

NEW: MOVI-C[®] Modular automation system

The future of automation



NEW: MOVI-C[®], the modular automation system

for complete solutions from a single source

MOVI-C[®] is the all-in-one solution for automation tasks. Whether you're implementing standardized single- or multi-axis applications or customized and/or particularly complex applications from the areas of motion control or automation, MOVI-C[®] makes everything possible.

How you benefit: MOVI-C[®] is the all-in-one modular automation system – from the software for planning, startup and operation to the electronic control components, mechanical drive and gearmotor, SEW-EURODRIVE delivers every automation component you need from a single source. And each can naturally be fully integrated into all automation concepts.

MOVI-C[®] – automation from a single source – from a single automation specialist:

Four modules

- 1. Engineering software
- 2. Control technology
- 3. Inverter technology
- 4. Drive technology

form a complete modular automation system with components you can combine to best meet your needs.







MOVI-C®, the all-rounder for any topology

1 Single-axis automation

The MOVIDRIVE[®] technology application inverters are directly connected with the higher-level controller via fieldbus interfaces. Predefined MOVI-KIT[®] application modules are used to implement the drive function quickly and reliably using graphical editors. Each axis is controlled individually.

A memory card in the $\text{MOVIDRIVE}^{\circledast}$ application inverter is used for data management.

Typical application: Material transportation

2 Motion control

The MOVIDRIVE® modular and MOVIDRIVE® system application inverters are connected with the MOVI-C® CONTROLLER via EtherCAT®/SBus^{PLUS} in a real-time capable manner. The MOVI-C® CONTROLLER receives setpoints for single-axis or coordinated movements from the higher-level controller via fieldbus. The MOVI-C® CONTROLLER determines the setpoints for the connected application inverters and thus performs tasks such as phase-synchronous operation, the electronic cam function and kinematics. Predefined MOVIKIT® application modules are used to implement the motion control drive function quickly and reliably using graphical editors. With over 50 kinematic models, a great many mechanical configurations are already covered. New kinematic models can be custom-made by SEW-EURODRIVE. A memory card in the MOVI-C[®] CONTROLLER is used for data management.

Typical applications:

Multiple column hoists, tripod mechanisms, robots

3 Module automation

All drive functions of the motion control topology are available in the module automation topology. In addition to the graphical editors for the drive functions, some or all automation tasks of the higher-level controller can be performed easily and flexibly using the programming system (IEC61131) in the MOVI-C[®] CONTROLLER. Any EtherCAT[®] devices can be integrated for automation in addition to MOVIDRIVE[®] application inverters.

Typical applications: Packaging machines, processing machines, complex transportation tasks

4 EtherCAT[®] motion slave

The CiA402 profile for controlling inverters has established itself in plants with very individual motion control functions that are calculated in the higher-level controller. For control via CiA402, the MOVIDRIVE® modular and MOVIDRIVE® system application inverters can be directly connected to the controller using the integrated EtherCAT® interface. This makes

integration into the higher-level controller particularly quick and easy and eliminates major conversion work.

Typical applications:

Series machines with numerous axes, kinematic calculation in the higher-level PLC

In all topologies, the higher-level controller uses safe communication to activate safety functions that are executed in the MOVISAFE® CS..A safety card in the application inverter.

Module 1 Engineering software: MOVISUITE[®] Save time and cut costs

MOVISUITE[®] sets new standards for engineering software in drive technology. In addition to significant time and cost savings thanks to faster engineering, the software impresses above all with its unique usability. Planning, startup, operation and diagnostics are quicker and easier than ever before.

Features of MOVISUITE® standard

- $-\,$ Startup and parameter setting of MOVIDRIVE® application inverters
- Optimized workflows for professional and occasional users
- Quick and easy familiarization for users thanks to state-of-the-art interactive design
- Intuitive handling of inverter functions such as manual mode and startup of the drive train
- Configuration and IEC programming for MOVI-C® CONTROLLERs
- $-\,$ Parameter setting and diagnostics for MOVIKIT^ $^{\otimes}$ modules
- Data management
- Project management
- Network scan and display of devices
- Scope function
- Electronic catalog for SEW-EURODRIVE products
- Comprehensive context-sensitive help function

Module 2 Control technology: MOVI-C[®] CONTROLLER Cut complexity

The MOVI-C[®] CONTROLLER results in more flexible parameterization and less programming work. This is made possible by already standardized MOVIKIT[®] modules and the MOVIRUN[®] software platform, which cuts costs and reduces complexity. What's more, the control technology is available in four different performance classes – power, power eco, advanced and standard. Further benefits include straightforward, centralized data management and an auto reload function for axis replacement. MOVI-C[®] CONTROLLERs can be connected to all standard control systems.

| Hardware | Performance class MOVI-C [®] CONTROLLER standard | Performance class MOVI-C [®] CONTROLLER advanced | Performance class MOVI-C [®] CONTROLLER power eco | Performance class MOVI-C [®] CONTROLLER power | |
|---------------------------|---|---|--|--|--|
| Features and equipment | Straightforward and centralized data management Can be connected to all standard control systems High performance and user-friendly Auto reload function for axis replacement Startup – MOVIRUN® software platform – module for parameterization and programming Operation – MOVIKIT® modular software system with function blocks for easy speed control, positioning, robotics, electronic cam, mechanically coupled axes, and much more besides. Routing from PROFIsafe to the axis modules 1 × ETHERNET (10/100 BaseT) for engineering or TCP/IP and UDP using IEC 61131-3 1 x EtherCAT® / SBus^{PLUS} master | | | | |
| | 1 x CAN, non-isolated PROFINET slave, EtherNet/IP[™] slave, Modbus TCP/IP slave Status display for PLC and fieldbus SD memory card ≤ 2 interpolating axes ≤ 6 auxiliary axes | 2 x CAN, 1 electrically isolated 1 x RS485 PROFINET slave, EtherNet/IP[™] slave, Modbus TCP/IP slave Status display for PLC and fieldbus Optional – installation in a master module, can be added to MOVIDRIVE[®] modular SD memory card ≤ 8 interpolating axes ≤ 8 auxiliary axes | PROFINET slave, EtherNet/IP[™] slave, Modbus TCP/IP slave CFast memory card 2 GB ≤ 16 interpolating axes ≤ 16 auxiliary axes PC-based | PROFINET slave, EtherNet/IP[™] slave, Modbus TCP/IP slave 7 x USB 2.0 CFast memory card 2 GB ≤ 32 interpolating axes Optional – 2nd Windows 7 Embedded operating system connected using cutting-edge Hypervisor technology for integrated visualization, for example PC-based | |

Module 2 Control technology software: MOVIRUN[®] and MOVIKIT[®]

Control applications more easily

| Software | MOVIRUN® The software platform for MOVI-C® CONTROLLERs | MOVIKIT® The modular software system for MOVI-C® CONTROLLERs | |
|---------------------------|--|--|--|
| Features and equipment | Startup with MOVIRUN® flexible, the versatile and open platform Automation with MOVI-C® and third-party components Interpolated operating modes for demanding motion control applications State-of-the-art programming system (IEC 61131) Prefabricated software modules from the MOVIKIT® modular software system can be integrated into the user program | Operation with MOVIKIT[®] for simple drive functions all the way to sophisticated motion control functions Graphic configuration and diagnostics Available for MOVIDRIVE[®] technology, MOVIRUN[®] small as a purely parameterizable solution with fieldbus connection, and MOVIRUN[®] flexible for integration in the IEC program with user-friendly IEC interface Modules: | |
| | MOVIRUN® smart, the intelligent, purely parameterizable motion control platform Parameterization instead of programming Prefabricated software modules from the MOVIKIT® modular software system can be easily connected to higher-level controllers via the defined fieldbus interface No additional programming work Assured, documented functionality | MOVIKIT[®] Velocity, Positioning MOVIKIT[®] MultiMotion, MultiMotion Camming MOVIKIT[®] MultiAxesController MOVIKIT[®] Robotics and many others | |
| Benefits | High functionality and user-friendly interface Choose between parameterization and programming Parameterization instead of programming: Startup shortened by using standardized software modules Only parameters required for the application need to be entered Guided parameterization instead of complex programming No lengthy familiarization, thus fast project planning and startup | | |

MOVIKIT®

modular software system

Gearing

Camming

MAC

Module 3 Inverter technology: MOVIDRIVE® Control every motor

MOVIDRIVE[®] application inverters control and monitor synchronous, asynchronous and linear motors, with and without encoders. They are available as a modular multi-axis system with single- and double-axis modules up to a rated current of 180 A, and as a single-axis application inverter with mains connection up to a rated power of 315 kW. The basic unit already incorporates the STO in PL e safety function. Safety option cards add over 15 extra safety functions. In addition to benefiting from extremely easy startup and exceptionally energy-saving operation, the application can be implemented quickly and easily using MOVIKIT[®] modules.

| | | MOVIDRIVE [®] modular | MOVIDRIVE [®] system | MOVIDRIVE® technology |
|---------------------------|--|---|--|---|
| Features and equipment | An inverter series for all motors – they control – synchronous and asynchronous AC motors with/without encoder – asynchronous motors with LSPM technology – synchronous and asynchronous linear motors Their practical benefits also include – extremely easy startup using the electronic nameplate or electronic catalog – easy startup of unknown motors using the calibration function – and energy-saving functions for partial-load operation and standby mode | | | |
| | | Compact multi-axis system consisting of power supply modules, regenerative power supply modules and single- and double-axis modules - Multi-encoder input in the basic unit - EtherCAT®/SBus ^{pLUS} in the basic unit - Up to 30 drives on one power supply module - Up to 800 m motor cable length - State-of-the-art control modes for op- timum control performance - Can be used in TN, TT and IT systems - IP20 degree of protection in all sizes - Can be stored for extended periods without additional measures - Control via MOVI-C® CONTROLLER | Single-axis application inverter with own line connection Perfect addition to the multi-axis system for high motor power ratings or long motor cables Multi-encoder input in the basic unit EtherCAT®/SBus^{PLUS} in the basic unit Up to 1200 m motor cable length State-of-the-art control modes for optimum control performance Can be used in TN, TT and IT systems IP20 degree of protection in all sizes Can be stored for extended periods without additional measures Control via MOVI-C® CONTROLLER | Single-axis application inverter with own line connection and direct fieldbus connection via pluggable fieldbus interfaces as well as the features of MOVIDRIVE® system, MOVIDRIVE® technology offers Startup via pluggable operator panels or engineering software Integrated memory card to back up device data Integrated DC 24 V switched-mode power supply |
| | Integrated safety technology For more information, refer to pages 18 + 19 | MOVISAFE® STO in PL e safety function integrated in basic unit Safe communication via PROFINET/PROFIsafe and FSoE Safety over EtherCAT® Higher quality safety functions with MOVISAFE® CSA safety cards, straightforward card and unit replacement using the pluggable CRC memory Straightforward startup by entering parameters Diagnostics and scope functions: SS1, SS2, SOS, SLS, SSR, SSM, SLI, SLA, SDI, SBC | | |
| | Explosion protection | The application inverters also enable operation of explosion-proof motors | | |

Module 3 Inverter technology: MOVIDRIVE®

Technical data

| | MOVIDRIVE® modular | MOVIDRIVE® system | MOVIDRIVE® technology |
|--|---|--------------------------------------|--------------------------------------|
| Nominal voltage V | 3 x AC 380 – 500 | 3 x AC 200 – 240 3 x AC 380 – 500 | 3 x AC 200 – 240 3 x AC 380 – 500 |
| Rated output – power supply module kW | 10 – 110 | - | - |
| Nominal output current – single-axis module A | 2 – 180 | - | - |
| Nominal power kW | - | 0.55 – 315 | 0.55 – 315 |
| Nominal output current – double- axis module A | 2 – 8 | - | - |
| Overload capacity | 250% | 200% | 200% |
| Options at a glance | Operator panels Encoder interfaces for motor and distance encoders PROFINET fieldbus connections, Modbus TCP/IP, EtherNet/IP[™], EtherCAT[®], EtherCAT[®] CiA402, PROFIBUS, DeviceNet[™], PROFIsafe via PROFIBUS / PROFIsafe via PROFINET Extension for inputs and outputs Regenerative power supply Braking resistors Line choke Line filters Output filters | | |
| | | | |
| Digital motor integration | Intelligent, digital link using only one hybrid cable for the data connection and power supply between the motors (synchronous and asynchronous) and the application inverters: NEW: Single-cable technology for synchronous and asynchronous motors: Standardized hybrid cable with uniform plug connector Data line connected to the application inverter with standard coaxial connector NEW: MOVILINK® DDI digital data interface for transferring Electronic nameplate information Brake and diagnostic data (e.g. temperature sensor data) Encoder data, safe and non-safe | | |
| | A standardized hybrid cable for power supply and data transfer Particularly robust and high-performance design with coaxial data cable, supports particularly space-saving installations Also suitable for very long cable lengths up to 200 m Fully integrated digital motor encoders in various designs | | |

Functional safety MOVISAFE® integrated in the inverter technology

Standards requirements and the option of humans and machines working hand in hand call for more and more system areas with functional safety technology. Functional safety is thus an integral part of every application.

By integrating MOVISAFE® CS..A safety cards, SEW-EURODRIVE has made functional safety an integral part of all MOVI-C® application inverters. STO in PL e is already included in the MOVIDRIVE® basic unit. All higher quality safety functions are achieved by plugging in an option card, including all the necessary connections to the inverter technology – encoder, communication, STO. Project costs are thus reduced to the function actually needed.

Functions in the basic unit

- STO (safe torque off)
- SIL 3 in line with EN 61800-5-2, EN 61508
- PL e in line with EN ISO 13849-1
- Can be activated via safe inputs

 Five scalable safety cards depending on application requirements

MOVISAFE® - functions of safety cards

- SIL 3 in line with EN 61800-5-2, EN 61508
- PL e in line with EN ISO 13849-1
- Can be plugged in later at any time, no additional external cables needed
- Also with additional multi-encoder input
- Safe communication via PROFIsafe/ PROFINET and FSoE – Fail Safe over EtherCAT[®]
- Parameters of the safety card included in the device data set

 Can be easily replaced during servicing via pluggable CRC memory on the safety card

- Can be activated via safe communication if

a CS..A safety card is plugged in

enables short safety distances

- Extremely short response time of 2 ms

- Parameterization and diagnostics using MOVISUITE[®] engineering software
- Process data and safety data in one joint scope recording
- Safe output for activating functionally safe brake systems

| Hardware | MOVISAFE® CSB21A | MOVISAFE® CSB31A | MOVISAFE® CSS21A | MOVISAFE® CSS31A | MOVISAFE® CSA31A* |
|-----------------------------------|---------------------|---------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| Safe inputs | 4 | 4 | 4 | 4 | 4 |
| Safe outputs | - | 2 | 2 | 2 | 2 |
| Safe stop functions | STO, SS1c | STO, SS1c, SBC | STO, SS1c, SBC | STO, SS1c, SBC | STO, SS1c, SBC, SBT |
| Safe motion functions | - | - | SOS, SS1b, SS2, SLS, SSR, SLA, SSM | SOS, SS1b, SS2, SLS, SSR, SLA, SSM | SOS, SS1b, SS2, SLS, SSR, SLA, SSM |
| Safe positioning functions | - | - | SLI, SDI | SLI, SDI | SLI, SDI, SCA, SLP |
| Safe communication | PROFIsafe, FSoE | PROFIsafe, FSoE | PROFIsafe, FSoE | PROFIsafe, FSoE | PROFIsafe, FSoE |
| Additional multi-encoder input | - | Yes | - | Yes | Yes |

Module 4 Drive technology Motion solutions for every application

All drive technology solutions support a wide range of applications. Select standard and servo gear units in various sizes and designs and with different ratings, torques and finishes – combined with asynchronous or synchronous AC motors. Linear motors, electric cylinders, brakes, built-in encoders and diagnostic units round off the diverse portfolio. And it goes without saying that all the necessary global certifications are in place. **NEW** to the range and available from 2018 – digital motor integration with single-cable technology: Standardized hybrid cable with uniform plug connector for synchronous and asynchronous motors alike.

| | Standard and servo gear units | Motors |
|----------|--|---|
| Overview | Five standard gear unit series One-, two- and three-stage helical gear units, R series: Output torque 50 Nm – 18 000 Nm Two- and three-stage parallel-shaft helical gear units, F series: Output torque 130 Nm – 18 000 Nm Two- and three-stage helical-bevel gear units, K series: Output torque 80 Nm – 50 000 Nm Two-stage helical-worm gear units, S series: Output torque 92 Nm – 4000 Nm One- and two-stage right-angle gear units, W series: Output torque 25 – 180 Nm Other than a few exceptions, the standard gear units are also available as compound gear units | DR and DT56 series AC motors (1 speed), 2-, 4- and 6-pole and Pole-changing DR series AC motors (2 speeds) cover outputs from 0.09 to 225 kW and energy efficiency classes from IE1 to IE4 Also available: Torque motors, single-phase motors, aseptic motors and motors with explosion protection |
| | Two servo gear unit series Low backlash planetary servo gear units from the PS.F series: Nominal torques 25 Nm – 3000 Nm PS.C: Nominal torques 30 Nm – 320 Nm Low backlash helical-bevel servo gear units from the BS.F series: Nominal torques 40 Nm – 1200 Nm | Synchronous and asynchronous servomotors for highly dynamic requirements, also with explosion protection and linear motors and electric cylinders round out the modular motor system Combined with an extensive range of brakes, encoders, plug connectors, forced cooling fans, special coatings and surface treatments, the modular system offers you the perfect drive for your application. |

2

MOVI-C® in use: Packaging machine with multipacker and top loader

8 1

0 123

1 Control cabinet:

Using a multi-axis system with double-axis inverter: High power density, minimal power loss - can even be installed in small machine control cabinets.

2 Automation framework:

The machine is operated using software based on the SEW-EURODRIVE automation framework. This PackML-compliant framework also offers a standardized user interface, for example, in addition to the sequential program.

3 Controller algorithms:

New, universally used controller algorithms enable control of all motors with just one inverter.

Robots as part of the machine – extensive kinematic libraries support the integration of robots into the machine control system.

MOVI-C® in practice:

Carton erector achieved using automation framework based on PackML standard – full functionality integrated

The following software functions are already available in the automation framework (AFW):

1 Modes & states

Various modes (such as production, manual mode, maintenance mode) can be defined. All 17 PackML-compliant states are available within the individual modes. Either all 17 states can be used or just some of them, depending on the machine type and mode used.

2 Modular software design and programming

The use and structure of SEW-AFW supports a modular software structure right from the start, resulting in a high level of reusable codes. The methods of the ISA88 industry standard are used for structuring the software. This standard is among the most common in the food industry.

3 Event (and error) handling

Using the integrated and predefined event handling, events (errors, warnings or information) can be easily triggered and sorted. Automated information processing enables quick and easy data transfer to external visualization systems.

Benefits

Reduced engineering workload

- Thanks to integrated functions and prefabricated standard modules
- Part of the machine program is parameterized instead of programmed
- Standard modules save the programmer time and help avoid errors

Reduced integration costs

 Thanks to standardized "PackTags" data interface:
 "PackTags" are used for communicating with other machines or the higher-level controller. They also serve as a standardized interface for all incoming and outgoing machine information. This ensures open data exchange between an extremely wide range of machines and their manufacturers.

Increased productivity

 Thanks to improved diagnostics options and identical visualization behavior of different machines in a production line

MOVI-C[®] – 100% automation from a single source – for numerous industries and applications – worldwide

www.sew-eurodrive.de/movi-c

27

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 19 3835-8000 sew@sew.com.br

Cameroon Tel. +237 233 39 02 10 Fax +237 233 39 02 10 sew@sew-eurodrive.cm

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 95 8500 Fax +45 43 95 8509 sew@sew-eurodrive.dk

Finland Tel. +358 201 589-300 Fax +358 3 780-6211 sew@sew.fi

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

Ghana Tel. +233 303 963 772 info@sew-eurodrive.com.gh

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

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

India Tel. +91 265 3045200 Fax +91 265 3045300 marketing@seweurodriveindia.com

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

Ivory Coast Tel. +225 21 21 81 05 Fax +225 21 25 30 47 info@sew-eurodrive.ci

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

How we're driving the world

Kazakhstan Tel. +7 727 350 5156 Fax +7 727 350 5156 sew@sew-eurodrive.kz

Kenya Tel. +254 791 398840 info@sew.co.ke

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

Morocco Tel. +212 522 88 85 00 Fax +212 522 88 84 50 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 24 10 20 Fax +47 69 24 10 40 sew@sew-eurodrive.no

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

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

Poland Tel. +48 42 293 00 00 Fax +48 42 293 00 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 11 248 7289 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 34 42 00 Fax +46 36 34 42 80 jonkoping@sew.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 info@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

United Arab Emirates Tel. +971 4 8806461 Fax +971 4 8806464 info@sew-eurodrive.ae

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 cslvman@seweurodrive.com Uzbekistan

Tel. +998 71 2359411 Fax +998 71 2359412 sew@sew-eurodrive.uz

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

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

