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1 General information

1.1 About this documentation

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 with 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 Content of the documentation

The descriptions in this documentation apply to the software and firmware versions applicable at the time of publication. These descriptions might differ if you install later software or firmware versions. In this case, contact SEW-EURODRIVE.

1.3 Structure of the safety notes

1.3.1 Meaning of signal words

The following table shows the grading and meaning of the signal words for safety notes.

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Meaning</th>
<th>Consequences if disregarded</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DANGER</strong></td>
<td>Imminent hazard</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td><strong>WARNING</strong></td>
<td>Possible dangerous situation</td>
<td>Severe or fatal injuries</td>
</tr>
<tr>
<td><strong>CAUTION</strong></td>
<td>Possible dangerous situation</td>
<td>Minor injuries</td>
</tr>
<tr>
<td><strong>NOTICE</strong></td>
<td>Possible damage to property</td>
<td>Damage to the product or its environment</td>
</tr>
<tr>
<td><strong>INFORMATION</strong></td>
<td>Useful information or tip: Simplifies handling of the product.</td>
<td></td>
</tr>
</tbody>
</table>

1.3.2 Structure of section-related safety notes

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.
Meaning of the hazard symbols

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

<table>
<thead>
<tr>
<th>Hazard symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General hazard</td>
</tr>
</tbody>
</table>

1.3.3 Structure of embedded safety notes

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

This is the formal structure of an embedded safety note:

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

1.4 Decimal separator in numerical values

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

Example: 30.5 kg

1.5 Rights to claim under limited warranty

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

The brands and product names in this documentation are trademarks or registered trademarks of their respective titleholders.

1.7 Copyright notice

© 2020 SEW-EURODRIVE. All rights reserved. Unauthorized reproduction, modification, distribution or any other use of the whole or any part of this documentation is strictly prohibited.

1.8 Other applicable documentation

Observe the corresponding documentation for all further components. Always use the latest edition of the documentation and the software.
General information

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.

1.9 Short designation

The following short designations are used in this documentation:

<table>
<thead>
<tr>
<th>Type designation</th>
<th>Short designation</th>
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<tbody>
<tr>
<td>MOVIKIT® OPC UA</td>
<td>Software module</td>
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# Safety notes

## 2.1 Preliminary information

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 Target group

Software specialist

Any work with the software may only be performed by a specialist with suitable training. A specialist in this context is someone who has the following qualifications:

- Appropriate training
- Knowledge of this documentation and other applicable documentation
- SEW-EURODRIVE recommends additional training for products that are operated using this software.

## 2.3 Network security and access protection

A bus system makes it possible to adapt electronic drive technology components to the particulars of the machinery within wide limits. There is a risk that a change of parameters that cannot be detected externally may result in unexpected but not uncontrollable system behavior and may have a negative impact on operational safety, system availability, or data security.

Ensure that unauthorized access is prevented, especially with respect to Ethernet-based networked systems and engineering interfaces.

Use IT-specific safety standards to increase access protection to the ports. For a port overview, refer to the respective technical data of the device in use.

## 2.4 Designated use

MOVIKIT® OPC UA is a software license to enable communication according to OPC UA.

Use the device-independent MOVISUITE® engineering software to start up and configure the axes and to download the complete configuration to a MOVI-C® CONTROLLER.
3 System description

3.1 Module description

The OPC UA server implements communication to the OPC UA specification and in accordance with the “Micro Embedded Device Server” profile, based on the communication stack of the OPC Foundation. The server receives its data via the symbol configuration in the CODESYS development system. MOVIKIT® OPC UA provides a basic solution for integrating components, implemented using the OPC UA communication protocol. This software module provides an OPC UA server on the controller (e.g. UHX65). This server can be used to integrate third-party devices such as HMI panels, augmented reality solutions or tablets for visualization purposes. A requirement for this is that the OPC UA communication protocol is supported and an OPC UA client is available.

3.2 Functions

Overview of functions:
• Providing an OPC UA server
  – Providing all data available and selected on the controller via OPC UA communication protocol.
  – Connecting a third-party component with an OPC UA client to a controller from SEW-EURODRIVE.

The following figure shows an example of using a third-party HMI panel with OPC client.

OPC UA topology:

![OPC UA topology diagram](image-url)
3.3 Advantages

The effort required to switch to an SEW controller is significantly lower. The HMI panel acts as the interface to the system/machine operator. Behind the user interface is usually an extensive code with corresponding programming effort that should not be lost when using a new controller. When switching to a MOVI-C® CONTROLLER, this code can be retained as long as the HMI panel has an OPC UA client.

When using the software module, you do not need to insert variables into a fieldbus telegram (e.g. MODBUS TCP) to transfer them to a higher-level controller and then send them to the HMI panel. Symbolic access is easy to handle, as is the architecture through a direct connection between the MOVI-C® CONTROLLER and the HMI panel.

The software module provides access to all sensor and actuator data provided in the IEC part of the controller, and opens up a wider range of products that can be combined with one another if they use the OPC UA standard.
4 Project planning information

4.1 Hardware

The following hardware is required:

- MOVI-C® CONTROLLER of power class "progressive" (UHX65A)

4.2 Software

The following software is required:

- MOVISUITE® engineering software
- OMH memory card with MOVIRUN® flexible; An OMW memory card (Windows 10 IoT) is not required.

For more detailed information on the hardware requirements of the individual software components, see the documentation for the respective software.

4.3 Licensing

A MOVIKIT® OPC UA performance license is required to operate the software module.

For further information on licensing, refer to the document "MOVI-C® Software Components". You can download the document from the SEW-EURODRIVE website (www.sew-eurodrive.com).
5 Startup

5.1 General information

OPC UA (Open Platform Communications Unified Architecture) according to IEC 62541 is increasingly establishing itself as a communication standard in mechanical and plant engineering. This makes it easier to network devices and exchange information.

Unlike conventional fieldbus connections or visualization interfaces, a device has the ability to provide symbolic information about itself, which means about its properties, variables, process values, and capabilities. The other devices in the network can read and write these objects. In this way, OPC UA meets the requirements of a standardized, service-oriented architecture (SOA). Defined profiles include, for example, process data exchange (data access) and methods (historical access and alarms and conditions).

Conventional protection goals of IT security include among others to ensure that the data is only accessible to authorized participants, that the origin of the data is known, and that the data cannot be manipulated. Part 2 of the OPC UA specification (security model) describes the security mechanisms for this communication. A distinction is made between security settings (security policy and message security mode) to protect the data and authentication settings as a requirement on the clients and servers involved in the communication.

5.2 The OPC UA server of the UHX65

The OPC UA server (available from firmware 04.00 of the UHX65) implements the "Micro Embedded Device Server" profile and is an additional software module on the real-time part of the UHX65 (OMH card).

The software module is a performance license and can be obtained under the type key SMK1501-060.
If the property "Support OPC UA features" is active in the symbol configuration in the IEC editor, the software module provides the selected data for suitable OPC UA clients. The symbol configuration is automatically created when generating the IEC project.

The following modes are supported:

- Security Policy = None
- Message Security Mode = None

The binary protocol is used for communication. In the connection setup, it is typically identified as `opc.tcp://<Server_IP>:4840`. The IP address of the server corresponds to the IP address selected for UHX65A. Port 4840 is registered with IANA and reserved for OPC UA.

If the communication partner expects a symbolic host name, this can be set on the CF card by means of an entry in the `SewPlcIp.xml` file in the `System` folder.

[1] Menu item [Support OPC UA functions]

Symbolic host name

[1] Symbolic host name
5.3 Testing the communication

You can test the communication with the OPC UA server using the open source software UaExpert from Unified Automation. You can download UaExpert from the Internet and install it on your computer.

To perform a simple test, do the following:

✓ You have defined process data values for communication via OPC UA in the symbol configuration of the IEC program.
✓ You have loaded the IEC program onto the MOVI-C® CONTROLLER.
✓ You have installed the UaExpert software.

1. Start UaExpert.
   - The user interface is displayed:

2. Click on the [Add Server] button.
   - The "Add Server" window opens.

3. Open the "Advanced" tab.

4. In the "Endpoint Url" edit box, enter the protocol, IP address and port of the OPC UA server.

5. Select "None" from the "Security Policy" drop-down list.

6. Select "None" from the "Message Security Mode" drop-down list.

7. Click [OK].
8. To establish a connection to the OPC UA server, click on the menu item [Server]/[Connect].

⇒ The OPC UA server is shown in the "Project" window.

9. Expand the tree structure.
10. Drag and drop the variables provided by the OPC UA server into the "Data Access View" window.