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Communication between HMI and Frequency Converter

Basic Panel, Comfort Panel, Runtime Advanced, SINAMICS G120



<https://support.industry.siemens.com/cs/ww/en/view/109481157>

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Table of Contents

	Warranty and Liability	2
1	Task.....	4
	1.1 Overview.....	4
2	Solution.....	5
	2.1 Setup	5
	2.2 Hardware and software components	6
	2.2.1 Validity	6
	2.2.2 Components used	6
3	Basics	7
	3.1 Access to the converter parameters	7
4	Mode of Operation	8
	4.1 Creating error messages.....	8
	4.2 Configuring the frequency converter	8
5	Configuration and settings of the HMI operator panel	9
	5.1 Setting the IP address at the panel	9
	5.2 Creating a connection in the HMI project	11
	5.3 Creating the alarm view.....	13
	5.4 SINAMICS XML Parser	14
	5.5 Configuring message text.....	15
	5.6 Configuring parameter access in the HMI.....	20
6	Configuration and settings of the drive	21
	6.1 Adding the frequency converter to the project	21
	6.2 Setting the Ethernet address.....	22
	6.3 Commissioning wizard	23
	6.4 Parameterizing converter settings.....	28
7	Operating the Application	30
	7.1 Commissioning the example project	30
	7.2 Operating the example project	30
8	Further Notes, Tips & Tricks, etc.	32
9	Alternative	33
10	Links & Literature	34
11	History.....	34

1 Task

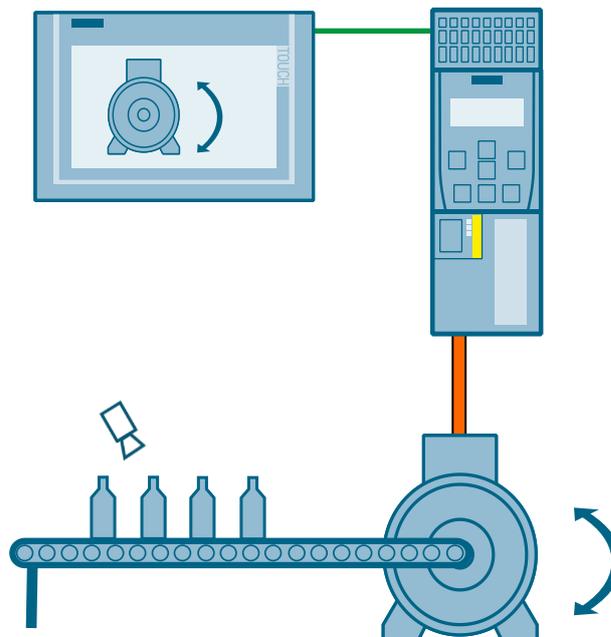
1.1 Overview

Description of the automation task

This application example shows how the communication between a SIMATIC HMI panel and a SINAMICS G120 can be established without a SIMATIC S7 controller. The following example describes how you can switch the converter on and off via a SIMATIC panel and how you can preset a setpoint speed value and display the actual speed value on the panel. Warning and error messages are displayed via the alarm view.

Overview of the automation task

The figure below provides an overview of the automation task.

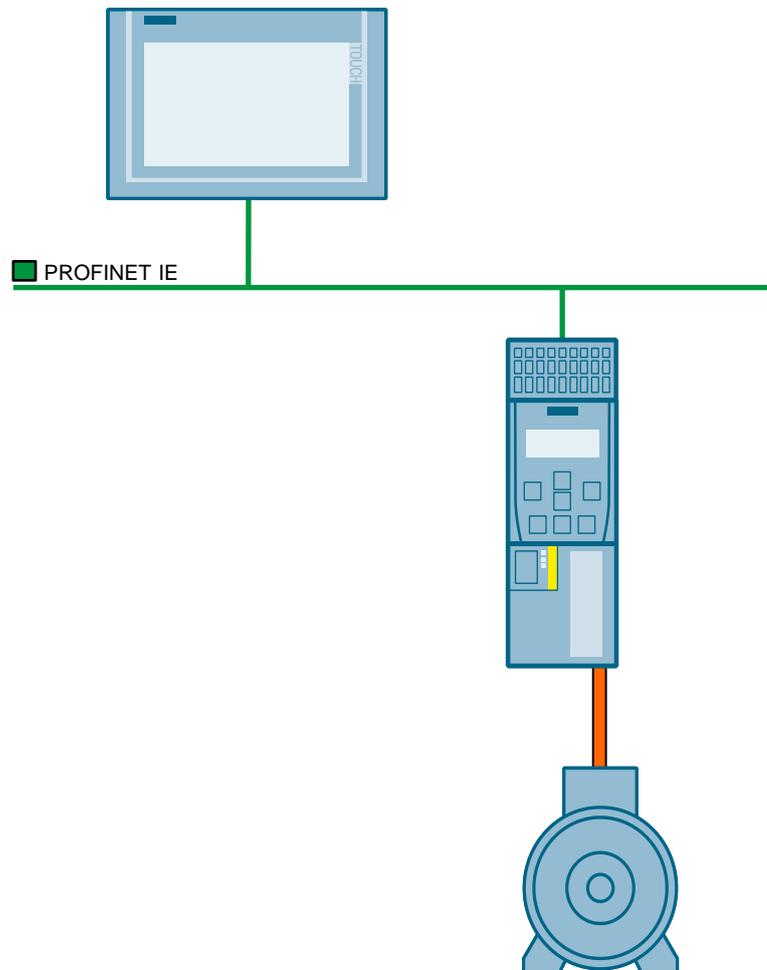


2 Solution

2.1 Setup

Schematic layout

Figure 2-1



Example

You want to achieve the following via the SIMATIC panel:

- Display warning and error messages via the alarm view
- Switch the converter on and off
- Specify a setpoint value
- Display the actual value and the status

Assumed knowledge

For the implementation of the solution described in this document, basic knowledge in the following topics is assumed:

- Automation technology
- Commissioning of the SINAMICS G120 frequency converter

2.2 Hardware and software components**2.2.1 Validity**

This application is valid for

- TIA Portal V13 SP1 Update 1

2.2.2 Components used

The application was created with the following components:

Hardware components

Table 2-1

Component	Qty	Article number	Note
SINAMICS Control Unit CU240E-2 PN-F	1	6SL3244-0BB13-1FA0	Firmware >= V4.7
SINAMICS PM240	1	6SL3224-0BE13-7UA0	
TP900 Comfort	1	6AV2 124-0JC01-0AX0	As an alternative, you can also use other Basic Panels, Comfort Panels or Advanced PC Stations.
Low-voltage motor	1	1LA7060-4AB10-Z	

Software components

Table 2-2

Component	Qty	Article number	Note
SINAMICS Startdrive V13	1	6SL3072-4DA02-0XG0	
WinCC Runtime Advanced V13	1	6AV2104-....3-0	

Example files and projects

The following list includes all files and projects that are used in this example.

Table 2-3

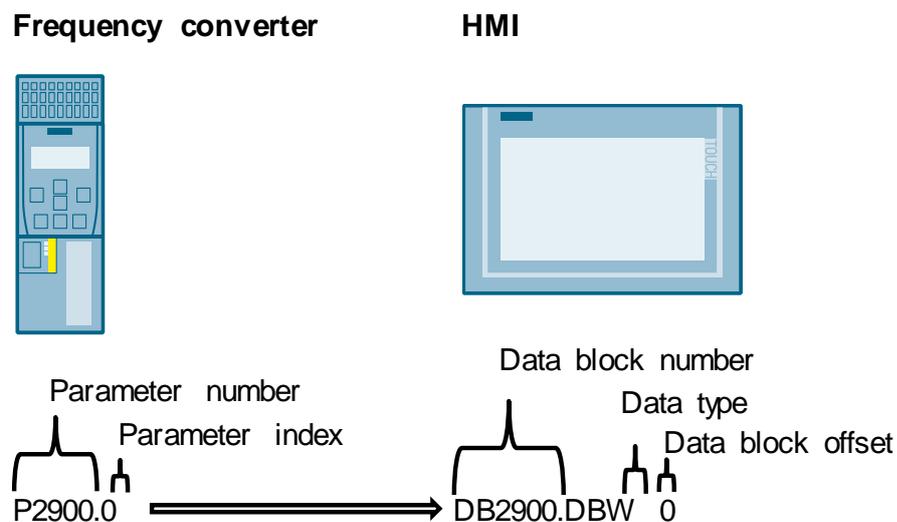
Component	Note
109481157_HMI_FU_CODE_v13.zip	This zip file contains the WinCC project.
109481157_HMI_FU_DOKU_v13_e.pdf	This document.

3 Basics

3.1 Access to the converter parameters

The parameters in the SINAMICS drive are accessed using HMI tags via the S7 communication. In general, all parameters can be accessed. It depends on the operating state of the SINAMICS drive and if it is an observable parameter (rxxxx) or a settable parameter (pxxxx) whether a parameter can be written via HMI direct access. Figure 3.1 shows you how to access a converter parameter in the HMI.

Figure 3-1



The following assignment is applied:

- Parameter number = data block number
- Parameter index = data block offset
- Data type (byte type tags are shown as DBB, Integers as DBW and DoubleInteger or Real type tags are shown as DBD).

Note

It is important that the data type of the frequency converter tag matches the data type of the HMI parameter.

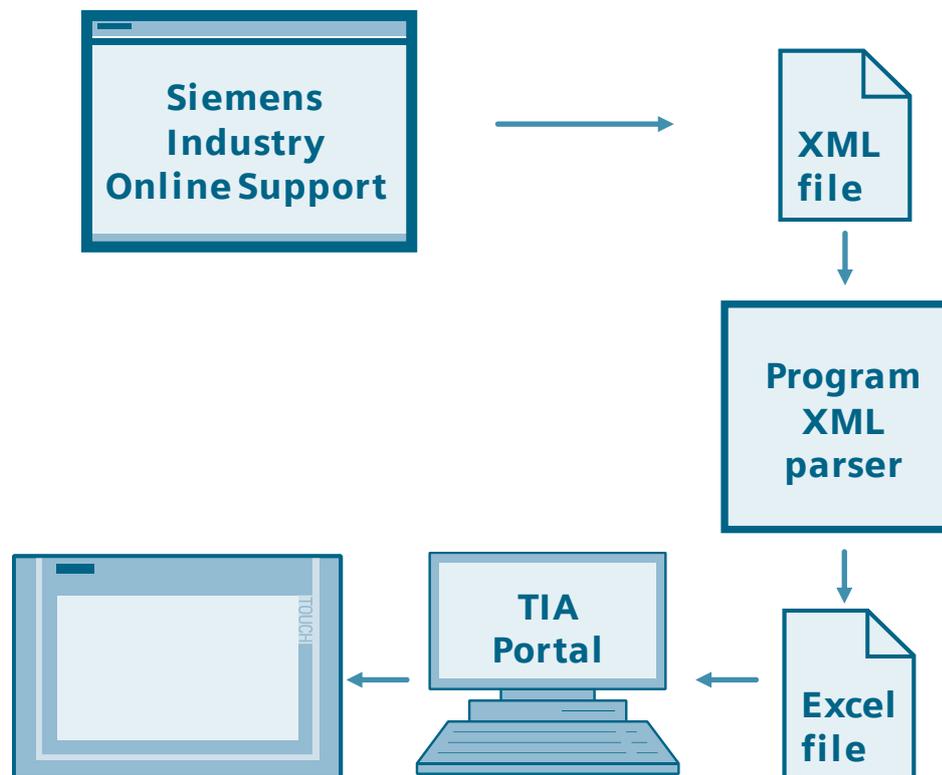
Comprehensive examples on directly accessing converter parameters via HMI can be found in the application example: [97550333](#)

4 Mode of Operation

4.1 Creating error messages

An XML file containing error and warning messages for your respective drive component and firmware in the [Industry Online Support](#). It has to be downloaded from the internet. With the tool [XML Parser](#), the XML file can be converted in an Excel format. This can be inserted into text list of your TIA Portal project. The error and warning message is linked with the text list using an analog message of the HMI. It is displayed in the HMI via an alarm view.

Figure 4-1



4.2 Configuring the frequency converter

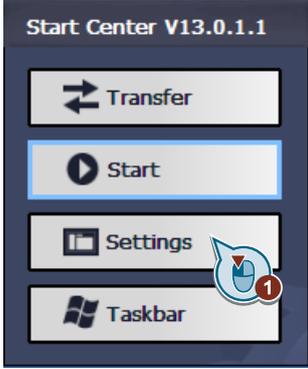
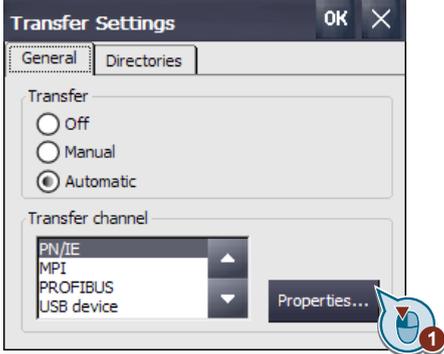
The frequency converter is configured using TIA Portal (see chapter [6.4](#)). To do this, the converter needs to be enabled to accept commands from the panel.

5 Configuration and settings of the HMI operator panel

5.1 Setting the IP address at the panel

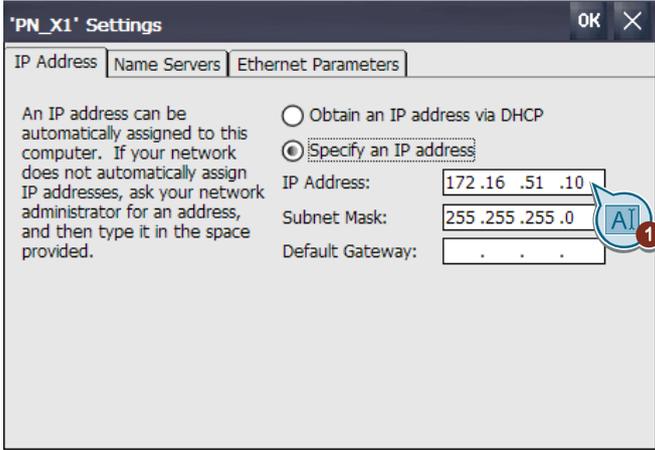
An Ethernet address has to be configured on the TP900 Comfort. This is done via the “Control Panel”. There, under “Transfer”, you can configure the connection type and its settings.

Table 5-1

No.	Action
1.	Start the TP900 Comfort by switching on the power supply.
2.	Open the “Control Panel” with the “Settings” button. 
3.	Select the “Transfer” option by double-clicking the “Transfer” icon. 
4.	Select the Profinet box and click on “Properties ...” to open the settings. 
5.	Double-click on “PN_X1” to open the Ethernet settings. 

5 Configuration and settings of the HMI operator panel

5.1 Setting the IP address at the panel

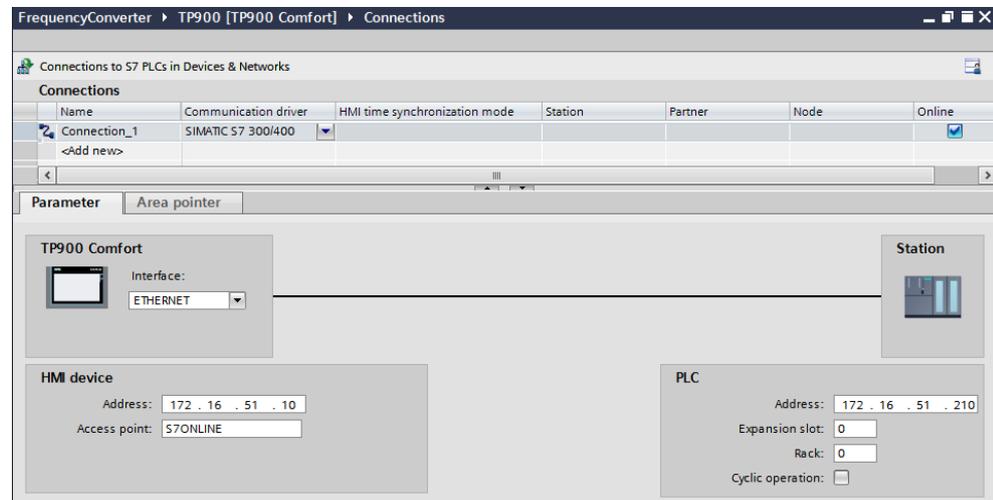
No.	Action
6.	<p>Enter the IP address. Please make sure the Ethernet addresses of the panel and the converter are in the same subnet.</p>  <p>The screenshot shows a dialog box titled "'PN_X1' Settings" with 'OK' and 'X' buttons. It has three tabs: 'IP Address', 'Name Servers', and 'Ethernet Parameters'. The 'IP Address' tab is active. On the left, there is a text block: "An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space provided." On the right, there are two radio buttons: "Obtain an IP address via DHCP" (unselected) and "Specify an IP address" (selected). Below these are three input fields: "IP Address:" with the value "172.16.51.10", "Subnet Mask:" with the value "255.255.255.0", and "Default Gateway:" with the value ".". A blue callout bubble with the letter 'A' and a red circle with the number '1' points to the IP Address field.</p>
7.	Click on OK to confirm all settings.

5.2 Creating a connection in the HMI project

You need to configure a SIMATIC S7 300/400 connection in the SIMATIC WinCC (TIA Portal). The frequency converter is recognized as such a station. Take note of the operator panel address, the network configuration and the controller/frequency converter address.

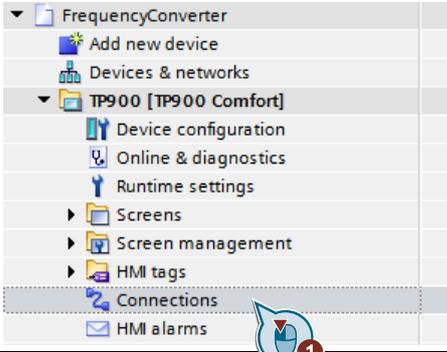
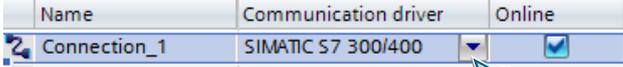
 DANGER	<p>Acyclic communication must not be the only means of controlling the panel.</p> <p>On and off commands must also be realized with terminals or cyclic communication!</p>
--	--

Figure 5-1



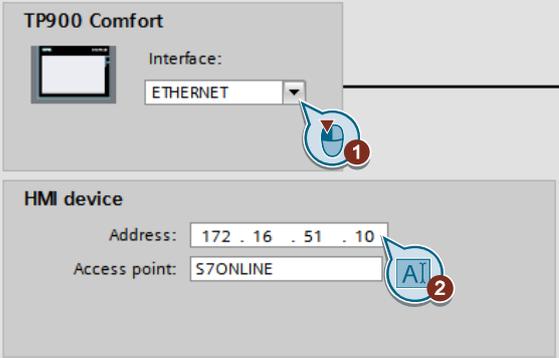
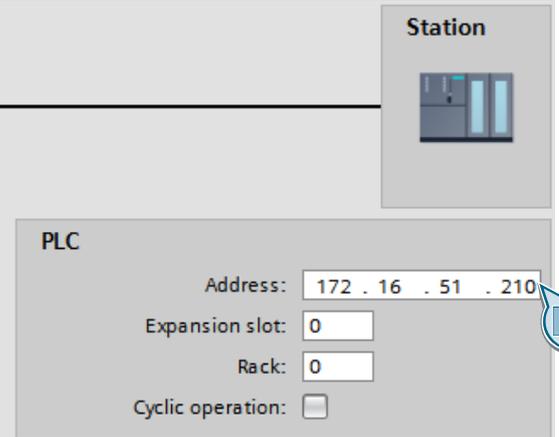
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Table 5-2

No	Action
1.	Create a Comfort Panel as a device.
2.	<p>Double-click on “Connections” to open the connection settings.</p> 
3.	<p>Create a new “SIMATIC S7 300/400” connection. Set the value in the “Online” column to “On”.</p> 

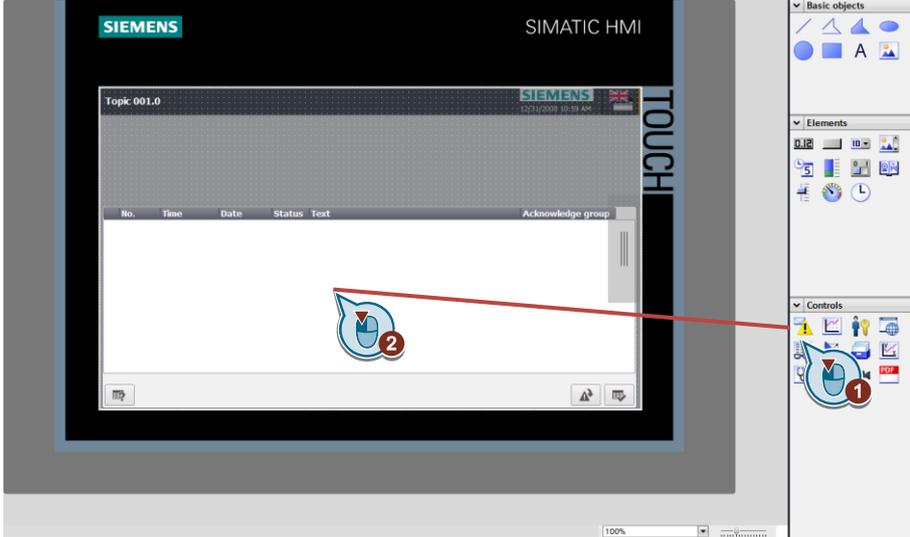
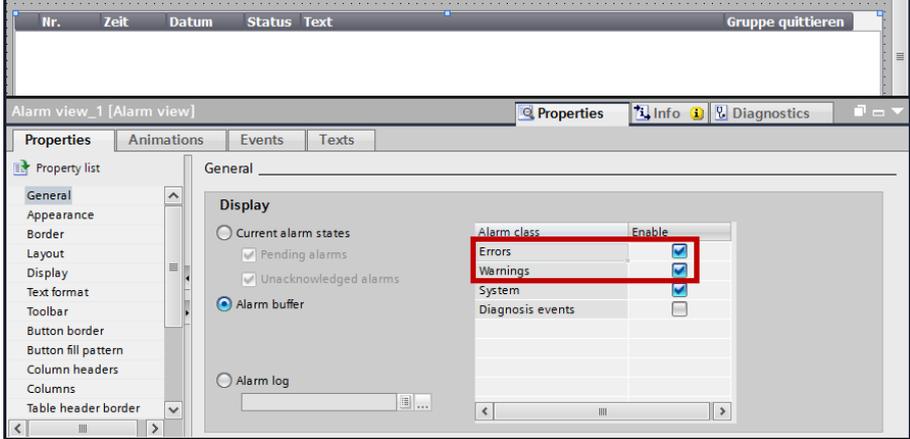
5 Configuration and settings of the HMI operator panel

5.2 Creating a connection in the HMI project

No	Action
4.	<p>Configure the connection settings for the operator panel under "Parameters". Set the interface to "ETHERNET". Set the Ethernet address. The address must be identical to the address you have set in your operator panel. The communication driver is "S7ONLINE".</p> 
5.	<p>Now configure the parameters for the converter. The address must be identical to the address you assign in the SINAMICS (see chapter 6.2). Slot and module rack are set to "0". De-select cyclic operation.</p> 

5.3 Creating the alarm view

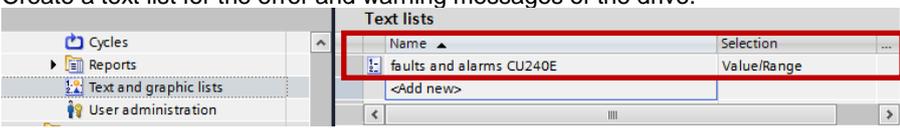
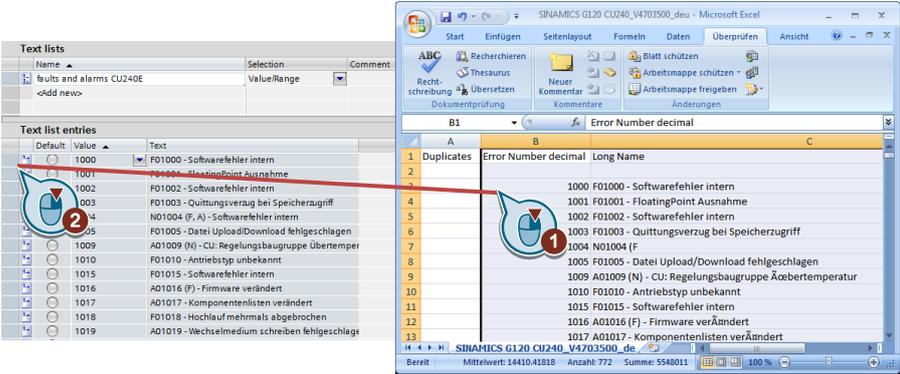
Table 5-3

No	Action												
1.	<p>Insert an “Alarm view” in the desired screen to be able to display messages on the HMI. To insert an “Alarm view”, drag the alarm display from the task card “Tools” in the “Controls” pallet and drop it into the screen.</p> 												
2.	<p>You can adjust the alarm view as required. Take note that under “Properties → General”, the boxes behind Errors and Warnings are ticked.</p>  <table border="1" data-bbox="925 1344 1181 1478"> <thead> <tr> <th>Alarm class</th> <th>Enable</th> </tr> </thead> <tbody> <tr> <td>Errors</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>Warnings</td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>System</td> <td><input type="checkbox"/></td> </tr> <tr> <td>Diagnosis events</td> <td><input type="checkbox"/></td> </tr> </tbody> </table>	Alarm class	Enable	Errors	<input checked="" type="checkbox"/>	Warnings	<input checked="" type="checkbox"/>	System	<input type="checkbox"/>	Diagnosis events	<input type="checkbox"/>		
Alarm class	Enable												
Errors	<input checked="" type="checkbox"/>												
Warnings	<input checked="" type="checkbox"/>												
System	<input type="checkbox"/>												
Diagnosis events	<input type="checkbox"/>												
3.	<p>Open the tag table and configure it. Set the configured connection from chapter 5.2. Change the data type to Int. The warning message parameter has address DB 2110 DBW 0 assigned. The error message parameter has address DB 947 DBW 0 assigned.</p> <table border="1" data-bbox="459 1713 1369 1792"> <thead> <tr> <th>Name</th> <th>Data type</th> <th>Connection</th> <th>Address</th> </tr> </thead> <tbody> <tr> <td>warning number</td> <td>Int</td> <td>Connection_1</td> <td>%DB2110.DBW0</td> </tr> <tr> <td>fault number</td> <td>Int</td> <td>Connection_1</td> <td>%DB947.DBW0</td> </tr> </tbody> </table>	Name	Data type	Connection	Address	warning number	Int	Connection_1	%DB2110.DBW0	fault number	Int	Connection_1	%DB947.DBW0
Name	Data type	Connection	Address										
warning number	Int	Connection_1	%DB2110.DBW0										
fault number	Int	Connection_1	%DB947.DBW0										

5.4 SINAMICS XML Parser

An XML file containing error and warning messages for your respective drive component and firmware in the [Industry Online Support](#). For the SINAMICS Control Unit CU240E-2 PN-F firmware version 4.7 described in the application example, the error and warning messages can be found under entry ID: [92554110](#). With the tool XML Parser, the XML file can be converted in an Excel format. The following pages show how to transfer the errors and warnings to Excel format for a CU240E-2 PN-F.

Table 5-4

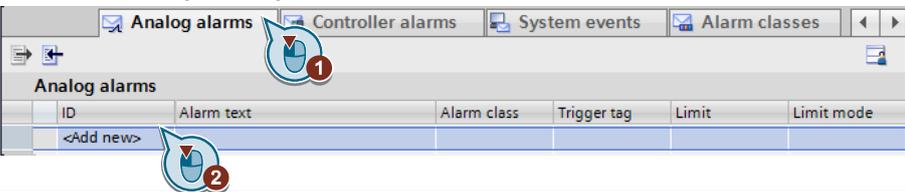
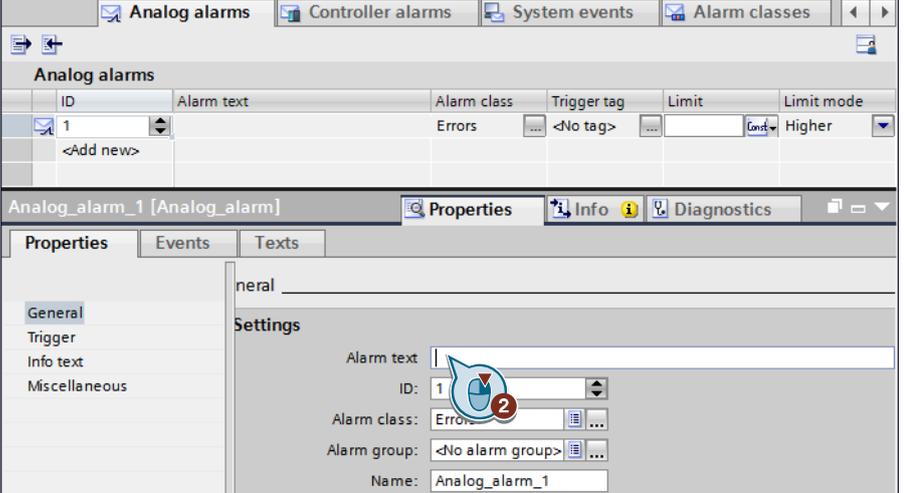
No.	Action
1.	Download the error and warning messages for your SINAMICS Control Unit with the respective firmware version from the Industry Online Support to your computer.
2.	Create an Excel table with error and warning messages using the XML parser. For further information on the XML parser, refer to the following entry ID: 77467239
3.	<p>Create a text list for the error and warning messages of the drive.</p> 
4.	<p>Add the error and warning messages from the Excel file to the newly created text list.</p> 

5.5 Configuring message text

It is possible to display a process value or an entry from a text list in an alarm view when an analog message arrives.

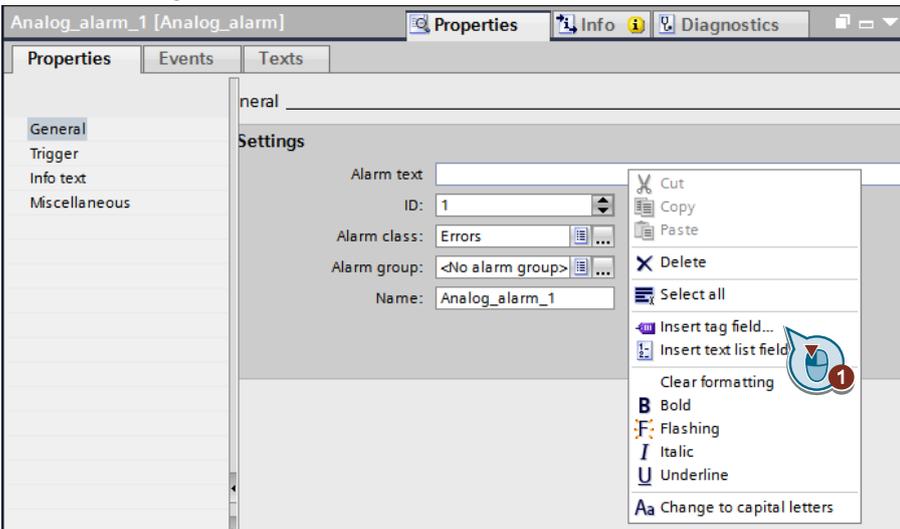
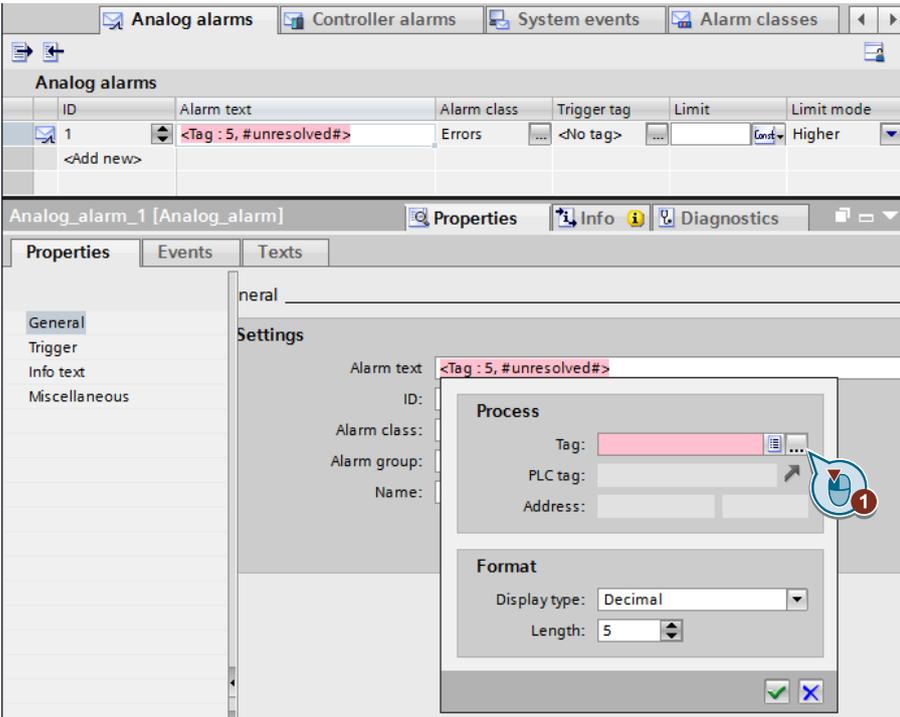
For further information on how to configure messages and alarms in WinCC (TIA Portal), refer to entry ID: [62121503](#)

Table 5-5

No.	Action
1.	Open the HMI messages in the project navigation. 
2.	Open the tab "Analog alarms". Add a new analog message. 
3.	In the inspector window, please open the tab "Properties > Properties > General".  <p>Click the right mouse button in the entry box "Alarm text" or place the cursor in the alarm text and click on the right mouse button. Then the context menu will open up.</p>

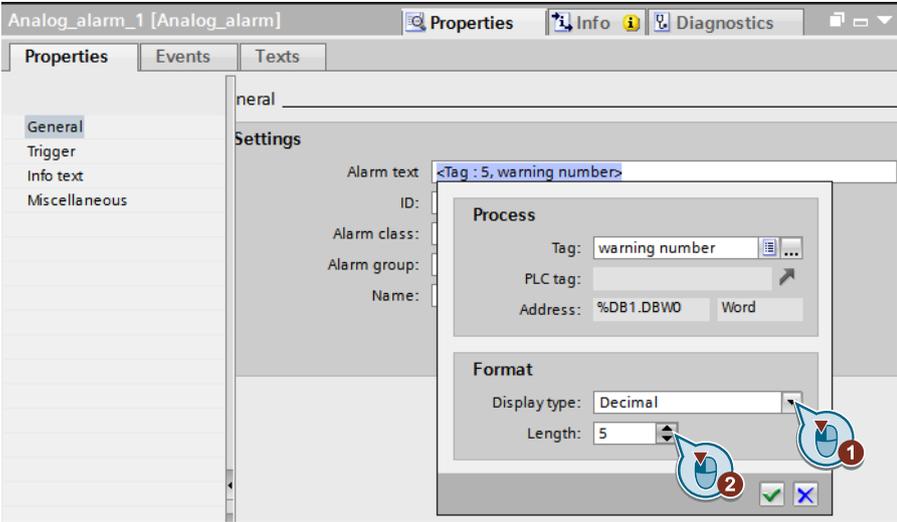
5 Configuration and settings of the HMI operator panel

5.5 Configuring message text

No.	Action
4.	<p>Select "Insert tag field..." in the context menu.</p>  <p>A dialog for the further configuration of the dynamic parameter (tag) opens up. Please continue with the section on the chosen parameter type.</p>
5.	<p>Adding dynamic parameters (tags) Select the existing "warning number" tag you have created in chapter 5.3. The tag is displayed within the alarm text.</p>  <p>Note If you use a process tag, the acquisition mode for this tag must be set to "cyclic continuous".</p>

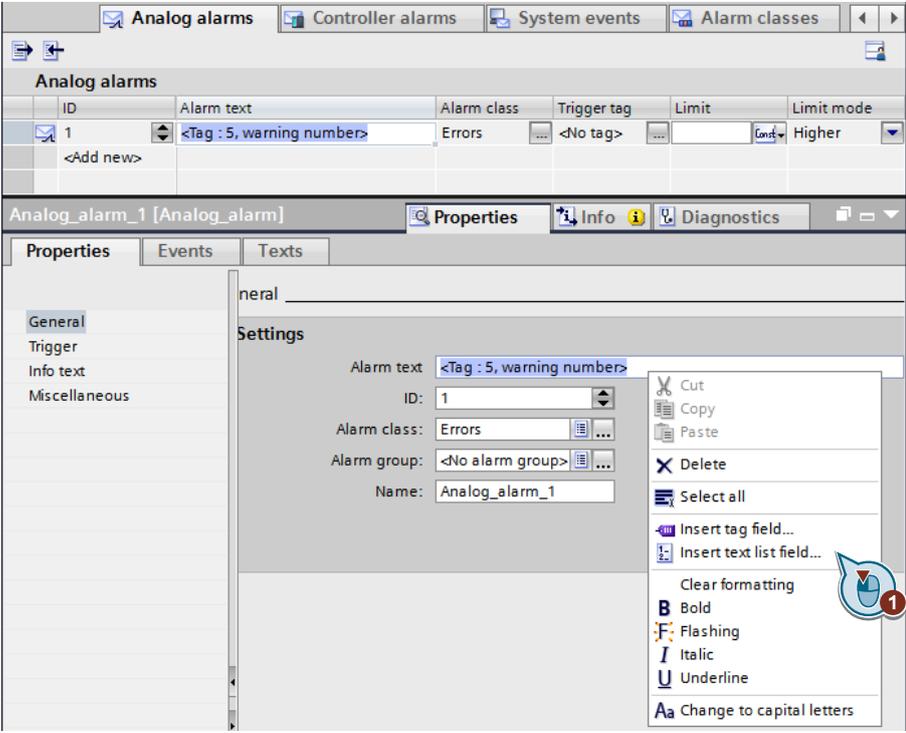
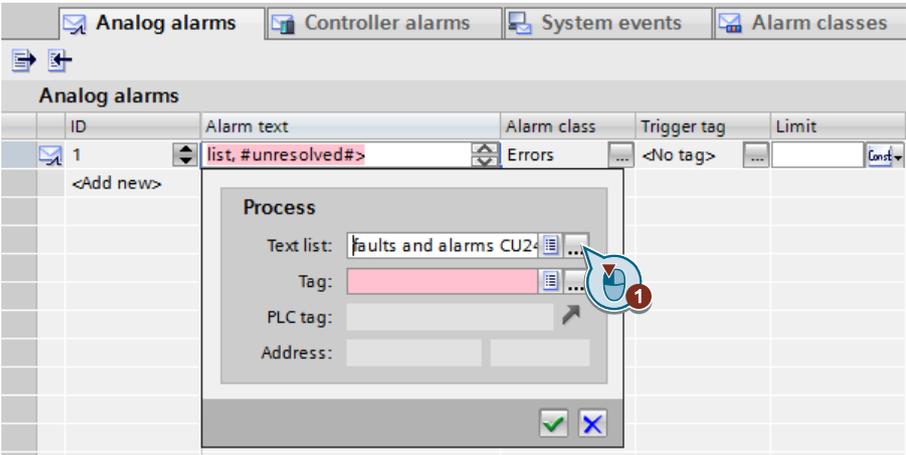
5 Configuration and settings of the HMI operator panel

5.5 Configuring message text

No.	Action
6.	<p>Open the drop-down menu under “Format – Display type” and select the display format for the process tag.</p> <p>Note The display format must be supported by the data type of the process tag.</p>  <p>Under “Format > Length”, please enter the number of characters for the display of the tag.</p> <p>Note Choose the length so that all the required characters of the longest tag entry can be displayed.</p>
7.	<p>Confirm the setting by clicking on the symbol. The configuration of the dynamic parameter (tag) is now complete.</p>

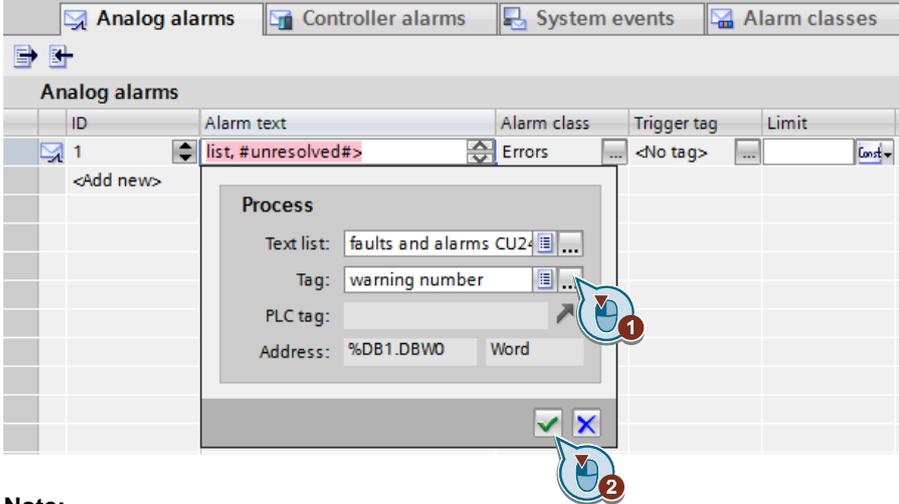
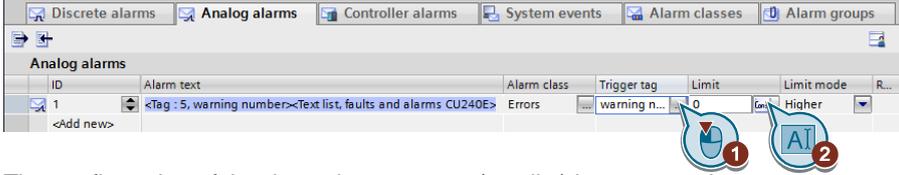
5 Configuration and settings of the HMI operator panel

5.5 Configuring message text

No.	Action
8.	<p>Adding dynamic parameters (text list)</p> <p>Select the existing text list from chapter 5.4. The elements/entries are displayed within the alarm text.</p> 
9.	<p>Select the text list created in chapter 5.4. The created text list is used to display the entries of the text list within the alarm text.</p> 

5 Configuration and settings of the HMI operator panel

5.5 Configuring message text

No.	Action
10.	<p>Select the existing “warning number” tag from chapter 5.3 for the text list. Confirm the setting by clicking on the symbol.</p>  <p>Note: If you use a process tag as an index tag, the acquisition mode for this tag of this process tag must be set to “cyclic continuous”.</p>
11.	<p>Select “warning number” as trigger tag. Enter 0 as a constant.</p>  <p>The configuration of the dynamic parameter (text list) is now complete.</p>
12.	<p>Repeat the steps for the fault messages. Instead of the “warning number” tag, use the “fault number” tag to do this. The fault messages are also contained in the text list created in chapter 5.4.</p>

5.6 Configuring parameter access in the HMI

This chapter shows how to access the following frequency converter tags (CU240E-2 PN-F) with the HMI:

- Setpoint speed value
- Actual speed value
- Switch fan on and off

To do this, set the tags to “Absolute access” under access type.

Table 5-6

No.	Action								
1.	<p>ON/OFF1</p> <p>Create a tag for parameter p2900 which refers to the address “data block 2900 with the data word DBD 0 (data type double word)”: DB2900.DBD 0</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Datentyp</th> <th>Verbindung</th> <th>Adresse</th> </tr> </thead> <tbody> <tr> <td>OnOff</td> <td>Real</td> <td>Connection_1</td> <td>%DB2900.DBD0</td> </tr> </tbody> </table> <p>Realize the display with a switch. Switch-on value is 100.</p>	Name	Datentyp	Verbindung	Adresse	OnOff	Real	Connection_1	%DB2900.DBD0
Name	Datentyp	Verbindung	Adresse						
OnOff	Real	Connection_1	%DB2900.DBD0						
2.	<p>Setpoint speed value</p> <p>Create a tag for parameter 1001 which refers to the address “data block 1001 with the data word DBD 0 (data type Real)”: DB1001.DBD 0.</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Data type</th> <th>Connection</th> <th>Address</th> </tr> </thead> <tbody> <tr> <td>motor speed</td> <td>Real</td> <td>Connection_1</td> <td>%DB1001.DBD0</td> </tr> </tbody> </table> <p>Realize the display with an I/O field.</p>	Name	Data type	Connection	Address	motor speed	Real	Connection_1	%DB1001.DBD0
Name	Data type	Connection	Address						
motor speed	Real	Connection_1	%DB1001.DBD0						
3.	<p>Actual speed value</p> <p>Create a tag for parameter r0021 which refers to the address “data block 21 with the data word DBD 0 (data type Real)”: DB21.DBD 0</p> <table border="1"> <thead> <tr> <th>Name</th> <th>Data type</th> <th>Connection</th> <th>Address</th> </tr> </thead> <tbody> <tr> <td>actual speed</td> <td>Real</td> <td>Connection_1</td> <td>%DB21.DBD0</td> </tr> </tbody> </table> <p>Realize the display with an I/O field.</p>	Name	Data type	Connection	Address	actual speed	Real	Connection_1	%DB21.DBD0
Name	Data type	Connection	Address						
actual speed	Real	Connection_1	%DB21.DBD0						

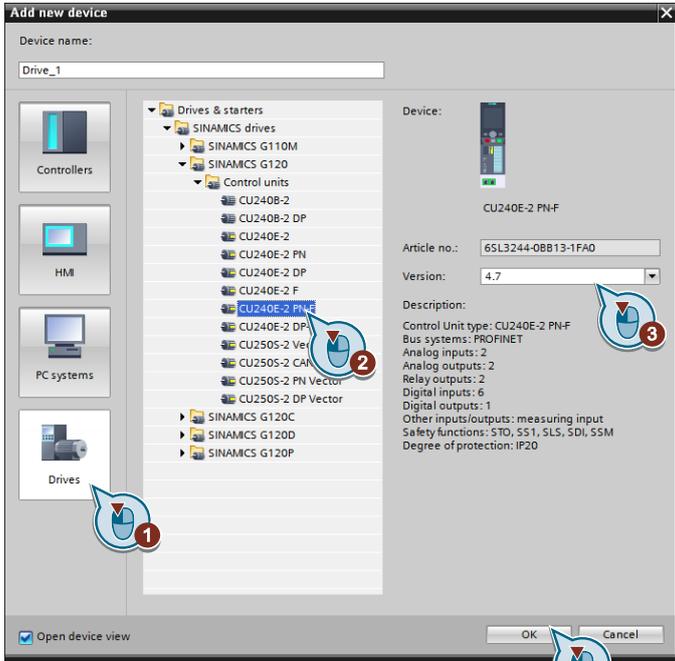
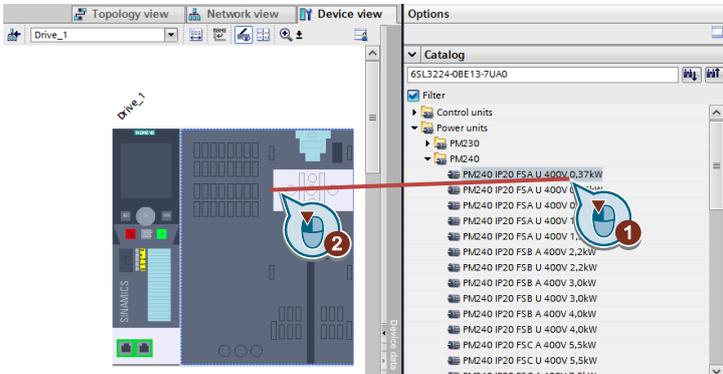
6 Configuration and settings of the drive

6.1 Adding the frequency converter to the project

If the “Startdrive” option package is installed in the TIA Portal, the G120 can be added as a new device, configured and parameterized. You can also project the frequency converter with STARTER plus SSP for 4.7 or a higher version.

The “Startdrive” option package is available at the following entry-ID: [68034568](https://www.siemens.com/press/en/pressrelease/2016/06/06160601.htm)

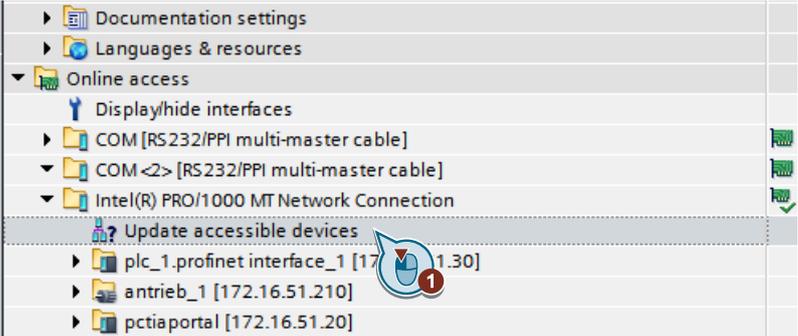
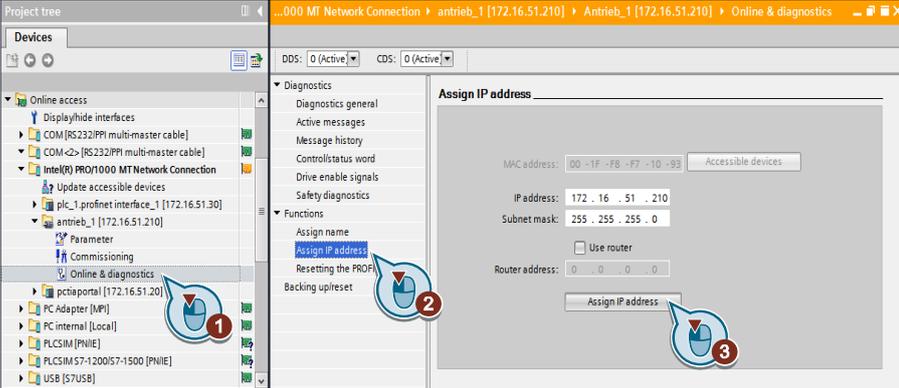
Table 6-1

No.	Action
1.	<p>Add a control unit to your project. To do this, go to “Add new device → Drives” in the project navigation and select your control unit.</p> <p>Note: Direct connection between HMI and frequency converter is supported from firmware version 4.7 of the control unit.</p> 
2.	<p>Add the power unit to your control unit.</p> 

6.2 Setting the Ethernet address

Assign the SINAMICS converter an IP address to be able to establish a connection via Ethernet. For the SINAMICS, there are the following options:

Table 6-2

No.	Procedure
1.	<p>Double-click in the “Online access” menu on the command “Update accessible devices”.</p> 
2.	<p>In the list of accessible devices, select the drive and activate “Online & diagnostics”. Then, assign the converter an IP address.</p> 

6.3 Commissioning wizard

With the Startdrive Commissioning Wizard, you can carry out the commissioning in a short time. Startdrive support offline commissioning in the project or online directly on the drive unit. After offline commissioning, load the configuration from the PG/PC to the device; after online commissioning, load the configuration from the drive unit to your project. In the next step, you will learn about online commissioning.

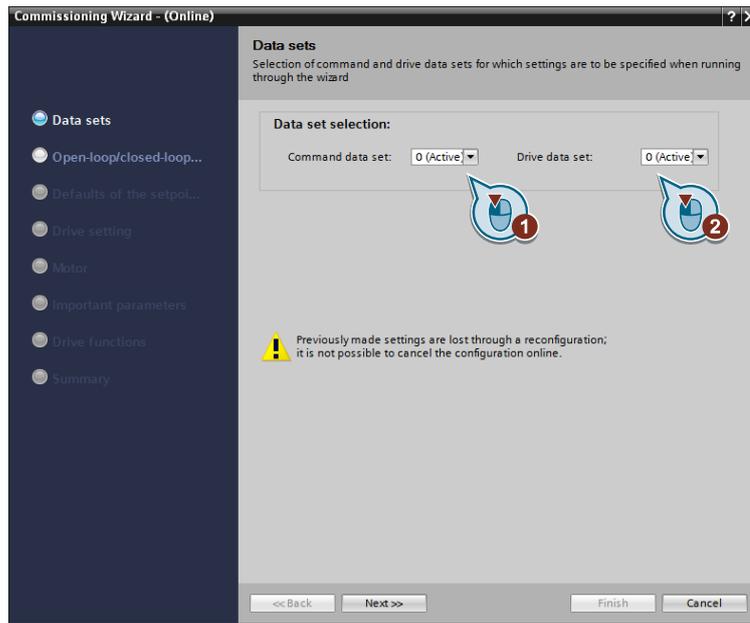
Note

Quick online commissioning

Before commissioning, you have to connect Startdrive Online with the drive unit.

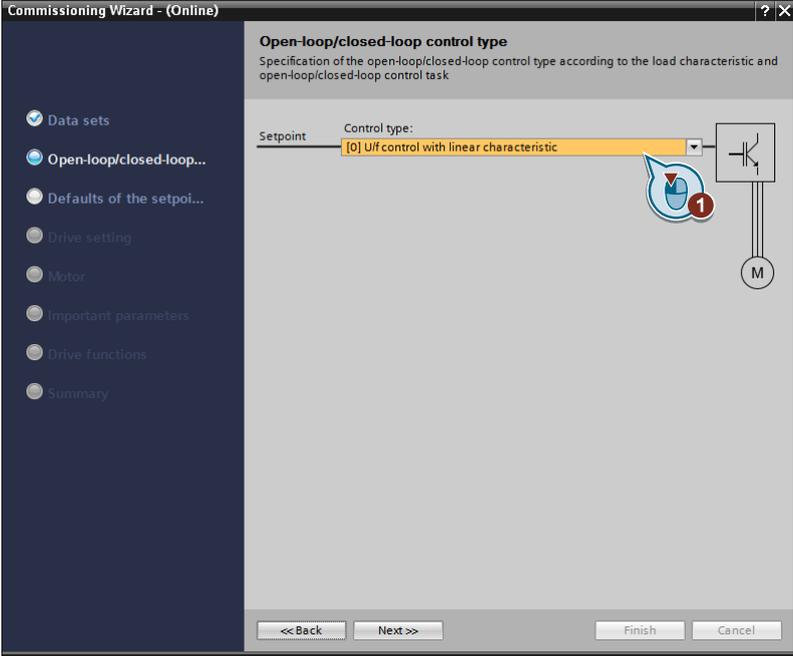
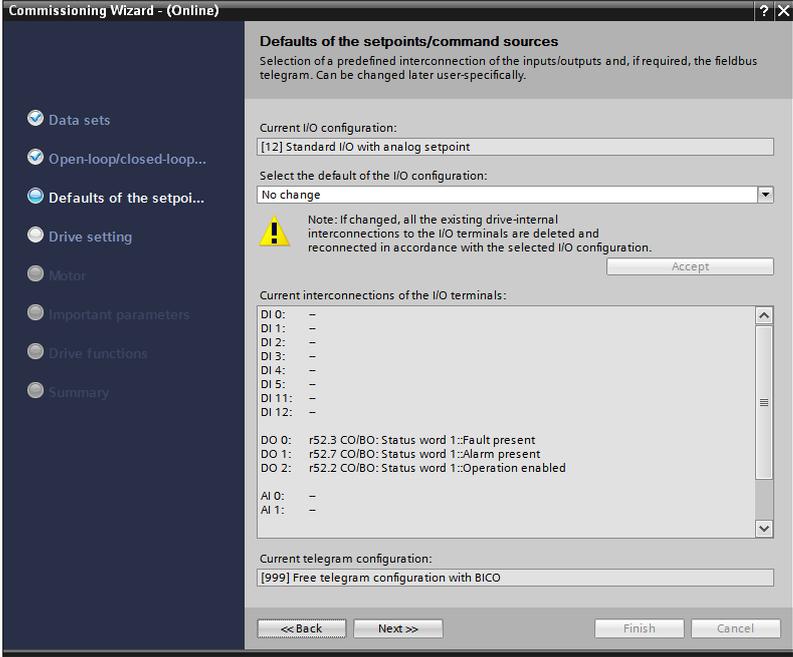
Table 6-3

No.	Action
1.	Select the drive unit in the project navigator and select "Go online" in the context menu.
2.	Double-click on "Commissioning" in the project navigator. A window appears in the work area. Click on "Commissioning Wizard" in the work area. The wizard starts.
3.	Set the command and drive data sets. Click on "Next" to confirm the settings.



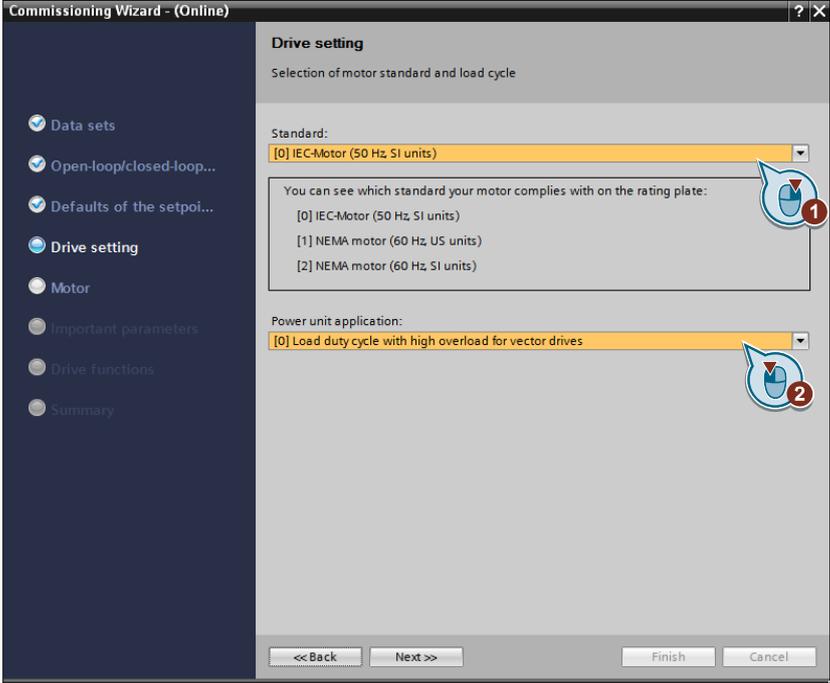
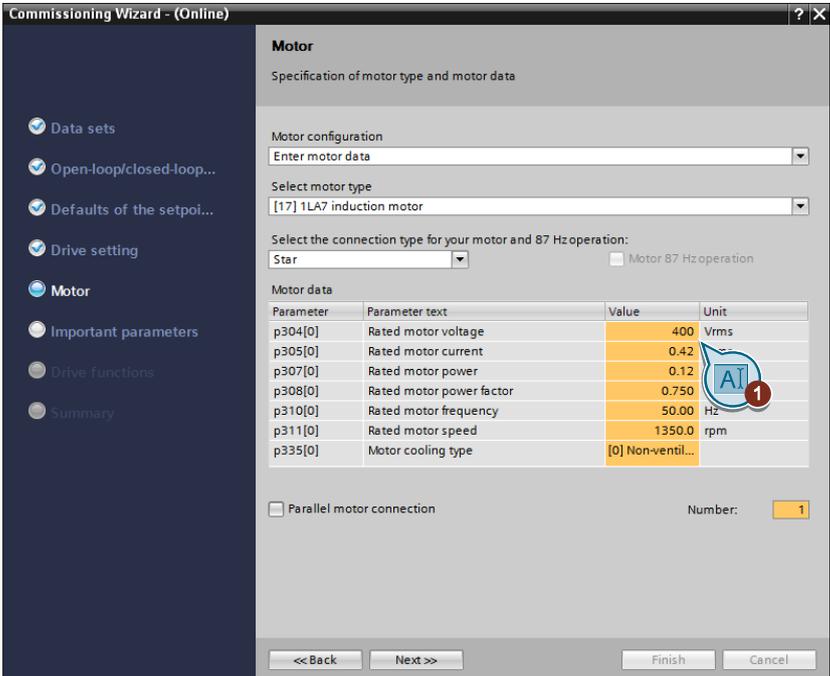
6 Configuration and settings of the drive

6.3 Commissioning wizard

No.	Action
4.	<p>Set the open-loop/closed-loop control type. Click on “Next” to confirm the settings.</p> 
5.	<p>Select the setpoints and command sources. In the application example, a freely configurable telegram [999] was used. Click on “Next” to confirm the settings.</p> 

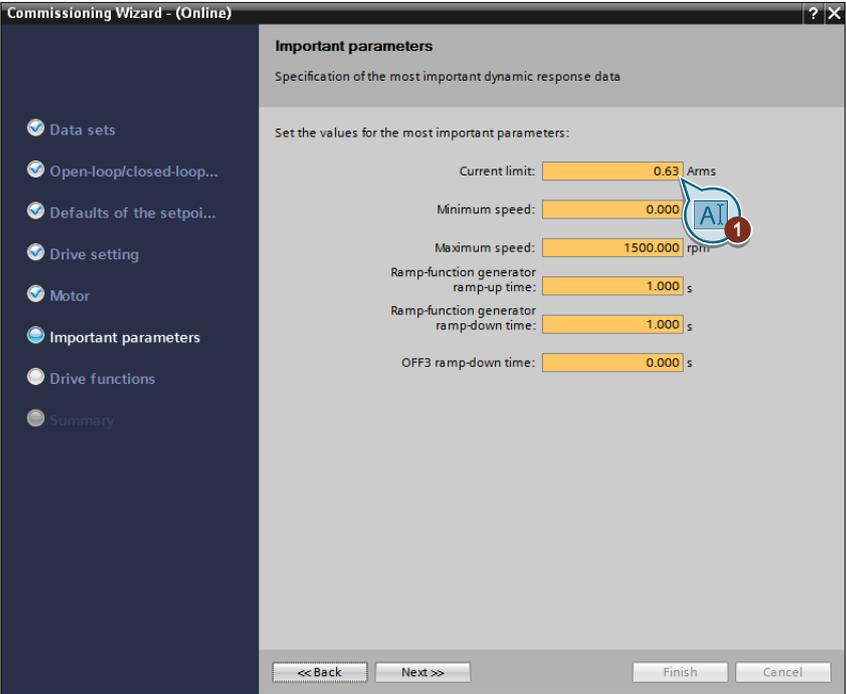
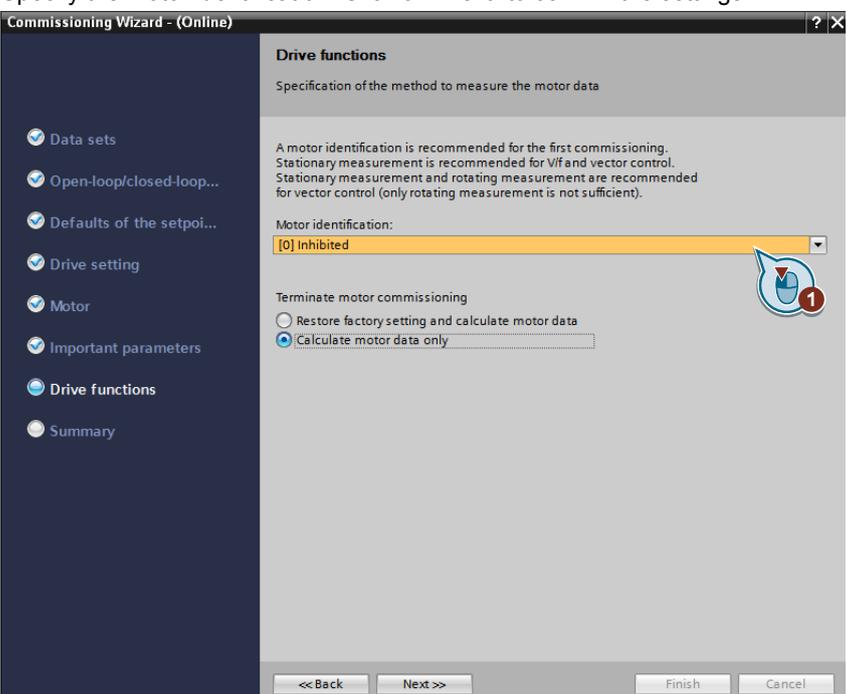
6 Configuration and settings of the drive

6.3 Commissioning wizard

No.	Action																																
6.	<p>The motor standard used is “IEC motor 50Hz SI units”; the power unit application is “Load duty cycle with high overload for vector drives”. Click on “Next” to confirm the settings.</p> 																																
7.	<p>Enter the motor data from the type plate of the motor in the motor dialog. Click on “Next” to confirm the settings.</p>  <table border="1" data-bbox="730 1435 1273 1615"> <thead> <tr> <th>Parameter</th> <th>Parameter text</th> <th>Value</th> <th>Unit</th> </tr> </thead> <tbody> <tr> <td>p304[0]</td> <td>Rated motor voltage</td> <td>400</td> <td>Vrms</td> </tr> <tr> <td>p305[0]</td> <td>Rated motor current</td> <td>0.42</td> <td></td> </tr> <tr> <td>p307[0]</td> <td>Rated motor power</td> <td>0.12</td> <td></td> </tr> <tr> <td>p308[0]</td> <td>Rated motor power factor</td> <td>0.750</td> <td></td> </tr> <tr> <td>p310[0]</td> <td>Rated motor frequency</td> <td>50.00</td> <td>Hz</td> </tr> <tr> <td>p311[0]</td> <td>Rated motor speed</td> <td>1350.0</td> <td>rpm</td> </tr> <tr> <td>p335[0]</td> <td>Motor cooling type</td> <td>[0] Non-ventil...</td> <td></td> </tr> </tbody> </table>	Parameter	Parameter text	Value	Unit	p304[0]	Rated motor voltage	400	Vrms	p305[0]	Rated motor current	0.42		p307[0]	Rated motor power	0.12		p308[0]	Rated motor power factor	0.750		p310[0]	Rated motor frequency	50.00	Hz	p311[0]	Rated motor speed	1350.0	rpm	p335[0]	Motor cooling type	[0] Non-ventil...	
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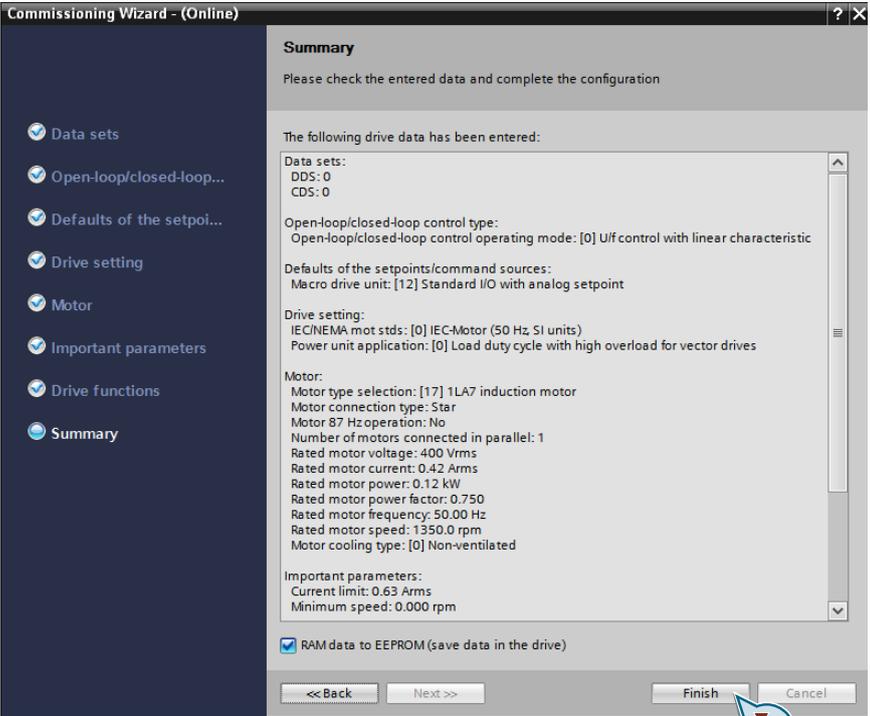
6 Configuration and settings of the drive

6.3 Commissioning wizard

No.	Action
8.	<p>In the "Important parameters" screen, the Ramp-up times, the current limit and minimum and maximum speed can be configured. Click on "Next" to confirm the settings.</p> 
9.	<p>Specify the motor identification. Click on "Next" to confirm the settings.</p> 

6 Configuration and settings of the drive

6.3 Commissioning wizard

No.	Action
10.	<p>Confirm your settings with the summary and the Finish button.</p> 

6.4 Parameterizing converter settings

To modify converter settings, proceed as follows:

Table 6-4

No.	Action																																																															
1.	<p>Perform the following settings and enable the converter to accept commands via the panel:</p> <ul style="list-style-type: none"> - Set both signal sources for OFF2 (p0844 and p0845) to 1: P0844 = 1 P0845 = 1 <table border="1"> <tr> <td>▼ p844</td> <td>Bi: No coast-down / coast-down (OFF2) signal source 1</td> <td></td> </tr> <tr> <td>p844[0]</td> <td>Bi: No coast-down / coast-down (OFF2) signal source 1</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p844[1]</td> <td>Bi: No coast-down / coast-down (OFF2) signal source 1</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>▼ p845</td> <td>Bi: No coast-down / coast-down (OFF2) signal source 2</td> <td></td> </tr> <tr> <td>p845[0]</td> <td>Bi: No coast-down / coast-down (OFF2) signal source 2</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p845[1]</td> <td>Bi: No coast-down / coast-down (OFF2) signal source 2</td> <td>1 <input checked="" type="checkbox"/></td> </tr> </table> <ul style="list-style-type: none"> - Set both signal sources for OFF3 (p0848 and p0849) to 1: P0848 = 1 P0849 = 1 <table border="1"> <tr> <td>▼ p848</td> <td>Bi: No Quick Stop / Quick Stop (OFF3) signal source 1</td> <td></td> </tr> <tr> <td>p848[0]</td> <td>Bi: No Quick Stop / Quick Stop (OFF3) signal source 1</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p848[1]</td> <td>Bi: No Quick Stop / Quick Stop (OFF3) signal source 1</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>▼ p849</td> <td>Bi: No Quick Stop / Quick Stop (OFF3) signal source 2</td> <td></td> </tr> <tr> <td>p849[0]</td> <td>Bi: No Quick Stop / Quick Stop (OFF3) signal source 2</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p849[1]</td> <td>Bi: No Quick Stop / Quick Stop (OFF3) signal source 2</td> <td>1 <input checked="" type="checkbox"/></td> </tr> </table> <ul style="list-style-type: none"> - Set the enable for the ramp-up function generator P1140 = 1 P1141 = 1 <table border="1"> <tr> <td>▼ p1140</td> <td>Bi: Enable ramp-function generator/inhibit ramp-function ge...</td> <td></td> </tr> <tr> <td>p1140[0]</td> <td>Bi: Enable ramp-function generator/inhibit ramp-function ge...</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p1140[1]</td> <td>Bi: Enable ramp-function generator/inhibit ramp-function ge...</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>▼ p1141</td> <td>Bi: Continue ramp-function generator/freeze ramp-function g...</td> <td></td> </tr> <tr> <td>p1141[0]</td> <td>Bi: Continue ramp-function generator/freeze ramp-function g...</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p1141[1]</td> <td>Bi: Continue ramp-function generator/freeze ramp-function g...</td> <td>1 <input checked="" type="checkbox"/></td> </tr> </table> <ul style="list-style-type: none"> - Set the setpoint value enable P1142 = 1 <table border="1"> <tr> <td>▼ p1142</td> <td>Bi: Enable setpoint/inhibit setpoint</td> <td></td> </tr> <tr> <td>p1142[0]</td> <td>Bi: Enable setpoint/inhibit setpoint</td> <td>1 <input checked="" type="checkbox"/></td> </tr> <tr> <td>p1142[1]</td> <td>Bi: Enable setpoint/inhibit setpoint</td> <td>1 <input checked="" type="checkbox"/></td> </tr> </table>	▼ p844	Bi: No coast-down / coast-down (OFF2) signal source 1		p844[0]	Bi: No coast-down / coast-down (OFF2) signal source 1	1 <input checked="" type="checkbox"/>	p844[1]	Bi: No coast-down / coast-down (OFF2) signal source 1	1 <input checked="" type="checkbox"/>	▼ p845	Bi: No coast-down / coast-down (OFF2) signal source 2		p845[0]	Bi: No coast-down / coast-down (OFF2) signal source 2	1 <input checked="" type="checkbox"/>	p845[1]	Bi: No coast-down / coast-down (OFF2) signal source 2	1 <input checked="" type="checkbox"/>	▼ p848	Bi: No Quick Stop / Quick Stop (OFF3) signal source 1		p848[0]	Bi: No Quick Stop / Quick Stop (OFF3) signal source 1	1 <input checked="" type="checkbox"/>	p848[1]	Bi: No Quick Stop / Quick Stop (OFF3) signal source 1	1 <input checked="" type="checkbox"/>	▼ p849	Bi: No Quick Stop / Quick Stop (OFF3) signal source 2		p849[0]	Bi: No Quick Stop / Quick Stop (OFF3) signal source 2	1 <input checked="" type="checkbox"/>	p849[1]	Bi: No Quick Stop / Quick Stop (OFF3) signal source 2	1 <input checked="" type="checkbox"/>	▼ p1140	Bi: Enable ramp-function generator/inhibit ramp-function ge...		p1140[0]	Bi: Enable ramp-function generator/inhibit ramp-function ge...	1 <input checked="" type="checkbox"/>	p1140[1]	Bi: Enable ramp-function generator/inhibit ramp-function ge...	1 <input checked="" type="checkbox"/>	▼ p1141	Bi: Continue ramp-function generator/freeze ramp-function g...		p1141[0]	Bi: Continue ramp-function generator/freeze ramp-function g...	1 <input checked="" type="checkbox"/>	p1141[1]	Bi: Continue ramp-function generator/freeze ramp-function g...	1 <input checked="" type="checkbox"/>	▼ p1142	Bi: Enable setpoint/inhibit setpoint		p1142[0]	Bi: Enable setpoint/inhibit setpoint	1 <input checked="" type="checkbox"/>	p1142[1]	Bi: Enable setpoint/inhibit setpoint	1 <input checked="" type="checkbox"/>
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p1142[1]	Bi: Enable setpoint/inhibit setpoint	1 <input checked="" type="checkbox"/>																																																														
2.	<p>Set the parameters for the ON/OFF command via the SIMATIC panel:</p> <ul style="list-style-type: none"> - Set p0840[0] = 2094.0 This connects the ON/OFF command with bit 0 of the BiCO converter 2094. The signal source for this parameter is p2099. <table border="1"> <tr> <td>▼ p840</td> <td>Bi: ON / OFF (OFF1)</td> <td></td> </tr> <tr> <td>p840[0]</td> <td>Bi: ON / OFF (OFF1)</td> <td>r2094.0 CO/BO: Connector-binector converter b...</td> </tr> <tr> <td>p840[1]</td> <td>Bi: ON / OFF (OFF1)</td> <td>r2094.0 CO/BO: Connector-binector converter b...</td> </tr> </table> <ul style="list-style-type: none"> - Now set p2099[0] = p2900 This specifies the ON/OFF command by setting P2900 = 1 (ON) or 0 (OFF1) <table border="1"> <tr> <td>▼ p2099</td> <td>CI: Connector-binector converter signal source</td> <td></td> </tr> <tr> <td>p2099[0]</td> <td>CI: Connector-binector converter signal source</td> <td>p2900[0] CO: Fixed value 1 [%] <input checked="" type="checkbox"/></td> </tr> <tr> <td>p2099[1]</td> <td>CI: Connector-binector converter signal source</td> <td>0% <input type="checkbox"/></td> </tr> </table>	▼ p840	Bi: ON / OFF (OFF1)		p840[0]	Bi: ON / OFF (OFF1)	r2094.0 CO/BO: Connector-binector converter b...	p840[1]	Bi: ON / OFF (OFF1)	r2094.0 CO/BO: Connector-binector converter b...	▼ p2099	CI: Connector-binector converter signal source		p2099[0]	CI: Connector-binector converter signal source	p2900[0] CO: Fixed value 1 [%] <input checked="" type="checkbox"/>	p2099[1]	CI: Connector-binector converter signal source	0% <input type="checkbox"/>																																													
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p2099[1]	CI: Connector-binector converter signal source	0% <input type="checkbox"/>																																																														

6 Configuration and settings of the drive

6.4 Parameterizing converter settings

No.	Action
3.	<p>Define the parameters for the setpoint specification</p> <ul style="list-style-type: none"> - Set - P1016 = 1 (Fixed speed setpoint select mode) - p1016 Fixed speed setpoint select mode [1] Direct - P1070 = 1001 (Fixed speed setpoint 1) <ul style="list-style-type: none"> ▼ p1070 Ci: Main setpoint p1070[0] Ci: Main setpoint p1001[0] CO: Fixed speed setpoint 1 p1070[1] Ci: Main setpoint p1001[0] CO: Fixed speed setpoint 1 - P1020 = 1 (Fixed speed setpoint selection Bit 0) <ul style="list-style-type: none"> ▼ p1020 Bi: Fixed speed setpoint selection Bit 0 p1020[0] Bi: Fixed speed setpoint selection Bit 0 1 p1020[1] Bi: Fixed speed setpoint selection Bit 0 1

7 Operating the Application

Before you start the configuration, check the wiring of the components.

7.1 Commissioning the example project

Table 7-1

No.	Action
1.	Unzip "109481157_HMI_FU_CODE_v13.zip"
2.	Start the TIA Portal.
3.	Unzip the project "FrequencyConverter.zap13".
4.	Load the SIMATIC WinCC project to the Comfort Panel.
5.	Load the SIMATIC Startdrive project to the frequency converter.

7.2 Operating the example project

Figure 7-1

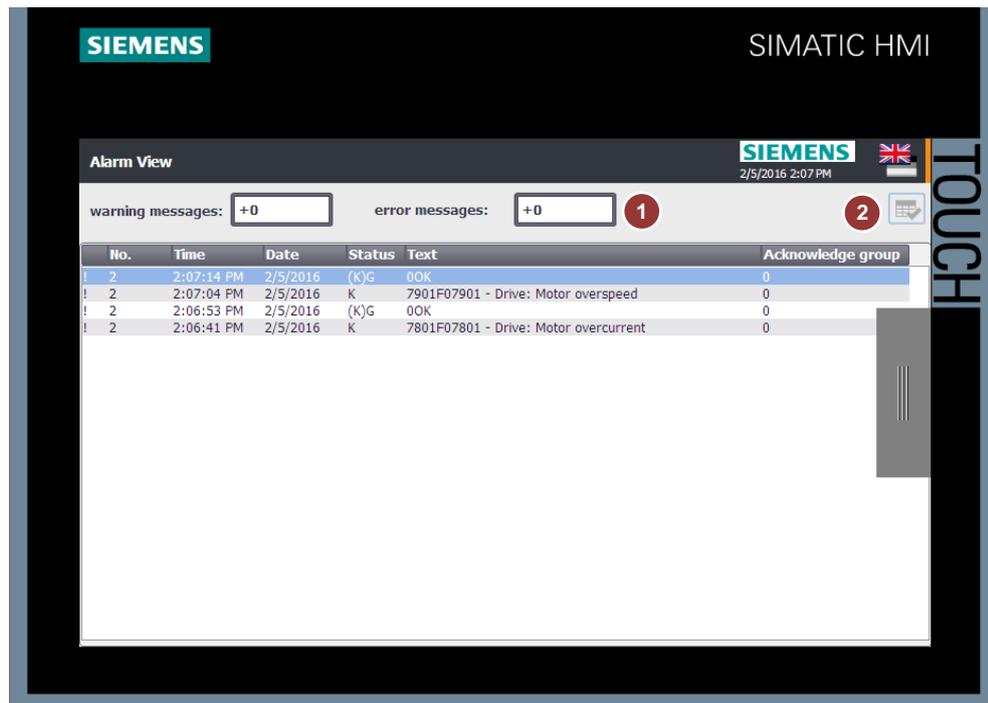


Table 7-2

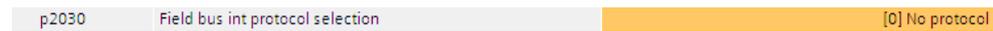
No.	Action
1.	The alarm and fault messages can be displayed in the alarm view and the I/O fields.
2.	As soon as the faults in the drive are rectified, they can be acknowledged using the button.

8 Further Notes, Tips & Tricks, etc.

Hiding bus error alarms

A bus error is displayed after configuration, because the drive expects a controller as the higher-level device. You can deactivate it with parameter p2030. The frequency converter must be restarted after that.

Figure 8-1



NOTICE

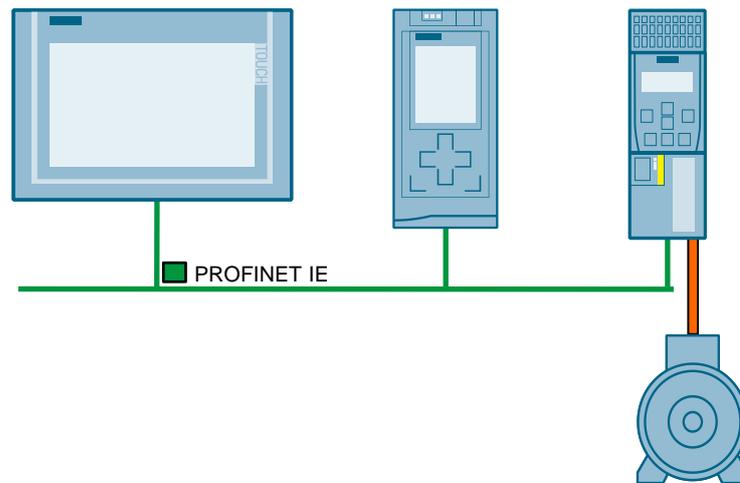
A controller will not be able to issue values for the drive. The drive will only accept commands from the panel.

9 Alternative

Drive with additional controller

The frequency converter is controlled and monitored via Ethernet by a PLC. The controller forwards the relevant parameters to the operator panel.

Figure 9-1



10 Links & Literature

Table 10-1

	Topic	Title
\1\	Siemens Industry Online Support	http://support.industry.siemens.com
\2\	Download page of the entry	https://support.industry.siemens.com/cs/ww/en/view/109481157

11 History

Table 11-1

Version	Date	Modifications
V1.0	04/2016	First version