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1 Introduction

1.1 Purpose of the User Guide

This User Guide provides:

- Step-by-step instructions on how to install the TwinCAT® Danfoss DriveManager Plug-in.
- Description of the DriveManager user interface.
- Use case examples of working with the DriveManager.

The user guide is intended for use by qualified personnel.

1.2 Trademarks

VLT® is a registered trademark for Danfoss A/S.

1.3 Qualified Personnel

Correct and reliable transport, storage, installation, operation, and maintenance are required for the trouble-free and safe operation of the drive. Only qualified personnel are allowed to install and operate this equipment.

Qualified personnel are defined as trained staff, who are authorized to install, commission, and maintain equipment, systems, and circuits in accordance with pertinent laws and regulations. Also, the qualified personnel must be familiar with the instructions and safety measures described in this manual.

1.4 Additional Resources

Resources available for the TwinCAT® software and for the drives in which the software can be installed:

- The Operating Guide of the relevant drive provides the necessary information for getting the drive up and running.
- The Design Guide of the relevant drive provides detailed information about capabilities and functionality to design motor control systems.
- The Programming Guide of the relevant drive provides greater detail on working with parameters.
- The Function Blocks with TwinCAT® User Guide provides instructions on how to integrate a Danfoss drive into a Beckhoff TwinCAT® 3 system.

1.5 Document and TwinCAT® Version

This User Guide is regularly reviewed and updated. All suggestions for improvement are welcome.

The original language of this manual is English.

Table 1: Document and TwinCAT® Version

<table>
<thead>
<tr>
<th>Revision date</th>
<th>Remarks</th>
<th>TwinCAT® version</th>
<th>Danfoss DriveManager version</th>
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<tbody>
<tr>
<td>2019.10</td>
<td>First release</td>
<td>3.1</td>
<td>1.15</td>
</tr>
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1.6 Product Overview

1.6.1 Purpose of the Plug-in

The TwinCAT Danfoss Drive Manager Plug-in simplifies the complete commissioning of Danfoss drives without using VLT® Motion Control Tool MCT 10.

1.6.2 Preconditions

- Operating system: Windows 7 or later.
- TwinCAT 3.1 must be installed in the default folder C:\TwinCAT.

**NOTICE**

It is not necessary to install Danfoss ESI files separately as they are installed with the plug-in.

1.6.3 Supported Drive Series

The TwinCAT® Danfoss DriveManager Plug-in supports the following drive series:
- VLT® AutomationDrive FC 301
- VLT® AutomationDrive FC 302
- VLT® Decentral Drive FCD 302

1.6.4 Limitations

The limitations listed apply to TwinCAT® Danfoss DriveManager Plug-in version 1.15.

The plug-in does not support the following:
- Certain drive-specific data types:
  - BYTE_STRING
  - TIMEOFDAY
  - TIME_DIFFERENCE
  - NORM_VALUE_N2
  - NORM_VALUE_N4
  - DATE
  - TIMEOFDAY_WITHOUT_DATE
  - TIME_DIFFERENCE_WITH_DATE_INDICATION
  - BYTE
  - WORD
  - DOUBLE_WORD
- Parameters in parameter group 19-** User-defined Parameters.
- Running automatic motor adaptation (AMA).
- Parameters in parameter group 12-2* Process Data.
- Configuring more than 1 out of 4 drive setups at a time via the plug-in.
2 Installation and Deinstallation

2.1 Installing the TwinCAT® Danfoss DriveManager Plug-in

Context:
Follow the on-screen instructions for installing the plug-in.
Procedure

1. Double-click the TwinCAT Danfoss DriveManager Plugin file to start the Installshield Wizard.

![Installshield Wizard]

2. Click Next.

![Ready to Install the Program]

3. Click Install.
4. Click Finish.

2.2 Deinstallation, TwinCAT® Danfoss DriveManager Plug-in and VLT® Motion Control Tool MCT 10

If both the TwinCAT® Danfoss DriveManager Plug-in and the VLT® Motion Control Tool MCT 10 are installed, they share a database. Uninstalling either program affects the operation of the other. After uninstalling 1 of the programs, reinstall the other to continue normal operation.
3 User Interface

3.1 Description of the TwinCAT® Danfoss DriveManager User Interface

The interface is split into 3 views:

- The left view contains parameter groups and subgroups.
- The middle view contains the following parameter information:
  - ID (parameter number)
  - Name
  - Value
  - Default value
  - Unit
  - Data type
  - Index - start-up list index
- The right view contains parameter values, which can be modified, minimum and maximum values, and the description.

This parameter influences the dynamic performance of the PM machine. Low damping gain results in high dynamic. The dynamic performance is limited by the machine data and load type. The damping gain is too high or too low the control will become unstable.
4 Using the TwinCAT® Danfoss DriveManager Plug-in

4.1 Scanning Devices

Context:
This procedure is a use case for scanning devices.

Prerequisites:
Ensure that the hardware setup is correct.
Procedure

1. Open TwinCAT®.
2. Create a new TwinCAT project.
3. On the TwinCAT Project tab in the middle view, click Choose Target.
4. Select the target system and click OK.
If the active solution platform is not TwinCAT RT (x64), it has to be changed.

5. Click Yes to change the solution platform.

6. Select the tab TwinCAT.

7. Select Reset TwinCAT (Config Mode).
8. Click OK.
9. In the Solution Explorer window, right-click Devices and select Scan.
10. Click OK.

11. Click OK.

12. Click Yes.

If the network was set up correctly, all drives are found and identified, and the TwinCAT® Danfoss DriveManager Plug-in is ready to be used.
If the software version is not supported (for example, if it is a new software version), the project drive can be created manually.

If the software version is not supported, contact Danfoss help desk to find the most compatible software version from the list of supported firmware, or to receive software support.
4.2 Modifying the Startup List with TwinCAT® Danfoss DriveManager Plug-in

The startup list may already contain values that were configured by the system manager based on the ESI specifications. More application-specific entries can be created.

To edit the start-up list parameters, use either the Startup tab or the Drive Manager (V1.15) tab.

The DriveManager Plug-in makes easy to work with parameters. The parameters are easily found, selections can be made from dropdown lists, and values can be entered directly.
Example:

Illustration 17: Parameter Selected in Startup List

Illustration 18: Option Selected for Parameter in DriveManager

Example:

Illustration 19: Parameter Selected in Startup List
4.2.1 Grid Colors

In the DriveManager view, the values of the parameters are color-coded depending on whether they are default or non-default values, or if they have been added to the startup list with or without a default value.

Table 2: Grid Color Legend

<table>
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<th>Color</th>
<th>Description</th>
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<tr>
<td>White</td>
<td>The parameter has the default value and is not in the startup list.</td>
</tr>
<tr>
<td>Golden (light gray in screenshot)</td>
<td>If the parameter value is different from the default value, this parameter value and all other parameters depending on that one are added to the startup list and marked with a golden color.</td>
</tr>
<tr>
<td>Orange (dark gray in screenshot)</td>
<td>By right-clicking, the parameter is added to the startup list whether it has a default value or not.</td>
</tr>
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4.2.2 Removing a Parameter from the Startup List

Context:

When removing a parameter, the context menu depends on whether the parameter value is default or not. If the parameter value is not default, the parameter is reset to default before it is removed from the startup list.
Procedure
1. Right-click the parameter to be removed from the startup list.
2. Click the context menu.

Illustration 22: Example of Parameter with Default Value

Illustration 23: Example of Parameter with Non-default Value

4.2.3 Adding a Default Value to the Startup List

Context:
To initialize drives, the parameters must have default values.

Procedure
1. Right-click the parameter to be added to the startup list.
2. Select the parameter appearing in the context menu.

4.2.4 Activating the Configuration

Context:
To apply the startup list to the PLC, activate the configuration as described in this procedure.

NOTICE
The startup list must be applied to the drive RAM. After a power cycle, reapply the list to the RAM.

NOTICE
To ensure that the correct values are applied to the startup list, initialize the drive before using it.
Procedure

1. Select the TwinCAT tab.
2. Select Activate Configuration.

3. Click OK.

4. Click OK.
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