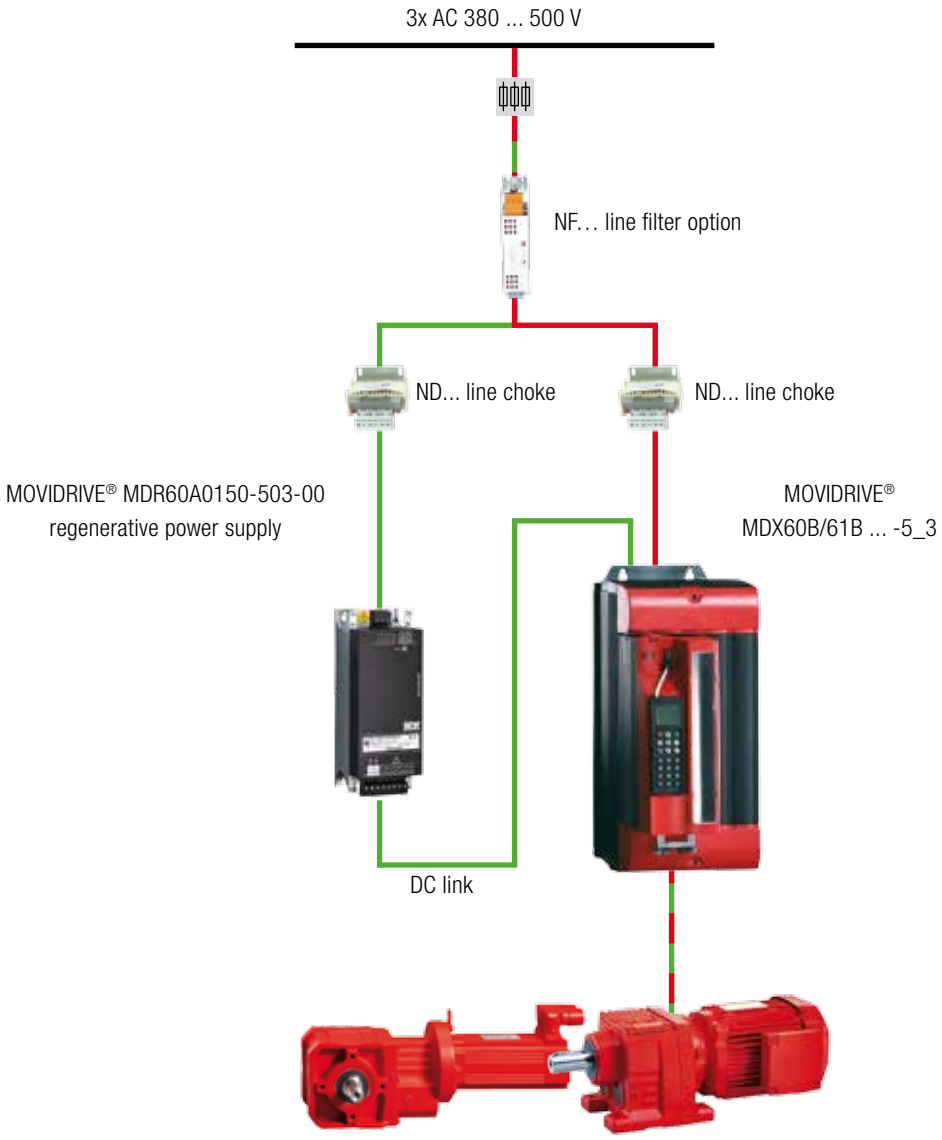
Power range 132 ... 160 kW

Type designation	MDR60A1320-503-00 (size 6)
Features	Used for central energy supply and recovery
Supply voltage	3x AC 380 V … 500 V
Nominal power [kW]	132 … 160
Line current I_{line} [A]	260 (at 160 kW)
Maximum continuous power	125%
Overload capacity	150% for 60 s

Regenerative power supply for MOVIDRIVE® B

Regenerative power supply: Function as a brake module

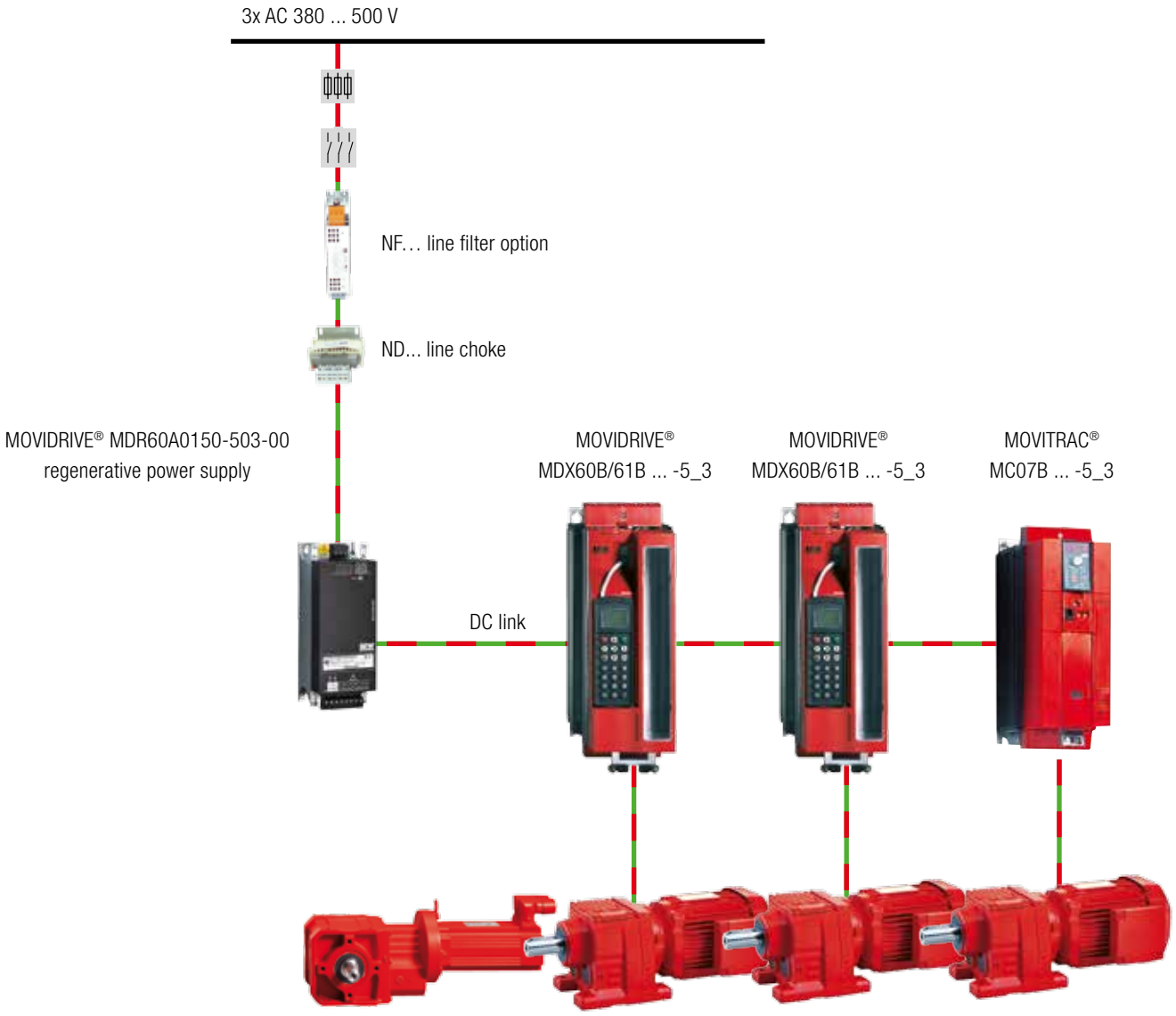
- Braking energy released during the application is fed back into the power supply system
- Energy recovery is selected based on the braking energy
- Drive inverters are selected based on the motor load
- The DC link is supplied via the integrated input rectifier of the drive axis



- Reduced overall energy consumption
- Reduced CO_2 emissions
- Reduced energy costs
- Cost-efficient installation
- No investment 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 control cabinet space and expenditure for ventilation

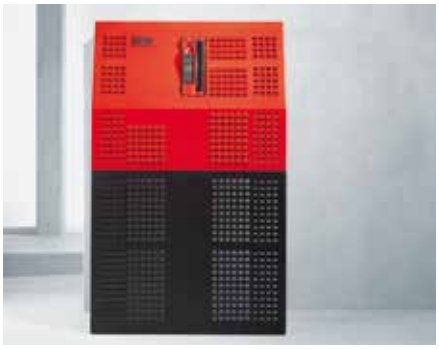
Regenerative power supply: For central energy supply and recovery

- Braking energy released during the application is fed back into the power supply system
- Energy recovery 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_2 emissions
- Reduced energy costs
- Cost-efficient installation
- No investment 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 control cabinet space and expenditure for ventilation

Regenerative power supply and motor inverters up to 315 kW



Regenerative power supply MOVIDRIVE® MDR61B

effiDRIVE®

Features	– 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 – 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.	
Functions	– Used as central regenerative power supply to connect standard inverters or motor inverters – Energy is fed back into the grid when the application is operating as a generator, e.g. during electrical braking – Braking energy is no longer converted into heat but is fed back into the grid for further use	
Benefits	– Significant reduction of the overall energy consumption/CO_2 emissions/energy costs – No braking resistors are required - No investment costs for braking resistors - No installation effort for external braking resistors - No heating up of the environment through braking resistors – Sine-shaped supply current = controlled regeneration – With coated printed-circuit boards as standard for demanding ambient conditions – Installation and wiring made easy: Integrated clock frequency filter/integrated choke/integrated and automatic DC link precharging/integrated line contactor – Modular power section, which means not the entire unit needs to be replaced in the event of service – EMC limit class C3 (EN 61800-3) with the standard unit - Input end: no further measures ➡ no external line filters are required - Motor end: with shielded motor cables or output choke	
Type designation	MDR61B1600-503-00/L	MDR61B2500-503-00/L
Supply voltage	3x AC 380 V … 500 V	
Nominal power [kW]	160	250
Line current/rated motor current I_N [A]	250	400
Maximum continuous power	125% I_N	
Overload capacity	150% I_N for 60 s	
External accessories for control cabinet installation	– Mounting base – Air duct – Connection kit – Touch guard (IP20 set) – DC link connection	

Motor inverter MOVIDRIVE® MDX62B

Features	– 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 – 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		
Functions	– MOVIDRIVE® B standard inverter without input stage for connection to MOVIDRIVE® MDR61B regenerative power supply		
Benefits	– Cost-optimized MOVIDRIVE® B standard inverter without input subassemblies – Simple installation – DC link connection via conductor rail – All MOVIDRIVE® B option cards can be used		
Type designation	MDX62B1600-503-4-0T/L	MDX62B2000-503-4-0T/L	MDX62B2500-503-2-0T/L
Supply voltage	Connection to MDR61B regenerative power supply unit		
Nominal power [kW]	160	200	250
Line current/rated motor current I_N [A]	300	380	470
Maximum continuous power	125% I_N		
Overload capacity	150% I_N for 60 s		
Internal options	Utilization of all MOVIDRIVE® B option cards for connection to fieldbus systems and evaluation of motor or distance encoders (see MOVIDRIVE® B options)		
External accessories for control cabinet installation	– Mounting base – Air duct – Connection kit – Touch guard (IP20 set) – DC link adapter – DC link connection		

Options for MOVIDRIVE® B

Type designation	
Keypad **DBG60B**	Standard keypad for parameterization, data management, startup and diagnostics
Encoder interfaces **DEH11B**	– Motor encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders – Distance encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders
DER11B	– Motor encoder connection: Resolver – Distance encoder connection: TTL, RS422, sin/cos and HIPERFACE® encoders
DEH21B	– Motor encoder connection: TTL, RS422, sin/cos and HIPERFACE ® encoders – Distance encoder connection: SSI absolut encoder
DEU21B	– Motor encoder connection: TTL, HTL, RS422, sin/cos, HIPERFACE®, SSI, CAN, EnDat 2.1 encoders – Distance encoder connection: TTL, HTL, RS422, sin/cos, HIPERFACE®, SSI, CAN, EnDat 2.1 encoders
DIP11B	– Distance encoder connection: SSI absolute encoder – Expansion of binary inputs and outputs: 8x inputs, 8x outputs
Fieldbus connection **– DFE32B / DFE33B** **– DFE24B** **– DFP21B** **– DFC11B / DFD11B** **– DFI11B / DFI21B** **– DFS11B / DFS21B**	 – PROFINET IO / Modbus TCP + EtherNet/IP – EtherCAT® – PROFIBUS DPV1 – CANopen / DeviceNet – INTERBUS / INTERBUS-LWL – PROFIsafe via PROFIBUS / PROFIsafe via PROFINET
MOVISAFE® safety monitor **– DCS31B** **– DCS21B + DFS12B** **– DCS21B + DFS22B**	Safe movement/position monitoring, safe inputs and outputs up to PL e according to EN ISO 13849-1 and – for “safe movement/position monitoring” – for “safe movement/position monitoring and communication” (PROFIsafe/PROFIBUS) – for “safe movement/position monitoring and communication” (PROFIsafe/PROFINET)
Input and output expansion **– DIO11B**	8x binary inputs and 8x binary outputs; 1x analog differentiation; 2x analog outputs
MOVI-PLC® controller **– DHE21B/DHE41B** **– DHF21B/DHF41B** **– DHR21B/DHR41B** **– external option: UHX71B**	 – MOVI-PLC® advanced, Ethernet interface – MOVI-PLC® advanced, Ethernet / PROFIBUS / DeviceNet interface – MOVI-PLC® advanced, Ethernet / PROFINET/ Modbus TCP / EtherNet/IP interface – Compact controller: - MOVI-PLC® power: IEC 61131-3 programmable motion and logic controller, or - CCU power: parameterizable application controller
Other **– DRS11B** **– USB11B** **– UWS21B**	 – Synchronous operation card – Interface adapter for connection to a PC via USB interface – Interface adapter for connection to a PC via RS232 interface

Accessories and options for MOVITRAC® B and MOVIDRIVE® B

Accessories and options	
Engineering software MOVITOOLS® MotionStudio	The MOVITOOLS® MotionStudio program package lets you conveniently start up, parameterize and diagnose MOVITRAC® B frequency inverters and MOVIDRIVE® B drive inverters.
Regenerative power supply MOVIDRIVE® MDR60A 15 kW ... 160 kW MOVIDRIVE® MDR61B 160 kW ... 315 kW	The regenerative power supply unit can be used to supply several units with power via a central power supply. In regenerative mode, the power is fed back into the grid. Using MDR60A/MDR61B saves energy and installation work.
Braking resistors type BW	BW series braking resistors are available for operating MOVITRAC® B and MOVIDRIVE® B inverters as generators. With integrated temperature sensor, the resistor can be protected without external monitoring.
Line choke type ND	ND series line chokes increase the overvoltage protection of inverters. This is important in rough industrial power supply systems, especially if the inverter is installed near a power supply transformer.
Line filter type NF	The NF line filter series is available for EMC-compliant installation according to EN 61800-3. They suppress interference emission on the line side of inverters. These line filters ensure that limit value class C1 is maintained on the supply end.
Output choke type HD	HD series output chokes suppress interference emitted from unshielded motor cables. The motor meets limit value class C1 in accordance with EN 61800-3 in EMC-compliant installations. This means output chokes are an alternative to shielded motor cables in EMC-compliant installations.
Output filter type HF	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 to prevent voltage peaks when using long motor cables.

effiDRIVE® – Energy efficiency of frequency and drive inverters

	The perfect drive solution for applications from simple speed control to dynamic positioning:	Process adaptation	Energy-saving function	DC link connection	Regenerative power supply	Thermally controlled fans
	**MOVITRAC® LTE-B** – Adjusted range of functions for simple applications	✔	✔			
	**MOVITRAC® B** – Compact design with complete equipment – Cost-effective choice for complex systems	✔	✔	✔	✔	✔
	**MOVIDRIVE® B** – High basic functionality with wide range of options – Cost-effective choice for complex systems	✔	✔	✔	✔	✔

Process adaptation

– 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, this saves up to 70% of energy.
– More energy-saving potential can be tapped in applications with periodic acceleration and deceleration through energy-efficient motion sequences. This means maximum acceleration, speed and braking deceleration are not always necessary.

Energy-saving function

– The energy-saving function of MOVITRAC® B and MOVIDRVE® 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. The 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.

DC link connection

– 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.

Regenerative power supply

– A regenerative power 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 as well as storage and retrieval units.

Thermally controlled fans

– The fans are only activated if sufficient waste heat is generated. This not only lowers the energy consumption, but also increases the service life of the fan.

Didactics – Electromechanics

Hands-on experience of drive technology

Modules for electromechanics

Subject area 8: Selecting and integrating drives

The modular didactics concept electromechanics was developed precisely for training of electronics technicians in the area of drive technology. It offers practical exercises for operating AC motors on the supply system as well as on the frequency inverter. The modular model concept can also be flexibly used to train specialists. A master/slave situation with known functions (speed and direction control, measuring functions) can be simulated, for example, with a higher-level PLC.

Modules **(Didactics – product group electromechanics)**	– MOVIDRIVE® B drive inverter module (MDX) – MOVIDRIVE® operating box (BDM) – MOVITRAC® B frequency inverter module (MCB) – Motor subassemblies (DRS..) – Motor subassemblies (CMP) – Motor load brake module (MLB) – Motor protection switch module (MSS) – Reversing contactor module (WSS) – Star/delta switchover module (SDU) – Motor load diagnostics module (MLD)
Advantages	– Flexible and modular test setup – Simple integration into existing lab concepts – Practical measuring of electrical and mechanical quantities – Industry standard, safe and reproducible

MOVIDRIVE® B drive inverter module (MDX)

Type:
– Line voltage 3-phase 400 V
– Control via digital or analog signals or via PROFIBUS or PROFINET
– Suitable for asynchronous and synchronous AC motors

MOVITRAC® B frequency inverter module (MCB)

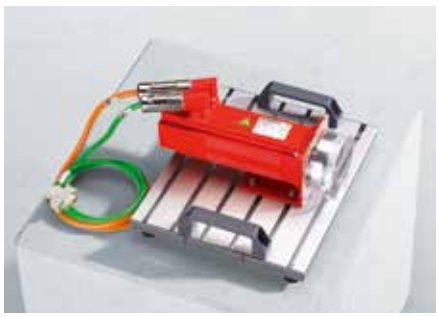
Type:
– Line voltage 1-phase 230 V
– Controlled via digital and analog signals or via PROFIBUS or PROFINET
– Suitable for asynchronous AC motors

Motor load brake module (MLB)

Type:
– Asynchronous AC motor of the type DRS71S4
  - Nominal power: 0.37 kW
  - Voltage: 230 V / 400 V
  - Insulation class: F
– Temperature sensor
– Built-in encoder: EI7C

Motor subassemblies (DRS..)

Type:
– Asynchronous AC motor of the type DRS71S4
  - Nominal power: 0.37 kW
  - Voltage: 230 V / 400 V
  - Insulation class: F
– Temperature sensor
– Built-in encoder: EI7C



Motor subassemblies (CMP)

Type:
– Synchronous AC motor of the type CMP50M
  - Torque: 2.40 Nm
  - Voltage: 400 V
  - Insulation class: F
– Temperature sensor
– Hiperface® single-turn encoder: ES1H

Didactics – Gear unit technology

Practical gear unit mounting

Helical and helical-bevel gear units

Subject area 10: gear units – ideal for training metal workers and mechatronics technicians

An industry-standard helical gear unit and a helical-bevel gear unit have been adapted specifically for didactic purposes. This makes it possible to perform simple assembly or disassembly processes for different machine elements in training without expensive pressing tools.

Advantages	– All components are protected against corrosion – Gear units can be easily assembled and disassembled (repetitively and without wear) – Clearly arranged components and tools (short preparation and wrap-up times) – All necessary tools can be ordered additionally

	**Helical gear unit R57FAD2**
Features	– Gear units are available with 2 and 3 stages – Safe standing thanks to foot and flange design – Functional test with handwheel – Design very similar to series unit
Gear unit ratio (theoretical)	– i = 16.79 (2-stage) – i = 26.97 (3-stage)

	**Helical-bevel gear unit K47AD2**
Features	– Setting the backlash and bearing clearance – Safe standing thanks to foot and flange design – Functional test with handwheel – Design very similar to series unit
Gear unit ratio (theoretical)	– i = 35.39

Have we sparked your interest?
Contact our Didactics team by telephone or email:
Contact person: Lenita Schmidt
Tel. +49 7251 75-3214, lenita.schmidt@sew-eurodrive.de

MOVIAXIS® multi-axis servo inverters

Flexibility	– In the product scalability (hardware and software) – In the communication and networking options – In the drive functionality and automation options – In engineering, startup, project planning and diagnostics with MOVITOOLS® MotionStudio
Versatility	– In the power range from 10 kW rated supply power up to a peak power of 187 kW – From high overload-capable supply to sine-shaped regenerative power supply – With integrable safety technology – With robust housing and simple installation – In supporting all common encoder systems
Solutions	– With motion control functions that range from simple, graphically selectable technology functions to powerful 32-bit control systems – With widely applicable motor/gear unit range – With graded motion control that ranges from simple positioning to customer-specific kinematics

Master modules

Types	– Fieldbus gateway with data memory – MOVI-PLC® advanced motion/network controller – Configurable Control Unit (CCU) for simple graphical startup and diagnostics of application modules

Axis modules

Features	– Maximum overload of 250%* for a maximum of 1 s (max. 250 A; the overload time increases for lower overloads) – Fast touch probe inputs – Integrated DC 24 V brake control – Extensive motion control and technology functions – Multi-encoder interface in the basic unit – Double 7-segment display for clear messages – Auto reload of all axis parameters when replacing the unit (in conjunction with master module) – safetyDRIVE: Functional safety - MXA80: Without integrated functional safety - MXA81: Safe Torque Off (STO) up to cat. 3 according to EN 954-1 and PL d to EN ISO 13849-1 - MXA82: Safe Torque Off (STO) up to cat. 4 according to EN 954-1 and PL e to EN ISO 13849-1 - Optional MOVISAFE® UCS..B safety module: Drive safety functions (SLS, SDI, SLP, etc.) according to EN 61800-5-2
Rated currents 8 kHz/4 kHz PWM	– 2/2, 4/4, 8/8, 12/12, 16/16, 24/32, 32/42, 48/64, 64/85, 100/133

* Basis 8 kHz rated current values

Power supply modules

Features	– 10 kW, 25 kW, 50 kW, 75 kW – Maximum overload of up to 250% of the rated power for a maximum of 1 s (max. 187 kW) – Minimized charging currents for mains-friendly harmonic behavior and high ratio of effective current – Auto addressing of all connected CAN axes for successful startup – With integrated braking resistor and energy buffer (MXP 81) – Sine and block shaped power regeneration 50, 75 kW (MXR)

NEW: Decentralized servo inverter

MOVIAXIS® MMD60B

Properties	– Compact, powerful performance – High overload capacity 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^{PLUS} for very extensive plants

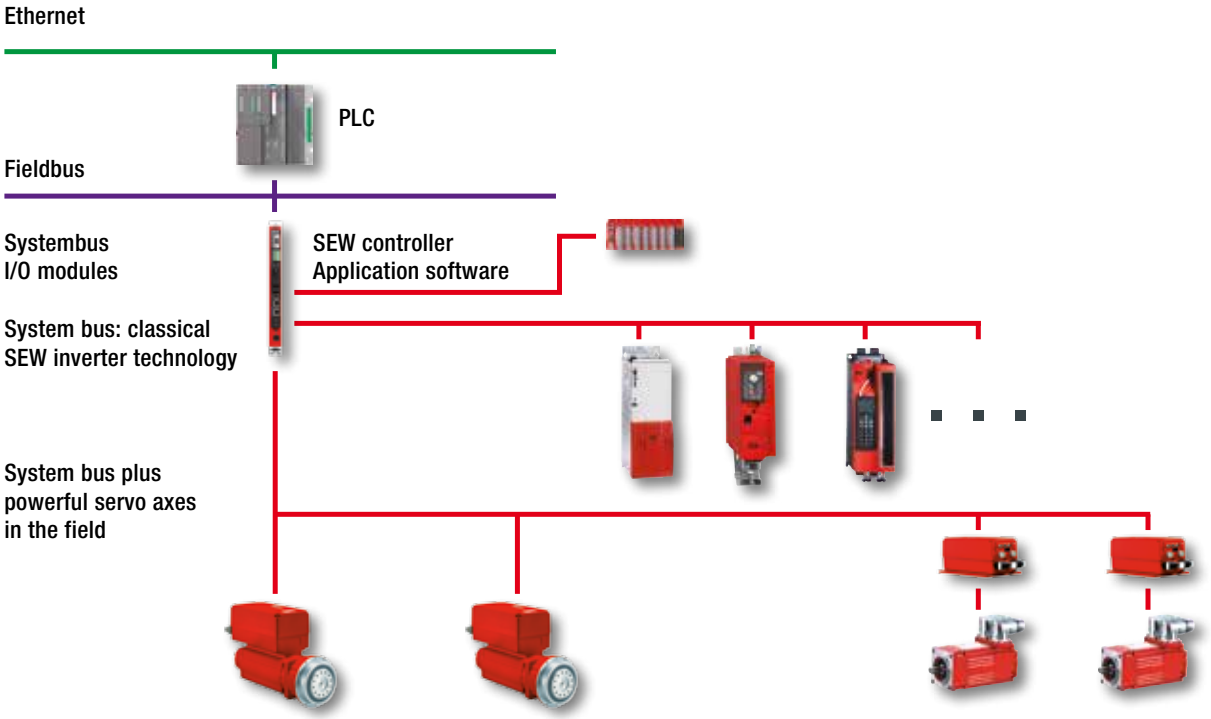
Decentralized inverter

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® MM60B designation**		
	019	**024**	**036**
CM71L, n_n = 4500 rpm	-	X	X
CM90L, n_n = 4500 rpm	-	-	X
CM112L, n_n = 1200 rpm	-	-	X
Decentralized inverter for mounting close to the motor	X	X	X

Automation concept
with plant and machine modules



Smart Servo Package

including MOVITRAC® LTX

Smart Servo Package 230 V / 400 V

	Smart Servo Package 230 V	Smart Servo Package 400 V
Features	– **Smart Selection:** Predefined combinations make product selection and coordination more efficient and offer a high level of flexibility – **Smart Automation:** Simple creation of graphically guided configurable as well as programmable automation solutions – **Smart Integration:** Easy connection of the Smart Servo Package to higher-level controllers (Profibus, ProfiNet, EtherNet/IP, DeviceNet, Modbus TCP) with controllers and gateways as well as with analog interfaces (+/– 10 V, step/dir, encoder)	
Controllers from SEW-EURODRIVE	**MOVI-PLC®** IEC 61131 programming, highly flexible	
	CCU Simple application configuration without any programming using the Application Configurator	
Fieldbus interfaces and gateways	Using DFx gateways, the Smart Servo Package can be easily used as speed controlled drive on any controller	

	Smart Servo Package 230 V	Smart Servo Package 400 V
MOVITRAC® LTX servo inverters	– 1x / 3x AC 230 V (750 – 5500 W) – 2 sizes / 6 performance classes – Powerful output stage – overload: 200% for 60 s / 250% for 2 s – UL / cUL approval – Controller or analog interfaces – Suitable motors: Synchronous motors with HIPERFACE® and asynchronous motors without encoder	– 3x AC 400 V (0.75 – 11 kW) – 2 sizes / 7 performance classes – Powerful output stage – overload: 200% for 60 s / 250% for 2 s – UL / cUL approval – Controller or analog interfaces – Suitable motors: Synchronous motors with HIPERFACE® and asynchronous motors without encoder
Servomotors	– Optimized combination with MOVITRAC® LTX – Highly dynamic CMP40/50/63 motors – Standstill torques from 0.8 to 7.1 Nm, peak torques up to 17.9 Nm – Multi-turn absolute encoder – Electronic nameplate for automatic motor parameterization – Optional holding brake	– Optimized combination with MOVITRAC® LTX – Highly dynamic CMP40/50/63/71 motors – Standstill torques from 0.8 to 13.1 Nm, peak torques up to 34.2 Nm – Multi-turn absolute encoder – Electronic nameplate for automatic motor parameterization – Optional holding brake
Optional servo gear units	– Delivered with adapter or for direct mounting – Planetary servo gear units PSKC 221 / 321 / 521 single-stage - Gear ratios i = 5, 7, 10 – Right-angle servo gear units based on W10, W20, W30 gear units	
Prefabricated cables and accessories	– Prefabricated cables in standard lengths: 5 / 10 / 15 / 20 / 25 m	

effiDRIVE®

Saving energy with servo drive technology

Perfect combination	– Servo drives operate more energy efficiently than conventional drive solutions as they use high-quality permanent magnets, planetary gear units, and drive systems with energy feedback – Combining the drives with the new components from the modular energy-saving system effiDRIVE®, such as the MXR regenerative power supply module for MOVIAXIS®, additionally increases the energy-saving potential significantly
Individual advice	– Comprehensive customer consultation is a major aspect of the modular effiDRIVE® energy-saving concept for servo applications – Comprehensive consultation and industry expertise is offered at any time for the project planning of new systems and for retrofitting existing applications
Benefits	– Universal modularity – Can be flexibly used and combined – High energy-saving potential – Fully compatible with all SEW-EURODRIVE servo components – Compact and powerful – Grid-compatible cos $\varphi = 1$

MXR80, MXR81 regenerative power supply modules	– Up to 50% less energy consumption compared to braking resistor – High overload capacity – Scopeable, bus capable, module bus to the axes
Sine-shaped MXR80 regenerative power supply modules	– Constant, controlled DC link voltage and drive performance independent of fluctuations in the supply input voltage – Power is taken from the supply system with the cos φ = 1 as standard – Sine-shaped feedback of excess energy into the power grid – Line harmonics are avoided almost completely – Sensitive electronic components operated on the same supply system are subject to significantly less interference – Service and operation information is offered, such as information about effective power
Block-shaped MXR81 regenerative power supply modules	– Emergency operation with braking resistor – Regenerative mode switches off automatically depending on the direction of the energy flow
MXC storage modules	– The optional MXC storage modules were developed as energy buffers – Can be mounted to all MXP power supply modules – Braking energy is buffered temporarily and utilized again during the next acceleration process – The average amount of energy drawn from the supply system is minimized and heating of the control cabinet is reduced or prevented – Reduced costs for cooling the control cabinet – Valuable installation space is saved
MXP81 compact power supply modules	– For machines with a particularly compact design and fast cycle times, the compact power supply modules meet demands for minimum installation effort, small housing dimensions and energy buffering to minimize losses and heat dissipation – A braking resistor is integrated in these power supply modules in addition to a buffer module – Amounts of energy that exceed the storage capacity are automatically dissipated

Operating conditions and power levels of the energy-saving modules

effiDRIVE	Very dynamic/fast cycle applications	Dynamic applications	Lower dynamics
Lower axis output/ small loads	**MXP81**	**MXC / MXP81**	**MXR**
Large servo axes/ medium loads		**MXC**	**MXC / MXR**
(Continuously operated) Power axes/ heavy loads	**MXR**		**MXR**

Servomotors

Synchronous servomotors

CMP series

Features	– Compact design allows for operation in a confined space – The low-inertia rotor of the CMP motor minimizes the amount of energy required for motor acceleration – The powerful rotor of the CMPZ motor controls even extreme loads stiffly, safely and accurately – Torque range from 0.5 Nm up to 95 Nm standstill torques – Seven CMP motor sizes, 31 motor grades – Performance-optimized and extremely low-inertia design through latest winding and magnet technology
Ex	– CMP/CMPZ motors are available in explosion-proof design, in compliance with the 94/9/EC ATEX directive, for sizes 40S to 100L – For more information on ATEX, refer to chapter “Solutions” on pages 56+57

Type	Rated speed [rpm]	M_0 [Nm]	M_{pK} [Nm]	J_{mot} [kgcm²]	
				CMP	CMPZ
CMP40S	3000 / 4500 / 6000	0.5	1.9	0.10	-
CMP40M	3000 / 4500 / 6000	0.8	3.8	0.15	-
CMP50S	3000 / 4500 / 6000	1.3	5.2	0.42	-
CMP50M	3000 / 4500 / 6000	2.4	10.3	0.67	-
CMP50L	3000 / 4500 / 6000	3.3	15.4	0.92	-
CMP63S	3000 / 4500 / 6000	2.9	11.1	1.15	-
CMP63M	3000 / 4500 / 6000	5.3	21.4	1.92	-
CMP63L	3000 / 4500 / 6000	7.1	30.4	2.69	-

Type	Rated speed [rpm]	M_0 [Nm]	M_{pK} [Nm]	J_{mot} [kgcm²]	
				CMP	CMPZ
CMP71S / CMPZ71S	2000 / 3000 / 4500 / 6000	6.4	19.2	3.1	9.32
CMP71M / CMPZ71M	2000 / 3000 / 4500 / 6000	9.4	30.8	4.1	10.37
CMP71L / CMPZ71L	2000 / 3000 / 4500 / 6000	13.1	46.9	6.1	12.47
CMP80S / CMPZ80S	2000 / 3000 / 4500 / 6000	13.4	42.1	8.8	27.18
CMP80M / CMPZ80M	2000 / 3000 / 4500 / 6000	18.7	62.6	11.9	30.3
CMP80L / CMPZ80L	2000 / 3000 / 4500 / 6000	27.5	107	18.1	36.51
CMP100S / CMPZ100S	2000 / 3000 / 4500	25.5	68.3	19.59	79.76
CMP100M / CMPZ100M	2000 / 3000 / 4500	31	108	26.49	86.66
CMP100L / CMPZ100L	2000 / 3000 / 4500	47	178.8	40.24	100.41
CMP112S	2000 / 3000 / 4500	30	88	74	–
CMP112M	2000 / 3000 / 4500	45	136	103	–
CMP112L	2000 / 3000 / 4500	69	225	163	–
CMP112H	2000 / 3000 / 4500	83	270	193	–
CMP112E	2000 / 3000 / 4500	95	320	222	–

safetyDRIVE
Functional safety

Optional: Integrated functional safety for CMP motors

FS	FS safety-rated encoder	Up to PL d according to EN ISO 13849-1	AK0H(FS), AK1H(FS)
	FS safety-rated brake	Up to PL c according to EN ISO 13849-1	BY(FS)

For more information on safetyDRIVE functional safety, refer to pages 54+55.

Servomotors

Synchronous servomotors

CM series

Features	– Three CM motor sizes available in three lengths – Torque range from 5 Nm up to 68 Nm standstill torque – Equipped with NdFeB magnets for high overload behavior of 400% standstill current as standard – Compact design with high power density due to its magnetic circuit layout

Type	**Rated speed [rpm]**	**M_0 [Nm]**	**M_{pK} [Nm]**	**Moment of inertia [kgcm²]**	
				J_{mot} [Nm]	**J_{bmot} [Nm]**
CM71S	2000 / 3000 / 4500 / 6000	5	16.5	4.99	6.72
CM71M	2000 / 3000 / 4500 / 6000	6.5	21.5	6.4	8.13
CM71L	2000 / 3000 / 4500 / 6000	9.5	31.4	9.21	10.94
CM90S	2000 / 3000 / 4500 / 6000	11	39.6	18.2	22
CM90M	2000 / 3000 / 4500 / 6000	14.5	52.2	23.4	27.2
CM90L	2000 / 3000 / 4500 / 6000	21	75.6	33.7	37.5
CM112S	2000 / 3000 / 4500	23.5	82.3	68.9	84.2
CM112M	2000 / 3000 / 4500	31	108.5	88.9	104.2
CM112L	2000 / 3000 / 4500	45	157.5	128.8	144.1
CM112H	2000 / 3000 / 4500	68	238	188.7	204

CMDV series

Features

- Particularly short length
- Suited as direct drive
- Ideal for applications with extremely limited installation space and for directly driven servo applications
- Innovative design with state-of-the-art winding and magnet technology
- Convection-cooled variant without housing
- Standstill torques from 0.25 Nm to 32.0 Nm
- Up to six times the overload capacity
- Motors equipped with thermal motor protection and resolver feedback as standard
- Optional: Scalable HIPERFACE® encoder with electronic nameplate and 24 V holding brake

Type	Rated speed [rpm]	M_0 [Nm]	M_{pK} [Nm]	J [kgcm²]	n_{max} [rpm]
CMDV 55S	4500	0.25	1.2	0.09	8000
CMDV 55M	4500	0.45	2.3	0.15	8000
CMDV 55L	4500	0.9	6.0	0.27	8000
CMDV 70S	1200 / 3000	0.7	2.8	0.26	6000
CMDV 70M	1200 / 3000	1.1	5.3	0.45	6000
CMDV 70L	1200 / 3000	2.0	11.4	0.83	6000
CMDV 93K	800 / 1200 / 3000	1.5	4.4	0.73	4000
CMDV 93S	800 / 1200 / 3000	2.5	10.3	1.35	4000
CMDV 93M	800 / 1200 / 3000	4.2	22.0	2.55	4000
CMDV 93L	800 / 1200 / 3000	6.5	38.0	3.74	4000
CMDV 138K	600 / 1200 / 2000	4.0	8.1	4.10	2500
CMDV 138S	600 / 1200 / 2000	8.8	19.0	7.09	2500
CMDV 138M	600 / 1200 / 2000	15.7	49.0	12.85	2500
CMDV 138L	600 / 1200 / 2000	20.2	70.0	18.61	2500
CMDV 162K	400 / 800 / 1200	6.0	11.0	7.50	1800
CMDV 162S	400 / 800 / 1200	13.5	28.0	12.90	1800
CMDV 162M	400 / 800 / 1200	24.0	63.0	23.60	1800
CMDV 162L	400 / 800 / 1200	32.0	104.0	34.60	1800

n_{max} = Maximum speed

Servomotors

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 by using latest winding technology and laminated iron core – Virtually maintenance-free – High control quality, dynamics, and accuracy – Available in three designs (SL2 Basic, SL2 Advance System, SL2 Power System) – Secondaries available in three different lengths; can be easily lined up

Product versions	**Rated power range [N]**	**Rated speed classes [m/s]**
SL2 Basic	125 ... 6000	1 / 3 / 6
SL2 Advance System	280 ... 3600	1 / 3 / 6
SL2 Power System	400 ... 5500	1 / 3 / 6

Options for linear servomotors

SL2 Advance 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 – Extensive accessories for inverter-specific cable prefabrication

Servomotors

Electric cylinders standard / with grease lubrication

CMS50/71 series (with grease lubrication)

Features	– Equipped with permanent magnet rotors – Precise, powerful, and fast – Combined with drive electronics from SEW-EURODRIVE, this motor 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	**CMS50S**			**CMS50M**		
Max. torque [Nm]	5.2			5.2 [4]		
Standstill torque [Nm]	1.3			2.4		
Mechanical data						
Rated speed [n_N]	3000 rpm 4500 rpm 6000 rpm					
Spindle type	KGT[1] 15x5			KGT[1] 15x5		
Max. continuous feed force [3] [N]	1300			2200		
Peak feed force [N]	5300					
Rated stroke [mm]	70	150	300	70	150	300
Max. speed [mm/s]	375		210	375		210

Electrical data				
Type	**CMS71L**			
Max. torque [Nm]	31.4			
Standstill torque [Nm]	9.5			
Mechanical data				
Rated speed [n_N]	2000 rpm 3000 rpm 4500 rpm			
Spindle type	KGT[1] 32x10	KGT[1] 32x6		PGT[2] 24x5
Max. continuous feed force [3] [N]	3600	6700		7200
Peak feed force [N]	17000	20000	15000 20000 [5]	20000
Rated stroke [mm]	200	200	350	200
Max. speed [mm/s]	500	300	200	250

[1] Ball screw

[2] Planetary roller screw

[3] Depending on average travel speed

[4] Maximum permitted torque

[5] In case of tensile loads

Servomotors

Electric cylinders standard / with oil bath lubrication

CMSB63/71 series (with oil bath lubrication)

Features	– Equipped with permanent magnet rotors – Precise, powerful, and fast – Combined with drive electronics from SEW-EURODRIVE, this motor 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	**CMSB63S**		**CMSB63M**	
Max. torque [Nm]	11.1		11.1 [4]	
Standstill torque [Nm]	2.9		5.3	

Mechanical data

Rated speed [n_N]	3000 rpm 4500 rpm 6000 rpm			
Spindle type	KGT [1] 25x6	PGT [2] 20x5	KGT [1] 25x6	PGT [2] 20x5
Max. continuous feed force [3] [N]	2400	2800	4100	5200
Peak feed force [N]	10000		10000	
Rated stroke [mm]	100 / 200 / 400 / 600	100 / 200	100 / 200 / 400 / 600	100 / 200
Max. speed [mm/s]	450	375	450	375

Electrical data			
Type	**CMSB71S**	**CMSB71M**	**CMSB71L**
Max. torque [Nm]	19.2	25 [4]	25 [4]
Standstill torque [Nm]	6.4	9.4	13.1
Mechanical data			
Rated speed [n_N]	3000 rpm 4500 rpm 6000 rpm		
Spindle type	KGT [1] 32x6	KGT [1] 32x6	KGT [1] 32x6
Max. continuous feed force [3] [N]	5000	7500	10000
Peak feed force [N]	18000	24000	24000
Rated stroke [mm]	100/200/400/600/800/1000/1200		
Max. speed [mm/s]	450	450	450

[1] Ball screw

[2] Planetary roller screw

[3] Depending on average travel speed

[4] Maximum permitted torque

Servomotors

Electric cylinder, modular

CMSMB63 series ACH or ACA (axially serial)

CMSMB71 series ACH or ACA (axially serial)

Features	– Separately available modular unit (linear gear unit) with the proven oil bath lubrication of the CMSB63 standard electric cylinder series – Can be combined with the standard servomotors from SEW-EURODRIVE (CMP63 S/M/L and CMP71 S/M/L respectively) using ACH/ACA adapters

Technical data

Type	**CMSMB63 / ACH or ACA**	**CMSMB71 / ACH or ACA**
Max. permitted input torque [Nm]	11.1	25
Max. permitted input speed [rpm]	4500	4500
Peak feed force [N]	10000	24000
Rated stroke [mm]	60/100/160/180/200/ 400/600	100/160/200/400/600/ 800/1000/1200
Spindle type	KGT[1)] 25x6	KGT[1)] 32x6

[1)] Ball screw

Electric cylinder, modular

CMSMB63 / AP series (axially parallel)

CMSMB71 / AP series (axially parallel)

Features	– Maintenance-free oil bath lubrication – Compact design – Optional water cooling – Standard CMP servomotors from SEW-EURODRIVE are used

Electrical data

Type	**CMSMB63S**	**CMSMB63M**	**CMSMB63L**	**CMSMB71S**	**CMSMB71M**	**CMSMB71L**
Max. torque [Nm]	11	11	11	19.2	30.8	31
Standstill torque [Nm]	2.9	5.3	7.19	6.4	9.4	13.1

Mechanical data

Rated speed [n_N]	3000 rpm 4500 rpm 6000 rpm					
Spindle type	KGT[1)] 25x6	KGT[1)] 25x6	KGT[1)] 25x6	KGT[1)] 32x6	KGT[1)] 32x6	KGT[1)] 32x6
Max. continuous feed force [N]	2400	3600	4800	5000	7500	10000
Peak feed force [N]	10000	10000	10000	18000	24000	24000
Stroke lengths [mm]	60/100/160/180/200/400/600			100/160/200/400/600/800/1000/1200		
Max. speed [mm/s]	450	450	450	450	450	450

[1)] Ball screw

Servo gear units

Planetary servo gear units

PS.C series

Features	– Low backlash planetary servo gear units – Designed for torque classes 30 to 320 Nm – Provide the basis for diverse, dynamic, and above all, **cost-optimized drive solutions** – 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

Size		**Torque class [Nm]**	**Gear ratios [i]**	
1-stage	**2-stage**		**1-stage** [1]	**2-stage** [2]
221	222	30	3 / 5 / 7 / 10	15 / 21 / 25 / 30 / 35 / 49 / 50 / 70 / 100
321	322	65		
521	522	160		
621	622	320	5 / 7 / 10	25 / 35 / 49 / 50 / 70 / 100

[1] Circumferential backlash: < 10‘ for all variants

[2] Circumferential backlash: < 15‘ for all variants

PS.F series

Features

- Low backlash planetary servo gear units
- Designed for torque classes 25 to 3000 Nm
- 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

Type	Size		Torque class [Nm]	Gear ratios [i] [4]		Circumferential backlash [˙]	
	1-stage	2-stage		1-stage	2-stage	1-stage	2-stage
PSF	121	122	25	3[4] / 4[4] / 5 / 7 / 10	15[5]/ 16[4]/ 20 / 25 / 28 / 35 / 40 / 49 / 70 / 100	8[6] / 4[7] / 2[8]	10 / 6 / 3
PSF / PSBF	221	222	55			6 / 3 / 1	8 / 4 / 2
PSF / PSBF	321	322	110				
PSF / PSBF	521	522	300				
PSF / PSBF	621	622	600	4 / 5 / 7 / 10		4 / 2 / 1	6 / 3 / 1
PSF / PSBF	721	722	1000				
PSF / PSBF	821	822	1750				
PSF	921	922	3000				

[3] Other gear ratios on request
[4] Only PSF
[5] Only PSBF 320 / 520
[6] Standard
[7] Reduced
[8] Minimized

Servo gear units

Helical-bevel servo gear units

BS.F series

Features	– Low backlash helical-bevel servo gear units – Designed for torque classes 40 to 1220 Nm – 5 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 circumferential backlash remains constantly low over the entire gear unit service life

Size	Torque class [Nm]	Gear ratios [i]	Circumferential backlash [`]
202	40	3 / 4 / 6 / 8 / 10 / 15 / 20 / 25	6[9] / 3[10]
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	1220		

[9] Standard [10] Reduced

Options

Options for servo gear units and servo gearmotors

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

Explosion-proof servo drive technology

Overview of safe servo solutions	
Category II2G/D c, k T4 120 °C X with degree of protection IP65	– R, RX, F, K, S, W37 and W47 series gear units (with reduced backlash)
Category II2G/D c, k T3 150 °C X with degree of protection IP65	– Low-backlash PS(K)F servo gear units – Low-backlash BS.F right-angle servo gear units – With adapter

Safety requirements and unit categories

Equipment group	Category	Degree of protection	Guaranteed protection	Medium	Zone	Protection type
II	**3**	**normal**	**suitable for standard operation**	**Gas**	**2**	**Motor: nA Gear units: c, k, …**
				Dust	**22**	**Motor: t Gear units: c, k, …**

	Ex marking	Circumferential backlash classes	M_{amax} [Nm]	M_{apk} [Nm]
PSF*	II2D c, k T3 / 150 °C X	Standard / Reduced circumferential backlash	18 – 3000	27 – 4200
PSKF*	II2GD c, k T3 / 150 °C X		40 – 1310	51 – 1910
BSF	II2D c, k T3 / 150 °C X			
BSAF	II2GD c, k T3 / 150 °C X			
BSKF				
BSBF				
R, F, K gear units	II2D c, k T4 / 120 °C X		31 – 8000	46 – 9090
	II2GD c, k T4 / 120 °C X			
S, W gear units	II2D c, k T4 / 120 °C X	Standard	43 – 480	60 – 655
	II2GD c, k T4 / 120 °C X			

*PSF/PSKF 121–522: Max.$_{nepk}$ 6000 rpm

System solutions with servo gearmotors

Helical servo gearmotors

Features	– The variety of sizes meets nearly any requirement – The RX57 to RX107 single-stage gear unit series offers compact, space-saving solutions for high output speeds – 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					
	Synchronous servo gearmotors				**DRL asynchronous servo gearmotors**	
	CMP		**CM**			
	RX57 ... RX77	R07 ... R107	RX57 ... RX107	R27 ... R107	RX57 ... RX107	R17 ... R167
Gear ratios [i]	1.3 ... 7.63	3.21 ... 216.54	1.3 ... 8.23	3.37 ... 216.28	1.3 ... 8.23	3.37 ... 255.71
Output torques [Nm]	63 ... 830	31 ... 4300	63 ... 830	45 ... 4300	63 ... 830	45 ... 18000
Circumferential backlash (option /R) [']	–	5 ... 14	–	5 ... 14	–	5 ... 14

Parallel-shaft helical servo gearmotors

Features	– This standard drive not only excels by its performance but also by its structural properties – Typical areas of application: materials handling and process engineering applications		
	Synchronous servo gearmotors		**Asynchronous servo gearmotors DRL**
	CMP	**CM**	
	F27 ... F107	F27 ... F107	F27 ... F157
Gear ratios [i]	3.77 ... 276.77	3.77 ... 276.77	3.77 ... 276.77
Output torques [Nm]	87 ... 7680	87 ... 7680	87 ... 18000
Circumferential backlash (option /R) [']	5 ... 12	5 ... 12	5 ... 12

System solutions with servo gearmotors

Helical-bevel servo gearmotors

Features	– Helical-bevel gear units from SEW-EURODRIVE provide a high degree of efficiency of about 95% 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 the helical-bevel gearmotors of SEW-EURODRIVE 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**	
	CMP		**CM**		**DRL**	
	K37 ... K107	NEW: K..19 + K..29	K37 ... K107	NEW: K..19 + K..29	K37 ... K187	NEW: K..19 + K..29
Gear ratios [i]	3.98 ... 174.19	3.19 … 54.89	3.98 ... 176.05	3.19 … 36.96	3.98 ... 179.86	3.19 … 54.89
Output torques [Nm]	125 ... 8000	54 ... 130	125 ... 8000	54 … 130	125 ... 50000	54 … 130
Circumferential backlash (option /R) [']	5 ... 13	–	5 ... 13	–	5 ... 13	–

SPIROPLAN® servo gearmotors

Features	– SPIROPLAN® servo gearmotors with directly mounted CMP motors are extremely efficient, quiet, and offer customers greatest possible flexibility – SPIROPLAN® right-angle gear units W37 / W47 achieve high speeds at smallest gear ratios – Wear-free gear components minimize friction losses and optimize the mechanical efficieny – Special gearing makes for low-noise operation – Areas of application: Ideal drives for simple positioning or conveyor applications – Gear unit versions: - Foot/flange-mounted - B5 flange - B14 flange - Solid shaft / hollow shaft - Direct servomotor mounting - Adapter mounting	
	Synchronous servo gearmotors	**Asynchronous servo gearmotors**
	CMP	**DRL**
	W37 ... W47	W37 ... W47
Gear ratios [i]	3.2 ... 74.98	3.2 ... 74.98
Output torques [Nm]	70 ... 180	70 ... 180

System solutions with servo gearmotors

Helical-worm servo gearmotors

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 – 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		
	Synchronous servo gearmotors		**Asynchronous servo gearmotors DRL**
	CMP	**CM**	
	S37 ... S67	S37 ... S67	S37 ... S67
Gear ratios [i]	3.97 ... 75.06	6.80 ... 75.06	3.97 ... 75.06
Output torques [Nm]	32 ... 480	43 ... 480	32 ... 480

1-stage SPIROPLAN® servo gearmotors

SPIROPLAN® servo gearmotors

W10 … W30 CMP40 – 63

Features

- Cost-optimized drive solution
- Constantly low circumferential backlash
- Positive shaft-hub connection throughout
- Compact unit volume when used with CMP motors
- Direct motor mounting or motor mounting via adapter
- 4 output variants:
  - W: Variant with shaft and key
  - WF: Flange variant with shaft and key
  - WA: Hollow shaft variant with keyway
  - WAF: Flange variant with hollow shaft with keyway

Size	Gearmotor (direct motor mounting)	Gear ratio [i] [1]	Torque [Nm] [2]	Circumferential backlash [´]
W10	CMP40	6.57 … 16.50	max. 25	< 15´
W20	CMP50		max. 40	
W30	CMP63		max. 70	

Size	Stand-alone gear unit with EWH adapter	Gear ratio [i] [1]	Torque [Nm] [2]	Circumferential backlash [´]
W10	EWH01	6.57 … 16.50	max. 25	< 15´
W20	EWH02		max. 40	
W30	EWH03		max. 70	

[1] Gear ratios from i = 19.5 to i = 75 are available on request

[2] The output torque depends on the gear ratio and efficiency

Cables and connection options

Cable connections for CMP servomotors

Motor type	Power connector	Cable installation	Drive electronics
CMP40 – 63	Motor: SM1	Fixed installation or cable carrier installation	MOVIDRIVE® inverters or MOVIAXIS® multi-axis servo inverters
	Brakemotor: SB1		
CMP71 – 100	Motor: SM1, SMB	Fixed installation or cable carrier installation	MOVIDRIVE® inverters or MOVIAXIS® multi-axis servo inverters
	Brakemotor: SB1, SBB		
CMP112	Motor: SM1, SMB, SMC	Fixed installation or cable carrier installation	MOVIDRIVE® inverters or MOVIAXIS® multi-axis servo inverters
	Brakemotor: SB1, SBB, SBC		

Motor type	Encoder connector	Cable installation	Drive electronics
CMP40 – 112	RH1M resolver	Fixed installation or cable carrier installation	MOVIDRIVE® drive inverter MOVIAXIS® multi-axis servo inverter
CMP40 – 63	HIPERFACE® AK0H, EK0H, AS1H, ES1H	Fixed installation or cable carrier installation	MOVIDRIVE® drive inverter MOVIAXIS® multi-axis servo inverter
CMP71 – 112	HIPERFACE® AK0H, EK1H, AK1H	Fixed installation or cable carrier installation	MOVIDRIVE® drive inverter MOVIAXIS® multi-axis servo inverter

Cable connections for DR series AC motors

Direct connection

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

Connection via intermediate sockets

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

Intermediate socket

M23 plug connector (male)	Extension	M23 plug connector (female)

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

Mechatronic drive systems

MOVIGEAR®

effiDRIVE®: Energy-saving potential up to 50% and significant reduction of CO_2 emissions

Features / benefits

- High overall efficiency of all components (motor, gear unit and electronics):
  - Optimized interfaces between motor and gear unit
  - Permanent-field synchronous motor
  - Highly efficient gearings
  - New electronic components and intelligent control methods
- The highest motor efficiency complies already today with efficiency class IE4 (Super Premium Efficiency) of the international standard IEC 60034
- Compact design: Motor, gear unit and electronics are combined in one mechatronic drive system
- Optimized housing, particularly suited for use in conveyor systems
- No restrictions during operation: High breakaway and acceleration torques
- The power required to drive the system can be reduced significantly
- Reduction of required reactive power (compared to motors operated directly on the grid)
- Long service life makes for high system availability
- Intelligent system with own control concept, easy to network
- Short startup times
- Supports monitoring and reduce maintenance
- Integrated user software
- Installation topology with SEW controller:
  - SNI: only one cable for power supply and communication; installation effort reduced by up to 60%
  - SBus: for applications with higher performance requirements, such as angular synchronism, etc.
- Installation topology binary or AS-Interface
- Reduced number of variants due to wide setting range and universal mounting position
- Reduced storage costs
- High degree of protection
- Hygienic surface design for applications in hygienic areas
- High degree of reliability due to systematic development of all components
- Reduced total costs and operating costs of the materials handling system
- Integrated functional safety: Safe Torque Off (STO) up to PL e according to EN ISO 13849-1

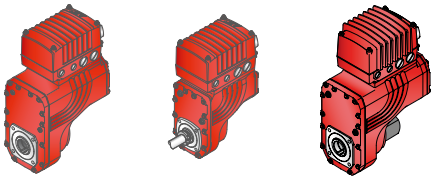
safetyDRIVE
safetyDRIVE functional safety

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 the MOVIGEAR® drives … over the entire load range."

MOVIGEAR® drive units



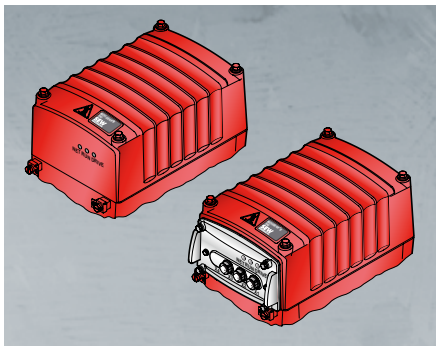
MGF.4 MGF.2 MGF.4/XT

MOVIGEAR® is available in two sizes and two mechanical versions.

MOVIGEAR® sizes
- MGF.2 (torque class: 200 Nm)
- MGF.4 (torque class: 400 Nm)
- MGF.4/XT (torque class: 400 Nm / increased torque)

MOVIGEAR® variants
- MOVIGEAR® with hollow shaft and key
- MOVIGEAR® with TorqLOC® hollow shaft mounting system

Application slot – electronics cover



Available electronics covers for MOVIGEAR® DSC-B and MOVIGEAR® SNI-B sizes:
- Electronics cover without application slot
- Electronics cover with application slot

The electronics cover of MOVIGEAR® DBC-B and MOVIGEAR® DAC-B is designed without application slot.

Application options

MOVIGEAR®
with optional inputs and outputs

- Installation in the application slot to implement specific interfaces, such as digital inputs or digital outputs
- Option is supplied with energy in a contactless manner
- Contactless communication between MOVIGEAR® electronics and option

GIO12B application option
For controlling up to 2 digital actuators and for processing up to 4 digital sensors

GIO13B application option
Equipped with the following interfaces:
- 1 digital output
- 4 digital inputs (two of them can be used as primary frequency input)
- 1 analog output
- 1 analog input

Variants

- MOVIGEAR® meets hygienic design requirements as standard

Also available as:
- Clean room variant, up to air cleanliness 2 according to ISO 14644-1
- Wet area variant (specific anti-stick surface HP200)

Mechatronic drive systems

MOVIGEAR® certified for air cleanliness class 2, according to ISO 14644-1

Areas of application	Industries where high requirements are placed on the drive technology used in production and logistics systems in terms of air quality and the permitted amount and size of particles released. For example: – Chemical, pharmaceutical and cosmetic industries – Biotechnology – Food industry – Medical technology – Semiconductor industry – Solar panel production
Features and benefits	– The MOVIGEAR® variant for air cleanliness class 2* meets all hygienic requirements – Up to 50% less energy consumption compared to conventional drive technology – Optimally suited for nearly any drive application in clean room environments – Opens completely new perspectives for many plant and machine manufacturers as well as operators
Design	– Smooth overall design and compact unit comprising gear unit, motor, and electronics – Facilitates thorough cleaning of the entire drive system and results in a reduced emission of particles – Available in two sizes covering a torque range from 20 Nm to 400 Nm.

* According to ISO 14644-1

Special anti-stick surface	– Makes for easier cleaning – Prevents paint flaking at the interfaces as the surface is treated prior to assembly and burnt into the housing material – Prevents particles from sticking to the surface – Resistant against mechanical stress and common cleaning agents
Without fan	– No whirls of air, dirt, and particles – Reduced noise emission – Allows for complying with noise limits at the workplace
Cost-effectiveness	– Reduction in energy costs by up to 50% due to high overall efficiency
Certificate	– The Fraunhofer Institute certifies that the MOVIGEAR® drive for clean room applications meets the requirements up to air cleanliness class 2 according to ISO 14644-1, depending on the motor speed, and that the drive can be operated in such applications.

Mechatronic drive systems

DRC.. electronic motor

Features / benefits:

- Combination of a permanent-field synchronous motor (nominal speed 2000 rpm) with integrated drive electronics in a completely enclosed housing:
  - No fan
  - Degree of protection IP65 and IP66
- NEW 4 sizes with a nominal torque of 2.65 Nm, 7.2 Nm, 14.33 Nm and 19.1 Nm (continuous power 0.55 and 4.0 kW)
- A completely new mechatronic drive system is generated together with a highly efficient helical-bevel, helical or parallel-shaft helical gear unit
- High gear unit flexibility:
  - Direct mounting to the gear unit using flange and pinion shaft
- Motor efficiency class IE4 (Super Premium Efficiency) of the international standard IEC 60034
- Energy savings up to 50%
- Overload capacity of 250%
- Universal application due to large control range of 1:2000
- Mechatronic drive system from a single source: All individual components are perfectly matched, are reliable and durable, and significantly contribute to a high level of system availability
- Installation topology with MOVIFIT® FDC SNI controller:
  - Only one cable for power supply and communication
  - Considerably less cabling effort than with conventional solutions
  - Installation effort reduced by up to 60%
- Installation topology binary or AS-Interface:
  - For stand-alone applications or systems with simple drive functionalities
- Installation topology with SEW system bus controller makes for highest performance and short response times for implementing demanding drive tasks
- Global player:
  - Usable worldwide
  - Connection voltage of 380 .. 500 V at 50/60 Hz
  - Significantly reduced number of variants facilitates selection and project planning
- Integrated STO safety function (Safe Torque Off)

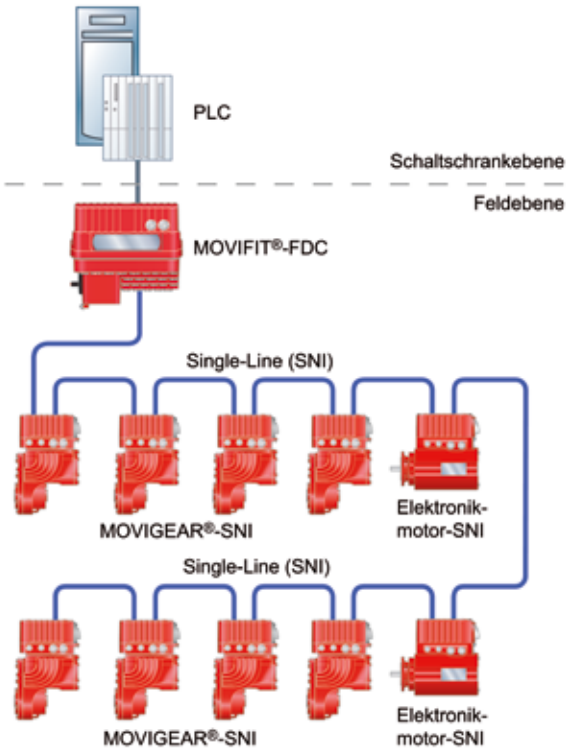
safetyDRIVE
functional safety

Application options	Universal mechatronic drive solutions for many standard applications in – Logistics – Automotive industry – Food and beverage industry – Construction materials industry – Airport logistics
Application examples	– Inclining tracks and hoists – Belt, chain or roller conveyors – Pallet conveyors and palletizers – Rollover machines – Roller conveyors or ascending conveyors – Areas in front of a machine – Drives for positioning and synchronous operation
Variants	– Sizes - DRC1 with 2.6 Nm nominal torque (power rating 0.55 kW) - DRC2 with 7.2 Nm nominal torque (power rating 1.5 kW) - NEW DRC3 with 14.3 Nm nominal torque (power rating 3 kW) - NEW DRC4 with 19.1 Nm nominal torque (power rating 4 kW) – Communication interfaces: - DBC: Direct Binary Communication - DAC: Direct AS-Interface Communication - SNI: Single Line Network Installation - DSC: Direct Sbus communication – Standard flanges for combination with 7 series gear units from SEW-EURODRIVE – IEC flanges for stand-alone motors and for combination with IEC adapters - size DRC1 with shaft end 14 x 30 mm and IEC flange FF130 - size DRC2 with shaft end 24 x 50 mm and IEC flange FF165 – With mechanical brake as option

Mechatronic drive systems

Installation topology with SNI controller

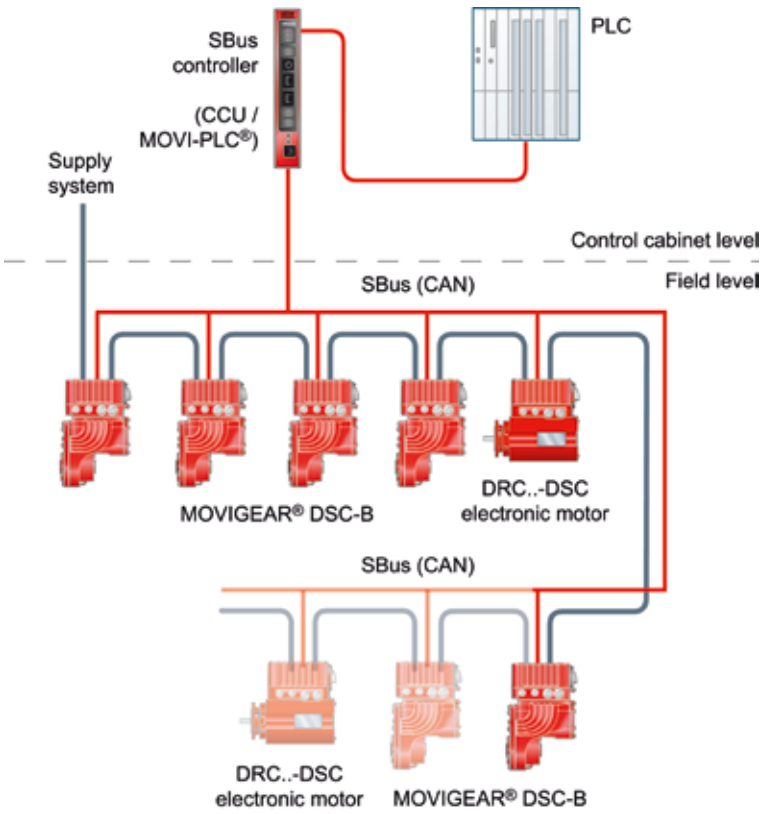
Single Line Network Installation	
Features	– Single control – Reduction in the number of components – Bus lines do not have to be routed in the field – No risk of hidden faults in the bus cabling – Reduced startup times – Shorter project runtimes/reduction of project costs
Application options	– As drive for applications with high breakaway and starting torques – Conveyor systems with variable speeds – As drive for applications that require soft and/or defined startup behavior – As group drive for easier implementation of synchronous operation
Application examples	– Belt conveyors – Pallet conveyors – Roller and wheel conveyors – Screw conveyors – Container and packaging unit transports – Chain and drag-chain conveyors



Installation topology with SEW system bus controller

SEW system bus High performance and fast bus communication via CAN

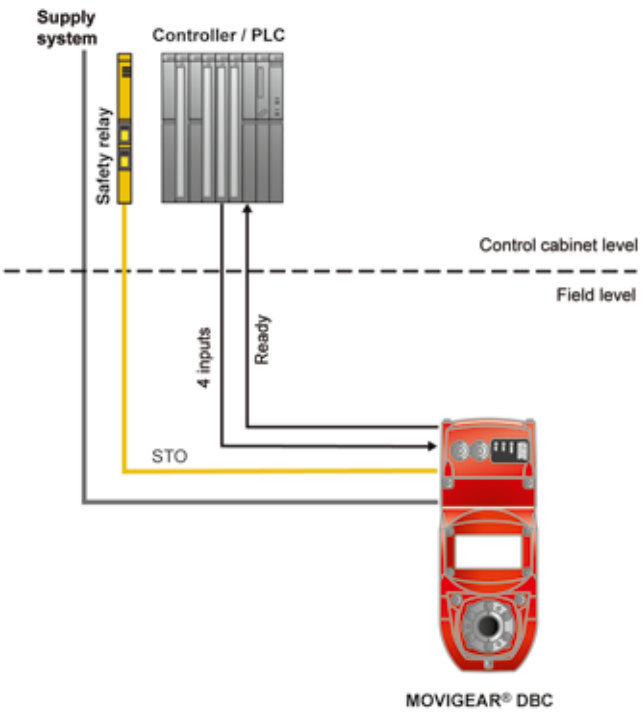
Features	– Line wiring – Single control – Integrated communication interface – Fast communication for short cycle times – Hybrid cable for minimum installation effort – System bus controller for control cabinet or fieldbus installation with integrated PLC – High drive dynamics and performance
Application options	– As drive for applications with high breakaway and starting torques – As drive for conveyor systems that have to be operated dynamically at varying speeds – For forming intelligent function groups – As group drive for realizing angular synchronism
Application examples	– Pallet conveyors – Machine-integrated conveyor belts – Feeding conveyors – Synchronized feeding conveyors – Reversing drives



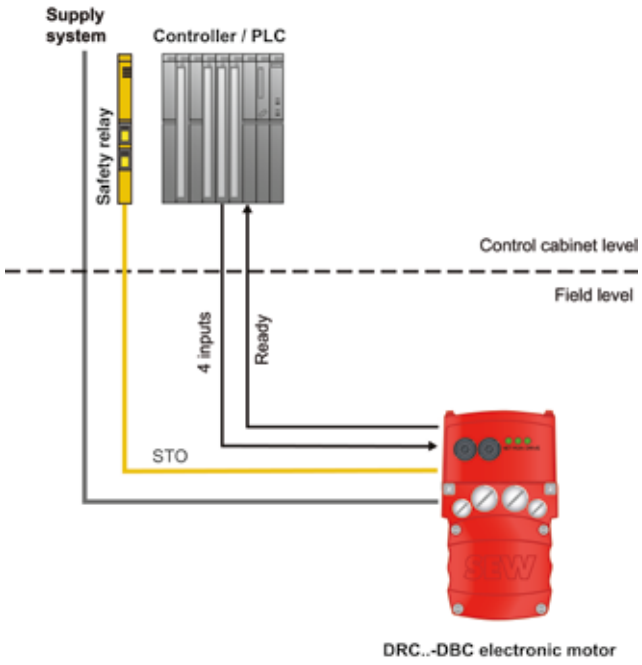
Mechatronic drive systems

Installation topology binary

Binary stand-alone operation	
Features	– Simple startup without PC using DIP switches and potentiometer – Parameterizable fixed speeds and ramps – Binary input control and signal relay evaluation via PLC – Local/manual operation via binary inputs – Interface for diagnostics and parameterization
Application options	– Simple stand-alone applications and single applications – For applications that require soft startup behavior – Applications with two fixed speeds – For applications with high breakaway torques – As a replacement for line-powered drives
Application examples	– Simple conveyors – Rotary tables – Actuating drives – Agitators and mixers – Crushers and shredders – Presses



MOVIGEAR® DBC

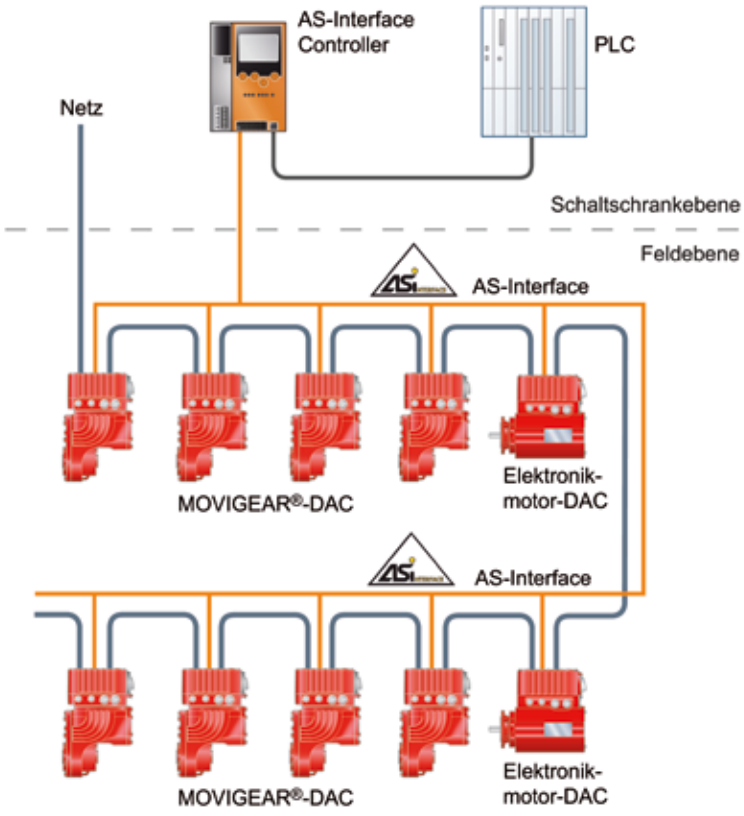


DRC..-DBC electronic motor

Installation topology with AS-Interface

AS-Interface Simple and economical fieldbus connection

Features	– Parameterizable fixed speeds and ramps – Control via standard AS-Interface specification – Connection of external sensors on the actuator – Voltage supply for connected sensors – Local/manual operation via binary inputs – Interface for diagnostics and parameterization – Available in 2 slave variants: - Binary slave (GLK30) - Double slave (GLK31)
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 connection with GLK31
Application examples	– Accumulating roller conveyors – Roller and wheel conveyors – Pallet conveyors – Rotary tables



MOVIMOT®

Gearmotor with integrated frequency inverter

Speed range [rpm]	Voltage [V]	Connection	Power [kW]	Torque [Nm]	Motor type
280 … 1400 (1700) 300 … 1500	3 x 380 … 500	人	0.37 … 4.0	2.52 … 27.3 2.35 … 25.5	DRS.., DRE.., DRP.. DRE..J, DRU..J
290 … 2900 300 … 2610	3 x 380 … 500	△	0.55 … 4.0 0.37 … 4.0	1.81 … 13.2 1.35 … 14.6	DRS.., DRE.., DRP.. DRE..J, DRU..J
280 … 1700	3 x 200 … 240	人人	0.37 … 2.2	2.08 … 12.4	DRE.., DRS..

Features	– The product of success in decentralized drive technology: the ingenious combination of gearmotor and digital frequency inverter – Available in all standard gearmotor variants and mounting positions, with or without brake – MOVIMOT® D can be combined with the motor series DR.. for different efficiency levels as standard: - with DRU.. motors = IE4 Super Premium Efficiency - with DRP.. motors = IE3 Premium Efficiency - with DRE.. motors = IE2 High Efficiency
Degrees of protection	IP54, optionally IP55, IP65 or IP66
Ambient temperature	–30 °C/–20 °C to +40 °C (depending on the motor)
Control via binary signals	Inputs for CW/stop, CCW/stop, setpoint changeover, potential-free signal relay, fixed setpoints, acceleration and deceleration ramps
Control via fieldbus communication	In combination with fieldbus interfaces with and without minicontroller PROFIBUS, PROFIsafe, INTERBUS, DeviceNet, CANopen, AS-Interface, PROFINET IO and NEW SBUS^{PLUS}/EtherCAT® (see page 187)

Use in stand-alone applications	In combination with the options: – MLU..A: Local DC 24 V supply – MLG.1A: Local speed control module with DC 24 V supply – MBG11A: Speed control module for setting and displaying the setpoint frequency – MWA21A: Setpoint converter for interfacing analog setpoints (0 ... 10 V, 0 ... 20 mA, 4 ... 20 mA) to RS-485
Use in decentralized installation	In combination with the field distributors: – MF.../Z.3. – MF.../Z.6. – MF.../.../Z.7. – MF.../.../Z.8. – And associated hybrid cables
Diagnostics	3-color LED to indicate operating and fault states via diagnostic interface, serial interface RS-485 and MDG11A option or PC
Approval	IEC or cULus

safetyDRIVE
functional safety

FS	Safe Torque Off (STO) up to PL d according to EN ISO 13849-1

Features of MOVIMOT® in category 3D	– Variant: wtih EDR.. motors and integrated frequency inverter – Specifically for use in potentially explosive dust and air mixtures – Power range 0.25 … 3.0 kW, with or without brake, for supply voltages of 400 … 500 V

Nominal speed [rpm]	Voltage [V]	Connection	Power [kW]	Torque [Nm]
1400	3x 400 … 500	⅄	0.25 … 3.0	1.7 … 20.5
2900	3x 400 … 500	△	0.37 … 3.0	1.2 … 9.9

MOVI-SWITCH®

Gearmotor with integrated switching and protection function

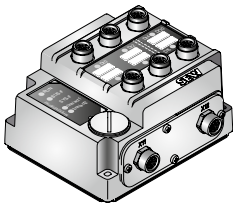
Features	– Switching and protection function integrated in the motor terminal box – Compact and robust gearmotor – No further cabling required – No additional control cabinet space is needed – Available in all AC motor and brakemotor combinations of the series DR.. with the matching gear units		
Number of poles	Power range [kW]		
	MSW-1E	MSW-1EM	MSW-2S
4	0.37 ... 3.0	0.09 … 0.25	0.37 ... 3.0
2	0.37 ... 3.0	0.12 … 0.37	0.37 ... 3.0
6	0.25 ... 1.5	–	0.25 ... 1.5
Switching function	On/off one direction of rotation		On/off two directions of rotation
Switching element	Contactless star bridge switch		Switching element with contact
Direction of rotation	CW or CCW, depending on the phase sequence		CW and CCW, regardless of the phase sequence

<table>
<tr><td rowspan="2">Controller</td><td colspan="2">– Binary control signals RUN / OK
– Connection using 1x M12 plug connector</td><td rowspan="2">– Binary control signals CW / CCW / OK
– Connection using 2x M12 plug connectors
– Alternatively with integrated AS-Interface</td></tr>
<tr><td>Optional with external AS-Interface</td><td>Alternatively with integrated AS-Interface</td></tr>
<tr><td>Brake management</td><td>With brake rectifier as standard: BGW</td><td>With brake rectifier as standard: BG</td><td>– Integrated brake control
– Electrical manual brake release with optional BGM rectifier</td></tr>
<tr><td>Motor protection</td><td colspan="3">Direct temperature monitoring with integrated evaluation</td></tr>
<tr><td>Degree of protection</td><td colspan="3">IP54, optionally IP55, IP65 or IP66</td></tr>
<tr><td>Ambient temperature</td><td colspan="3">–25 °C … + 40 °C (… + 60 °C)</td></tr>
</table>

Fieldbus interfaces, field distributors and cable systems

MF.. fieldbus interface

MFE52 fieldbus interface for PROFINET IO



MQ.. fieldbus interface

Features	– Connection of MOVIMOT® and MOVI-SWITCH® drives to the standardized fieldbus systems PROFIBUS, PROFIsafe, INTERBUS, CANopen, DeviceNet and PROFINET IO – Fieldbus interfaces are based on a module carrier 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 variable 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. – 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 – IP65 degree of protection – Option package: Degree of protection IP66, stainless steel cable glands, pressure compensation fitting, M12 metal plug for fieldbus modules with M12 plug connectors	
		Additionally integrated controller with the following functions: – Programmable via IPOS$^{plus®}$ – 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 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 prefabricated cable with plug connector – 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 plug 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: MFE72A SBUS^{PLUS}/EtherCAT® fieldbus interface

Features	– Connection of MOVIMOT® drives to an SBUS^{PLUS}/EtherCAT® fieldbus system – Compatible with all existing SEW field distributors – Reading-in of sensor signals via M12 plug connectors – Control of actuators via M12 plug connectors – IO update cycle ≥ 1 ms – Selectable number of process data (4PD/10PD) – Degree of protection IP65
Seamless networking	– The MFE72A fieldbus interface enables simple and efficient communication between decentralized drives and SBUS^{PLUS}/EtherCAT® masters – Added value due to flexible additional functions such as encoder evaluation and counting input for fast pulse trains
Integrated additional functions	– Integrated encoder evaluation for master-based simple positioning – Compatible with built-in encoder EI7C from SEW – Counting input for fast pulse trains, e.g. for product identification using a light barrier

MOVIFIT® basic

Decentralized drive unit

Features	Minimum effort – maximum benefit: – Drive unit designed specifically for intralogistics applications – 2 variants: - MOVIFIT® basic as motor controller - MOVIFIT® basic as motor starter – Areas of application: simple applications - in intralogistics, for package or pallet conveyors - in the beverage industry for conveying bottles or crates - and for many more goods to be conveyed
Installation concept and accessories	As much as necessary – as little as possible: – Simple connection and wiring technology enables quick and user-friendly startup – Integrated contact block for energy distribution with modern and reliable quick connector 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 quick mounting and installation – In connection with AS-Interface, two sensors can be connected to the unit for direct communication with the plant PLC, at no additional costs

MOVIFIT® basic motor controller				
Function	Frequency inverter with configurable ramps and 4 speeds			
Control	AS-Interface		Binary control signals	
Type designation	MBF07A-K1-A1	MBF15A-K1-A1	MBF07A-B1-A1	MBF15A-B1-A1
Max. motor power [kW]	0.75	1.5	0.75	1.5
Supply voltage [V_{AC}]	AC 3x 380 – 10% … 480 + 10%			
Line frequency [Hz]	50 / 60			
Line connection / cable cross section	FieldPower® contact block*			
Line protection	External			
Nominal output current [A]	2.2	4.1	2.2	4.1
Controller connection	M12 plug connector: 1x male / 2x female		M12 plug connector: 2x male / 1x female	
Inputs and outputs	2 digital inputs for connecting external sensors		– 4 control inputs – 1 digital output – DC 24 V output	
Brake control	– Switched power output at the controller – Brake voltage = Line voltage – BG rectifier in the motor terminal box			
Dimensions L x W x H [mm]	255 x 150 x 159			

MOVIFIT® basic motor starter				
Function	Reversing	Duo	Reversing	Duo
Control	AS-Interface		Binary control signals	
Type designation	MBS4RA-K1-A1	MBS4DA-K1-A1	MBS4RA-B1-A1	MBS4DA-B1-A1
Max. motor power [kW]	4	2x 2.2	4	2x 2.2
Supply voltage [V_{AC}]	AC 3x 380 – 10% … 480 + 10%			
Line frequency [Hz]	50 / 60			
Line connection / cable cross section	FieldPower® contact block*			
Line protection	External			
Nominal output current [A]	10	2x 5	10	2x 5
Controller connection	M12 plug connector: 1x male / 2x female		M12 plug connector: 2x male / 1x female	
Inputs and outputs	2 digital inputs for connecting external sensors		– 3 control inputs – 1 digital output – DC 24 V output	
Brake control	– Supply via motor connection – Brake voltage = Line voltage – BG rectifier in the motor terminal box			
Dimensions L x W x H [mm]	255 x 150 x 159			

MOVIFIT®

Decentralized drive control

Features	– Innovative connection technology stands for - Quick installation and startup - Easy diagnostics and maintenance, for example when replacing the electronics – Variants with pluggable motor output – Modular design, available in three variants – Decentralized installation technology with modern, application-oriented drive and communication functions – Versatile – Supports new strategies for optimized system topologies – Industry-specific unit variants as standard, for example MOVIFIT® with Hygienic^{Plus} option for use in wet areas in the beverage industry

MOVIFIT® function level

The function level indicates the functional scope of the software assigned to MOVIFIT® units regarding

– Operation
– Local system control
– Diagnostics

Classic Simple functions	– Control as fieldbus gateway via MOVILINK® – Easy to use and simple functions
Technology Free programming (MOVI-PLC®/MOVITOOLS® MotionStudio)	Programming is carried out in accordance with IEC 61131 (e. g. in FBD, LD, STL, ST, SFC) – MOVITOOLS® MotionStudio with PLC Editor, Application Builder, etc. – Multi-level library concept (application and program modules of the MOVI-PLC® controller series)
Communication	All common bus systems are available: PROFIBUS, PROFINET, PROFIsafe, DeviceNet, EtherNet/IP and Modbus/TCP, PROFINET interface SCRJ / POF

MOVIFIT® variants

MOVIFIT® MC

Features	– Up to three MOVIMOT® units can be connected using hybrid cables – Voltage range 3x 380 ... 500 V – Integrated power distribution and line protection – Integrated communication interface – Maintenance switch – 12 digital inputs + 4 digital inputs/outputs – CAN/SBus interface for external components – Simple and fast parameter setting via DIP switches or fieldbus

safetyDRIVE
Functional safety

NEW: MOVISAFE® S12 option

– Control via PROFIsafe with MOVISAFE® S12 option
– Safety functions according to IEC 61800-5-2:
  - Safe torque off (STO)
  - Safe stop (SS1(a), SS1(c))
  - Safe motion (SDI, SLS)
– Approvals
  - SIL 3 according to IEC 61508
  - 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)

MOVIFIT® variants

MOVIFIT® SC

Features	– Electronic (contactless) motor starter - When connecting 2 motors (dual starter) ➡ one direction of rotation - When connecting 1 motor (reversing starter) ➡ two directions of rotation – Power range - When connecting 2 motors ➡ 2x 0.37 to 1.5 kW - When connecting 1 motor ➡ 1x 0.37 to 3.0 kW – Parameterizable soft start time – Voltage range 3x 380 ... 500 V – Increased safety through switching of 3 phases – Integrated energy distribution – Integrated brake management for SEW three-wire brakes – Optional maintenance switch – Integrated communication interface – 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 – CAN/SBus interface for external components – Simple and fast parameter setting via DIP switches – Expanded parameter setting via fieldbus or diagnostic interface

MOVIFIT® FC

Features	
	– Parameterizable (open loop) frequency inverter – Power range from 0.37 to 4 kW (in two sizes) – Voltage range 3x 380 ... 500 V – Integrated energy distribution – Integrated brake management for SEW two-wire brakes and additional brake control output for non-SEW brakes – Optional internal braking resistor (integrated in ABOX) – Optional external braking resistor – Optional maintenance switch – Integrated communication interface – Freely programmable integrated controller (IEC 61131) – 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 for complex applications – CAN/SBus interface for external components – Simple and fast startup via DIP switches – Expanded parameter setting via fieldbus or diagnostic interface

safetyDRIVE
Functional safety

NEW: MOVISAFE® S12 option

– Control via PROFIsafe with MOVISAFE® S12 option
– Safety functions according to IEC 61800-5-2:
- Safe torque off (STO)
- Safe stop (SS1(a), SS1(c))
- Safe motion (SDI, SLS)
– Approvals
- SIL 3 according to IEC 61508
- 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)

MOVIPRO® SDC/ADC

Decentralized drive, positioning, and application controller

Simple project planning with MOVIPRO® SDC	– Standardized single-axis application modules are used for drive and positioning tasks – Speed and position can be controlled conveniently, simply and quickly
Adding functions with MOVIPRO® ADC	– Free programming according to IEC 61131-3 and PLCopen for system-specific or complex functions – Standardized application modules are used for drive and positioning tasks – Flexible and individual solutions, for example synchronization of several axes or local coordination of several actuators and sensors – Expanded safety functions
Compact power for decentralized applications: Features of MOVIPRO® SDC and MOVIPRO® ADC	– Power range 2.2 ... 15 kW - BG0: 2.2 kW - BG1: 4 kW, 7.5 kW - BG2: 11 kW, 15 kW / operation without fan up to 11 kW – Speed control and positioning – Optional encoder feedback for motor and track – Integrated brake controller with various brake voltages – Regenerative power supply as option – Fieldbus interfaces: PROFIBUS, PROFINET, PROFIsafe, EtherNet/IP, Modbus/TCP, DeviceNet – Integrated 12 DI + 4 DIO – Optional RS485, SBus, SBUS^{PLUS} interfaces for external actuators and sensors – Pluggable interfaces for energy, motor (power) and encoder (signals) – Local memory for parameters – IP54 degree of protection – Robust aluminum housing – Optional maintenance switch – Optional, separable connection unit for linear power bus

safetyDRIVE
Functional safety

MOVISAFE®: **Integrated functional safety**	– Safe Torque Off (STO) up to category 3 and PL d according to EN ISO 13849-1 – Optional: safe bus system PROFIsafe – Optional: safe brake control

Flexibility simplifies the integration of many functions and reduces the complexity of machines and systems	– Communication via any established fieldbus system enables regional flexibility – State-of-the-art connection technology based on plug connectors ensures fault-free installation and ease of maintenance – Parameterizable inverters support a wide range of motors (asynchronous and synchronous), from standard DRS.. to premium efficiency DRP.. motors and CMP motors – Simplified integration of many functions and reduced complexity of machines and systems
Consistent plant concept for the entire materials handling system	– Installation topology (energy, bus) – Operation, parameter setting, diagnostics with the MOVITOOLS® MotionStudio engineering software
Areas of application	– Scissor lift tables – Lifting/lowering conveyors – Lifting stations – Conveyor trolleys – Rotary feeders – Rotary indexing tables – High-speed horizontal conveyors with positioning

MOVIPRO® for MAXOLUTION® system solutions

Specific MOVIPRO® variant with expanded functions as drive and system controller for MAXOLUTION® system solutions

Features	– Power range 0.75 ... 22 kW – Up to 3 axes can be integrated – Speed control and positioning – Control and supply of external actuators (auxiliary axes) – Fieldbus and network interfaces – Integrated DIO – Pluggable interfaces for power, motor and encoder – Robust and compact aluminum housing – IP54 degree of protection

safetyDRIVE
Functional safety

MOVISAFE®: **Integrated functional safety**	– Safe Torque Off (STO) up to category 3 and PL d according to EN ISO 13849-1

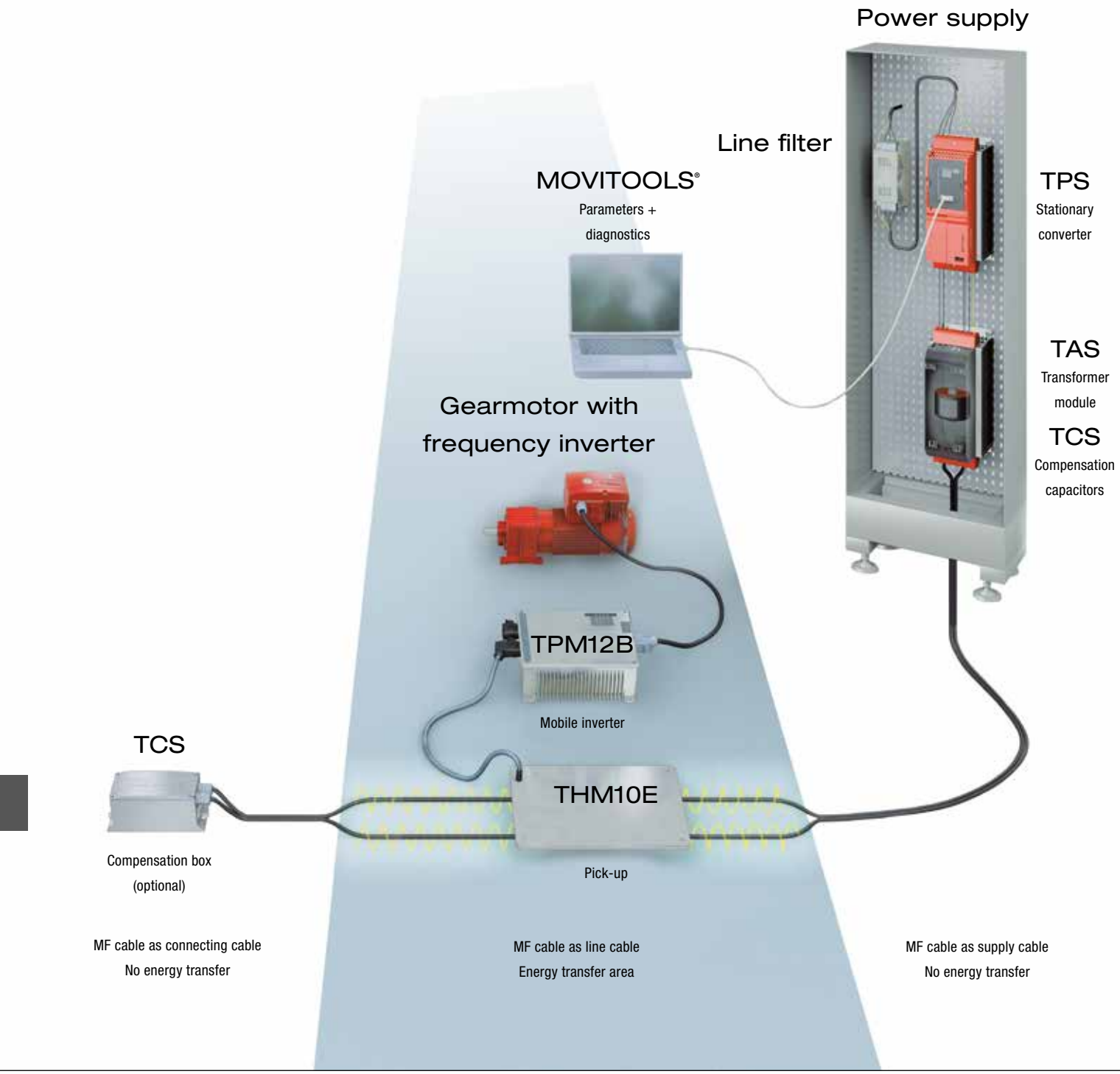
MOVIPRO® additional functions for MAXOLUTION® system solutions	**Positioning and navigation** Accurate track positioning and inductive or optical track guidance **Communication** WNI Contactless communication for slotted microwave guide, radiating cable or radio – Network structure – Standard Ethernet-based products **Energy supply** Contactless energy supply with MOVITRANS® for mobile systems **Energy management** Energy storage with quick charging – Contactless/inductive with MOVITRANS® – Management of peak powers and regenerative energy **safetyDRIVE functional safety** – The "MOVISAFE® HM31 decentralized safety controller" assembly meets the safety requirements of MAXOLUTION® system solutions; based on EN 61800-5-2, ready to use drive and application modules are available for mobile materials handling technology - Safe disconnection and stop - Safe range changeover - Safe detection of movement and position, e.g. SLS, SLP for travel and lifting axes – Hardware assignment: - Safe digital inputs (OSSD-capable) and outputs - Safe counting inputs (HTL, TTL) - CAN and RS485 interfaces – Certification: - SIL 3 according to IEC 61508 - PL e according to EN ISO 13849-1 – Communication: - Safe communication safeethernet (SIL 3, master & slave), also possible via WiFi - Safe communication PROFINET PROFIsafe (controller/host & device/device) - Modbus TCP/UDP (master & slave) TCP send/receive
Software alternatives	– Parameterizable plant software MOVIVISION® - Configuration, operation and diagnostics of the system solution - Central data management - No programming required - Standardized system functions for mobile systems – Free programming with MOVI-PLC® according to the IEC 61131 standard and PLCopen for system-specific or complex functions – Programming or parameterization of safety functions with engineering tool

MOVITRANS®

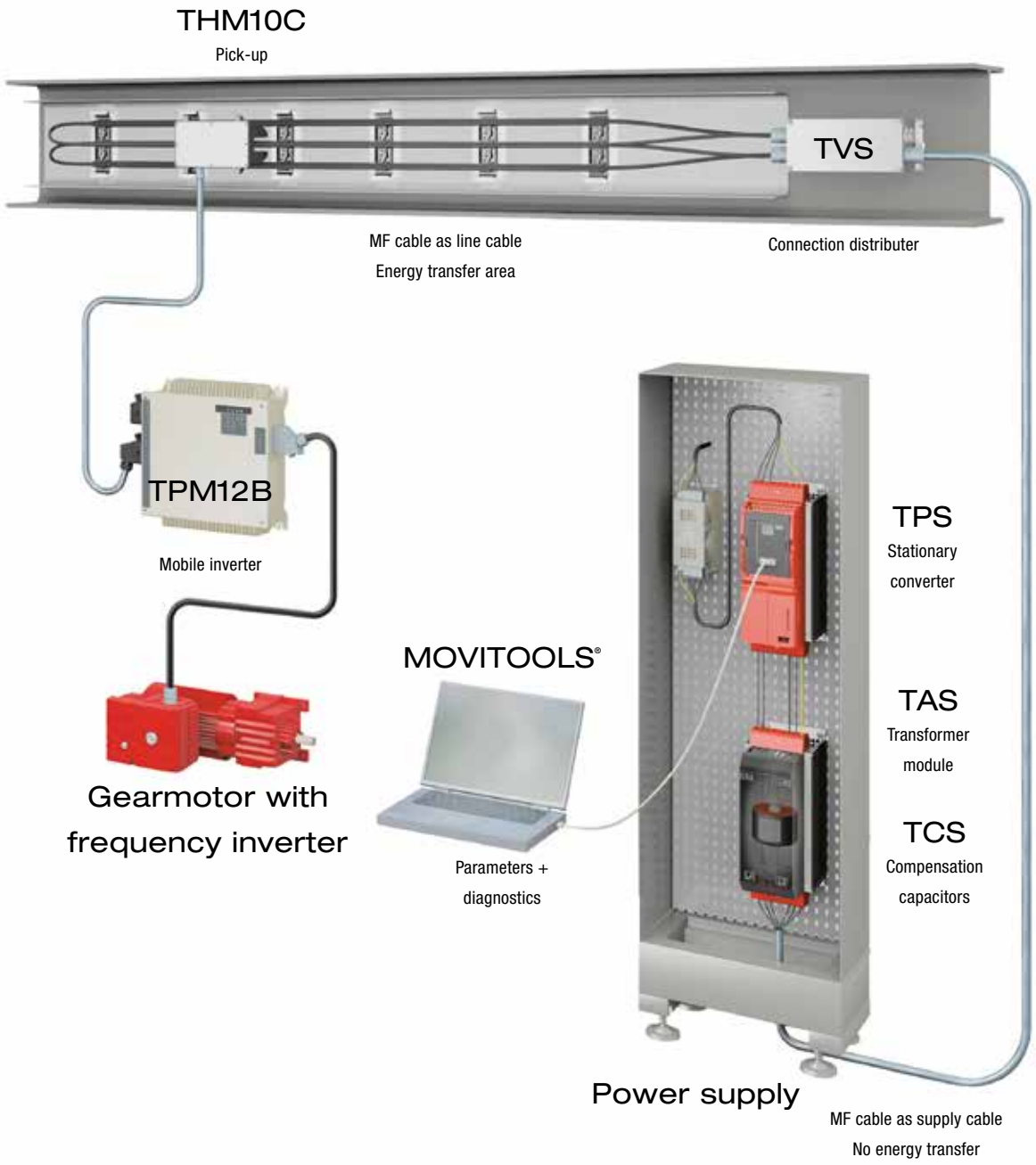
Contactless energy transfer

Features	– MOVITRANS®, the contactless energy transfer system from SEW-EURODRIVE, works on the principle of inductive energy transfer – Electrical energy is transferred without contact from a fixed conductor to one or more mobile consumers – The electromagnetic connection is made via an air gap and is not subject to wear; it is therefore maintenance-free – Contactless energy transfer is emission-free and resistant to contamination from external sources – Tested according to BGV B11
Areas of application	– Perfect supply system for all mobile applications – Long distances are covered at high speed – When maintenance-free operation is required – When additional environmental contaminants are not permitted in sensitive areas – In wet and humid areas
Stationary components	
TPS stationary converter	– Power: 4.0 kW or 16.0 kW – V_{line}: 380 V ... 500 V ± 10% – Degree of protection: IP20
TAS transformer module	– Power: 4.0 kW or 16.0 kW – I_A: 60 A or 85 A – Degree of protection: IP10
TSC compensation capacitors	– Capacitance values: 2 µF, 4 µF, 8 µF, 16 µF or 32 µF – Output current: 60 A or 85 A – Degree of protection: IP00

Mobile components	
TPM12B mobile converter	– Rated output power: - when connecting 4x THM10C: max. 3.6 kW - when connecting 2x THM10E: max. 3.0 kW – Output voltage: DC 500 V – Additional output voltage: 24 V, max. 2 A – Degree of protection: IP65
THM10E pick-up	– Power: 1.5 kW – Degree of protection: IP65
THM10C pick-up	– Rated power: 0.8 kW – Peak power: 0.9 kW – Degree of protection: IP65
TVS connection distributor	– Degree of protection: IP65 – Output current: 60 A or 85 A
TCS compensation box	– Degree of protection: IP65 – Output current: 60 A or 85 A – Compensates a travel distance of 25 to 30 m



MOVITRANS® with flat pick-up (THM10E)



MOVITRANS® with U-shaped pick-up (THM10C)

TIS
Installation components
for line cable support

Industrial gear units

Helical/bevel-helical gear units

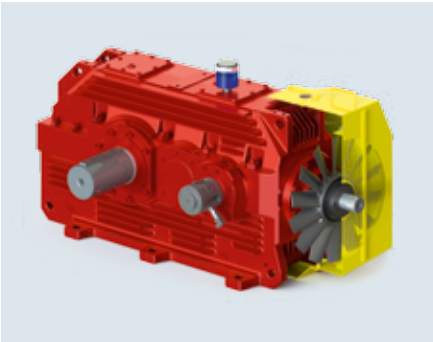
X series

Features	– 23 sizes – Single-piece and split gear unit housing – Universal mounting positions – Distinctive modular technology – Customer-specific adaptations – Areas of application: Conveyor systems in various industries, mixers, agitators, etc. – Also available in ATEX design
Benefits	– 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 type	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 units X.K..:	2, 3 and 4 stages	6.3 ... 450	6.8 ... 475[1)]
Bevel-helical gear units X.T..:	3 and 4 stages	12.5 ... 450	6.8 ... 175

[1)] 2 stages: M_{N2} = 6.8 … 175 kNm

A project-specific solution can be offered on request for the torque range 475 to 1200 kNm. Please contact your local sales representative.



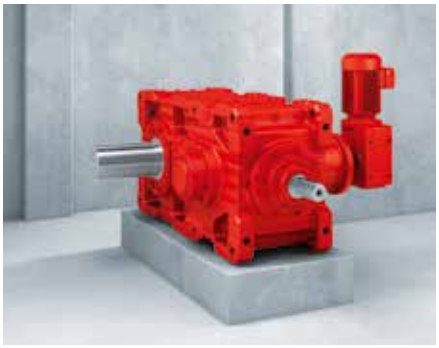
X series – belt conveyors

Features	– Gear unit consists of the tried and tested components of the X series – Three-stage helical-bevel gear unit with special horizontal housing for improved heat dissipation – Increased cooling capacity due to efficient fan concept – Comprehensive range of accessories of the X series – Versatile shaft concepts – Taconite sealing system – Pressure lubrication and splash lubrication available – Also available in ATEX design – Standard backstop; optional torque-limited backstop – Available as a complete package, e.g. including brake, swing bases, rigid flange coupling, condition monitoring, etc.
Benefits	– Efficient cooling concept eliminates the need for external cooling units and a larger gear unit – Reliability especially in harsh environments – Simplified maintenance – two-piece housings

Gear unit type	Stages	Gear ratio [i]	Nominal torque M_{N2} [kNm]
Bevel-helical gear units X3K.B..:	3 stage	12.5 …90	58 … 475

Industrial gear units

Helical/bevel-helical gear units



X series – Bucket elevator drives

Features	– 19 sizes – Based on the X series with the successful SEW gearmotor 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		
Benefits	– All drive components are perfectly matched – Reliability thanks to speed monitoring – High availability thanks to modular concept – Extensive supplementary equipment available on request		
Gear unit type	**Stages**	**Gear ratio [i]**	**Nominal torque M_{N2} [kNm]**
Bevel-helical gear units X3K.B..:	3 stages	28 … 80	6.8 … 270

MC series

Features	– 8 sizes – Modular concept – Block housing without parting line – Universal mounting positions – EBD version with reinforced bearings and “Drywell” seal – Areas of application: Conveyor systems in various industries, mixers, agitators, shredders and disintegrators, etc.		
Benefits	– High power density – Sturdy unit due to block housing		
Gear unit type	**Stages**	**Gear ratio [i]**	**Nominal torque M_{N2} [kNm]**
Helical gear units MC.P..:	2 and 3 stages	7.1 ... 112	6 ... 65
Bevel-helical gear units MC.R..:	2 and 3 stages	7.1 ... 112	6 ... 65

Industrial gear units

Helical gear units

MACC series

Features	– 5 sizes – Improved motor lantern – 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
Benefits	– Optimized thermal rating – High stiffness of the housing – High permitted axial load on the output shafts – Reliable surface treatment for use under aggressive ambient conditions

Gear unit type MACC series	H	W	L	Gear ratio [i]	Nominal torque M_{N2} [kNm]
05	484	480	897	9 … 25	21
06	516	530	992		28
07	540	570	1055		37
08	585.5	716	1187		51
09	606	730	1267		66

Helical/bevel-helical gear units

ML series

Features	– 5 sizes – Housing in welded construction with parting line – Horizontal mounting position – Areas of application: Hoists in crane construction, mill drives in raw material processing, special machines and stand-alone machines, etc.		
Benefits	– Flexible thanks to the welded construction of the housing – Service-friendly due to the parting line		
Gear unit type	**Stages**	**Gear ratio [i]**	**Nominal torque M_{N2} [kNm]**
Helical gear units ML.P..:	2, 3 and 4 stages	5.6 ... 315	180 ... 680
Bevel-helical gear units ML.R..:	3, 4 and 5 stages	14 ... 1250	180 ... 680

Industrial gear units

Planetary gear units

P series

Features	– 11 sizes – High transmittable torque and very compact design – Great number of variants thanks to the combination options with the proven SEW gearmotor – High torsional rigidity – Areas of application: Construction materials industry, cement industry, process engineering, steel industry, materials handling, and waste water industry.
Benefits	– 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 type	Stages	Gear ratio [i]	Nominal torque M_{N2} [kNm]
Helical planetary gear units (gearmotors) P.RF..:	4 and 5 stages	100 ... 4000	24 ... 630 [1]
Bevel-helical planetary gear units (gearmotors) P.KF..:	5 stages	140 ... 4000	24 ... 630 [1]

[1] Increased nominal torque for available sizes on request

P.MC series

Features	– 9 sizes – High transmittable torque and very compact design – Variable in the gear reduction range – High torsional rigidity – Areas of application: Apron conveyors, bucket-wheel reclaimers, jib drives, etc.
Benefits	– Sealing systems and lubrication variants are available to suit specific applications – Numerous options are available

Gear unit type	Stages	Gear ratio [i]	Nominal torque M_{N2} [kNm]
Helical/bevel-helical planetary gear units P1.MC..:	3 and 4 stages	31.5 ... 500	24 ... 185
Helical/bevel-helical planetary gear units P2.MC..:	4 and 5 stages	140 ... 4000	69 ... 359*

* For combinations over 359 kNm, please contact your local sales representative

Industrial gear units

Planetary gear units

XP series

Features	– 13 sizes – Transmission of high torque ratings – Suitable for high motor power – High power density – Wide gear ratio range – Variable cooling system – 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
Benefits	– Maximum flexibility makes for customized solutions – Gear ratio according to customer request – Wide gear ratio range – Wide range of equipment options

Gear unit type	Stages	Gear ratio [i]	Nominal torque M_{N2} [kNm]
Planetary gear units XP..:	2 and 3 stages	50 ... 3000 [1]	600 … 5200 [2]

[1] In combination with primary gear units from the modular system of SEW

[2] Other sizes with higher nominal torque on request

Helical gear units

M1 series

Features	– 11 sizes – Foot-mounted helical gear units – Cooling with fan or cooling coil – Oil heater available – Sealing system also for harsh environments – Areas of application: Pump drives or rolls and refiners in the paper industry		
Benefits	– Particularly maintenance-friendly due to horizontally split housing design – Optimized thermal rating – Gear unit for small gear ratio ranges for more cost-effective energy efficiency in many applications		
Gear unit type	**Stages**	**Gear ratio [i]**	**Nominal torque M_{N2} [kNm]**
Helical gear unit M1..:	1 stage	1.25 … 7.1	4.5 …168

Industrial gear units

NEW: Segmented girth gears

Segmented girth gears

Features	– Girth gear pitch diameter up to about 16 m* – Maximum width 600 mm – Maximum power 4000 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)
Benefits	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. Easy 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. Easy 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. High pitch accuracy** - The segmented girth gears from SEW-EURODRIVE guarantee an 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 – Installation: Flange – Rotational speed: high (10 … 20 rpm) Example: rotary kiln / application size examples – Power rating: up to approx. 1 MW – Diameter: up to approx. 9 m – Installation: Leaf spring – Rotational speed: low (1...2 rpm)
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 and base frame – Couplings and covers – Condition monitoring – Installation as well as startup of the whole drive system

Industrial gear units

Explosion-proof industrial gear units

Explosion protection according to ATEX

ATEX versions of industrial gear units: (Group II, categories 2/3G and 2/3D, zones 1, 21, 2 and 22)	– X series – MC series – P series – P.MC series

Customized solutions

Drive packages

Components	– Industrial gear unit – Segmented girth gears – Motor – Coupling – Brake – Steel structure – Other components are available after consultation with SEW-EURODRIVE

Control technology

Control technology from a single source	Control technology "made by SEW-EURODRIVE" combines scalable hardware (Controller basic, standard, advanced or power) with freely programmable motion control software (MOVI-PLC®) or already preprogrammed application modules (CCU): – Hardware controller: pages 217 … 223 – Accessories: modular I/O system and ORA11B modem for remote maintenance: pages 224 + 225 – Software MOVI-PLC® or CCU: pages 226 + 227
Features	– Continuous, scalable and powerful controller and software program – Extensive motion control functions from single-axis positioning to electronic cam all the way to robotics – Flexible and adjustable control technology for efficient automation concepts – More flexibility and cost-effectiveness for machine automation – Optimization of - Investment and startup costs - Production capacities - Possible follow-up costs for maintenance and repair
Variants	The controllers are available as option cards for simple integration – into MOVIDRIVE® B and MOVITRAC® B inverters, – into the master module of the MOVIAXIS® multi-axis servo inverter, and – into decentralized MOVIFIT® controllers in IP65, – or as compact controller on a mounting rail All SEW-EURODRIVE inverters can be connected using the system bus
Scalable performance classes	The controllers are available in four performance classes: – Performance class "basic": Local module control for simple automation tasks with speed and positioning applications – Performance class "standard": Used as module controller or for complete automation of demanding automation tasks with motion control functions, such as positioning, or print mark control with medium response times and a maximum of 16 axes – Performance class "advanced": Used as module controller or for complete automation for demanding automation tasks with high-end motion control functions, such as electronic gear unit, electronic cam, or robotics with short response times and a maximum of 64 axes – Performance class "power": Can be used as module control or for complete automation for demanding automation tasks with a great number of axes and extremely short response times, such as electronic cam or electronic gear, or 3D robotics functions (8 degrees of freedom) and a maximum of 64 axes

Hardware: Controller performance class “basic”

Control card basic DHP11B	– In unit variants T0, T1, T2 / for installation in MOVIDRIVE® B and MOVITRAC® B
Features	– Motion and logic controller in the lower power range – Motion control libraries and program modules for decentralized motion control functionality – Motion control for up to 12 axes via SBus – I/O system via SBus – Engineering via RS485
Technical data	– PROFIBUS slave DP-V1 – 2x CAN, 1 electrically isolated – 1x RS485 – 8 digital I/Os – Status display of PLC and fieldbus – 512 kB program memory + 128 kB data memory – 16 kB retain variables + 8 kB system variables (retain) – Free-running task and 4 cyclic tasks (1 ms, 5 ms, 10 ms, 100 ms) – Optional second RS485 interface (electrically isolated)
	**MOVIFIT® MTx basic variant**
Features	– MOVIFIT® function level Technology – With integrated control card basic – For decentralized field installation up to IP69 – As freely programmable motion and logic controller (MOVI-PLC®) with libraries and program modules specifically for materials handling applications – As parameterizable configurable control unit (CCU) with special application modules for materials handling applications, such as cam or simple positioning

Control technology

Hardware: Controller performance class “standard”

Control card standard DHx21B	– DHE21B with Ethernet interface – DHF21B additionally with PROFIBUS and DeviceNet slave interface – DHR21B additionally with PROFINET / EtherNet/IP / Modbus TCP/IP slave interface – In T0 variant / installation in MOVITRAC® B and MOVIDRIVE® B
Features	– Motion and logic controller for response times > 10 ms – Single-axis motion control libraries and program modules – Motion control up to 16 axes via SBus – MOVI-PLC® I/O system via SBus – SD card for easy unit replacement and recipe management – Fast engineering via USB and Ethernet
Technical data	– 1x Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3 – 2x CAN, 1 electrically isolated – 2x RS485, 1 electrically isolated – USB device – DHF21B: PROFIBUS slave DP-V1, DeviceNet slave – DHR21B: PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave – 8 digital I/Os – Status display of 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 ... 10 000 ms) – PC-readable memory card for firmware and application program

MOVIFIT® FDC-SNI standard

Features	– MOVIFIT® FDC-SNI with integrated control card standard – Module controller for up to 16 axes via SBus or max. 10 MOVIGEAR® SNI – As freely programmable motion and logic controller (MOVI-PLC®) with libraries and program modules specifically for materials handling applications – As parameterizable configurable control unit (CCU) with special application modules for materials handling applications, rapid/creep speed positioning, or bus positioning – Motion and logic controller for response times > 10 ms – Single-axis motion control libraries and program modules – SD card for easy unit replacement and recipe management – Fast engineering via USB and Ethernet
Technical data	– 1x Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3 – 1x CAN, electrically isolated – 1x SNI – 1x RS485, electrically isolated – USB device – PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave – 12 digital inputs and 4 digital I/Os – Status display of 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 ... 10 000 ms) – PC-readable memory card for firmware and application program

Control technology

Hardware: Controller performance class “advanced”

Control card advanced DHx41B	– DHE41B with Ethernet interface – DHF41B additionally with PROFIBUS and DeviceNet slave interface – DHR41B additionally with PROFINET / EtherNet/IP / Modbus TCP/IP slave interface – In T0...T25 variants / installation in MOVIDRIVE® B, MOVITRAC® B, MOVIAXIS® master module
Features	– Motion and logic controller for very short response times – Technology motion control libraries and program modules, such as electronic gear unit, electronic cam, and robotics with extensive kinematic transformations – Motion control up to 64 axes via SBus or for high performance with SBUS^{PLUS} – MOVI-PLC® I/O system via SBus or for high performance with SBUS^{PLUS} – SD card for easy unit replacement and recipe management – Fast engineering via USB and Ethernet
Technical data	– 1x Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3 – 1x Ethernet as SBUS^{PLUS} (EtherCAT®) master – 2 CAN interfaces, 1 electrically isolated – 2x RS485, 1 electrically isolated – USB device – DHF41B: PROFIBUS slave DP-V1, DeviceNet slave (DHF41B) – DHR41B: PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave – 8 digital I/Os – Status display of 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 tasks (1 ... 10 000 ms) – PC-readable memory card for firmware and application program

MOVIPRO® ADC advanced

Features	– MOVIPRO® ADC with integrated control card advanced – For compact power with decentralized field installation up to IP54 – As freely programmable motion and logic controller with libraries and program modules specifically for materials handling applications – As parameterizable configurable control unit (CCU) with special application modules for materials handling applications and positioning applications, such as cam positioning, bus positioning, modulo positioning, or sensor-based 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 card for easy unit replacement and recipe management – Fast engineering via USB and Ethernet
Technical data	– 1x Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3 – 1x Ethernet as SBUS^{PLUS} (EtherCAT®) master – 1x CAN, electrically isolated – 1x RS485, electrically isolated – PROFIBUS slave DP-V1, DeviceNet slave (DHF41B) – PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave – 12 digital inputs and 4 digital I/Os – Status display of 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 tasks (1 ... 10 000 ms) – PC-readable memory card for firmware and application program

Control technology

Hardware: Controller performance class “advanced”

MOVIFIT® FDC-SNI advanced

Features	– MOVIFIT® FDC-SNI with integrated control card advanced – Module control for up to 16 axes via SBus or a maximum of 10 SNI actuators – As freely programmable motion and logic controller (MOVI-PLC®) with libraries and program modules specifically for applications in the materials handling technology – As parameterizable configurable control unit (CCU), with special application modules for materials handling, rapid/creep speed positioning or bus positioning – Motion and logic controller for short response times – Single-axis motion control libraries and program modules – SD card for easy unit replacement and recipe management – Fast engineering via USB and ETHERNET
Technical data	– 1x Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3 – 1x CAN, electrically isolated – 1x SNI – 1x RS485, electrically isolated – USB Device – PROFINET slave, EtherNet/IP slave, Modbus TCP/IP slave – 12 digital inputs and 4 digital IOs – Status display of PLC and fieldbus – Realtime clock – 4 MB program memory + 12 MB data memory – 32 KB retain variables + 24 KB system variables (retain) – 8 cyclic tasks (1 ... 10 000 ms) – PC readable memory card for firmware and application program

Hardware: Controller performance class “power”

Control card power UHX71B	High-end motion & logic control The ”power“ performance class controllers of SEW-EURODRIVE are the ideal solution for applications with many axes and extremely short response times. The UHX71B card can be expanded with a Windows operating system as an option. This will allow you to implement control functions and sophisticated visualization tasks in one controller. Available as – IEC 61131-3 programmable motion and logic controller MOVI-PLC® power
Features	– In T0 ... T25 variants – Can be used as compact controller for all inverters – Reduced interfaces: All functions are controlled by one controller: - Demanding technology functions, such as electronic cam or electronic gear unit, or - 3D robotics functions with up to 8 degrees of freedom – Allows for implementing highly complex machines in an efficient and easy manner – Up to 64 centrally calculated motion control axes can be handled within a millisecond – There is sufficient processing power available even for the most demanding application programs – SBUS^{plus}/EtherCAT® on board for clock-synchronous transfer of processing power to the drives – A CFast memory card for firmware, application and user data facilitates easy unit replacement and enables extremely quick data access – CFast memory card OMW71B to add a Windows platform to the system. This will allow you to visualize your plant with HMI-Builder PRO.
Technical data	– Intel Core2Duo 2.2 GHz – 1x Gigabit Ethernet (10/100 BaseT) for engineering or TCP/IP and UDP via IEC 61131-3 – 1x Ethernet interface for SBUS^{PLUS} – 16 MB program memory + 64 MB data memory – 32 kB retain variables + 24 kB system variables (retain) – Free-wheeling task and 8 cyclic tasks (1 ... 10 000 ms) – PC-readable memory card for firmware and application program – CAN as an option (OSC71B) – Fieldbus slave connection for PROFIBUS with unit variant UHX71B-OSP71B and PROFINET, EtherNet/IP and Modbus TCP with unit variant UHX71B-OSR71B

Control technology

Hardware: Memory card, compact design and accessories

OMH41B memory card	– For performance classes standard and advanced – In conjunction with the freely programmable MOVI-PLC® motion and logic controller, technology levels T0 to T25 depending on the required motion control functionality
UOH../DHx compact controller variant	– IP20 for control cabinet installation – For support rail mounting

I/O system

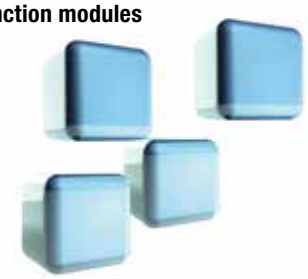
Features	– I/O system expands the digital and analog interfaces of the controllers – Up to 32 modules per bus coupler can be connected via the system bus in IP20 degree of protection – Bus coupler for SBus and SBUS^{PLUS} – When using the fast SBUS^{PLUS}, all inputs/outputs are transferred every millisecond – Ideal solution for high-performance servo applications Automatic access to a wide range of inputs/outputs: – I/O system – Directly to the I/Os integrated in the controller – I/Os of the controlled inverters
Benefits	– Powerful connection to the controllers via the system bus of the machine module – Scalable performance due to scalable connection to SBus or SBUS^{PLUS} – Optimally integrated into the programming software PLC Editor of MOVITOOLS® MotionStudio – Compact design and modularity reduce control cabinet space requirements to a minimum – Can be installed or replaced quickly and easily during startup or service – A variety of combination options makes for flexible and individual machine solutions

ORA11B / remote maintenance

Features	– Convenient engineering access also possible via remote maintenance – The simplest solution merely requires an analog telephone line: - The ORA11B modem converts the signals into Ethernet signals so the performance class advanced can be easily addressed - Ideal solution if the controller is used stand-alone to automate an entire machine – When a central PLC is used, this PLC is used to access the controller – 2 digital inputs/outputs each, SMS message functionality
Power supply	DC 0 ... 60 V / 3 ... 5 W
Functions	– Analog modem with dial-up line up to 56 kBit/s – Router with dial-in / dial-out / callback / DHCP server and client – Switch with 4 ports, 10/100 MBit/s, full and half-duplex
Configuration	Web interface (local / remote)

Control technology

Software: MOVI-PLC® motion and logic controller

Free programming of applications: MOVI-PLC® motion and logic controller	Available are: – Parameterizable function modules: Easy and convenient IEC 61131 and PLCopen programming – Program modules: Combine comprehensive drive functions – MOVI-PLC® can be integrated easily into any drive solution – Convenient access to all drive functions – Fast implementation of complex drive tasks – Inverters are connected via fast, clock-synchronous system bus – Response times are reduced and the performance of the drive system is enhanced, particularly when coordinating several axes – The programming languages FBD, LD, IL, CFC, structured text and the modular I/O system allow to implement also conventional PLC tasks – Engineering of MOVI-PLC® and inverters using the MOVITOOLS® MotionStudio engineering software, for example – MOVITOOLS® MotionStudio not only provides the programming environment but also all the tools required for starting up and diagnosing units from SEW-EURODRIVE
Function modules 	Versatile combinations and flexible use Function modules: – Provide for greatest possible warranty of proper functioning – Control a specific drive function (according to PLCopen) – Are clearly arranged in libraries according to their functions and inverter types – Can be flexibly combined, with some experience, to create the optimum program
Program modules 	Optimally combined for efficient use Program modules: – Combine comprehensive drive functions: - From simple functions, such as positioning, referencing or speed control - To technology functions for controlling an electronic cam or synchronous operation - Up to functions for multi-axis interpolations of kinematics – Conveniently provide the entire drive functionality via interface – Are ideal for PLC programmers who want to reduce the programming effort of the drive functionality “MultiMotion” program module of single-axis function – Drive functionality up to 24 axes – Technology functions, such as electronic cam and synchronous operation, interpolation mechanisms, cam controller, any much more – Graphical user interface for setting parameters, monitoring, and controlling the parameterizable functionality “AxisGroupControl Kinematics” program module – Control of individual axes or technology functions – Sophisticated path interpolation – Numerous sample programs – Transfer of path points and parameters – Graphical user interface for monitoring and controlling simple startup – Convenient program sequence test, and much more

Software: Configurable Control Unit (CCU)

Configuring applications: CCU (Configurable Control Unit)	– For easily configurable applications – Standardized single or multi-axis application modules, which are immediately executable – The module functionality is made available to a higher-level controller via fieldbus interface – Configuring the application modules for the machine is really simple: a PC program with a wizard queries all the relevant data. In this way, error sources are minimized significantly and startup can be carried out quickly. Using a special control mode, startup can even be carried out without higher-level PLC – Without programming – the functionality is adjusted to the specific application – Integrated diagnostics ensures fast and straightforward startup
Application modules 	Standardized and immediately executable Application modules: – Offer a standardized functionality via a process data interface of the higher-level controller – The functionality is adjusted to the specific application by simple graphical parameterization – without any programming The following application modules are available: Single-axis functionality: – Cam positioning – Bus positioning – Universal module (speed, positioning, modulo, remaining distance) Multi-axis functionality: – Energy-efficient storage and retrieval system: a specific algorithm allows for saving up to 25% to 30% of energy without regeneration – SyncCrane: simple control of crane bridges and lifters. A special algorithm makes for time and jerk optimized movement also with distance encoders
Application Configurator	– Tool for configuration and diagnostics – Independent of the application module – Independent of the drive electronics and control component

Operator panels

Visualization and diagnostics

NEW: DOP11C operator panel generation

Features	– Standardized, modern panel series with touch screen, 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 input 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 control technology – Perfect system integration as an integral component of MOVITOOLS® MotionStudio – Consistent development environment for the complete C unit series (from the smallest 4.3" panel to the high-end 15" visualization unit 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 panel generation DOP11C

Panel type	Display	Operation	Interfaces	Processor / memory
DOP11C-40	4.3", 480 x 272 pixels, 65k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	ARM9 (400 MHz) – Main memory: 128 MB (DDR2) – Application memory: 80 MB
DOP11C-51	5", 800 x 480 pixels, 65k colors	Touch display panel (resistive) Limited functionality	RS232, RS422/RS485 interface, Ethernet, USB	ARM9 (400 MHz) – Main memory: 128 MB (DDR2) – Application memory: 80 MB
DOP11C-70	7", 800 x 480 pixels, 65k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	ARM9 (400 MHz) – Main memory: 128 MB (DDR2) – Application memory: 80 MB
DOP11C-100	10.4", 640 x 480 pixels, 65k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	ARM9 (400 MHz) – Main memory: 128 MB (DDR2) – Application memory: 80 MB
DOP11C-120	12.1", 1280 x 800 pixels, 262k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	Intel Atom (1.1 GHz) – Main memory: 1 GB (DDR2) – Application memory: > = 1.4 GB
DOP11C-150	15.4", 1280 x 800 pixels, 262k colors	Touch display panel (resistive)	RS232, RS422/RS485 interface, Ethernet, SD card slot, USB	Intel Atom (1.1 GHz) – Main memory: 1 GB (DDR2) – Application memory: > = 1.4 GB
Monitor type (MOVI-PLC® power)				
OPT71C-120	Display 12", 1280 x 800 pixels, 16 million colors	Touch display monitor in connection with MOVI-PLC® power	DVI, USB for touch functionality	
OPT71C-150	Display 15", 1280 x 800 pixels, 16 million colors	Touch display monitor in connection with MOVI-PLC® power	DVI, USB for touch functionality	
Unit type license (MOVI-PLC® power)				
ORV71C	USB license dongle for using the visualization runtime integrated in HMI-Builder-PRO without a time limit.			

Operator panels

Visualization and diagnostics

DOP11B generation operator panels

Features	– Easy and reliable operation, can be used at any place – Make possible and support operation, visualization, diagnostics of machines and systems, for example during positioning, synchronous operation, and coordinated movements of several drives – Other functions available are, for example, recipe management, dual-driver function, pass-through mode or integrated web server – Production processes can be continuously optimized – Individual parameters, such as velocity, target positions, stop marks, and ramps can be adjusted immediately as required – Make for economic efficiency and reliability of the machine and plant
HMI Builder operating software	– The operator terminals are programmed using the HMI Builder operating software – Software principle: what you see is what you get – Visualization is already displayed during programming – The object library provides a wide selection of static and dynamic objects – The objects are displayed as simple and descriptive symbols – Users simply select and edit objects to create their own personalized screen display

Operator panel generation DOP11B

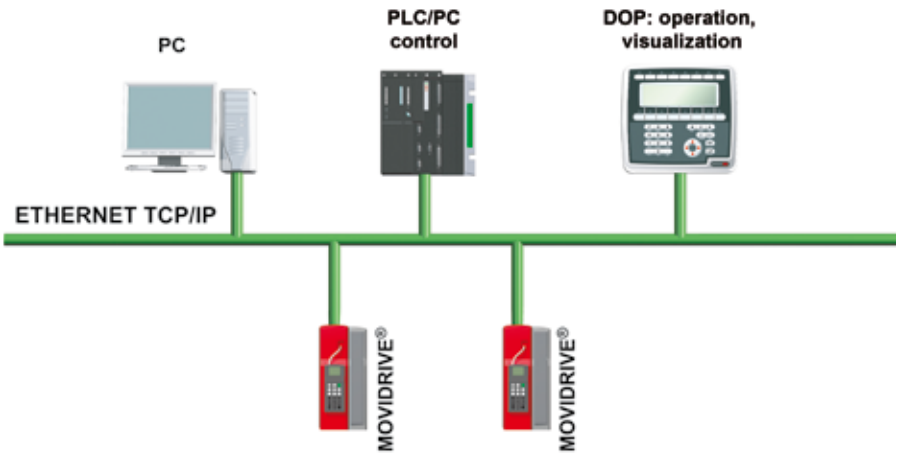
Unit type	Display and LEDs	Membrane keypad	Interfaces	Memory
DOP11B-10 	– 160 x 32 pixels or 4 x 20 / 2 x 20 characters text – 6 LEDs	IP66 membrane keypad with – Navigation keys – Numerical keypad – 6 function keys	RS232, RS422/RS485, Ethernet optional	500 kB
DOP11B-20 	– 240 x 64 pixels or 8 x 40 / 4 x 20 characters text – 6 LEDs	IP66 membrane keypad with – Navigation keys – Numerical keypad – 8 function keys	RS232, RS422/RS485, Ethernet 10/100 Mbit, USB	12 MB
DOP11B-25 	– 5.7", 320 x 240 pixels (16 gray scale)	– Touch display in IP66	RS232, RS422/RS485, Ethernet 10/100 Mbit, USB	12 MB
DOP11B-30 	– 5.7", 320 x 240 pixels (64k colors)	– Touch display in IP66	RS232, RS422/RS485, Ethernet 10/100 Mbit, USB	12 MB
DOP11B-40 	– 5.7", 320 x 240 pixels (64k colors) – 16 LEDs	IP66 membrane keypad with – Navigation keys – Numerical keypad – 16 function keys	RS232, RS422/RS485, Ethernet 10/100 Mbit, USB	12 MB
DOP11B-50 	– 10.4", 800 x 600 pixels (64k colors)	– Touch display in IP66	RS232, RS422/RS485, Ethernet 10/100 Mbit, USB	12 MB
DOP11B-60 	– 15", 1024 x 768 pixels (64k colors)	– Touch display in IP66	RS232, RS422/RS485, Ethernet 10/100 Mbit, USB	12 MB
Mobile Operator Panel DOP M70 	– 6.5", 640 x 480 pixels (64k colors)	– Touch display and – Membrane keypad (IP65) / 8 function keys	RS232, Ethernet 10/100 Mbit, USB	12 MB

MOVITOOLS® MotionStudio

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 from 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 – Status of connected units can be viewed – Fieldbus communication is diagnosed using a bus monitor – Controlling technology functions – Ready-to-use application 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
	**Startup:** – Configuration and startup: For adapting the inverter to the connected motor and optimizing current, speed and position controllers – Manual mode: The tool allows to manually control the units directly from the PC
	**Parameter setting:** – Parameter tree: Uniform editor for setting the parameters of different unit types – PDO Editor: Process data object editor for graphic configuration of process data for the MOVIAXIS® multi-axis servo inverter – Gateway configurator: Uniform tool for diagnostics and configuration of the fieldbus gateways UFx41B, DFx and MOVIFIT® with Classic and Technology function levels
	**Diagnostics and visualization:** – Status: Support for unit diagnostics, provides general unit status information; manual unit reset is possible – Application Builder: Editor for creating application-specific visualizations and application-specific diagnostics. Visualization is connected via data download with the inverter program IPOS® and the parameter settings – Fieldbus monitor: Diagnostics for communication between fieldbus and unit (monitor modes) and setpoint specification on the unit, controller-independent (control mode) – Scope: Diagnostics using an oscilloscope program for all SEW-EURODRIVE inverters
	**Programming:** – PLC Editor: Programming MOVI-PLC® controllers using application programs written once; can be applied independently of the unit – IPOS® assembler and compiler

MOVIVISION®

Parameterizable plant software

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 – Saves time – Operators can respond to manufacturing modifications even during the production process without tying up human resources to a disproportionally high extent – Convenient software solutions for the materials handling industry
System overview and operating principle	– MOVIVISION® combines central data management and decentralized intelligence – Convenient software solution for the materials handling industry – Decentralized intelligence simplifies and shortens the complex communication paths between all the hardware and software components of the plant – Fast cycle and response times – Ensures a permanent flow of information and commands on every level – Allows for an object-oriented view – Each individual user can have displayed the entire production plant, the drive systems or individual drives at any time – Intuitive user interface ensures user-friendliness

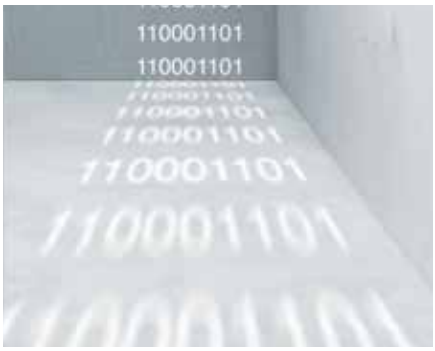
Functions	
	– Designing and project planning of the system
	– Plant data management and administration
	– Plant parameterization – Plant startup – Simplified plant maintenance
	– Plant diagnostics – Plant operation and monitoring

MOVIVISION® configuration and diagnostics tool	– Windows-based configuration and diagnostics tool SPS/PPS – User access to the central database of the MOVIVISION® server
MOVIVISION® server	– All data is stored in one central database – A link to the connected decentralized control components is established – Data is exchanged between server and decentralized control components via fieldbus and/or networks – Parameters are set or changed only here – Management and supervision of access authorizations – High degree of data security and user friendliness
MOVIVISION® client	– The interface displays the data of the decentralized control components visually – Parameter and diagnostic data of each unit is displayed separately. Both nodes are divided into - Drive level - Positioning level - Technological level – It is possible to grant different access rights to users, e.g. for monitoring, for parameter setting, for initial startup, for replacing units, etc.

Project planning tools

Servo project planning tool

Features	Applications from the “servo” field of drive engineering not only place high demands on the speed and precision of the drive technology implemented, the project planning required for these applications is also very time-consuming and labor-intensive. The individual system solution provided by SEW-EURODRIVE not only offers dynamic and precise drive technology, but also tailor-made software that guides users quickly and simply to their goal: the new servo project planning tool for optimum project planning of servo applications.



EPLAN® macros

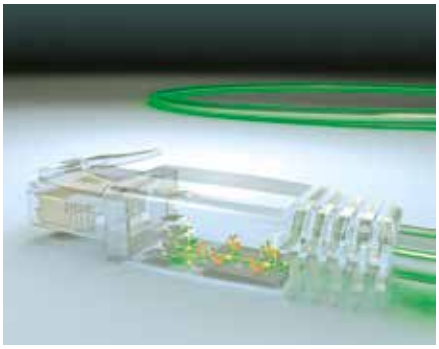
Features	For efficient electric design, SEW-EURODRIVE offers product data on the basis of the E-CAD system EPLAN® Electric P8. Apart from the typical macro drawings, this product data also comprises the complete technical data and product information. The product data can be directly downloaded from the EPLAN® data portal to a P8 wiring diagram project. This saves you a lot of time for creating wiring diagrams as there is no need for creating your own drawings and no complex data has to be prepared.

Sample programs for SIMATIC STEP7

Features	For easy integration into an existing SIMATIC S7 system, SEW-EURODRIVE makes available practical sample programs on the Internet free of charge. Time-consuming and costly startup procedures are now a thing of the past. You can choose from: Standard control examples for: – MOVIMOT® gearmotors on PROFIBUS DP and PROFINET IO – MOVIFIT® decentralized drive controllers with function levels "Classic" and "Technology" – MOVIDRIVE® inverters and "Extended positioning via bus" application module – MOVIPRO® decentralized drive, positioning and sequence controllers – MOVILINK® and DP-V1 parameter channel for easy parameter access as well as advanced control examples for: – MOVIDRIVE® inverters in application version (bus positioning, extended bus positioning, modulo positioning, and DriveSync application modules)

Fieldbus concepts

Industrial ETHERNET



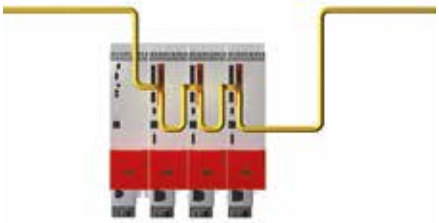
Industrial ETHERNET

One cable – numerous possibilities	– High transmission rate – Widespread medium – 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 – 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) – Comprehensive service from SEW-EURODRIVE for process data communication
Benefits	– Vertical and horizontal communication using Industrial ETHERNET – Real-time capable process data communication between controller and drive engineering components (soft real time) with 10 process data words (each direction) – Fast data transfer with 100 Mbit/s – Diagnostics of drive technology via Internet Explorer, for example – Programming and diagnostics of the drive technology can be carried out via Ethernet, which makes remote maintenance easy to handle – Broadband data communication between the control level and field level – Control and engineering combined in one bus system, saving costs for installation and maintenance – Fast system integration
Functions	– 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 – Control and diagnostics via Ethernet – Local operation, diagnostics and maintenance at field level – Integrated web server (not EtherCAT®) to diagnose the drive technology via Internet Explorer – Central data backup at control level – Parameter setting and programming using MOVITOOLS® MotionStudio via Ethernet – Reduction of installation costs and maintenance due to installation of only one diagnostic bus or engineering bus system

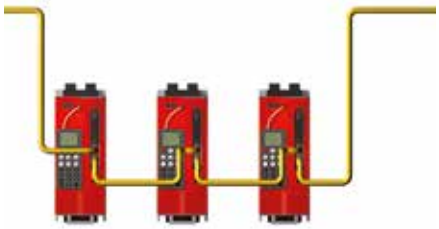
Industrial Ethernet fieldbus interfaces are available for the following standardized communication profiles:

Industrial ETHERNET / Drive electronics	PROFINET	EtherNet/IP / MODBUS TCP	EtherCAT Technology Group
MOVITRAC® LTE-B	DFE32B/UOH option	DFE33B/UOH option	DFE24B/UOH option
MOVITRAC® B	Options – DFE32B – DFE32B/UOH – DFS21B/PROFIsafe	Options – DFE33B – DFE33B/UOH	Options – FSE24B – DFE24B – DFE24B/UOH
MOVIDRIVE®	Options – DFE32B – DFE32B/UOH – DFS21B/PROFIsafe	DFE33B option	DFE24B option
MOVIAXIS®	Options – UFR41B – Controller DHR		XFE24A option
MOVITRAC® LTP-B/LTX	Opions – DFE32B/UOH – Controller DHR	Options – DFE33B/UOH – Controller DHR	DFE24B/UOH option
MOVIPRO®	On-board interface PROFIsafe optional	On-board interface	
MOVIFIT®	On-board interface PROFIsafe optional	On-board interface	
MOVIMOT®	MOVIMOT® MTM option PROFIsafe optional	MOVIMOT® MTM option	In preperation
MOVIGEAR®/DRC..-SNI	On-board interface in MOVIFIT® FDC		
MOVIGEAR®/DRC..-DSC	Options – DFE32B/UOH – DFS21B/PROFIsafe – MOVIFIT® FDC	Options – DFE33B/UOH – MOVIFIT® FDC	DFE24B/UOH option
Fieldbus Gateway	Options – UFR41B – DFE32B/UOH	Options – UFR41B – DFE33B/UOH	DFE24B/UOH option
Controller: MOVI-PLC® and CCU	On-board interface DHR		

EtherCAT® and motion control – high-speed industrial ETHERNET



Servo drive systems: MOVIAXIS® multi-axis servo inverter with XFE24A motion control

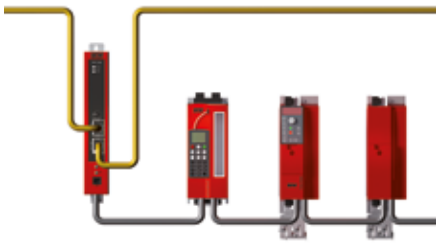


Drive inverter MOVIDRIVE® with DFE24B

With synchronization via distributed clock and a synchronization cycle of 0.5 to 10 ms, the hard realtime communication for MOVIDRIVE® inverters and MOVIAXIS® multi-axis servo inverters offers the following operating modes:

– High-performance motion control with centrally calculated motion functions and clock-synchronous speed, position or torque settings
– Use of integrated motion control functions such as electronic cam, electronic gear unit, touch probe, positioning, etc. through clock-synchronous control
– Conventional PLC operation

Frequency inverter MOVITRAC® with FSE24B

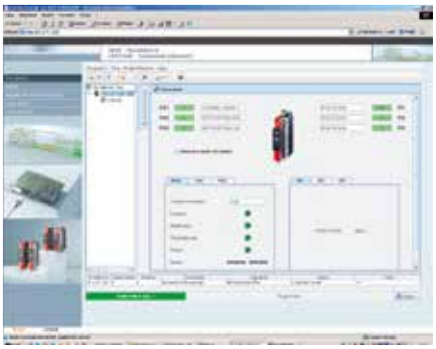


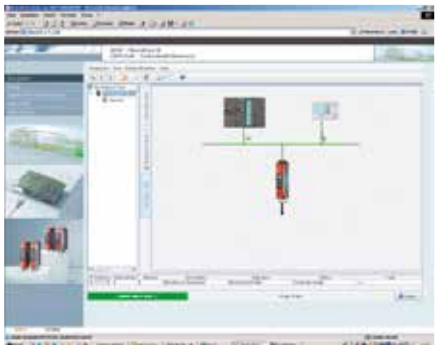
Applications with SEW drives, connected via DFE24B gateway

The mailbox gateway in the EtherCAT® master ensures unlimited engineering access, for example, for MOVITOOLS® MotionStudio down to the drive level.

PLC operation

Non-synchronized process data (such as control and status values, actual and set speed or position values) is transferred in conventional PLC operation. In addition to enabling control of application modules (positioning, modulo, winder, etc.) in the MOVIDRIVE® inverter, also MOVITRAC® frequency inverters and other SEW drives with SBus interface can be used for simple drive tasks.





Web-based diagnostics	The Ethernet-based fieldbus interfaces (PROFINET, EtherNet/IP and Modbus) provide an integrated web server for simple diagnostics of drive engineering components. Using the Internet Explorer, the web server makes accessible a great number of display values and allows for simple configuration after having entered a password. – Diagnostics via Internet Explorer – Process values such as speed, position, current etc. are displayed numerically and graphically – Displays the unit data and status information – Displays the binary inputs/outputs with status and function – Displays the analog inputs/outputs with values and function – Fieldbus communication diagnostics – Displays the fieldbus process data – User documentation saved on the web server – Network configuration

Diagnostic units

DUV – Diagnostic Unit Vibration

Drive diagnostics through vibration analysis

Description	– Perfect sensor for simple and reliable monitoring of rolling bearings – Measures the structure-borne noise and uses this value to calculate the frequency spectrum – This frequency spectrum is used to constantly monitor the condition of the rolling bearings – Structure-born noise sensor and evaluation electronics are fully integrated in the diagnostic unit
Benefits	– Rolling bearings and gearing components are permanently monitored – The condition of the rolling bearing and damage development can be easily detected and identified in good time: the colors green, yellow and red indicate the development of the damage – Monitoring options: Values can be read directly from the sensor or visualized externally via switch outputs (DUV can be linked to bus systems) – Level monitoring device monitors the entire vibration spectrum – Permanent monitoring of 5 bearing locations or 20 individual frequencies (e.g. tooth meshing frequency, imbalance) with one sensor – Parameters can also be set by the system operator via RS-232 interface – Data is recorded, processed, and evaluated decentrally – Vibration speed is monitored according to DIN ISO 10816-1 – Maintenance intervals can be planned individually

DUO – Diagnostic Unit Oil Aging

Gear unit oil diagnostics through thermal analysis

Description	– The perfect sensor to determine the remaining life of the gear unit oil and to reliably indicate the right time for an oil change – 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 – The diagnostic unit takes the oxidation characteristics of the different oils into account under thermal stress
Benefits	– Reduced oil costs – Optimum utilization of the oil service life – Start-up can be performed directly on the diagnostic unit (without PC) – Simple detection and reading of the time remaining until the next oil change – 5 different oil types can be parameterized – Warning message is issued if predefined limit values are exceeded, such as max. oil temperature – Permanent oil aging monitoring – Maintenance intervals can be planned individually

DUB – Diagnostic Unit Brake

Brake diagnostics through function and wear analysis

Description	– Ideal sensor to monitor the wear and proper functioning of the brake – The voltage-dependent signal can be evaluated by an SEW-EURODRIVE frequency inverter or a higher-level controller – Two sensors allow for reliably monitoring the correct functioning of the brake and the wear of the lining
Benefits	– Brake lining wear can be detected in good time – Reliable brake function monitoring – The condition signal of the microswitch can be implemented as normally closed (wear monitoring) or normally open contact (function monitoring) – Evaluation directly via SEW-EURODRIVE inverter with corresponding error protocol – Can be used in damp conditions up to IP65 – Self-cleaning contacts inside the sensor – Maintenance intervals can be planned individually according to wear

safetyDRIVE
Functional safety

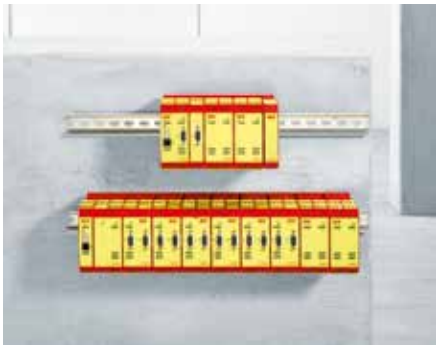
For control cabinet drive technology

MOVISAFE®
Functional safety integrated in the inverter

Features and benefits	– Simplified machine planning and design – Perfectly matched standard cabling and safety technology – Short startup times – Long product life of the safety components due to long service life (20 years) – Monitoring also in the event of maintenance and repair – Compliance with all normative requirements – Can be combined with all SEW motors (synchronous and asynchronous) – Short downtimes due to selective application solution – Cost savings due to matched products – Elimination of external protection devices increases productivity – Safe drive technology can be easily integrated into existing systems with PROFIsafe communication – Certified to (IEC 61508) SIL 3, (EN ISO 13849-1) PL e
Application examples	– Storage and retrieval systems – Trolleys – Cranes and hoists – Gantry handling – Baggage handling systems – Assembly sections: Press plant, body shop, paint, final assembly

MOVISAFE® DFS11B/21B **Stop monitoring**	– For MOVIDRIVE® B drive inverters (sizes 0 to 7) – For MOVITRAC® B frequency inverters (sizes 0 to 5) – STO (Safe Torque Off, according to IEC 61800-5-2) – SS1 (Safe Stop 1, according to IEC 61800-5-2) – 1 digital safe output – PROFIsafe via PROFIBUS DP or PROFINET IO
MOVISAFE® DCS21B **Movement and position monitoring** **Communication via** **DFS12B/DFS22B**	– For MOVIDRIVE® B drive inverters (sizes 1 to 7) – Integrated axis monitoring function – Simple safety-related parameterization – Safety functions according to IEC 61800-5-2: SLS, SDI, SLA, SCA, SLP, STO, SS1, SS2, SOS – 8 digital safe inputs – 3 digital safe outputs – PROFIsafe via PROFIBUS DP or PROFINET IO
MOVISAFE® DCS22B **Movement monitoring** **Communication via** **DFS12B/DFS22B**	– For MOVIDRIVE® B inverters (sizes 1 to 7) – Integrated axis monitoring function – Simple safety-related parameterization – Safety functions according to IEC 61800-5-2: SLS, SDI, SLA, SCA, SLP, STO, SS1, SS2, SOS – 8 digital safe inputs – 3 digital safe outputs – PROFIsafe via PROFIBUS DP or PROFINET IO
MOVISAFE® DCS31B **Movement and position monitoring**	– For MOVIDRIVE® B inverters (sizes 1 to 7) – Integrated axis monitoring function – Integrated logic processing for connecting inputs and outputs as required – Safety functions according to IEC 61800-5-2: SLS, SDI, SLA, SCA, SLP, STO,SS1, SS2, SOS – 8 digital safe inputs – 3 digital safe outputs
MOVISAFE® DCS32B **Movement monitoring**	– For MOVIDRIVE® B inverters (sizes 1 to 7) – Integrated axis monitoring function – Integrated logic processing for connecting inputs and outputs as required – Safety function according to IEC 61800-5-2: SLS, SDI, SLA, STO, SS1, SSM – 8 digital safe inputs – 3 digital safe outputs

safetyDRIVE
Functional safety



For control cabinet drive technology

MOVISAFE®
Modular safety in the inverter

Features and benefits	– Simplified machine planning and design – Perfectly matched standard cabling and safety technology – Short startup times – Long product life of the safety components due to long service life (20 years) – Monitoring also in the event of maintenance and repair – Compliance with all normative requirements – Covers the entire range of SEW inverters: MOVIDRIVE® drive inverters, MOVITRAC® frequency inverters, and MOVIAXIS® multi-axis servo inverters – Can be combined with all SEW motors (synchronous and asynchronous) – Cost savings due to matched products – Short downtimes due to selective application solution – Elimination of external protection devices increases productivity – Safe drive technology can be easily integrated into existing systems with PROFIsafe communication – Certified to (IEC 61508) SIL 3, (EN ISO 13849-1) PL e
Application examples	– Scara robots – Application SRU – Handling gantries – Special machine design – Palletizers – Packaging systems

Safety module **UCS10B/PS**	– Integrated **logic processing** for connecting inputs/outputs as required – Safety functions according to IEC 61800-5-2: STO, SS1 – PROFIsafe via PROFIBUS DP and PROFINET IO – Can be extended by input/output modules – Up to 56 digital inputs – Up to 32 outputs
Safety module **UCS11B/PS**	– Integrated logic processing for connecting inputs/outputs as required – Axis monitoring function **for one axis** – Safety functions according to IEC 61800-5-2: SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SCA, SLP – PROFIsafe via PROFIBUS DP and PROFINET IO – Can be extended by input/output modules – Up to 56 digital inputs – Up to 32 outputs
Safety module **UCS12B/PS**	– Integrated logic processing for connecting inputs/outputs as required – Axis monitoring function for **up to two axes** – Safety functions according to IEC 61800-5-2: SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SCA, SLP – PROFIsafe via PROFIBUS DP and PROFINET IO – Can be extended by input/output modules – Up to 56 digital inputs – Up to 32 outputs
Multi-axis logic modules **UCS50B and UCS51B**	– Integrated logic processing for connecting inputs/outputs as required – Axis monitoring function for **up to twelve axes** – Safety functions according to IEC 61800-5-2: SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SCA, SLP – Can be extended by input/output modules – Up to 150 digital inputs/outputs – Up to 54 outputs

safetyDRIVE
Functional safety

Decentralized installation with a decentralized MOVIFIT® MC or FC drive controller and integrated functional safety

Features and benefits	– 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 – Certified to (IEC 61508) SIL 2, (EN ISO 13849-1) PL d
NEW: MOVISAFE® S12 option	– Control via PROFIsafe with MOVISAFE® S12 option – Safety functions according to IEC 61800-5-2: - Safe torque off (STO) - Safe stop (SS1(a), SS1(c)) - Safe motion (SDI, SLS) – Approvals - SIL 3 according to IEC 61508 - 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.

Decentralized installation with a decentralized drive, positioning or application controller

– MOVIPRO® SDC with integrated safety functions, and

– MOVIPRO® ADC with decentralized safety controller MOVISAFE® HM31

Features and benefits	– 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 MOVISAFE® S11 option – Optional, safety-related brake disconnection (SBC) – Integrated MOVISAFE® option S11 comes equipped with 4 safety-related inputs for connecting safe sensors and two safety-related outputs
Specific MOVIPRO® variant 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 EN 61800-5-2 for mobile materials handling technology - SS1, SS2, SOS, SDI, SLS, SSR, SLA, SAR, SSM, SLI, SLP, SCA - Safe disconnection and stop - Safe range changeover - Safe movement and position monitoring 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	Scissor lift tables, lifting/lowering conveyors, lifting stations, transfer carriages, rotary feeders, rotary indexing tables, high-speed horizontal conveyors with positioning

Functional safety

Safe communication with PROFIsafe

PROFIsafe

Standard safety functions according to IEC 61800-5-2

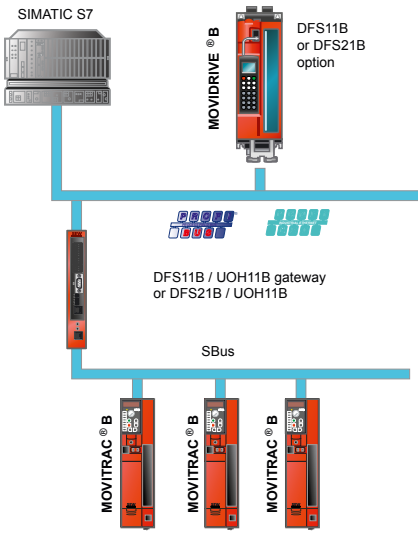
The safety functions Safe Torque Off (STO) and Safe Stop (SS1) according to IEC 61800-5-2 can be activated for **MOVIDRIVE® B** and **MOVITRAC® B** inverters via the following options:

– MOVISAFE® DFS11B for connecting MOVIDRIVE® B / MOVITRAC® B: PROFIsafe on PROFIBUS
– MOVISAFE® DFS21B for connecting MOVIDRIVE® B / MOVITRAC® B: PROFIsafe on PROFINET

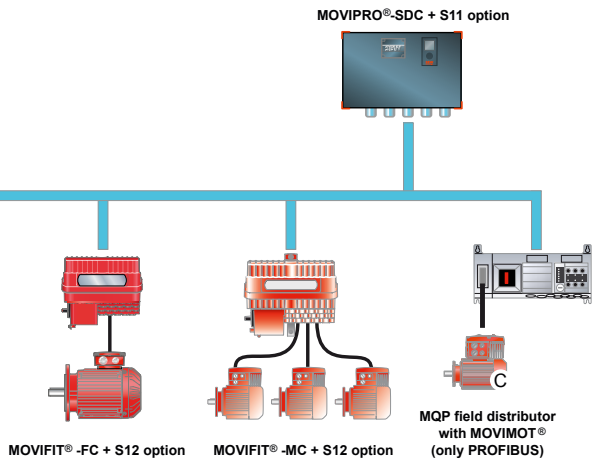
These components come equipped with a safety-related output used for the safe disconnection of individual MOVIDRIVE® B / MOVITRAC® B inverters or a group of MOVIDRIVE® B / MOVITRAC® B inverters.

MOVIMOT® gearmotors with integrated frequency inverter can be controlled via PROFIBUS/PROFIsafe in conjunction with the MQS../Z.6F field distributor.
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 S12 safety option. The S12 safety option 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 speed- or torque-related monitoring functions.

Components for control cabinet installation



Components for decentralized installation



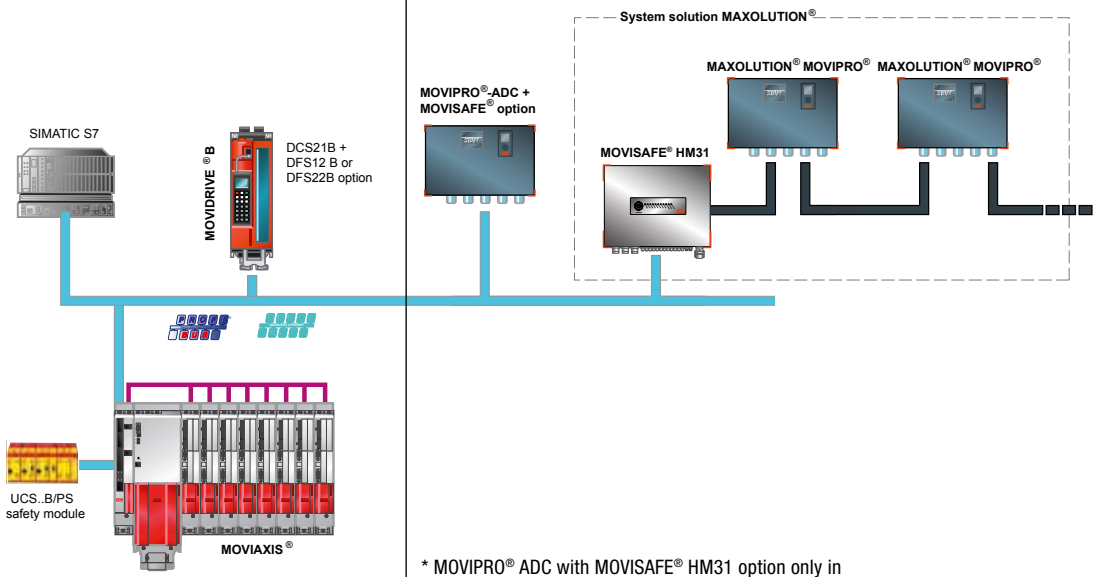
Expanded safety functions according to IEC 61800-5-2

– Additional safe motion functions can be implemented according to IEC 61800-5-2 for **MOVIDRIVE® B** inverters from size 1. These functions are SLS, SDI, SLA, SSM, SLI, SCA, SLP, STO, SS1, SS2 and SOS.
– Combining the **MOVISAFE®** DCS21B 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 MOVISAFE® S11 option
– The integrated MOVISAFE® S11 option 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

Components for control cabinet installation

Components for decentralized Installation



* MOVIPRO® ADC with MOVISAFE® HM31 option only in connection with MAXOLUTION® system solutions
(see also pages 196 +197)

2121 6991 / 0414

SEW-EURODRIVE is right there for you:

Argentina
Tel. +54 3327 4572-84
Fax +54 3327 4572-21
sewar@sew-eurodrive.com.ar

Australia
Tel. +61 3 9933-1000
Fax +61 3 9933-1003
enquires@sew-eurodrive.com.au

Austria
Tel. +43 1 617 55 00-0
Fax +43 1 617 55 00-30
sew@sew-eurodrive.at

Belarus
Tel. +375 17 298 47 56
Fax +375 17 298 47 54
sales@sew.by

Belgium
Tel. +32 16 386-311
Fax +32 16 386-336
info@sew-eurodrive.be

Brazil
Tel. +55 11 2489-9133
Fax +55 11 2480-3328
sew@sew.com.br

Canada
Tel. +1 905 791-1553
Fax +1 905 791-2999
marketing@sew-eurodrive.ca

Chile
Tel. +56 2 2757 7000
Fax +56 2 2757 7001
ventas@sew-eurodrive.cl

China
Tel. +86 22 25322612
Fax +86 22 25323273
info@sew-eurodrive.cn

Colombia
Tel. +57 1 54750-50
Fax +57 1 54750-44
sew@sew-eurodrive.com.co

Czech Republic
Tel. +420 255 709 601
Fax +420 235 350 613
sew@sew-eurodrive.cz

Denmark
Tel. +45 43 9585-00
Fax +45 43 9585-09
sew@sew-eurodrive.dk

Finland
Tel. +358 201 589-300
Fax +358 3 7806-211
sew@sew.fi

France
Tel. +33 3 88 73 67 00
Fax +33 3 88 73 66 00
sew@usocome.com

Great Britain
Tel. +44 1924 893-855
Fax +44 1924 893-702
info@sew-eurodrive.co.uk

Hong Kong
Tel. +852 36902200
Fax +852 36902211
contact@sew-eurodrive.hk

Hungary
Tel. +36 1 437 06-58
Fax +36 1 437 06-50
office@sew-eurodrive.hu

India
Tel. +91 265 2831086
Fax +91 265 2831087
mdoffice@seweurodriveindia.com

Italy
Tel. +39 02 96 9801
Fax +39 02 96 980 999
sewit@sew-eurodrive.it

Japan
Tel. +81 538 373811
Fax +81 538 373814
sewjapan@sew-eurodrive.co.jp

Kazakhstan
Tel. +7 727 238 1404
Fax +7 727 243 2696
sew@sew-eurodrive.kz

Malaysia
Tel. +60 7 3549409
Fax +60 7 3541404
sales@sew-eurodrive.com.my

Mexico
Tel. +52 442 1030-300
Fax +52 442 1030-301
scmexico@seweurodrive.com.mx

Mongolia
Tel. +976 77109997
Fax +976 77109997
sew@sew-eurodrive.mn

Morocco
Tel. +212 523 32 27 80/81
Fax +212 523 32 27 89
sew@sew-eurodrive.ma

Netherlands
Tel. +31 10 4463-700
Fax +31 10 4155-552
info@sew-eurodrive.nl

New Zealand
Tel. +64 9 2745627
Fax +64 9 2740165
sales@sew-eurodrive.co.nz

Norway
Tel. +47 69 241-020
Fax +47 69 241-040
sew@sew-eurodrive.no

Paraguay
Tel. +595 991 519695
Fax +595 21 3285539
sew-py@sew-eurodrive.com.py

Peru
Tel. +51 1 3495280
Fax +51 1 3493002
sewperu@sew-eurodrive.com.pe

Poland
Tel. +48 42 676 53 00
Fax +48 42 676 53 49
sew@sew-eurodrive.pl

Portugal
Tel. +351 231 20 9670
Fax +351 231 20 3685
infosew@sew-eurodrive.pt

Russia
Tel. +7 812 3332522
Fax +7 812 3332523
sew@sew-eurodrive.ru

Singapore
Tel. +65 68621701
Fax +65 68612827
sewsingapore@sew-eurodrive.com

Slovakia
Tel. +421 2 33595 202
Fax +421 2 33595 200
sew@sew-eurodrive.sk

South Africa
Tel. +27 11 248-7000
Fax +27 11 494-3104
info@sew.co.za

South Korea
Tel. +82 31 492-8051
Fax +82 31 492-8056
master.korea@sew-eurodrive.com

Spain
Tel. +34 94 4318470
Fax +34 94 4318471
sew.spain@sew-eurodrive.es

Sweden
Tel. +46 36 3442 00
Fax +46 36 3442 80
info@sew-eurodrive.se

Switzerland
Tel. +41 61 41717-17
Fax +41 61 41717-00
info@imhof-sew.ch

Tanzania
Tel. +255 22 277 5780
Fax +255 22 277 5788
uroos@sew.co.tz

Thailand
Tel. +66 38 454281
Fax +66 38 454288
sewthailand@sew-eurodrive.com

Turkey
Tel. +90 262 999 1000-04
Fax +90 262 999 1009
sew@sew-eurodrive.com.tr

Ukraine
Tel. +380 56 370 3211
Fax +380 56 372 2078
sew@sew-eurodrive.ua

Uruguay
Tel. +598 2 2118189
Fax +598 2 2118190
sewuy@sew-eurodrive.com.uy

USA
Tel. +1 864 439-7537
Fax +1 864 439-7830
cslyman@seweurodrive.com

Venezuela
Tel. +58 241 832-9804
Fax +58 241 838-6275
ventas@sew-eurodrive.com.ve

How we're driving the world

SEW-EURODRIVE
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Fast. Up-to-date. Online: www.driveworld.de/en

SEW-EURODRIVE GmbH & Co KG
P.O.Box 30 23
76642 Bruchsal/Germany
Tel. +49 7251 75-0
Fax +49 7251 75-1970
sew@sew-eurodrive.com

➟ www.sew-eurodrive.com