SEW
EURODRIVE

Operating Instructions

MOVI-C® CONTROLLER Type UHX85A

Table of Contents

1 General information [Freigegeben]

1.1 About this documentation [Freigegeben]

The documentation at hand is the original.

This documentation is an integral part of the product. The documentation is intended for all employees who perform work on the product.

Make sure this documentation is accessible and legible. Ensure that persons responsible for the systems and their operation as well as persons who work on the product independently have read through the documentation carefully and understood it. If you are unclear about any of the information in this documentation or if you require further information, contact SEW-EURODRIVE.

1.2 Other applicable documentation [Freigegeben]

Refer to the corresponding documentation for all other components.

Always use the latest edition of the documentation and the software.

The SEW-EURODRIVE website (www.sew-eurodrive.com) provides a wide selection of documents for download in various languages. If required, you can also order printed and bound copies of the documentation from SEW-EURODRIVE.

1.3 Structure of the safety notes [Freigegeben]

1.3.1 Meaning of signal words [Freigegeben]

The following table shows the graduation and meaning of the signal words in the safety notes.

Signal word	Meaning	Consequences if not observed
⚠ DANGER	Imminent danger	Death or severe injuries
⚠ WARNING	Possibly dangerous situation	Death or severe injuries
⚠ CAUTION	Possibly dangerous situation	Minor injuries
NOTICE	Possible damage to property	Damage to the product or its environment
INFORMATION	Useful information or tip: Simplifies handling of the product.	

1.3.2 Structure of section-related safety notes [Freigegeben]

Section-related safety notes do not apply to a specific action but to several actions pertaining to one subject. The hazard symbols used either indicate a general hazard or a specific hazard.

This is the formal structure of a safety note for a specific section:

SIGNAL WORD

Type and source of hazard.

Possible consequence(s) if disregarded.

• Measure(s) to prevent the hazard.

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1.3.3 Meaning of the hazard symbols [Freigegeben]

The hazard symbols in the safety notes have the following meaning:

Hazard symbol	Meaning
⚠	General hazard

1.3.4 Structure of embedded safety notes [Freigegeben]

Embedded safety notes are directly integrated into the instructions just before the description of the dangerous step.

This is the formal structure of an embedded safety note:

⚠ **SIGNAL WORD!** Type and source of danger. Possible consequence(s) if disregarded. Measure(s) to prevent danger.

1.4 Decimal separator in numerical values [Freigegeben]

In this document, a period is used to indicate the decimal separator.

Example: 30.5 kg

1.5 Rights to claim under limited warranty [Freigegeben]

Read the information in this documentation. This is essential for fault-free operation and fulfillment of any rights to claim under limited warranty. Read the documentation before you start working with the product.

1.6 Product names and trademarks [Freigegeben]

The product names mentioned in this documentation are trademarks or registered trademarks of the respective titleholders.

1.6.1 Trademark of Beckhoff Automation GmbH [Freigegeben]

EtherCAT® is a registered trademark and patented technology, licensed by Beckhoff Automation GmbH, Germany.

EtherCAT.®

1.7 Copyright notice [Freigegeben]

1.8 Short designation [Nicht freigegeben]

The following short designations are used in this documentation:

Type designation	Short designation
MOVI-C® CONTROLLER Type UHX85A	MOVI-C® CONTROLLER
Real-Time Operating System	RTOS
General Purpose Operating System	GPOS

2 Safety notes [Freigegeben]

2.1 Preliminary information [Freigegeben]

The following general safety notes serve the purpose of preventing injury to persons and damage to property. They primarily apply to the use of products described in this documentation. If you use additional components, also observe the relevant warning and safety notes.

2.2 Duties of the user [Freigegeben]

As the user, you must ensure that the basic safety notes are observed and complied with. Make sure that persons responsible for the machinery and its operation as well as persons who work on the device independently have read through the documentation carefully and understood it.

As the user, you must ensure that all of the work listed in the following is carried out only by qualified specialists:

- Setup and installation
- Installation and connection
- Startup
- Maintenance and repairs
- Shutdown
- Disassembly

Ensure that the persons who work on the product pay attention to the following regulations, conditions, documentation, and information:

- The national and regional regulations governing safety and the prevention of accidents
- The warning and safety signs on the product
- All other associated project planning documents, installation and startup instructions, as well as wiring diagrams
- Do not assemble, install or operate damaged products
- All system-specific specifications and regulations

Ensure that systems in which the product is installed are equipped with additional monitoring and protection devices. Observe the applicable safety regulations and legislation governing technical work equipment and accident prevention regulations.

2.3   Target group [Freigegeben]

Specialist for mechanical work

Any mechanical work may be performed only by adequately qualified specialists. Specialists in the context of this documentation are persons who are familiar with the design, mechanical installation, troubleshooting, and maintenance of the product, and who possess the following qualifications:

- Qualifications in the field of mechanics in accordance with the national regulations
- Familiarity with this documentation

Specialist for electrotechnical work

Any electrotechnical work may be performed only by electrically skilled persons with a suitable education. Electrically skilled persons in the context of this documentation are persons who are familiar with electrical installation, startup, troubleshooting, and maintenance of the product, and who possess the following qualifications:

- Qualifications in the field of electrical engineering in accordance with the national regulations
- Familiarity with this documentation

Additional qualifications

In addition to that, these persons must be familiar with the valid safety regulations and laws, as well as with the requirements of the standards, directives, and laws specified in this documentation.

The persons must have the express authorization of the company to operate, program, parameterize, label, and ground devices, systems, and circuits in accordance with the standards of safety technology.

Instructed persons

All work in the areas of transport, storage, installation, operation and waste disposal may only be carried out by persons who are trained and instructed appropriately. These instructions must enable the persons to carry out the required activities and work steps safely and in accordance with regulations.

2.4 IT security [Freigegeben]

2.4.1 Contact [Freigegeben]

If you need support with the configuration, contact SEW-EURODRIVE Service. You can obtain information about current security-related issues by e-mail or on the Product Security Management website. There you will find various contact options for reporting security-related problems.

2.4.2 IT security of the product [Freigegeben]

As of version V2.40 (IEC 3.5.18) of the MOVISUITE® engineering software and firmware version 8 of the product, you can activate user management on the product and so you can assign an access level to certain functions. In addition, you can set up certificate-based secure communication between the product and the IEC Editor via fieldbus and the Ethernet communication interface.

Firmware [Freigegeben]

The version of the MOVISUITE® engineering software and the version of the product firmware must be up to date. You can check the firmware version using the MOVISUITE® engineering software. If the product does not have the latest version of the firmware, update it.

You can download the latest version of the MOVISUITE® engineering software from the SEW-EURODRIVE website. The MOVISUITE® engineering software contains the latest version of the product firmware. For a detailed description of the firmware update, refer to chapter "Service" (→ 🖺 65).

2.4.3 IT security of the environment [Freigegeben]

For drive and control components that are integrated into a network (e.g. a fieldbus, WLAN, or Ethernet network), it is possible to make settings even more remotely. This brings with it the risk of a parameter change that is not visible externally resulting in unexpected, but not uncontrolled system behavior, and this may impact negatively on operational security, system availability, or data security.

Make sure that unauthorized access is not possible, especially for WLAN- or Ethernet-based networked systems and engineering interfaces. Using IT-specific security standards, such as network segmentation, adds to the protection of access to the ports. For an overview of the ports and of the services provided by the communication interfaces, refer to Online Support. The IT security of the product is only guaranteed when used in an environment secured by defense-in-depth strategies.

Ensure that clear responsibility for security is guaranteed during operation. SEW-EURODRIVE recommends an IT security management system in accordance with ISO/IEC 27001 and ISO/IEC 62443-2-4.

2.5 Designated use [Freigegeben]

The product is intended for control cabinet installation in electrical systems or machines.

In case of installation in electrical systems or machines, startup of the product is prohibited until it is determined that the machine meets the requirements stipulated in the local laws and directives. For Europe, Machinery Directive 2006/42/EC as well as the EMC Directive 2014/30/EU apply. Observe EN 60204-1 (Safety of machinery -— electrical equipment of machines).

Technical data and information on the connection conditions are provided on the nameplate and in chapter "Technical data" in the documentation. Always comply with the data and conditions.

Unintended or improper use of the product may result in severe injury to persons and damage to property.

2.5.1 Restrictions under the European WEEE Directive 2012/19/EU [Freigegeben]

Options and accessories from SEW-EURODRIVE may only be used in combination with products from SEW-EURODRIVE.

2.5.2 Lifting applications [Freigegeben]

To avoid danger of fatal injury due to falling hoists, observe the following points when using the product in lifting applications:

- Use mechanical protection devices.
- Perform a hoist startup.

Application in ELSM® control mode [Freigegeben]

When the inverter is operated in ELSM® control mode, using it in lifting applications and inclining tracks is not permitted.

2.5.3 Restrictions of use [Freigegeben]

The following applications are prohibited unless the device is explicitly designed for such use:

- Use in potentially explosive areas.
- Use in areas exposed to harmful oils, acids, gases, vapors, dust, and radiation.
- Operation in applications with impermissibly high mechanical vibration and shock loads in excess of the regulations stipulated in EN 61800-5-1.
- Use at an elevation of more than 3800 m above sea level.

2.6 Functional safety technology [Freigegeben]

The product must not perform any safety functions without a higher-level safety system unless explicitly allowed by the documentation.

2.7 Transport [Freigegeben]

Inspect the shipment for damage as soon as you receive the delivery. Inform the shipping company immediately about any damage. If the product or the packaging is damaged, do not assemble, install, connect, or start up the product. If the packaging is damaged, the product itself may also be damaged.

Observe the following notes when transporting the device:

• Ensure that the product is not subject to mechanical impact.

If necessary, use suitable, adequately dimensioned transport aids.

Observe the notes on the climatic conditions in accordance with chapter "Technical data" in the corresponding product manual.

2.8 Installation/assembly [Freigegeben]

Ensure that the product is installed and cooled in accordance with the regulations in the documentation.

Protect the product from excessive mechanical strain. The product and its mounted components must not protrude into the path of persons or vehicles. Ensure that no components are deformed or no insulation spaces are modified, particularly during transportation. Electrical components must not be mechanically damaged or destroyed.

Observe the notes in chapter "Mechanical installation" (→ 🖹 26) in the documentation.

2.9 Electrical installation [Freigegeben]

Ensure that all of the required covers are correctly attached after the electrical installation.

Make sure that preventive measures and protection devices comply with the applicable regulations (e.g. EN 60204-1 or EN 61800-5-1).

2.9.1 Required preventive measure [Freigegeben]

Make sure that the product is correctly attached to the ground connection.

2.9.2 Stationary application [Freigegeben]

The necessary preventive measure for the product is:

Type of energy transfer	Preventive measure
Direct power supply	Ground connection

2.10   Protective separation [Freigegeben]

The product meets all requirements for protective separation of power and electronics connections in accordance with IEC 61800-5-1. The connected signal circuits must meet requirements according to SELV (**S**afety **E**xtra **L**ow **V**oltage) or PELV (**P**rotective **E**xtra **L**ow **V**oltage) to ensure protective separation. The installation must meet the requirements for protective separation.

In order to avoid exceeding the permitted contact voltages in SELV or PELV power circuits in the event of a fault, continuous equipotential bonding is required in the vicinity of these power circuits. If this is not possible, other preventive measures must be taken. These preventive measures are described in IEC 61800-5-1.

2.11   Startup/operation [Freigegeben]

Observe the safety notes in chapters "Startup" (→ 🗎 40) and "Operation" (→ 🗎 46) in this documentation.

Make sure the connection boxes are closed and screwed before connecting the supply voltage.

Depending on the degree of protection, products may have live, uninsulated, and sometimes moving or rotating parts as well as hot surfaces during operation.

Additional preventive measures may be required for applications with increased hazard potential. Be sure to check the effectiveness of the protection devices after every modification.

In the event of deviations from normal operation, switch off the product. Possible deviations are increased temperatures, noise, or vibration, for example. Determine the cause. Contact SEW-EURODRIVE if necessary.

When the device is switched on, dangerous voltages are present at all power connections as well as at any connected cables and terminals. This also applies even when the product is inhibited and the motor is at standstill.

Risk of burns due to arcing: Do not disconnect power connections during operation. Do not connect power connections during operation.

If you disconnect the product from the voltage supply, do not touch any live components or power connections because capacitors might still be charged. Observe the following minimum switch-off time:

10 minutes.

Observe the corresponding information signs on the product.

The fact that the operation LED and other display elements are no longer illuminated does not indicate that the product has been disconnected from the supply system and no longer carries any voltage.

Mechanical blocking or internal protective functions of the product can cause a motor standstill. Removing the cause of this problem or performing a reset can result in the machine or the system re-starting on its own. First, disconnect the product from the supply system before you start troubleshooting.

Risk of burns: The surface temperature of the product can exceed 60 °C during operation. Do not touch the product during operation. Let the product cool down before touching it.

3 Device structure [Freigegeben]

3.1 Device description [Nicht freigegeben]

The MOVI-C® CONTROLLER Type UHX85A it is suitable for sophisticated motion and automation control tasks. The real-time operating system (RTOS) guarantees very short response times as well as a high-performance connection of system buses from SEW-EURODRIVE and standard fieldbuses. Demanding visualization solutions can be realized via the Windows operating system (GPOS) that runs in parallel.

The MOVI-C® CONTROLLER Type UHX85A is suitable for automating machines and cells for up to 32 interpolating axes and 32 auxiliary axes. It is suitable as a module controller for complex motion control tasks such as cams and robotics, as well as for the complete automation of machines and systems.

3.2 Device variants [Nicht freigegeben]

The MOVI-C® CONTROLLER is available in booksize format with the following fieldbus interfaces for control cabinet installation.

INFORMATION

When using the fieldbus variants, observe the respective communication manual available from the Online Support of SEW-EURODRIVE.

Device variant	Fieldbus interface
UHX85A	MOVI-C® CONTROLLER Type UHX85A without fieldbus interface
UHX85A-P	MOVI-C® CONTROLLER Type UHX85A with PROFIBUS fieldbus interface for slave connection
UHX85A-R	MOVI-C® CONTROLLER Type UHX85A with EtherNet/IP™ fieldbus interface, Modbus TCP, and PROFINET IO for slave connection

3.3 Nameplate [Freigegeben]

The following figure shows an example of the nameplate of the device:

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[1] "Type code" (→ 📄 16)	[5] Input electrical data
[2] Part number	[6] "Markings" (→ 📄 73)
[3] Serial number	[7] Enable state
[4] Assembly number	

3.4 Product label [Freigegeben]

The product label with QR code is clearly visible attached on the front of the device.

By scanning the QR code you will be forwarded to the digital services of SEW-EURODRIVE. There, you have access to product-specific data, documents, and further services.

For more information, refer to the chapter "Markings" (→ 📄 73).

3.5 Type code [Nicht freigegeben]

The following table shows the structure of the type code:

Example: UHX85A-R		
Product name	**UHX**	MOVI-C® CONTROLLER
Series	**85**	
Version	**A**	• A = Version status A
Variants	**R**	• R = With EtherNet/IP™ fieldbus interface, Modbus TCP, and PROFINET IO
		• P = With PROFIBUS fieldbus interface

3.6 Terminals [Freigegeben]

A

B
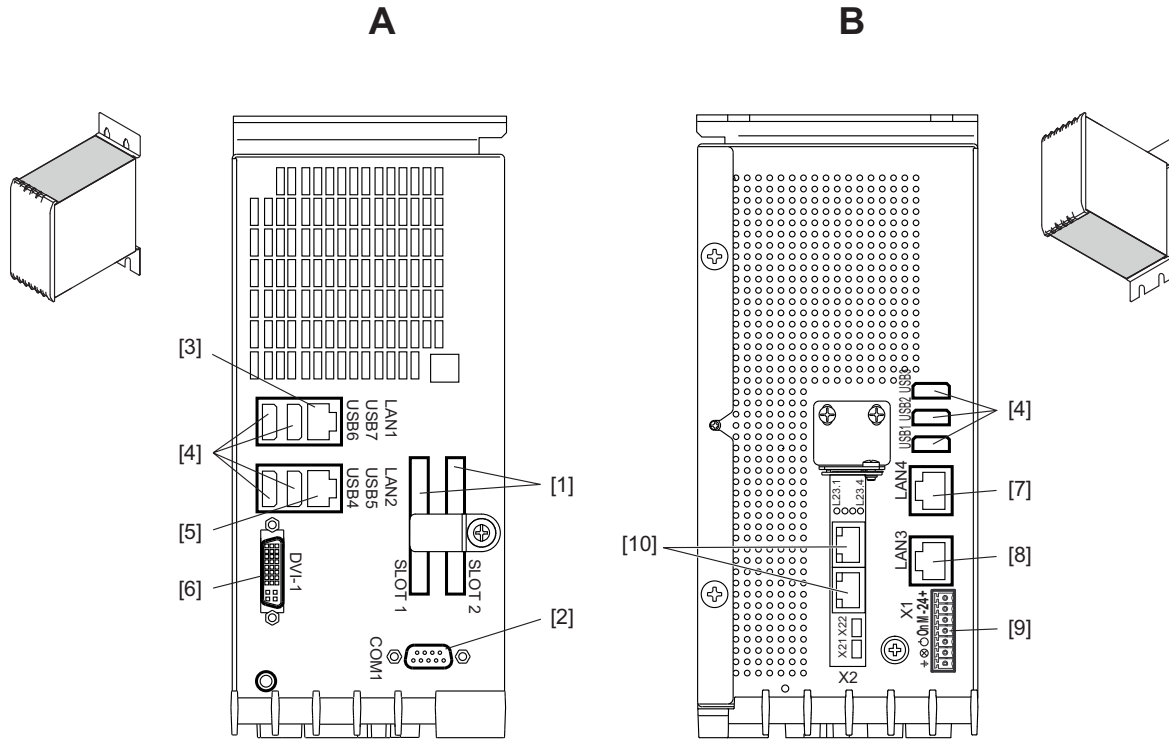
24987496459

A: View from top

B: View from bottom

No.	Designation	Terminal	Function
[1]	CFast card slot	SLOT 1	Card slot for the OMH85A CFast memory card (control section with firmware, IEC program, user data)
		SLOT 2	Card slot for the OMW71B/72B Windows CFast memory card (Windows 7 Embedded)
[2]	Connector COM 1: (D-sub connector, 9-pin)	COM 1	Reserved
[3]	Windows interface (RJ45 socket)	LAN 1	Engineering interface for the Windows section of the MOVI-C® CONTROLLER Standard IP address: 192.168.10.5
[4]	USB port	USB 1 – 7	Standard USB assignment (USB 2.0)
[5]	EtherCAT®/SBus^PLUS interface (RJ45 socket)	LAN 2	EtherCAT®/SBus^PLUS interface master connection
[6]	DVI-I interface	DVI-I	Monitor connection
[7]	Ethernet interface (RJ45 socket)	LAN 4	Reserved
[8]	Engineering interface (RJ45 socket)	LAN 3	Engineering interface for the control section of the MOVI-C® CONTROLLER Standard IP address: 192.168.10.4

No.	Designation	Terminal	Function
[9]	Plug-in terminals	X1: ⏚	Digital ground and housing potential
		X1: ⊗	Electrically isolated output with internal resistor to limit the current to about 10 mA. A LED can be connected here as a power status display.
		X1: ○	Electrically isolated input. Connection of a button to switch the MOVI-C® CONTROLLER on and off.
		X1:On	Electrically isolated input. Connection of a button to switch the MOVI-C® CONTROLLER on.
		X1:M	Common ground for all electrically isolated inputs/outputs
		X1:−	Connection of DC 24 V voltage supply (−)
		X1:+	Connection of DC 24 V voltage supply (+)
[10]	Fieldbus interface (RJ45 socket)	X21/22	Slave connection

3.7   Communication interfaces [Nicht freigegeben]

MOVI-C® CONTROLLER has the following communication interfaces:

- The Ethernet communication interfaces are used for engineering the MOVI-C® CONTROLLER, for connecting an operator panel, and for communicating with other Ethernet stations (e.g. with a higher-level PLC).

- The EtherCAT®/SBusPLUS interface is used to control drive inverters, I/O modules and other EtherCAT® slave components.

The following figure illustrates the use of the communication interfaces:
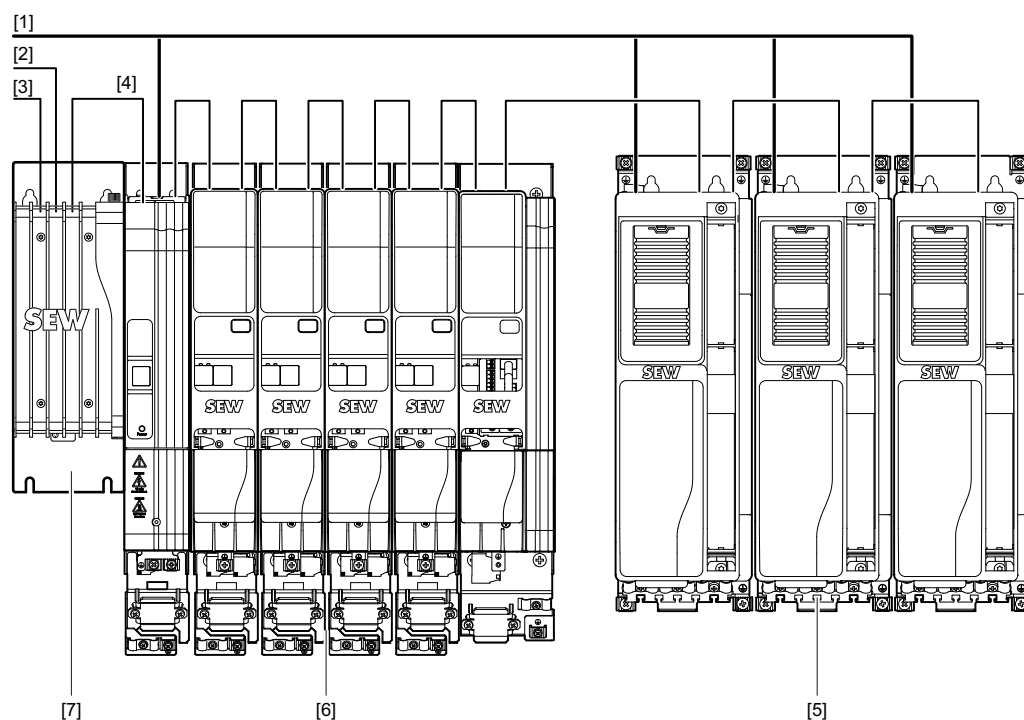
24246805387

[1] Line voltage   [5] MOVIDRIVE® system
[2] Fieldbus connection   [6] MOVIDRIVE® modular axis system
[3] Engineering connection   [7] MOVI-C® CONTROLLER
[4] EtherCAT®/SBusPLUS connection

3.7.1 Windows interface [Nicht freigegeben]

The Ethernet communication interface (LAN 1) is assigned to the Windows section (GPOS) of the MOVI-C® CONTROLLER and is therefore referred to as the Windows interface.

The interface is available when the Windows memory card is inserted and is used to implement the following functions:

- Access to the Windows operating system via remote desktop connection
- Connection of a visualization system
- Connection to the master level

3.7.2 Engineering interface [Nicht freigegeben]

The Ethernet communication interface (LAN 3) is assigned to the control section (RTOS) of the MOVI-C® CONTROLLER and is therefore referred to as the engineering interface.

The following functions are implemented via the engineering interface (LAN 3):

- Engineering of the MOVI-C® CONTROLLER
- PC visualization (e.g. OPC interface)
- Connection to the master level

The engineering of the MOVI-C® CONTROLLER comprises the following activities:

- Configuration
- Parameterization
- Programming

Engineering is carried out using the MOVISUITE® engineering software. The software has a number of useful features for startup and diagnostics of all connected SEW-EURODRIVE devices.

3.7.3 Virtual network card (VNET) [Freigegeben]

The OMW CFast memory card (Windows memory card) is required to use the virtual network card. For more information, refer to chapters "Cfast memory card OMW" (→ 🖺 24)and "Virtual network card (VNET)" (→ 🖺 32).

3.7.4 EtherCAT®/SBusPLUS interface [Freigegeben]

The following devices can be connected to the MOVI-C® CONTROLLER via the EtherCAT®/SBusPLUS interface (LAN 2):

- Inverters from the MOVI-C® modular automation system
- MOVI-PLC® I/O system C
- Third-party components with ESI project planning file

The maximum number of slave components that can be connected to the MOVI-C® CONTROLLER is: 256.

3.7.5 Fieldbus interface [Freigegeben]

The MOVI-C® CONTROLLER can be connected to a higher-level PLC via the fieldbus interfaces (X21, X22).

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The fieldbus interface is integrated into the MOVI-C® CONTROLLER.

PROFINET IRT communication [Freigegeben]

The device supports the IRT communication feature of PROFINET (**I**sochronous **R**eal-**T**ime).

No synchronization with the lower-level EtherCAT®/SBus^PLUS interface is performed during IRT communication. This means that it is not possible to access EtherCAT®/SBus^PLUS devices isochronously with the PROFINET controller.

3.8 Status LEDs [Nicht freigegeben]

A   **B**
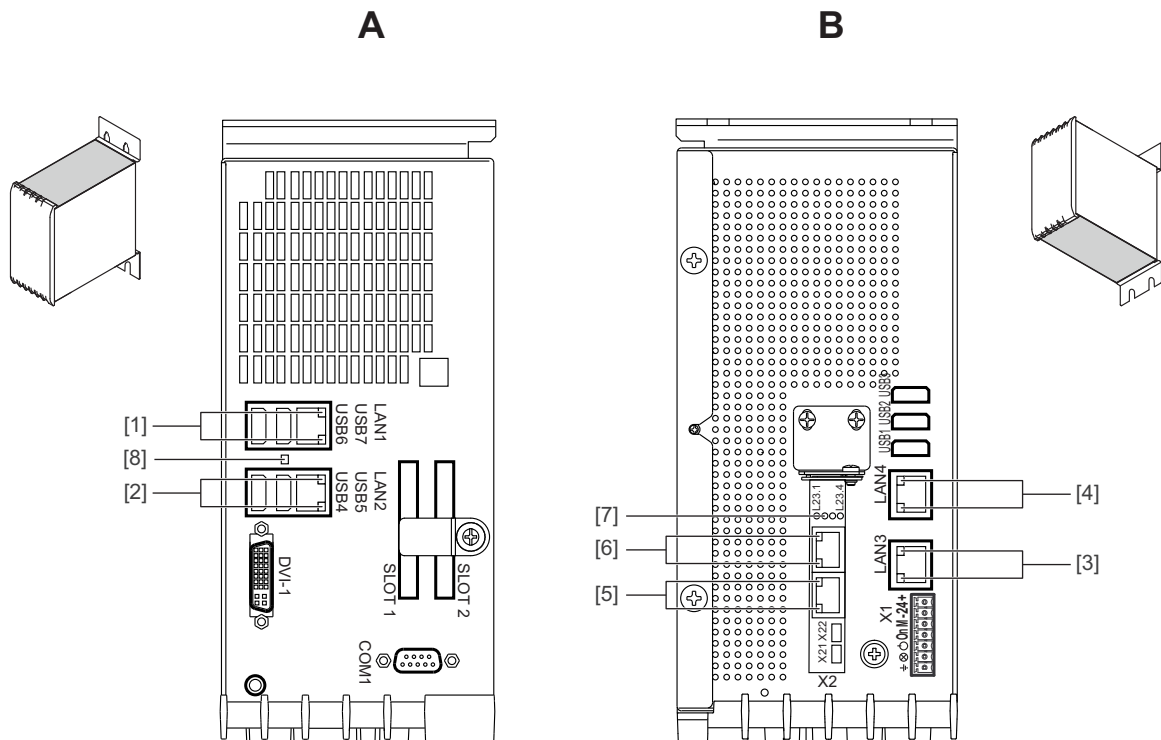
9007224242256395

A: View from top   **B: View from bottom**

[1]   L/A: Status of the Windows interface (LAN 1)
[2]   L/A: Status of the EtherCAT®/SBusPLUS interface (LAN 2)
[3]   L/A: Status of the engineering interface (LAN 3)
[4]   L/A: Reserved (LAN 4)
[5]   L/A: Status of the fieldbus interface X21
[6]   L/A: Status of the fieldbus interface X22
[7]   L23.1: Reserved
       L23.2: Status of the fieldbus system (NETWORK STATUS)
       L23.3: Status of the bus electronics (MODULE STATUS)
       L23.4: Status of the fieldbus slave (SYS)
[8]   Status of the real-time operating system (RTOS)

3.8.1 Status LEDs "L/A" (Link/Activity) [Freigegeben]

Status LED "Link" [Freigegeben]

Status LED	Meaning
Green	There is an Ethernet connection.
Off	There is no Ethernet connection.

Status LED "Activity" [Freigegeben]

Status LED	Operating status
Yellow, flickering	Data is currently being exchanged via Ethernet.
	The status LED flickers depending on the load.

3.8.2 Status LED "L23.1" (Reserved) [Freigegeben]

Shows the status of the fieldbus system.

LED	Meaning
–	Is reserved.

3.8.3 Status LED "L23.2" (NS – network status) [Freigegeben]

Shows the status of the fieldbus system.

Status LED	Operating status
Green	There is a controlling connection to the fieldbus system.
Green, flashing	No controlling connection. However, the device is configured (including IP address) and ready for a connection.
Green/red, flashing	The option card performs a self-test.
Red, flashing	The previously established controlling connection is in timeout state. The state is reset by restarting communication.
Red	Conflict detected during IP address assignment. Another node in the network uses the same IP address.
Off	The option card does not yet have any IP address parameters.

3.8.4 Status LED "L23.3" (MS – module status) [Freigegeben]

Signals that the bus electronics are operating correctly.

Status LED	Operating status
Green	The controller is in normal operating state.
Green, flashing	The controller was not configured yet and is in "Standby" state.
Green/red, flashing	The option card performs a self-test.
Red, flashing	A simple, correctable error, e.g. a faulty configuration, was detected.
Red	A serious, non-correctable fault was detected.

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Status LED	Operating status
Off	The controller is not switched on or is defective.

3.8.5 Status LED "L23.4" (SYS) [Freigegeben]

Indicates proper functioning of the fieldbus slaves.

Status	Possible cause	Measure
Green	The fieldbus slave is OK.	–
Orange	The fieldbus slave is being initialized.	–

3.8.6 Status LED "RTOS" [Freigegeben]

Status LED	Meaning
Green	The real-time operating system (RTOS) is enabled. The LED lights up directly when the boot process is started.
Off	The real-time operating system (RTOS) is not enabled.

3.9 Accessories [Freigegeben]

3.9.1 OMH85A CFast memory card [Nicht freigegeben]

INFORMATION

ℹ️ Make sure that only authorized persons can access the memory card. By accessing the memory card, you can make changes to the configuration.

The OMH85A CFast memory card (**C**ompact**F**lash **A**TA **S**erial **T**ransfer) is required for operation of the MOVI-C® CONTROLLER and contains the firmware, the IEC program, and user data (e.g. recipes). It can be used for data backup and for automatic parameterization in the event of a "Device replacement" (→ 🗎 66).

The OMH85A CFast memory card is plugged into card slot 1 of the MOVI-C® CONTROLLER.

3.9.2 OMW CFast memory card [Nicht freigegeben]

The OMW CFast memory card adds a Windows operating system to the MOVI-C® CONTROLLER and can be used, for example, for system visualization. The OMW CFast memory card is plugged into card slot 2 of the MOVI-C® CONTROLLER.

The memory card is available in various designs. The various features result in the following structure of the type code:

Example: OMW72A		
Product name	**OM**	MOVI-C® CONTROLLER memory card
	W	General Purpose Operating System (GPOS)
Design	**72**	• 71 = 16 GB • 72 = 32 GB
Version	**A**	• A = Version status A

INFORMATION

ℹ️ • SEW-EURODRIVE recommends using the 32 GB version in the following cases:
  – If you would like to use third-party software as well as the installed basic software. Note that SEW-EURODRIVE cannot accept any warranty in such a case.
  – If you use the Windows section as a permanent working platform for system programming.

The Windows memory card OMW71B/72A contains the Windows 7 Embedded operating system in English. The MOVI-C® CONTROLLER provides the following hardware for the Windows system:

• Core2Duo 2.2 GHz (Windows 7 Embedded uses only 1 core)

• 1.5 GB RAM

• 5 × USB 2.0 (USB 1, 2, 3, 6, 7)

• Windows 7 Embedded 32-bit

• 1 × Ethernet 10/100 Mbaud (LAN 1)

• 1 × Virtual Ethernet to control section

Part numbers:

Windows® memory card	Part number	Memory space
OMW71B	28208323	16 GB
OMW72B	28208331	32 GB

3.9.3 System bus cable [Freigegeben]

Cable for connecting MOVI-C® CONTROLLER and other automation components (such as MOVIDRIVE® modular/system application inverters)

Designation	Length	Connector	Part number
4-pole system bus cable, system bus EtherCAT®/SBus^PLUS	• 0.29 m • 0.44 m • 0.75 m • 1.5 m • 3 m • 5 m • 10 m	2 × RJ45	• 18179959 • 18179967 • 18167039 • 18179975 • 18167047 • 18179983 • 18179991

For more information, refer to chapter "System bus cable" (→ 🖹 36).

4 Installation [Freigegeben]

4.1 Mechanical installation [Freigegeben]

4.1.1 General information [Freigegeben]

> **⚠ CAUTION**
>
> Installing a defective or damaged MOVI-C® CONTROLLER.
>
> Injury to persons and damage to property.
>
> - Before installation, check the device for external damage and replace a damaged device.

> **NOTICE**
>
> Mounting the MOVI-C® CONTROLLER on a poorly conductive mounting surface.
>
> Damage to the MOVI-C® CONTROLLER.
>
> - The mounting plate in the control cabinet must be conductive over a large area for the mounting surface of the MOVI-C® CONTROLLER (metallically pure, good conductivity). EMC-compliant installation of the device can only be accomplished with a mounting plate that is conductive over a large area.

> **NOTICE**
>
> Non-compliance with the stipulated tightening torques.
>
> Damage to the MOVI-C® CONTROLLER.
>
> - Always adhere to the stipulated tightening torques. Otherwise, excessive heat can develop which would damage the device.

4.1.2 Minimum clearance and mounting position [Freigegeben]

MOVI-C® CONTROLLER is installed in the control cabinet. Observe the following for installation:

- To ensure unobstructed cooling of the MOVI-C® CONTROLLER, leave a minimum clearance of 100 mm above and below the device's housing. Make sure air circulation in the clearance is not impaired by cables or other installation equipment.
- Ensure unobstructed cooling air supply and make sure that the MOVI-C® CONTROLLER is not exposed to the warm exhaust air from other devices.
- There is no need for clearance at the sides of the device. You may connect the MOVI-C® CONTROLLER and other devices (e.g. MOVIDRIVE® modular) in series.
- Install the devices only vertically. You must not install them horizontally, tilted or upside down.

4.1.3 Options and accessories [Freigegeben]

OMW CFast memory card [Freigegeben]

Proceed as follows to insert the memory card:

1. Turn the blocking mechanism to the open position.

SLOT 2

OMW71B/72B

OMH85A

SLOT 1

9007213599256587
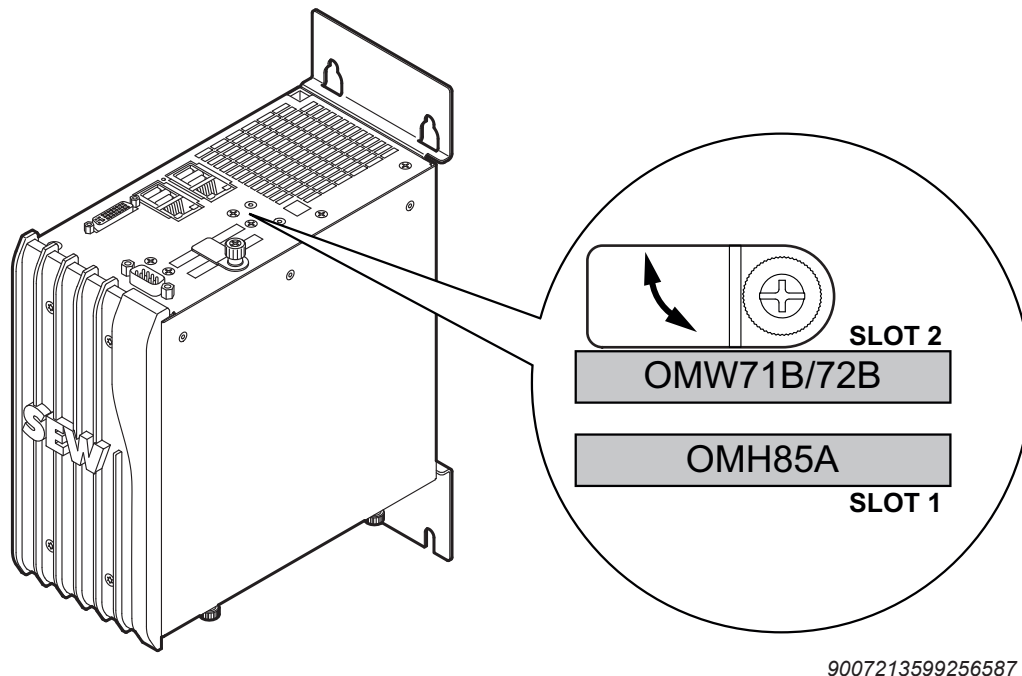
2. Insert the memory card into the slot marked "Slot 2".

INFORMATION

Slot 1 may only be used for OMH85A CFast memory cards.

4.2 Electrical installation [Freigegeben]

4.2.1 General information [Freigegeben]

INFORMATION

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Installation with protective separation.

The device meets all requirements for protective separation of power and electronics connections in accordance with EN 61800-5-1. The connected signal circuits have to meet the requirements according to SELV (**S**afe **E**xtremely **L**ow **V**oltage) or PELV (**P**rotective **E**xtra **L**ow **V**oltage) to ensure protective separation. The installation must meet the requirements for protective separation.

INFORMATION

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The MOVI-C® CONTROLLER has a fused power consumption $P_{max} < 100$ VA and therefore does not require separate UL approval as an SEW inverter accessory according to UL508. If the MOVI-C® CONTROLLER is not used as an SEW inverter accessory, it must be supplied with a UL-approved class 2 power supply unit.

4.2.2 Shielding and routing bus cables [Freigegeben]

NOTICE

Flowing compensating currents due to the incorrect cable type, inadequate shielding, and/or the incorrect routing of bus cables.

Damage to property.

• In the event of fluctuations in the ground potential, a compensating current may flow via the bilaterally connected shield that is also connected to the protective earth (PE). Make sure you always supply adequate equipotential bonding in accordance with the relevant IEC regulations.

Only use shielded cables and connection elements that meet the requirements of category 5, class D as per IEC 11801 edition 2.0.

You can take the following measures to minimize electrical interference:

• Manually tighten the retaining screws on the connectors, modules, and equipotential bonding cables.

• Use only connectors with a metal housing or a metalized housing.

• Connect the shielding in the connector over a wide surface area.

• Apply the shielding of the bus cable on both ends.

• Always route the signal and bus cables spatially separated from power cables (motor leads) and, whenever possible, in separate cable ducts.

• Use metallic, grounded cable racks in industrial environments.

• Route the signal cable and the corresponding equipotential bonding close to each other using the shortest possible route.

• Avoid using plug connectors to extend bus cables.

• Route the bus cables closely along existing grounding surfaces.

4.2.3   Voltage supply connection [Nicht freigegeben]

Use an external DC 24 V power supply unit for the voltage supply:

- Power consumption P_{max} = 100 W
- Current consumption I_{max} = 4 A (with DC 24 V supply voltage)

Wiring diagram [Freigegeben]
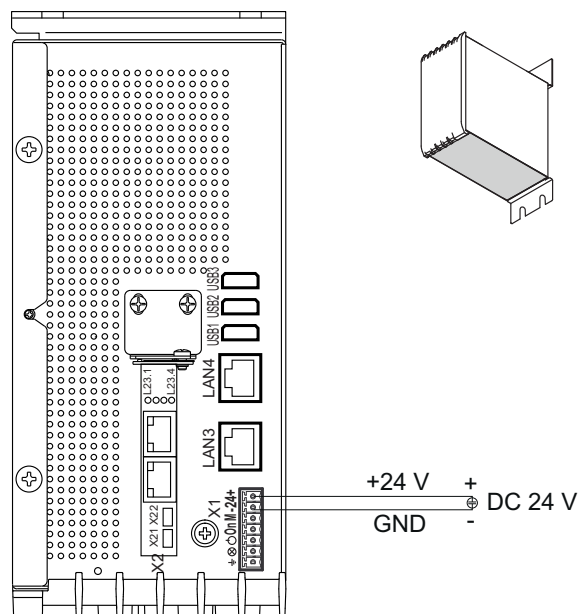
24987504523

4.2.4   Connection of on/off pushbutton to X1 [Freigegeben]

INFORMATION

ℹ️

We do not recommend wiring an on/off pushbutton to X1 because an incorrect external voltage supply (e.g. when the voltage drops when switching on) can cause the MOVI-C® CONTROLLER to shut down unintentionally. In this case, the MOVI-C® CONTROLLER mistakenly detects an actuation of the pushbutton and is shut down as a result. A pulse at the pushbutton input is then required for switching on.

Therefore use an industry-standard 24 V power supply unit or a power supply unit with a higher rating when connecting an on/off pushbutton to X1 to prevent the voltage supply from dropping.

You can connect a pushbutton to X1 to switch the MOVI-C® CONTROLLER on or off. The button works like a PC on/off button.

- To switch the MOVI-C® CONTROLLER on or off during operation, press the pushbutton briefly.
- To switch off the MOVI-C® CONTROLLER, press the pushbutton for at least 5 seconds.

    If you have switched off the MOVI-C® CONTROLLER with the pushbutton, you must also switch it on again with the pushbutton.

Wiring diagram – button on X1 [Freigegeben]
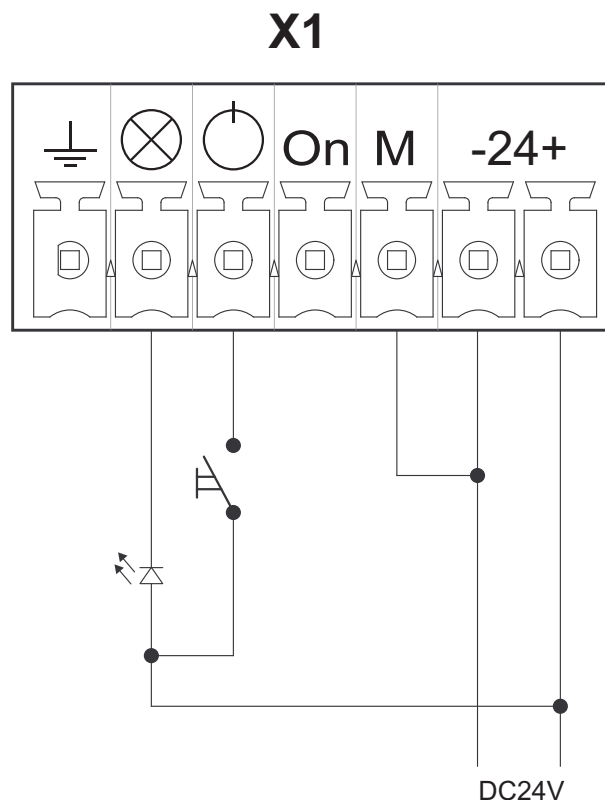
7917280395

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4.2.5 Engineering PC connection [Nicht freigegeben]

INFORMATION

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Before connecting, make sure that the engineering PC is adequately protected with regard to IT security. To do so, check whether anti-virus software and all updates for it are available on the engineering PC. For this connection, use a point-to-point Ethernet connection if possible and do not connect the engineering PC to a network.

To connect the MOVI-C® CONTROLLER to the Ethernet network, connect one of the Ethernet communication interfaces LAN 1 or LAN 3 (RJ45 connector) to the other network stations using a category 5, class D shielded twisted-pair cable in accordance with IEC 11801 edition 2.0.

You can connect an engineering PC or other network stations (e.g. visualization systems) to the Ethernet communication interfaces. The Ethernet communication interface LAN 1 is only available in combination with the Windows memory card.
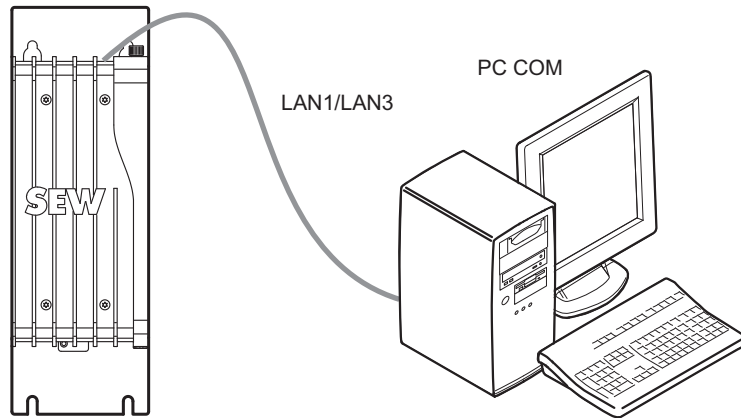
9007213599253387

In delivery state, the engineering interfaces of the MOVI-C® CONTROLLER have the following IP address parameters:

LAN 1 – IP address: `192.168.10.5`, subnet mask: `255.255.255.0`

LAN 3 – IP address: `192.168.10.4`, subnet mask: `255.255.255.0`

4.2.6 Virtual network card (VNET) [Freigegeben]

INFORMATION

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The virtual network card (VNET) does not support DHCP operation.

Apart from the hardware communication connections of the MOVI-C® CONTROLLER, the Windows operating system is also provided with a virtual network card (VNET).

VNET allows for a very simple addressing of the control section of the MOVI-C® CONTROLLER. The virtual network card behaves like a real network card and you can directly address the control section via the engineering software using the address 192.168.2.2 set as default in delivery state.

If you do not use the virtual network card (VNET), you have to interconnect the real network connections of the Windows section (LAN 1) and of the control section (LAN 3) via a network switch.

Setting the network address of the Windows section [Freigegeben]

Set the network addresses of the Windows section with the corresponding settings menus in the Windows operating system.

Proceed as follows:

1. Open the start menu and type "Control Panel" into the search field.

2. In the result list, click on the app entry [Control Panel].

3. Select the "Network and Internet" submenu and then call up the "Network and Sharing Center" menu.

4. In the "Network and Sharing Center" menu, select the "Change adapter settings" menu item from the left-hand pane.

   ⇨ The current network connections are displayed.

5. In the context menu of the "VNET connection" network connection, open the "VNET Connection Properties" menu.
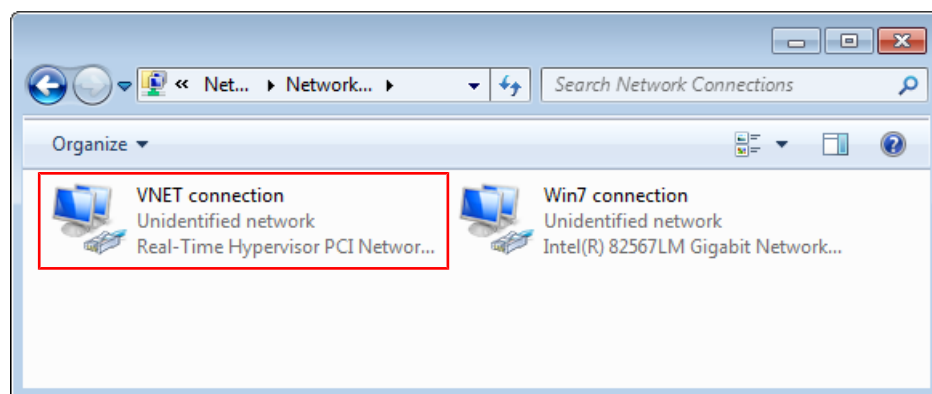
24432542219

6. On the "Networking" tab, select the entry "Internet Protocol Version 4" in the group "This connection uses the following items" and then click on [Properties].
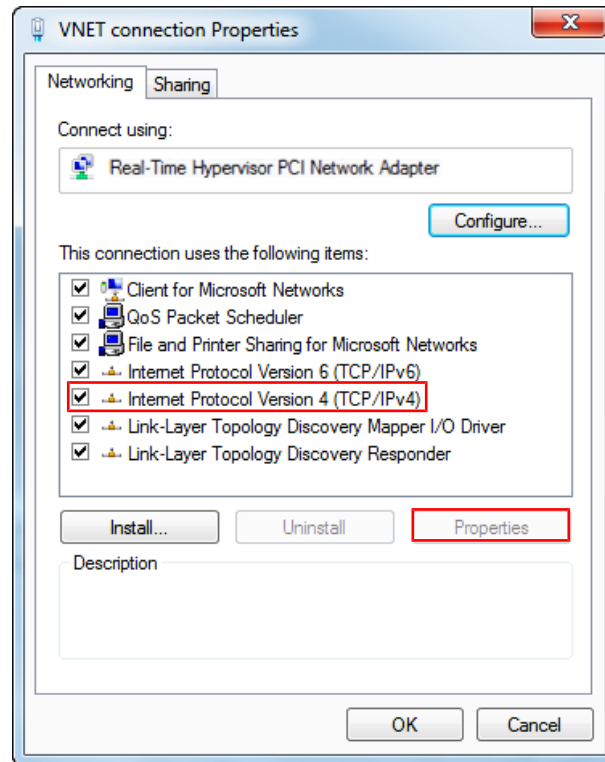
24488708875

⇒ The "Internet Protocol Version 4 Properties" window is displayed.

7. Select the option "Use the following IP address" and enter the values for the IP address and the subnet mask.
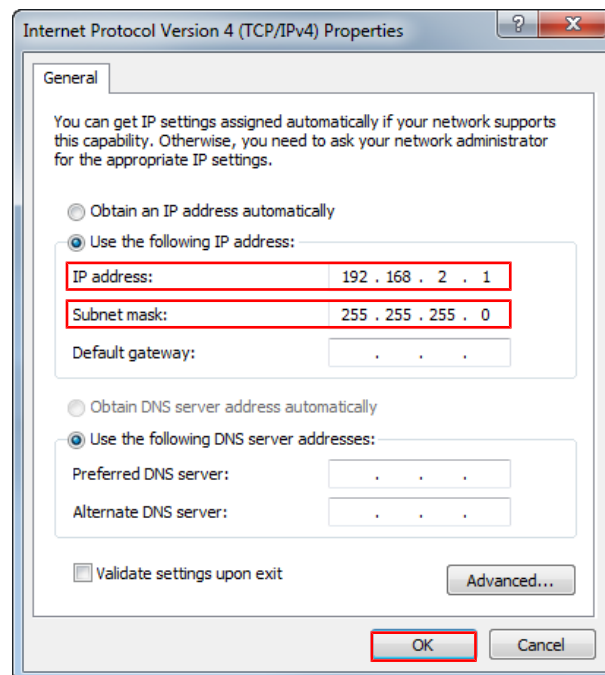
24488174859

8. Confirm your entries with [OK].

Connecting Windows section and control section [Nicht freigegeben]

Via virtual network card (VNET) [Freigegeben]

The internal connection between the Windows section and the control section is available as standard and does not require any additional hardware such as network cables, for example.
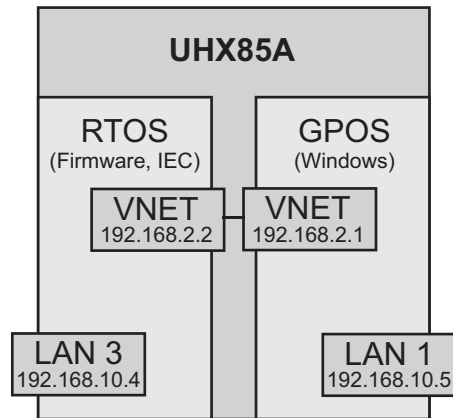
14344519179

Via external network [Nicht freigegeben]

A network switch can be used to connect an external network to the Windows section (LAN 1), the control section (LAN 3) of the controller, and another external **DHx41B controller (terminal: X37)**. This connection option also allows you to connect external devices, e.g. a DOP operator panel.
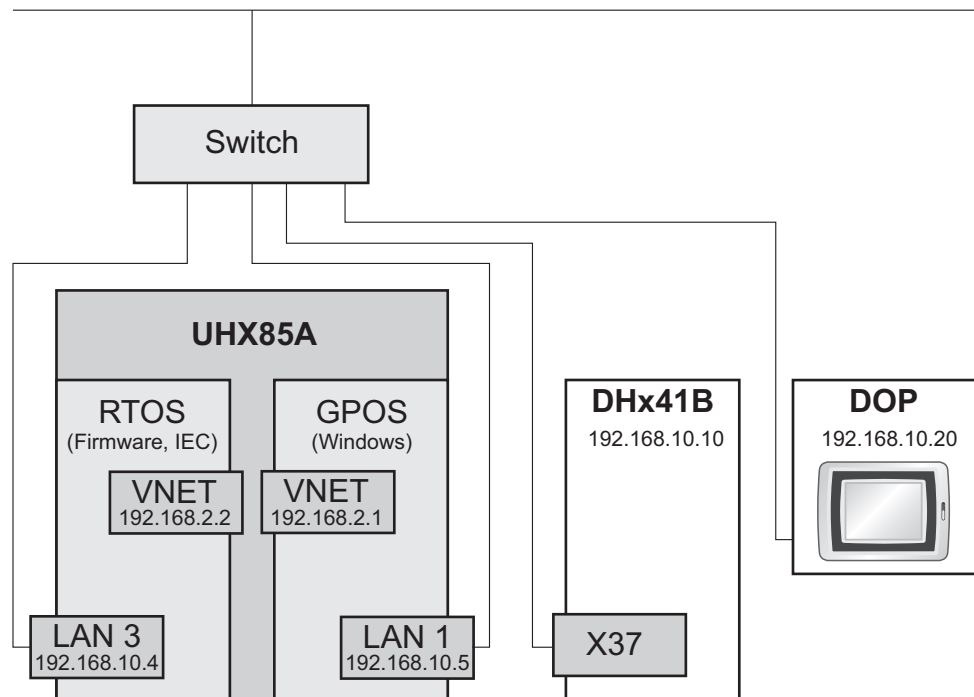
14344608523

Reading out the version number of the software package [Freigegeben]

You can view the version number of the software package installed on the CFast memory card OMW85A via the Windows control panel.

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Proceed as follows:

1. Select the "System and Security" submenu and then call up the "System" menu.
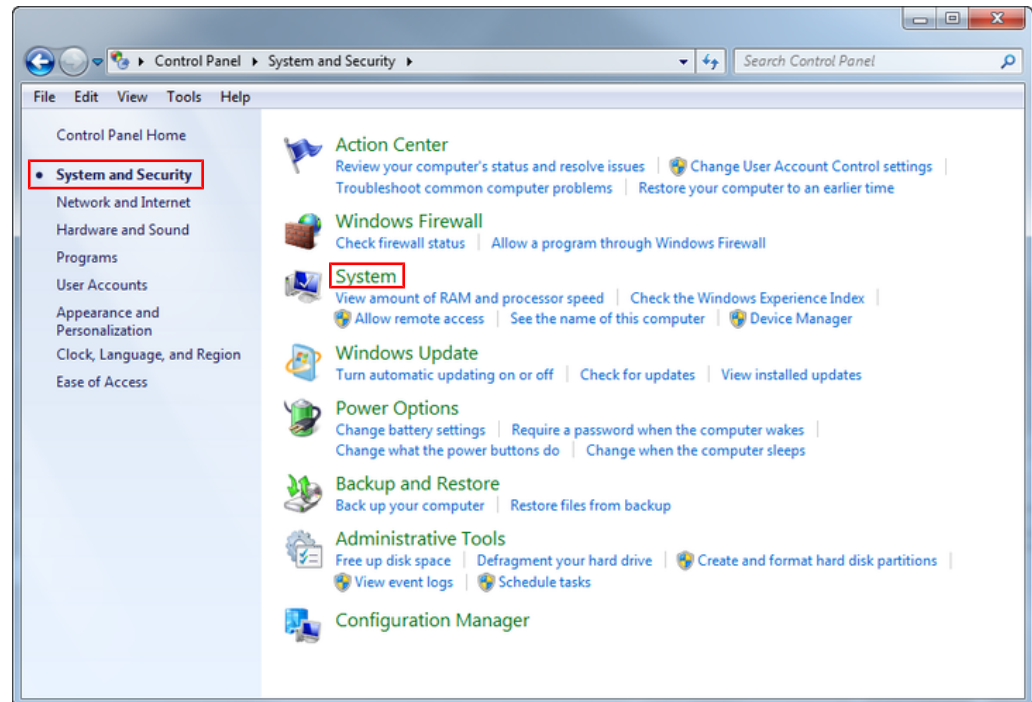
24488056331

⇨ The "View basic information about your computer" window opens.
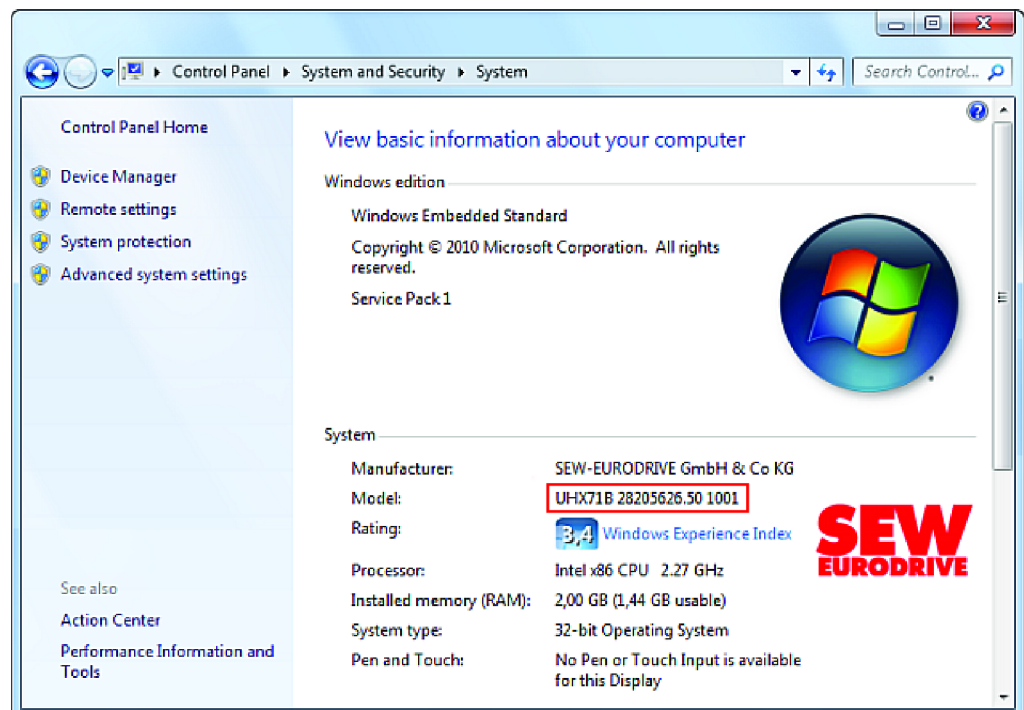
9007207115514763

⇨ The version number of the software package is displayed in the "Model" line in the "System" section.

4.2.7 EtherCAT®/SBus^PLUS connection [Freigegeben]

The MOVI-C® CONTROLLER serves as EtherCAT®/SBus^PLUS master for the lower-level application inverters (EtherCAT®/SBus^PLUS slaves). The communication takes place via the EtherCAT®-based, fast system bus SBus^PLUS (LAN 2).

EtherCAT®/SBus^PLUS bus topology [Freigegeben]

EtherCAT®/SBus^PLUS is designed for linear bus structure with RJ45 connectors. The EtherCAT®/SBus^PLUS slave devices are connected via a shielded twisted-pair cable.
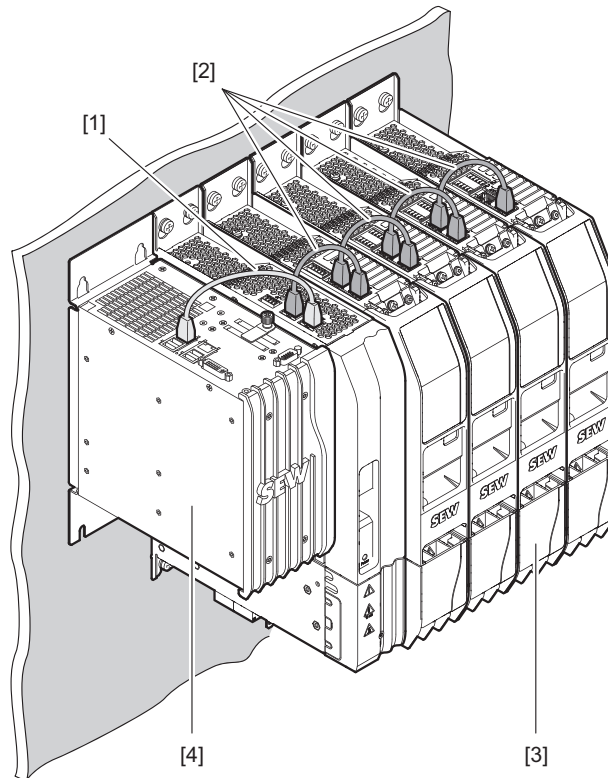
24480511499

[1] System bus cable, 4-pin, color: light gray
[2] Module bus cable, 8-pin, color: anthracite gray
[3] MOVIDRIVE® modular
[4] MOVI-C® CONTROLLER

INFORMATION

According to IEEE 802.3, 200 Edition, the maximum cable length for 10 MBaud/100 MBaud Ethernet (10BaseT/100BaseT) between 2 EtherCAT®/SBus^PLUS stations is 100 m.

System bus cable [Freigegeben]

NOTICE

Malfunctions or defects in the connected devices due to the use of incorrect cables.

Damage to the product or its environment.

- Use one of the cables recommended by SEW-EURODRIVE in the chapter "Accessories" (→ 🖹 24).

INFORMATION

The mounting plates on which the axis systems are mounted must have a sufficiently large ground connection, e.g. a ground strap.

A 4-core system bus cable is used between the MOVI-C® CONTROLLER and the other automation components (such as MOVIDRIVE® modular/system application inverters). SEW-EURODRIVE recommends using only the prefabricated cables from SEW-EURODRIVE listed in the "System bus cable" (→ 🖹 25) chapter for connecting the EtherCAT®/SBus^PLUS system bus.

Bus termination [Freigegeben]

Bus termination (for example with bus terminating resistors) is not necessary. The system detects automatically if there is no subsequent device connected to a device.

Station address [Freigegeben]

EtherCAT®/SBus^PLUS devices from SEW-EURODRIVE do not have an address that can be set for the device. The devices are detected by their position in the bus structure and are assigned an address by the EtherCAT®/SBus^PLUS master.

4.2.8 Connecting the fieldbus slave [Nicht freigegeben]

The MOVI-C® CONTROLLER serves as a fieldbus slave for the higher-level PLC (fieldbus master). Communication takes place via Ethernet.

The MOVI-C® CONTROLLER is connected to the Ethernet network via the following terminals:

• X21 (RJ45 connector)

• X22 (RJ45 connector)

The device is connected to the other network nodes using a category 5, class D twisted-pair cable in accordance with IEC 11801, edition 2.0.

INFORMATION

ⓘ

According to IEEE 802.3, 200 Edition, the maximum cable length for 10 MBaud/ 100 MBaud Ethernet (10BaseT/100BaseT) between 2 network nodes is 100 m.

4.2.9 Connecting USB interfaces [Nicht freigegeben]

INFORMATION

ⓘ

Make sure that only authorized persons have access to the USB interfaces. If necessary, restrict the access of USB devices via the group policy of the Windows operating system. The restriction can also be user-based. If you do not use the USB interfaces, disable them via the group policies of the Windows operating system.

The USB interfaces USB1, USB2, USB3, USB6, and USB7 are assigned to the Windows operating system (Windows memory card). You can connect a keyboard, a mouse or a touchpad to these USB interfaces. The USB4 and USB5 USB interfaces are assigned to the MOVI-C® CONTROLLER.
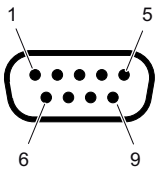
4.2.10 DVI-I interface connection [Freigegeben]

The DVI-I interface assigned to the Windows operating system (Windows memory card) is used for connecting a monitor to the MOVI-C® CONTROLLER.

SEW-EURODRIVE recommends the connection of the following monitors:

• OPT71C-120 (part number 1797 428 3)

  12-inch touchscreen with a resolution of 1280 × 800

• OPT71C-150 (part number 1797 429 1)

  15-inch touchscreen with a resolution of 1280 × 800

4.2.11   Terminal assignment [Freigegeben]

Illustration	Terminal	Connection	Brief description
	COM 1	D-sub connector, 9-pole	Reserved (Do not connect a cable!)
	LAN 1	RJ45	Engineering interface for the Windows section
	LAN 2	RJ45	EtherCAT®/SBusPLUS interface
	LAN 3	RJ45	Engineering interface for the control section
	LAN 4	RJ45	Reserved
	X1: ⏚	Plug-in terminals	Digital ground and housing potential
	X1: ⊗		Electrically isolated output with internal resistor to limit the current to about 10 mA. A LED can be connected here as a power status display.
	X1: ↻		Electrically isolated input. Connection of a button to switch the MOVI-C® CONTROLLER on and off.
	X1:On		Electrically isolated input. Connection of a button to switch the MOVI-C® CONTROLLER on.
	X1:M		Common ground for all electrically isolated inputs/outputs.
	X1:−		DC 24 V supply voltage (-)
	X1:+		DC 24 V supply voltage (+)
	X21	RJ45	EtherNet/IP™ fieldbus interface
	X22	RJ45	EtherNet/IP™ fieldbus interface

5 Startup [Freigegeben]

5.1 Setting an IP address (optional) [Freigegeben]

If you want to use an IP address other than the default IP address (`192.168.10.4`) for communication, you can change the IP address using one of the following methods.

5.1.1 Via MOVISUITE® [Freigegeben]

The IP address for communication can be changed directly in the configuration of the MOVI-C® CONTROLLER in MOVISUITE®. To do so, proceed as follows:

INFORMATION

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When using this function to set the IP address, the specified IP address is written directly to the memory only. If a `SewPlcIp.xml` file exists in the "System" directory on the MOVI-C® CONTROLLER, the IP address declared in the `SewPlcIp.xml` file is adopted the next time the MOVI-C® CONTROLLER is switched on.

- Access the file system on the MOVI-C® CONTROLLER via the engineering interface for the control section or using a card reader, navigate to the "System" directory and check if the `SewPlcIp.xml` file exists. If you always want to set the IP address via MOVISUITE® in the future, delete the file or rename the file.

1. In MOVISUITE®, open the configuration of the MOVI-C® CONTROLLER.

2. In the "Communication" configuration menu, open the submenu "Engineering".

3. Enter the required IP address data in the "Saved address settings" area.

36669845515

4. Click [Set parameter].

5.1.2 Via file system [Freigegeben]

i INFORMATION

If necessary, switching between default address and user-defined IP address is performed via the integrated DIP switch.

The MOVI-C® CONTROLLER reads the IP address for communication from the `SewPlcIp.xml` file in the "System" directory of the OMH memory card of the MOVI-C® CONTROLLER. You can adjust this file manually to change the IP address. To do so, proceed as follows:

1. Access the file system on the MOVI-C® CONTROLLER via the engineering interface for the control section or using a card reader and navigate to the "System" directory.

2. Open the `SewPlcIp.Example.xml` file for editing in an editor.

3. In the file, replace the currently specified IP addresses with the ones you require.

4. Save the file and close the editor.

5. Rename the edited file into `SewPlcIp.xml`.

⇨ The new values are applied and used the next time the MOVI-C® CONTROLLER is started up.

⇨ After the first startup after processing, the `SewPlcIp.xml` file should be deleted or renamed to `SewPlcIp.Example.xml` to allow the IP address to be changed via the configuration MOVI-C® CONTROLLER in MOVISUITE®. See also the information in chapter "Via MOVISUITE®" (→ 🖺 40).
INFORMATION: When the file is deleted, the default address (`192.168.10.4`) is not set again automatically.

5.2 Connecting engineering PC and MOVI-C® CONTROLLER [Freigegeben]

To ensure that the engineering PC can communicate via the LAN 3 engineering interface with the MOVI-C® CONTROLLER via Ethernet, both the devices must be connected in the same local network. For this purpose, the IP address parameters of the engineering PC must be set to the local network. The default IP address(es) of the Ethernet communication interface(s) can be found in the chapter "Connecting the engineering PC" (→ 🖺 31).

Proceed as follows:

1. Open the settings for the network via the Windows control panel.

2. Double-click on the adapter that is physically connected to the LAN 3 engineering interface of the MOVI-C® CONTROLLER.

3. Select the Internet protocol version 4 "TCP/IPv4" in the adapter properties.

4. Enter the IP address parameters of the engineering PC in the Internet protocol properties. Note that the IP address of the engineering PC is different from the IP address of all other network stations and is therefore unique. The network address (here the first 3 address blocks) for all network stations must be identical and the station address (here the last address block) of the engineering PC must be different from the network address of all other stations.
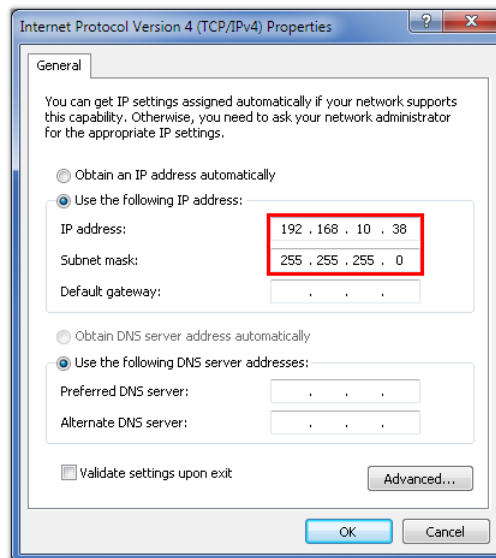
18014415915164555

⇨ In this example, the IP address of the engineering PC is 192.168.10.38

5.3 Inserting devices in MOVISUITE® [Freigegeben]

INFORMATION

ℹ️ For detailed information on how to use the MOVISUITE® engineering software, refer to the corresponding documentation.

Proceed as follows:

✓ The engineering PC and the MOVI-C® CONTROLLER are connected via the (LAN 3) engineering interface.

✓ Both devices are connected in the same local network and the IP address parameters of the engineering PC are set to the local network.

1. Start the MOVISUITE® engineering software.

2. Create a new MOVISUITE® project from a network scan.
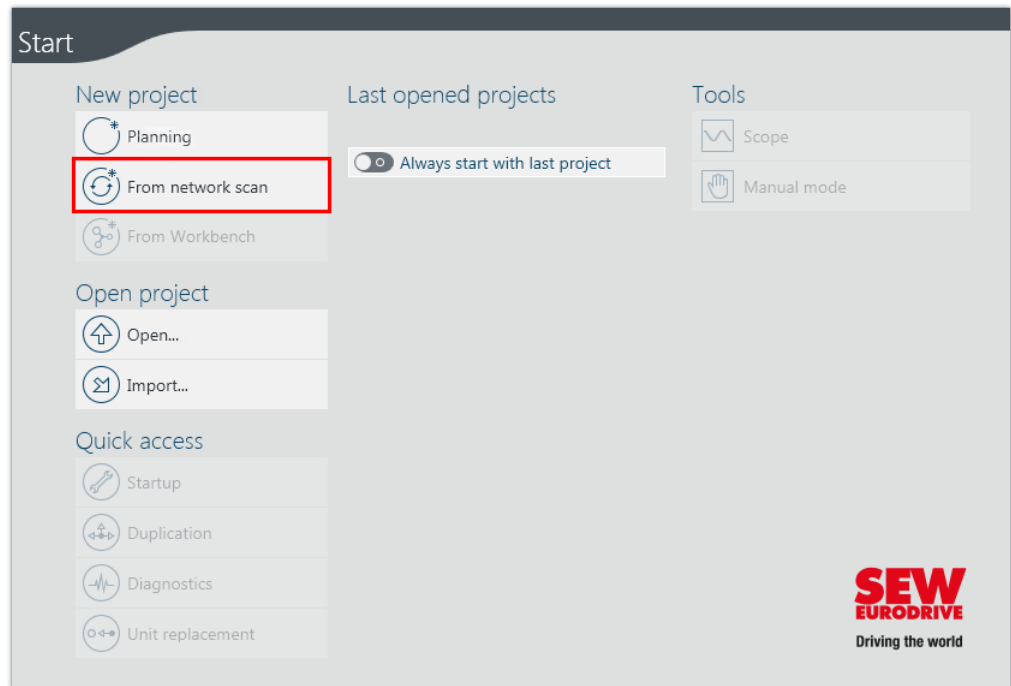
27021614690718859

3. Select the network type "Ethernet", activate "Scan Ethernet", and select the desired Ethernet adapter from the list.

4. Click [Apply and start scan].
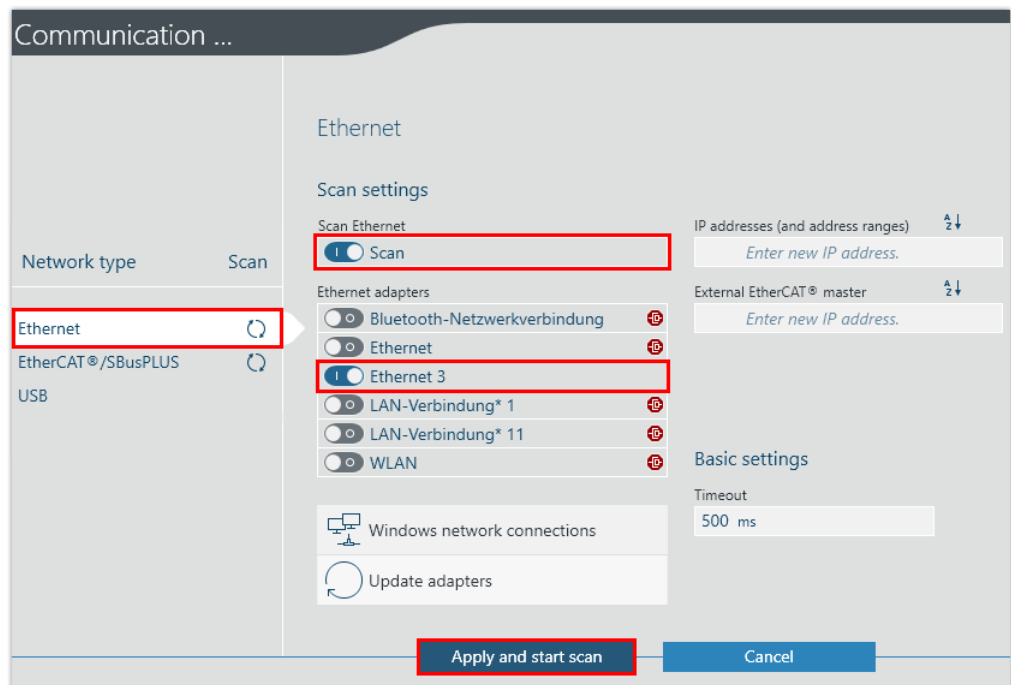
36028814434188171

⇨ The "Network scan" dialog box opens and shows the number of found devices.
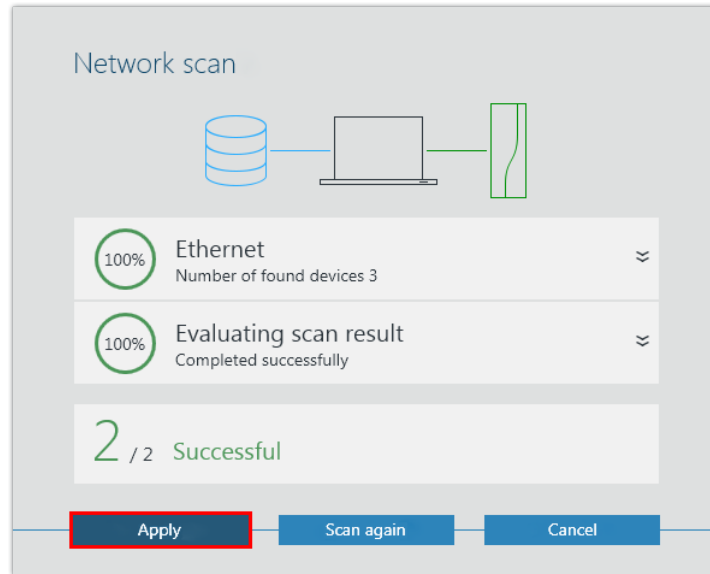
9007216181358219

5. To apply the found devices to the MOVISUITE® project, click [Apply].

⇨ The devices found during the network scan are displayed in the MOVISUITE® project.
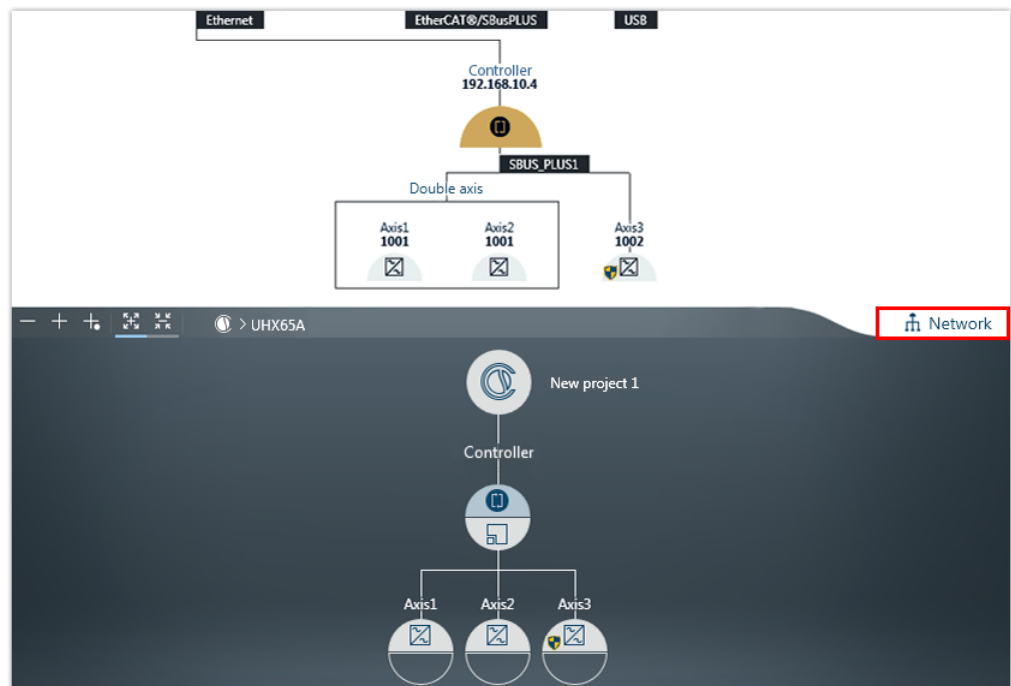
18014424376079499

6. Assign a name to the MOVI-C® CONTROLLER in the MOVISUITE® project by opening the context menu of the device node and clicking [Rename] in the menu.

7. Save the MOVISUITE® project.

5.4 Setting up the Windows operating system (optional) [Freigegeben]

The scope of functions of your MOVI-C® CONTROLLER can be extended to include a Windows operating system by means of the optional OMW CFast memory card.

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When you start the operating system for the first time, you must first go through various setup steps. This involves adapting the operating system in terms of system time, number formats and user accounts, among other things. Furthermore, you must accept the license terms of Microsoft for using the Windows operating system.

Observe the following notes when starting the operating system for the first time:

• The installation process of the Windows operating system must be performed completely and without interruption. Interrupting the voltage supply of the MOVI-C® CONTROLLER during the boot process can damage the Windows image, which would then have to be restored by SEW-EURODRIVE Service.

• The operating system cannot be initially booted via remote desktop access. You need external input/output devices (monitor, keyboard, mouse) connected to the MOVI-C® CONTROLLER. The monitor must be connected and switched on before the MOVI-C® CONTROLLER is switched on. If the monitor is switched on afterwards, the Windows image could be damaged and would have to be restored by SEW-EURODRIVE Service.

Once the setup steps are complete, the Windows operating system is available. For further notes and instructions on using the operating system in connection with the MOVI-C® CONTROLLER, refer to chapter "Operation" (→ 🖹 47).

6 Operation [Freigegeben]

6.1 IT security [Freigegeben]

6.1.1 Hardening measures [Freigegeben]

Perform the following hardening measures:

- Regularly check if updates are available for your products.
- Report incidents concerning IT security by e-mail to cert@sew-eurodrive.com.
- Regularly check which Security Advisories are available in the Online Support of SEW-EURODRIVE.
- Evaluate the error memories and diagnostics information of your products regularly and check whether there are entries that affect IT security.

6.1.2 Guidelines for secure operation [Freigegeben]

The engineering protocol from SEW-EURODRIVE allows authorized personnel to activate various service accesses on the device. Authentication is implemented by using static access data. This data is not used to defend against attacks on IT security but to protect against unintentional modification. This is the reason why it cannot be changed.

To prevent misuse of these service accesses, network access must be restricted according to the state of the art. For more information, refer to section "IT security of the environment" (→ 🖺 11).

6.1.3 Guidelines for user account management [Freigegeben]

As of version V2.40 (IEC 3.5.18) of the MOVISUITE® engineering software and firmware version 8 of the product, you can activate user management on the product and so you can assign an access level to certain functions. In addition, you can set up certificate-based secure communication between the product and the IEC Editor via fieldbus and the Ethernet communication interface.

If a Windows operating system is used, at least one user account must be configured on it. It is recommended to configure an administrator account, which is not relevant for operational use and is only used to administer the Windows operating system. Appropriate user accounts with restricted permissions should be configured for operational use. The exact configuration should follow the IT policies of the operator.

6.1.4 Communication [Freigegeben]

Use secure protocols (e.g. TLS-based protocols) for communications via TCP/IP or UDP with other stations. As of version 2.40 (IEC 3.5.18) of the MOVISUITE® engineering software and firmware version 8 of the product, the use of OPC UA based on certificates is recommended.

6.2 Logging function [Freigegeben]

The MOVI-C® CONTROLLER has a logging function, for example, to track the processing procedures in the event of an error. The logging function is disabled by default.

INFORMATION

ℹ️

To keep the write operations on the memory card low and in this way prevent a defect, the logging function should not be activated permanently.

To activate the logging function, do the following:

1. On your engineering PC connected to the MOVI-C® CONTROLLER, open the OMH memory card content using a file explorer.

2. Navigate to the "log" directory on the OMH memory card.

   ⇨ The "log" directory contains the `LogConfig.Example.xml` file.

3. Rename the `LogConfig.Example.xml` file into `LogConfig.xml`.

⇨ The logging function is now active.

6.3 Windows operating system [Freigegeben]

6.3.1 General information [Freigegeben]

Observe the following notes when using the Windows operating system:

- The license terms of Microsoft apply when using the Windows operating system.
- The Windows operating system is only available in English.
- SEW-EURODRIVE does not offer support for setting up the Windows operating system.
- If you wish to use a Windows remote desktop connection, you have to use a user password.

6.3.2 IT security [Freigegeben]

🔒

Observe the following notes relating to IT security when using the Windows operating system:

- Follow the Window security policies of your IT organization.
- Install the required security updates for the Windows operating system at regular intervals.
- Only install appropriately signed drivers and packages from trusted sources on the Windows operating system.
- Use antivirus software on the Windows operating system and keep it up-to-date.
- Activate and configure a firewall on the Windows operating system.
- Refer to the Port Overview chapter for information on the relevant ports and their functionality.

6.3.3 Creating a data backup [Freigegeben]

SEW-EURODRIVE strongly recommends to create a data backup of the OMW CFast memory card, for example in the event of a "device replacement" (→ 📄 66). Use the tools included in the Windows operating system to create a backup image.

6.3.4 Resetting the Windows section [Freigegeben]

To reset the Windows operating system to the delivery state, download the corresponding recovery image from the SEW-EURODRIVE homepage (**www.sew-eurodrive.com**). To do so, search on the page [Online Support] > [Data & documents] > [Software] for "Recovery image". The recovery image prepares a USB stick for the installation of the image for you.

INFORMATION

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Installing the recovery image will clear all data from the OMW CFast memory card.

Proceed as follows:

1. Connect the USB stick to a USB port of the MOVI-C® CONTROLLER.

2. Switch the MOVI-C® CONTROLLER on.

3. During the boot process of the MOVI-C® CONTROLLER, keep the <F11> key pressed and then select the connected USB stick.

⇨ The system on the USB stick then boots. A wizard guides you through the system restore process.

6.3.5 Switch-off and reboot behavior of the MOVI-C® CONTROLLER [Freigegeben]

INFORMATION

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If the voltage supply to the MOVI-C® CONTROLLER is disconnected without first shutting down the Windows operating system, data and recently made settings can be lost. SEW-EURODRIVE therefore recommends always shutting down the Windows operating system in the normal way before disconnecting the voltage supply.

If the MOVI-C® CONTROLLER is operated with both the OMW CFast memory card and the OMW CFast memory card, then it is a combined device containing a control section and a Windows section. In this context, observe the following notes on the shutdown and reboot behavior:

• Restarting the Windows operating system

The Windows operating system (the Windows section) is restarted.
The control section keeps running as normal without a restart.

• Shutting down the Windows operating system

The Windows operating system (the Windows section) and the control section are shut down. For restarting, the voltage supply of the MOVI-C® CONTROLLER must be disconnected and then reconnected.

6.3.6 Setting write protection [Freigegeben]

If you switch off the DC 24 V supply voltage of the MOVI-C® CONTROLLER without shutting down the Windows operating system first, data can be lost. You can prevent such a loss of data by setting an appropriate write protection.

The write protection restricts write access to the Windows memory card. As long as write protection is enabled, there is no write access to the blocked sections of the Windows memory card. To make sure that Windows programs can keep working flawlessly, the actual write accesses are routed to the volatile RAM. In this case, newly created texts or modifications in files are lost when the system is rebooted. Windows does not output any message when there is an attempt to write on a write-protected data carrier.

Write protection is implemented using the Windows Unified Write Filter (UWF) function. The basic steps for setting up the function are described below. Further instructions, for example on how to define exceptions, can be found in the associated documentation from Microsoft.

1. Click "Start" and type "Turn Windows features on or off".

2. Click on the search result "Turn Windows features on or off" to open the system controls menu of the same name.

   ⇨ The "Windows Features" window is displayed.

3. In the "Windows Features" window, expand the "Device Lockdown" entry and activate the "Unified Write Filter" entry in it.
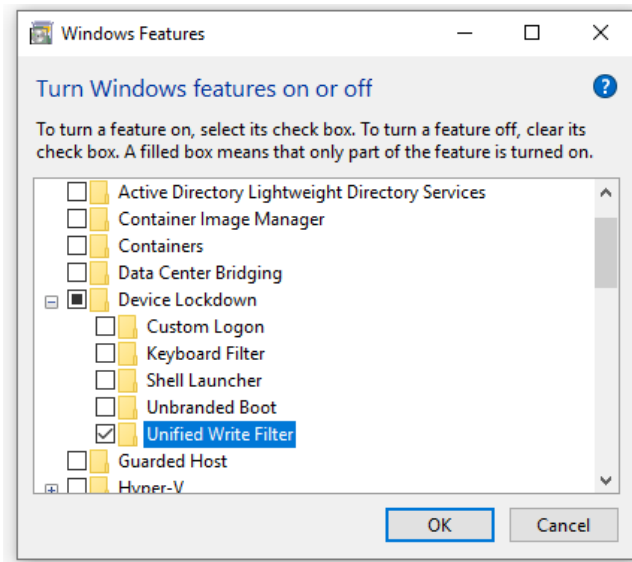
34364615819

4. Close the "Windows Features" window with [OK].

5. Start the command line in administrative mode.

6. Run the following command from the command line:

   ⇨ `uwfmgr filter enable`

7. To use the function, restart the computer.

8. Execute the following command to verify that the function is executed and to obtain an overview of the current configuration:

   ⇨ `uwfmgr.exe get-config`

9. Run the following command to apply write protection explicitly to the C drive:

   ⇨ `uwfmgr.exe volume protect C:`

⇨ Write protection is set up. Further instructions, for example on how to define exceptions, can be found in the associated documentation from Microsoft.

6.3.7 Further instructions [Freigegeben]

INFORMATION

The instructions in this chapter are only intended as specific help for using the Windows operating system in connection with the MOVI-C® CONTROLLER. The explanations of the respective functions do not claim to be complete and are provided by SEW-EURODRIVE without warranty. Therefore be sure to also observe the associated documentation provided by Microsoft when using the Windows operating system.

Setting a remote desktop connection [Freigegeben]

You can use a remote desktop connection for remote maintenance purposes.

INFORMATION

Note that remote maintenance does not allow you to monitor the state of the system on-site.

Proceed as follows:

✓ There is a network connection between your PC and the Windows section of the MOVI-C® CONTROLLER.

✓ You are working on the MOVI-C® CONTROLLER with a password-protected user account.

1. Click in the Start menu on [Control Panel].
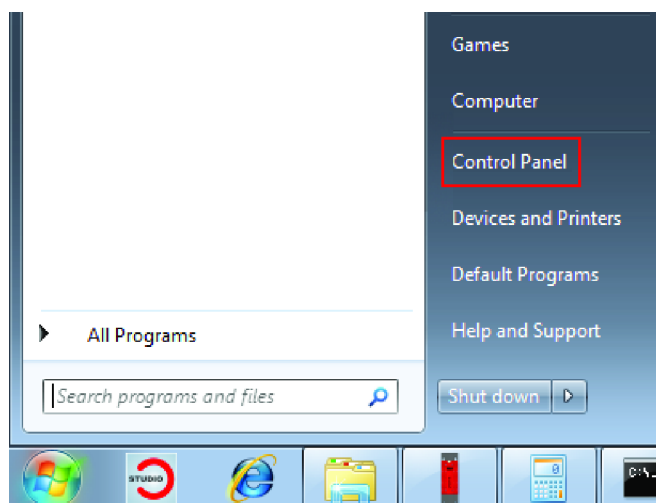
18014406338858251

2. Select the "System and Security" submenu and then call up the "Allow remote access" menu in the "System" group.
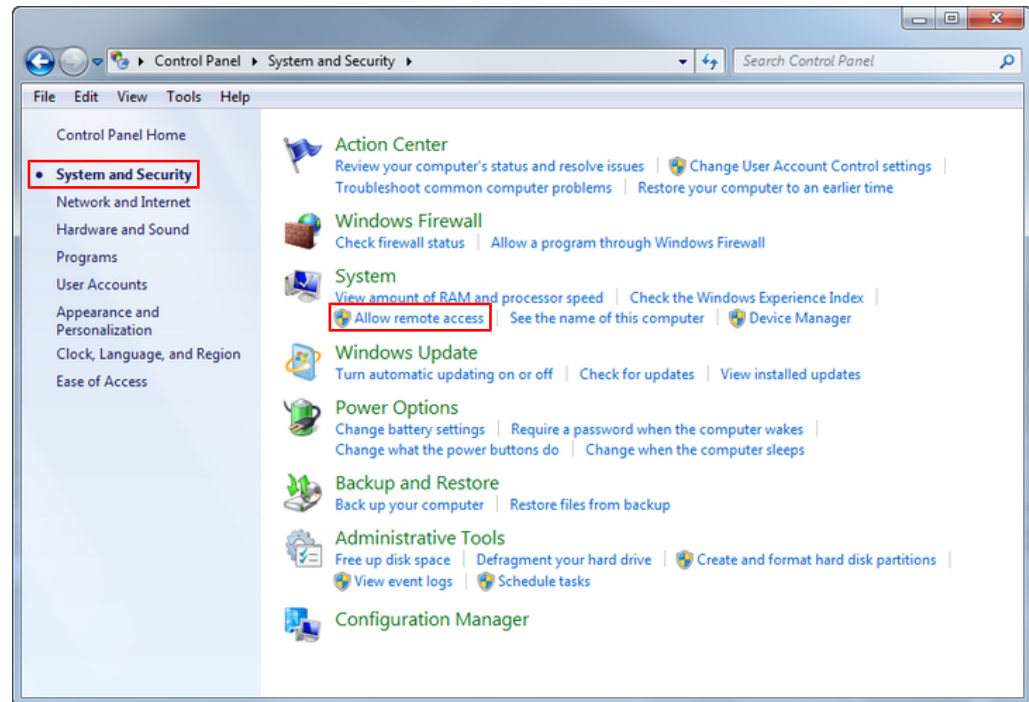
24488062987

3. On the "Remote" tab, select the "Allow remote assistance connections to this computer" check box in the "Remote Assistance" section.

4. In the "Remote Desktop" section, select the "Allow connections from computers running any version of Remote Desktop" option field and confirm your entry with [OK].
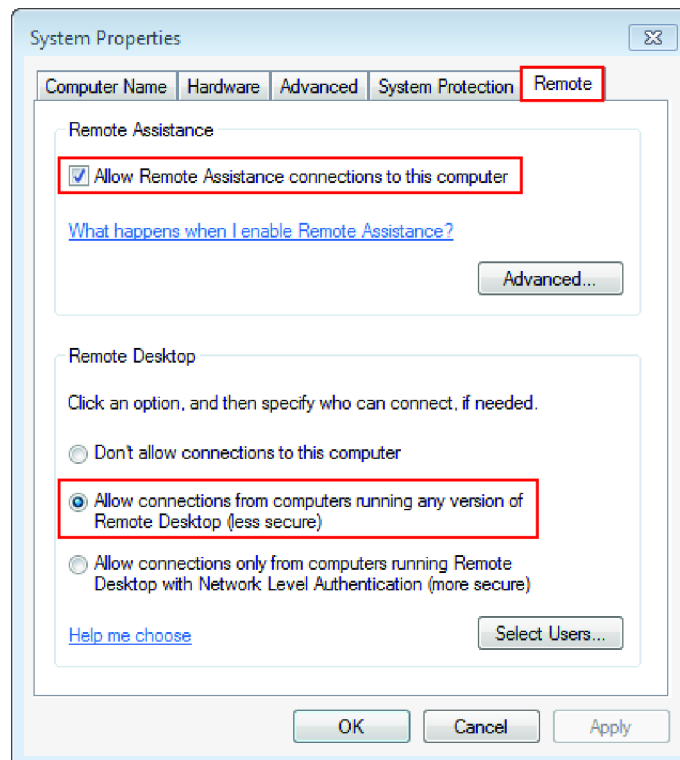
9007207088724747

Starting a remote desktop connection [Freigegeben]

Proceed as follows:

✓ There is a network connection between your PC and the Windows section of the MOVI-C® CONTROLLER.

✓ You are working on the MOVI-C® CONTROLLER with a password-protected user account.

✓ The remote desktop connection was set up correctly. For further information, refer to the chapter "Setting a remote desktop connection" (→ 🖹 50).

1. In the Start menu, click under "Accessories" on the entry "Remote Desktop Connection".
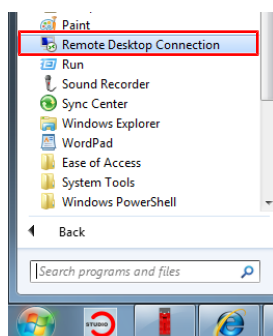
9007223704310155

2. In the "Computer" field, enter the IP address of the MOVI-C® CONTROLLER and then click on [Connect].
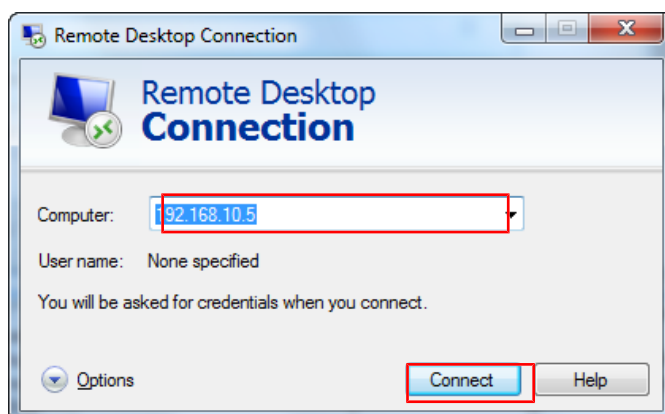
24449573643

Using a touchscreen monitor [Freigegeben]

On-screen keyboard [Freigegeben]

You can use the on-screen keyboard if you are working with a touchscreen monitor without keyboard and mouse.

7834129291

You can call up the on-screen keyboard either via the Windows Start menu or with the icon at the bottom left of the Windows login screen.
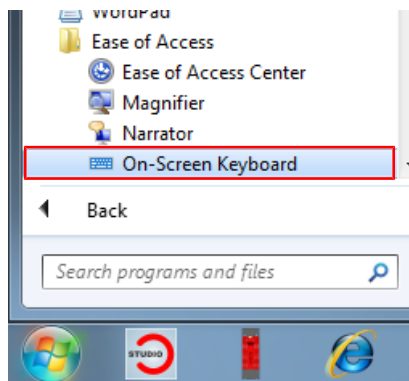
24442088843

Right mouse button [Freigegeben]

You can also simulate a right click via the on-screen keyboard. To do so, use the following on-screen key.

9007207088877195

Activating the Windows swap file [Freigegeben]

For a high workload on the MOVI-C® CONTROLLER, it is beneficial to activate the Windows swap file. Doing so makes more memory capacity available for the programs.

Proceed as follows:

1. Click in the Start menu on [Control Panel].
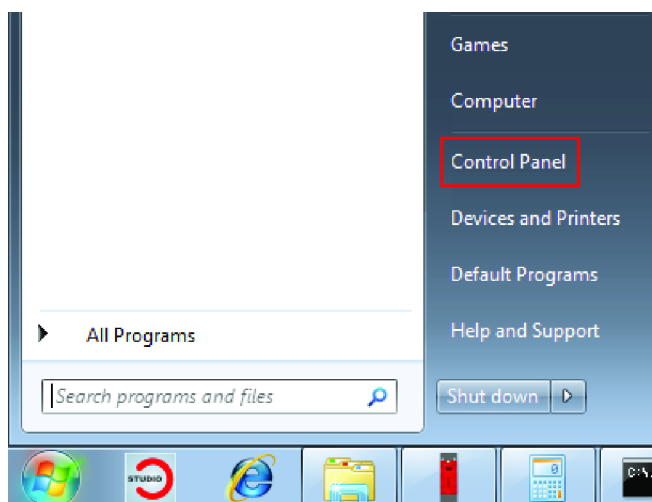
18014406338858251

2. Open the system information.
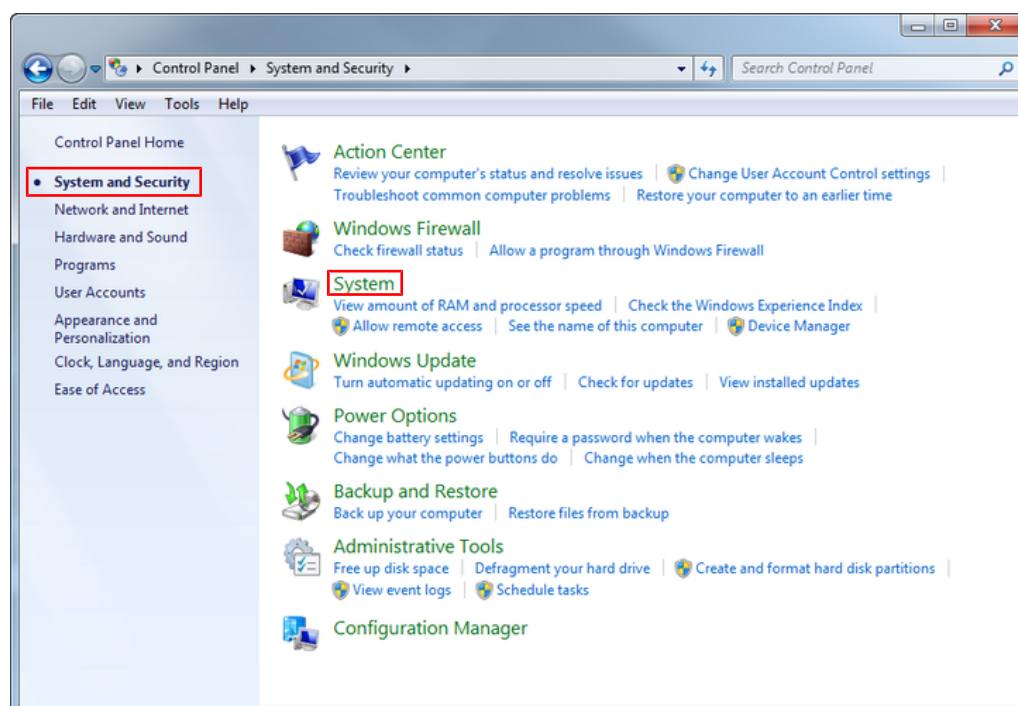
24488056331

⇨ The "View basic information about your computer" window opens.

3. Select "Advanced system settings" on the left.
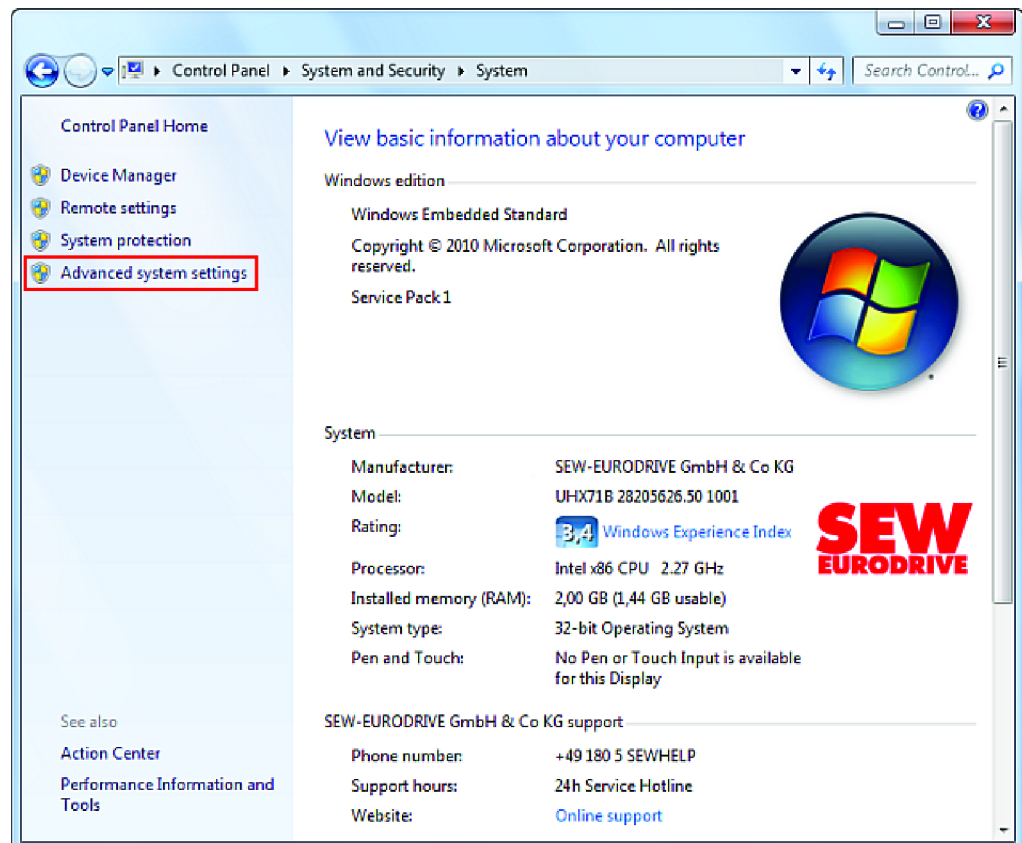
⇨ The "System Properties" window opens.

4. On the "Advanced" tab, click on the [Settings] button in the "Performance" section.
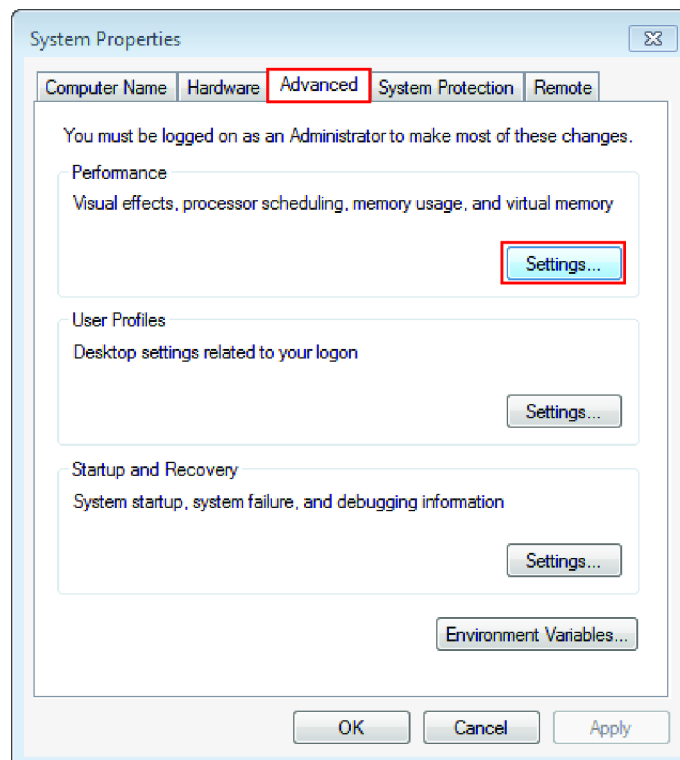
⇨ The "Performance Options" window opens.

5. On the "Advanced" tab, click on the [Change...] button in the "Virtual memory" section.
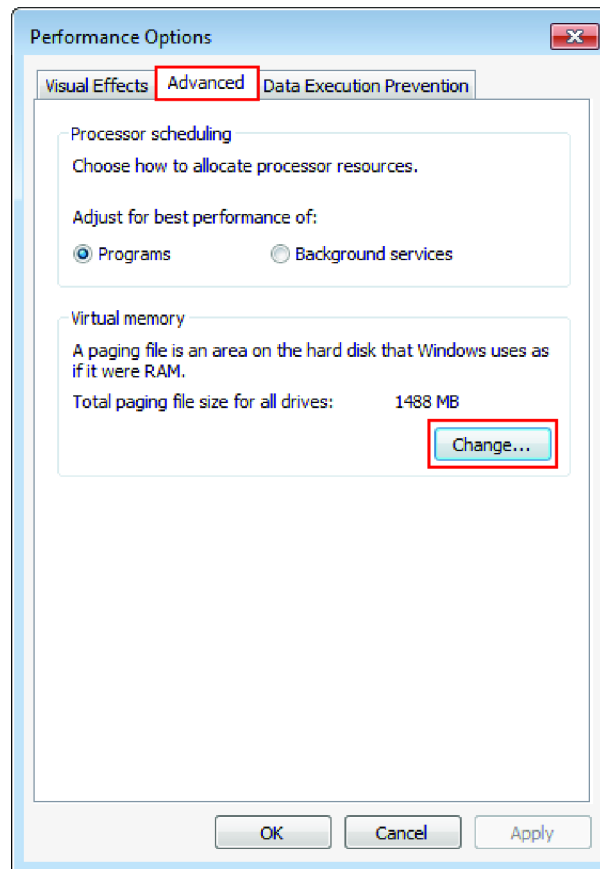
9007207092576267

⇨ The "Virtual Memory" window opens.

6. Activate the "System managed size" radio button and then click on [Set]. Then click [OK] to confirm your entry.
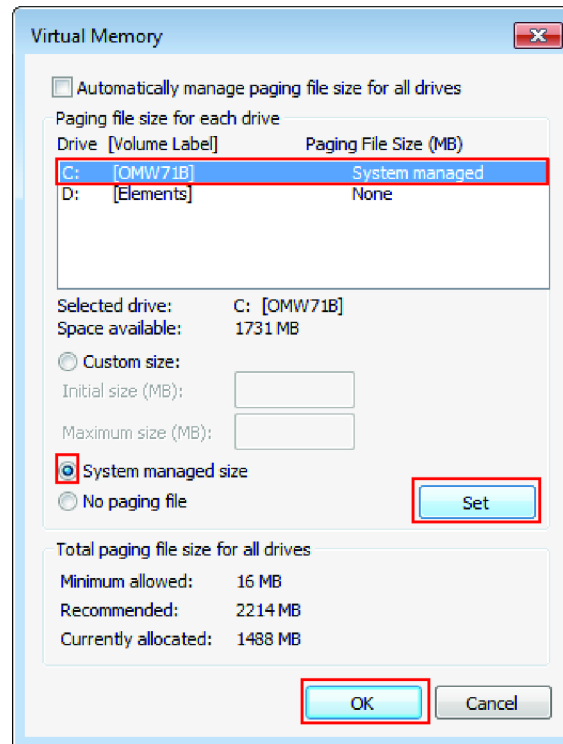
9007207092709131

⇨ The swap file is activated.

Startup and visualization [Freigegeben]

In order to use the Windows section as a visualization platform, you will need the following hardware and software:

- HMIBuilder.PRO engineering software (part of MOVISUITE®)
- ORV71C USB dongle

  (enabling of the visualization runtime of the HMI-Builder PRO)
- Monitor, e.g. OPT71C-120 or OPT71C-150

INFORMATION

For more information, refer to the "HMI-Builder PRO" manual.

Visualization accessories [Freigegeben]

Type	Part number	Description
OPT71C-120	17974283	**Touchscreen display size 12"** with DVI interface for connection to the Windows® section of the MOVI-C® CONTROLLER Resolution 1280 × 800, 65k colors
OPT71C-150	17974291	**Touchscreen display size 15"** with DVI interface for connection to the Windows® section of the MOVI-C® CONTROLLER Resolution 1280 × 800, 65k colors
OVR71C	17974305	**USB dongle** for using the HMI-Builder PRO visualization software.

Configuring the Windows section during startup [Freigegeben]

Configure the Windows section for the startup of a visualization as follows:

- Activate the Windows swap file.

  More RAM is available for working with applications.
- Deactivate the write protection.

  You can save modifications on the CFast memory card.

Configuring the Windows section during operation [Freigegeben]

Configure the Windows section as follows after successfully putting the system into operation:

- Deactivate the Windows swap file.

  The system does not perform any unnecessary write accesses to the Windows memory card.
- Activate the write protection.

  It is possible to switch off the DC 24 V supply voltage during operation.

INFORMATION

Switching off the controller, make sure that the system controlled by the control section is in a safe state.

Setting an automatic system startup [Freigegeben]

After startup, you can configure the system to boot automatically and directly start with a previously generated visualization.

Proceed as follows:

1. In the "Accessories" section in the Windows Start menu, select "Run".
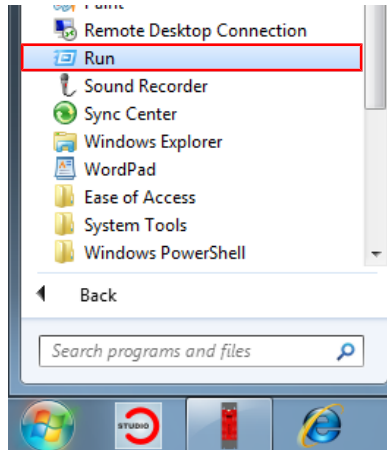
9007223697013003

⇨ The "Run" window is displayed.

2. In the "Open" input field, enter the command `control userpasswords2` and confirm with [OK].
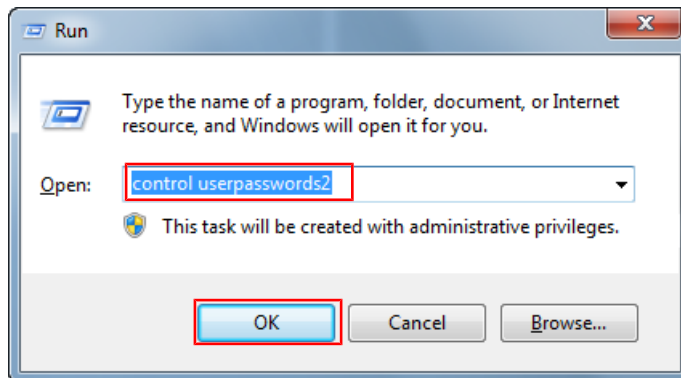
24442275467

⇨ The "User Accounts" window opens.

3. Deactivate the "Users must enter a user name and password to use this computer" check box for the user who is planned to log in automatically.
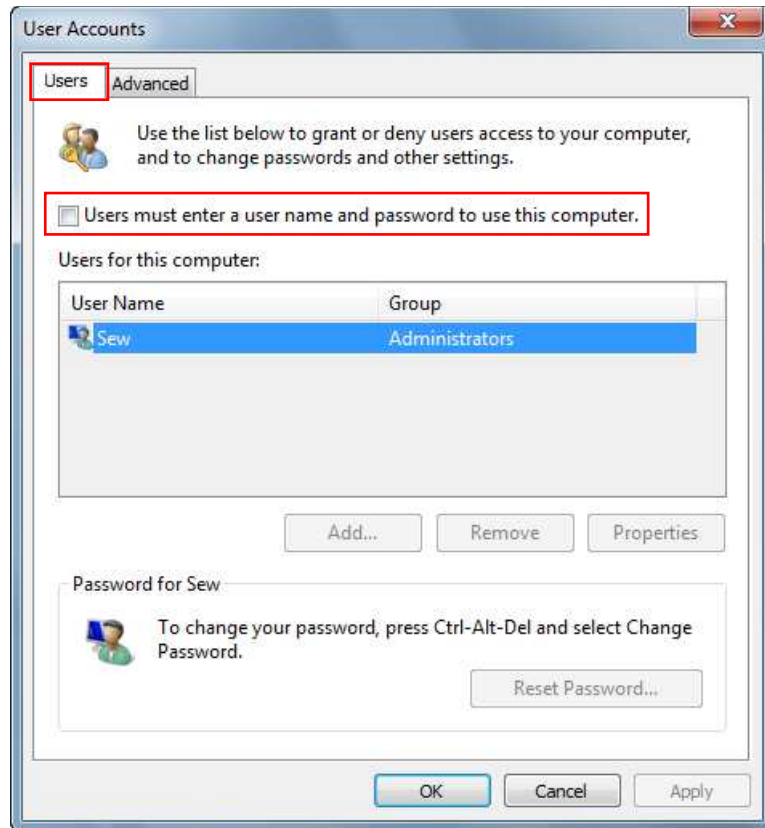
9007207100229771

4. To start a visualization automatically, create a shortcut in the "Startup" section in the Windows Start menu.
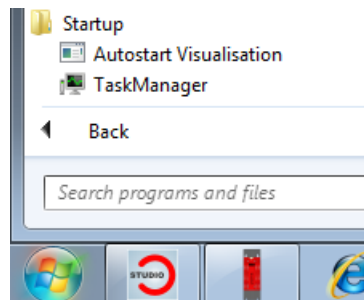
7850562059

6.4 Use of RETAIN/PERSISTENT variables [Freigegeben]

RETAIN/PERSISTENT variables can keep their value beyond the standard program runtime. This is why they are used in the IEC program to save values in a power failure-safe manner. The memory area required for using the RETAIN/PERSISTENT variables is available on the MOVI-C® CONTROLLER. See chapter "Technical data" (→ 🗎 74).

RETAIN variables retain their value after an uncontrolled exit (or online command `Reset warm`). RETAIN variables are initialized with the `Reset origin` command, the `Reset cold` command, and a new program download.

PERSISTENT variables keep their values warm in case of a `Reset cold`, when the application is downloaded again, and during a reset warm. This means that PERSISTENT variables are only re-initialized with `Reset origin`.

The following table provides an overview of whether the variable type keeps its value for certain commands (x) or whether the variable is initialized (i).

Action in the IEC menu "Online"	Neither RETAIN nor PERSISTENT	RETAIN	RETAIN PERSISTENT
Online change	x	x	x
Reset warm	i	x	x
Reset cold	i	i	x
Load	i	i	x
Reset original	i	i	i

6.4.1 Adding RETAIN/PERSISTENT variables [Freigegeben]

To add RETAIN/PERSISTENT variables at the corresponding position in the device tree, open the context menu and select "Persistent variables..." in the "Add object" submenu. This adds a corresponding object to the device tree that you can fill with your variables.

Observe the following notes when using RETAIN/PERSISTENT variables.

- RETAIN/PERSISTENT variables are stored in FRAM. As the FRAM is 10x slower than the RAM, you should avoid using RETAIN/PERSISTENT variables in the TaskPrio.

- If RETAIN/PERSISTENT variables are used in a task, the task creates a copy of the data for reading, writing and executing the program at the start of the cycle and then copies the data back to the FRAM. For this reason, you should avoid using a RETAIN/PERSISTENT variable in more than one task because the data is always overwritten by the later task.

- You should avoid using function blocks with local RETAIN variables because in this case the entire function block runs in the RETAIN memory. This makes the execution very slow and wastes memory space.

6.4.2 Cleaning up the PERSISTENT memory [Freigegeben]

After changing PERSISTENT variables, the PERSISTENT memory may be completely filled even though only a few PERSISTENT variables are used. In this case, the PERSISTENT memory should be reorganized. The reorganization removes gaps that have occurred when changing declarations of PERSISTENT variables and thus reduces the memory requirement.

Proceed as follows:

1. Double-click the added "Persistent variables" object in the device tree.

   ⇨ The "Declarations" menu is displayed in the menu bar.

2. Open the "Declarations" menu and click on the entry [Reorder list and clean up gaps].

6.4.3 Saving and restoring the RETAIN/PERSISTENT memory [Freigegeben]

During the "Device replacement" (→ 🖺 66), the RETAIN/PERSISTENT variables are not saved and restored. The RETAIN/PERSISTENT variables must be saved and restored manually as described below.

INFORMATION

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To execute the corresponding command, the program must be stopped. The RETAIN/PERSISTENT memory can be saved without a login.

To save the RETAIN/PERSISTENT memory (or optionally from a specific program), execute the following command in the configuration of the MOVI-C® CONTROLLER in the IEC Editor in the "PLC Shell" tab:

```
saveretains [<applicationname>]
```

To restore the RETAIN/PERSISTENT memory (or optionally from a specific program), execute the following command in the communication settings of the MOVI-C® CONTROLLER in the IEC Editor in the "PLC Shell" tab:

```
restoreretains [<applicationname>]
```

6.5 Fault description [Freigegeben]

6.5.1 Fault 150 controller firmware – general device fault [Freigegeben]

Subfault: 150.1	
Description: Unknown fault	
Response: No response	
Cause	Measure
The firmware of the MOVI-C® CONTROLLER detected a severe fault that cannot be attributed to a precise device fault.	– Activate the function that the log books are stored in the file system of the MOVI-C® CONTROLLER. Check the entries with the severity "Fault" or "Exception" in the log books for further information. – Acknowledge the fault. The MOVI-C® CONTROLLER is restarted. – If the fault occurs repeatedly, contact SEW- EURODRIVE Service.

Subfault: 150.2	
Description: Restart after exception handling	
Response: No response	
Cause	Measure
The MOVI-C® CONTROLLER has performed exception handling due to unauthorized access to the memory with subsequent restart.	– Activate the function that the log books are stored in the file system of the MOVI-C® CONTROLLER. Check the entries with the severity "Fault" or "Exception" in the log books for further information. – Acknowledge the fault. The MOVI-C® CONTROLLER is restarted. – If the fault occurs repeatedly, contact SEW- EURODRIVE Service.

Subfault: 150.3	
Description: Faulty booting	
Response: No response	
Cause	Measure
Failed to start the MOVI-C® CONTROLLER properly. The configuration of the firmware of the MOVI-C® CONTROLLER is incorrect or corrupt.	– Activate the function that the log books are stored in the file system of the MOVI-C® CONTROLLER. Check the entries with the severity "Fault" or "Exception" in the log books for further information. – Acknowledge the fault. The MOVI-C® CONTROLLER is restarted. – If the fault occurs repeatedly, contact SEW- EURODRIVE Service.

Subfault: 150.4	
Description: Fault in early booting phase	
Response: No response	
Cause	Measure
The MOVI-C® CONTROLLER could not start properly due to errors in the early start phase.	– Activate the function that the log books are stored in the file system of the MOVI-C® CONTROLLER. Check the entries with the severity "Fault" or "Exception" in the log books for further information. If the software packages are corrupt, load original SEW-EURODRIVE software packages onto the removable storage device again. – Acknowledge the fault. The MOVI-C® CONTROLLER is restarted. – If the fault occurs repeatedly, contact SEW- EURODRIVE Service.

6.5.2 Fault 151 controller firmware – License Manager fault [Freigegeben]

Subfault: 151.1	
Description: License Manager not working properly	
Response: No response	
Cause	Measure
An internal software error has been detected.	Contact SEW-EURODRIVE Service.

7 Service [Freigegeben]

7.1 SEW-EURODRIVE Service [Freigegeben]

If you are unable to rectify a fault, contact SEW-EURODRIVE Service. For addresses, refer to www.sew-eurodrive.com.

When contacting SEW-EURODRIVE Service, always specify the following information so that our service personnel can assist you more effectively:

- Information on the nameplate (e.g. type designation, serial number, part number, product key, purchase order number)
- Brief description of the application
- Fault message on the status display
- Type of fault
- Accompanying circumstances
- Unusual events preceding the problems

7.2 IT security [Freigegeben]

7.2.1 IT security guidelines for secure disposal [Freigegeben]

Removing the product from its intended environment [Freigegeben]

If the data stored on the product is considered relevant for IT security, remove it as described in the section "Secure removal of data stored in the product." (→ 🖺 65)

Removing reference and configuration data in the environment [Freigegeben]

Reference files, configuration files, log files, and other data belonging to the product can be stored in the environment on other devices, such as a higher-level controller or a local OPC-UA client. If the stored data is considered relevant for IT security, remove it from the corresponding devices.

Secure removal of data stored in the product [Freigegeben]

You can reset the data saved in the product to the factory settings using the MOVISUITE® engineering software.

This encompasses the following data, if present on the device variant:

- Configuration of the device
- Scope recording of the device
- Fault memory
  - Fault number
  - Timestamp
  - Fault code, subfault code, descriptive text
  - Process data
  - States of the digital inputs/outputs
  - Control word and status word
- Device name

- IP address
- Safety-relevant data

The following data is not reset with this procedure and can be changed individually, if present on the device variant:

- Enabled functions
- AS-Interface address
- Data set of the safety option
- EtherCAT® device designation
- PROFINET name
- Last detected options

Safe removal of data stored on the memory card [Freigegeben]

Before disposing of the memory card, proceed as follows to remove any data stored on it:

1. Remove the memory card from the product.
2. Insert the memory card into a suitable interface of your computer or a memory card reader connected to the computer.
3. Perform a low-level format of the memory card using an appropriate formatting tool.
   ⇨ You can dispose of the memory card in accordance with chapter "Waste disposal".

Removing a customer data backup [Freigegeben]

The product does not create local customer data backups.

If a data backup of the OMW CFast memory card was created via the Windows operating system, remove this data backup accordingly.

7.3 Device replacement [Freigegeben]

INFORMATION

Observe the information in chapters "Installation" (→ 📄 26) and "Safety notes" (→ 📄 9) when replacing a MOVI-C® CONTROLLER.

INFORMATION

For information on replacing the drives, refer to the manual of the corresponding application inverter.

INFORMATION

The variable values permanently stored on the MOVI-C® CONTROLLER are not stored on the OMH memory card by default. To store the variable values on the OMH memory card, program a corresponding IEC program.

Proceed as follows when replacing a MOVI-C® CONTROLLER:

1. In MOVISUITE®, open the configuration of the MOVI-C® CONTROLLER.
2. Open the "Data management" submenu.

3. Under "Configuration data", enable the "Controller replacement function".

4. Click on the [Update configuration data] button.

    ⇨ The current failsafe data of the MOVI-C® CONTROLLER is stored once on the OMH memory card. In this way, all of the data that is required when replacing the MOVI-C® CONTROLLER is stored on the OMH memory card so that the system can run again in the same way as before the replacement. You can find a detailed list of the stored data in the table below. This information may vary depending on the firmware version.

NV data	Category
IP settings	Backup and restore
IEC settings	Backup and restore
Customer-specific device designation	Backup and restore
Fieldbus parameters, e.g. "PROFINET device name"	Backup and restore
Time/date settings	Backup and restore
Device faults and info	Backup only; no restore
Device faults and info	Backup only; no restore
IEC RETAIN/PERSISTENT	Not backed up. To back up this data, contact SEW-EURODRIVE Service. See also "Saving and restoring the RETAIN/PERSISTENT memory" (→ 🗎 62).

5. Insert the OMH memory card of the MOVI-C® CONTROLLER to be replaced into the corresponding card slot of the new MOVI-C® CONTROLLER.

    ⇨ The most recently saved failsafe data is transferred from the OMH memory card to the MOVI-C® CONTROLLER.

7.4 Program transfer [Freigegeben]

If you load a program from an older MOVI-C® CONTROLLER (firmware older than version 2.10) to a newer one, the latter will not start due to a different setting of the scheduling mode ("MaximumCommunicationTime" instead of "Multicore_MaxCom-Time"). In this case, the scheduling mode of the MOVI-C® CONTROLLER must be set from "MaximumCommunicationTime" to "MultiCore_MaxComTime".

Proceed as follows to adjust the scheduling mode:

1. In the IEC Editor, open the configuration of the MOVI-C® CONTROLLER.

2. In the configuration of the MOVI-C® CONTROLLER, open the "Parameter" tab.
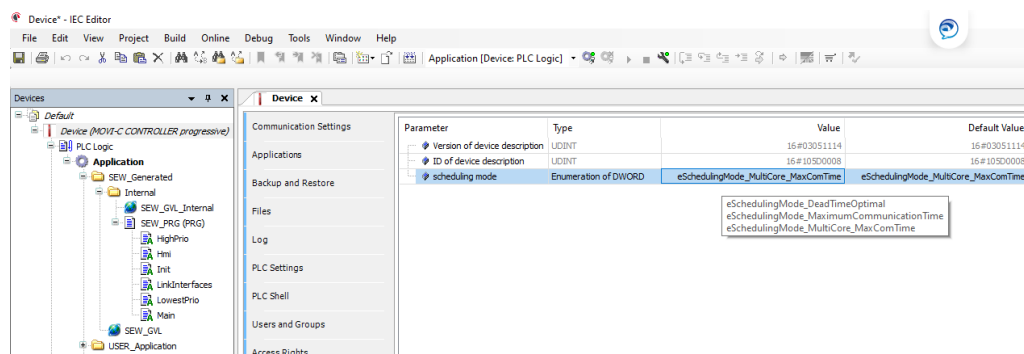
9007235925336075

3. Set the "Scheduling mode" parameter to the value "Multicore_MaxComTime".
4. Save the IEC project.
5. Restart the MOVI-C® CONTROLLER.

7.5 Firmware update [Freigegeben]

The methods described in the following chapters are available for updating the firmware of the MOVI-C® CONTROLLER.

7.5.1 Via MOVISUITE® [Freigegeben]

INFORMATION

The tool is only available with permission level "advanced".

The "Firmware loader" tool is available in MOVISUITE® to change the firmware version.

Proceed as follows to change the firmware:

1. Open the context menu of the MOVI-C® CONTROLLER in the MOVISUITE® project.

2. In the "Tools" submenu, select the "Firmware loader" menu entry.

   ⇨ The "Firmware loader" tool opens.
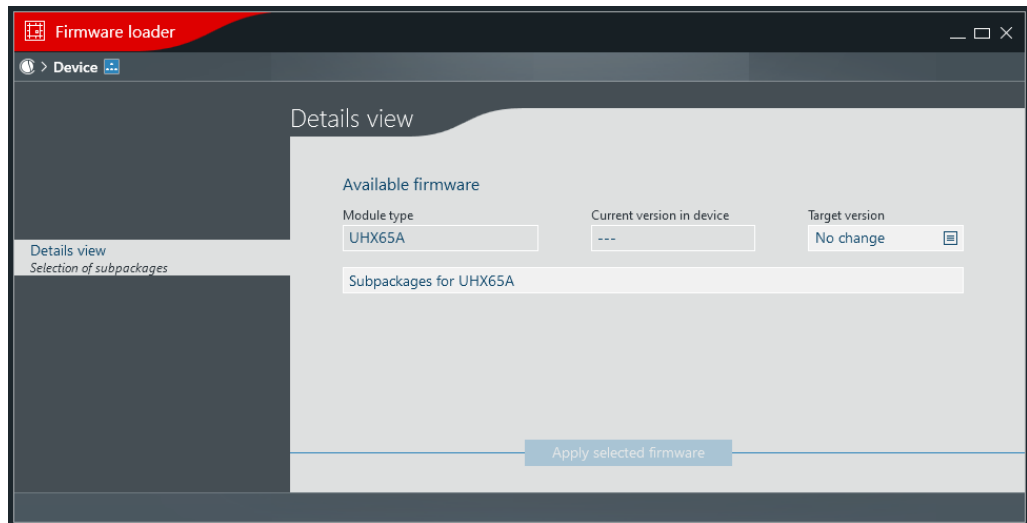
9007235925344651

3. In the "Target version" drop-down list, select the firmware version to be applied.

4. Click [Apply selected firmware].

7.5.2 Via file system [Freigegeben]

The firmware of the MOVI-C® CONTROLLER can be updated manually via the file system as follows.

Exporting a firmware image [Freigegeben]

1. Create a new project in MOVISUITE® via "Planning" in the "Start" menu.

2. In the function view of the MOVISUITE® project, add the required MOVI-C® CONTROLLER in the required version.

3. Select the MOVI-C® CONTROLLER in the MOVISUITE® project.

   ⇨ The configuration menu of the MOVI-C® CONTROLLER opens.

4. In the "Functions" section, open the "Data management" submenu and the "Export firmware" menu.
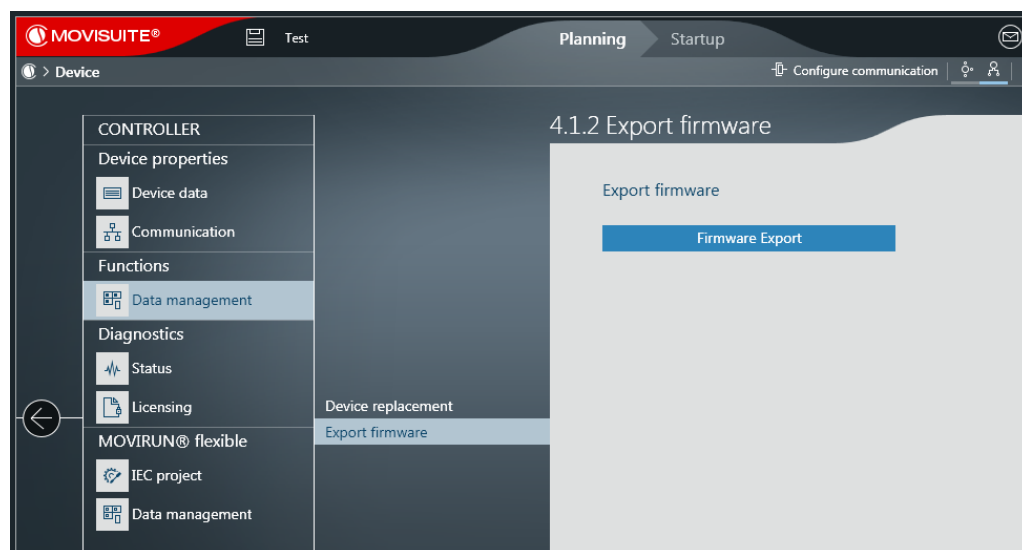
9007227382099467

5. Click the [Firmware export] button in the "Export firmware" menu.

⇨ A dialog opens where you can select the export directory.

6. Navigate to the export directory and confirm your selection by clicking [OK].

⇨ The firmware of the MOVI-C® CONTROLLER is saved as a ZIP file (file name: FS.zip) in the selected export directory.

Copying a firmware image to the OMH memory card [Nicht freigegeben]

✓ The steps described in chapter "Exporting a firmware image" (→ 📄 69) have been performed. The firmware image of the MOVI-C® CONTROLLER is located on your computer as a ZIP archive.

1. Remove the OMH memory card from the MOVI-C® CONTROLLER.

2. To read the data stored on the OMH memory card, insert the card in a card reader connected to your computer. You can also use another suitable interface of your computer.

3. On your computer, use a file explorer to open the contents of the OMH memory card.

    ⇨   The "licenses" directory on the OMH memory card contains the SEW license file. To ensure that the licenses you have purchased remain valid, the SEW license file must again be contained in a "licenses" directory on the OMH memory card after the firmware update.
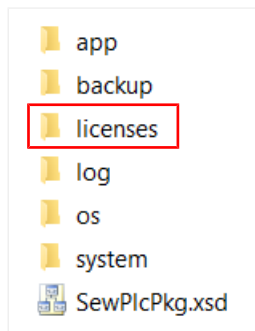
28166114571

4. To save your license files, copy the "licenses" directory locally to your computer.

5. Delete all files on the OMH memory card.

6. Unzip the ZIP archive of the required firmware image onto the OMH memory card. For more information on the export, refer to chapter "Exporting a firmware image" (→ 📄 69).

7. From the "licenses" directory copied locally to your computer, copy the SEW license file to the "licenses" directory on the OMH memory card.

INFORMATION

Restoring the "licenses" directory after deleting the OMH memory card is also possible via the MOVISUITE® License Manager. For this purpose, carry out the following steps:

✓   Engineering PC and MOVI-C® CONTROLLER are connected.

✓   The engineering PC is connected to the Internet.

•   Insert the OMH memory card into the MOVI-C® CONTROLLER.

•   Open the License Manager via the context menu of the MOVI-C® CONTROLLER in MOVISUITE® in the "Tools" menu.

•   Click on [Transfer licenses to the MOVI-C® CONTROLLER].

⇨   The firmware has been updated. Now you can create a new MOVISUITE® project.

7.6 Waste disposal [Freigegeben]

Dispose of the product and all parts separately in accordance with their material structure and the national regulations. Put the product through a recycling process or contact a specialist waste disposal company. If possible, divide the product into the following categories:

- Iron, steel or cast iron
- Stainless steel
- Magnets
- Aluminum
- Copper
- Electronic parts
- Plastics

The following materials are hazardous to health and the environment. These materials must be collected and disposed of separately:

- Oil and grease

  Collect used oil and grease separately according to type. Ensure that the used oil is not mixed with solvent. Dispose of used oil and grease correctly.
- Screens
- Capacitors
- Rechargeable batteries
- Batteries

Waste disposal according to WEEE Directive 2012/19/EU

This product and its accessories may fall within the scope of the country-specific application of the WEEE Directive. Dispose of the product and its accessories according to the national regulations of your country.

For further information, contact the responsible SEW-EURODRIVE branch or an authorized partner of SEW-EURODRIVE.

Waste disposal according to the Battery Directive 2006/66/EC

This product contains batteries or accumulators. Dispose of this product and the batteries or accumulators separately from the municipal waste according to the national regulations.

Information according to article 33 of Regulation EC No. 1907/2006 (REACH):

This product contains lithium batteries that contain 1.2 dimethoxyethane; ethylene glycol dimethyl ether (EGDME) (EC no: 203-794-9; CAS no.: 110-71-4) as electrolyte solvent.

8   Technical data [Freigegeben]

8.1   Markings [Nicht freigegeben]

	The CE mark states compliance with the following European directives:
$\mathsf{C}\,\mathsf{E}$	• Low Voltage Directive 2014/35/EU • EMC Directive 2014/30/EU • Machinery Directive 2006/42/EC • Directive 2011/65/EU for limiting the use of certain hazardous substances in electrical and electronic equipment

8.2   General technical data [Nicht freigegeben]

MOVI-C® CONTROLLER Type UHX85A	
Interference immunity	Meets EN 61800-3; 2. Environment
Interference emission	Limit value category C2 according to EN 61800-3
Ambient temperature ϑ_{amb}	-20 °C to +50 °C
Type of cooling	Convection cooling

Environmental conditions	
Climatic conditions	• Extended storage: EN 60721-3-1 class 1K2 temperature -20 °C to +70 °C • Transportation: EN 60721-3-2 class 2K3 temperature -20 °C to +70 °C • Operation (fixed installation, weatherproof): EN 60721-3-3 class 3K3 temperature -20 °C to +60 °C (non-condensing, no moisture condensation)
Chemically active substances	• Extended storage: EN 60721-3-1 class 1C2 • Transportation: EN 60721-3-2 class 2C2 • Operation (fixed installation, weatherproof): EN 60721-3-3 class 3C2
Mechanically active substances	• Extended storage: EN 60721-3-3 class 1S1 • Transportation: EN 60721-3-3 class 2S1 • Operation (fixed installation, weatherproof): EN 60721-3-3 class 3S1
Vibration check	• 3M5 in accordance with EN 60721-3-3 • 5M1 in accordance with EN 60721-3-5

Degree of protection	
Degree of protection	IP20 according to EN 60529
Pollution class	2 according to IEC 60664-1
Overvoltage category	III according to IEC 60664-1
Installation altitude	Maximum 3000 m (above sea level)

8.3   Technical data of the MOVI-C® CONTROLLER [Nicht freigegeben]

MOVI-C® CONTROLLER Type UHX85A	
Electrical supply	• Power consumption: P_{max} = 100 W • Supply voltage U = DC 24 V in accordance with IEC 61131-2 • Current consumption I_{max} = 4 A (with DC 24 V supply voltage) • The MOVI-C® CONTROLLER has to be supplied by an external voltage source.
Memory	• Retain data: 30 kB • Retain persistent: 24 kB • Code/data/constants: 64 MB
LAN 1 Windows interface (RJ45 socket contact)	• TCP/IP • Possible connections: Engineering PC, visualization, other controller • Engineering of the Windows section.
LAN 2 EtherCAT®/SBus^PLUS interface (RJ45 socket contact)	Fast system bus SBus^PLUS based on EtherCAT® for master connection
LAN 3 Engineering interface (RJ45 socket contact)	• TCP/IP • Possible connections: Engineering PC, visualization, other controller • Engineering for all SEW-EURODRIVE components connected to the MOVI-C® CONTROLLER can be performed via the MOVI-C® CONTROLLER.
USB interfaces	7 x standard USB assignment (USB 2.0)

CFast memory card
• OMH85A (2 GB)
	• PC-readable
	• Contains:
	  – Firmware
	  – IEC application program
	  – Application data

CFast memory cards • OMW71B (16 GB) • OMW72B (32 GB)	• Contains: – Windows 7 Embedded 32-bit operating system

8.4 Technical data of the PROFINET interface [Nicht freigegeben]

MOVI-C® CONTROLLER Type UHX85A	
Manufacturer ID	010Ahex
Device ID	13dec
Connection technology	RJ45
Baud rate	100 Mbaud, full duplex
Maximum process data length	512 PD
Network protocols	ARP, ICMP
Application protocols	PROFINET IO, HTTP, SNMP
Port numbers used	80, 161, 310, PROFINET DCE/RPC Ports (dynamic via end point mapper)
Conformance class	C
Application profiles	PROFIsafe
Permitted cable types	From category 5, class D in accordance with IEC 11801
Maximum cable length (switch to switch)	100 m
EDS file name	GSDML-Vx.yz-SEW-MOVI-C-CONTROLLER-UHX85-yyyym-mdd-hhmmss
Process data words	64
Number of non-safe slots	64
Number of PROFIsafe stations	24
Shared device	Not supported

8.5 Technical data of the EtherNet/IP™ interface [Nicht freigegeben]

MOVI-C® CONTROLLER Type UHX85A-R	
Manufacturer ID	315 (0x013B)
Product code	20 (0x14)
Connection technology	RJ45
Baud rate	100 Mbaud/10 Mbaud, full duplex/half duplex
Maximum process data length	248 PD
Application protocols	EtherNet/IP™, Modbus TCP, SNMP, DHCP
Port numbers used	67/68, 161, 310, 502, 2222, 44818
Permitted cable types	From category 5, class D in accordance with IEC 11801
Maximum cable length (switch to switch)	100 m
EDS file name	SEW_UHX85A.eds

8.6 Port overview [Freigegeben]

8.6.1 Interface description [Freigegeben]

The Ethernet interfaces of the MOVI-C® CONTROLLER have the following functions:

- LAN 1 – Engineering interface for the Windows section
- LAN 2 – EtherCAT®/SBus^{PLUS} interface for the master port
- LAN 3 – Engineering interface for the control section
- LAN 4 – Ethernet interface (reserved)

Fieldbus interfaces [Freigegeben]

- X21 – Fieldbus interface for the slave port (Port 2)
- X22 – Fieldbus interface for the slave port (Port 1)

8.6.2 Engineering interface [Freigegeben]

| **i** | **INFORMATION**
As of MOVISUITE® V2.30, IPv6 is deactivated by default. |
|---|---|

| **i** | **INFORMATION**
Ports 21 and 23 are initially closed and can be opened via the configuration. |
|---|---|

| **i** | **INFORMATION**
Use Telnet and FTP only during startup and only in a secure environment (e.g. behind a firewall at the system limits). |
|---|---|

Port	TCP/UDP	Function	Authorization
21	TCP	FTP	Reading from and writing to the file system
23	TCP	Telnet	Reading OEM diagnostic data
310	TCP/UDP	Data Streaming	Reading and writing of all indexed parameters
11740 – 11743	TCP	CODESYS engineering	Read and write
1740 - 1743	UDP	CODESYS engineering	Read and write
4840		CODESYS OPC UA server	
8080	HTTP	CODESYS web server	
8443	HTTPS	CODESYS secure web server	

8.6.3 Windows interface [Freigegeben]

Depending on the installation and configuration of the Windows operating system and of additionally installed software components, the following ports are available, among others:

Port	TCP/UDP	Function
7	TCP/UDP	Echo
9	TCP/UDP	Discard
13	TCP/UDP	Daytime
17	TCP/UDP	Quote of the day
19	TCP/UDP	Character generator protocol
135	TCP	Microsoft EPMAP (End Point Mapper)/DCE/RPC Locator Service
139	TCP	Microsoft EPMAP (End Point Mapper)/DCE/RPC Locator Service
161	UDP	SNMP
300	TCP/UDP	SMLP (MOVILINK® on Ethernet)
445	TCP	Microsoft-DS SMB release (also known as the free implementation Samba)
500	UDP	Internet Security Association and Key Management Protocol (ISAKMP)
515	TCP	Line Printer Daemon print services
3389	TCP	Microsoft Terminal Server (RDP), officially registered as Windows Based Terminal (WBT)
4500	UDP	IPSec NAT Traversal (RFC 3947)
5355	UDP	LLMNR – Link-Local Multicast Name Resolution
3389	RDP	Optional: Remote desktop sharing
11740-11743	TCP	CODESYS engineering when using MOVIKIT® Visualization
1740-1743	UDP	CODESYS engineering when using MOVIKIT® Visualization
8080	HTTP	CODESYS web server when using MOVIKIT® Visualization

8.6.4   PROFINET [Freigegeben]

Port	TCP/ UDP	Function	Authorization
Dynamic port definition via End Point Mapper	UDP	PROFINET DCE/RPC	Reading and writing on all indexed parameters
Ethertype 8892hex		Process data exchange	Controlling connection
Ethertype 88B5hex		Address Editor from SEW-EURODRIVE	Reading and writing of all address parameters of the Ethernet interface
310	TCP/ UDP	Data Streaming	Reading and writing of all indexed parameters
161	UDP	SNMP	Reading on MIBs
11740 – 11743	TCP	CODESYS engineering	Read and write

8.6.5   EtherNet/IP™ and Modbus TCP [Freigegeben]

Port	TCP/ UDP	Function	Authorization
Ethertype 88B5hex		Address Editor from SEW-EURODRIVE	Reading and writing of all address parameters of the Ethernet interface
67/68	UDP	DHCP	Reading and writing of all address parameters of the Ethernet interface
161	UDP	SNMP	Reading on MIBs
310	TCP/ UDP	Data Streaming	Reading and writing of all indexed parameters
502	TCP	Modbus TCP	Process data exchange; reading and writing of all indexed parameters
2222	UDP	EtherNet/IP™	Process data exchange; reading and writing of all indexed parameters
44818	TCP/ UDP	EtherNet/IP™	Parameter exchange; reading and writing of all indexed parameters
80	TCP	Integrated web server	Read
11740 – 11743	TCP	CODESYS engineering	Read and write

8.7 Dimension drawing of the MOVI-C® CONTROLLER [Freigegeben]

9007213600351243

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9 Address list [Freigegeben]

Argentina			
Assembly Sales	Buenos Aires	SEW EURODRIVE ARGENTINA S.A. Ruta Panamericana Km 37.5, Lote 35 (B1619IEA) Centro Industrial Garín Prov. de Buenos Aires	Tel. +54 3327 4572-84 Fax +54 3327 4572-21 http://www.sew-eurodrive.com.ar sewar@sew-eurodrive.com.ar

Australia			
Assembly Sales Service	Melbourne	SEW-EURODRIVE PTY. LTD. 27 Beverage Drive Tullamarine, Victoria 3043	Tel. +61 3 9933-1000 Fax +61 3 9933-1003 http://www.sew-eurodrive.com.au enquires@sew-eurodrive.com.au
	Sydney	SEW-EURODRIVE PTY. LTD. 9, Sleigh Place, Wetherill Park New South Wales, 2164	Tel. +61 2 9725-9900 Fax +61 2 9725-9905 enquires@sew-eurodrive.com.au
Service	Tomago	SEW-EURODRIVE PTY. LTD. 8 Epson Drive Tomago, New South Wales, 2322	Tel. +61 2 49505585 mail@sew-eurodrive.com.au

Austria			
Assembly Sales Service	Vienna	SEW-EURODRIVE Ges.m.b.H. Richard-Strauss-Straße 24 1230 Wien	Tel. +43 1 617 55 00-0 Fax +43 1 617 55 00-30 http://www.sew-eurodrive.at sew@sew-eurodrive.at

Bangladesh			
Sales	Bangladesh	SEW-EURODRIVE INDIA PRIVATE LIMITED 345 DIT Road East Rampura Dhaka-1219, Bangladesh	Tel. +88 01729 097309 salesdhaka@seweurodrivebangladesh.com

Belarus			
Sales	Minsk	Foreign unitary production enterprise SEW-EURODRIVE Novodvorskij village council 145 223016, Minsk region	Tel. +375 17 319 47 56 / +375 17 378 47 58 Fax +375 17 378 47 54 http://www.sew-eurodrive.by sew@sew-eurodrive.by

Belgium			
Assembly Sales Service	Brussels	SEW-EURODRIVE n.v./s.a. Researchpark Haasrode 1060 Evenementenlaan 7 3001 Haasrode	Tel. +32 16 386-311 Fax +32 16 386-336 http://www.sew-eurodrive.be info@sew-eurodrive.be
Service Competence Center	Industrial Gears	SEW-EURODRIVE n.v./s.a. Rue du Parc Industriel, 31 6900 Marche-en-Famenne	Tel. +32 84 219-878 Fax +32 84 219-879 http://www.sew-eurodrive.be info@sew.be

Brazil			
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Assembly Sales Service	Rio Claro	SEW-EURODRIVE Brasil Ltda. Rodovia Washington Luiz, Km 172 Condomínio Industrial Conpark Caixa Postal: 327 13501-600 – Rio Claro / SP	Tel. +55 19 3522-3100 Fax +55 19 3524-6653 montadora.rc@sew.com.br
	Joinville	SEW-EURODRIVE Brasil Ltda. Jvl / Ind Rua Dona Francisca, 12.346 – Pirabeiraba 89239-270 – Joinville / SC	Tel. +55 47 3027-6886 Fax +55 47 3027-6888 filial.sc@sew.com.br

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Cameroon			
Sales	Douala	SEW-EURODRIVE SARLU Ancienne Route Bonabéri P.O. Box B.P 8674 Douala-Cameroun	Tel. +237 233 39 12 35 Fax +237 233 39 02 10 www.sew-eurodrive.ci/ info@sew-eurodrive.cm

Canada			
Assembly Sales Service	Toronto	SEW-EURODRIVE CO. OF CANADA LTD. 210 Walker Drive Bramalea, ON L6T 3W1	Tel. +1 905 791-1553 Fax +1 905 791-2999 http://www.sew-eurodrive.ca l.watson@sew-eurodrive.ca
	Vancouver	SEW-EURODRIVE CO. OF CANADA LTD. Tilbury Industrial Park 7188 Honeyman Street Delta, BC V4G 1G1	Tel. +1 604 946-5535 Fax +1 604 946-2513 b.wake@sew-eurodrive.ca
	Montreal	SEW-EURODRIVE CO. OF CANADA LTD. 2001 Ch. de l'Aviation Dorval Quebec H9P 2X6	Tel. +1 514 367-1124 Fax +1 514 367-3677 n.paradis@sew-eurodrive.ca

Chile			
Assembly Sales Service	Santiago de Chile	SEW-EURODRIVE CHILE LTDA Las Encinas 1295 Parque Industrial Valle Grande LAMPA Santiago de Chile P.O. Box Casilla 23 Correo Quilicura - Santiago - Chile	Tel. +56 2 2757 7000 Fax +56 2 2757 7001 http://www.sew-eurodrive.cl ventas@sew-eurodrive.cl

China			
Production Assembly Sales Service	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 78, 13th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25323273 http://www.sew-eurodrive.cn info@sew-eurodrive.cn
Assembly Sales Service	Suzhou	SEW-EURODRIVE (Suzhou) Co., Ltd. 333, Suhong Middle Road Suzhou Industrial Park Jiangsu Province, 215021	Tel. +86 512 62581781 Fax +86 512 62581783 suzhou@sew-eurodrive.cn
	Guangzhou	SEW-EURODRIVE (Guangzhou) Co., Ltd. No. 9, JunDa Road East Section of GETDD Guangzhou 510530	Tel. +86 20 82267890 Fax +86 20 82267922 guangzhou@sew-eurodrive.cn
	Shenyang	SEW-EURODRIVE (Shenyang) Co., Ltd. 10A-2, 6th Road Shenyang Economic Technological Development Area Shenyang, 110141	Tel. +86 24 25382538 Fax +86 24 25382580 shenyang@sew-eurodrive.cn
	Taiyuan	SEW-EURODRIVE (Taiyuan) Co,. Ltd. No.3, HuaZhang Street, TaiYuan Economic & Technical Development Zone ShanXi, 030032	Tel. +86-351-7117520 Fax +86-351-7117522 taiyuan@sew-eurodrive.cn
	Wuhan	SEW-EURODRIVE (Wuhan) Co., Ltd. 10A-2, 6th Road No. 59, the 4th Quanli Road, WEDA 430056 Wuhan	Tel. +86 27 84478388 Fax +86 27 84478389 wuhan@sew-eurodrive.cn
	Xi'An	SEW-EURODRIVE (Xi'An) Co., Ltd. No. 12 Jinye 2nd Road Xi'An High-Technology Industrial Development Zone Xi'An 710065	Tel. +86 29 68686262 Fax +86 29 68686311 xian@sew-eurodrive.cn
Assembly	Tianjin	SEW-EURODRIVE (Tianjin) Co., Ltd. No. 66, 10th Avenue, TEDA Tianjin 300457	Tel. +86 22 25322612 Fax +86 22 25322611 http://www.sew-sew-eurodrive.cn info@sew-eurodrive.cn

China			
Sales Service	Hong Kong	SEW-EURODRIVE LTD. Unit No. 801-806, 8th Floor Hong Leong Industrial Complex No. 4, Wang Kwong Road Kowloon, Hong Kong	Tel. +852 36902200 Fax +852 36902211 contact@sew-eurodrive.hk

Colombia			
Assembly Sales Service	Bogota	SEW-EURODRIVE COLOMBIA LTDA. Calle 17 No. 132-18 Interior 2 Bodega 6, Manzana B Santafé de Bogotá	Tel. +57 1 54750-50 Fax +57 1 54750-44 http://www.sew-eurodrive.com.co sew@sew-eurodrive.com.co

Croatia			
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Czech Republic			
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	Brumath	SEW USOCOME 1 Rue de Bruxelles 67670 Mommenheim Cedex	Tel. +33 3 88 37 48 00
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	Nantes	SEW USOCOME Parc d'activités de la forêt 4 rue des Fontenelles 44140 Le Bignon	Tel. +33 2 40 78 42 00 dtcnantes@usocome.com
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Production / Precision Gear Units	Bruchsal	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 42 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 sew@sew-eurodrive.de
Production	Graben	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-0 Fax +49 7251-2970
Service Competence Center	Mechanics / Mechatronics	SEW-EURODRIVE GmbH & Co KG Ernst-Blickle-Straße 1 76676 Graben-Neudorf	Tel. +49 7251 75-1710 Fax +49 7251 75-1711 scc-mechanik@sew-eurodrive.de
	Electronics	SEW-EURODRIVE GmbH & Co KG Christian-Pähr-Straße 12 76646 Bruchsal	Tel. +49 7251 75-1780 Fax +49 7251 75-1769 scc-elektronik@sew-eurodrive.de
	MAXOLU- TION® Factory Automation	SEW-EURODRIVE GmbH & Co KG Eisenbahnstraße 11 76646 Bruchsal	Tel. +49 7251 75-0 Fax +49 7251 75-1970 sew@sew-eurodrive.de
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	East	SEW-EURODRIVE GmbH & Co KG Dänkritzer Weg 1 08393 Meerane (Zwickau)	Tel. +49 3764 7606-0 Fax +49 3764 7606-20 dtc-ost@sew-eurodrive.de
	South	SEW-EURODRIVE GmbH & Co KG Domagkstraße 5 85551 Kirchheim (München)	Tel. +49 89 909551-21 Fax +49 89 909551-50 dtc-sued@sew-eurodrive.de
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	Bremen	SEW-EURODRIVE GmbH & Co KG Allerkai 4 28309 Bremen	Tel. +49 421 33918-10 Fax +49 421 33918-22 dc-bremen@sew-eurodrive.de
	Hamburg	SEW-EURODRIVE GmbH & Co KG Hasselbinnen 11 22869 Schenefeld	Tel. +49 40298109-60 Fax +49 40298109-70 dc-hamburg@sew-eurodrive.de
	Saarland	SEW-EURODRIVE GmbH & Co KG Gottlieb-Daimler-Straße 4 66773 Schwalbach Saar – Hülzweiler	Tel. +49 6831 48946 10 Fax +49 6831 48946 13 dc-saarland@sew-eurodrive.de
	Ulm	SEW-EURODRIVE GmbH & Co KG Dieselstraße 18 89160 Dornstadt	Tel. +49 7348 9885-0 Fax +49 7348 9885-90 dc-ulm@sew-eurodrive.de
	Würzburg	SEW-EURODRIVE GmbH & Co KG Nürnbergerstraße 118 97076 Würzburg-Lengfeld	Tel. +49 931 27886-60 Fax +49 931 27886-66 dc-wuerzburg@sew-eurodrive.de
Drive Service Hotline / 24 Hour Service			0 800 SEWHELP 0 800 7394357

Great Britain

Assembly Sales Service	Normanton	SEW-EURODRIVE Ltd. DeVilliers Way Trident Park Normanton West Yorkshire WF6 1GX	Tel. +44 1924 893-855 Fax +44 1924 893-702 http://www.sew-eurodrive.co.uk info@sew-eurodrive.co.uk

Greece

Sales	Athens	Christ. Boznos & Son S.A. 12, K. Mavromichali Street P.O. Box 80136 18545 Piraeus	Tel. +30 2 1042 251-34 Fax +30 2 1042 251-59 http://www.boznos.gr info@boznos.gr

Hungary

Sales Service	Budapest	SEW-EURODRIVE Kft. Csillaghegyí út 13. 1037 Budapest	Tel. +36 1 437 06-58 Fax +36 1 437 06-50 http://www.sew-eurodrive.hu office@sew-eurodrive.hu

Iceland

Sales	Reykjavik	Varma & Vélaverk ehf. Knarrarvogi 4 104 Reykjavík	Tel. +354 585 1070 Fax +354 585)1071 https://vov.is/ vov@vov.is

India

Registered Office Assembly Sales Service	Vadodara	SEW-EURODRIVE India Private Limited 302, NOTUS IT PARK, Sarabhai Campus, Beside Notus Pride, Genda Circle, Vadodara 390023 Gujarat	Tel. +91 265 3045200 Fax +91 265 3045300 https://www.seweurodriveindia.com salesvadodara@seweurodriveindia.com
Assembly Sales Service	Chennai	SEW-EURODRIVE India Private Limited Plot No. K3/1, Sipcot Industrial Park Phase II Mambakkam Village Sriperumbudur - 602105 Kancheepuram Dist, Tamil Nadu	Tel. +91 44 37188888 Fax +91 44 37188811 saleschennai@seweurodriveindia.com
	Pune	SEW-EURODRIVE India Private Limited Plant: Plot No. D236/1, Chakan Industrial Area Phase- II, Warale, Tal- Khed, Pune-410501, Maharashtra	Tel. +91 21 35 628700 Fax +91 21 35 628715 salespune@seweurodriveindia.com
	Tapukara	SEW-EURODRIVE India Private Limited Plot No SP-6-46, Tapukara, Karoli Industrial Area, No. 1, district : Alwar , Rajasthan - 301707	Tel. +91 265 3045200 Fax +91 265 3045300 tapukara.plant@seweurodriveindia.com

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India

Sales	Gurgaon	SEW-EURODRIVE India Private Limited Global Business Park, Sector -26, M.G. Road, Sikanderpur Unit No. 205, 2nd Floor, Tower – D Gurugram 122002, Haryana	Tel. +91 9958376669 salesgurgaon@seweurodriveindia.com
Drive Center	Raipur	SEW-EURODRIVE India Private Limited Plot unit no. 129/17 P.O. GSI-Mandhar District: Raipur, State: Chhattisgarh	Tel. +91 8294630772 salesraipur@seweurodriveindia.com

Indonesia

Registered Office Sales Service	Jakarta	PT SEW EURODRIVE INDONESIA Palma Tower, 16th Floor, Unit H & I, Jl R.A. Kartini II-S Kav 06 Pondok Pinang, Kebayoran Lama Jakarta Selatan 12310	Tel. +62 21 7593 0272 Fax +62 21 7593 0273 sales.indonesia@sew-eurodrive.com https://www.sew-eurodrive.com.sg
Sales	Medan	PT. Serumpun Indah Lestari Jl.Pulau Solor no. 8, Kawasan Industri Medan II Medan 20252	Tel. +62 61 687 1221 Fax +62 61 6871429 / +62 61 6871458 / +62 61 30008041 sil@serumpunindah.com serumpunindah@yahoo.com http://www.serumpunindah.com
	Jakarta	PT. Cahaya Sukses Abadi Komplek Rukan Puri Mutiara Blok A no 99, Sunter Jakarta 14350	Tel. +62 21 65310599 Fax +62 21 65310600 csajkt@cbn.net.id
	Jakarta	PT. Agrindo Putra Lestari JL.Pantai Indah Selatan, Komplek Sentra Industri Terpadu, Pantai indah Kapuk Tahap III, Blok E No. 27 Jakarta 14470	Tel. +62 21 2921-8899 Fax +62 21 2921-8988 aplindo@indosat.net.id http://www.aplindo.com
	Surabaya	PT. TRIAGRI JAYA ABADI Jl. Sukosemolo No. 63, Galaxi Bumi Permai G6 No. 11 Surabaya 60111	Tel. +62 31 5990128 Fax +62 31 5962666 sales@triagri.co.id http://www.triagri.co.id
	Surabaya	CV. Multi Mas Jl. Raden Saleh 43A Kav. 18 Surabaya 60174	Tel. +62 31 5458589 Fax +62 31 5317220 sianhwa@sby.centrin.net.id http://www.cvmultimas.com

Ireland

Sales Service	Dublin	Alperton Engineering Ltd. 48 Moyle Road Dublin Industrial Estate Glasnevin, Dublin 11	Tel. +353 1 830-6277 Fax +353 1 830-6458 http://www.alperton.ie info@alperton.ie

Israel

Sales	Tel Aviv	Liraz Handasa Ltd. Ahofer Str 34B / 228 58858 Holon	Tel. +972 3 5599511 Fax +972 3 5599512 http://www.liraz-handasa.co.il office@liraz-handasa.co.il

Italy

Assembly Sales Service	Milan	SEW-EURODRIVE S.a.s. di SEW S.r.l. & Co. Via Bernini,12 20033 Solaro (Milano)	Tel. +39 02 96 980229 Fax +39 02 96 980 999 http://www.sew-eurodrive.it milano@sew-eurodrive.it

Ivory Coast

Sales	Abidjan	SEW-EURODRIVE SARL Ivory Coast Rue des Pêcheurs, Zone 3 26 BP 916 Abidjan 26	Tel. +225 27 21 21 81 05 Fax +225 27 21 25 30 47 info@sew-eurodrive.ci http://www.sew-eurodrive.ci

Japan

Assembly Sales Service	Iwata	SEW-EURODRIVE JAPAN CO., LTD 250-1, Shimoman-no, Iwata Shizuoka 438-0818	Tel. +81 538 373811 Fax +81 538 373814 http://www.sew-eurodrive.co.jp sewjapan@sew-eurodrive.co.jp

Kazakhstan			
Sales Service	Almaty	SEW-EURODRIVE LLP 291-291A, Tole bi street 050031, Almaty	Tel. +7 (727) 350 5156 Fax +7 (727) 350 5156 http://www.sew-eurodrive.com kazakhstan@sew-eurodrive.com
	Tashkent	Representative Office SEW-EURODRIVE Representative office in Uzbekistan 95A Amir Temur ave, office 401/3 100084 Tashkent	Tel. +998 97 134 01 99 http://www.sew-eurodrive.uz sew@sew-eurodrive.uz
	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Fax +976-77109997 imt@imt.mn

Latvia			
Sales	Riga	SIA Alas-Kuul Katlakalna 11C 1073 Riga	Tel. +371 6 7139253 Fax +371 6 7139386 http://www.alas-kuul.lv info@alas-kuul.com

Lebanon			
Sales (Lebanon)	Beirut	Gabriel Acar & Fils sarl B. P. 80484 Bourj Hammoud, Beirut	Tel. +961 1 510 532 Fax +961 1 494 971 ssacar@inco.com.lb
Sales (Jordan, Kuwait , Saudi Arabia, Syria)	Beirut	Middle East Drives S.A.L. (offshore) Sin El Fil. B. P. 55-378 Beirut	Tel. +961 1 494 786 Fax +961 1 494 971 http://www.medrives.com info@medrives.com

Lithuania			
Sales	Alytus	UAB Irseva Statybininku 106C 63431 Alytus	Tel. +370 315 79204 Fax +370 315 56175 http://www.irseva.lt irmantas@irseva.lt

Luxembourg
Representation: Belgium

Macedonia			
Sales	Skopje	Boznos DOOEL Dime Anicin 2A/7A 1000 Skopje	Tel. +389 23256553 Fax +389 23256554 http://www.boznos.mk

Malaysia			
Assembly Sales Service	Johor	SEW-EURODRIVE SDN BHD No. 95, Jalan Seroja 39, Taman Johor Jaya 81000 Johor Bahru, Johor West Malaysia	Tel. +60 7 3549409 Fax +60 7 3541404 sales@sew-eurodrive.com.my

Mexico			
Assembly Sales Service	Querétaro	SEW-EURODRIVE MEXICO S.A. de C.V. SEM-981118-M93 Tequisquiapan No. 102 Parque Industrial Querétaro C.P. 76220 Querétaro, México	Tel. +52 442 1030-300 Fax +52 442 1030-301 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx
Sales Service	Puebla	SEW-EURODRIVE MEXICO S.A. de C.V. Calzada Zavaleta No. 3922 Piso 2 Local 6 Col. Santa Cruz Buenavista C.P. 72154 Puebla, México	Tel. +52 (222) 221 248 http://www.sew-eurodrive.com.mx scmexico@seweurodrive.com.mx

Mongolia			
Technical Office	Ulaanbaatar	IM Trading LLC Olympic street 28B/3 Sukhbaatar district, Ulaanbaatar 14230, MN	Tel. +976-77109997 Tel. +976-99070395 Fax +976-77109997 http://imt.mn/ imt@imt.mn

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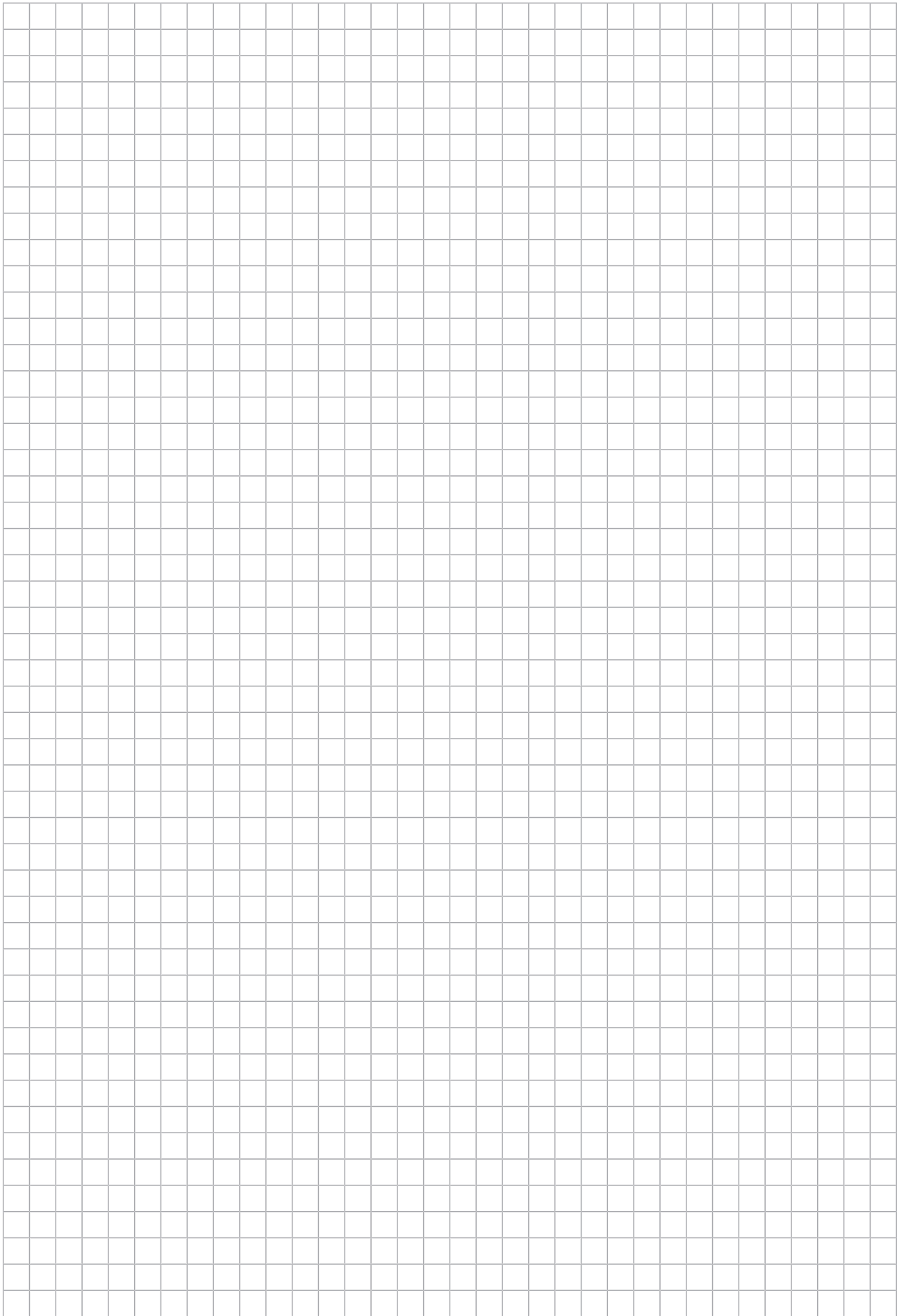| **Morocco**			
Sales Service Assembly	Bouskoura	SEW-EURODRIVE Morocco SARL Parc Industriel CFCIM, Lot. 55/59 27182 Bouskoura Grand Casablanca	Tel. +212 522 88 85 00 Fax +212 522 88 84 50 http://www.sew-eurodrive.ma sew@sew-eurodrive.ma

Namibia			
Sales	Swakopmund	DB MINING & INDUSTRIAL SUPPLIES CC Einstein Street Strauss Industrial Park Unit1 Swakopmund	Tel. +264 64 462 738 Fax +264 64 462 734 anton@dbminingnam.com

Netherlands			
Assembly Sales Service	Rotterdam	SEW-EURODRIVE B.V. Industrieweg 175 3044 AS Rotterdam Postbus 10085 3004 AB Rotterdam	Tel. +31 10 4463-700 Fax +31 10 4155-552 Service: 0800-SEWHELP http://www.sew-eurodrive.nl info@sew-eurodrive.nl

New Zealand			
Assembly Sales Service	Auckland	SEW-EURODRIVE NEW ZEALAND LTD. P.O. Box 58-428 82 Greenmount drive East Tamaki Auckland	Tel. +64 9 2745627 Fax +64 9 2740165 http://www.sew-eurodrive.co.nz sales@sew-eurodrive.co.nz
	Christchurch	SEW-EURODRIVE NEW ZEALAND LTD. 30 Lodestar Avenue, Wigram Christchurch	Tel. +64 3 384-6251 Fax +64 3 384-6455 sales@sew-eurodrive.co.nz

Nigeria			
Sales	Lagos	Greenpeg Nig. Ltd 64C Toyin Street Opebi-Allen Ikeja Lagos-Nigeria	Tel. +234-701-821-9200-1 http://www.greenpegltd.com sales@greenpegltd.com

Norway			
Assembly Sales Service	Moss	SEW-EURODRIVE A/S Hornebergvegen 11 B 7038 Trondheim	Tel. +47 69 24 10 20 Fax +47 69 24 10 40 http://www.sew-eurodrive.no sew@sew-eurodrive.no

Pakistan			
Sales	Karachi	Industrial Power Drives Al-Fatah Chamber A/3, 1st Floor Central Commercial Area, Sultan Ahmed Shah Road, Block 7/8, Karachi	Tel. +92 21 452 9369 Fax +92-21-454 7365 seweurodrive@cyber.net.pk

Paraguay			
Sales	Fernando de la Mora	SEW-EURODRIVE PARAGUAY S.R.L Nu Guazu No. 642 casi Campo Esperanza Santisima Trinidad Asuncion	Tel. +595 991 519695 Fax +595 21 3285539 sewpy@sew-eurodrive.com.py

Peru			
Assembly Sales Service	Lima	SEW EURODRIVE DEL PERU S.A.C. Los Calderos, 120-124 Urbanizacion Industrial Vulcano, ATE, Lima	Tel. +51 1 3495280 Fax +51 1 3493002 http://www.sew-eurodrive.com.pe sewperu@sew-eurodrive.com.pe

Philippines			
Sales	Makati	P.T. Cerna Corporation 4137 Ponte St., Brgy. Sta. Cruz Makati City 1205	Tel. +63 2 519 6214 Fax +63 2 890 2802 mech_drive_sys@ptcerna.com http://www.ptcerna.com

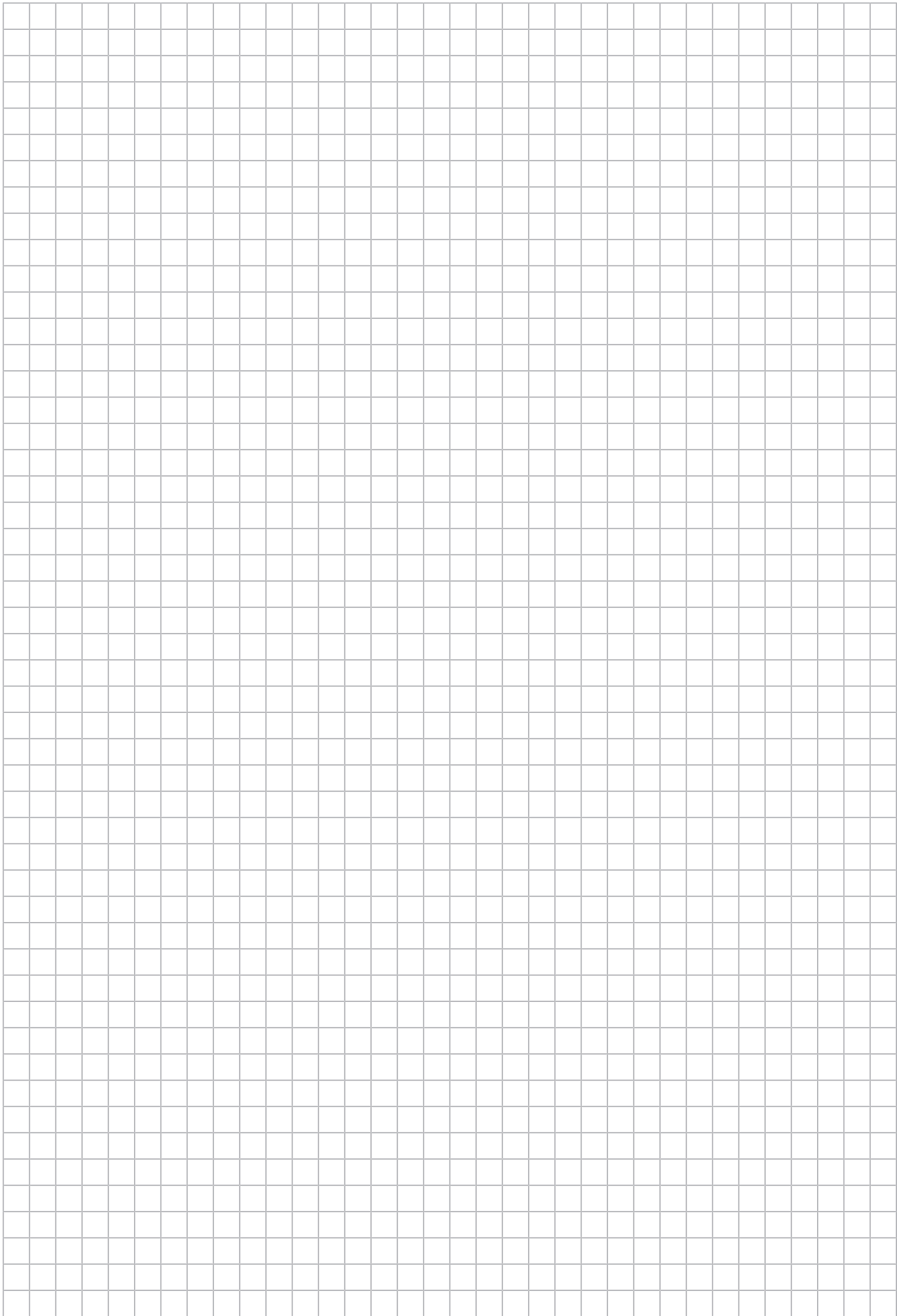| **Poland**			
Assembly Sales Service	Łódź	SEW-EURODRIVE Polska Sp.z.o.o. ul. Techniczna 5 92-518 Łódź	Tel. +48 42 293 00 00 Fax +48 42 293 00 49 http://www.sew-eurodrive.pl sew@sew-eurodrive.pl

Poland			
	Service	Tel. +48 42 293 0030 Fax +48 42 293 0043	24 Hour Service Tel. +48 602 739 739 (+48 602 SEW SEW) serwis@sew-eurodrive.pl

Portugal			
Assembly Sales Service	Coimbra	SEW-EURODRIVE, LDA. Av. da Fonte Nova, n.º 86 3050-379 Mealhada	Tel. +351 231 20 9670 Fax +351 231 20 3685 http://www.sew-eurodrive.pt infosew@sew-eurodrive.pt

Romania			
Sales Service	Bucharest	Sialco Trading SRL str. Brazilia nr. 36 011783 Bucuresti	Tel. +40 21 230-1328 Fax +40 21 230-7170 http://www.sialco.ro sialco@sialco.ro

Senegal			
Sales	Dakar	SENEMECA Mécanique Générale Km 8, Route de Rufisque B.P. 3251, Dakar	Tel. +221 338 494 770 Fax +221 338 494 771 http://www.senemeca.com senemeca@senemeca.sn

Serbia			
Sales	Belgrade	DIPAR d.o.o. Ustanicka 128a PC Košum, IV floor 11000 Beograd	Tel. +381 11 347 3244 / +381 11 288 0393 Fax +381 11 347 1337 office@dipar.rs

Singapore			
Assembly Sales Service	Singapore	SEW-EURODRIVE PTE. LTD. 9, Tuas Drive 2 Singapore 638644	Tel. +65 68621701 Fax +65 68612827 http://www.sew-eurodrive.com.sg sewsingapore@sew-eurodrive.com

Slovakia			
Drive Technology Center	Bernolákovo	SEW-Eurodrive SK s.r.o. Priemyselná ulica 6267/7 900 27 Bernolákovo	Tel.+421 2 48 212 800 http://www.sew-eurodrive.sk sew@sew-eurodrive.sk

Slovenia			
Representation: Austria			

South Africa			
Assembly Sales Service	Johannesburg	SEW-EURODRIVE (PROPRIETARY) LIMITED 32 O'Connor Place Eurodrive House Aeroton Johannesburg 2190 P.O.Box 90004 Bertsham 2013	Tel. +27 11 248-7000 Fax +27 11 248-7289 http://www.sew.co.za info@sew.co.za
	Cape Town	SEW-EURODRIVE (PROPRIETARY) LIMITED Rainbow Park Cnr. Racecourse & Omuramba Road Montague Gardens Cape Town P.O.Box 36556 Chempet 7442	Tel. +27 21 552-9820 Fax +27 21 552-9830 Telex 576 062 bgriffiths@sew.co.za
	Durban	SEW-EURODRIVE (PROPRIETARY) LIMITED 48 Prospecton Road Isipingo Durban P.O. Box 10433, Ashwood 3605	Tel. +27 31 902 3815 Fax +27 31 902 3826 cdejager@sew.co.za
	Nelspruit	SEW-EURODRIVE (PROPRIETARY) LIMITED 7 Christie Crescent Vintonia P.O.Box 1942 Nelspruit 1200	Tel. +27 13 752-8007 Fax +27 13 752-8008 robermeyer@sew.co.za

South Korea			
Assembly Sales Service	Ansan	SEW-EURODRIVE Korea Co., Ltd. 7, Dangjaengi-ro, Danwon-gu, Ansan-si, Gyeonggi-do, Zip 425-839	Tel. +82 31 492-8051 Fax +82 31 492-8056 http://www.sew-eurodrive.kr master.korea@sew-eurodrive.com
	Busan	SEW-EURODRIVE Korea Co., Ltd. 28, Noksansandan 262-ro 50beon-gil, Gangseo-gu, Busan, Zip 618-820	Tel. +82 51 832-0204 Fax +82 51 832-0230
Assembly Service	Siheung	SEW-EURODRIVE Korea Co., Ltd. 35, Emtibeui 26-ro 58beon-gil, Siheung-si, Gyeonggi-do	http://www.sew-eurodrive.kr

Spain			
Assembly Sales Service	Bilbao	SEW-EURODRIVE ESPAÑA, S.L. Parque Tecnológico, Edificio, 302 48170 Zamudio (Vizcaya)	Tel. +34 94 43184-70 http://www.sew-eurodrive.es sew.spain@sew-eurodrive.es

Sri Lanka			
Sales	Colombo	SM International (Pte) Ltd 254, Galle Raod Colombo 4, Sri Lanka	Tel. +94 1 2584887 Fax +94 1 2582981

Swaziland			
Sales	Manzini	C G Trading Co. (Pty) Ltd Simunye street Matsapha, Manzini	Tel. +268 7602 0790 Fax +268 2 518 5033 charles@cgtrading.co.sz www.cgtradingswaziland.com

Sweden			
Assembly Sales Service	Jönköping	SEW-EURODRIVE AB Gnejsvägen 6-8 553 03 Jönköping Box 3100 S-550 03 Jönköping	Tel. +46 36 34 42 00 Fax +46 36 34 42 80 http://www.sew-eurodrive.se jonkoping@sew.se

Switzerland			
Assembly Sales Service	Basel	Alfred Imhof AG Jurastrasse 10 CH-4142 Münchenstein bei Basel	Tel. +41 61 417 17 17 http://www.imhof-sew.ch info@imhof-sew.ch

Taiwan			
Sales	Taipei	Ting Shou Trading Co., Ltd. 6F-3, No. 267, Sec. 2 Tung Huw S. Road Taipei	Tel. +886 2 27383535 Fax +886 2 27368268 Telex 27 245 sewtwn@ms63.hinet.net http://www.tingshou.com.tw
	Nan Tou	Ting Shou Trading Co., Ltd. No. 55 Kung Yeh N. Road Industrial District Nan Tou 540	Tel. +886 49 255353 Fax +886 49 257878 sewtwn@ms63.hinet.net http://www.tingshou.com.tw

Tanzania			
Sales	Daressalam	SEW-EURODRIVE PTY LIMITED TANZANIA Plot 52, Regent Estate PO Box 106274 Dar Es Salaam	Tel. +255 0 22 277 5780 Fax +255 0 22 277 5788 http://www.sew-eurodrive.co.tz info@sew.co.tz

Thailand			
Assembly Sales Service	Chonburi	SEW-EURODRIVE (Thailand) Ltd. 700/456, Moo.7, Donhuaroh Muang Chonburi 20000	Tel. +66 38 454281 Fax +66 38 454288 sewthailand@sew-eurodrive.com https://www.sew-eurodrive.co.th

Tunisia			
Sales	Tunis	T. M.S. Technic Marketing Service Zone Industrielle Mghira 2 Lot No. 39 2082 Fouchana	Tel. +216 79 40 88 77 Fax +216 79 40 88 66 http://www.tms.com.tn tms@tms.com.tn

Turkey			
Assembly Sales Service	Kocaeli-Gebze	SEW-EURODRIVE Ana Merkez Gebze Organize Sanayi Böl. 400 Sok No. 401 41480 Gebze Kocaeli	Tel. +90 262 9991000 04 Fax +90 262 9991009 http://www.sew-eurodrive.com.tr sew@sew-eurodrive.com.tr

Ukraine			
Assembly Sales Service	Dnipropetrovsk	SEW-EURODRIVE, LLC Robochya str., bld. 23-B, office 409 49008 Dnipro	Tel. +380 56 370 3211 Fax +380 56 372 2078 http://www.sew-eurodrive.ua sew@sew-eurodrive.ua

United Arab Emirates			
Drive Technology Center	Dubai	SEW-EURODRIVE FZE PO Box 263835 Jebel Ali Free Zone – South, P.O. Box Dubai, United Arab Emirates	Tel. +971 (0)4 8806461 Fax +971 (0)4 8806464 info@sew-eurodrive.ae

Uruguay			
Assembly Sales	Montevideo	SEW-EURODRIVE Uruguay, S. A. Jose Serrato 3569 Esqina Corumbe CP 12000 Montevideo	Tel. +598 2 21181-89 Fax +598 2 21181-90 sewuy@sew-eurodrive.com.uy

USA			
Production Sales Service	Southeast Region	SEW-EURODRIVE INC. 1295 Old Spartanburg Highway P.O. Box 518 Lyman, S.C. 29365	Tel. +1 864 439-7537 Fax Sales +1 864 439-7830 Fax Production +1 864 439-9948 Fax Assembly +1 864 439-0566 Fax Confidential/HR +1 864 949-5557 http://www.seweurodrive.com cslyman@seweurodrive.com
Assembly Sales Service	Northeast Region	SEW-EURODRIVE INC. Pureland Ind. Complex 2107 High Hill Road, P.O. Box 481 Bridgeport, New Jersey 08014	Tel. +1 856 467-2277 Fax +1 856 845-3179 csbridgeport@seweurodrive.com
	Midwest Region	SEW-EURODRIVE INC. 2001 West Main Street Troy, Ohio 45373	Tel. +1 937 335-0036 Fax +1 937 332-0038 cstroy@seweurodrive.com
	Southwest Region	SEW-EURODRIVE INC. 202 W. Danieldale Rd. DeSoto, TX 75115	Tel. +1 214 330-4824 Fax +1 214 330-4724 csdallas@seweurodrive.com
	Western Region	SEW-EURODRIVE INC. 30599 San Antonio St. Hayward, CA 94544	Tel. +1 510 487-3560 Fax +1 510 487-6433 cshayward@seweurodrive.com
	Wellford	SEW-EURODRIVE INC. 148/150 Finch Rd. Wellford, S.C. 29385	Tel. +1 864 439-7537 Fax +1 864 661 1167 IGOrders@seweurodrive.com
		SEW-EURODRIVE INC. 220 Finch Rd. Wellford, S.C. 29385-9630	
		Additional addresses for service provided on request!	

Vietnam			
Sales	Ho Chi Minh City	SEW-EURODRIVE PTE. LTD. RO at Hochiminh City Floor 8, KV I, Loyal building, 151-151 Bis Vo Thi Sau street, ward 6, District 3, Ho Chi Minh City, Vietnam	Tel. +84 937 299 700 huytam.phan@sew-eurodrive.com
	Hanoi	MICO LTD Quảng Trị - North Vietnam / All sectors except Construction Materials 8th Floor, Ocean Park Building, 01 Dao Duy Anh St, Ha Noi, Viet Nam	Tel. +84 4 39386666 Fax +84 4 3938 6888 nam_ph@micogroup.com.vn http://www.micogroup.com.vn

Zambia			
Representation: South Africa			
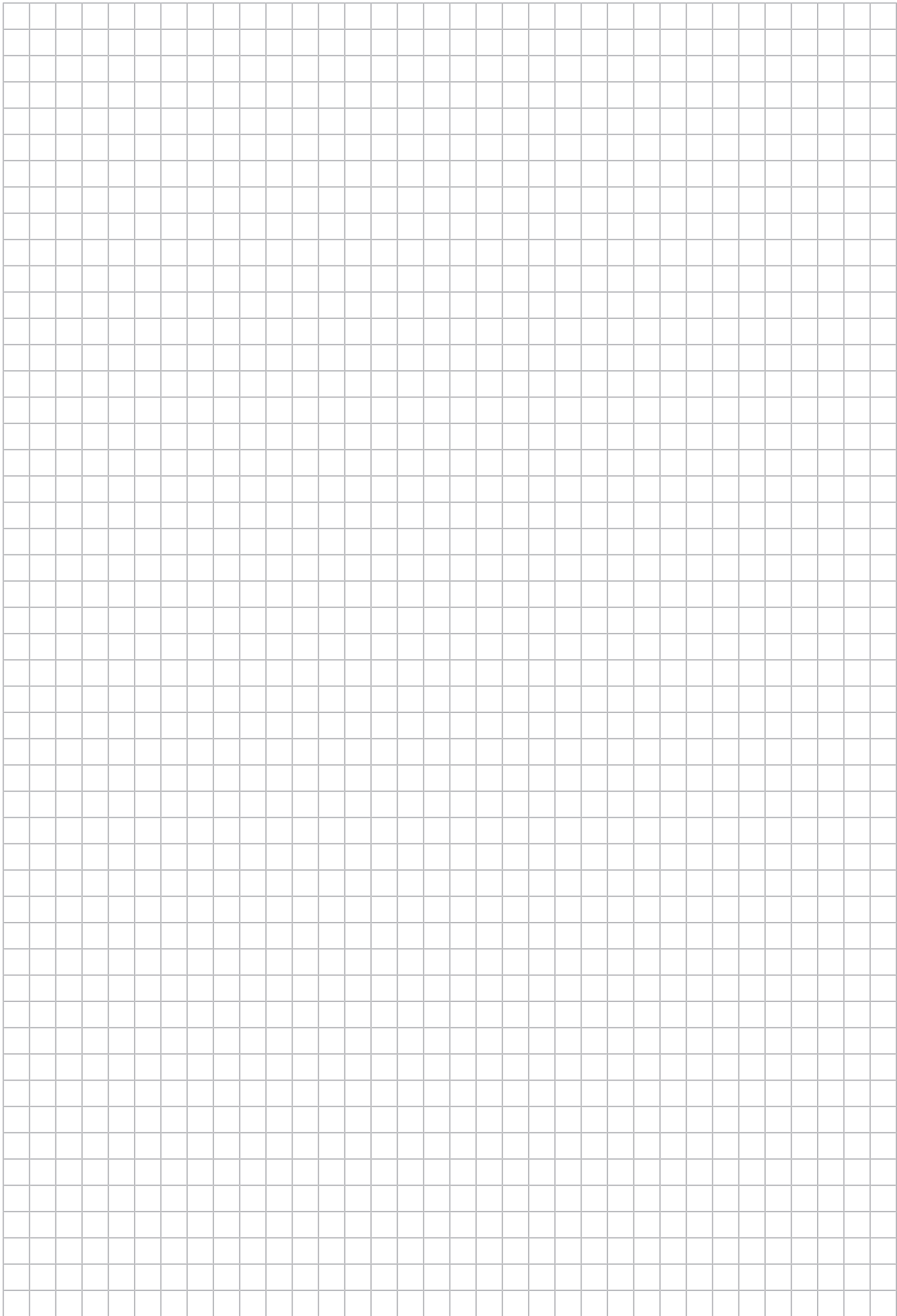
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