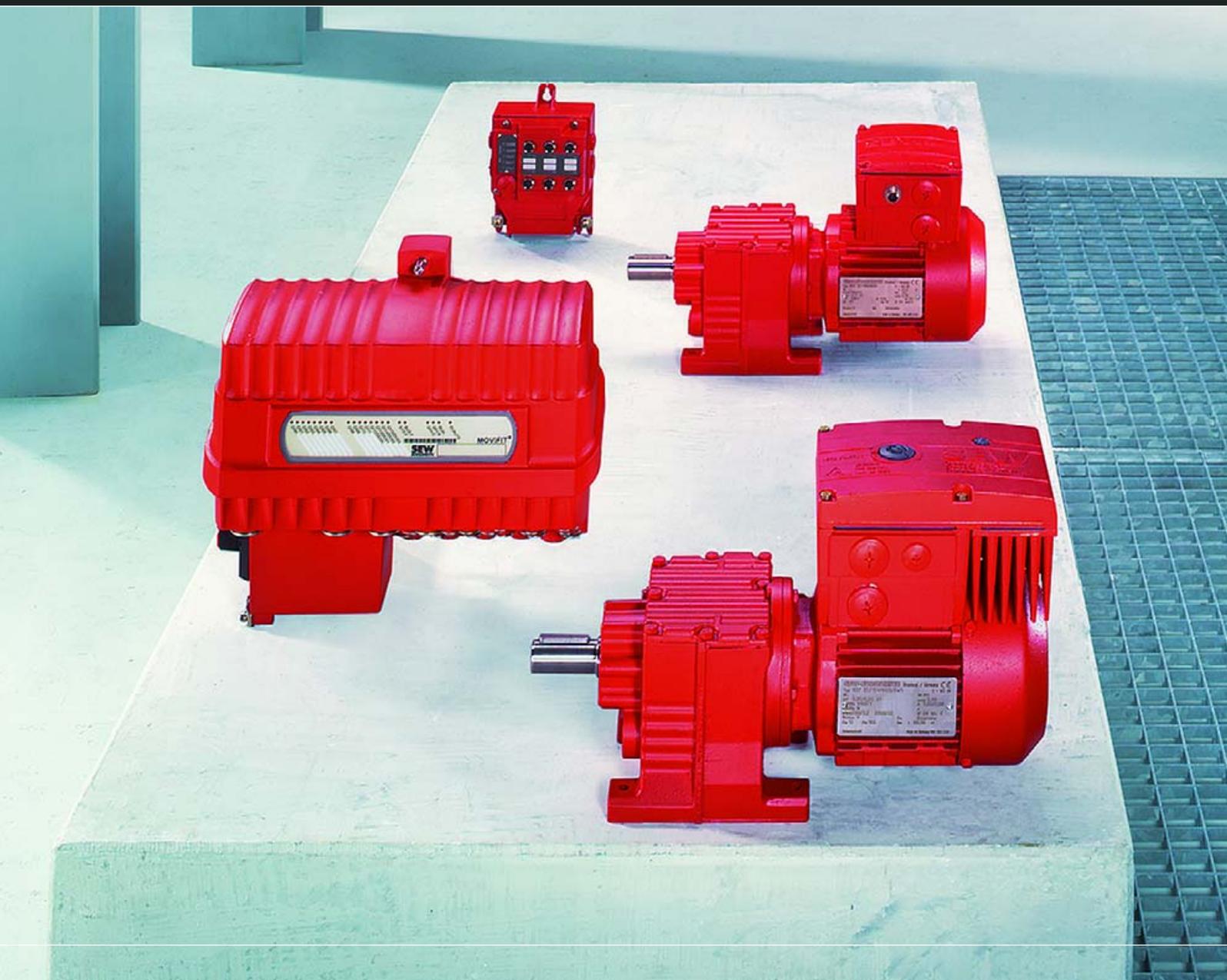


Decentralization with system solutions:
MOVIMOT®, **MOVI-SWITCH®**, **MOVIFIT®**,
field distributor and cable systems

Decentralized Drive Systems



Decentralization in its most compact and space-saving form

Decentralization often represents the most economical solution in many areas of automation. Long rows of control cabinets with complex wiring, expansive space requirements and long distances between control cabinet and motors are too rigid and not very economical. That is the reason why system operators opting for SEW-EURODRIVE are always ahead of the game: we not only reduce the number of components, but constantly develop more compact and efficient drive systems.



MOVIMOT®, the gearmotor with integrated frequency inverter, MOVI-SWITCH®, the gearmotor with integrated switching and protection functions, MOVIFIT® Field Integrated Technology plus the specifically developed field distributors and cable systems make additional central switching and protection equipment as well as electronic control elements a thing of the past. Of course, this need for less components also results in tremendous space savings in the control cabinet, not to mention the savings in the so far very cost and time consuming wiring of motors, sensors and actuators. Of course, these components can be installed in any commercial bus system. For faster, more economical and flexible decentralization.

Driving the world – with innovative drive solutions for all branches of industry and for every application. Products and systems from SEW-EURODRIVE for any application – worldwide. SEW-EURODRIVE products can be found in a variety of industries, e. g. automotive, building materials, food and beverage as well as metal-processing. The decision to use drive technology “made by SEW-EURODRIVE“ stands for safety regarding functionality and investment.





Complicated and time-consuming solutions are a thing of the past

The savings realized with the unified system solutions for decentralization from SEW-EURODRIVE start as early as the planning stage of the drive solution. The modular design can be easily and quickly altered to accommodate future changes and additions. Flexible adaptation to all process and spatial conditions can be achieved without any difficulty.

Standard fieldbus systems take over the job of communicating with the central controller. Several motors can be easily linked with the energy bus and fieldbus by means of the installed field distributors and system connections.



SEW-EURODRIVE offers the most compact approach to decentralization with the least number of components. MOVIMOT®, the gearmotor with integrated frequency inverter, MOVI-SWITCH®, the gearmotor with integrated switching and protection functions, MOVIFIT® Field Integrated Technology, plus the specifically developed field distributors and cable systems will help you face any drive challenge.



MOVIMOT®: ingeniously simple

MOVIMOT® is the proven combination of gearmotor and digital frequency inverter in the power range of 0.37 to 3.0 kW. Despite the integrated frequency inverter, the unit needs only a minimum of additional space than the standard gearmotors and can be supplied in all standard versions and mounting positions with and without brake for supply voltages of 380 to 500 V and 200 to 240 V. The plug-in type inverter makes for quick installation and can be easily replaced in case of a service call.

MOVIMOT® combines the advantages of our gearmotors and drive electronics: heavy-duty and compact housing, infinitely variable speed range up to 1:10 at constant torque, vector-oriented motor design and four-quadrant operation with or without mechanical brake. Communication with the control takes place via RS-485 serial interface or optionally

via all commercial fieldbus interfaces (PROFIBUS, INTERBUS, DeviceNet, CANopen or AS-Interface). MOVIMOT® is available in all gear unit designs and mounting positions of the modular system up to enclosure IP66. Of course, MOVIMOT® meets all requirements for operation on all standard power supply systems worldwide.



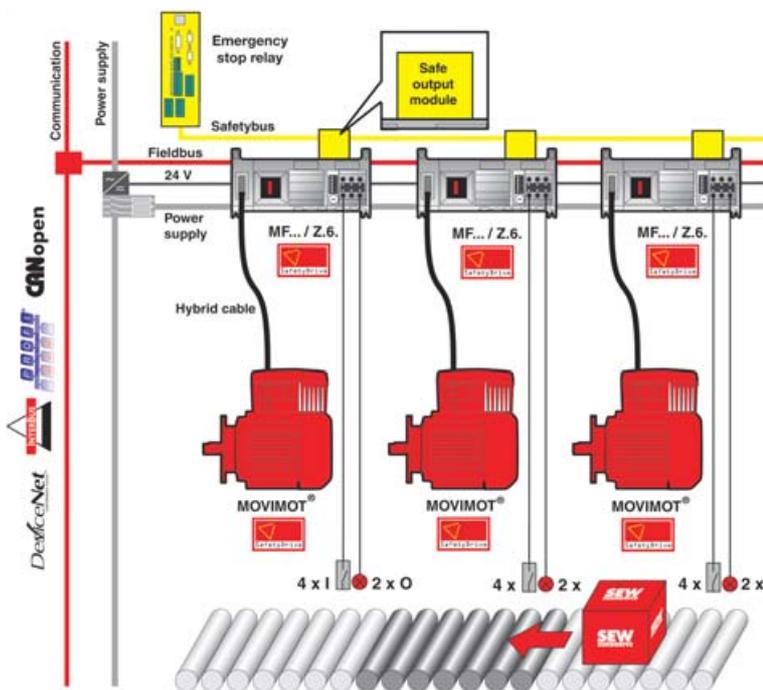
MOVIMOT®, the gearmotor with integrated frequency inverter. The heavy-duty and compact version for a number of decentralized drive solutions with standard integrated control, protection and monitoring functions.



If you want to play it safe...

... then makes use of the advantages of the decentralized installation technology for safety-related facilities. SEW-EURODRIVE offers an optional SafetyDrive package for this application to equip plants according to safety category 3

meeting EN 954-1. Our MOVIMOT®, as well as the filed distributors MF../Z.6 and MF../MM../Z.8 meet all the requirements made on these safety components.



The graphic shows the realization of a decentralized installation unified up to the control for use in safety applications according to EN 954-1, category 3.

Components:

Field distributor with safety-oriented 24 V output for interfacing to a safety fieldbus and a safety control.

Modular conveyor system in the automotive production

Components:

Helical-worm gearmotor
and MOVIMOT® unit
mounted separately with
mounting plate, helical
gearmotors



MOVIMOT®

Connection voltage [V]	3 x 380 ... 500 ± 10 % / 50/60 Hz 3 x 200 ... 240 ± 10 % / 50/60 Hz
Motor frequency range [Hz]	2 ... 100
Control supply voltage	24 V _{DC} external, local supply available as option
Enclosure	IP54, optional IP55, IP65, IP66
Ambient temperature	-25 °C ... +40 °C
Control via binary signals	Entry for cw/stop, ccw/stop, setpoint switch mode isolated signal relays 2 fixed setpoints 1 ramp for acceleration and deceleration
Control via fieldbus communication	In combination with fieldbus interfaces with and without intelligent fieldbus module: PROFIBUS: MFP21D, MFP22D, MFP32D, MQP21D, MQP22D, MQP32D INTERBUS: MFI21A, MFI22A, MFI32A, MQI21A, MQI22A, MQI32A INTERBUS LWL: MFI23F, MFI33F DeviceNet: MFD21A, MFD22A, MFD32A, MQD21A, MQD22A, MQD32A CANopen: MFO21A, MFO22A, MFO32A AS-Interface: MFK21A
Use in stand-alone applications	In combination with the options: MLU.1A: Local 24 V _{DC} -supply MLG.1A: Local supply with 24 V _{DC} -supply MBG11A: Speed control module for setpoint frequency specification and display MWA21A: Setpoint converter for interfacing of analog setpoints (0... 10 V, 0 ... 20 mA, 4 ... 20 mA) an RS-485
Use in decentralized installations	In combination with field distributors: MF.../Z.3. MF.../Z.6. MF.../.../Z.7. MF.../.../Z.8. as well as the corresponding hybrid cables
Diagnostics	3-color LED signals operating status and fault status via serial interface RS-485 and option MDG11A or PC



Whether  approval or IEC regulation –
MOVIMOT® is available in both designs:

Approval / Regulation	IEC / 		IEC / 		
	Speed [1/min]	280 ... 1400	290 ... 2900	280 ... 1700	
Connection voltage [V]	380 ... 500		380 ... 500		380 ... 500 200 ... 240
Motor frequency range [Hz]	50	50, with increased short-term torque	100	100, with increased short-term torque	60
Power kW HP	Type		Type		Type
0.37 0.5	DT71D4/.../MM03	DT71D4/.../MM05	-	-	DT71D4/.../MM03
0.55 0.75	DT80K4/.../MM05	DT80K4/.../MM07	DT71D4/.../MM05	DT71D4/.../MM07	DT80K4/.../MM05
0.75 1	DT80N4/.../MM07	DT80N4/.../MM11	DT80K4/.../MM07	DT80K4/.../MM11	DT80N4/.../MM07
1.1 1.5	DT90S4/.../MM11	DT90S4/.../MM15	DT80N4/.../MM11	DT80N4/.../MM15	DT90S4/.../MM11
1.5 2	DT90L4/.../MM15	DT90L4/.../MM22	DT90S4/.../MM15	DT90S4/.../MM22	DT90L4/.../MM15
2.2 3	DV100M4/.../MM22	DV100M4/.../MM30	DT90L4/.../MM22	DT90L4/.../MM30	DV100M4/.../MM22
3 5	DV100L4/.../MM30	DV100L4/.../MM3X	DV100M4/.../MM30	DV100M4/.../MM3X	DV100L4/.../MM30

MOVI-SWITCH®: simply switched

MOVI-SWITCH® was especially developed for decentralization applications and meets all requirements regarding safety and functionality in a very economical manner.

MOVI-SWITCH®-1E is a compact and heavy-duty gearmotor for power ratings up to 3 kW with integrated switching and protection function. The direction of rotation is turned on and off with a 24 V_{DC} signal via a short-circuit proof star bridge connector. The integrated thermal winding monitoring function is directly linked to the connector.

MOVI-SWITCH® does not take up any control cabinet space and needs no wiring except the power supply and control voltage cables, since switching and protection functions are completely integrated into the motor.

MOVI-SWITCH® is available in all gear unit designs up to enclosure IP66 as well as all mounting positions of the modular system, making it the simple and flexible option for a multitude of applications. The BGW brake control results in short reaction times during release and braking and is a standard component of all brake motors.

MOVI-SWITCH® startup is a very simple operation. The power supply and control connection for motors is the same with or without brake.

MOVI-SWITCH®,
gearmotor with all
switching and protection
functions: type MSW-1E



MOVI-SWITCH®-2S, which completes the range of the MOVI-SWITCH®-1E version, offers new areas of application and simplifies maintenance work. Switch elements with contact make it possible to control the drive in two

directions of rotation. A standard LED offers excellent possibilities for local diagnosis. In this version, the integrated thermal winding monitoring function is also directly linked to the connector.



MOVI-SWITCH®
gearmotor with
switching and protection
functions: type MSW-2S



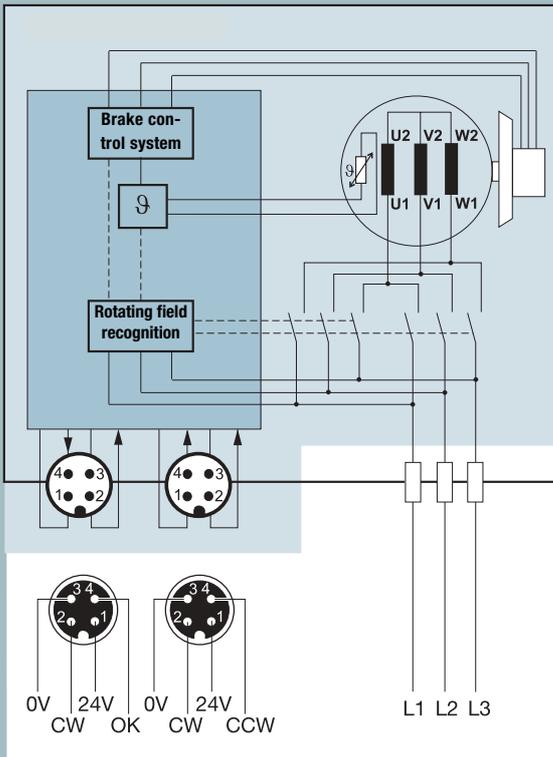
MOVI-SWITCH®, the gearmotor with integrated switching and protection function. Space-saving and simple installation. For quick project planning due to simple control.

MOVI-SWITCH®

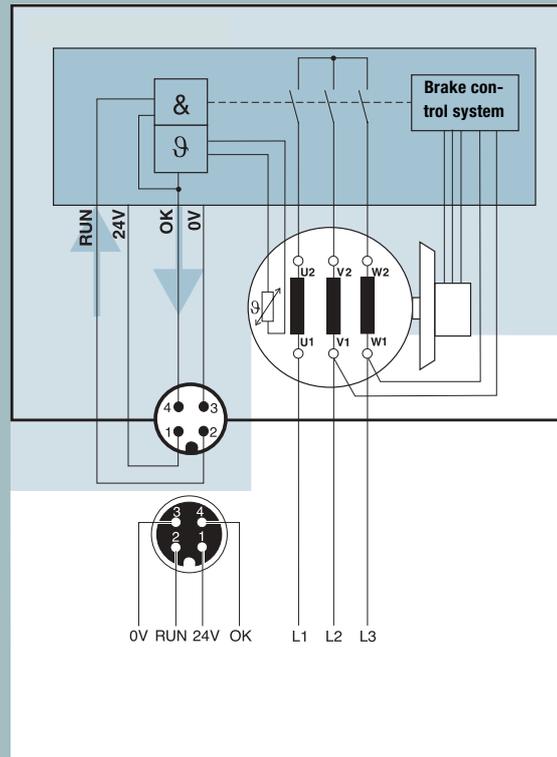
Type	MSW-1E	MSW-2S
Switching function	On/Off one direction of rotation	On/Off two directions of rotation
Switch element	Contactless star bridge switch	Switch element with contact
Direction of rotation	CW or CCW depending on phase sequence	CW and CCW, independent of phase sequence
Control	<ul style="list-style-type: none"> – Binary control signals RUN / OK – Connection via 1xM12-plug connector – Optionally with external AS-Interface 	<ul style="list-style-type: none"> – Binary control signals CW / CCW / OK – Connection via 2xM12-plug connectors – Alternatively with integrated AS-Interface
Brake management	Standard with brake rectifier BGW	<ul style="list-style-type: none"> – Integrated brake control – Electrical manual brake release with optional BGM-rectifier
Supply voltage [V]	3 x 380 ... 500 V / 50/60 Hz	
Control supply voltage [V _{DC}]	24	
Brake voltage	Supply voltage, alternative supply voltage / $\frac{U}{\sqrt{3}}$	
Motor protection	Direct temperature monitoring with integrated analysis	
Ambient temperature	-25 °C ... +40 °C (... +60 °C)	
Power range [kW]		
4-pole	0.37 ... 3.0	
2-pole	0.55 ... 3.0	
6-pole	0.25 ... 1.5	
8-pole	0.15 ... 1.1	

Functional and Connection Principles

MOVI-SWITCH®-2S



MOVI-SWITCH®-1E



Wiring:

- SEW
- Customer

MOVIFIT® – Field Integrated Technology

The new MOVIFIT® system combines the well-known advantages of SEW-EURODRIVE decentralized installation technology with modern, application-oriented drive and communication functions. In this way, MOVIFIT® fulfills the current expectations of plant manufacturers and operators, for example,

for reduction in unit costs, setup times and start-up work, for “ready-to-use” and flexible conveyor functions, optimized system topologies, high degree of integration or even food-grade unit designs.

MOVIFIT® MC features



- Up to three MOVIMOT® to be connected via hybrid cable
- Voltage range 3 x 380 ... 500 V
- Integrated power distribution and line protection
- Integrated communication interface
- Maintenance switch
- Function “Safe stop” by deactivation of 24 V (MOVIMOT® supply)
- Stop categories 0 and 1 acc. to EN 60204-1
- Safety category 3 to EN 954-1
- 12 digital inputs + 4 digital inputs/outputs
- CAN/SBus interface
- Optional connection of sensors/actuators via external standard I/O boxes
- Simple and fast parameter setting via DIP switches or fieldbus

MOVIFIT® SC features



- Electronic (contactless) motor starter
 - connection of two motors (dual motor starter) → one direction of rotation
 - connection of one motor (reversing starter) → two directions of rotation
- Power range
 - connection of two motors → 2 x 0.37 to 2.2 kW
 - connection of one motor → 1 x 0.37 to 4.0 kW
- Adjustable start ramp
- Voltage range 3 x 380 ... 500 V
- Increased safety by switching of three phases
- Integrated energy distribution
- Integrated brake management for SEW three-wire brakes (400 V)
- Control output for external brake control
- 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 Technology or System
- CAN/SBus interface
- Optional connection of sensors/actuators via external standard I/O boxes
- Simple and fast parameter setting via DIP switches
- Expanded parameter setting via fieldbus or diagnostics interface

MOVIFIT® FC features



- Open-loop frequency inverter
- Power range from 0.37 to 1.5 kW and 2.2 to 4 kW
- Voltage range 3 x 380 ... 500 V
- Integrated energy distribution
- Integrated brake management for SEW three-wire brakes (400 V, 230 V, 110 V)
- Control output for external brake control
- Optional internal braking resistor (integrated in ABOX)
- Optional external braking resistor
- 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 Technology or System
- CAN/SBus interface
- Optional connection of sensors/actuators via external standard I/O boxes
- Function "Safe stop" by deactivation of 24 V (inverter supply)
- Stop categories 0 and 1 acc. to EN 60204-1
- Safety category 3 to EN 954-1
- Simple and fast parameter setting via DIP switches
- Expanded parameter setting via fieldbus or diagnostics interface

MOVIFIT® function level

Function level indicates the functional level of the software assigned to the MOVIFIT® units regarding

- operation
- system control
- diagnostics

Overview of MOVIFIT® function level

Classic	Technology	System
Simple functions	Open programming (MOVI-PLC®/ MOVITOOLS® MotionStudio)	Application functions (MOVIVISION)
<ul style="list-style-type: none"> – Control as fieldbus gateway via MOVILINK® – Simple handling – Comparable with control of SEW field distributors (Z.3, Z.6 etc.) 	<ul style="list-style-type: none"> – The programming takes place to IEC 61131 (e. g. in KOP, FUP, AWL, ST, AS) – Multi-stage library concept 	<ul style="list-style-type: none"> – Central data storage for decentralized units – Central parameter and diagnostics system – Scalable drive-based conveyor functions

Detailed solutions make a good concept even better

System operators cannot make any compromises, especially when it comes to “small things.” Fieldbus interfaces, field distributors and cable systems complete the SEW-EURODRIVE system solutions for each decentralization task.

The fieldbus interfaces support the communication with the most frequently used fieldbus systems, PROFIBUS, INTERBUS, CANopen, DeviceNet und AS-Interface. The fieldbus interfaces are based on a module terminal box with connecting terminals and a plug-in fieldbus module. These interfaces can be fitted directly onto MOVIMOT® or they can be mounted separately.

The variable speed MOVIMOT® drive is connected to the bus using terminals; additional sensors, actuators or MOVI-SWITCH® gearmotors without closed-loop control can be connected to the bus either by using terminals or M12 plug connectors. Fault diagnosis can easily be conducted via the bus in the event of a malfunction thanks to diagnostic interfaces and LED signals.



MOVI-SWITCH®-
Helical-bevel gearmotor
with fieldbus interface



Field distributor

You can now organize the electrical connections in your production system even without a control cabinet

Field distributors rationalize the connection of drives with the power supply system, the 24 V_{DC} control voltage and the fieldbus. The units are based on the bus interfaces technology with additional connection technology for supply system distribution. Decentralized installation is made easy by installation of the field distributor close to the motor. The modular plug-in system makes for easy troubleshooting and maintenance, especially in case of a problem.

The hybrid cables have been developed in house and are combination cables which carry the power supply, control voltage and communication

strands within one cable sheath. They also guarantee optimum EMC shielding and impedance.

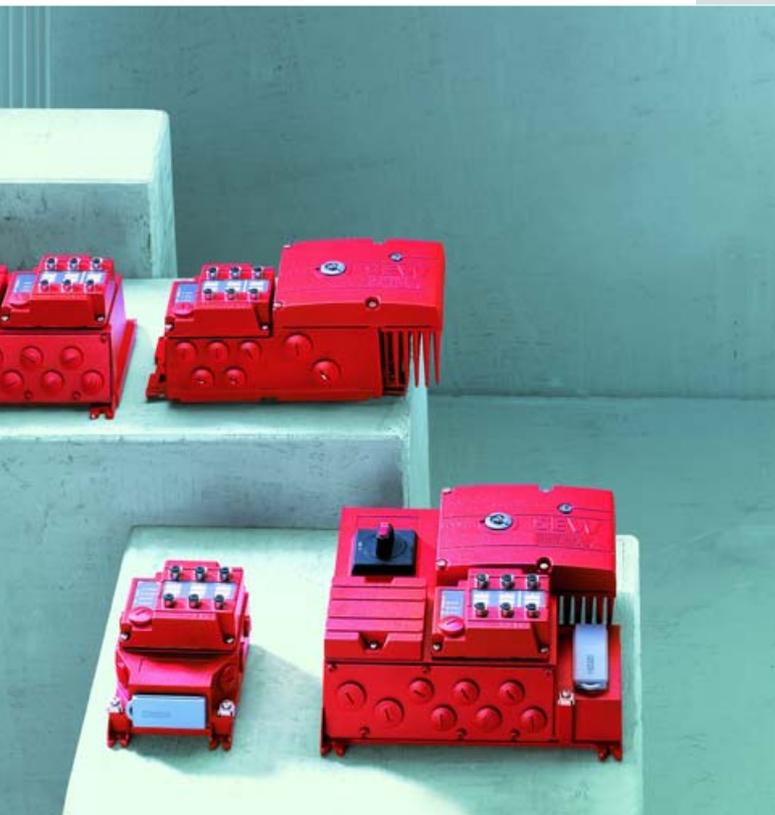
The hybrid cable for connecting MOVIMOT® units to field distributors is 3 m (10 ft.) long. It combines the communications interface as well as supply and control voltage connections in one cable and is supplied as a pre-fabricated cable with plug-in connection.

MOVIMOT® drives fitted with hybrid cables can be connected to the field distributor in a matter of seconds – ready to operate. For servicing, the plug can be disconnected without any danger, even by personnel without technical training. The drive can be replaced and the new drive re-connected quickly. The system is ideal for all applications requiring high levels of operating availability.



We have thought about all details for quick, economical and flexible decentralization. Fieldbus interfaces, field distributors and cable systems complete the range of MOVIMOT® and MOVI-SWITCH® products.

MOVIMOT®-Helical gear-motor with field distributor and hybrid cable

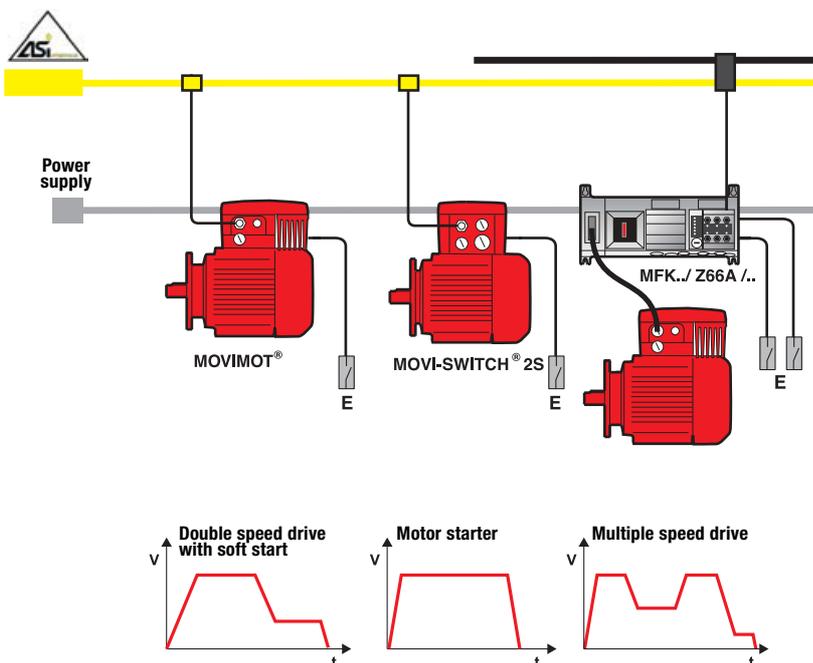


Cost-Saving Communication – With the AS-Interface Concept from SEW-EURODRIVE

For years, the communicative installation connection AS-Interface has been employed for the cost-saving networking of sensors and actuators in automation engineering. The AS-Interface concept from SEW-EURODRIVE even goes one step further. Today, decentralized drives with integrated AS-Interface set the new standards.

Each decentralized drive with integrated AS-Interface from SEW-EURODRIVE has an extremely compact design and can easily be integrated into the AS-Interface network. All classic applications in materials handling technology such as multiple speed drives with soft start or motors with one speed become a communicative drive

factor with added value through the networking with AS-Interface! So far, such networked communication could only be realized by using high-quality fieldbuses and complex installation connections.



AS-Interface Concept in Practice

The picture shows a unified concept in materials handling technology for cost-saving installation with AS-Interface, realized with the components from the “Drive System for Decentralized Installation” of SEW-EURODRIVE:

- MOVIMOT® with integrated AS-Interface as multiple speed drive with soft start
- MOVI-SWITCH® with integrated AS-Interface as switched drive with protection function
- AS-Interface field distributor in conjunction with MOVIMOT® for variable speed drives
- Optimum and AS-Interface-specific, pluggable installation technology

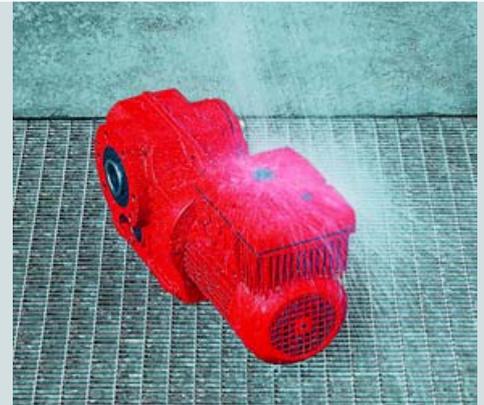


SEW-EURODRIVE offers gearmotors for protection class IP66 – and more

Gearmotors from SEW-EURODRIVE provide protection against humidity, oils, dirt or chemicals as standard and have proven successful in environments that are likely to produce corrosion. A number of optional protective measures and the use of special materials allow operation even under extreme ambient conditions. Due to internal and external measures, SEW-EURODRIVE not only protects all drives reliably from damage but also contributes to long service life and low-maintenance operation of any machine.

SEW-EURODRIVE can even do better:

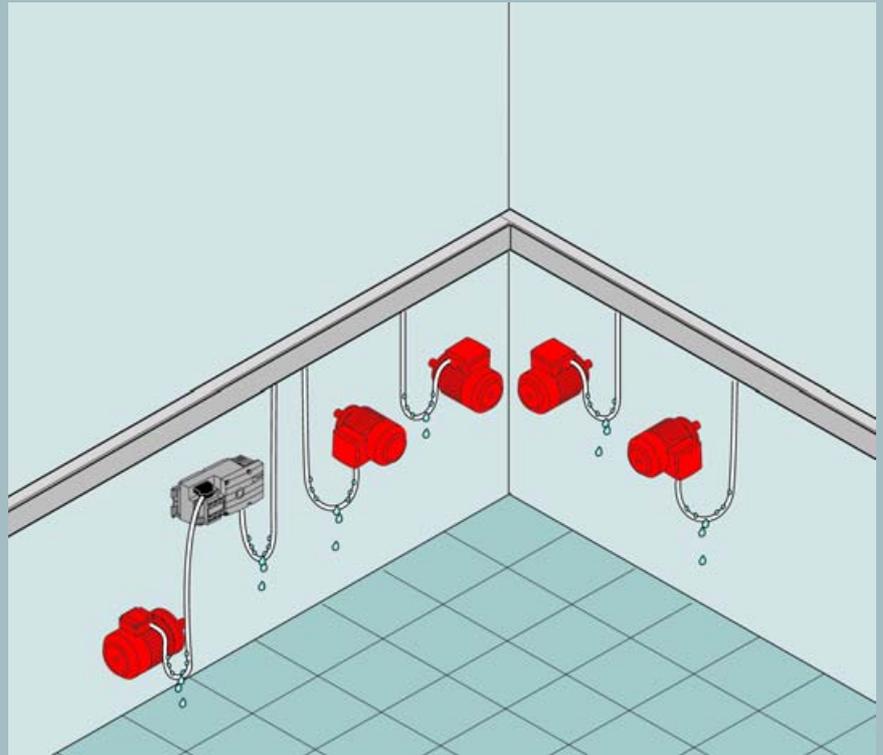
The components for decentralized drive technology from SEW-EURODRIVE meet the requirements of protection class IP66 even if acidic and/or alkaline additives are added to powerful water jets.



Overview of optional packages:

<p>MOVIMOT®, gearmotor with integrated frequency inverter</p> <p>MOVI-SWITCH®, gearmotor with integrated switching and protection function</p>	<ul style="list-style-type: none"> – Drives with condensation drain hole – Surface protection OS – IP66 washdown terminal box with or without pressure compensation screws – Optimized cable entry position – Increased resistance against moisture condensation – Stainless steel screws
<p>Z.1, Z.3 and Z.7 field distributors</p>	<ul style="list-style-type: none"> – Enclosure IP66/IP67 – Stainless steel screws – Pressure compensation screws – M12 metal screw plugs for fieldbus modules with M12 plug connector

The illustration shows the permitted mounting positions and examples for cable run of decentralized drives in IP66 design



How we're driving the world

With people who think fast and develop the future with you.

With a worldwide service network that is always close at hand.

With drives and controls that automatically improve your productivity.

With comprehensive knowledge in virtually every branch of industry today.

With uncompromising quality that reduces the cost and complexity of daily operations.



SEW-EURODRIVE
Driving the world

With a global presence that offers responsive and reliable solutions. Anywhere.

With innovative technology that solves tomorrow's problems today.

With online information and software updates, via the Internet, available around the clock.

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