Drive System Application

applications & TOOLS

Generating application macros

SIEMENS

Application description
for SINAMICS G and MICROMASTER 4

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Preposition

Aim of the application

The application has been drawn-up in order to provide users with an overview about application macros.

This application shows how application macros are generated in the STARTER and Drive Monitor commissioning tools – and how they are handled.

Scope

The following main points will be discussed in this application:

- Handling using the expert lists of STARTER
- Handling using parameter sets from Drive Monitor

Exclusion

This application does not provide a description of

- of the commissioning tool STARTER
- of the commissioning tool Drive Monitor

It is assumed that the reader has basic knowledge of these subjects.

Reference to the Automation and Drives Service & Support

This article is from the Internet Application Portal of the Automation and Drives Service & Support. You can go directly to the download page of this document using this link.

http://support.automation.siemens.com/WW/view/en/22078810

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Application description

Contents

For series commissioning as well as parameterizing functions which are repeatedly required, it is advantageous to be able to use pre-configured configurations. Both the commissioning tool STARTER as well as the commissioning tool Drive Monitor allows application macros to be used. These macros can be generated new but they can also be obtained by comparing two parameter sets.

In the STARTER commissioning tool, user-defined parameter and value lists as well as scripts are called application macros. In STARTER, the expert list is used to handle these.

In the Drive Monitor commissioning tool, parameter sets are known as application macros.

In this application, you will obtain an overview of how to handle these using the expert lists from STARTER. An explanation is provided as to how you create and open user-defined parameter value lists and scripts in STARTER. It will also be shown, how a number of drives can be commissioned in series quickly using STARTER scripts.

A description is also provided as to how you create parameter sets in Drive Monitor, and then how you compare them and print them out – or read them from a frequency inverter or write them into another frequency inverter.

It is easy to compare parameter sets between several drives, one drive and a saved file, as well as between several files using the STARTER and Drive Monitor start-up programs. Not only this, the differences can be documented.

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1 Commissioning tool STARTER

1.1 Expert list for drives

In addition to accessing the parameter values using wizards and parameterization screen forms, you also have the option of direct access using an expert list. As all important values can be parameterized using dialogs, the expert list is required only in special cases (such as the overview of all parameters in a table).

From STARTER V4.0, there exist user-defined parameter and value lists that can be used to call default lists with the most important parameters or save the values for specific parameters in a value list. The parameters for the drive device or Drive Object (DO) are displayed in the expert list.

Special knowledge of the system is required to modify parameters in the expert list.
You can overwrite entries made using the expert list by calling wizards and parameterization screen forms.
No check is made on dependencies with other parameters.
Parameter values should therefore be modified via the expert list in exceptional cases only.

To open the expert list (refer to fig. 1-1):

- Mark the required drive device, drive or DO in the project navigator.
- In the object context menu, select **“Expert > Expert list”**.

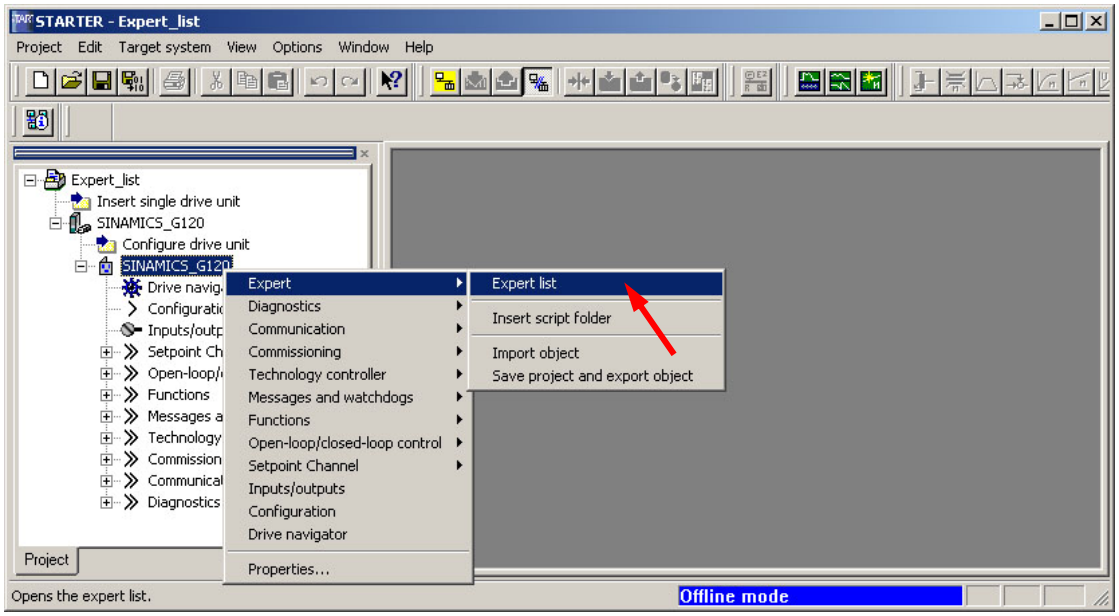


Figure 1-1 Open the expert list

Additional information on the expert list is provided in the STARTER help:

- Open **STARTER**
- Press **"F1"** (the help function that is automatically displayed when STARTER opens must be closed)
- In the **"HTML Help"** dialog box, change into the **"Contents"** tab
- Select the **"Commissioning drive units and drives"**
- Select the **"Expert list/parameter list, drive devices"**

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1.2 Drives expert list overview

The parameters for the drive device or Drive Object (DO) are displayed in the expert list.

The following information is displayed in the expert list:

Table 1-1 Drives expert list overview

Button/ Table column	Meaning/Note
New tab for user-defined list of parameters 	Click this button to create a **user-defined parameter list** or to open an existing one. A **user-defined parameter list** contains only the parameter name and a comment. The value of the parameter is read from the expert list or the drive device / DO and will not be stored explicitly in the parameter list. If you want to create a list of the values, you must create a **user-defined value list**. The current value for the associated parameter is then also saved in the value list.
Open user-defined list of values 	Click the button to open a **user-defined value list**. In the displayed dialog, you can select and display the value list (*.xml). In addition to the parameter name and a comment, the value list also contains the saved value of the parameter. You can use a value list, for example, if you want to permanently save, restore or transfer (serial commissioning) a specific configuration of a drive device / DO. **Note** You can also create a user-defined value list from any expert list or user-defined parameter list. Select the **Save list** in the context menu of the tab. In the displayed dialog, you can select the format to be used to save the list.
Display filter 	**Display filter** defines a filter for the expert list. You can select the parameter types and function groups for display.
Quick search 	In this text field, you can carry out a quick search within the expert list. The columns **Parameter**, **Parameter text** and **Value** are searched. 1. Enter the search term in the text field and press the ENTER key. The expert list is searched for the term. The first hit is highlighted in the expert list. If the search term is in the line of a writable parameter, a jump is made to the **Value** column so that you can enter a value. 2. Press the **F3** key to continue the search.

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Button/ Table column	Meaning/Note
Comparison 	**Comparison** compares differences in the parameter lists of several devices and the differences in the ONLINE and OFFLINE mode of a device. Parameters with different settings or parameters not available for a drive unit are presented in a list. A comparison is possible only within a sensible group, e.g. no comparisons of an infeed with a drive can be performed.
Extended search 	Using **Extended search** you can specify extended search criteria and furnish search queries within the expert list with logic operations.
Access level 	Specifies the **access level** for writing the parameters.
Settings 	**Settings** can be used to define parameter representation in the expert list, e.g. refresh rate or bit field presentation.
Convert list to S7 data block 	Click the button to convert the parameter set of the expert list or a user-defined parameter/value list to a STEP7 data block. The created user-defined parameter or value list must first be saved so that you can convert the data block. Certain parameters will be automatically filtered out for the conversion of the parameter list to a DB.
User-defined parameter list	Click **User-defined parameter list** to define a new parameter list. In this new list, you can include those parameters which you use most frequently and add comments to them, for example, you can also include individual parameters for indexed or bit-coded parameters, e.g. p13[4]. Only parameter names and comments are saved in the user-defined list. The parameter settings are managed centrally in the expert list, that means the parameter settings are identical in all of the lists. If settings are changed in the user-defined parameter list, these are also changed in the expert list and vice versa.
Recreate user-defined list 	Click this button to create a new user-defined list. An empty list will be opened. If you have already created a list, you must save it first to save its contents. Click the **Save** button to keep the existing list. This button is only visible when the **User-defined parameter list** button is clicked.
Open user-defined list 	Click **Open** to load saved user-defined lists. The lists are saved in the standardized XML format, Version 1.0 (*.xml). The button is only visible when the **User-defined parameter list** button is clicked.
Save user-defined list 	Click **Save** to save the current user-defined list. Enter a name for the list. The list is saved in the standardized XML format, Version 1.0 (*.xml). The button is only visible when the **User-defined parameter list** button is clicked.

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Button/ Table column		Meaning/Note
	Edit user-defined list 	Click this button to edit the currently displayed, user-defined list. The button will be displayed as clicked during the editing operation. The Edit toolbar for list editing pops up. You can add or edit parameters and comments by clicking on the corresponding line in the list. The button is only visible when the **User-defined parameter list** button is clicked. Individual lines are deleted in the expert list by positioning the cursor in the line and pressing the DEL key.
	Abort editing mode 	Click this button to exit the editing mode. Parameters and comments cannot be changed any more. The button is only visible when the **User-defined parameter list** button is clicked and the editing mode is active.
	Enter comment 	Click this button to add a comment to the list. The button is displayed as clicked. Comments can only be entered in this mode. After clicking this button, a new empty comment line is inserted. Click in this line to enter your comment. To insert additional comment lines, position the cursor into the respective line and press the ENTER KEY. The button is only visible when the **User-defined parameter list** button is clicked and the editing mode is active.
	Enter title 	Click this button to add a heading to the list. The button is displayed as clicked. A header behaves like a comment. Only the text is displayed as highlighted in bold. By using a heading, you can, for example, enter important comments or structure the list more clearly. The button is only visible when the **User-defined parameter list** button is clicked and the editing mode is active.
	Enter parameters 	Click the button to include a new parameter in the list. The button is displayed as clicked. Comments can only be entered in this mode. After clicking this button, a new empty parameter line is inserted. Click the parameter number to enter the number of the parameter (e.g. 3 for the parameter p3). To insert additional parameter lines, position the cursor into the respective line and press the ENTER KEY. The button is only visible when the **User-defined parameter list** button is clicked and the editing mode is active. Bit-coded and indexed parameters can be included individually by specifying the bits or index in the list, e.g. p13[4]. If you do not specify a bit or index, the entire field is included into the list. However, the field can only be opened (click the **+** sign) if the list has been saved before.

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Button/ Table column	Meaning/Note
Parameter search	Within the expert list, you can search and display parameters using a quick search function. **Working with the parameter search function:** 1. Click a field in the expert list that **cannot** be written (normally the cursor should not be placed in the **value** column). 2. Type the digits of the parameter to be found on your keyboard (e.g. keys 2, 1, 6 and 9 for parameter 2169). The parameter will be displayed in the expert list. When you type the digits of the parameter, the time between typing the individual digits must not exceed a certain period of time so that the digits can be recognized as an integral parameter number. If you exceed the time limit when typing the number, e.g. for digit 6 of the parameter 2169, parameter 21 will be displayed instead.
Expert list / user-defined list	An extra tab is displayed for each expert list. You can close the user-defined list by clicking the tab and selecting **Close tab** in the context menu.
Parameter	The number of the parameter is displayed here. Parameters in different colors have different meanings. Parameters marked with **r** (yellow) have a read-only status (e.g. r34). Parameters marked with **p** (green) have a read/write status (e.g. r34). Parameters marked in light-blue are of the Binector parameter type and those in dark blue of the Connector type. You can change the values for these parameters.
Data set „+“	This displays the data set group to which the parameter is assigned. Data sets are, for example, CDS (Command Data Set), DDS (Drive Data Set), MDS (Motor Data Set), EDS (Encoder Data Set), PDS (Power Module Data Set).
Index / Bit field „+“	Click the **“+”** sign to open the indexed or bit-coded parameters in the expert list. If you click the plus sign in the table header of the expert list, all the indexed parameters or all the bit-coded parameters are opened. If you click the plus sign next to the parameter number, only the indices and bits for the relevant parameter are opened.
Parameter text	Displays a short description of the parameter.

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Button/ Table column		Meaning/Note
	Value	Displays the value of the parameter. Depending on the type of parameter, you can enter the value directly as a numerical value or select a symbolic identifier from the selection list. **To enter a numerical value:** 1. Click the numerical value in the table cell. 2. Enter the numerical value of the parameter. Values that lie outside the range are rejected and the value 0 is entered automatically. 3. Confirm the numerical value by using the ENTER KEY. **To select a symbolic identifier:** 1. Click the relevant cell in the table. The table cell is displayed as a selection list. Select a symbolic identifier.
	Unit	The unit of the parameter is displayed here.
	Modifiable to	Displays the operating status in which the value of the parameter can be written.
	Access level	The access level is displayed here. You can choose between four predefined access levels and one user-defined access level (see also p3).
	Minimum	Displays the minimum value.
	Maximum	Displays the maximum value.

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1.3 User-defined parameter list

From STARTER version 4.0, you can create user-defined parameter lists. A user-defined parameter list contains a subset of the optional parameters from an expert list. Only the parameter name and the comment are saved in the user-defined parameter list. The parameter value is stored in the associated expert list for the associated drive device or DO. When parameter values are changed, the value in the expert list is also changed automatically.

In the user-defined parameter list, you add the most important parameters and assign them a comment or heading, e.g. structuring of parameter groups. Parameters can also occur several times or in unsorted order within a user-defined parameter list.

User-defined parameter lists depend on the context in which they are opened because they always refer to the expert list that is opened in parallel. Thus, if a parameter list is created for Drive1 and opened in the context of Drive2, certain parameters may not be present there or have a different version. In this case, information text will be displayed in the user-defined parameter list.

The user-defined parameter list is stored as ASCII text in the *.cdl format. User-defined lists that were created with the STARTER versions V3.2 or V3.2 SP1 can be opened in V4.0. The associated stored values are ignored. The parameter list is saved automatically as *.cdl by default. User-defined parameter lists that were created with V4.0 or later can no longer be used in an older version.

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Create/open user-defined parameter list

Proceed as follows in order to create/open a user-defined parameter list:

- Create a new project with the required frequency inverter type – or open an existing project.
- To open the expert list (refer to fig. 1-1):
  - Mark the required drive device, drive or DO in the project navigator.
  - In the object context menu, select **“Expert > Expert list”**.
- In the expert list, click the button **„New tab for user-defined list of parameters“** .
- Select in the displayed dialog the option **„Create a new user-defined parameter list“** or **„Open existing user-defined parameter list“** and click **“OK”** to confirm (refer to fig. 1-2).

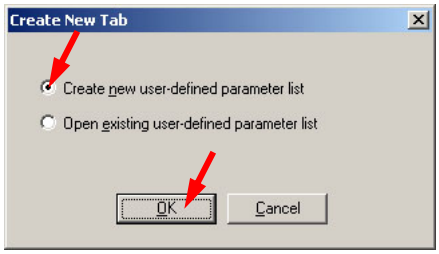


Figure 1-2 Create new or open existing user-defined parameter list

The edit mode is activated after creating a new **user-defined list**. The buttons are active which are used to save, enter comments, headers and parameters as well as to exit the edit mode.

After an existing **user-defined list** is opened, buttons that control the creation, opening, editing and saving become active:

 A new user-defined list is generated using the **„Recreate user-defined list“** button. An empty list is displayed.

 Using the **“Open user-defined list"** button, user-defined lists which have already been saved, are opened.

 The current user-defined list is saved using the **"Save user-defined list"** button The list is saved in the project in the standardized XML format, Version 1.0 (*.xml).

 The currently displayed user-defined list is processed using the **"Edit user-defined list"** button. To do this, the toolbar to edit the list is displayed. New parameters and new comments can be added or modified in the list by marking the appropriate line in the list. Individual lines are deleted in the expert list by positioning the cursor in the line and then pressing the DEL key.

 The editing mode is exited using the **"Abort editing mode"** button. Parameters and comments can no longer be changed and the changes which were made are deleted.

Note:

The buttons to enter comments, headers and parameters are only activated in the edit mode as well as when creating a new user-defined list.

After opening/creating a new user-defined list and switching-in the editing mode, all of the parameters, required for the particular application, are entered in the list (refer to fig. 1-3). Bit-coded and indexed parameters can

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be included individually by specifying the bits and the index in the list – for example p13[4]. In this case, it is necessary to use square brackets (Alt Gr 8 and Alt Gr 9). This means, for example, that it is possible to specifically select three different drive data sets and control data sets. If neither a bit nor index is specified, then the complete field is included in the list. However, the additional indexed fields are only opened if the list was first saved. As example, the settings for quickly commissioning a frequency inverter are shown in the following diagram.

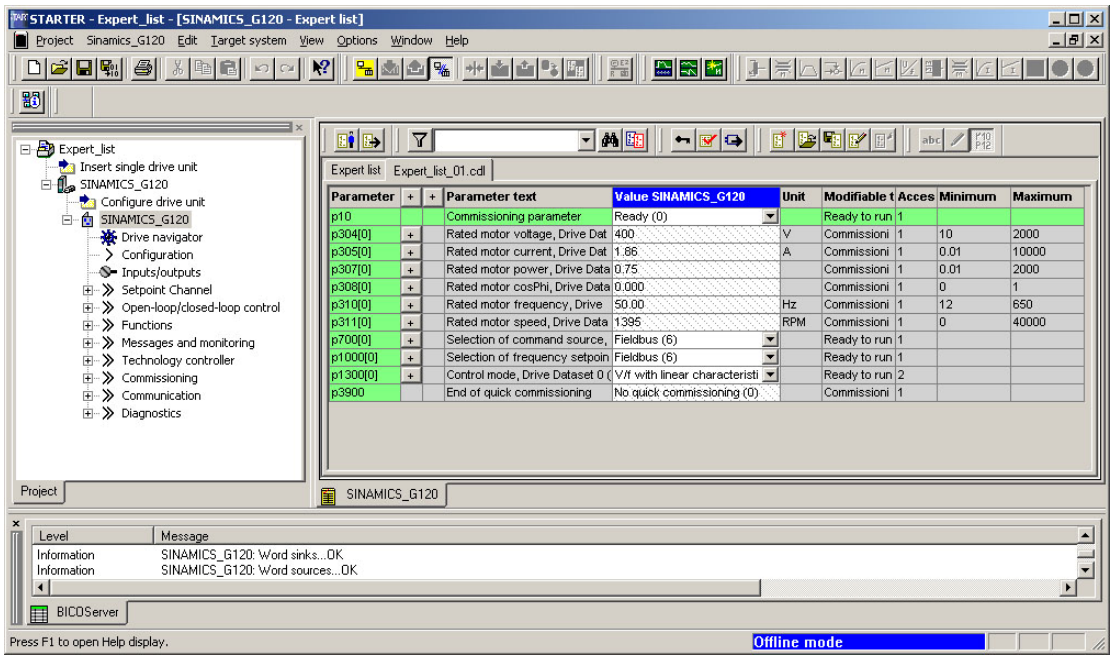


Figure 1-3 Parameter entry into the user-defined list

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It is possible to insert titles and comments in intermediate lines. This means that a user-defined list can be structured more transparently if a higher number of parameters are involved. In this case, the line in front of which an element is to be inserted is highlighted, the INSERT key is pressed and then the following button for



Comments or


Titles



Parameter input is again selected using this button.

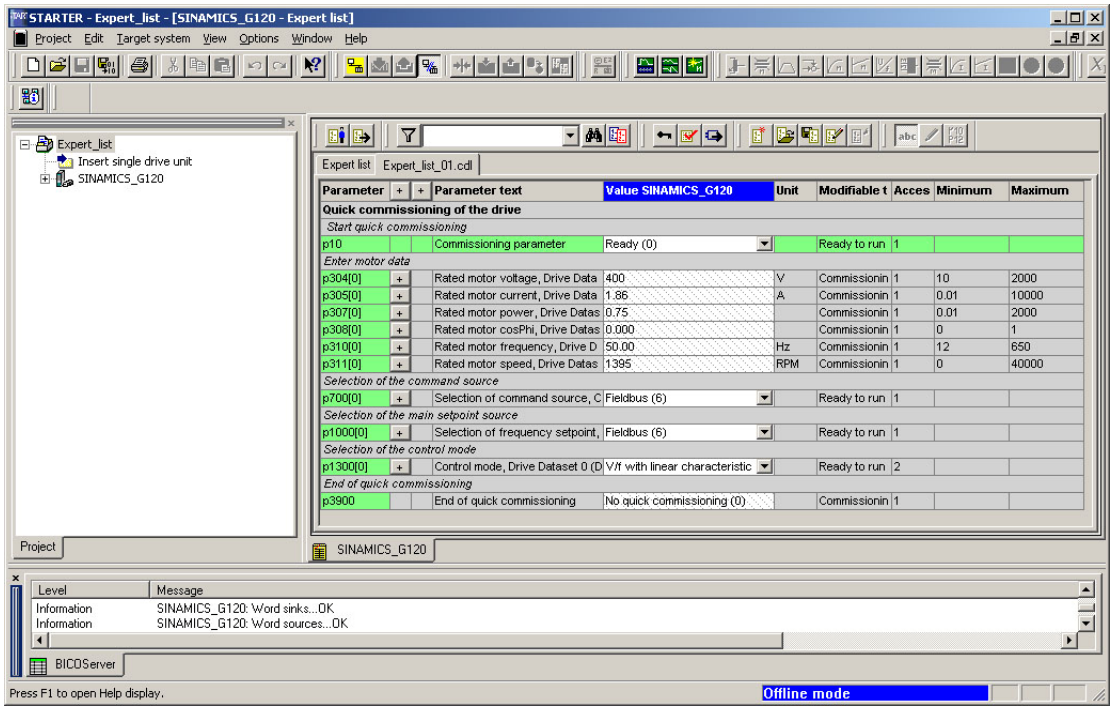


Figure 1-4 Title and comments in user-defined lists

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Enter all of the necessary parameter values into the parameter list (refer to Fig. 1-5).

Note:

The parameter values can be entered both in the edit mode as well as in the project after the edit mode has been exited.

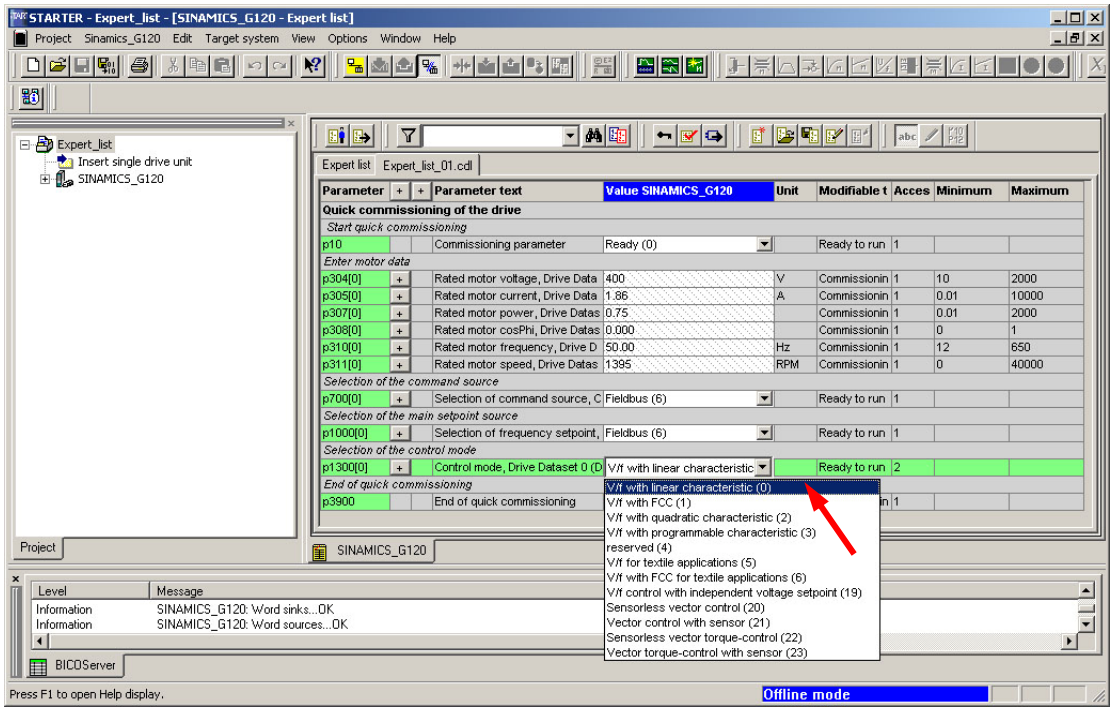


Figure 1-5 Entering parameter values

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After you have entered all of the required parameters and parameter values in the parameter list, the user-defined list must be saved. To do this, press the following button **"Save user-defined list"**  to save the list. In the dialog box that is then displayed, enter a name for this user-defined list and acknowledge your entry by pressing the **"Save"** button (refer to Fig. 1-6).

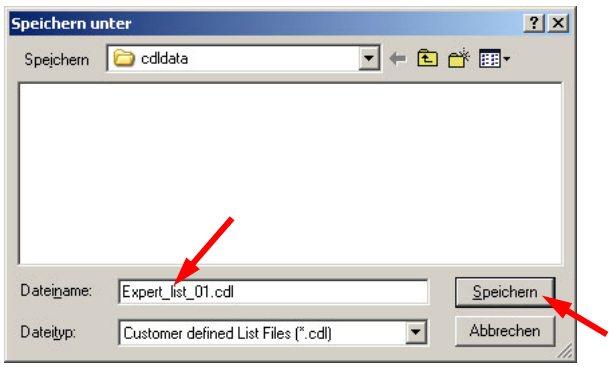


Figure 1-6 Saving the user-defined list

Note:

These values are not saved in the user-defined list, but in the drive object of the project. This is the reason that it is also not possible to save several user-defined lists in an object, which access the same parameters. The reason for this is that parameters values could be overwritten.

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1.4 User-defined Value List

From STARTER version 4.0, you can create user-defined value lists. A user-defined value list contains a subset of the optional parameters from an expert list with the associated value of the parameter. The parameter name, a comment and the value are saved in the user-defined value list. You can use a value list, for example, if you want to permanently save (diagnosis), restore or transfer (serial commissioning) a specific configuration of a drive device / DO. The user-defined value list replaces the user-defined list that existed up to V3.2 SP1.

The user-defined value list is saved in the standardized XML format version 1.0 (*.xml). The user-defined list that was created with the versions V3.2 or V3.2 SP1 can be opened and converted in V4.0. User-defined value lists that were created with V4.0 or later can no longer be used in an older version.

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Create user-defined list of values

Proceed as follows to create a user-defined value list:

You can create a user-defined value list from an expert list or a user-defined parameter list.

Select the **“Save list”** entry in the context menu of the tab of the expert list or the user-defined parameter list (refer to fig. 1-7).

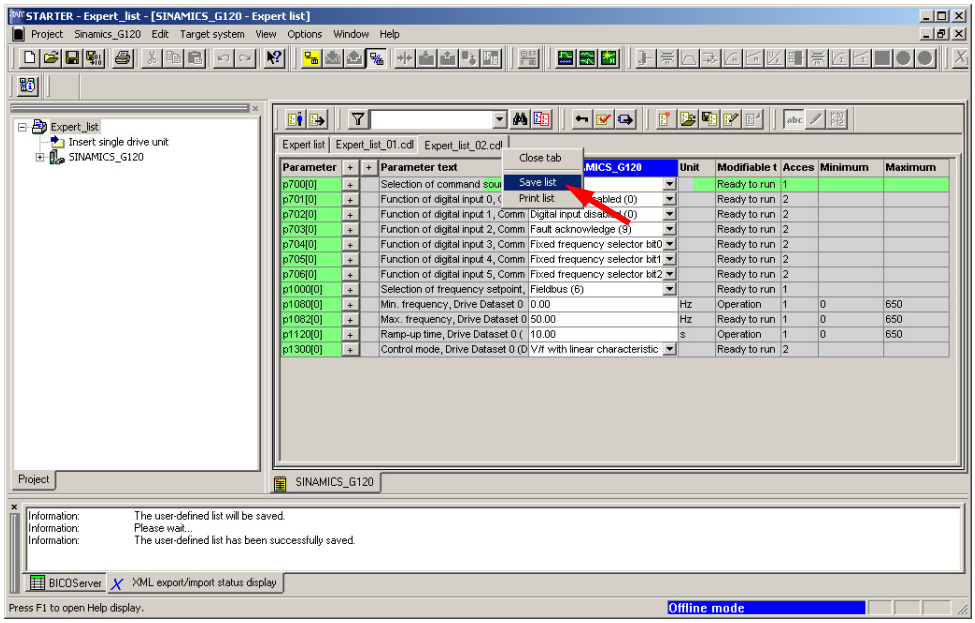


Figure 1-7 Create user-defined value list

Click the **"Save as user-defined list of values"** option in the displayed **Selection** dialog and click **"OK"** to confirm (refer to fig. 1-8).

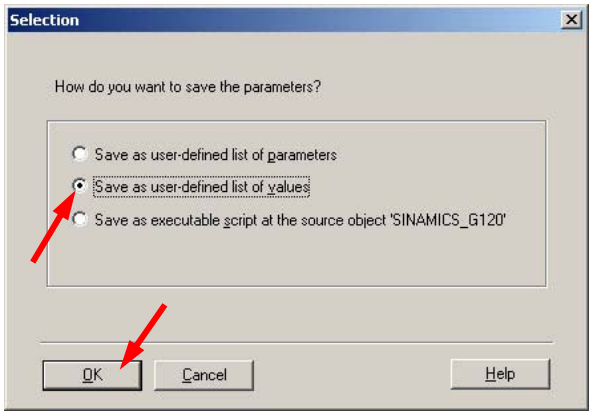


Figure 1-8 Save a subset of the parameters as a user-defined list of values

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Select the **File name** and **Storage location** and click **"Save"** to confirm (refer to fig. 1-9). The current list will be saved as value list (*.xml). This contains the current configuration and all read-write and read-only parameter values. The **read-only** values are used only for visualization in the value list. Only the read-write parameters are used for a subsequent transfer of the value list to the expert list.

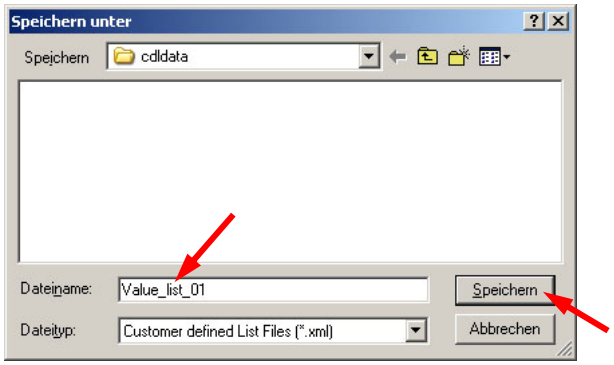


Figure 1-9 Save user-defined list of values

Open user-defined list of values

Proceed as follows to open a user-defined value list:

In the expert list, click **„Open user-defined list of values“** . In the displayed dialog you can select the list that is to be opened (refer to fig. 1-10).

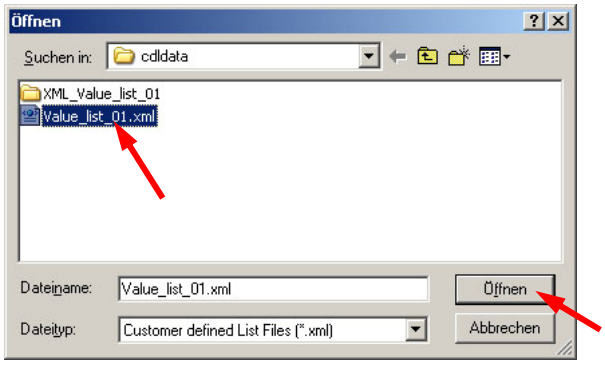


Figure 1-10 Open user-defined list of values

The **Value list display** will be displayed (refer to fig. 1-11). The content of the value list is reference for the comparison in the value list dialog. The comparison is made using the current values of the object in whose context the value list was opened.

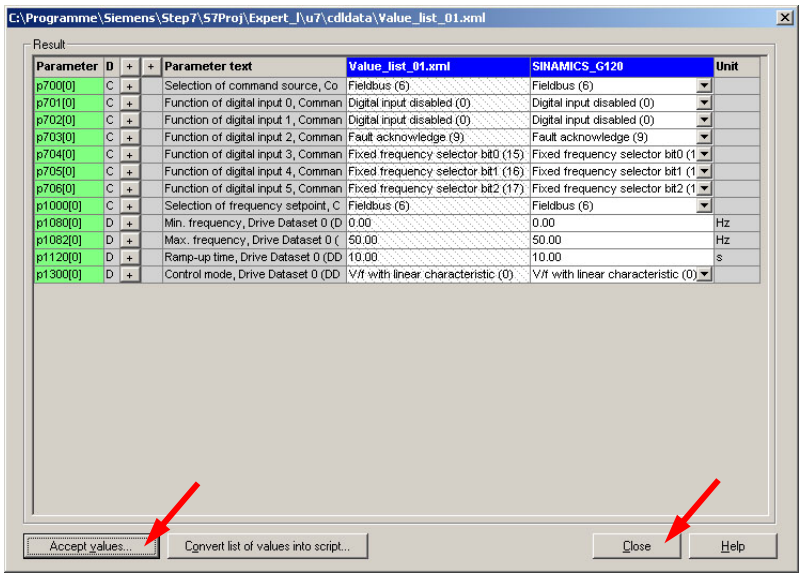


Figure 1-11 Value list display

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You can use this function to compare an expert list with a user-defined value list.

Click **Accept values** if the parameter values of the value list are to be transferred to the opened expert list. Click **Close** to retain the current values of the expert list (refer to fig. 1-11).

1.5 Save Expert List and User-defined Lists as Script

Within the expert list, from STARTER version V4.0 you can save a parameter set (expert list, user-defined parameter/value list) as a chain of write/read requests in script form. The script will be saved in the script folder below the object. If the script folder does not exist, it will be created. You can use this functionality, for example, to save the result of a comparison with the factory setting in script form or to perform a series commissioning of a number of drives by taking the parameterization from a reference drive.

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To create an executable script:

Select the **"Save list"** menu entry in the context menu of the tab of the expert list or a user-defined parameter list (refer to fig. 1-7).

In the displayed **selection** window, activate the **"Save as executable script"** option and click **"OK"** to confirm (refer to fig. 1-12).

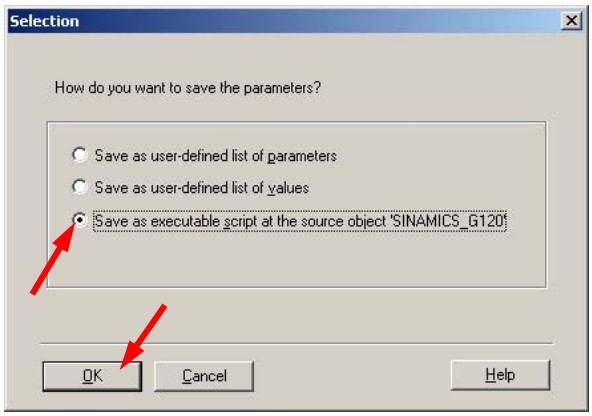


Figure 1-12 Save a subset of the parameters as an executable script

Enter a name in the displayed **"Insert script"** window and click **"OK"** to confirm (refer to fig. 1-13).

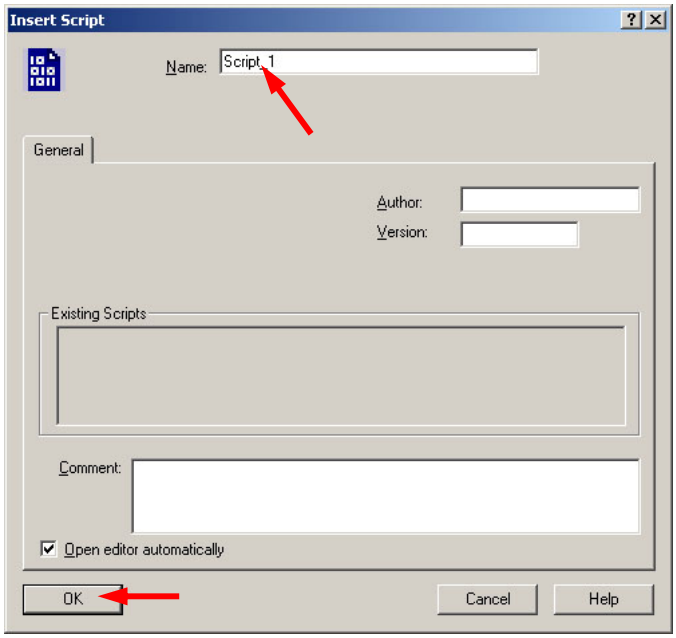


Figure 1-13 Insert script

A new script folder with the created script will be created below the object. Optionally, you can also export the script as ASCII text. Select the storage location and the name in the displayed **"Save as"** window (refer to fig. 1-14) or click **"Cancel"** if you do not want to export the script.

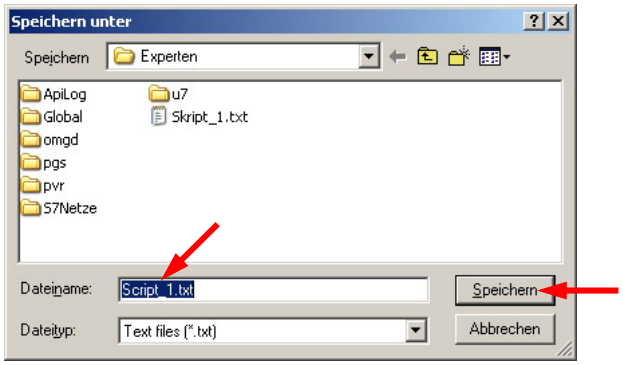


Figure 1-14 Export the script as ASCII text

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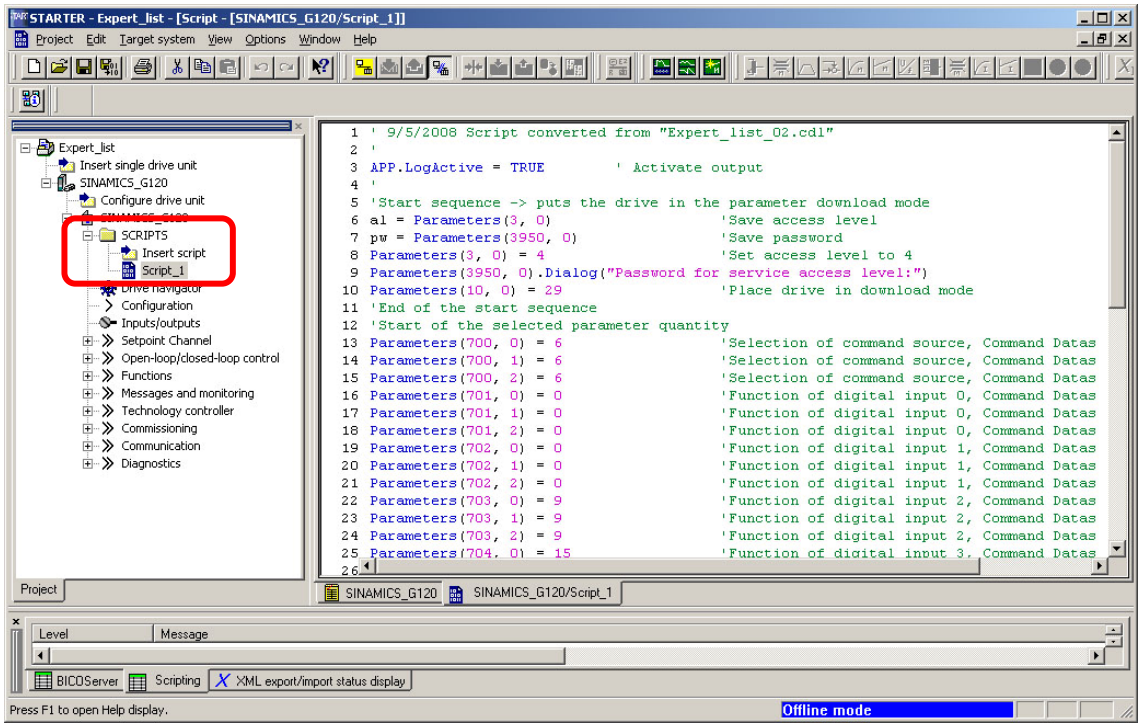


Figure 1-15 Converted script

You can also convert a value list into a script. To do this, click **"Open user-defined list of values"**  in the expert list to open a value list. In the **Value list display**, click **"Convert list of values into script"** (refer to fig. 1-16).

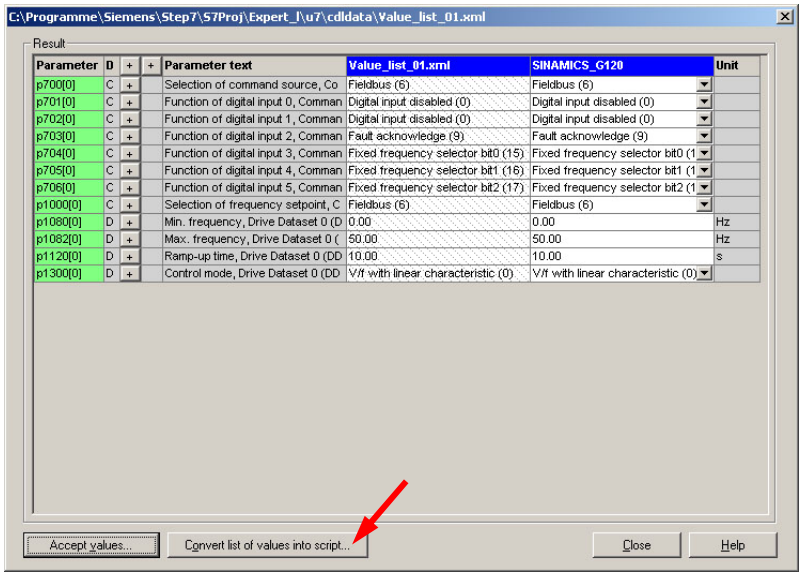


Figure 1-16 Convert list of values into a script

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Series commissioning of a number of drives using scripts

The STARTER scripts can be used for quick series commissioning of a number of drives by transferring the parameter assignments from a reference drive.

The scripts, exported as ASCII text, can be imported into a new project that is then used to commission a series of drives that can be then used to commission the drives.

Note:

Before you commission the drives using the scripts, set the drives to the factory settings (P0010 = 30, P0970 = 1).

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The procedure in detail:

1. Save the script in a folder on the hard disk of your computer if you transfer the script from another computer or download from the Internet.
2. Set-up a script folder for the drive in your STARTER project by clicking with the righthand mouse key on the drive; then click on **"Expert"** (lefthand mouse key) and on **"Insert script folder"**.

   A new folder appears **"SCRIPTS"** at the lower end of the tree.
3. Import the script from your folder into STARTER as described below:
   - Using the righthand mouse key click on the tab **"SCRIPTS"**;
   - Click on **"ASCII import..."** (refer to fig. 1-17) and open the required script file;
   - Assign a name to the opened file and acknowledge with **“OK”**.

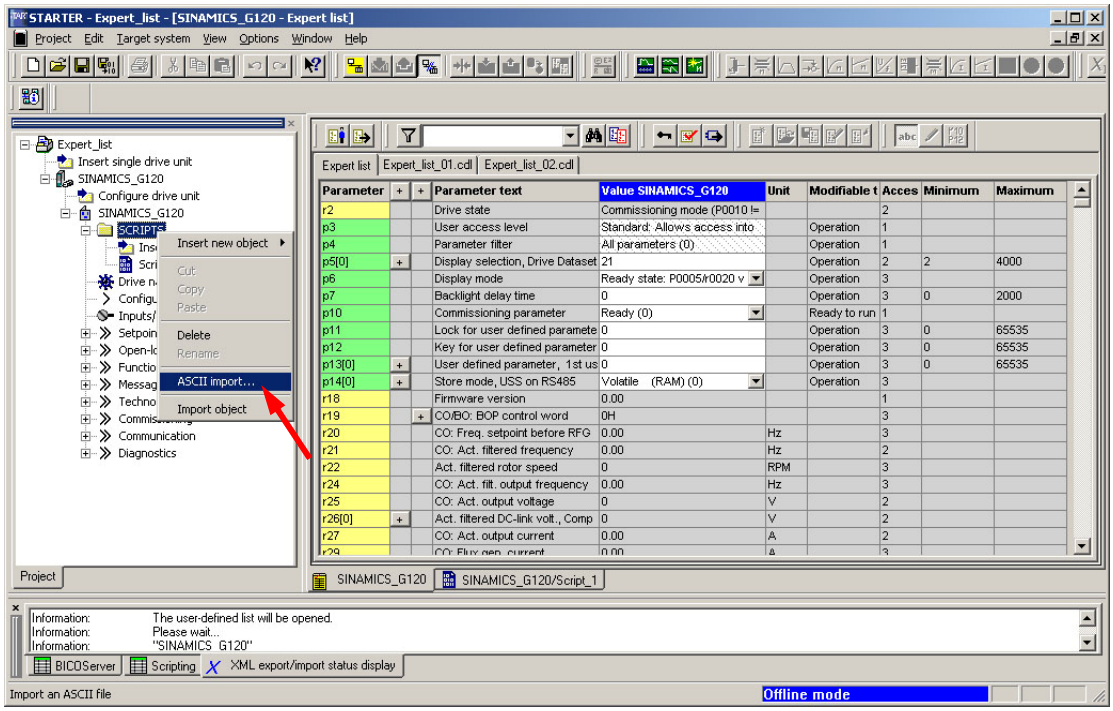


Figure 1-17 Import the script as ASCII text

4. Execute the script by clicking with the righthand mouse key on the script and clicking **"Accept and execute"**; or open the script by double clicking on it and then pressing the button  **"Accept and execute"**.

For more information on the scripts, please refer to the STARTER help.

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1.6 Display Filter – Expert List

The **"Display Filter"** window defines which function groups and parameter types are to be displayed in the expert list. The expert list is filtered according to the set criteria.

Press the **"Display filter"** button to activate the display filter.

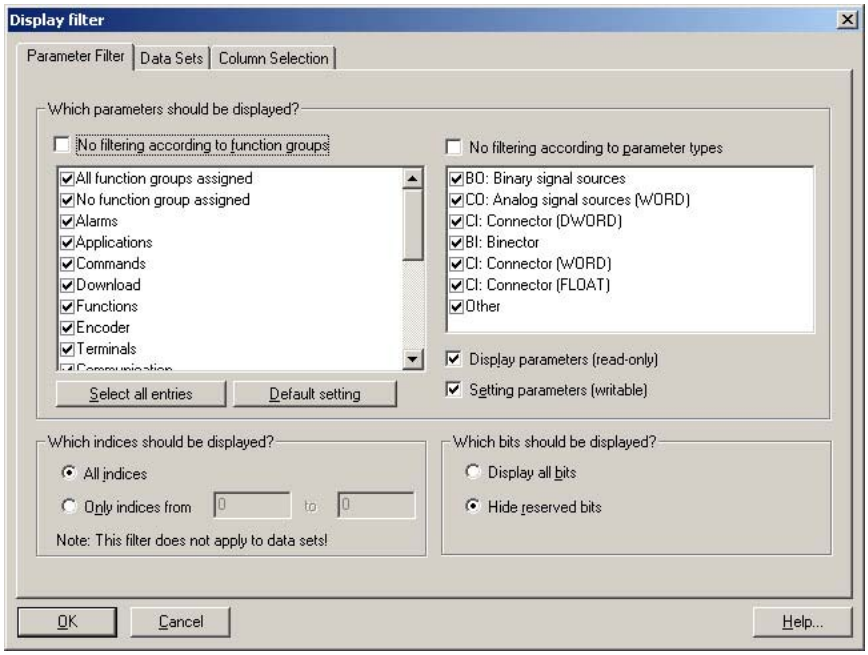


Figure 1-18 Display filter (Parameter filter)

A brief description of all of the buttons and tabs of the display filter is listed in the following table.

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Table 1-2 Display filter – Expert list

Field/Button	Meaning/Note
Parameter filter (not for a user-defined list)	
Which parameters should be displayed?	
No filtering according to function groups	Activate the checkbox if no filtering according to function groups is to be performed in the expert list and all parameters are to be displayed. If you deactivate the checkbox, parameters can be displayed for the individual function groups by activating the corresponding function group (e.g. **Motor** for parameters concerning the motor). You can activate more than one function group.
Select all entries	Click the button to display all entries. No filtering is carried out.
Default setting	Click the button to create the default setting for the filtering. Only certain function groups are displayed.
No filtering according to parameter types	Activate the checkbox if no filtering according to function groups is to be performed in the expert list and all parameters are to be displayed. If you deactivate the checkbox, parameters can be displayed for the individual function groups by activating the corresponding function group (e.g. **Binary signal source**). You can activate more than one parameter type.
Display parameters (read-only)	Activate **Display parameters** if only the readable parameters are to be displayed in the expert list. You cannot change the values for these parameters. They are marked with an **r** in the expert list (e.g. r2).
Setting parameters (writable)	Activate **Setting parameters** if only the writable parameters are to be displayed in the expert list. You can change the values for these parameters. They are marked with a **p** in the expert list (e.g. p2).
Which indices should be displayed?	
All indices	Activate **All indices** if all indexed parameters are to be displayed in the expert list.
Only indices from	Activate **Only indices from** if only certain indexed parameters are to be displayed in the expert list. Enter the range of indices for the parameters in the text fields to be displayed.
Which bits should be displayed?	
Display all bits	Activate this checkbox if all the assigned and not assigned bits of the parameters are to be displayed in the expert list.
Hide reserved bits	Activate this checkbox to hide the bits of the parameters that are not assigned in the expert list.

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Field/Button	Meaning/Note
Data sets (not for a user-defined list)	
No filtering according to data sets	Activate the checkbox if all parameters in the expert list are to be displayed and no filtering according to data sets is to be performed. Deactivate the checkbox so that you can configure the filtering according to data sets.
Filtering according to data sets	Activate the checkboxes in front of the data sets which are to be filtered. You can also specify the number of data sets that are to be displayed for each data set. The filtering of the data sets is static and only takes effect after confirmation with OK. There is no dynamic adjustment of the data sets if data sets are changed. The filtering is adjusted when you open the expert list, confirm the display filter dialog box with OK or change OFFLINE-ONLINE.
Column selection	
Which columns should be displayed?	Activate the checkbox(es) preceding the columns to be displayed in the expert list.

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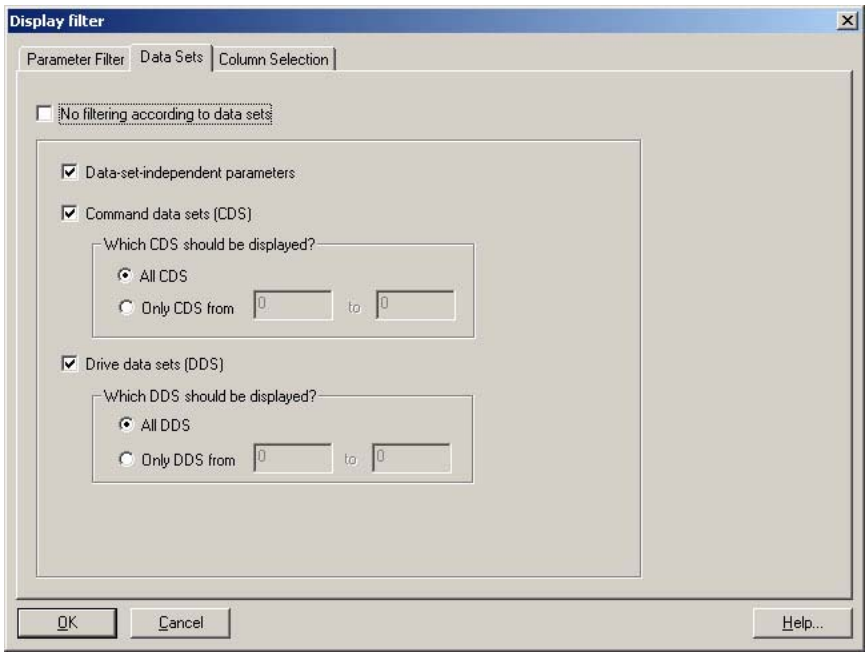


Figure 1-19 Display filter (Data sets)

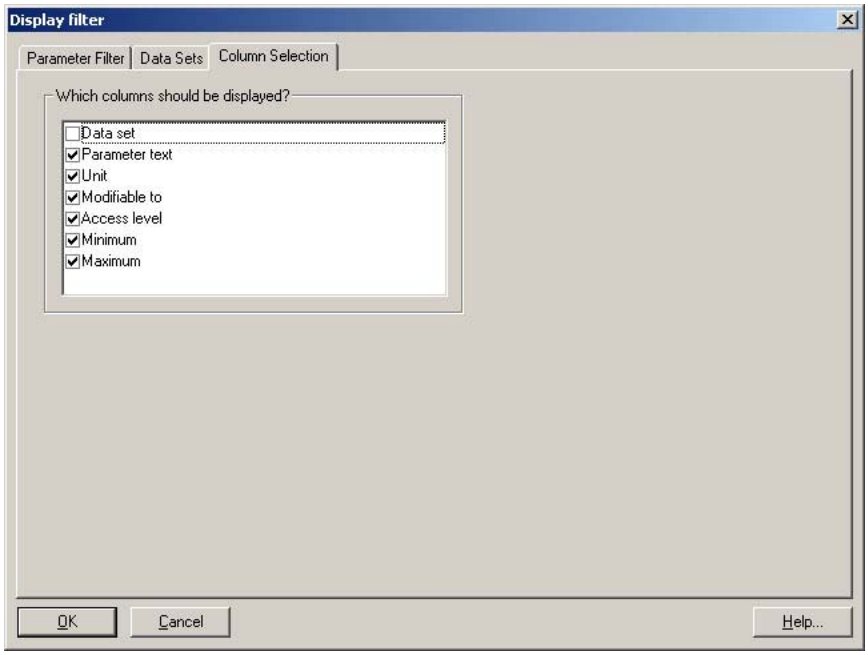


Figure 1-20 Display filter (Column Selection)

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1.7 Comparison – Expert List

In this window, you can compare the parameter setting differences of max. 5 objects (e.g. drive units) and the differences between the ONLINE and OFFLINE mode of an object. Parameters with different settings or parameters not available for an object are presented in a list.

A comparison can only be made within groups of compatible objects (devices/DO). Only the possible objects will be made available for the comparison.

A brief description of all of the buttons and the filter of the comparison window is provided in the following table.

Table 1-3 Comparison – Expert List

Button/ Table column		Meaning/Note
Objects to be compared		Activate the checkbox in front of the objects you wish to compare. You can compare up to five objects with one another and objects in OFFLINE and ONLINE mode. In the ONLINE mode, separate checkboxes are available for the ONLINE and OFFLINE parameterization of an object. The uppermost list which is grayed-out is used as reference list. By comparing the expert list of the drive in ONLINE and OFFLINE mode, you can find the inconsistencies in the parameter values. Only the parameter values are compared. Inconsistencies, for example, caused by differences in the project hardware and the connected hardware, cannot be analyzed. When resetting a drive unit or drive objects and option modules to the factory settings, not all parameters are reset to the factory settings. Especially power-unit-dependent default settings are not reset. Therefore differences are displayed when comparing the new parameters with the factory settings.
	New comparison	Click **New comparison** to compare the parameter settings of the selected objects. The compared settings are listed under **Result**.
Which parameters should be displayed?		Select the parameter types which should be displayed under **Result** after the comparison.
	Non-comparable	Only the parameters which cannot be compared are displayed under **Result**.
	Values not the same	Only the parameters whose values are not the same are displayed under **Result**.
	Same values	Only the parameters whose values are the same are displayed under **Result**.

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Button/ Table column	Meaning/Note
Display filter mode	
Parameter filter active	Only those parameters are displayed which are specified under **Display filter** in the **Parameter filter** tab.
Column selection only	Only those columns are displayed which are specified under **Display filter** in the **Column selection** tab.
Refresh lines	Click the button to refresh the display under **Result** after you have respecified the displayed parameters.
Display filter	Click the button to open the **Display filter** window. Here you can filter the parameter display or hide columns.
Result	**Result** displays the parameters found to have different settings in the comparison of the objects or other parameters which are not available for an object. Diverging values and non-comparable parameter values are highlighted in colour.
Non-comparable parameters	Displays the number of parameters which are only available in one of the objects to be compared, as a result of which a value comparison is impossible. **Result** displays the non-comparable values highlighted in colour. The parameters are shown in colour.
Parameters with the same values	Displays the numbers of parameters having the same value for all objects.
Parameters with different values	Displays the numbers of parameters having different values for the objects. **Result** displays the different values highlighted in colour.
Save the comparison result	Click the button to save the comparison results as new user-defined parameter/value list or as executable script. The button is only active when the parameters of a device are displayed under **Result**. You cannot save comparison results of more than one object in a user-defined list. Prior to storing, you must specify which object is to be saved.
Print comparison result	Click the button to print comparison results in a tabular form. Each object will be printed with its corresponding parameter number, value and unit.

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Proceed as follows to start a new comparison:

- Press the **"Comparison"** button.
- In the dialog box that is displayed, select the objects (drives) whose parameters must be compared.
- In the righthand part of the window, select which parameters are to be displayed.
- Select the display mode.
- When required, you can also parameterize the display filter.
- Then press on the **"New comparison"** button (refer to Fig. 1-21).

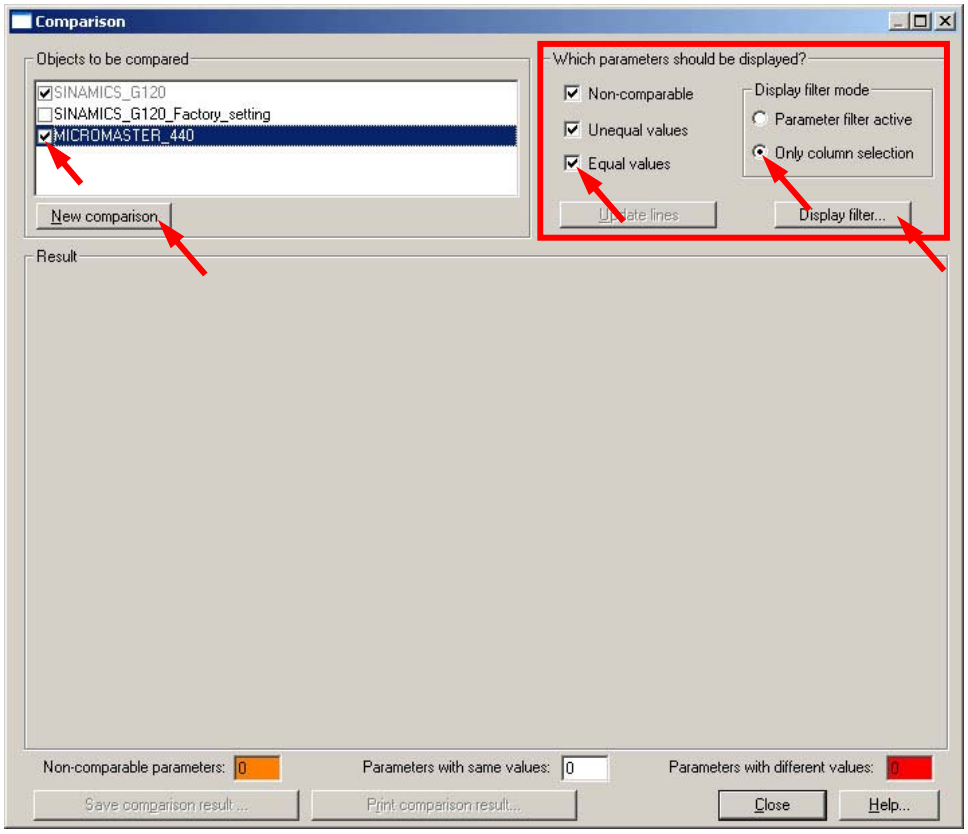


Figure 1-21 Starting a new comparison

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A window opens to enable the parameters of access level 4. Select **"Display parameters with Access level 4 in "read only" mode“** and acknowledge with **"OK"** (refer to Fig. 1-22).

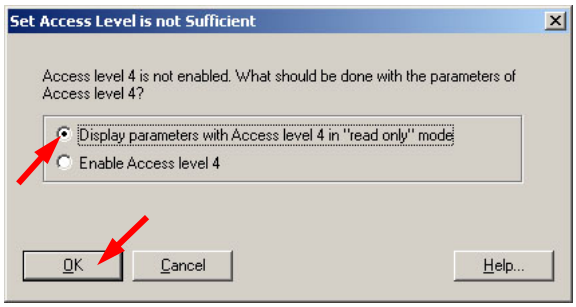


Fig. 1-22 Enabling the parameters of access level 4

The comparison operation is then subsequently started.

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Result displays the parameters found to have different settings in the comparison of the objects or other parameters which are not available for an object. Diverging values and non-comparable parameter values are highlighted in colour (refer to fig. 1-23). For a detailed description of all of the buttons, columns, lines, cells and colors, please refer to Table 1-3.

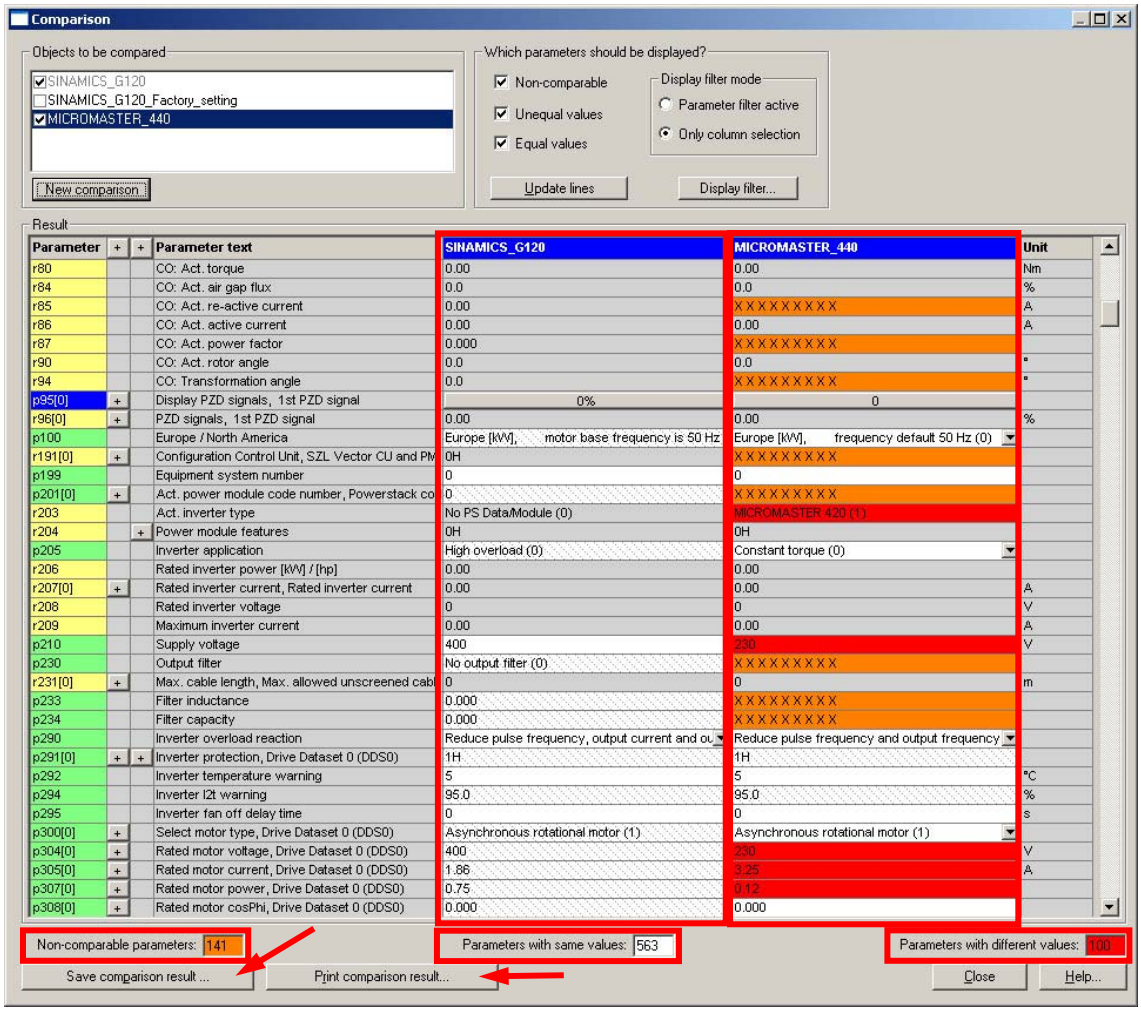


Figure 1-23 Comparison result

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There are two ways of documenting the results of the comparison operation. You can either save or print-out the results of the comparison operation.

Save the comparison result

Click the button to save the comparison results as new user-defined parameter/value list or as executable script (refer to fig. 1-24). The button is only active when the parameters of a device are displayed under **Result**.

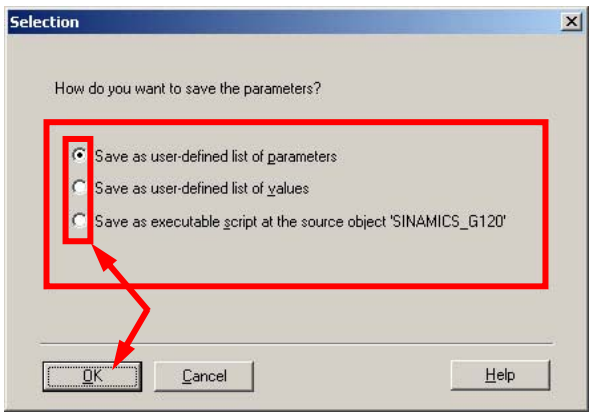


Figure 1-24 Save the comparison result

You cannot save comparison results of more than one object in a user-defined list. Prior to storing, you must specify which object is to be saved (refer to fig. 1-25).

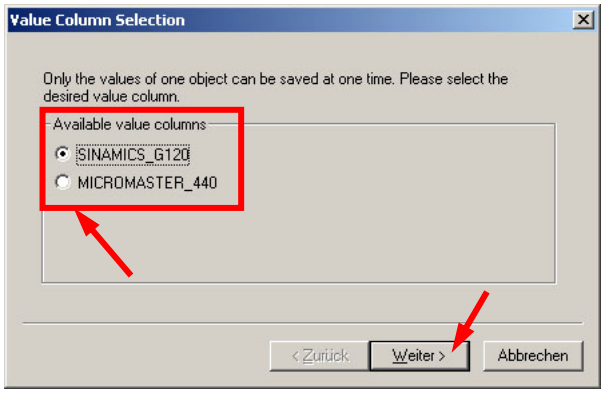


Figure 1-25 Value column selection

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A message is displayed that the parameters that cannot be compared cannot be saved and that they must be removed. Close the message by pressing **“Continue”** (refer to Fig. 1-26).

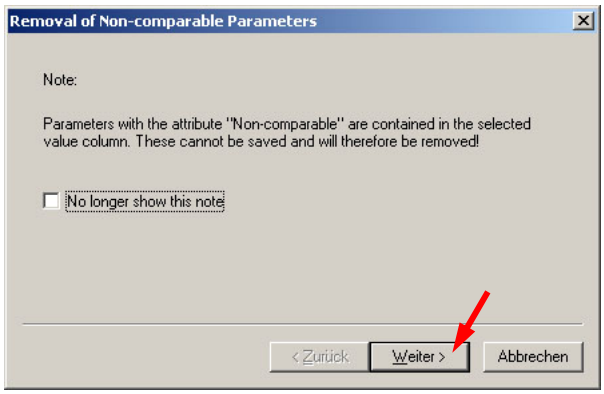


Figure 1-26 Removal of non-comparable parameters

A message is displayed that the parameter filtering operation has been completed and the parameters can be saved. Close the message by pressing **“Complete”** (refer to Fig. 1-27).

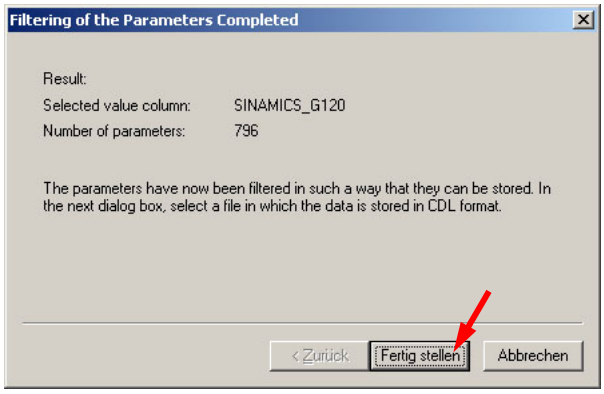


Figure 1-27 Filtering of the parameters completed

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In the following dialog box, select a file in which the data are to be saved (refer to Fig. 1-28).

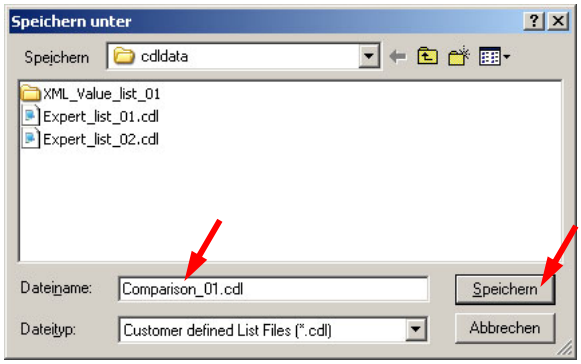


Figure 1-28 Saving the results of the comparison in a file

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Print comparison result

Click the **„Print comparison result“** button to print comparison results in a tabular form (refer to fig. 1-23).

A window is opened to make the selection and for the printer settings. When required, adapt this and then acknowledge with **“OK”** (refer to Fig. 1-29).

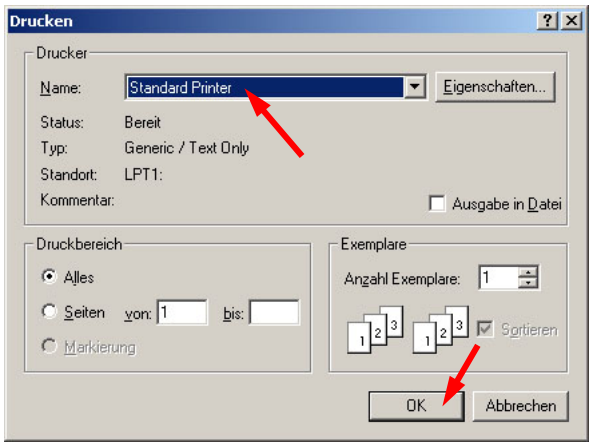


Figure 1-29 Print comparison result

Each object will be printed with its corresponding parameter number, value and unit.

Comparison with a user-defined value list

From STARTER V4.0, comparison with a user-defined list is no longer possible. Only the comparison with a user-defined value list is supported. You can perform this comparison by clicking **"Open user-defined list of values"**  in the expert list and comparing the current expert list with the opened value list (refer to fig. 1-30).

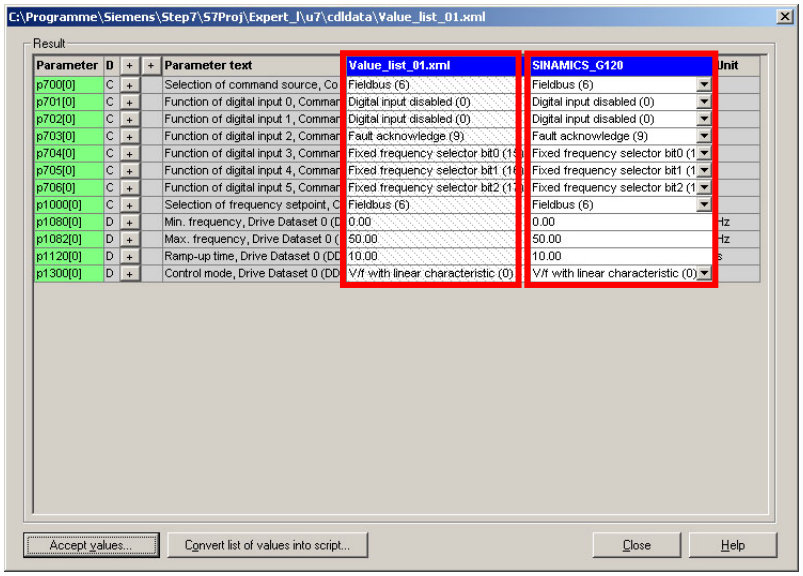


Figure 1-30 Compare the actual expert list with a user-defined value list

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1.8 Extended Search – Expert List

In the **Extended Search** window, you can search for all the parameters for the drive for specific search texts and display the results (refer to fig. 1-31).

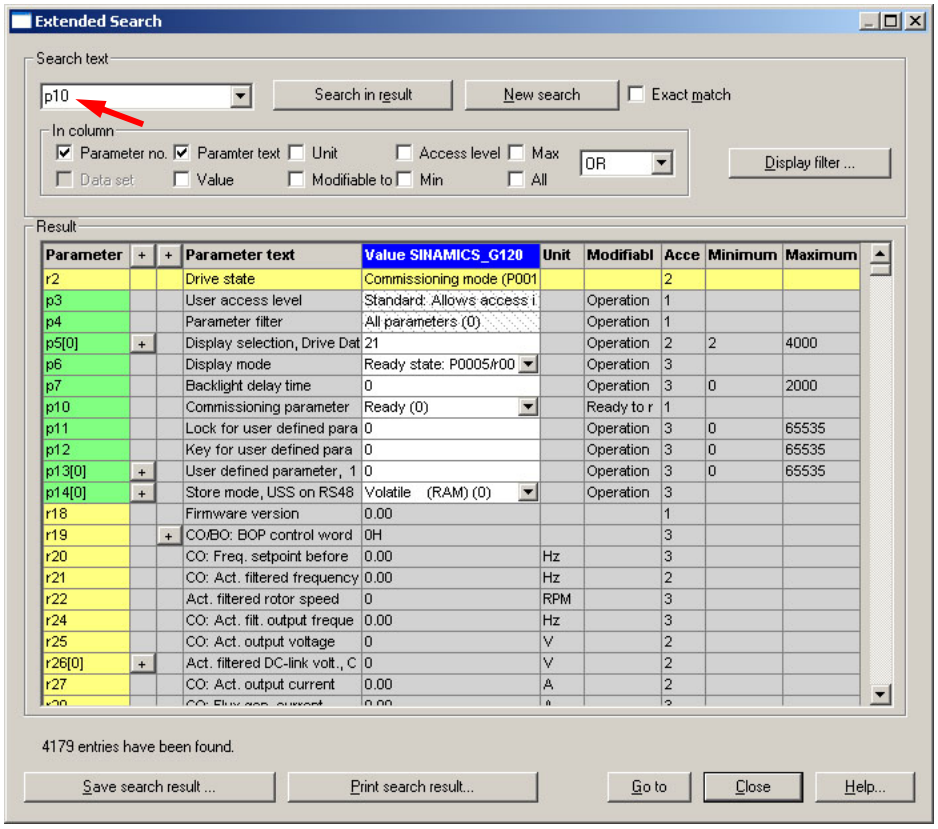


Figure 1-31 Extended Search – Expert List

You will find a brief description of all of the buttons and filters of the **"Extended Search"** window in the following table.

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You can set the following parameters:

Table 1-4 Extended Search – Expert List

Field/Button	Meaning/Note
Search text	Use the **Selection list** under **Search text** to enter the term to be searched for in the expert list (e.g. p10 for the search for parameter p10). You can search for single terms or multiple terms. All columns of the expert list which were activated under **In column** will be searched. Only "search for parameter number" has been set as default.
Search in result	**Search in result** searches for the new search text only among those parameters listed under **Result**.
New search	**New search** searches for the search text throughout the entire expert list.
Exact match	Activate **Exact match** if the search result is to match the search text precisely (e.g. p10 only finds the parameter p10 and not p100, p1000 etc.).
In column	Selects the columns of the expert list to be searched. Activate the checkbox in front of the column name to search this column. Activate **All** to search all columns of the expert list. You can optimize the search in the columns by using the logic operations **AND** or **OR**. If you select **AND**, the search text must be found in all activated columns. If you select **OR**, the search text must be in only one of the activated columns.
Display filter	Click **Display filter** to open the **Display Filter** window. in which the parameters to be displayed in the expert list can be selected.
Result	**Result** displays those parameters which contain the search text.
Save as user-defined list	Click the button to save the search result as user-defined list.
Print search result	Click **Print search result** to print all parameters listed under **Result** in tabular form.
Go to	Click **Go to** to jump directly to the parameter found in the expert list after closing the window. The respective parameter is marked in the expert list after closing the window.

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1.9 Set Access Level – Expert List

Press the button **„Access Level“**  to select the access rights for the parameters.

In the displayed window **„Set Access Level“** you can choose between four predefined access levels and one user-defined access level (see also p3).

Independent of the setting that has been selected, all of the parameters with access levels 1-3 are always displayed.



Figure 1-32 Set Access Level

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You can set the following parameters:

Table 1-5 Access Level – Expert List

Field/Button	Meaning/Note
Access level	**Standard** Allows access to the most frequently used parameters.
	Extended Allows extended access to the I/O functions of the drive.
	Expert Only for the experienced user.
	Service/reserved Only for authorized service personnel. Access is password-protected. You must enter the password in the text field displayed.

1.10 Settings – Expert List

Press the button **„Settings“** . In the displayed window choose the representation of bit arrays (refer to fig. 1-33).

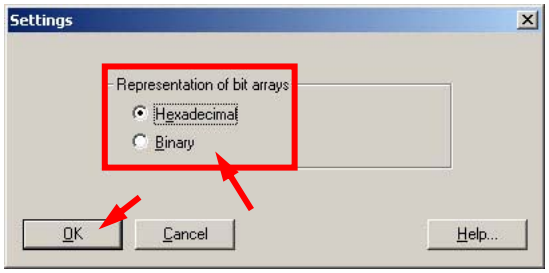


Figure 1-33 Settings – Expert List

You can set the following parameters:

Table 1-6 Settings – Expert List

Field/Button	Meaning/Note
Bit field presentation	Select whether the values of the bit-coded parameters should be displayed in a hexadecimal or binary form.

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1.11 Convert Parameter Set to a STEP7 Data Block (DB)

A parameter set from the Starter Drive ES / Scout expert list is converted to STEP7 data blocks; with the aid of the PDAT_UD2 function block (parameter upload and download), they can then be downloaded from the DRVDPS7 library (Product Drive ES SIMATIC) to the drive via the CPU. This requires the installation of STEP 7 V5.1 SP3 or higher.

To convert the parameter set to a data block:

In the expert list, click **„Convert list to S7 data block“** .

The “**Select S7 block folder”** window appears.

Select a folder in which the S7 data blocks are to be saved and acknowledge the selection with **"OK"** (refer to Fig. 1-34).

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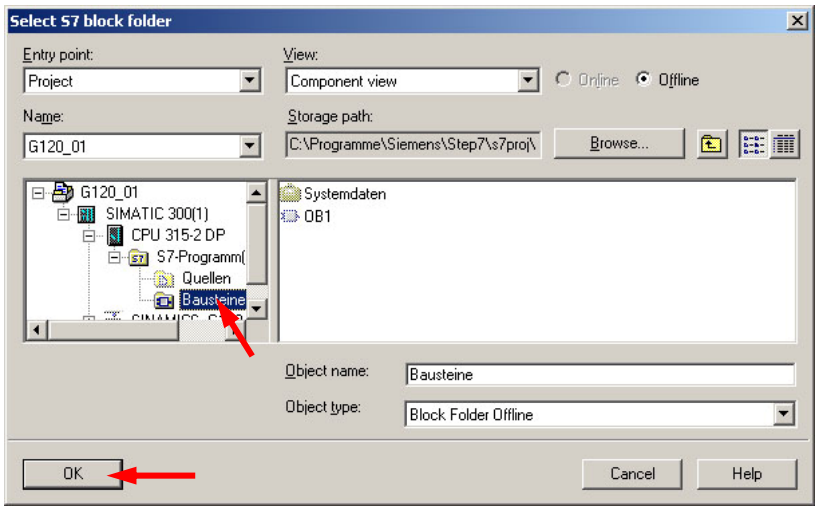


Figure 1-34 Select S7 block folder

The **“Convert parameter set to DB”** window appears (refer to fig. 1-35). The number of required download data blocks of the selected parameter set is displayed.

Here, you can again define the block folder for the download data blocks by pressing the **"Select S7 block folder…“** button.

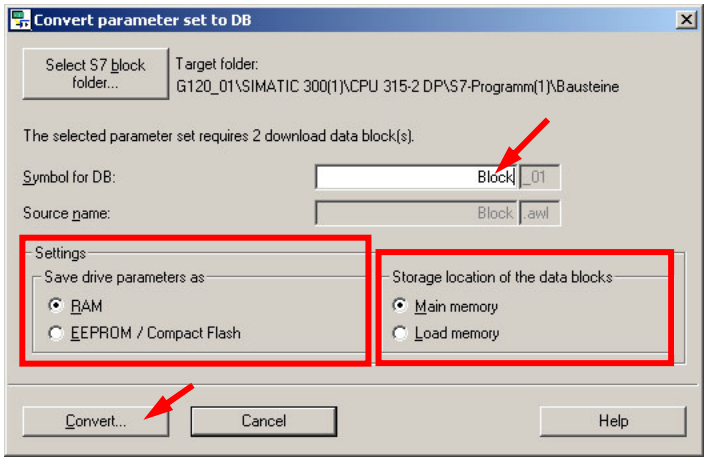


Figure 1-35 Convert parameter set to DB

After you have selected an S7 block folder, you must enter a valid symbol name (without (single) quotation marks or blank). This name is appended with a number ranging from "_01" to "_xx" to assign a unique symbolic name to each data block.

In the **“Settings”** dialog field you can decide whether to save the parameters as volatile data in the RAM or as retentive data in the EEPROM / Compact Flash of the drive. In addition, you can determine the **storage location** of the DBs.

Data blocks can be designated as "not execution-relevant" (key word UNLINKED). This means that when loading to the CPU, these blocks are stored in the load memory of the CPU and only copied to the main memory when required. This saves space in the main memory of the CPU. You can influence this via the **storage location of the data blocks** selection.

By clicking the **Convert...** button you now access the **Assign DB number -> Symbol** dialog. This dialog suggests a plausible absolute address for the first data block to be generated, the so-called Start data block. It must be confirmed with ENTER (refer to fig. 1-36).

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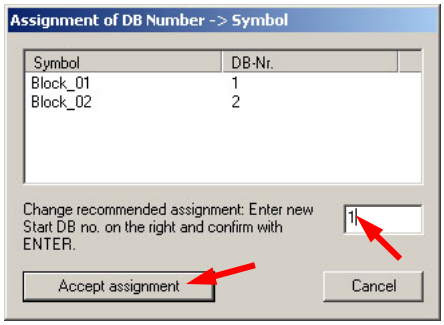


Figure 1-36 Assignment of DB Number

If you change a number you must observe the following conditions:

- The number of the starting DB must be greater than 0 and that of the last DB – the so-called end DB – must be less than 65536.
- The absolute addresses in the symbol table may not be assigned to any other symbol names, i.e. if the symbol name 'Test_01' is assigned to address DB5 then this can be changed to DB6 as long as no other symbol name has already been assigned to address DB6.

Note:

The maximum number of loadable data blocks is dependent on the existing CPU. This has to be taken into account with the number assignment of the download data blocks.
Normally, 1 DB is required per parameter set, because the converter generates multi-parameter jobs.
No data blocks are deleted automatically.
It is possible to overwrite an existing download data block after confirmation.

The conversion process is started by clicking the **Accept assignment** button.

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The **"Symbol table has been imported“** message is displayed. Press **"Yes"** if you wish to open the log file - or **"No"** to start the conversion operation (refer to fig. 1-37).

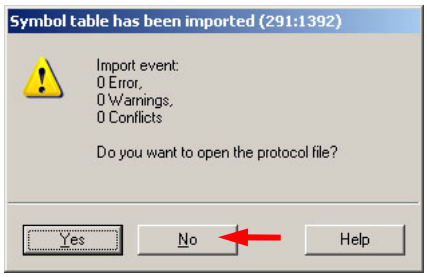


Figure 1-37 Open the protocol file

After the parameter set has been successfully converted, the appropriate message is generated. Close this by pressing **"OK"** (refer to fig. 1-38).

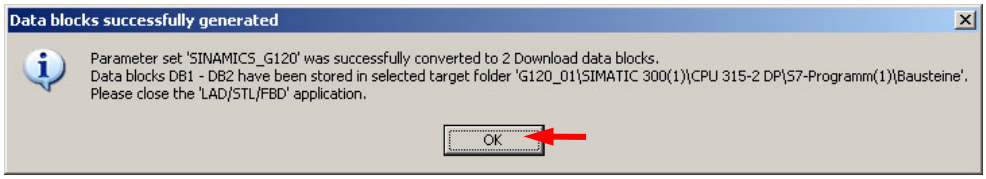


Figure 1-38 Data blocks sucessfully generated

The converted data blocks are in the folder of the S7 project that has been selected for the data blocks (refer to Fig. 1-39).

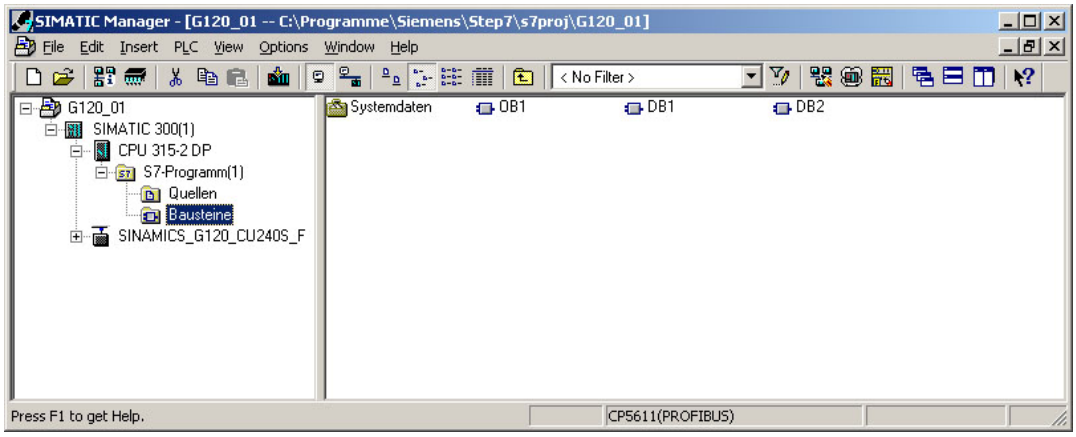
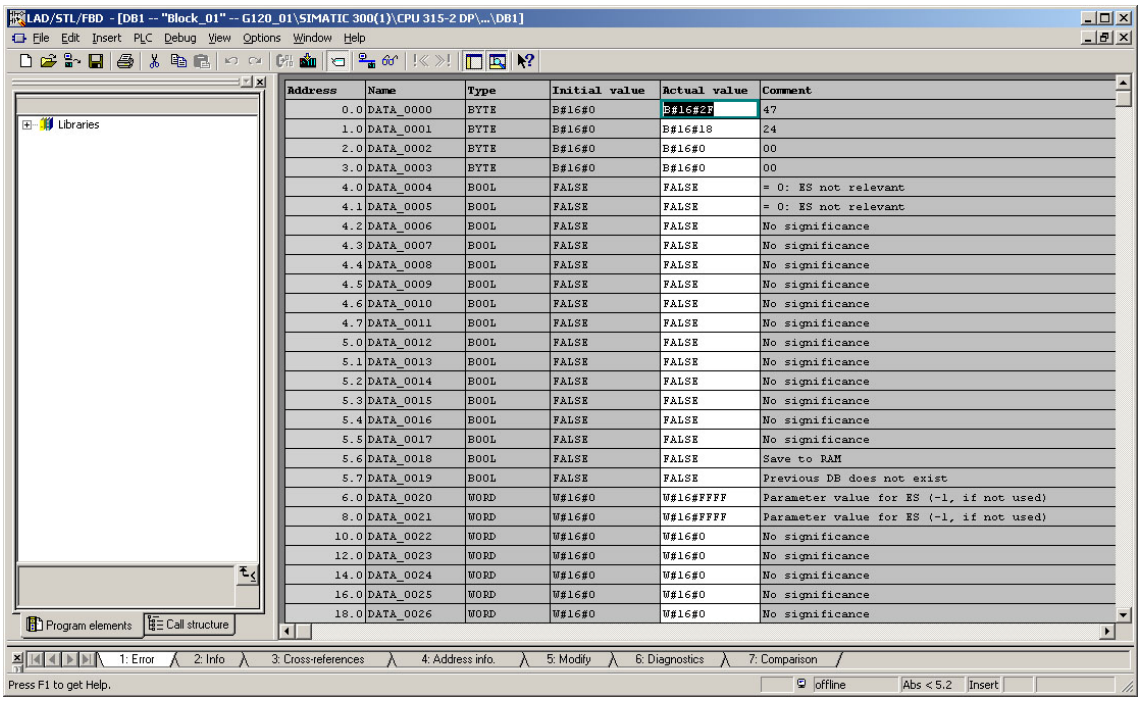


Figure 1-39 Converted data blocks

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Contents of the data blocks:



Address	Name	Type	Initial value	Actual value	Comment
0.0	DATA_0000	BYTE	B#16#0	B#16#2F	47
1.0	DATA_0001	BYTE	B#16#0	B#16#18	24
2.0	DATA_0002	BYTE	B#16#0	B#16#0	00
3.0	DATA_0003	BYTE	B#16#0	B#16#0	00
4.0	DATA_0004	BOOL	FALSE	FALSE	= 0: ES not relevant
4.1	DATA_0005	BOOL	FALSE	FALSE	= 0: ES not relevant
4.2	DATA_0006	BOOL	FALSE	FALSE	No significance
4.3	DATA_0007	BOOL	FALSE	FALSE	No significance
4.4	DATA_0008	BOOL	FALSE	FALSE	No significance
4.5	DATA_0009	BOOL	FALSE	FALSE	No significance
4.6	DATA_0010	BOOL	FALSE	FALSE	No significance
4.7	DATA_0011	BOOL	FALSE	FALSE	No significance
5.0	DATA_0012	BOOL	FALSE	FALSE	No significance
5.1	DATA_0013	BOOL	FALSE	FALSE	No significance
5.2	DATA_0014	BOOL	FALSE	FALSE	No significance
5.3	DATA_0015	BOOL	FALSE	FALSE	No significance
5.4	DATA_0016	BOOL	FALSE	FALSE	No significance
5.5	DATA_0017	BOOL	FALSE	FALSE	No significance
5.6	DATA_0018	BOOL	FALSE	FALSE	Save to RAM
5.7	DATA_0019	BOOL	FALSE	FALSE	Previous DB does not exist
6.0	DATA_0020	WORD	W#16#0	W#16#FFFF	Parameter value for ES (-1, if not used)
8.0	DATA_0021	WORD	W#16#0	W#16#FFFF	Parameter value for ES (-1, if not used)
10.0	DATA_0022	WORD	W#16#0	W#16#0	No significance
12.0	DATA_0023	WORD	W#16#0	W#16#0	No significance
14.0	DATA_0024	WORD	W#16#0	W#16#0	No significance
16.0	DATA_0025	WORD	W#16#0	W#16#0	No significance
18.0	DATA_0026	WORD	W#16#0	W#16#0	No significance

Figure 1-40 Contents of the data blocks

The parameter download with the aid of the function block PDAT_DL is explained in the functional description *Drive ES SIMATIC, DRVDPS7 block library* and the respective Online Help.

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2 Commissioning tool Drive Monitor

2.1 Parameter sets in Drive Monitor

A Drive Monitor parameter set is a file, which contains a number of parameter numbers with parameter values. In the offline mode, such a parameter set behaves, on the Drive Monitor screen, similar to a drive which is connected online: Parameter values can be read-out and written in.

A parameter set can contain all of the parameters of a drive type or only just a few parameters.

You can generate as many parameter sets as you require, save them under filenames which you can define, print and write them into the drive converters (download).

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There are various ways of setting-up new parameter sets:

- Generating parameter sets based on the factory setting of the current drive converter
- Generating empty parameter blocks
- Generating parameter sets by comparing two existing parameter sets
- Generating parameter sets by reading (upload) the parameters of a drive converter.

Further, you can copy existing parameter sets (and save them under another name).

Caution:

Parameter sets are always assigned to one drive converter type. Only parameter sets of the same drive converter type are located in a parameter folder in SIMATIC- or Drive ES Manager (e.g. MICROMASTER 440) and the same software version (e.g. 2.1).

Note:

If you generate a new parameter set in Drive Monitor, you can enter a file name via a file selection box. The name of the first parameter set is entered in the current chart folder as default. If you generate a new parameter set in the SIMATIC- or Drive ES Manager, then initially, a default name is specified (”parameter set (consecutive No.)”).

In both cases, you can subsequently change the parameter set name.

2.2 Generating a parameter set based on the factory setting

A parameter set **"based on the factory setting"**, contains all of the parameters and parameter values which are set in a drive converter in the factory. This also includes parameters which cannot be changed (parameters which can only be read). If you work with such a file in the offline mode, you will see the parameter values on the Drive Monitor screen, which were set when the drive converter was shipped from the plant or a drive converter where the factory setting has been re-established.

In this case, you can change any parameters offline (parameters which can be written into) and then subsequently transfer the revised file online to the drive converter (download).

Pre-requisite:

The drive is in the offline mode (if this is not the case, the menu item is gray and cannot be selected).

Proceed as follows:

If you are already in the offline mode, select the menu command **"File > New > Based on the factory setting"** (refer to fig. 2-1) or press the button **"New parameter set with factory settings"**  in the function bar. You can save the parameter set, which was previously opened, in the dialog box which opens, or overwrite it with the new parameter set.

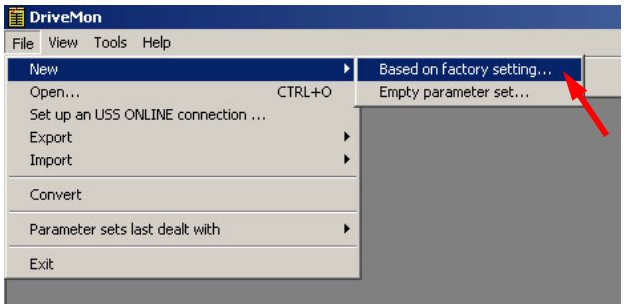


Figure 2-1 Generating a parameter set based on the factory setting

If you are in the online mode, go to the offline mode (using the offline button in the function bar), select the menu command **"New file > Based on factory setting"** in the pop-up menu which then opens.

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A window for the drive properties opens (refer to Fig. 2-2). Here, select the frequency inverter type (e.g. MICROMASTER 440), the frequency inverter version (e.g. 02.1), the bus address (e.g. 0) and the number of PZD (2).

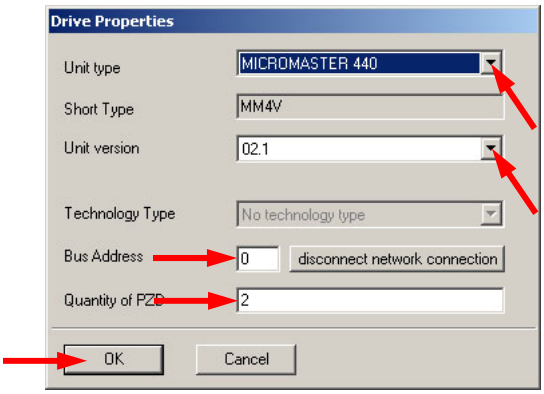


Figure 2-2 Set drive properties

In the next window, select the location where the data is saved and the file name for the parameter set (refer to Fig. 2-3).

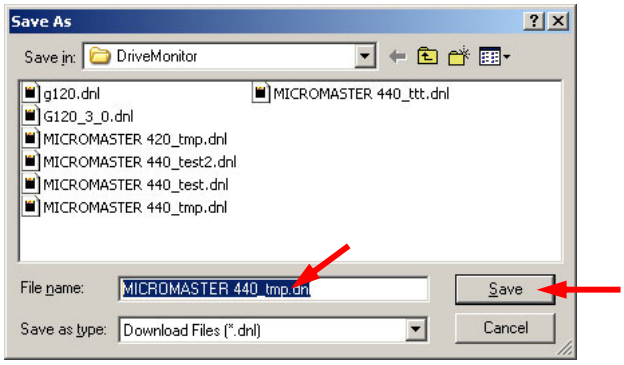
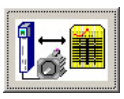


Figure 2-3 Selecting the location where the data is saved and filename

Press on the **"Direct to parameter list"**  button or, in the drive window, press on the **"Direct to parameter list" button** (refer to Fig. 2-4), in order to access the parameter list.

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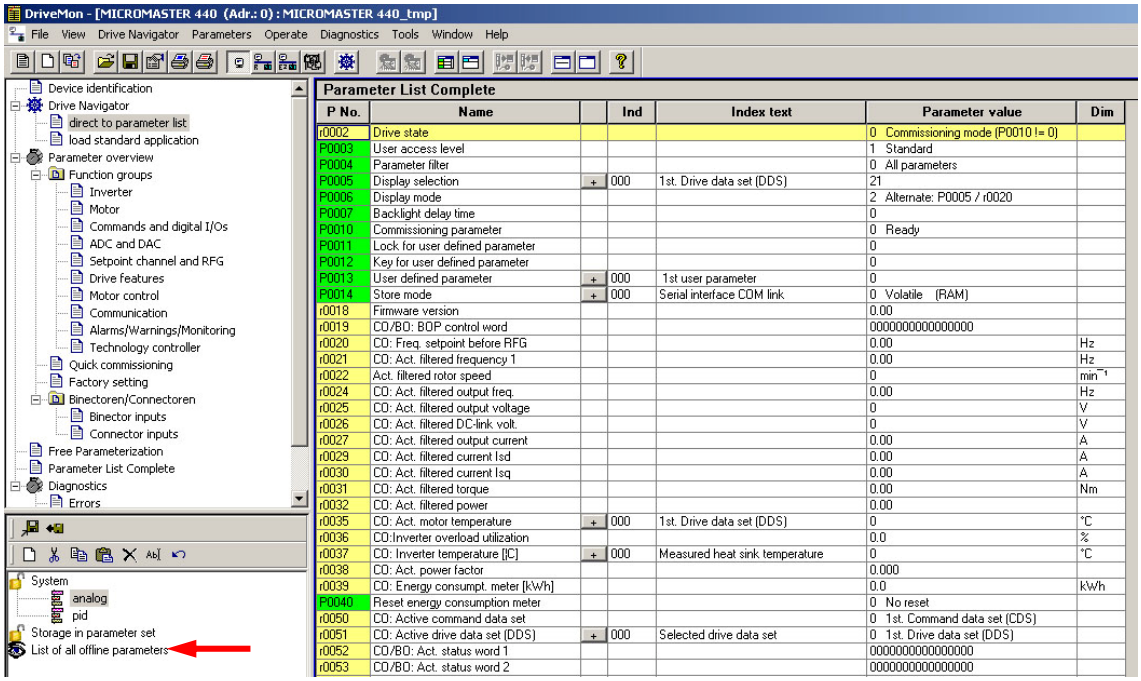


Figure 2-4 Opening the parameter list

It is possible to open various groups of parameters using the drive window – e.g. frequency inverter, motor, commands and digital I/Os, ADC and DAC and others (refer to Fig. 2-4).

You can open the list of all of the offline parameters by pressing on the **"List of all offline parameters"** button in the Explorer (refer to Fig. 2-4).

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2.3 Generating an empty parameter set

Select the menu command **“File > New > Empty Parameter Set”** (refer to fig. 2-5) or press the button **“New empty parameter set”** in the function bar.

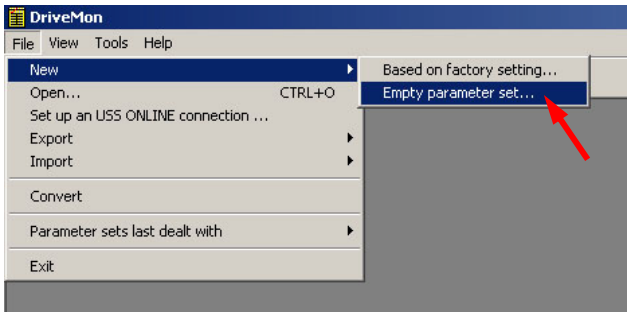


Figure 2-5 Generating an empty parameter set

Initially, an empty parameter set does not contain any parameter values (refer to fig. 2-6).

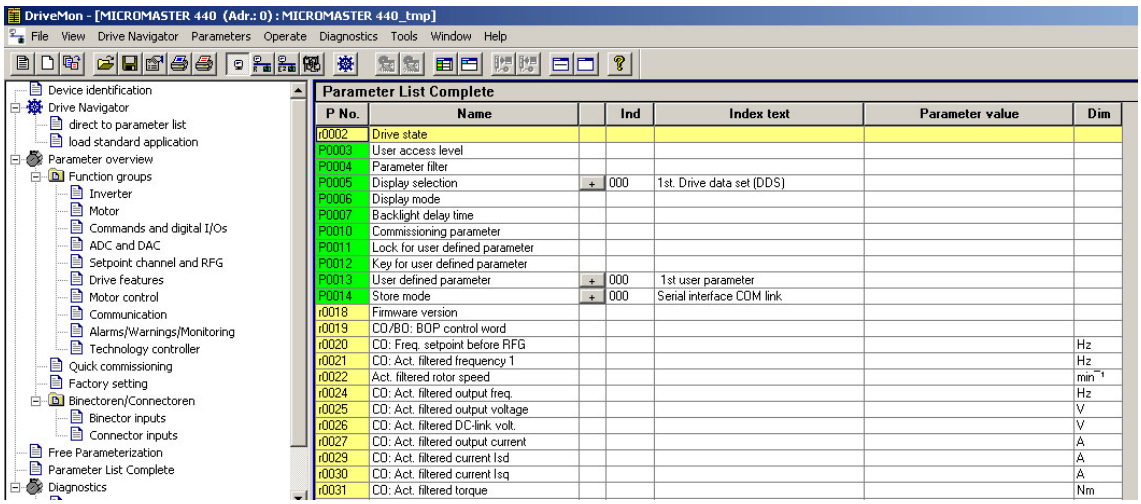


Figure 2-6 Empty parameter set

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If you work offline with such a file, you will see five question marks (?????) on the Drive Monitor screen instead of the parameter values.

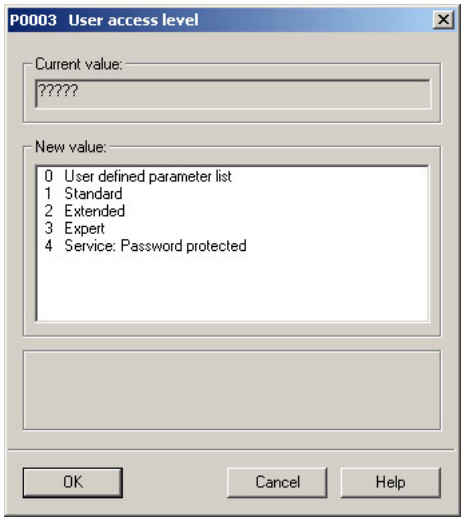


Figure 2-7 Enter a parameter value

You can enter any parameter values, which then replace the question marks. The parameter set then contains the number of parameters which you entered. This means that a subsequent download is especially effective.

For additional information, please refer to the Drive Monitor help.

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2.4 Comparing parameter sets

Drive Monitor can compare two existing parameter sets. The result of the comparison is then contained in a new parameter set.

Description:

All of the parameter entries of the actual parameter set (APS) are compared with the appropriate entry of the parameter set to be compared (VPS). The actual PS (APS) is always that parameter set whose name is entered in the Drive Monitor title line or in the title line of the actual parameter window (if several parameter sets have been simultaneously opened).

Rules for comparison:

1. Every parameter entry of the APS (P-No./Ind./value) is compared with the appropriate entry in the VPS, if this is contained there. If two values differ, then the APS value is always entered in the result file.
2. If the appropriate entry does not exist in the VPS, then the APS value is entered into the result file.
3. VPS entries (parameter number/index/value), which are not contained in the APS, are not entered into the result file.

Prerequisite

The drive is in the offline mode (if this is not the case, the menu item is gray and cannot be selected).

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Proceed as follows:

- Select the required actual parameter set (APS) with **“File > Open...”**
- Select the comparison parameter set (VPS) using the menu command **“File > New > Compare...”** (or press the button “New parameter set after comparison”  in the function bar).
- A file selection dialog box (**”Open file”**) opens with all of the parameter sets which exist for the selected drive converter type.
  Select in this, a comparison file, and click on the **"Open”** button (refer to fig. 2-8).

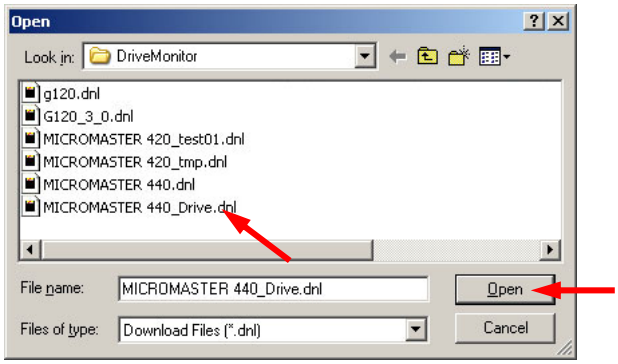


Figure 2-8 Open the comparison parameter set

- An additional file selection window then opens (**"Save as"**). Enter the required name of the result file generated as a result of the comparison there (in the **"File name”** field) and press the button **“Save”** (refer to fig. 2-9).

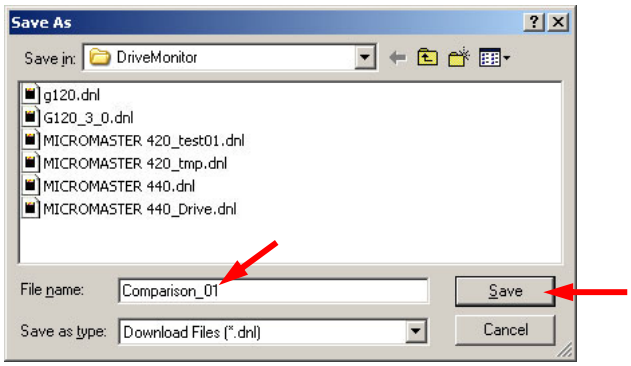
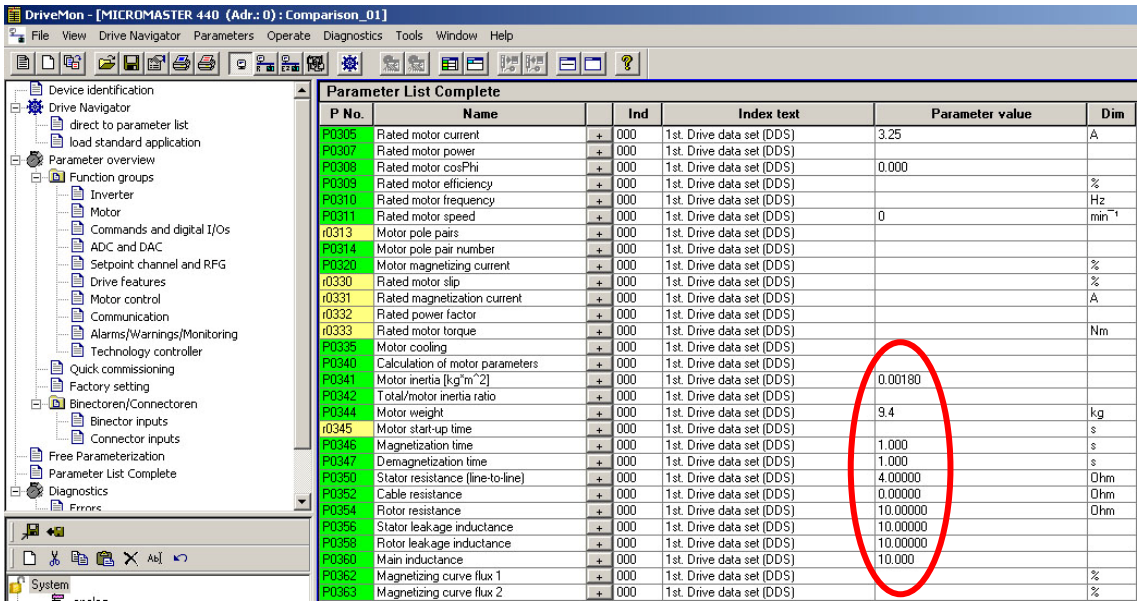


Figure 2-9 Save the result of the comparison

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Result:

The file with the results is saved. The parameter values of the actual parameter set (APS) - that differ from the parameter values of the parameter set to be compared - are shown in the parameter list. The same parameter values are hidden (refer to Fig. 2-10).



Parameter List Complete

P No.	Name		Ind	Index text	Parameter value	Dim
P0305	Rated motor current	+	000	1st. Drive data set (DDS)	3.25	A
P0307	Rated motor power	+	000	1st. Drive data set (DDS)		
P0308	Rated motor cosPhi	+	000	1st. Drive data set (DDS)	0.000	
P0309	Rated motor efficiency	+	000	1st. Drive data set (DDS)		%
P0310	Rated motor frequency	+	000	1st. Drive data set (DDS)		Hz
P0311	Rated motor speed	+	000	1st. Drive data set (DDS)	0	min^{-1}
r0313	Motor pole pairs	+	000	1st. Drive data set (DDS)		
P0314	Motor pole pair number	+	000	1st. Drive data set (DDS)		
P0320	Motor magnetizing current	+	000	1st. Drive data set (DDS)		%
r0330	Rated motor slip	+	000	1st. Drive data set (DDS)		%
r0331	Rated magnetization current	+	000	1st. Drive data set (DDS)		A
r0332	Rated power factor	+	000	1st. Drive data set (DDS)		
r0333	Rated motor torque	+	000	1st. Drive data set (DDS)		Nm
P0335	Motor cooling	+	000	1st. Drive data set (DDS)		
P0340	Calculation of motor parameters	+	000	1st. Drive data set (DDS)		
P0341	Motor inertia [kg*m^2]	+	000	1st. Drive data set (DDS)	0.00180	
P0342	Total/motor inertia ratio	+	000	1st. Drive data set (DDS)		
P0344	Motor weight	+	000	1st. Drive data set (DDS)	9.4	kg
r0345	Motor start-up time	+	000	1st. Drive data set (DDS)		s
P0346	Magnetization time	+	000	1st. Drive data set (DDS)	1.000	s
P0347	Demagnetization time	+	000	1st. Drive data set (DDS)	1.000	s
P0350	Stator resistance (line-to-line)	+	000	1st. Drive data set (DDS)	4.00000	Ohm
P0352	Cable resistance	+	000	1st. Drive data set (DDS)	0.00000	Ohm
P0354	Rotor resistance	+	000	1st. Drive data set (DDS)	10.00000	Ohm
P0356	Stator leakage inductance	+	000	1st. Drive data set (DDS)	10.00000	
P0358	Rotor leakage inductance	+	000	1st. Drive data set (DDS)	10.00000	
P0360	Main inductance	+	000	1st. Drive data set (DDS)	10.000	
P0362	Magnetizing curve flux 1	+	000	1st. Drive data set (DDS)		%
P0363	Magnetizing curve flux 2	+	000	1st. Drive data set (DDS)		%

Figure 2-10 Result of the comparison

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2.5 Upload (reading parameter sets)

In the online mode, you can generate a parameter set by uploading (reading) the currently set parameters in the drive converter.

The following possibilities are available:

4. Reading all of the parameters in the drive converter ("complete").
5. Only reading the parameters which differ from the factory setting ("changes"), if the actual drive converter type supports this functionality.
6. Updating an existing parameter set, by only reading those parameters/indices, which are contained in the existing parameter set.

Prerequisite:

The drive is in the online mode (if this is not the case, the menu item is gray and cannot be selected).

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Proceed as follows:

Select one of the menu commands:

"File > Upload > Update Parameter Set..."
Reads only those drive parameters that are included in the set to be updated. The file is subsequently overwritten with the new parameter values.

or
"File > Upload > Basic Device Complete..."
Creates a parameter set by reading all basic device parameters.

or
"File > Upload > Basic Device: Changes Only..."
Creates a parameter set by reading the modified basic device parameters

or
"File > Upload > Technology module..."
Creates a parameter set by reading all technology board parameters

or
"File > Upload > Basic Device and Technology Module..."
Creates a parameter set by reading all basic device and technology board parameters.

In the file name selection box which opens, select a file name for the parameter set to be generated and then press the **"Save"** button (refer to fig. 2-11).

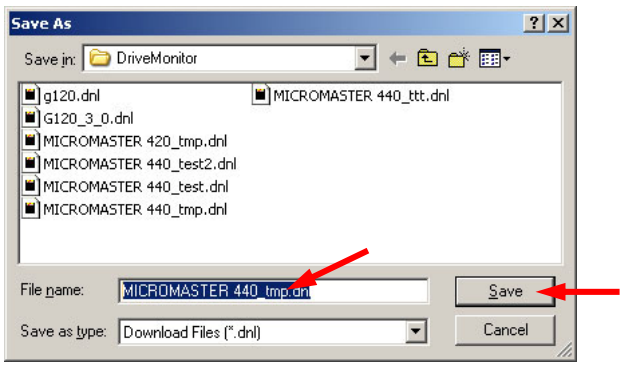


Figure 2-11 Saving an upload parameter set

The parameter set is read (uploaded). When uploading, the progress bar is displayed (refer to fig. 2-12).

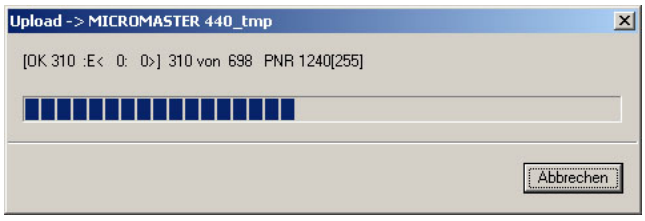


Figure 2-12 Progress bar during the upload

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Result:

An info window is displayed after upload has been completed which tells you whether all of the parameters have been read error-free or individual parameters were not able to be read. If required, you can obtain a list of parameter numbers which were not read by pressing the **"Details"** button. If any communication errors (indicated in the list by **"KommFehler"**) occur during the read operation, reading of the affected parameter sets can be repeated.

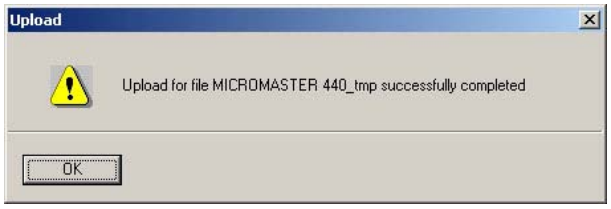


Figure 2-13 Info window

The parameter set is saved under the selected name.

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2.6 Free parameterization

Using the Free parameterization (Free Parameterization Plus = FPP) you can:

- create and save individual parameter tables in online or offline operation. All of those tables you can re-open, modify, or remove at any time;
- create parameter sets (which can be downloaded into the drive) including individual composed parameters;
- get an overview over all parameters contained in the parameter set, which is the basis for the offline operation. This is an advantage if the parameter set contains only a smaller quantity of parameters, compared to the complete set of parameters.

Free parameterization comprises two elements: The Explorer in which the lists are administered and the previously existing table in which parameters and comments can be entered.

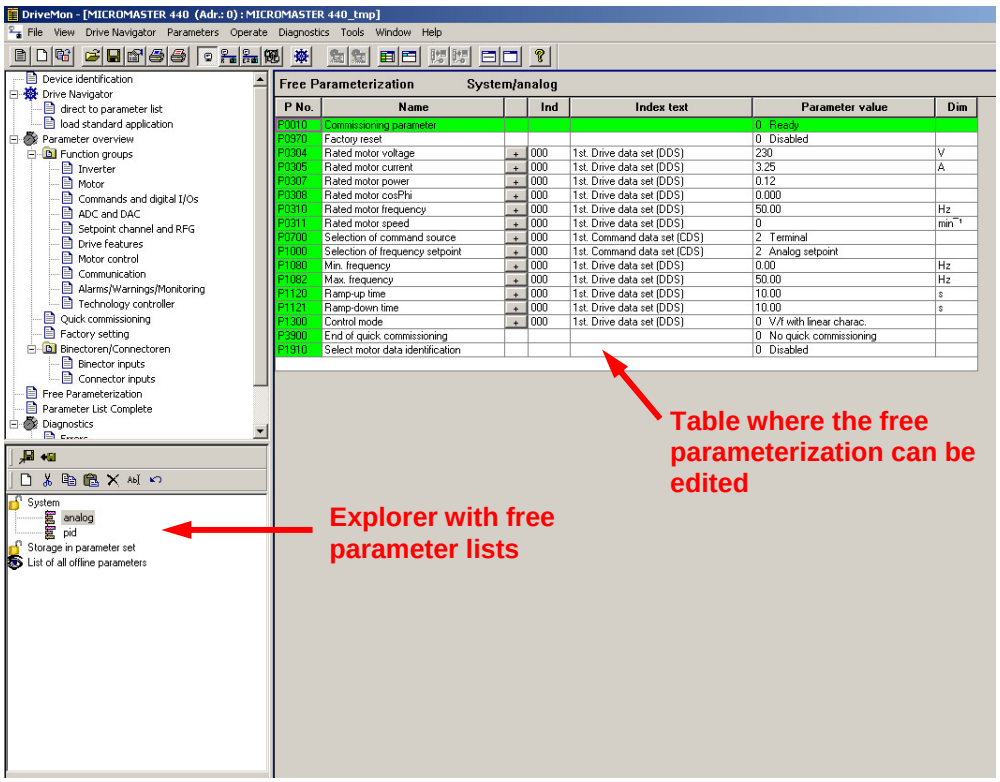


Figure 2-14 Free parameterization

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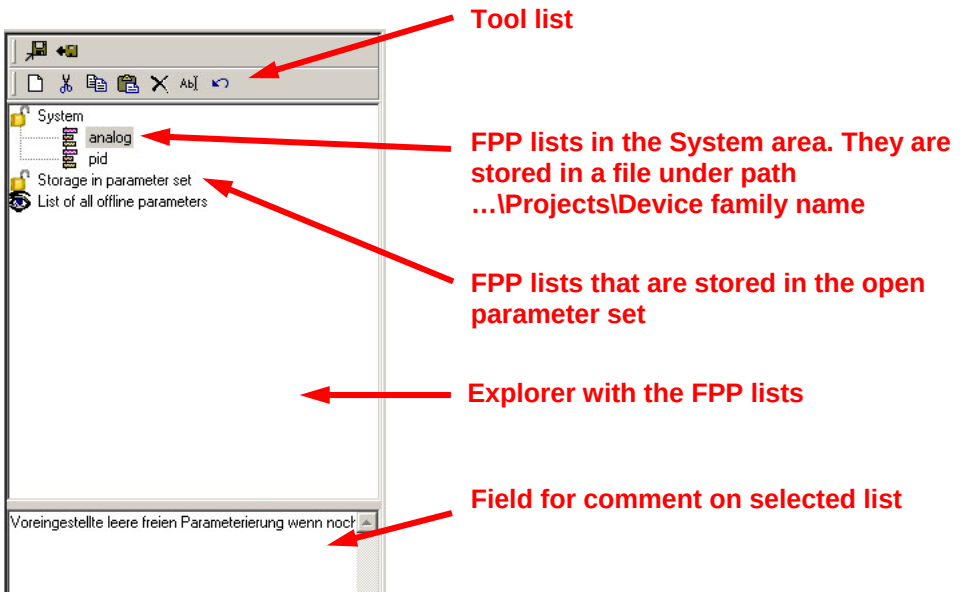


Figure 2-15 Explorer with free parameter lists

Every node can contain a parameter list. Any node which does not contain one is marked by the • symbol. A node which does contain a parameter list is displayed with the icon.

Commands:

Export the selected node and all its sub-nodes to a file.

Import a file below the selected node. A file with the name Import is created for this purpose.

Set up a new, empty node. You can use the Ins key as an alternative. Nodes need not contain a name.

Cut the selected node including all its sub-nodes.

Copy the selected node including all its sub-nodes.

Paste at selected node.

Delete the selected node including all its sub-nodes.

Edit the name of the selected node.

Single-step undo of delete, cut and paste operations.

Nodes can also be dragged & dropped.

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The top line of the Free parameterization table contains (from left to right):

Free Parameterization System/analog

P No.	Name		Ind	Index text	Parameter value	Dim
P0010	Commissioning parameter				0 Ready	
P0970	Factory reset				0 Disabled	
P0304	Rated motor voltage	+	000	1st. Drive data set (DDS)	230	V
P0305	Rated motor current	+	000	1st. Drive data set (DDS)	3.25	A
P0307	Rated motor power	+	000	1st. Drive data set (DDS)	0.12	
P0308	Rated motor cosPhi	+	000	1st. Drive data set (DDS)	0.000	
P0310	Rated motor frequency	+	000	1st. Drive data set (DDS)	50.00	Hz
P0311	Rated motor speed	+	000	1st. Drive data set (DDS)	0	min^{-1}
P0700	Selection of command source	+	000	1st. Command data set (CDS)	2 Terminal	
P1000	Selection of frequency setpoint	+	000	1st. Command data set (CDS)	2 Analog setpoint	
P1080	Min. frequency	+	000	1st. Drive data set (DDS)	0.00	Hz
P1082	Max. frequency	+	000	1st. Drive data set (DDS)	50.00	Hz
P1120	Ramp-up time	+	000	1st. Drive data set (DDS)	10.00	s
P1121	Ramp-down time	+	000	1st. Drive data set (DDS)	10.00	s
P1300	Control mode	+	000	1st. Drive data set (DDS)	0 V/f with linear charac.	
P3900	End of quick commissioning				0 No quick commissioning	
P1910	Select motor data identification				0 Disabled	

Figure 2-16 Free parameterization table

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- The text **"Free parameterization"** (name of current view),
- The name of the FPP list (in this case "analog"),
- The button **"List of all offline parameters"**.

Creating, saving, re-opening, modifying, removing individual parameter tables:

- Create a new FPP list under **"Storage in parameter set"** or under **"System"** (using the Ins key or shortcut menu) in the "Parameter" view,
- Give this new FPP list a name,
- You can now edit the list freely using the following functions:

Table 2-1 Functions for editing parameter tables

Function	Key combination	Shortcut menu
Insert a new line	Ins	"Insert new line"
Delete a line (from table, not from the parameter set!)	Del	"Delete line"
Switch to edit mode to change a line	CTRL + ENTER	"Change line"
Copy to clipboard	CTRL + C	"Copy"
Paste from clipboard	CTRL + V	"Paste"

- The FPP lists from the **"Storage in parameter set"** are stored explicitly when the parameter set is saved in the DNL file. The FPP lists from **"System"** are stored explicitly in the FPP system file according to device type when the device is closed. When an FPP list is closed, a prompt appears asking whether the FPP list is to be stored. When you confirm with **"Yes"**, the list is stored only temporarily. The FPP lists are not saved to the DNL file or the FPP system file until the DNL file is next saved or the drive is closed.
- You can re-open and modify saved FPP lists at any time. To do this, you only need to select the relevant list in the **"Parameter"** view.
- The Copy/Paste function has been adapted for Free parameterization: If you select whole lines and save them to the clipboard, they will also be pasted as whole lines at the position you select. If the clipboard only contains a text, this will be pasted as text in edit mode (for further editing if desired), otherwise as a new, complete comment line.

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Notes:

- Lines are always inserted in front of the current parameter, i.e. if an indexed parameter is open, the line is not inserted in front of the current line, but in front of the 1st index of the parameter.
- You can only delete individual lines of an indexed parameter if they were entered individually.
- A new line is always in edit mode immediately after insertion, an existing line can be switched to edit mode. In edit mode, you can enter the desired parameter number(s) or, alternatively, a comment text in the field under **"P. No."**. Terminate your input with ENTER in each case. You can select the following inputs:
  - Parameter number
  - Parameter number.Index number

- Comment text (Non-existent parameters/indices are also treated like a comment).

Example of an FPP list:

Free Parameterization **System/FPP**

P No.	Name		Ind	Index text	Parameter value	Dim
Quick commissioning						
Start commissioning						
P0010	Commissioning parameter				0 Ready	
Enter motor data						
P0304	Rated motor voltage	+	000	1st. Drive data set (DDS)	230	V
P0305	Rated motor current	+	000	1st. Drive data set (DDS)	3.25	A
P0307	Rated motor power	+	000	1st. Drive data set (DDS)	0.12	
P0308	Rated motor cosPhi	+	000	1st. Drive data set (DDS)	0.000	
P0309	Rated motor efficiency	+	000	1st. Drive data set (DDS)	0.0	%
P0310	Rated motor frequency	+	000	1st. Drive data set (DDS)	50.00	Hz
P0311	Rated motor speed	+	000	1st. Drive data set (DDS)	0	min^{-1}
Command source						
P0700	Selection of command source	+	000	1st. Command data set (CDS)	2 Terminal	
Main setpoint source						
P1000	Selection of frequency setpoint	+	000	1st. Command data set (CDS)	2 Analog setpoint	
Minimum frequency						
P1080	Min. frequency	+	000	1st. Drive data set (DDS)	0.00	Hz
Maximum frequency						
P1082	Max. frequency	+	000	1st. Drive data set (DDS)	50.00	Hz
Ramp-up time						
P1120	Ramp-up time	+	000	1st. Drive data set (DDS)	10.00	s
Ramp-down time						
P1121	Ramp-down time	+	000	1st. Drive data set (DDS)	10.00	s
Control mode						
P1300	Control mode	+	000	1st. Drive data set (DDS)	0 V/f with linear charac.	
Motor data identification						
P1910	Select motor data identification				0 Disabled	

Figure 2-17 Example of an FPP list

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Creating individual parameter sets (download files):

- Set up an "Empty parameter set" in offline mode.
- Using the ”Free parameterization” define a parameter table including the desired parameters, and enter the desired values in the "Parameter value" column.
- Select File > Save as... and store the parameter set under a matching name.
- This parameter set can now be downloaded in online operation.
- In offline operation you can modify this parameter set. However, before you can download the modified parameter set, it must be saved once again (File > Save).

List of all offline parameters

If you opened a parameter set in the offline mode, where you don't know which and how many parameters it contains, you can obtain a precise overview of the parameter set by clicking on the "list all offline parameters" button. For this you have to draw up a list with the name "Offline parameters".
The button "list all offline parameters" is only activated when a empty list is selected. Thus it is prevented that the entered parameters are headed with the offline parameters.

Application example:

You have created a new parameter set by comparing two parameter sets. You now obtain an overview of the new parameter set using this button (i.e. about the differences between the parameter sets which have been compared).

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2.7 Printing parameter sets

You can print parameter sets (hard copy) in two ways:

- You can print all of the parameters in the parameter set (if required, more than 100 pages!).
- Only print those parameters of the parameter set, which differ from the factory setting.

The actual parameter set which is printed, which is used for the offline mode (i.e. the name which is entered in the title line). You will see the file name, date and time of the print-out, drive converter type and its software version as well as the user name of the drive in the header of the print-out.

Prerequisite:

The drive is in the offline mode (if this is not the case, the menu item is gray and cannot be selected).

Proceed as follows:

Select the menu command **“File > Print > Full Parameter Set...”** or **“File > Print > Changes Only...”**.

Result:

The parameter set is printed if the printer is ready.

The printer type is selected and the settings made via the **WINDOWS menu Start > Settings > Printer**.

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2.8 Download (writing a parameter set)

In the online mode, you can write a parameter set into the RAM memory of a drive (download).

If the drive converter supports the function, the parameter set can also be directly saved in the EEPROM memory of the drive converter.

When downloading, the actual parameter values in the drive converter are overwritten by the parameter values in the parameter set.

In the online mode, you can transfer a parameter set into the selected drive converter (download).

The following possibilities are available:

- Transferring the parameter set into the RAM memory of the drive converter.
- Transferring the parameter set into the RAM memory, and then additionally saving them in the EEPROM memory of the drive converter (non-volatile).

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Prerequisite:

The drive is in the online mode (if this is not the case, the menu item is gray and cannot be selected).

Proceed as follows:

- Select one of the menu commands **“File > Download > Write [RAM]...”** or **“File > Download > Save [EEPROM]...”** (refer to fig. 2-18).

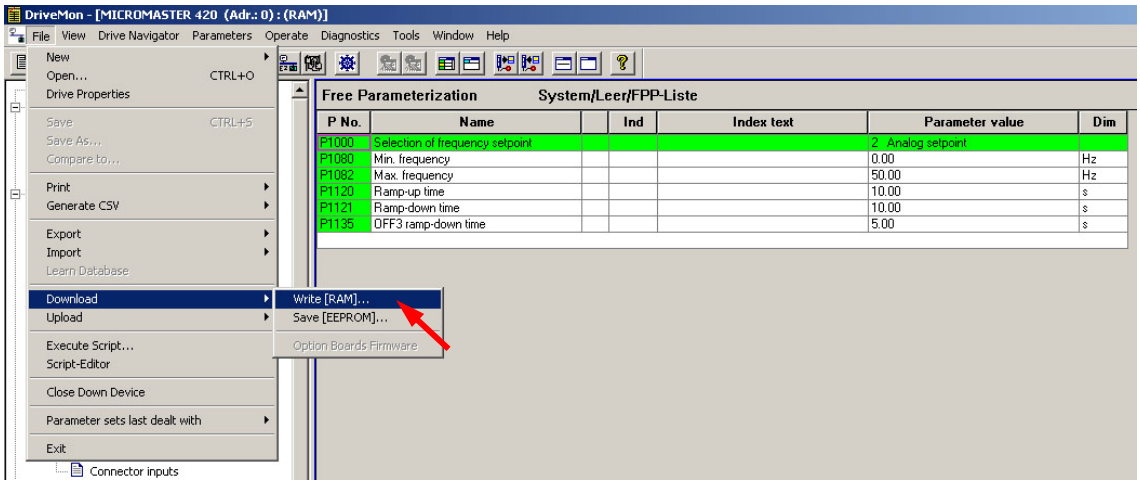


Figure 2-18 Writing a parameter set into the drive

- In the file name selection dialog box which opens, select the file name of the parameter set which you wish to write into the drive converter or into the technology module and press the **"Open"** button (refer to fig. 2-19).

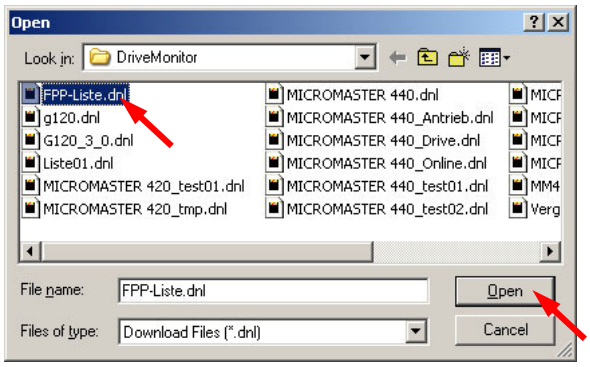


Figure 2-19 Open a parameter set

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- If the selected parameter set and the identified device have the same device type and software version, the download operation is started immediately. A dialog is otherwise displayed showing the differences between device types and software versions. You can start the download from this dialog by selecting button "Download" or "Convert". If you select the "Convert" button, the parameter set is converted to the higher software version of the identified device before it is downloaded. (see also Uploading / downloading via the command line)

The parameter set is downloaded. A progress bar is displayed when downloading (refer to fig. 2-20).

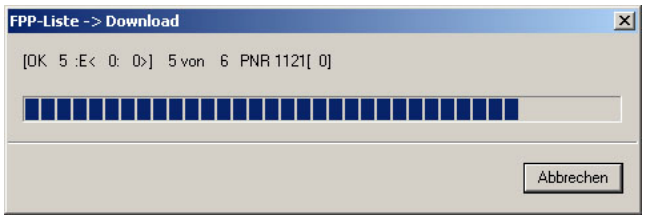


Figure 2-20 Progress bar during the download

Result:

An info window is displayed after downloading which tells you whether all of the parameters were correctly downloaded or individual parameters were not able to be downloaded. If required, you can obtain a list of the parameter numbers which were not downloaded by pressing the **"Details"** button.

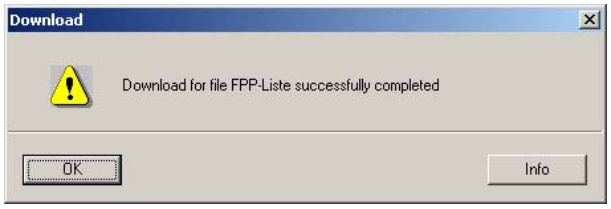


Figure 2-21 Info window

If any communication errors (indicated in the list by **"KommFehler"**) occur during the write operation, writing of the affected parameter sets can be repeated.

For information regarding the parameter sets, please refer to the Drive Monitor help.

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Appendix and references

3 References

3.1 Internet link data

This list is in no way complete and only reflects a selection of suitable references.

Table 3-1

	Subject area	Title
\1\	Application note	Converting a MICROMASTER 4 DriveMonitor data backup (data archive) into a data backup (data archive) based in STARTER.
\2\	Application note [Intranet]	MICROMASTER 4 – data exchange with a PC via Microsoft VB-Script

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3.2 History

Table 3-2 History

Version	Datum	Change
V1.0	August 2003	First edition
V2.0	June 2008	Revised, expanded and merged with the application "comparing parameter sets".