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1 Foreword

1.1 Notes on the documentation

This description is only intended for the use of trained specialists in control and automation engineering who are familiar with applicable national standards.
It is essential that the documentation and the following notes and explanations are followed when installing and commissioning the components.
It is the duty of the technical personnel to use the documentation published at the respective time of each installation and commissioning.

The responsible staff must ensure that the application or use of the products described satisfy all the requirements for safety, including all the relevant laws, regulations, guidelines and standards.

Disclaimer

The documentation has been prepared with care. The products described are, however, constantly under development.
We reserve the right to revise and change the documentation at any time and without prior announcement.
No claims for the modification of products that have already been supplied may be made on the basis of the data, diagrams and descriptions in this documentation.

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1.2 Safety instructions

Safety regulations

Please note the following safety instructions and explanations!
Product-specific safety instructions can be found on following pages or in the areas mounting, wiring, commissioning etc.

Exclusion of liability

All the components are supplied in particular hardware and software configurations appropriate for the application. Modifications to hardware or software configurations other than those described in the documentation are not permitted, and nullify the liability of Beckhoff Automation GmbH & Co. KG.

Personnel qualification

This description is only intended for trained specialists in control, automation and drive engineering who are familiar with the applicable national standards.

Description of symbols

In this documentation the following symbols are used with an accompanying safety instruction or note. The safety instructions must be read carefully and followed without fail!

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>! DANGER !</td>
<td>Serious risk of injury!</td>
</tr>
<tr>
<td>! WARNING !</td>
<td>Risk of injury!</td>
</tr>
<tr>
<td>! CAUTION !</td>
<td>Personal injuries!</td>
</tr>
<tr>
<td>! NOTE !</td>
<td>Damage to the environment or devices</td>
</tr>
</tbody>
</table>

Tip or pointer

This symbol indicates information that contributes to better understanding.
The TF5400 Advanced Motion Pack Documentation is subdivided into:

- TF511x TwinCAT 3 Kinematic Transformation,
- TF5410 TwinCAT 3 Motion Collision Avoidance,
- TF5420 TwinCAT 3 Motion Pick-and-Place,
- TF5430 TwinCAT 3 Planar Motion.
3 Installation

The installation package TF5400 TC3 Advanced Motion Pack contains the necessary components for the TwinCAT functions TF5110 - TF5113 TC3 Kinematic Transformation, TF5410 TC3 Motion Collision Avoidance, TF5420 TC3 Motion Pick-and-Place and TF5430 TC3 Planar Motion.

Make sure that you install the Advanced Motion Pack both on the development computer and on the target system.

Installation requirements

The installation of TF5400 TC3 Advanced Motion Pack requires TwinCAT 3.

Target system

Windows XP or Windows 7/8/10.

Function level for TF5110-TF5113

The function TF5110 - TF5113 TC3 Kinematic Transformation is subdivided into four different levels, depending on the number of transformation axes. A higher level includes all sublevels.

A separate installation file is required for Level 4, which you can obtain from Support on request.

Level 1: Supports the static transformation. This includes a translation and rotation of the coordinate system.

Level 2: Supports Level 1 and simple (mainly 2D) kinematic transformations such as H-Bot and 2D parallel kinematics.

Level 3: Supports Level 2 and more complex (3D, 4D) kinematic transformations such as delta robots.

Level 4: Supports Level 3 and complex kinematic transformations (up to 6D).