SoMachine
Controller Assistant User Guide

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a “Danger” or “Warning” safety label indicates that an electrical hazard exists which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates a hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a hazardous situation which, if not avoided, **could result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a hazardous situation which, if not avoided, **could result** in minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

At a Glance

Document Scope

This document describes the Controller Assistant. It is a stand-alone software that allows you to update the firmware and to manage images of controllers in a common way.

Controller Assistant performs the following main functions:

- updating the firmware of a connected controller
- managing images
  - loading images from different locations
  - creating images
  - modifying the different part of the image (such as firmware, communication settings)
  - saving images to different locations

Validity Note

This document is valid for Controller Assistant V4.1.

Product Related Information

⚠ WARNING

UNAUTHENTICATED ACCESS AND SUBSEQUENT UNAUTHORIZED MACHINE OPERATION

- Evaluate whether your environment or your machines are connected to your critical infrastructure and, if so, take appropriate steps in terms of prevention, based on Defense-in-Depth, before connecting the automation system to any network.
- Limit the number of devices connected to a network to the minimum necessary.
- Isolate your industrial network from other networks inside your company.
- Protect any network against unintended access by using firewalls, VPN, or other, proven security measures.
- Monitor activities within your systems.
- Prevent subject devices from direct access or direct link by unauthorized parties or unauthenticated actions.
- Prepare a recovery plan including backup of your system and process information.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

If there is a power outage or communication interruption during the transfer of the application program or a firmware change, your device may become inoperative. If a communication interruption or a power outage occurs, reattempt the transfer.

NOTICE
INOPERABLE EQUIPMENT ● Do not interrupt the transfer of the application program or a firmware change once the transfer has begun. ● Do not place the device into service until the transfer has completed successfully. **Failure to follow these instructions can result in equipment damage.**

Performing a firmware change will delete the current application program in the device, including the Boot Application in Flash memory.

NOTICE
LOSS OF APPLICATION DATA ● Perform a backup of the application program to the hard disk of the PC before attempting a firmware change. ● Restore the application program to the device after a successful firmware change. **Failure to follow these instructions can result in equipment damage.**

Chapter 1
General Information

Section 1.1
General Information

What Is in This Section?

This section contains the following topics:

Introduction

Overview

A controller consists of hardware and software.

The software of a controller consists of:
- the SoMachine project,
- the firmware (the interface between SoMachine project and hardware),
- additional data required to operate a controller

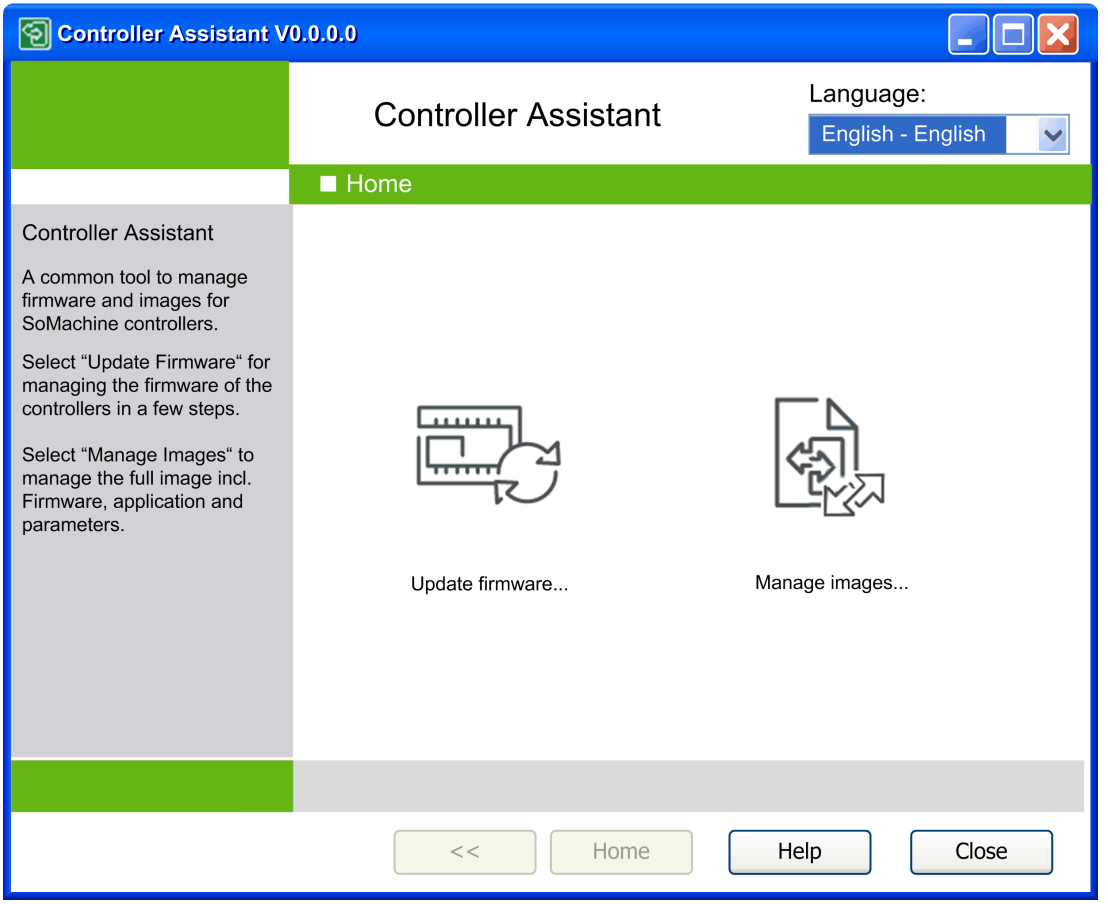
The files are typically located on the flash disk or in the memory of the controller.

The Controller Assistant provides quick access to 2 different tasks concerning these software components of a controller:
- Updating the firmware of a connected controller and deleting the current application program (SoMachine project) in the device:
  Performing a firmware change will delete the current application program in the device, including the Boot Application in Flash memory.

NOTICE
LOSS OF APPLICATION DATA ● Perform a backup of the application program to the hard disk of the PC before attempting a firmware change. ● Restore the application program to the device after a successful firmware change. **Failure to follow these instructions can result in equipment damage.**

- Managing images:
  - ❍ If any maintenance work has to be performed (for example, firmware and project updates of a controller), carry out first a data backup of the entire controller software.
  - ❍ If following an update, the preceding version must be used again, the backed-up software can be uploaded again.
  - ❍ If the content of the controller is to be used on another controller, you can generate an identical copy of a controller.
  - ❍ Possibly you may simply want to back up the current status of the software of a controller.
  - ❍ Update the firmware without deleting the application.

The tasks are directly available from the **Home** dialog of the Controller Assistant:



Online Help

Press the F1 key or click the **Help** button to call up the online help for the Controller Assistant.

To change the language of the online help, select an entry from the **Language** list and restart the Controller Assistant.

Controller Assistant on Windows 7

Overview

If you work on a PC with the operating system Windows 7, certain functions must be shared in the dialog box **User Account Control**.

You can set this once when starting the Controller Assistant. Right-click the *ControllerAssistant.exe*, and execute the command **Run as administrator** from the context menu.

If you do not set the **User Account Control** once, the dialog box is displayed every time when a function that has been called up requires administrator rights.

Use on Windows 7 With Administrator Rights

If you work on a PC with the operating system Windows 7, on which you have all administrator rights, the dialog box **User Account Control** without an input field for a password is displayed.

Click **Yes** to continue operation.

Use on Windows 7 Without Administrator Rights

If you work on a PC with the operating system Windows 7, on which you have no administrator rights, the dialog box **User Account Control** with one or several input fields for a password is displayed.

Enter the user name with administrator privileges and the respective password, and click **Yes** to continue operation.

Buttons with Shield Icon

On Windows 7 several buttons are marked with a shield icon (UAC shield). When clicking these buttons, the dialog box **User Account Control** can be displayed, if needed.

The following buttons in the Controller Assistant are marked with this shield icon:

- Reading from flash disk.
- Writing on flash disk.
- Selecting a firmware directory.
- Selecting an individual firmware file.

Home Dialog

Overview

The **Home** dialog opens after the startup of the Controller Assistant. It provides quick access to the main functions.

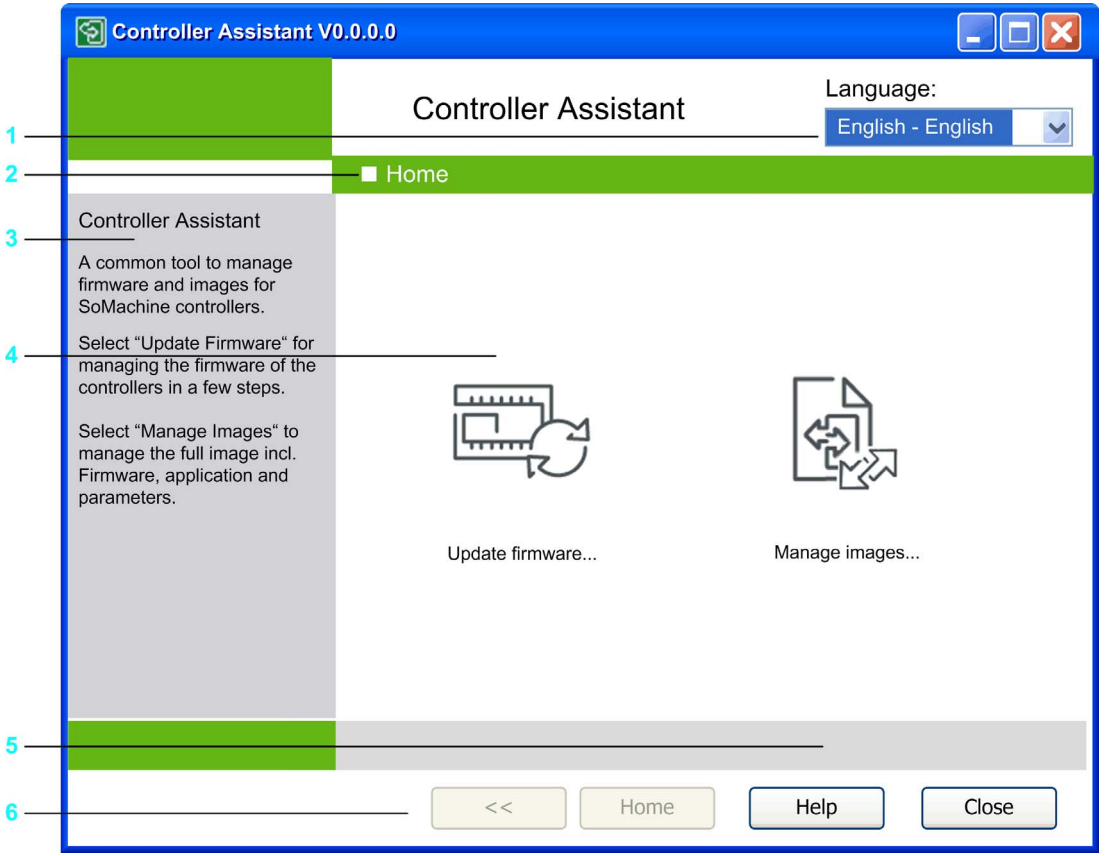
The main elements are in the middle of the dialog (legend item 4 in the following graphic). To perform a function, click a symbol that works as a button.

You can return to the **Home** dialog from each sub dialog by clicking the **Home** button (legend item 6 in the following graphic).

In the left-hand information field (3), you receive information on the currently selected dialog or currently selected button. In addition, the information field provides you with information on how to proceed further within the individual functions.

The status bar comprises controller type / IP address / firmware version / image size / DHCP / BOOTP, if available. On hovering the status bar, detailed information is displayed in the left-hand information field (3).

The **Home** dialog



1 Changes the language of the Controller Assistant
2 Title of the current dialog box or data view
3 Info field providing you with information on the operation of the selected window or instructions on how to use the operating button selected
4 Main elements providing access to the core operating elements in a single view
5 Status bar providing brief information on the selected controller
6 Buttons available in most of the dialog boxes

Main Elements

You can access the core functions of the Controller Assistant directly from the **Home** dialog via buttons in the form of symbols.

Click the **Update firmware...** button to update the firmware of a connected controller.

Performing a firmware change will delete the current application program in the device, including the Boot Application in Flash memory.

NOTICE
LOSS OF APPLICATION DATA ● Perform a backup of the application program to the hard disk of the PC before attempting a firmware change. ● Restore the application program to the device after a successful firmware change. **Failure to follow these instructions can result in equipment damage.**

Click the **Manage images...** button to manage images.

- If any maintenance work has to be performed (for example, firmware and project updates of a controller), carry out first a data backup of the entire controller software.
- If following an update, the preceding version must be used again, the backed-up software can be uploaded again.
- If the content of the controller is to be used on another controller, you can generate an identical copy of a controller.
- Possibly you may simply want to back up the current status of the software of a controller.
- Update the firmware without deleting the application.

Buttons

The **Home**, **Help**, **Close** and **<<** buttons are available in all program sections.

The following is a short overview of the individual elements:

- **Home**
  Click this button to return to the **Home** dialog.
  NOTE: Click the **Home** button to return to the **Home** dialog at any time. This button is simultaneously used to cancel a function.
- **Help**
  Displays the online help.
- **Close**
  Ends the Controller Assistant.
- **<<**
  Opens the preceding step.

Updating the Firmware

Overview

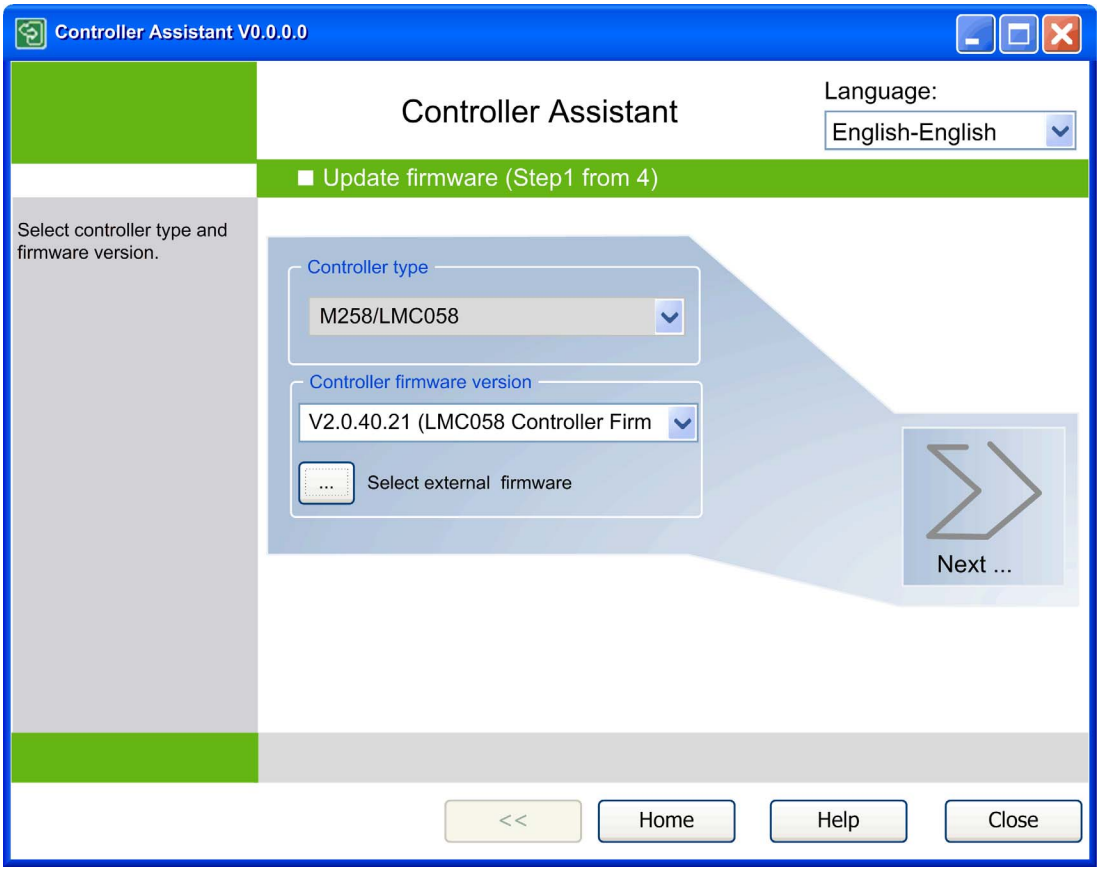
If you click the **Update firmware...** button on the **Home** dialog, the update firmware procedure starts with the first step.

NOTE: This procedure does not only update the firmware of a connected controller, but it also deletes the current application program (SoMachine project) in the device.

NOTICE
LOSS OF APPLICATION DATA ● Perform a backup of the application program to the hard disk of the PC before attempting a firmware change. ● Restore the application program to the device after a successful firmware change. **Failure to follow these instructions can result in equipment damage.**

Step 1

First step of the **Update firmware** dialogs:



Description of the elements

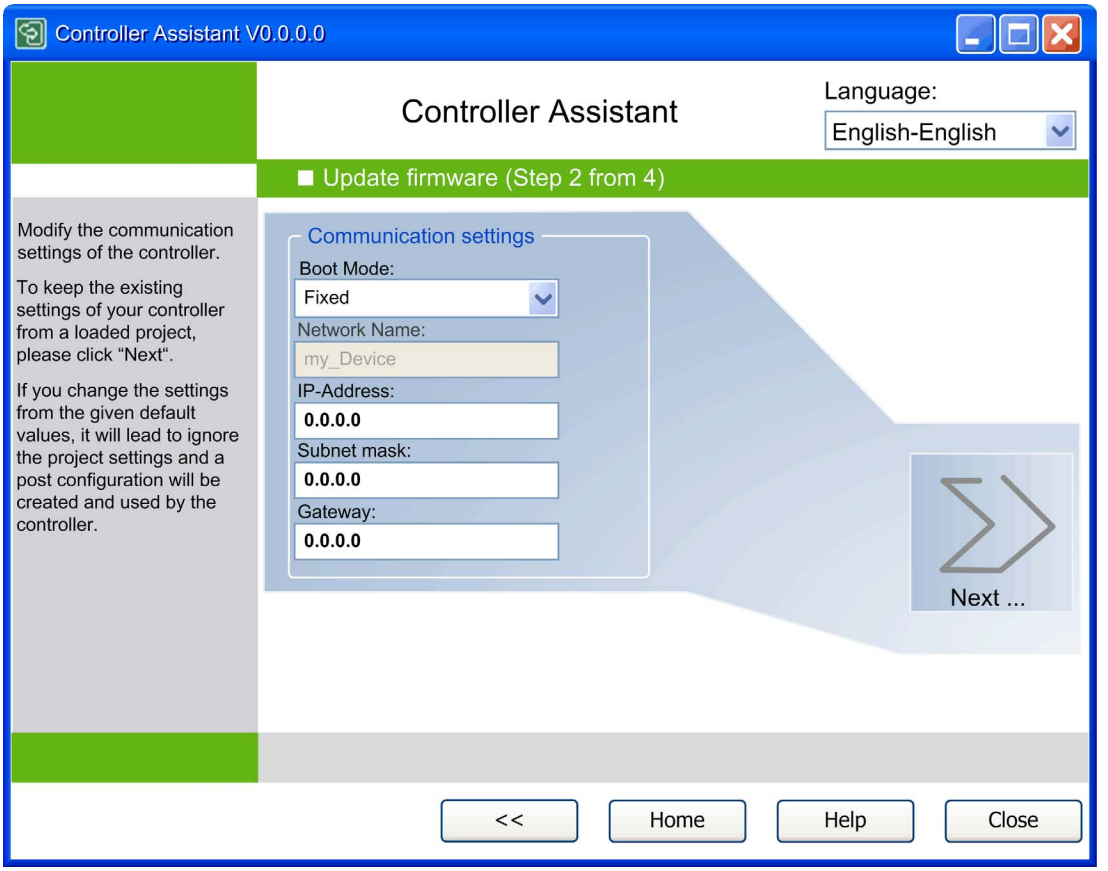
Element	Description
Controller type	Select the controller you are using from the list.
Controller firmware version	Select a firmware version from the list or click the **...** button to browse for an external firmware.

Element	Description
Select external firmware	Click this button to add a firmware from any location within the file system. Following a prompt, you can add the firmware to the default firmware directory. It will then be available permanently. The **OK** button is only activated if the firmware directory is valid. Via **Select firmware directory**, you can select the directory containing the firmware versions of the controllers. This directory can be declared as the standard firmware directory after inquiry. Choose in the subsequent dialog if you want to select the standard firmware directory for the firmware files.

Click the button **Next...** to continue.

Step 2

Second step of the **Update firmware** dialogs, for specifying the communication settings:



The communication settings vary depending on the controller. The illustration shows the communication settings for LMC058 / M258 / TM241 / TM251 / TM221 controllers.

For these controllers, the parameter **Boot Mode** is by default set to the value **Fixed** and the **IP-Address** is set to **0.0.0.0**. This has the effect that the communication settings on the controller remain unchanged. You can adapt the communication settings to your individual requirements.

NOTE: For LMC058 / M258 / TM241 / TM251 / TM221 controllers, the changed parameters are written to the post configuration file *Machine.cfg* which overwrites the parameters of the SoMachine application.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

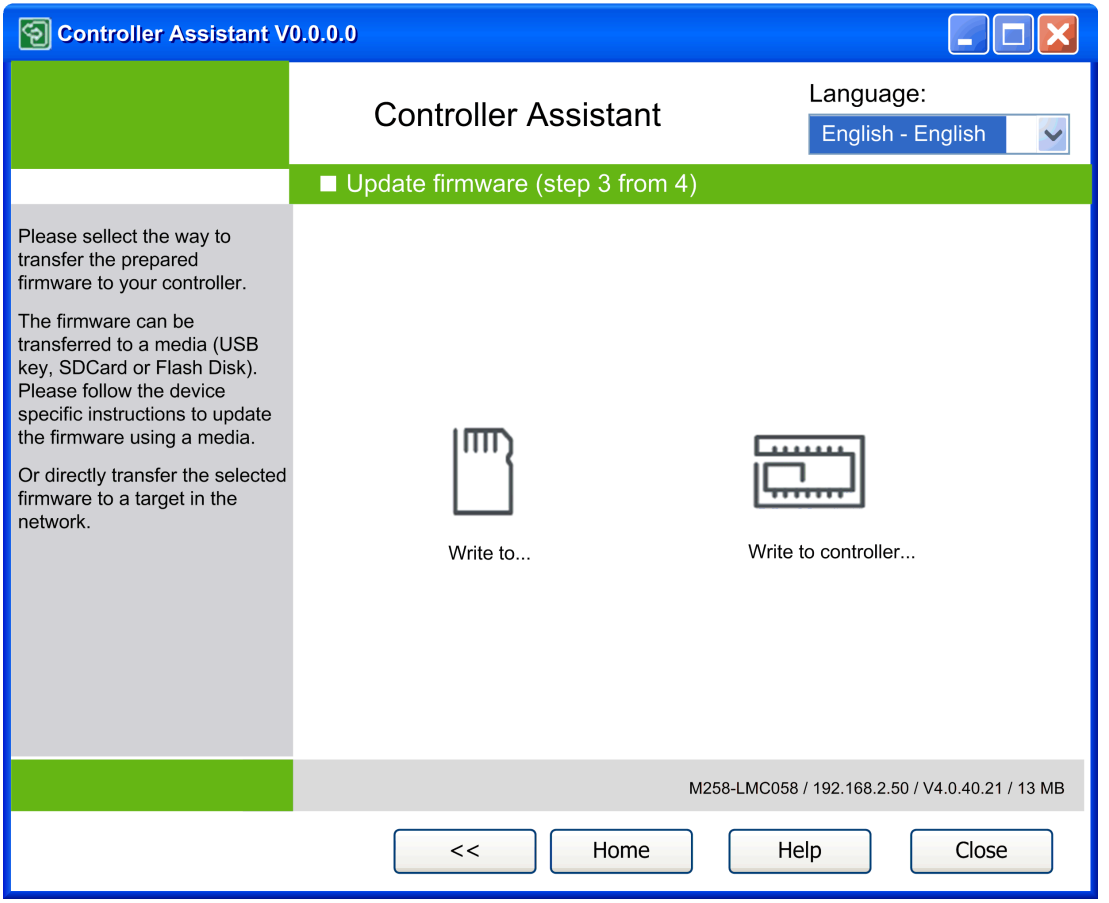
- Verify that there is only one master controller configured on the network or remote link.
- Verify that all devices have unique addresses.
- Obtain your IP address from your system administrator.
- Confirm that the device's IP address is unique before placing the system into service.
- Do not assign the same IP address to any other equipment on the network.
- Update the IP address after cloning any application that includes Ethernet communications to a unique address.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Click the button **Next...** to continue.

Step 3

Third step of the **Update firmware** dialogs, for specifying the way the firmware is transferred to the controller:



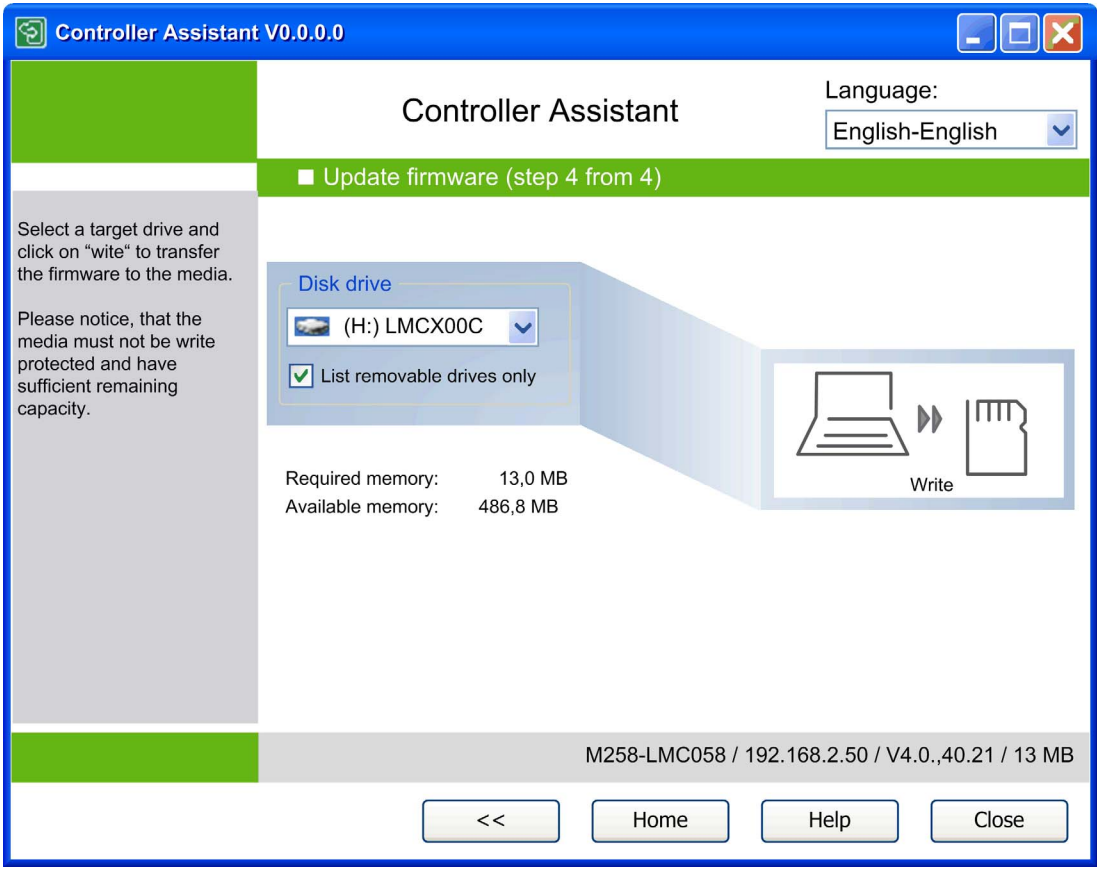
This dialog provides two possibilities:

- Writing the firmware to a removable storage device (USB mass storage device, SD card, flash disk) by clicking the **Write to...** button.
- Writing the firmware directly to a controller by clicking the **Write on controller...** button.

The dialog for step 4 varies depending on the selected option.

Step 4 For Writing to a Removable Storage Device

After you have clicked the **Write to...** button in the third step, the fourth step of the **Update firmware** dialogs is displayed. It allows you to select the drive where the removable storage device is installed.



Select the drive containing the suitable removable storage device from the **Disk drive** list.

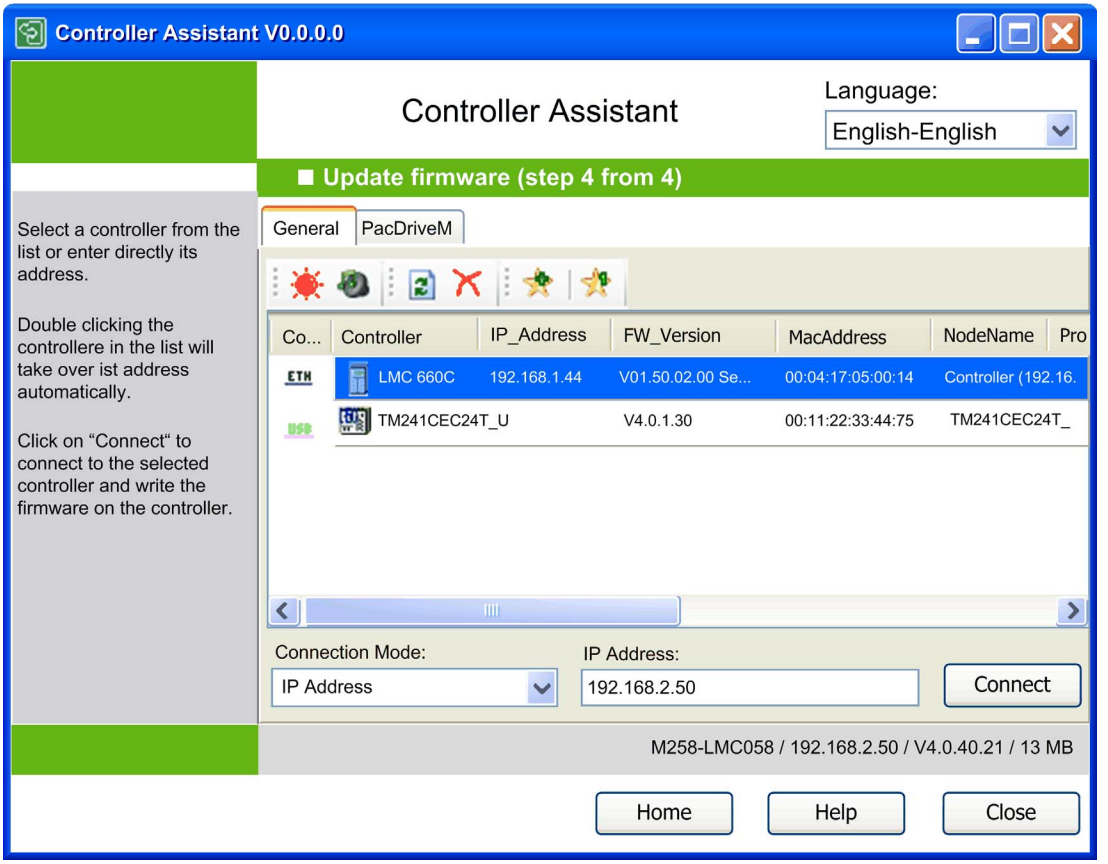
By default, the option **List removable drives only** is selected. This has the effect that the **Disk drive** list only contains drives of removable storage devices. To display also hard disk drives in the list, deselect the option **List removable drives only**.

NOTE: Make sure that the removable storage device is not write protected and that there is sufficient memory capacity available for the firmware you intend to transfer.

Click the button **Write** to transfer the firmware to the selected removable storage device. Before the operation is performed, a message box will be displayed informing you that the data will be deleted from the selected drive. Before you start the operation by clicking **Yes**, it allows you to verify the content of the destination drive in a Windows Explorer view by clicking **Explorer**. To abort the operation, click **No**.

Step 4 For Writing to a Controller

After you have clicked the **Write to controller...** button in the third step, the fourth step of the **Update firmware** dialogs is displayed. It allows you to connect to a controller.



From the list of connected controllers, select the controller to which you want to transfer the firmware.

Click the **Connect** button to establish a connection to the selected controller and to transfer the firmware.

Managing Images

Overview

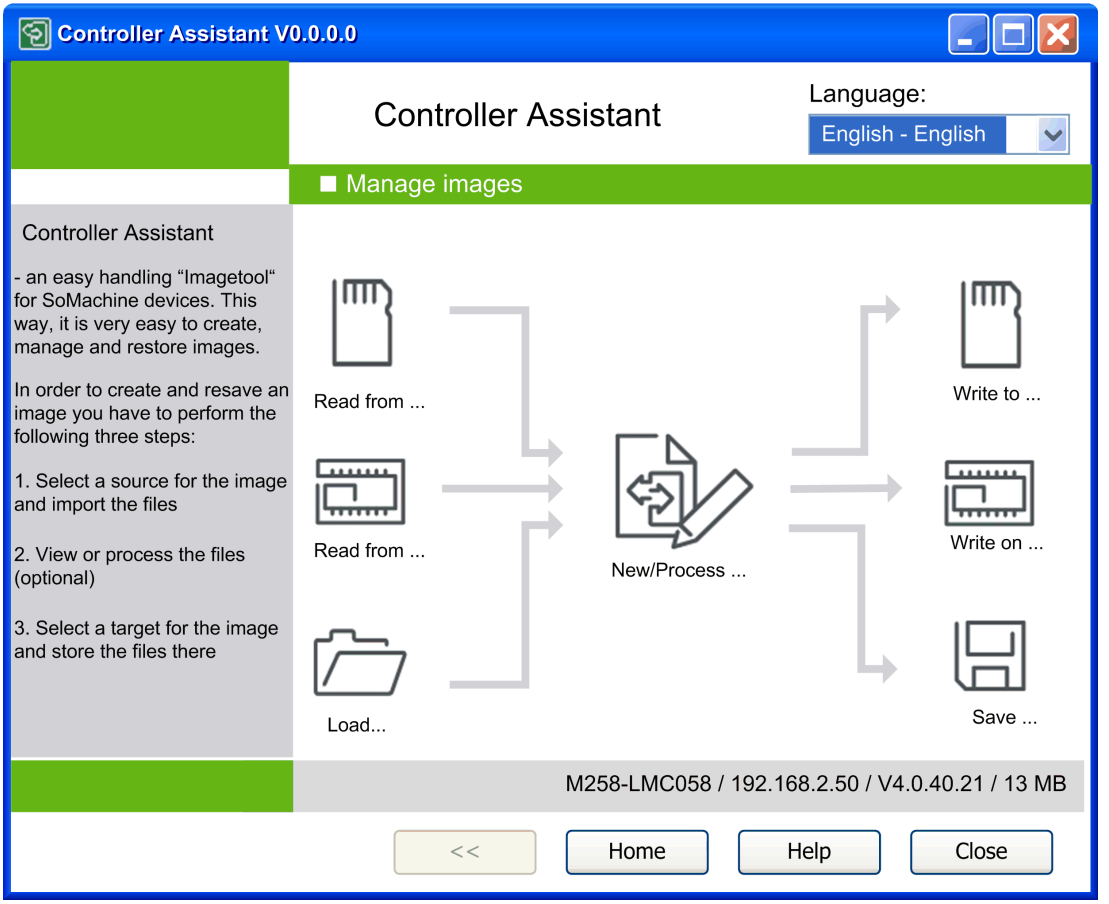
To open the **Manage images** dialog, click the **Manage images...** button in the **Home** dialog. The **Manage images** dialog provides quick access to the functions allowing you to manage images.

The main elements are in the middle of the dialog. The symbols are simultaneously buttons which can be selected by clicking them.

NOTE: Depending on the user mode or on the state of the current image, individual buttons can be inactive.

The status bar below the main elements comprises controller type / IP address / firmware version / image size / DHCP / BOOTP, if available.

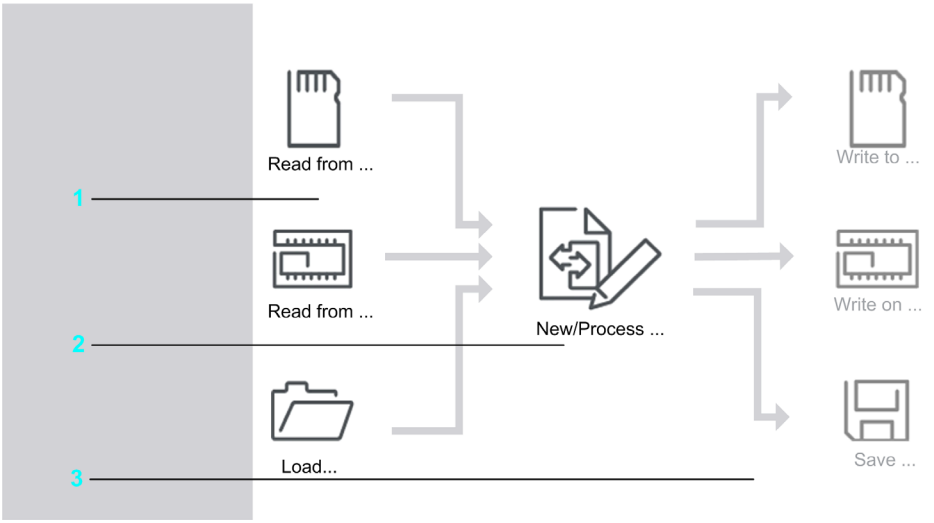
The **Manage images** dialog



Main Elements

The **Manage images** dialog allows you to manage controller images *(see page 28)*. You can access the core functions directly via buttons in the form of symbols.

Click these main elements to call up core functions directly.



The main elements subdivide into 3 areas:

Area	Description
1	On the left, there are the functions for loading an image to Controller Assistant. An image can be optionally loaded from a flash disk, a controller or directly from the file system of your computer to the Controller Assistant.
2	Clicking the symbol in the center leads to further dialogs for creating a new image or editing a loaded image.
3	The functions on the right-hand side are used to rewrite an image again to another destination location. It can also be written to a flash disk, a controller or directly into the file system of your computer. You can select source and destination independently of one another.

NOTE: When reading or writing on a flash disk, cards ranging 8...512 Mbyte are supported.

NOTE: When selecting a controller as destination, the image has to be suitable for the selected controller. Additionally, you can change the firmware of the current image without deleting the application by clicking the **New / Process... → Update firmware ...** button.

Controller Images

Definition

The sum of the controller files managed in Controller Assistant are designated as image. The Controller Assistant can read in an image from different sources such as a controller, a flash disk, or a file. The last image read in from Controller Assistant is designated as current image.

NOTE: The Controller Assistant can only manage one image at a time.

After the Controller Assistant has read in an image, it can write the same to different destinations such as a controller, a flash disk, or a file.

The image itself comprises the files that are typically located on the flash disk of a controller. It represents a complete image of the firmware, the SoMachine project and the controller data. The files contained in the image are easy to display and edit. An image is stored as a compressed file with the file ending *bpd*.

Overview of Call Parameters

Overview

You can start the Controller Assistant by writing a series of call parameters into a batch file and executing it via the standard Windows **Run...** command in the **Start** menu. Some of these call parameters already execute program functionalities.

NOTE: If the commands are called up via a batch file, then the processing takes place synchronously. But by a call via a console, the processing takes place asynchronously. To be able to perform synchronous processing via a console, set the prefix `start /b /wait` before the command.

Example

```
start / b/ wait ControllerAssistant.exe
-loadcontrol ip etcp3://10.128.225.156 "c:\temp\Result.log"
```

Optional and Default Values

The values of the following parameters are optional. Default values are used if no specific value is indicated.

`ImagePath`

If the parameter `<ImagePath>` is not available, then the current directory of the Controller Assistant is used. The path is shown in the **ImageManager** dialog *(see page 99)*.

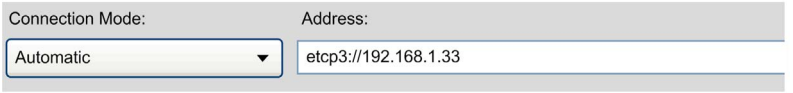
`Logfile`

If the parameter `<Logfile>` is not available, then a logfile named errorlog.log is created in parallel to the default value of the parameter `<ImagePath>`.

Target Address URI

Some commands have a parameter `<TargetAddressURI>`. This parameter requires a URI (uniform resource identifier) for the target address of the controller.

To get the correct URI, enter the target address with the desired **Connection Mode** in the **Controller selection** dialog *(see page 68)*. Then select the option **Automatic** from the **Connection Mode** list. You can copy the URI directly from the **Address** field.



NOTE: For PacDrive M controllers, the URI prefix `etcp2://` is used to establish a connection via IP address.

Image Directory

Many of the commands work on the current image that is saved in the directory specified with the `ImagePath` parameter *(see page 29)*. This path can be changed for this command call by adding the parameter `-imagedirectory` with the desired image directory path.

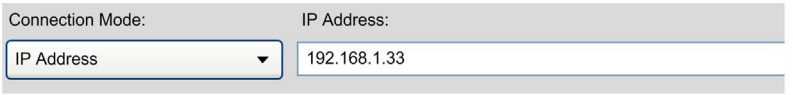
Example:

```
ControllerAssistant -imagedirectory c:\Temp\MyImage
-loadfile C:\Temp\Default.bpd C:\Temp\Logfile.log
```

List of Call Parameters

Setting the Default Target Address in the Controller Selection Dialog

Use the following command to set the target **IP Address** value of the **Controller selection** dialog *(see page 68)* to a specified value. Also refer to the description of the parameter <TargetAddressURI> *(see page 29)*.



Usage:

```
ControllerAssistant -connect ip <TargetAddressURI>
```

Examples:

```
ControllerAssistant -connect ip 192.168.1.33
ControllerAssistant -connect ip etcp3://192.168.1.33
ControllerAssistant -connect ip etcp2://192.168.1.33
ControllerAssistant -connect ip "enodename3://MyController
(192.168.1.33)"
```

Setting the Default Path of the File Dialogs

Use the following command to set the default path of the **Open** and **Save** dialog boxes *(see page 79)* to a specified value.

Usage:

```
ControllerAssistant -file <Path>
```

Example:

```
ControllerAssistant -file C:\Temp\Default.bpd
```

Loading Image from Controller

Use following command to start a backup of the specified controller and to save the backup as the image. The process sequence of this backup is entered into the specified log file. The program runs completely without any graphical user interface. Also refer to the description of the parameter <TargetAddressURI> *(see page 29)*.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-loadcontrol <TargetAddressURI> [<logfile>]
```

Examples:

```
ControllerAssistant
-loadcontrol ip etcp3://190.201.100.100 C:\Temp\Logfile.log
```

```
ControllerAssistant
-imagedirectory c:\Temp\MyImage
-loadcontrol ip etcp3://190.201.100.100 C:\Temp\Logfile.log
```

NOTE: In order to save the current image into a single image file (file extension *.bdp), additionally call `-savefile`.

Saving Image to a Controller

Use the following command to save the image in the specified controller. The saving sequence is entered into the specified log file. The program runs completely without any graphical user interface. Also refer to the description of the parameter <TargetAddressURI> *(see page 29)*.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-savecontrol <TargetAddressURI> [<logfile>]
```

Examples:

```
ControllerAssistant
-savecontrol ip etcp3://190.201.100.100 C:\Temp\Logfile.log
```

```
ControllerAssistant -imagedirectory c:\Temp\MyImage
-savecontrol ip etcp3://190.201.100.100 C:\Temp\Logfile.log
```

NOTE: It can happen that the file system of the controller is overwritten without any request and that the controller is reset.
In order to load the current image from a single image file (file extension *.bdp), call `-loadfile` before.

Loading Image from Image File

To load the specified *.bpd file as the image, use the following command. The loading sequence is entered into the log file specified. The program runs completely without any graphical user interface.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-loadfile <ImageFilePath> [<logfile>]
```

Examples:

```
ControllerAssistant -loadfile C:\Temp\Default.bpd C:\Temp\Logfile.log
```

```
ControllerAssistant -imagedirectory c:\Temp\MyImage
-loadfile C:\Temp\Default.bpd C:\Temp\Logfile.log
```

Saving Image to Image File

To save the image in the specified *.bpd file, use the following command. The saving sequence is entered into the log file specified. The program runs completely without any graphical user interface.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-savefile <ImageFilePath> [<logfile>]
```

Examples:

```
ControllerAssistant -savefile C:\Temp\Default.bpd C:\Temp\Logfile.log
```

```
ControllerAssistant -imagedirectory c:\Temp\MyImage
-savefile C:\Temp\Default.bpd C:\Temp\Logfile.log
```

Getting Installed Firmware Versions

Use the following command to save an XML file with a list of the firmware versions of the given controller type that can be found on this PC at the result path. The result provides the same information as available inside the graphical user interface.

Usage:

```
ControllerAssistant
-getinstalledfirmwareversionsXml <ControllerType> <ResultPath>
[<logfile>]
```

Example:

```
ControllerAssistant
-getinstalledfirmwareversionsXml LMC058 c:\Temp\MyVersions.xml
```

Creating an Image from Scratch

The call via command line creates the image from the given controller type or family and the given version. The functionality equals the graphical user interface.

Usage:

```
ControllerAssistant -createimage <ControllerType> <FirmwareVersion>
[<logfile path>] [imagepath=<image path>]
```

Example:

```
ControllerAssistant -createimage LMC400C 1.50.1.3 c:\Temp\MyLogfile.log
```

NOTE: The XML command for creating the controller firmware *(see page 37)* offers additional features.

Updating Firmware Version of the Current Image

The call via command line updates the firmware of the current image by the given version. The functionality equals the call via the graphical user interface. The controller type and the firmware version are given by the existing image directory. If a compatible version is detected, the update is performed in the compatible way without removing any existing application.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-updateimage <FirmwareVersion> [<LogFile>]
```

Examples:

```
ControllerAssistant -updateimage 1.50.1.3 c:\Temp\MyLogfile.log
```

```
ControllerAssistant -imagedirectory c:\Temp\MyImage
-updateimage 1.50.1.3 c:\Temp\MyLogfile.log
```

Updating Communication Settings

The call via command line updates the communication settings of a controller inside an existing image by the given communication settings. The functionality equals the call via the graphical user interface.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-updatecommunicationsettings <IPaddress>
<SubnetMask> <Gateway> <IPMode(fixed | bootp | dhcp)> <DeviceName>
[<logfile path>]
```

The `DeviceName` is used with `IPMode dhcp`. On some controllers, `IPMode` and `DeviceName` are ignored.

Examples:

```
ControllerAssistant
-updatecommunicationsettings 10.128.111.222 255.255.255.0 10.128.111.1
fixed "" c:\temp\version.log
```

```
ControllerAssistant -imagedirectory "c:\temp\MyImage"
-updatecommunicationsettings 10.128.111.222 255.255.255.0 10.128.111.1
dhcp "MyDeviceName" c:\temp\version.log
```

Getting the Program Version

Use the following command to retrieve the version number of the Controller Assistant application. The optional log file `<LogFile>` is used to log the result and detected errors. Also refer to the description of optional and default values *(see page 29)*.

Usage:

```
ControllerAssistant -getProgramVersion [<logfile>]
```

Example:

```
ControllerAssistant -getProgramVersion c:\temp\version.log
```

Creating a User Folder with Specific Data on the Flash Disk

Use the following command to add specific files to a controller image.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-addCustomFiles <sourcePath> [<relativeDestinationPath>]
[logfile=<logfile>]
```

The `SourcePath` is a folder containing the files that are copied into the controller image. This path can also contain subdirectory structures. The `RelativeDestinationPath` is optional and specifies a subfolder inside the controller image where the files are stored. The subfolder or a structure of subfolders is relative to the root folder of the `imagepath`.

Examples:

```
ControllerAssistant -addCustomFiles "c:\temp\MyRecipes"
```

```
ControllerAssistant -imagedirectory "c:\Temp\MyImage"
-addCustomFiles "c:\temp\MyRecipes" "MyFiles\MyRecipes"
logfile=c:\temp\MyLogfile.log
```

Copying Application Files and Adding an Application to the Configuration File of the Controller

Use the following command to add an application to an existing controller image. For example, for the LMC•0•C controller family, the *.app and the corresponding *.crc files are copied into the image folder and the `CmpApp` section of the *sysc3.cfg file is modified.

NOTE: Some controller types do not support this command.

Usage:

```
ControllerAssistant [-imagedirectory <ImageDirectoryPath>]
-addapplication <ApplicationPath> <ApplicationName>
[logfile=<logfile>]
```

Example:

```
ControllerAssistant -imagedirectory c:\temp\MyImage
-addapplication c:\temp\MyApplicationFolderPath
logfile=c:\temp\version.log
```

The `ApplicationPath` is the folder containing the *.app and the corresponding *.crc files. The `ApplicationName` is the name of the *.app file (the file name without extension).

Showing the Supported Commands

Use the following command to list the possible commands with its arguments on the console.

Usage:

```
ControllerAssistant -help
```

Example:

```
ControllerAssistant -help
```

Device Identification

Refer to the Network Device Identification Call Parameters chapter *(see page 49)* for additional command line calls specific for Network Device Identification.

XML Commands

Refer to the XML Commands chapter *(see page 37)* for additional commands that are defined in XML formatted files.

XML Commands

Overview

You can use XML commands instead of a batch file. The commands are written into an XML formatted file. They provide more detailed and more readable calls of commands. Additionally, specific commands can only be used by XML commands (such as creating an image with specific Sercos devices).

It is called itself from command line using this format:

```
-xmlcommand <CommandFilePath> [<LogFile>]
```

The file at `<CommandFilePath>` contains the XML commands.

The optional log file `<LogFile>` is used to log detected XML results and detected errors. You can also define a log file inside the XML document.

File Format

The name of the root XML tag is `ControllerAssistantCommandLine`.

It contains the following elements:

- A list tag named `Commands`.
- One or more commands (tag name `Command`) to be executed in the defined order.

Getting the Program Version

Use the following command to retrieve the version number of the Controller Assistant application.

Example:

```
<ControllerAssistantCommandLine xmlns:xsi="http://www.w3.org/2001
XMLSchema-instance" Logfile="c:\log\ca.log">
   <Commands>
      <Command xsi:type="GetProgramVersion"/>
   </Commands>
</ControllerAssistantCommandLine>
```

The `Logfile` parameter is optional. If it is not specified, a default log file is used *(see page 29)*.

The result is logged into the log file and written to the console.

Creating a Controller Firmware

Use the following command to create a new firmware image for a controller.

Example:

The example creates an image for the controller LMC600C with specific version and communication settings. Additionally, the image includes firmware for the given Sercos devices and versions.

```
<ControllerAssistantCommandLine xmlns:xsi="http://www.w3.org/2001/XMLSc
hema-instance" ImagePath="c:\img" Logfile="c:\log\ca.log">
    <Commands>
        <Command xsi:type="CreateImage"
                 ControllerType="LMC600C"
                 FirmwareVersion="1.50.3.4"
                 IPAddress="192.168.15.1"
                 SubnetMask="255.255.255.0"
                 Gateway="192.168.15.100"
                 IPMode="fixed"
                 DeviceName=""
           >
            <SercosDevices>
              <SercosDevice VisibleName="LXM62" Version="1.50.4.0" />
              <SercosDevice VisibleName="LXM62P" Version="1.50.4.0" />
              <SercosDevice VisibleName="LXM62D" Version="1.50.4.0" />
              <SercosDevice VisibleName="ILM62" Version="1.50.4.0" />
              <SercosDevice VisibleName="LXM52" Version="1.50.4.0" />
              <SercosDevice VisibleName="TM5NS31" Version="1.09" />
              <SercosDevice VisibleName="SLC100" Version="1.10" />
              <SercosDevice VisibleName="SLC200" Version="1.10" />
              </SercosDevices>
        </Command>
    </Commands>
</ControllerAssistantCommandLine>
```

The `ImagePath` and `Logfile` parameters are optional. If they are not specified, default values are used *(see page 29)*.

The result is logged into the log file and written to the console.

Setting the Communication Parameters

Use the following command to set the communication parameters of the controller inside the image.

Example:

```
<ControllerAssistantCommandLine xmlns:xsi="http://www.w3.org/2001/XMLSc
hema-instance" ImagePath="c:\img" Logfile="c:\log\ca.log">
    <Commands>
        <Command xsi:type="UpdateCommunicationSettings"
                 IPAddress="192.168.0.1"
                 SubnetMask="255.255.255.0"
                 Gateway="192.168.0.100"
                 IPMode="fixed"
                 DeviceName="">
        </Command>
    </Commands>
</ControllerAssistantCommandLine>
```

The `ImagePath` and `Logfile` parameters are optional. If they are not specified, default values are used *(see page 29)*.

The `DeviceName` is used with `IPMode dhcp`. On some controllers, `IPMode` and `DeviceName` are ignored.

The result is logged into the log file and written to the console.

Add Custom Files to an Existing Image

Use the following command to add specific files to a controller image.

```
<ControllerAssistantCommandLine xmlns:xsi="http://www.w3.org/2001/XMLSc
hema-instance" ImagePath="c:\img" Logfile="c:\log\ca.log">
  <Commands>
    <Command xsi:type="AddCustomFiles" SourcePath="c:\additionalFiles"
      RelativeDestinationPath="addons"/>
  </Commands>
</ControllerAssistantCommandLine>
```

The `ImagePath` and `Logfile` parameters are optional. If they are not specified, default values are used *(see page 29)*.

The `SourcePath` is a folder containing the files that are copied into the controller image. This path can also contain subdirectory structures. The `RelativeDestinationPath` is optional and specifies a subfolder inside the controller image where the files are stored. The subfolder or a structure of subfolders is relative to the root folder of the image.

Adding an Application to an Existing Image

Use the following command to add an application to a controller image. For example, for the LMC•0•C controller family, the *.app and the corresponding *.crc files are copied into the image folder and the `CmpApp` section of the *sysc3.cfg file is modified.

NOTE: Some controller types do not support this command.

Example:

```
<ControllerAssistantCommandLine xmlns:xsi="http://www.w3.org/2001/XMLSc
hema-instance" ImagePath="c:\img" Logfile="c:\log\ca.log">
<Commands>
  <Command xsi:type="AddApplication" ApplicationPath=""
    ApplicationName="newapp"/>
  </Commands>
</ControllerAssistantCommandLine>
```

The `ImagePath` and `Logfile` parameters are optional. If they are not specified, default values are used *(see page 29)*.

The `ApplicationPath` is the folder containing the *.app and the corresponding *.crc files. The `ApplicationName` is the name of the *.app file (the file name without extension).

Configuration File

Overview

The Controller Assistant can be parameterized in its behavior with an external configuration file in XML format. This user-specific configuration file can be loaded when starting the program. After this, the settings are available throughout the complete runtime. The file is read by the Controller Assistant and never written to.

If the configuration file is in the execution directory of the Controller Assistant, then its settings will be taken over at program start. The settings influence the behavior as well as the operation of the Controller Assistant. Above all, the settings are used for a better integration within HMIs.

Structure

The file is structured in XML format (*http://www.xml.org*) and must include the encoding ISO-8859-1. This allows you to enter special characters (for example, umlauts such as ä, ö and ü) at any time using a simple text editor.

The root node has the name `<config>`. For a description of further subnodes, refer to the section *Parameters* in this chapter.

The typical configuration file below contains 2 entries, `autofilesavefilename` and `defaultfilesavedirectory`. Both are located as a group under the parent node `fileoptions`.

Example of a typical configuration file with 2 entries:

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<config>
  <fileoptions>
    <autofilesavefilename>
      <![CDATA[Backup_<date>_<counter>.pdi]]
    <autofilesavefilename>
    <defaultfilesavedirectory>
       c:\temp\PD-BackUp
    <defaultfilesavedirectory>
  <fileoptions>
</config>>
```

Changes to the XML file must be XML compliant. Otherwise, the file cannot be loaded. When starting the Controller Assistant, this is indicated by the pertinent diagnostic message stating the incorrect row and column. The program is then run as if there were no configuration file.

Calling

There are 2 ways to load the desired configuration file:

- automatically
  If there is a file with the name *Controller assistant.config.xml* in the start directory of the Controller Assistant, it is loaded automatically upon start-up. The program then uses these settings as it runs.
- manually
  You can also load the configuration file explicitly from another location in the file system using a command line. This has precedence over the automatic call. To do this, you can use the following syntax via the command line:
  `-userconfigfile <file name>`
  In this case, the configuration file entered under `<file name>` is loaded.

Parameters

The individual parameters are described where they appear within the configuration file *Controller assistant.config.xml*. You will find application examples there. As this file is located in the program directory, you can use it as a template.

Moreover, the parameters are once again described in detail. The parameters are listed as XML paths, which describe their distinct position within the XML file.

config/fileoptions/autofilesavefilename

When a file is saved, a file name can be generated automatically. The file name can consist of constant name elements, current values, (such as date or controller type) and a counter. The automatically generated name is then proposed, for example in the **Save as** dialog box.

The automatically generated name can be described by text and placeholders.

Example

`BackUp_date=<date>.bpd` gets the file name *BackUp_date=2006-03-12.bpd*

The current date is used. The placeholder must be written in lower case. This means that `<date>` is valid, whereas `<Date>` is not recognized.

The newly generated file name may possibly include characters that are not supported by the file system (for example, file is *My?File*). Therefore, these characters are replaced by a lowercase x.

Example

My?File.bpd is replaced by *MyxFile.bpd*.

The following 8 characters are those which are replaced:

\/:*?"**<>**|

The description (with placeholders) of the name to be generated includes special XML characters that cannot simply be written to an XML file. Therefore, the description must be enclosed in a `CDATA` section.

Example

`BackUp_<date>.bpd` must be changed to *<!CDATA[BackUp_<date>.bpd]]* to be inserted in the XML file.

As the description of a file name which is to be automatically generated may contain special characters, it must be enclosed in a `CDATA` section.

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<config>
  <fileoptions>
    <autofilesavefilename>
      <![CDATA[Backup_<date>_<counter>.pdi]]
    <autofilesavefilename>
    <defaultfilesavedirectory>
       c:\temp\PD-BackUp
    <defaultfilesavedirectory>
  <fileoptions>
</config>>
```

Placeholders are surrounded by angle brackets. They have to be entered manually. The list provides an overview of the possible placeholders:

- `<date>`
  Current date:
  Format: `yyyy-MM-dd`
  Examples
  1999-12-01 2006-03-21
- `<time>`
  Current time in 24-hour format:
  Format: `HH-mm-ss`
  Examples
  07-41-29 19-41-29
- `<counter>`
  The counter is an exception. First, it replaces the placeholder `<counter>` in the file name with a number, starting with 1. For example, this then results in a file name *PD-BackUp_1.bpd*. Then, it immediately checks if this file name already exists in the current directory. If it does, it increases the counter by 1 and repeats the test until it finds no file with the same name.
- `<controllertype>`
  This inserts the current controller type in an abbreviated format.
  Examples
  LMC 300 C400600
- `<firmwareversion>`
  Sets the current firmware version in the format `Major.Minor.Build.Revision`
  Examples
  1.30.0.0 1.31.201.2.

Examples of Calls with Possible Results

```
<controllertype>_<firmwareversion>.bpd
--> MAX4_0.22.6.0.bpd
<controllertype>_<firmwareversion>_<date>_<counter>.bpd
--> C400600_2206_2006-03-22_1.bpd
```

`config/fileoptions/defaultfilesavedirectory`

This parameter defines the default directory that is first shown when a **Save as** dialog box is opened. It allows the user to change the directory as desired and save the file. However, when the user opens the **Save as** dialog box the next time, the directory defined in `<defaultfilesave-directory>` is suggested again.

The following example defines *c:\temp\PD-BackUp* as the default directory.

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<config>
  <fileoptions>
    <autofilesavefilename>
      <![CDATA[Backup_<date>_<counter>.pdi]]
    <autofilesavefilename>
    <defaultfilesavedirectory>
       c:\temp\PD-BackUp
    <defaultfilesavedirectory>
  <fileoptions>
</config>>
```

The entry defines *c:\temp\PD-BackUp* as the default directory

`config/fileoptions/defaultfileopendirectory`

This parameter defines the default directory that is first shown when an **Open** dialog box is opened. It allows the user to change the directory as desired and open the file. However, when the user opens the **Open** dialog box the next time, the directory defined in `<defaultfileopendi-rectory>` is suggested again.

`config/application/usermode`

Via user mode, the Controller Assistant can be further parameterized. The user mode is intended for HMI applications. It defines which functionalities are available.

The following modes are possible:

Mode	Description
`Default`	default setting (corresponds to leaving out user mode)
`NoFirmwareChange`	The dialog boxes for the firmware replacement have been deactivated.
`DontEditImage`	The entire menu for editing an image has been deactivated.
`NoExplorer`	The **ImageManager** dialog of the Controller Assistant for manual editing of the image has been deactivated

`config/application/quicktransfermode`

In the case of resource intensive programming which places a high level of demand on the controller, and that may also have outdated firmware, cycle times may be exceeded. If `<quicktransfermode>` is set to FALSE, then the transfer takes place slowly (up to a factor of 15). This helps to minimize the risk of a cycle time overrun and consequential watch dog timeout errors.

NOTE: The default value of `<quicktransfermode>` is TRUE.

Chapter 2
Network Device Identification

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
General Information

Network Device Identification

Overview

SoMachine Motion / SoMachine, and different tools, such as Controller Assistant, have a Network Device Identification command interface.

This interface can be used, for example by an HMI that offers a controller setup or for exchange functionalities with the user. The Network Device Identification command-line call can be used in the maintenance and service environment, for example for the HMI integration.

The Network Device Identification command line expands the standard command line of the respective tool. The entry criteria of the command line is `Netmanage Command`. The commands are not case-sensitive.

A series of Network Device Identification command calls allow you to receive information of the controllers that are connected to the same network such as the PC on which the command-line tool is running.

As a result of this controller scan, an .xml file is created with the controller information.

In addition, you can use the MAC address of the controller to perform further Network Device Identification command-line calls. For example, the function signal (controller signaling) that can be used to find devices in the network quickly through flashes or audio signals.

Furthermore, an additional command-line call allows you to change the communication settings of the controller.

NOTE: If the commands are called up via a batch file, then the processing takes place synchronously. However, when entering manually by command line arguments, the processing takes place asynchronously. To be able to perform synchronous processing via manual command line entries, set the prefix `start /b /wait` before the command.

Example

```
start / b/ wait ControllerAssistant.exe -
loadcontrol ip etcp3://10.128.225.156 "c:\temp\Result.log"
```

Section 2.2
Network Device Identification Call Parameters

What Is in This Section?

This section contains the following topics:

Create a Controller List

Overview

The Network Device Identification service allows you to retrieve a list of connected controllers in the current network.

After call-up of this function the network is scanned. Connected controllers that support the function will reply and will be listed in the specified XML file.

Call

```
<ToolPath> -
NetmanageCommand CreateControllerList <ResultXmlFilePath> [<RefreshTime
out>]
```

Parameter Description

Call Parameters	Content
`<ToolPath>`	Path of the tool to be executed that supports the Network Device Identification command-line call, see example underneath this table.
`<ResultXmlFilePath>`	Path to the Network Device Identification configuration file in .xml format.
`<RefreshTimeout>`	Optional, default value = 5 This timeout defines the time in seconds which is required to determine the controller information. Normally, the controller sends its information immediately after receiving the request. In some cases (for example, overloaded network), UDP answers can get lost. In this case, an increase of `<RefreshTimeout>` may be reasonable to collect the information of all the controllers.

Example

Entry

```
"c:\Programs\Schneider Electric\ControllerAssistant\ControllerAssistant
.exe" -NetmanageCommand CreateControllerList
"c:\temp\MyControllerList.xml" 2
```

Result

By a successful processing of the call 0, otherwise 1.

Signal to

Overview

The controller is identified by an optical signal (blinking of the status LED) or via an acoustic signal. It is assigned via the MAC (media access control) address. The signal stops after 10 seconds. If the controller is already in the status *Signal*, then a new signalizing is triggered with the last mode `<SignalMode>`.

Call

```
<ToolPath> -NetmanageCommand SignalOn <MacAddress> [<SignalMode>]
```

Parameter Description

Call Parameters	Content
`<ToolPath>`	Path of the tool to be executed that supports the Network Device Identification command-line call, see example underneath this table.
`<MacAddress>`	MAC address of the desired controller
`<SignalMode>`	Optional, standard value = 2 Determines the type of the signaling: ● 1: only blinking ● 2: blinking and sound (if supported by the controller)

Example

Entry

```
"c:\Programs\Schneider Electric\ControllerAssistant\ControllerAssistant
.exe" -NetmanageCommand SignalOn 00:04:17:05:00:78 2
```

Result

By a successful processing of the call 0, otherwise 1.

Signal from

Overview

The identification of a controller through an optical signal or via a series of sounds (refer to the Signal to chapter *(see page 51)*) is stopped.

Call

```
<ToolPath> -NetmanageCommand SignalOff <MacAddress>
```

Parameter Description

Call Parameters	Content
`<ToolPath>`	Path of the tool to be executed that supports the Network Device Identification command-line call, see example underneath this table.
`<MacAddress>`	MAC address of the desired controller

Example

Entry

```
"c:\Programs\Schneider Electric\ControllerAssistant\ControllerAssistant
.exe" -NetmanageCommand SignalOff 00:04:17:05:00:78
```

Result

By a successful processing of the call 0, otherwise 1.

Carry Out Communication Settings

Overview

Changes the communication parameters IP (Internet protocol) address, subnet mask, and gateway of the controller. The controller is assigned via the MAC address.

NOTE: The communication can only take place if it was permitted in the project parameters. By default, the communication is enabled.

Call

```
<ToolPath> -
NetmanageCommand SetCommunicationSettings <MacAddress> <IpAddress> <Sub
net-Mask> <Gateway> <SetPermanently>
```

Parameter Description

Call Parameters	Content
`<ToolPath>`	Path of the tool to be executed that supports the Network Device Identification command-line call, see example underneath this table.
`<MacAddress>`	MAC address of the desired controller
`<IpAddress>`	New IP address of the controller .
`<Subnet-Mask>`	New subnet mask of the controller
`<Gateway>`	New gateway of the controller.
`<SetPermanently>`	TRUE: The change of the communication settings is permanently saved. The new settings are also used after a reset. FALSE: The change of the communication settings is only saved temporary.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Verify that there is only one master controller configured on the network or remote link.
- Verify that all devices have unique addresses.
- Obtain your IP address from your system administrator.
- Confirm that the device's IP address is unique before placing the system into service.
- Do not assign the same IP address to any other equipment on the network.
- Update the IP address after cloning any application that includes Ethernet communications to a unique address.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: Most controllers provide a parameter (such as **RemoteAccess**) that helps to prevent changing of communication parameters of the controller.

Example

Entry

```
"c:\Program Files (x86)\Schneider Electric\Tools\ControllerAssistant\Co
ntrollerAssistant.exe" -
NetmanageCommand SetCommunicationSettings 00:04:17:05:00:78 192.168.2.2
1 255.255.0.0 192.168.2.50 true
```

Result

By a successful processing of the call 0, otherwise 1.

NOTE: The command is sent asynchronously without waiting for a result. The result 0 means that the command has been sent successfully. In order to check the result, call the command `CreateControllerList` after a few seconds (depending on the controller) and check the delivered result.

Help Display

Overview

A help for the usage of the call parameters is displayed.

Call

```
<ToolPath> -NetmanageCommand <Help>
```

Parameter Description

Call Parameters	Content
<ToolPath>	Path of the tool to be executed that supports the Network Device Identification command-line call, see example underneath this table.
<Help>	"?" (enter a question mark to get the usage information)

Example

Entry

```
"c:\Program Files (x86)\Schneider Electric\Tools\ControllerAssistant\ControllerAssistant.exe" -NetmanageCommand ?
```

Result

By a successful processing of the call 0, otherwise 1.

Section 2.3
Network Device Identification Controller List

Network Device Identification Controller List

Overview

With the **CreateControllerList** function, a controller list can be created that contains the information of the controllers that are in the local network.

The controller list is structured in XML format (*http://www.xml.org*) and uses the UTF-8 (UCS (universal character set) transformation format 8-bit) format as encoding. The name of the root node is `<Netmanage>`. The subnode `<ControllerList>` contains further subnodes which each represent a controller and the last information it sent.

Example

Example of a configuration file with 2 entries

```
<?xml version="1.0"encoding="utf-8"?>
<Netmanage Version="1.0.0.0">
   <ControllerList>
      Controller MacAddress="00:04:17:07:02:36" SignalState="0" Control
ler="2000"
      TimeSinceBoot="184"_IP_Address="192.168.2.23" IP_SubNetMask="255.
255.255.0">
      Controller MacAddress="00:04:17:05:00:78" SignalState="2" Control
ler="3000"
      TimeSinceBoot="116"_IP_Address="192.168.2.22" IP_SubNetMask="255.
255.255.0">
   </ControllerList>
</Netmanage><
```

Attributes of the XML File

Name	Description	Example
`MacAddress`	MAC address of the controller in hexadecimal STRING display	`00:04:17:07:02:36`
`SignalState`	definite identifier of the controller type ● 0: no signal ● 1: blinking ● 2: blinking and sound (if supported by the controller)	`0`

Name	Description	Example
Controller	unique identifier of the controller type ● -1: Unknown ● 0: PacDrive P600 ● 1: PacDriveMAx-4 ● 2: PacDriveC600 ● 3: PacDriveC200 ● 4: PacDrive C400 ● 2000: LMC 201C ● 3000: LMC 300C ● 100513: TM258LD42DT ● 100537: LMC058LF42 ● 101798: TM241CEC24T_U ● 104200: XBTGC1100 ● 104208: HMISAC ● 108201: ATV-IMC ● 201920: TM221M16R/G ● ...	2000
TimeSinceBoot	time in seconds since the last boot of the controller	184
IP_Address	IP address of the controller	192.168.2.23
IP_SubNetMask	subnet mask of the controller	255.255.255.0
IP_Gateway	gateway of the controller	192.168.2.1
NetbiosName	not used	–
DhcpState	not used	–
FW_Version	firmware version of the controller in STRING display	V01.35.02.02 Dec 2 2011
KernelVersion	kernel version of the controller in STRING display	V0.1 LMC x01C
ControllerType	controller type in STRING display, additional information in form of key value pairs separated with a slash	LMC 201C/AX=8/RAM=500/NVRAM=128/DiskS=515/PFPGA=0109/CPU=106ca/BIOS=B704R001/SFPGA=6
ProjectName	name of the project that was loaded onto the controller	MyProjectName
ProjectDate	date of the project that was loaded onto the controller The sum of the seconds is specified since 01.01.1970.	1326388978
ProjectVersion	version of the project that was loaded onto the controller	0.0.0.0
ProjectAuthor	author of the project that was loaded onto the controller	MyAuthor

Name	Description	Example
ProjectDescription	description of the project that was loaded onto the controller.	MyProjectDescription
Programming system	programming system of the project that was loaded onto the controller.	2
RemoteCommunicationAccess	not used	–
P600_IP_Address	not used	–
P600_IP_SubNetMask	not used	–
P600_IP_Gateway	not used	–
P600_NetbiosName	not used	–
P600_GatewayStarted	not used	–
ConnectionMode	the way the controller is connected to the PC ● 0: None ● 1: Any ● 2: Ethernet ● 3: USB ● 4: Remote Tcp ● 5: Modem ● 6: SharedMemory	2
NodeName	nodename of the controller	LMC_600 (10.128.154.12)
CartridgeID	ID of the cartridge of the controller	1

The format of the parameters is not unique and depends on the controller type.

Chapter 3
Managing Images

What Is in This Chapter?

This chapter contains the following sections:

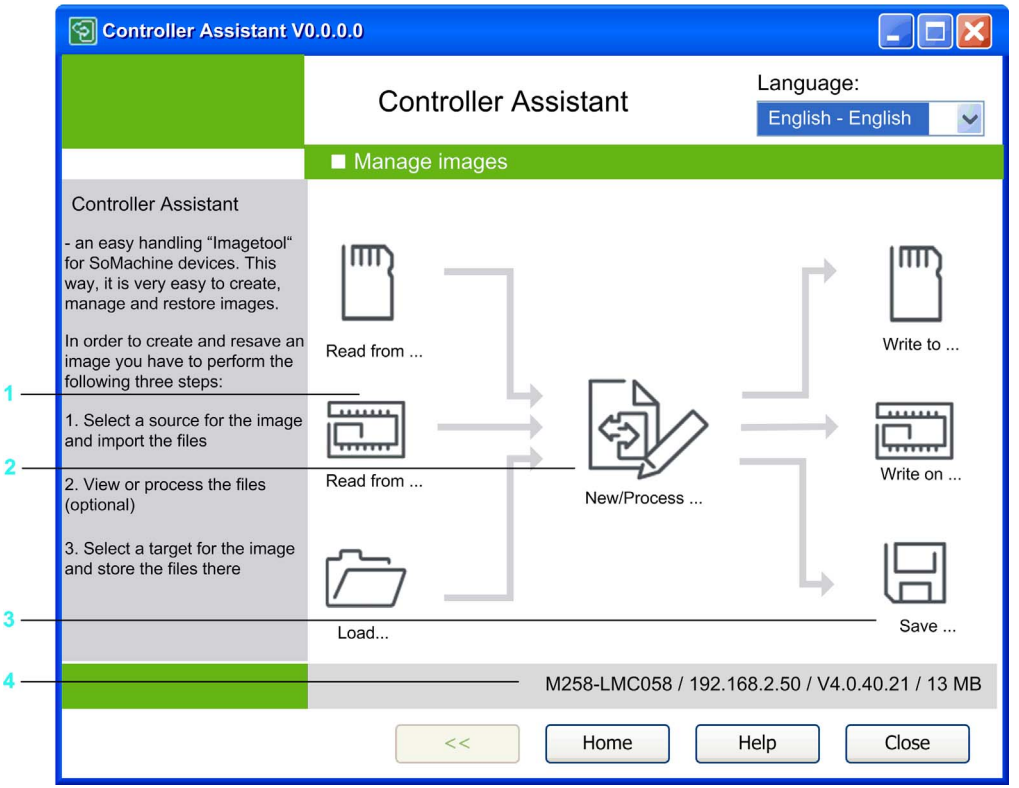
Section 3.1
Manage Images Dialog

Introduction

Overview

If you click the **Manage images...** button in the **Home** dialog, the **Manage images** dialog opens.

The **Manage images** dialog



The **Manage images** dialog is subdivided into 4 areas.

Area	Description
1	On the left, there are the functions for reading in an image in Controller Assistant.

Area	Description
2	The central area refers to the image currently managed by the Controller Assistant. Below the same, you can edit or create the current image, or you can replace the firmware in the current image.
3	On the right-hand side, there are functions for writing the image currently managed by Controller Assistant into a specific destination.
4	The status bar shows information on the current image: ● Controller The controller type which the current image refers to. ● IP address The IP address of the controller saved in the current image. ● Version The firmware version of the current image. ● Source This shows the origin of the image currently managed by the Controller Assistant. Possible variants are: ❍ Removable storage device (from CF card, SD card or USB mass storage device) ❍ Controller (from controller) ❍ Image file (from file system)

Section 3.2
Accessing Drives

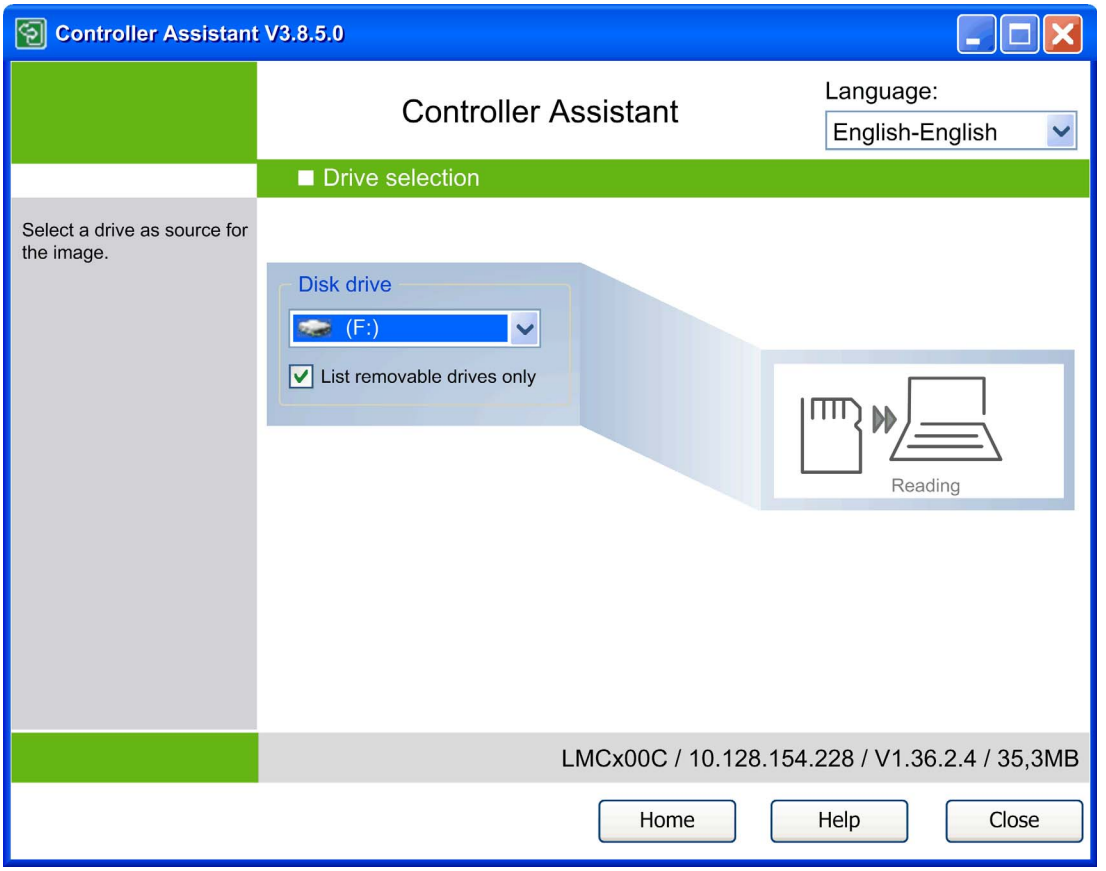
Description of the Drive selection Dialog

Overview

To open the dialog **Drive selection**, click one of the buttons **Read from...** or **Write to...** on the **Manage images** dialog. Depending on this selection, the **Drive selection** dialog appears in one of the variants described in this chapter.

Read from...

Drive selection dialog after call-up via **Read from...** button.



In this dialog, select the drive into which you have inserted the removable storage device (CF card for PacDrive M controllers, SD card for Modicon M221, M241, M251 logic controllers, or USB mass storage device for Modicon M258 Logic Controller, Modicon LMC058 Motion Controller).

By default, the option **List removable drives only** is selected. This has the effect that the **Disk drive** list only contains drives of removable media. To display also hard disk drives in the list, deselect the option **List removable drives only**.

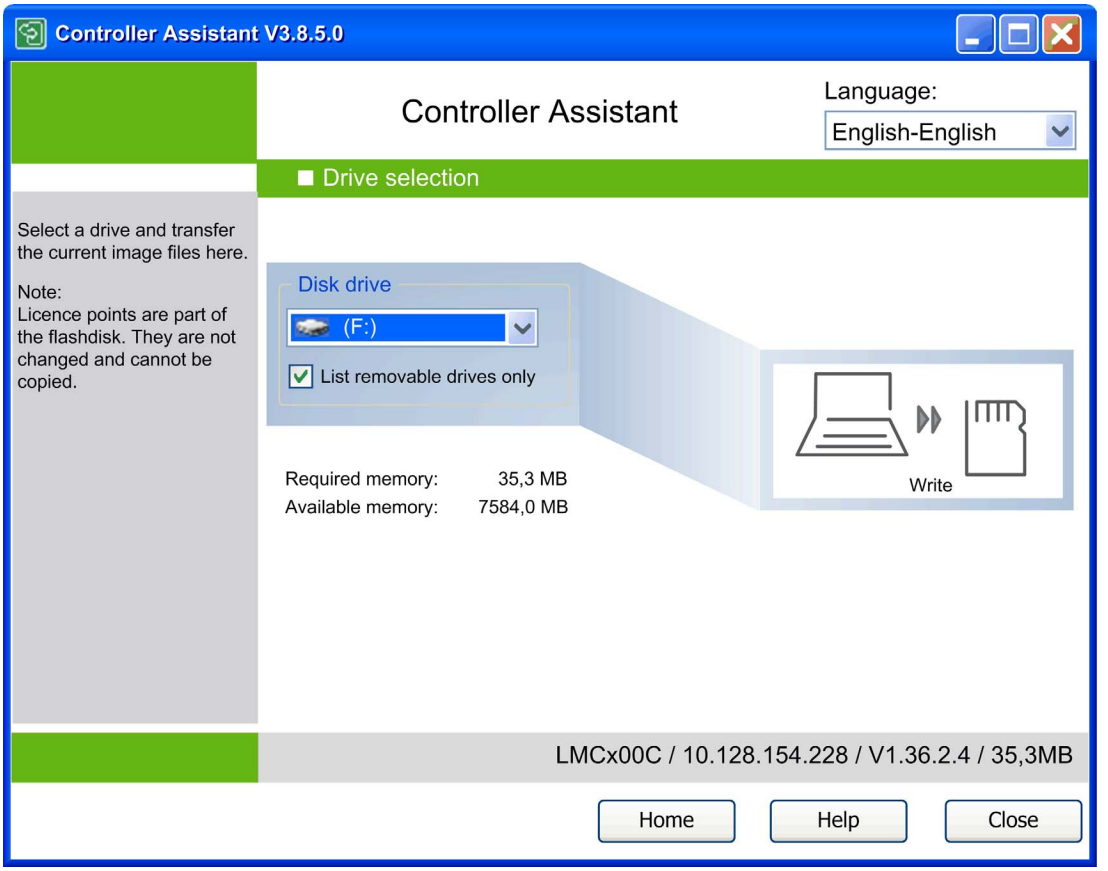
Select a drive from the **Disk drive** list.

Click the **Reading** button to load the image into the Controller Assistant.

Write to...

NOTE: Writing, for example on a SoMachine controller card, is only possible if the inserted storage device has a data volume of at least 128 Mbyte.

Drive selection dialog after call-up via **Write to...** button.



In this dialog, select the drive into which you have inserted the storage device.

By default, the option **List removable drives only** is selected. This has the effect that the **Disk drive** list only contains drives of removable media. To display also hard disk drives in the list, deselect the option **List removable drives only**.

Click the **Write** button to write the image back onto the inserted storage device. Before the operation is performed, a message box will be displayed informing you that the data will be deleted from the selected drive. Before you start the operation by clicking **Yes**, it allows you to verify the content of the destination drive in a Windows Explorer view by clicking **Explorer**. To abort the operation, click **No**.

Hints

NOTE: Note for PacDrive M controllers that existing license points are not a component part of an image but rather are a part of a flash disk. They cannot be copied. They are not changed when writing an image to the flash disk or controller.

NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Section 3.3
Accessing Controllers

What Is in This Section?

This section contains the following topics:

General Tab of the Controller Selection Dialog

Overview

To open the dialog **Controller selection**, click one of the buttons **Read from...** or **Write to...** a controller on the **Manage images** dialog. The **Controller selection** dialog appears in one of the variants described in this chapter. By default, the **General** tab is selected. This tab includes the SoMachine Network Device Identification function and allows you to configure the controller access options *(see page 68)*.

To connect to a PacDrive M controller, click the **PacDriveM** tab. The specific settings for PacDrive M controllers are described in the chapter Description of the Controller Selection Dialog for PacDrive M Controllers *(see page 74)*.

Images on CF Card, SD Card, or USB Mass Storage Device

Images are read from or written to a CF card (PacDrive M controllers), an SD card (Modicon M221, M241, M251 logic controllers) or to a USB mass storage device (Modicon M258 Logic Controller, Modicon LMC058 Motion Controller). Configure your controller for this operation as described in the documentation of your controller.

In the **Drive selection** dialog, select the drive of the SD card or USB mass storage device and click the **Reading** or **Writing** button.

Configuration of the Controller Access Options

SoMachine Network Device Identification

The **Controller selection** dialog allows you to select a device from a list of connected controllers.

The Network Device Identification service is used to automatically detect all connected controllers.

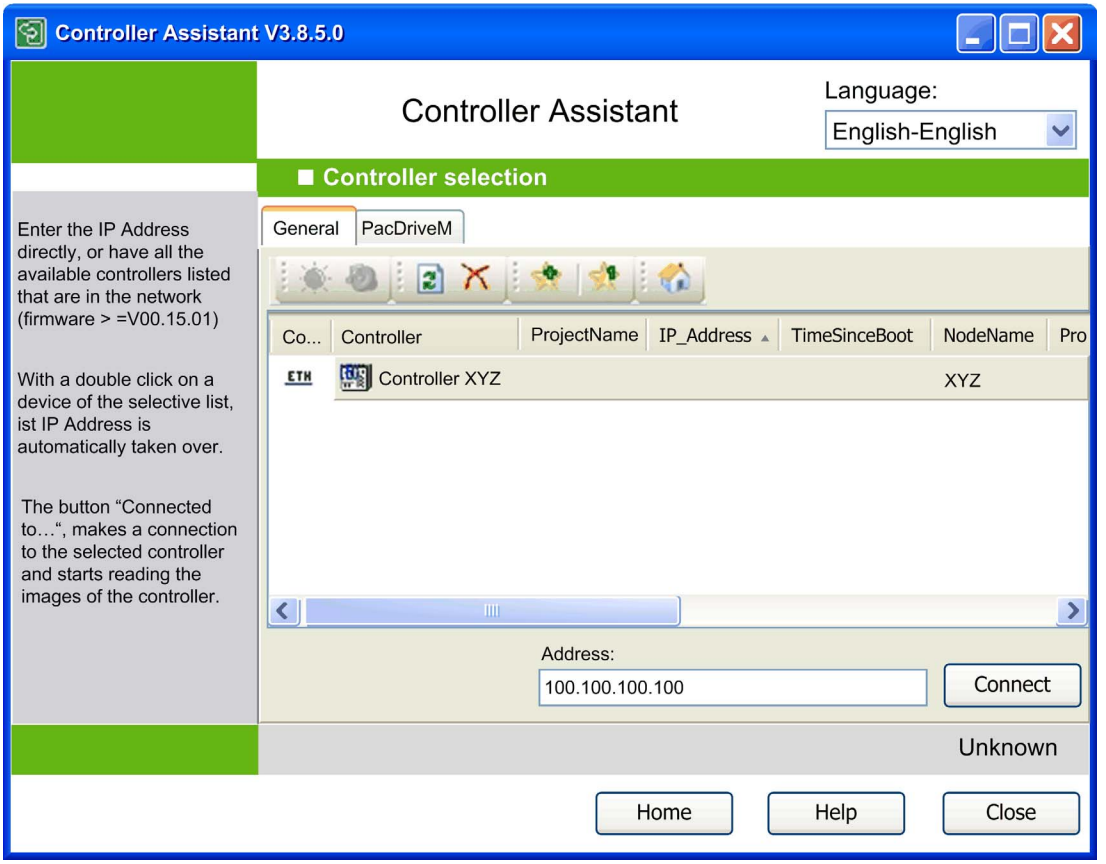
The Controller Assistant provides 2 different ways to access the Network Device Identification service:

- Click the **General** tab of the **Controller selection** dialog.
- In the **PacDriveM** tab, select the option **Ethernet** and click the **Searching network** button.

The Network Device Identification function shows a list of controllers available in the network.

Select a controller from this list, and click **Connect** to accept the marked controller in the controller selection.

Network Device Identification function providing a list of controllers available in your network



Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

This also applies to the **NodeNames**. Each device on the network requires a unique **NodeName**.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Verify that there is only one master controller configured on the network or remote link.
- Verify that all devices have unique addresses.
- Obtain your IP address from your system administrator.
- Confirm that the device's IP address is unique before placing the system into service.
- Do not assign the same IP address to any other equipment on the network.
- Update the IP address after cloning any application that includes Ethernet communications to a unique address.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Changing the Communication Settings Via Ethernet Using the Context Menu

To change the communication settings of a controller via the Ethernet connection, use the context menu. However, to this end the controller must already be visible in the network.

To change the communication settings of M258 and LMC058 controllers with specific firmware versions that do not support this feature, use the USB mass storage device.

To achieve this, right-click the entry of the controller in the **Controller selection** list and execute the command **Process communication settings...** from the context menu.

Description of the Buttons in the Toolbar

The following buttons are available in the toolbar:

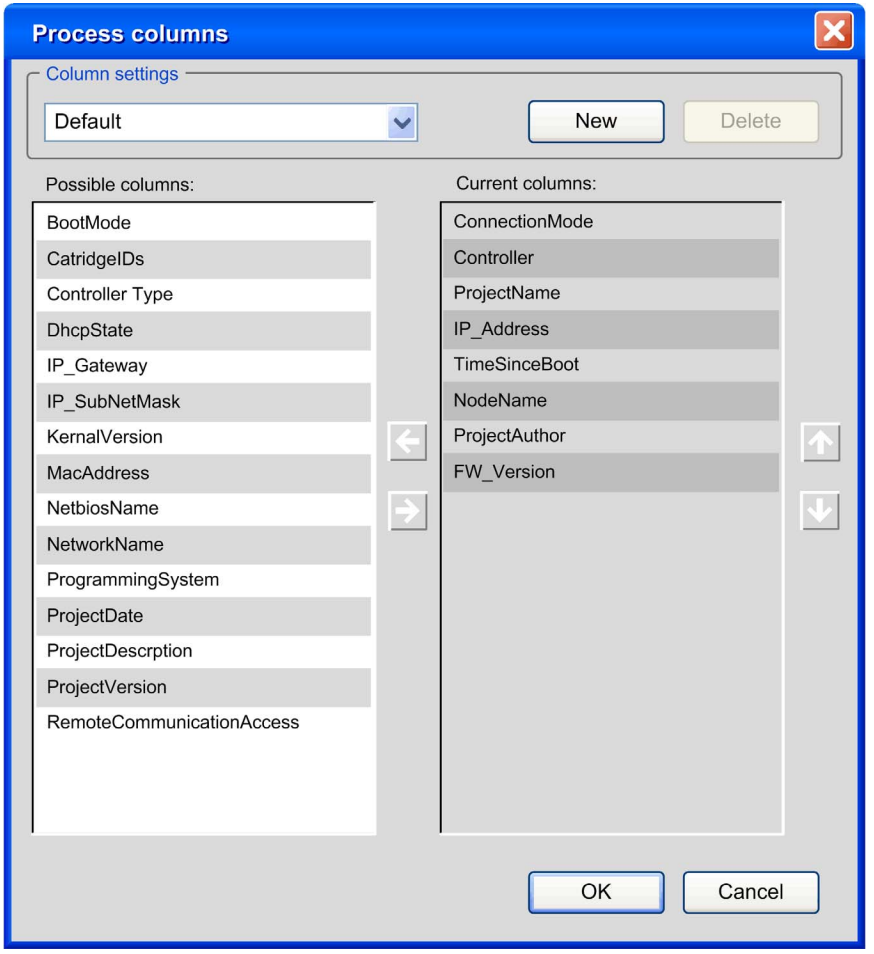
Button	Description
Optical	Click this button to cause the selected controller to indicate an optical signal: It flashes a control LED quickly. This can help you to identify the respective controller if many controllers are used. The function stops on a second click or automatically after about 30 seconds. **NOTE:** The optical signal is issued only by controllers that support this function.
Optical and acoustical	Click this button to cause the selected controller to indicate an optical and an acoustical signal: It starts to beep and flashes a control LED quickly. This can help you to identify the respective controller if many controllers are used. The function stops on a second click or automatically after about 30 seconds. **NOTE:** The optical and acoustical signals are issued only by controllers that support this function.

Button	Description
Update	Click this button to refresh the list of controllers. A request is sent to the controllers in the network. Any controller that responds to the request is listed with the current values. Pre-existing entries of controllers are updated with every new request. Controllers that are already in the list but that do not respond to a new request are not deleted. They are marked as inactive by a red cross being added to the controller icon. The **Update** button corresponds to the **Refresh list** command that is provided in the context menu if you right-click a controller in the list. To refresh the information of a selected controller, the context menu provides the command **Refresh this controller**. This command requests more detailed information from the selected controller. NOTE: The **Refresh this controller** command can also refresh the information of other controllers.
Remove inactive controllers from list.	Controllers that do not respond to a network scan are marked as inactive in the list. This is indicated by a red cross being added to the controller icon. Click this button to remove all controllers marked as inactive controllers simultaneously from the list. NOTE: Because of network issues, a controller can be marked as inactive even if this is not the case. The context menu that opens if you right-click a controller in the list provides 2 other commands for removing controllers: • The **Remove selected controller from list** command allows you to remove only the selected controller from the list. • The **Remove all controllers from list** command allows you to remove all controllers simultaneously from the list.
New Favorite... and **Favorite 0**	You can use **Favorites** to adjust the selection of controllers to your personal requirements. This can help you to keep track of many controllers in the network. A **Favorite** describes a collection of controllers that are recognized by a unique identifier. Click a favorite button (such as **Favorite 0**) to select or deselect it. If you have not selected a favorite, all detected controllers are visible. You can also access **Favorites** via the context menu. It opens upon right-clicking a controller in the list. Move the cursor over a favorite button in the toolbar to view the associated controllers as a tooltip.

List of Controllers

The list of controllers in the middle of the **Controller selection** view of the device editor lists those controllers that have sent a response to the network scan. It provides information on each controller in several columns. You can adapt the columns displayed in the list of controllers according to your individual requirements.

To achieve this, right-click the header of a column to open the **Process columns** dialog box.



You can create your own layout of this table. Click **New**, and enter a name for your layout. Shift columns from the list of **Possible columns** to the list of **Current columns** and vice versa by clicking the horizontal arrow buttons. To change the order of the columns in the **Current columns** list, click the arrow up and arrow down buttons.

Managing Favorites

To manage favorites in the list of controllers, proceed as follows:

Step	Action
1	Select the controller in the list of controllers.
2	Right-click the controller and select one of the commands: ● **New Favorite** to create a new group of favorites. ● **Favorite n** in order to ❍ add the selected controller to this list of favorites ❍ remove the selected controller from this list of favorites ❍ remove all controllers from this list of favorites ❍ select a favorite ❍ rename a favorite ❍ remove a favorite

Continue Reading / Writing Data

After you have selected a controller, click the button on the right-hand side to continue the writing/reading process.

Cancel Operation

To cancel the operation, click the **Home** button. The **Home** dialog opens.

Description of the Controller Selection Dialog for PacDrive M Controllers

Overview

To open the dialog **Controller selection**, click one of the buttons **Read from...** or **Write to...** a controller on the **Manage images** dialog.

To connect to a PacDrive M controller, click the **PacDriveM** tab. This chapter describes the specific settings for PacDrive M controllers.

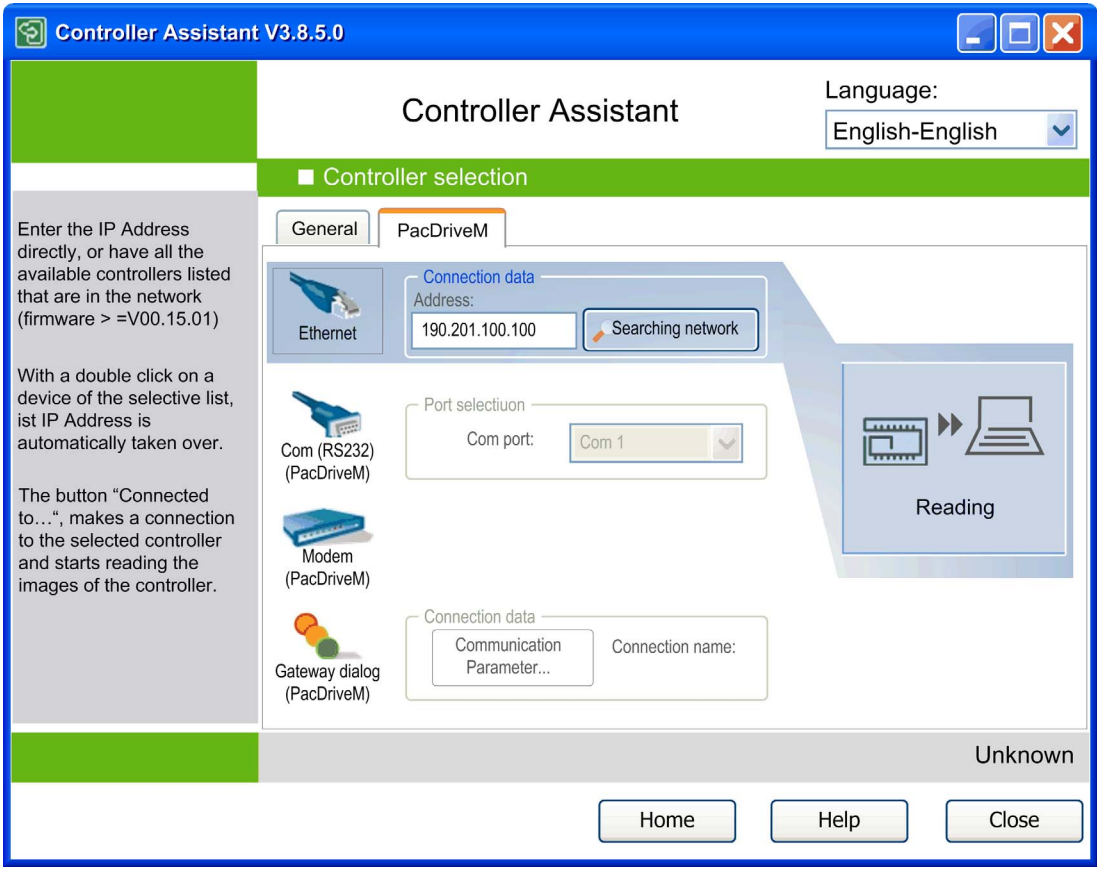
Read from...

The **PacDriveM** tab contains the various options for PacDrive M controller selection for **Read from...** and the **Write to...** operations. To load an image from a PacDrive M controller, click the **Read from...** controller button in the **Manage images** dialog (the icon in the middle on the left-hand side) and select the **PacDriveM** tab of the **Controller selection** dialog.

Select a data transfer method from the list on the left-hand side (**Ethernet**, **Com port**, **Modem**, or **Gateway dialog**), and enter further information to specify the PacDrive M controller (such as the IP address).

Click the **Reading** button to load the image. Refer to the paragraphs further below in this chapter on the configuration settings.

Use this dialog to select various access options for the PacDrive M controller.



Write to...

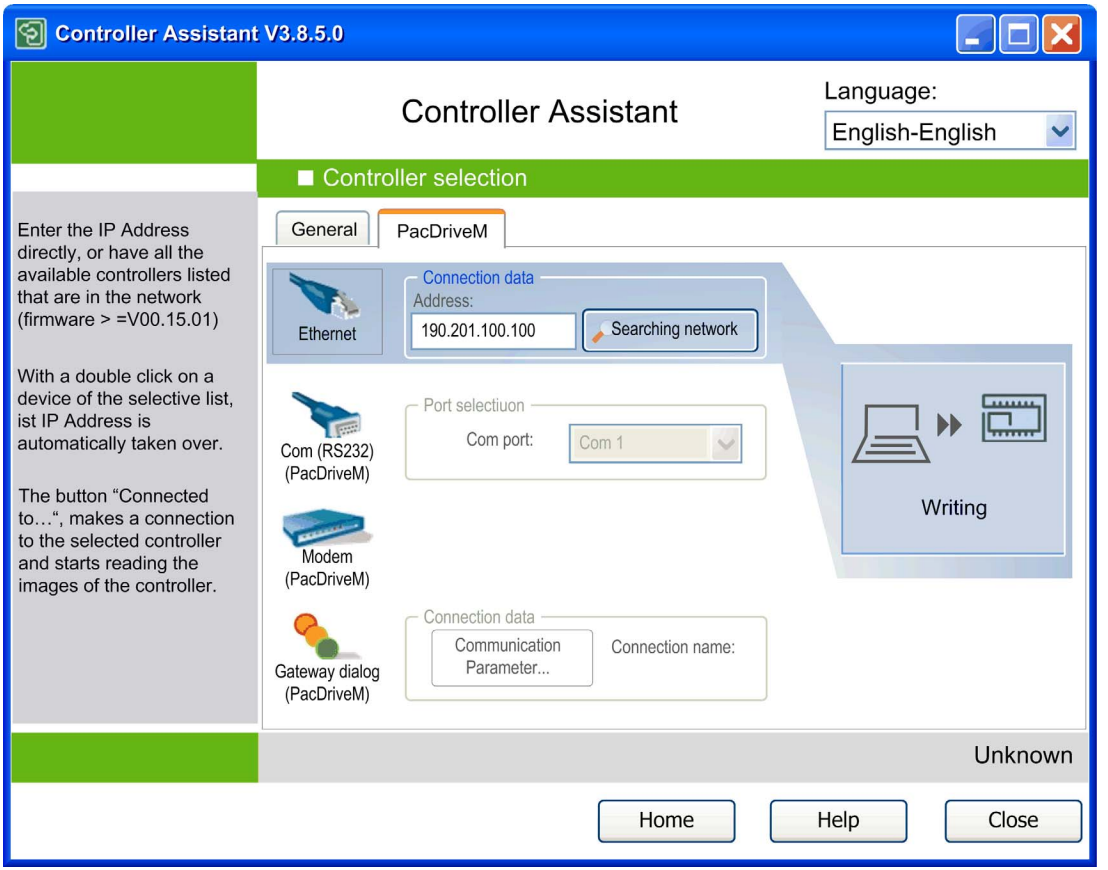
To write an image to a PacDrive M controller, click the **Write on...** controller button in the **Manage images** dialog (the icon in the middle on the right-hand side) and select the **PacDriveM** tab of the **Controller selection** dialog. In the **Write to...** dialog, click the **Writing** button to transfer the image to the controller.

The writing process during the transfer of an image can be canceled.

NOTE: If the transfer of an image to a PacDrive M controller is canceled, the controller is in an undefined state. As long as the PacDrive M controller is not restarted, an image transfer can be performed again. If the controller is switched off in the meantime, you have to remove the flash disk from the controller. Transfer the image directly via a card reader.

NOTE: Existing license points are not a component part of an image but rather are a part of a flash disk. They cannot be copied. They are not changed when writing an image to the flash disk or PacDrive M controller.

Use this dialog to select various access options for the PacDrive M controller.



Ethernet Communications

Select the option **Ethernet** in order to communicate with PacDrive M controllers. It is the fastest method to read and write data.

NOTE: For the other transfer methods, long waiting periods during the transfer are to be expected when exchanging large volumes of data.

Ethernet communication uses the TCP/IP protocol. To establish a communication, a valid IP address of the controller is required. You can enter it directly in the text box **Address**. To execute a search for the controllers available in the network, click the button **Search network**. This dialog starts the Network Device Identification function. It is also available in the **General** tab of the **Controller selection** dialog. For further information, refer to the chapter Configuration of the Controller Access Options *(see page 68)*.

Serial Communications

If the controller is connected to the SoMachine PC via serial cable, select the option **Com (RS232)**. Select the **Com Port** where the controller is connected, and click the **Reading** or **Writing** button.

Communication Via Modem

Before you can communicate with the PacDrive M controller via modem, configure the modem connection on the PC using the Windows modem features. For further information on this topic, refer to the Windows online help.

Configure the PacDrive M controller for modem communication as described in the EPAS-4 online help that is automatically installed with the EPAS-4 software.

After the connection via modem has been configured, you can select the option **Modem**, and click the **Reading** or **Writing** button.

⚠ CAUTION
INOPERABLE EQUIPMENT
Do not use a modem connection for updating the firmware.
Failure to follow these instructions can result in injury or equipment damage.

If the communication to the controller is interrupted during firmware update, for example, due to a reset of the serial line configuration, your device may become inoperative.

Communication Via Gateway

To establish a communication to the controller via gateway, set the **Communication parameters** and define a **Connection name**, and click the **Reading** or **Writing** button. For further information on these parameters, refer to the EPAS-4 online help that is automatically installed with the EPAS-4 software.

Changing the Communication Settings of a PacDrive M Controller Via Serial Data Transfer

If the PacDrive M controller is connected to the SoMachine PC via a serial cable, click the button

 **Transfer communication settings serial to a controller...**. The **Transfer communication settings serial** dialog box opens. It allows you to enter the **IP address**, the **Subnet mask**, and the **Gateway** you want to assign to the PacDrive M controller. Select the **Com port** where the PacDrive M controller is connected, and click **OK** to transfer the settings to the PacDrive M controller.

After successful transfer of the communication settings, you can transmit the data of the PacDrive M controller via the fast Ethernet connection. The communication settings can also be changed via the context menu. However, to this end the PacDrive M controller must already be visible in the network (from firmware version >= V00.15.00).

Section 3.4
Loading / Saving Images

Loading / Saving Images Via Standard Windows Dialog Boxes

Loading Images

To open the **Open** dialog box, click the button **Load...** on the **Manage images** dialog. The standard Windows **Open** dialog box allows you to read in an image. Enter the desired path and file name, and click the **Open** button. The **.bpd* file type is supported. The specified image is read into Controller Assistant.

Saving Images

To open the **Save** dialog box, click the button **Save...** on the **Manage images** dialog. The standard Windows **Save as** dialog box allows you to save the image currently managed in Controller Assistant. Enter the desired path and file name, and click the **Save** button. The image is saved at the specified location. The file type available for selection is **.bpd*.

Hints

NOTE: Note for PacDrive M controllers that existing license points are not a component part of an image but rather are a part of a flash disk. They cannot be copied. They are not changed when writing an image to the flash disk or controller.

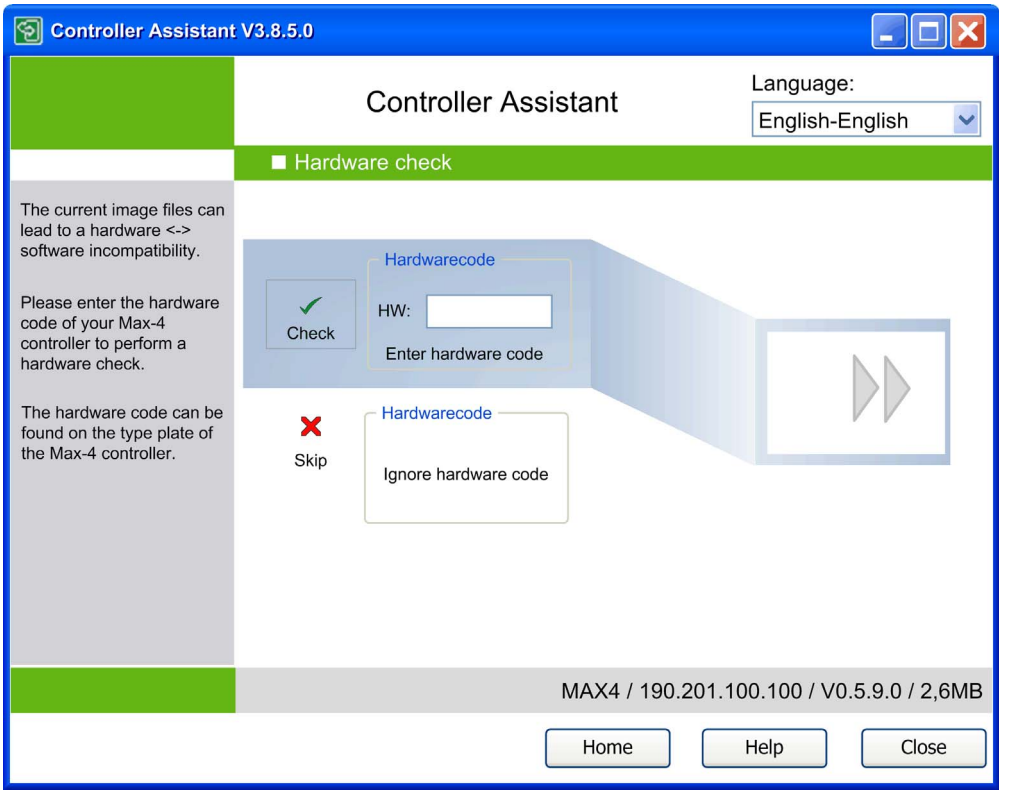
NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Section 3.5
Compatibility Check Between Image and PacDrive M Controllers

Description of the Hardware Check Dialog for PacDrive M Controllers

Overview

The **Hardware check** dialog opens automatically when PacDrive M controllers with specific firmware versions are used.



To execute a hardware check, enter the hardware code of the controller in the **HW:** text box. You can find the hardware code on the type plate of the controller. Click the **Check** button to execute the verification process.

Alternatively, you can ignore this check by clicking the **Skip** button. In this case, it will not be verified whether the image is suitable for the controller.

If there is an incompatibility between the image and the controller, the axis connected via Sercos can run in an undesirable way (for example, at an unspecified speed), or rendered the controller unable to respond to communications nor change state.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION OR INOPERABLE EQUIPMENT
Always use the latest firmware to help avoid incompatibilities between image and controller.
Failure to follow these instructions can result in death, serious injury, or equipment damage.

NOTE: When **Skip** is selected, no verification whatsoever will be carried out. In this case, Schneider Electric may not be considered responsible.

Chapter 4
The Process Image / Create Image New Dialog Boxes

What Is in This Chapter?

This chapter contains the following sections:

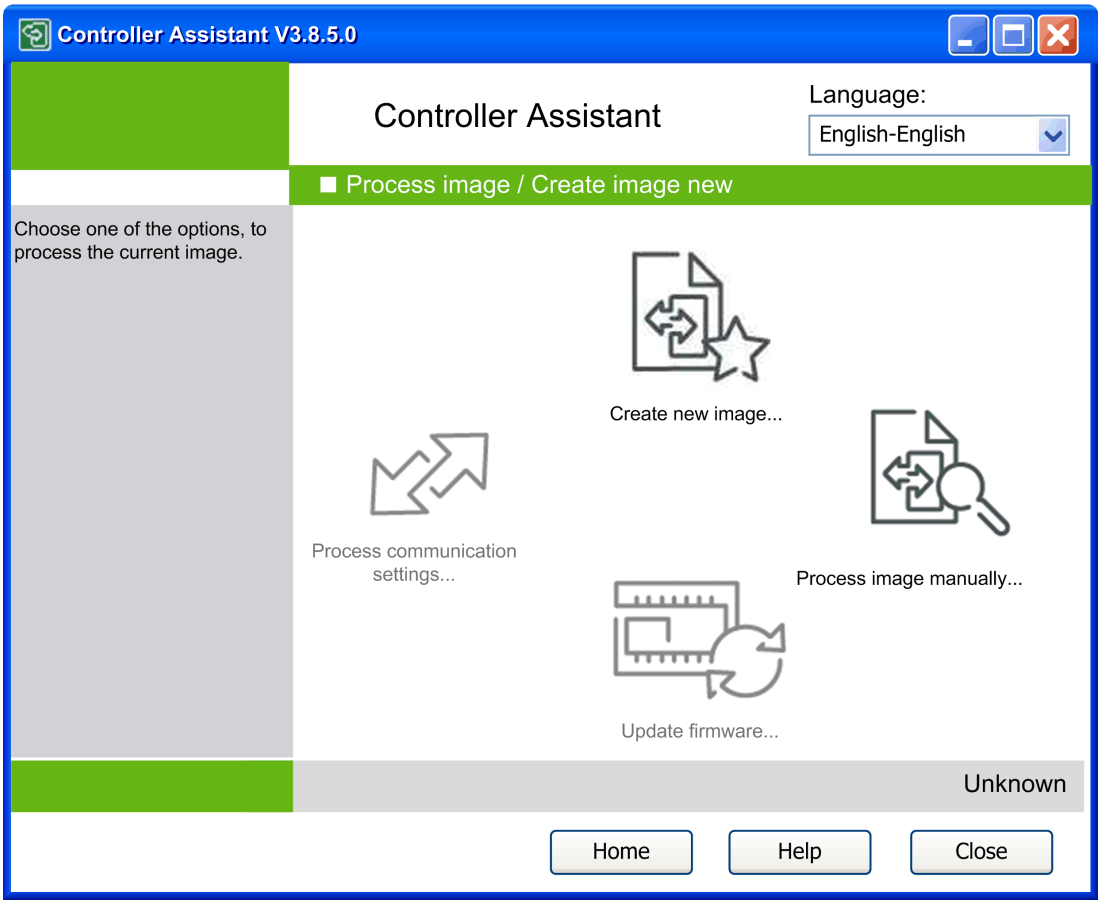
Section 4.1
Process Image / Create Image New Dialog Box

Description of the Process Image / Create Image New Dialog Box

Overview

To open the **Process image / Create image new** dialog, click the **New / Process...** button on the **Manage images** dialog.

Process image / Create image new dialog



The Controller Assistant saves the currently selected image for internal processing temporarily in the directory */Image/*. The path is displayed in the **ImageManager** dialog.

The **Edit image / Create new image** dialog contains buttons that provide access to further functions of the Controller Assistant.

Section 4.2
Editing / Creating Images

What Is in This Section?

This section contains the following topics:

Creating an Image

Overview

NOTICE
UNINTENDED MODIFICATIONS OF THE SOFTWARE Do not modify or manually intervene with the original image. Only use the Controller Assistant to carry out updates and changes on the software of the controller. **Failure to follow these instructions can result in equipment damage.**

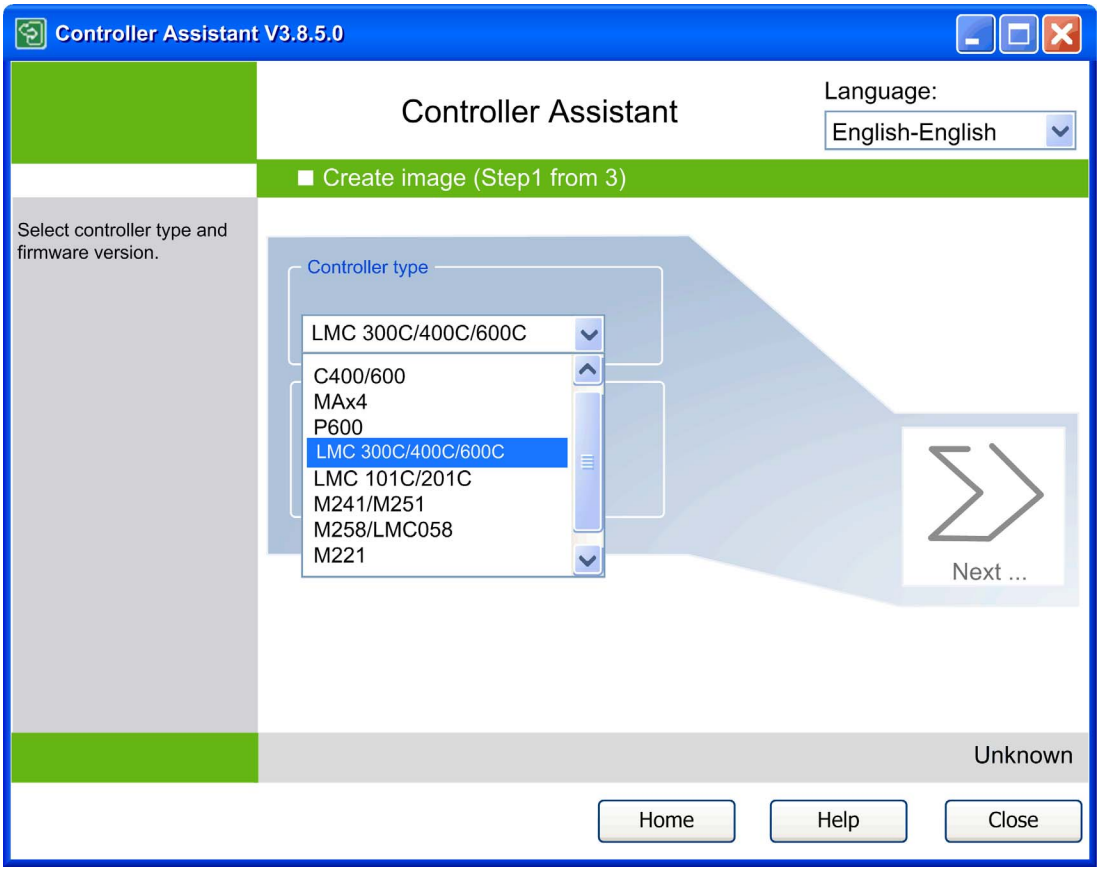
This chapter describes the process of creating an image for SoMachine devices. The process of creating an image for PacDrive M controllers is described in a separate chapter *(see page 94)*.

To create a new image, click the button **Create new image...** in the **Process image / Create image new** dialog. The first step of the **Create image** dialogs is displayed.

The image is created from scratch. The resulting image file is saved in the *I/image* directory of the Controller Assistant. (The path of this directory is displayed in the **ImageManager** dialog.) The image file contains all firmware files of a specific version and a selected controller type. The image file can additionally contain 1 or more configuration files. It does not contain an application.

Step 1

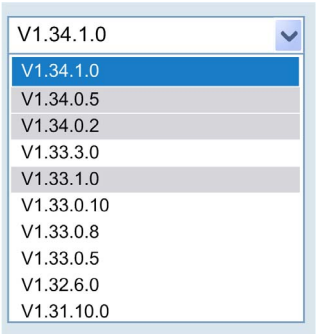
First step of the **Create image** dialogs



From the **Controller type** list, select the type of controller connected.

From the **Controller firmware version** list, select the controller firmware version required.

For PacDrive M and SoMachine Motion controllers, those firmware versions that are compatible to each other are marked as a group in the same color (bright or dark) in the **Controller firmware version** list.



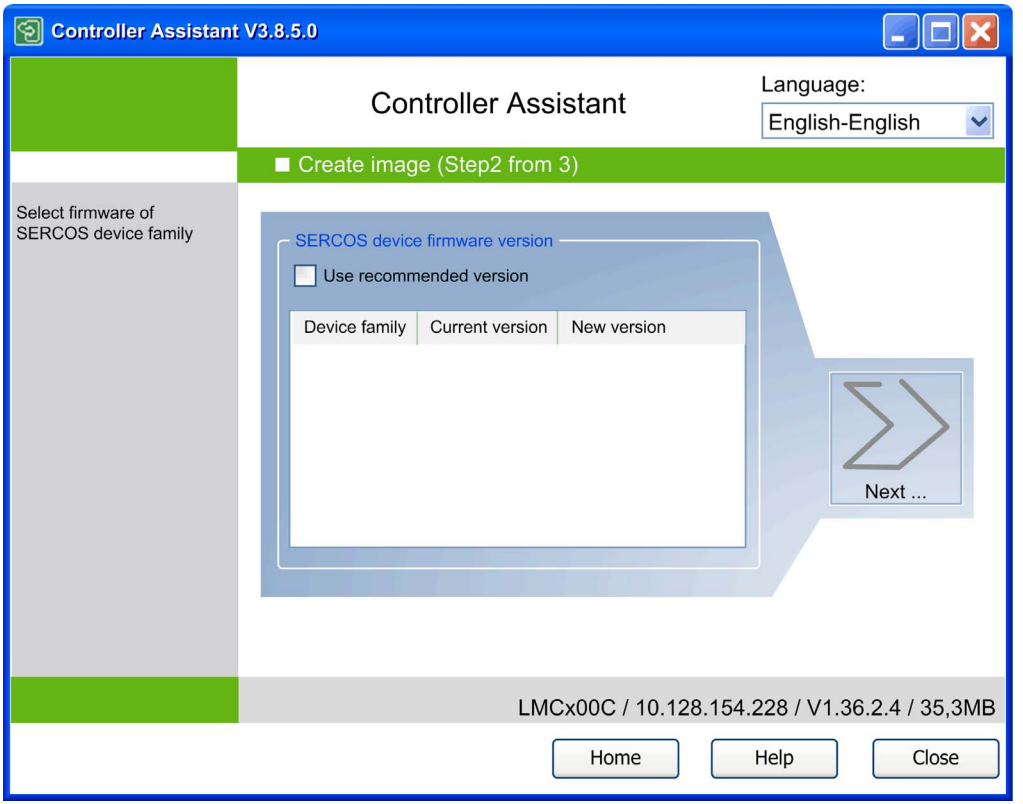
In the selection list above V1.33.0.10, V1.33.0.8 and V1.33.0.5, for instance, are compatible to each other. In contrast, V1.33.3.0 and V1.33.1.0 are not compatible to V1.33.0.10.

To browse for an external firmware, click the **...** button.

Click the button **Next...** to continue with step 2.

Step 2

Second step of the **Create image** dialogs that is only displayed for SoMachine Motion controllers:



Here you can select whether you want to update to a recommended version of the Sercos device firmware. The option **Use recommended version** is selected by default.

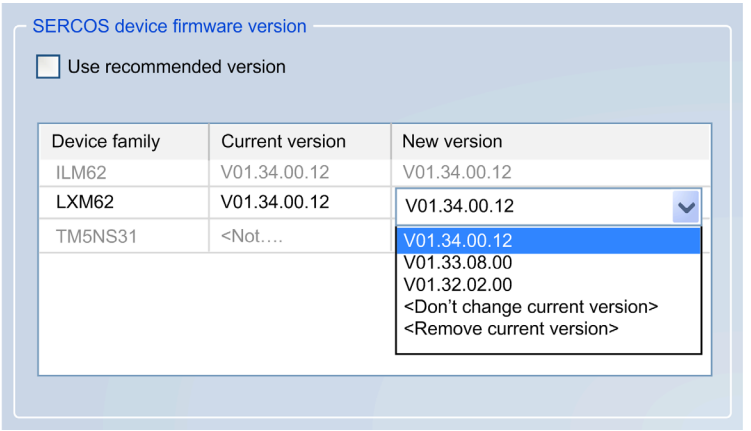
When clicking **Next...**, the recommended versions are applied and step 3 of the **Create image** dialogs is displayed.

If you disable the option **Use recommended version**, a list with the identified device families and the corresponding firmware versions is displayed.

Designation	Description
Device family	In this column, the designation of the device family is displayed.
Current version	In this column, the version of the device family that is currently in the image of the Controller Assistant is displayed. If there is no firmware file for the specified device family in the image, the text **<not available>** is displayed in this cell.

Designation	Description
New version	The version recommended for the current controller firmware version and the corresponding Sercos device family is displayed as new version. If no recommended version has been found, the text **<Current version not found>** is displayed. When clicking an entry in the column, a selection menu with a list of all available firmware versions opens (see the following graphic). Here you can do the following: ● select the desired version ● delete the current version in the image ● keep the current version in the image The recommended version is displayed in bold.

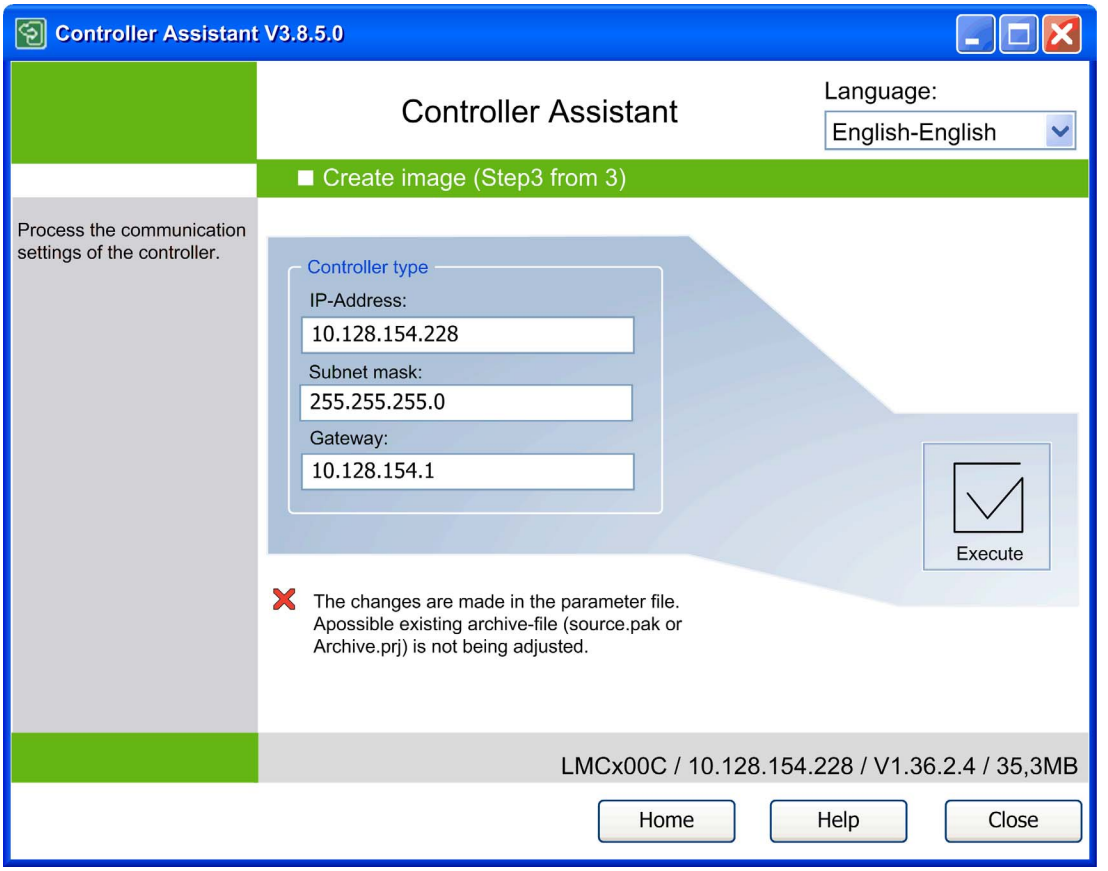
Selection menu **New version**



Click the button **Next...** to continue with step 2.

Step 3

Third step of the **Create image** dialogs



Enter the communications settings.

NOTE: The communication settings configured in this dialog are used on startup of the controller. Other communication settings, for example in a project file, are not used.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION ● Verify that there is only one master controller configured on the network or remote link. ● Verify that all devices have unique addresses. ● Obtain your IP address from your system administrator. ● Confirm that the device's IP address is unique before placing the system into service. ● Do not assign the same IP address to any other equipment on the network. ● Update the IP address after cloning any application that includes Ethernet communications to a unique address. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Click the **Execute** button to create a new image.

Hint

NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Creating an Image - for PacDrive M Controllers

Overview

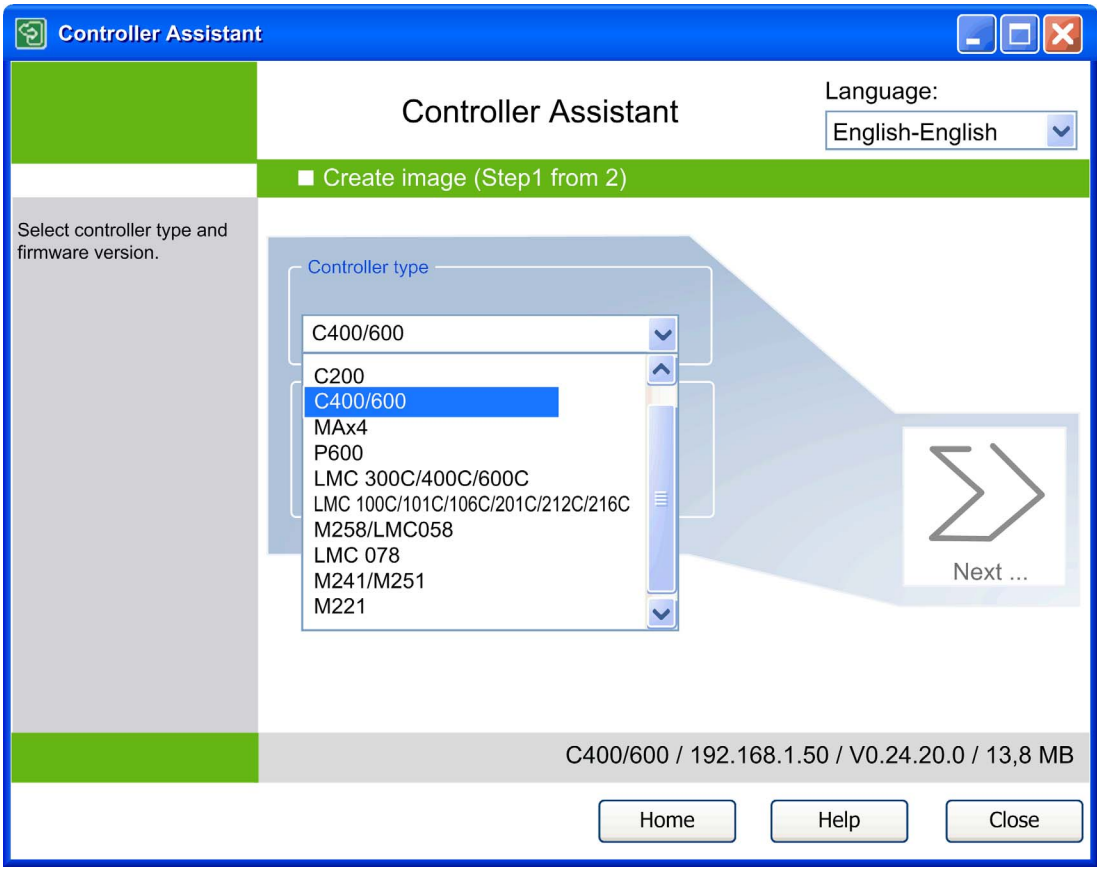
NOTICE
UNINTENDED MODIFICATIONS OF THE SOFTWARE Do not modify or manually intervene with the original image. Only use the Controller Assistant to carry out updates and changes on the software of the controller. **Failure to follow these instructions can result in equipment damage.**

To create a new image, click the button **Create new image...** in the **Process image / Create image new** dialog. The first step of the **Create image** dialogs is displayed.

The image is created from scratch. The resulting image file is saved in the *\Image* directory of the Controller Assistant. (The path of this directory is displayed in the **ImageManager** dialog.) The image file contains all firmware files of a specific version and a selected controller type. The image file can additionally contain 1 or more configuration files. It does not contain an application.

Step 1

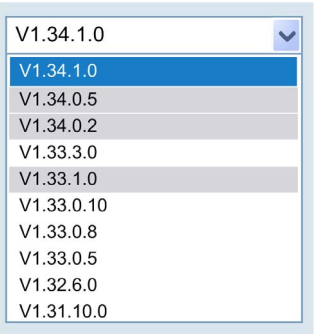
First step of the **Create image** dialogs



From the **Controller type** list, select the type of controller connected, such as **C400/600** for PacDrive M controllers.

From the **Controller firmware version** list, select the controller firmware version required.

For PacDrive M and SoMachine Motion controllers, those firmware versions that are compatible to each other are marked as a group in the same color (bright or dark) in the **Controller firmware version** list.



In the selection list above V1.33.0.10, V1.33.0.8 and V1.33.0.5, for instance, are compatible to each other. In contrast, V1.33.3.0 and V1.33.1.0 are not compatible to V1.33.0.10.

To browse for an external firmware, click the **...** button.

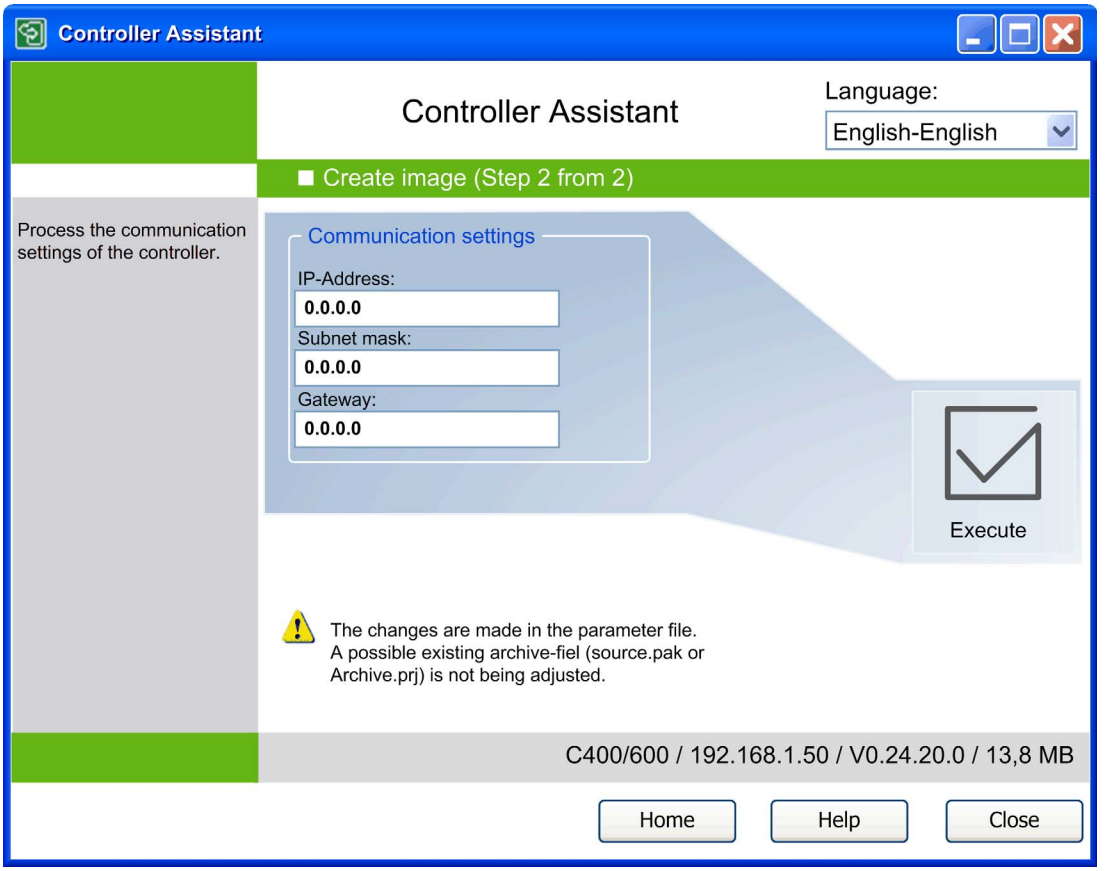
NOTE: The flash disk in the P600 is required for the license points. Do not replace it at runtime. It can only be transmitted into the PC with a card reader.

NOTE: Controllers have standard firmware directories. This is automatically specified on the computer after installing the firmware. After starting the Controller Assistant, the firmware is searched in the standard firmware directory at first. Depending on the selected controller type, you can select the external firmware or the firmware directory for the PacDrive M firmware and determine the standard firmware directory as well.

Click the button **Next...** to continue with step 2.

Step 2

Second step of the **Create image** dialogs



Enter the communications settings.

NOTE: The changes are made in the parameter file. A possible existing archive file (*source.pak* or Archive.prj) is not being adjusted.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION ● Verify that there is only one master controller configured on the network or remote link. ● Verify that all devices have unique addresses. ● Obtain your IP address from your system administrator. ● Confirm that the device's IP address is unique before placing the system into service. ● Do not assign the same IP address to any other equipment on the network. ● Update the IP address after cloning any application that includes Ethernet communications to a unique address. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Click the **Execute** button to create a new image.

Hint

NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Section 4.3
Processing Images Manually

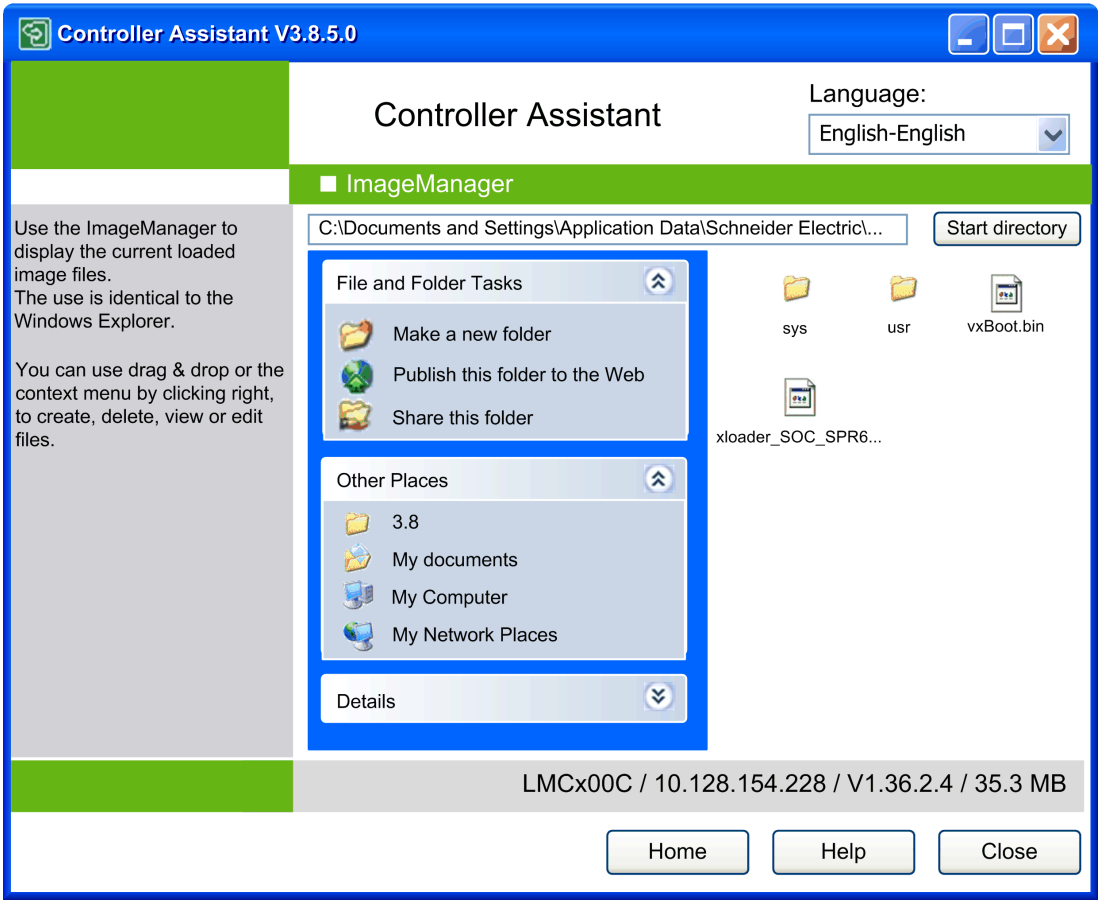
Description of the ImageManager Dialog

Overview

To open the dialog **ImageManager**, click the button **Process image manually...** in the **Process image / Create image new** dialog.

The Controller Assistant saves the currently selected image for internal processing temporarily in the directory */image/*. The path to and the content of this directory are displayed in this dialog.

ImageManager dialog for editing the image manually



Content of the Dialog

The **ImageManager** dialog displays the files and directories contained in the image similar to a Windows Explorer. It also allows you to copy, rename, and move the files and directories by providing the functions of the Windows Explorer (such as drag and drop).

Several functions are provided via the context menu. Right-click an item and select the requested function from the list.

To open a subdirectory, double-click a folder icon as in the Windows Explorer. To return to the root directory, click the **Start directory** button.

NOTICE
UNINTENDED MODIFICATIONS OF THE SOFTWARE Do not modify or manually intervene with the original image. Only use the Controller Assistant to carry out updates and changes on the software of the controller. **Failure to follow these instructions can result in equipment damage.**

Section 4.4
Updating Firmware

What Is in This Section?

This section contains the following topics:

Updating Firmware

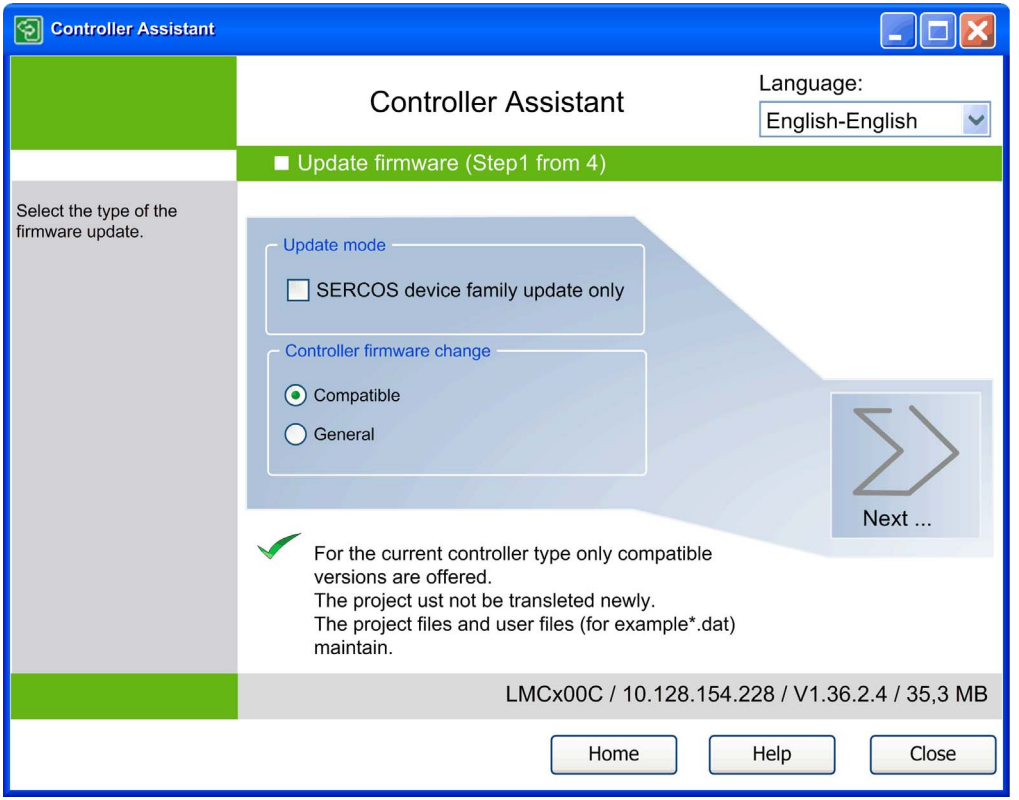
Overview

To update the firmware without deleting the application in the controller, click the button **Update firmware...** in the **Process image / Create image new** dialog. The first step of the **Update firmware** dialogs is displayed.

This is a general description of the firmware update procedure. It may be that not all the steps and options described here are available for the controller you are using. For a description of updating the firmware of PacDrive M controllers, refer to the chapter Updating Firmware - PacDrive M Controllers *(see page 112)*.

Step 1

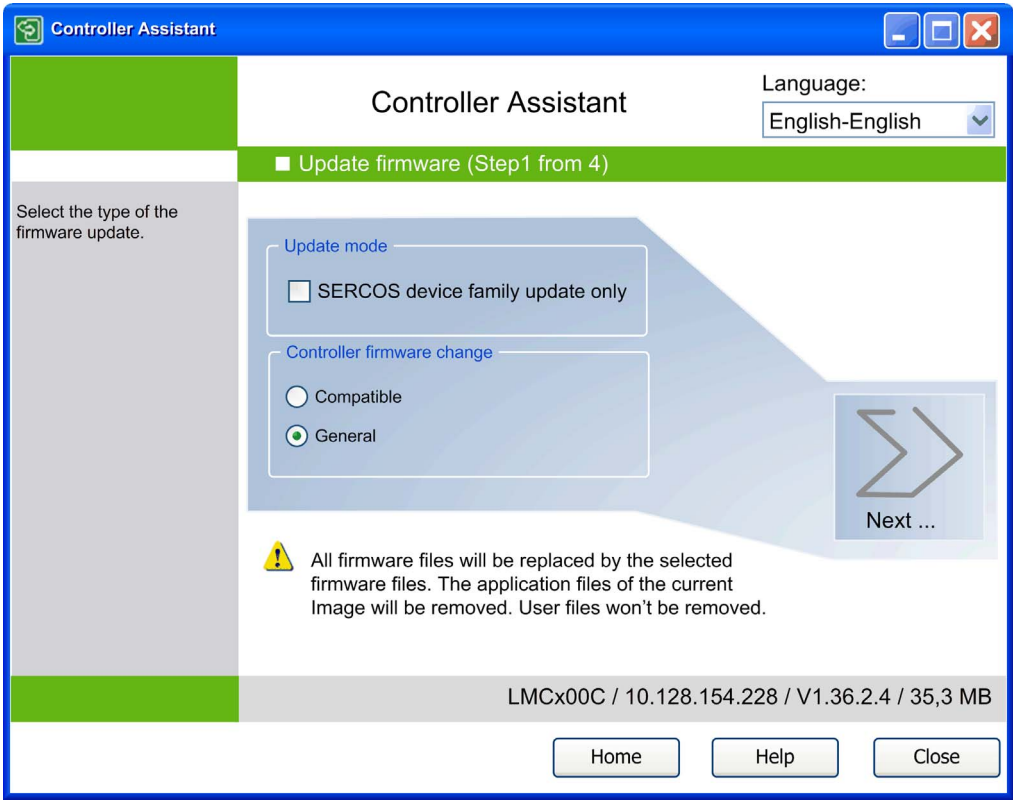
First step of the **Update firmware** dialogs, option **Compatible** selected



Description of the elements

Element		Description
Update mode		This option is only available for SoMachine Motion controllers: Select the option **SERCOS device family update only** to update only the firmware of the Sercos devices within an image. If you do not select this option, select the controller firmware version in the next step (refer to step 2 of this update firmware procedure *(see page 106)*). The entire controller firmware will be changed. If you select this option, the area **Controller firmware change** of the dialog is hidden. The separate dialog for selecting the controller firmware version (step 2 of this update firmware procedure) is skipped.
Controller firmware change		Choose the desired type of controller firmware change.
	Compatible	Select the option **Compatible** to provide only compatible firmware versions for selection. For SoMachine Motion controllers, for instance, a compatible firmware version is detected with the version number: The first 3 digits have to match. Compatible is, for example, V1.30.1.0 to V1.30.1.1 or V1.30.1.2. Not compatible, is for example, V1.30.1.0 to V1.30.2.0 or V1.31.230.1.
	General	Select the option **General** to provide all firmware versions for selection. By default, the latest firmware version is selected.

First step of the **Update firmware** dialogs, option **General** selected

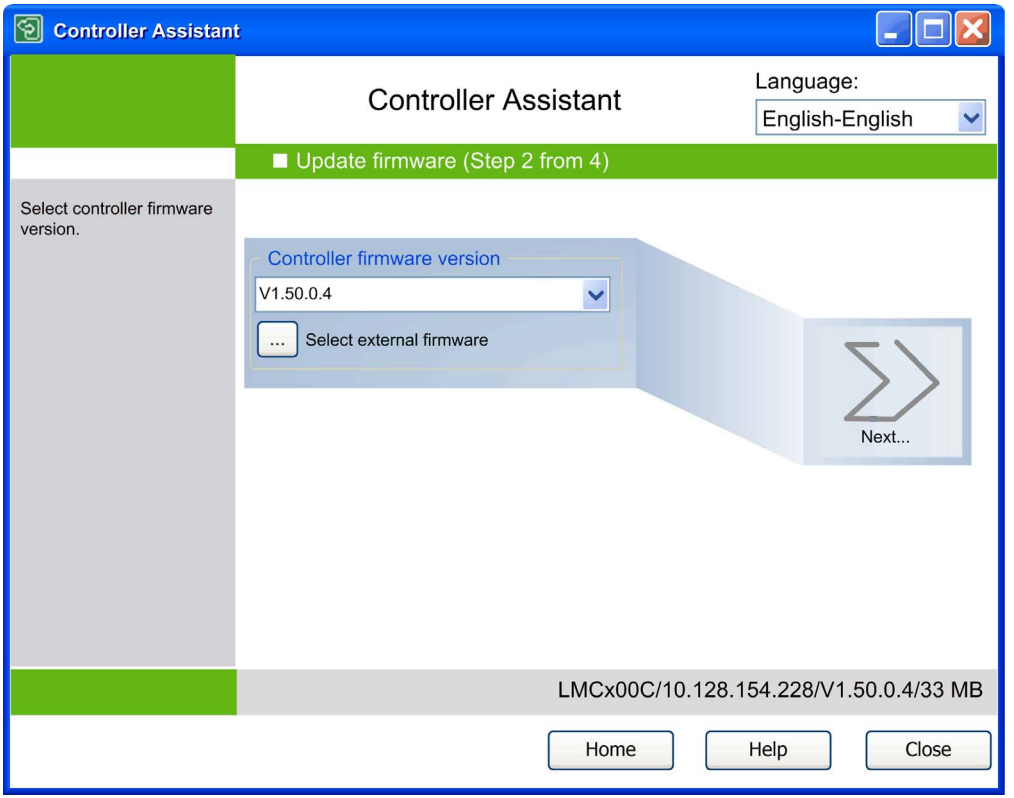


Click the button **Next...** to continue with one of the following dialogs:

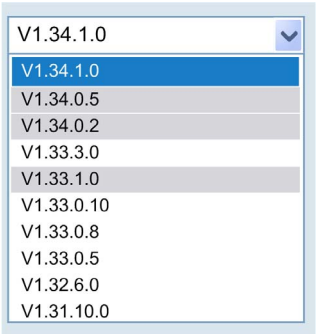
- If **SERCOS device family update only** is deselected, the dialog **Update firmware (Step 2 of 4)** for updating the controller firmware is displayed.
- If **SERCOS device family update only** is selected, the dialog **Update firmware (Step 2 of 3)** for selecting the Sercos device firmware version is displayed.

Step 2

Second step of the **Update firmware** dialogs for selecting the firmware version



For PacDrive M and SoMachine Motion controllers, those firmware versions that are compatible to each other are marked as a group in the same color (bright or dark) in the **Controller firmware version** list.



In the selection list above V1.33.0.10, V1.33.0.8 and V1.33.0.5, for instance, are compatible to each other. In contrast, V1.33.3.0 and V1.33.1.0 are not compatible to V1.33.0.10.

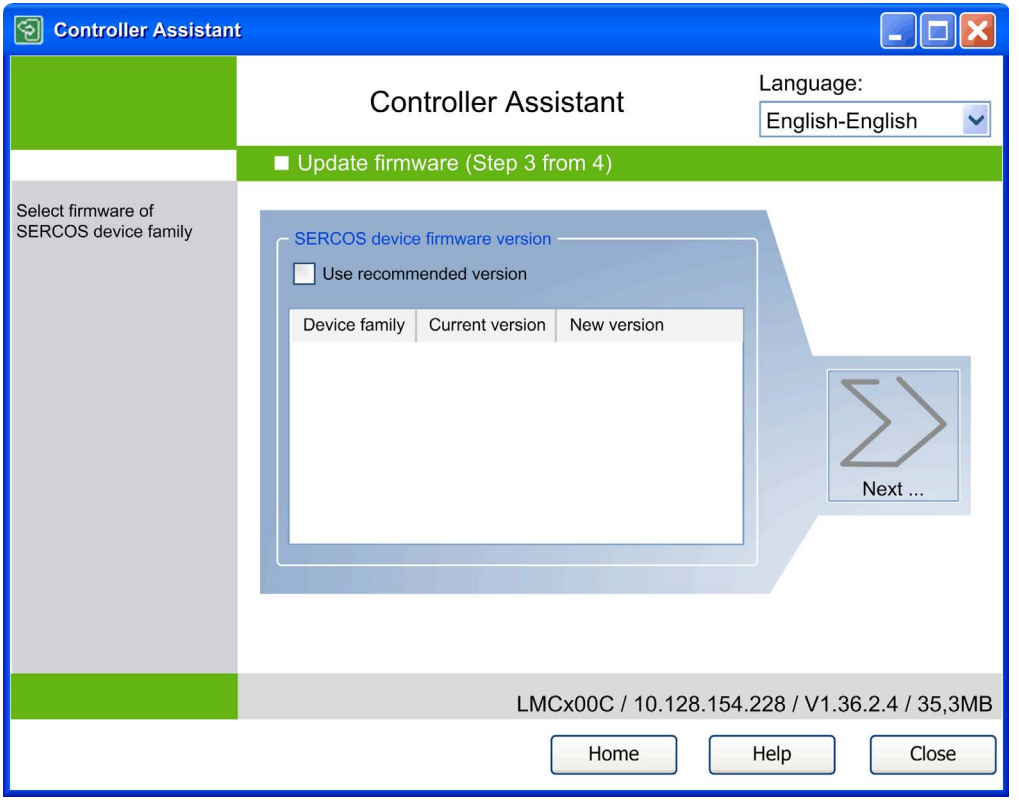
Select a firmware version from the list or click the  button to browse for an external firmware. It allows you to add a firmware from any location within the file system. Following a prompt, you can add the firmware to the default firmware directory. It will then be available permanently. The **OK** button is only activated if the firmware directory is valid. Via **Select firmware directory**, you can select the directory containing the firmware versions of the controllers. This directory can be declared as the standard firmware directory after inquiry. Choose in the subsequent dialog if you want to select the standard firmware directory for the firmware files.

Click the button **Next...** to continue.

The dialog for updating the Sercos device firmware is accessed. Depending on the selection made in the are **Update mode**, this will be the dialog **Update firmware (step 3 of 4)** or **Update firmware (step 2 of 3)**.

Step 3

Third step of the **Update firmware** dialogs only updating the Sercos device firmware (only available for SoMachine Motion controllers):



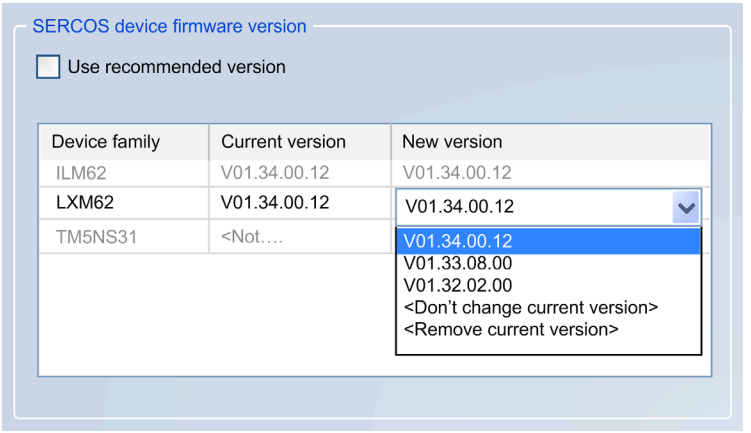
Here you can select whether you want to update to a recommended version of the Sercos device firmware The option **Use recommended version** is selected by default.

If the option **Use recommended version** is disabled, a list with the identified device families and the corresponding firmware versions is additionally displayed.

Designation	Description
Device family	In this column, the designation of the device family is displayed.
Current version	In this column, the version of the device family that is currently in the image of the Controller Assistant is displayed. If there is no firmware file for the specified device family in the image, the text **<not available>** is displayed in this cell.

Designation	Description
New version	The version recommended for the current controller firmware version and the corresponding Sercos device family is displayed as new version. If no recommended version has been found, the text **<Current version not found>** is displayed. When clicking an entry in the column, a selection menu with a list of all available firmware versions opens (see the following graphic). Here you can do the following: ● select the desired version ● delete the current version in the image ● keep the current version in the image The recommended version is displayed in bold.

Selection menu **New version**

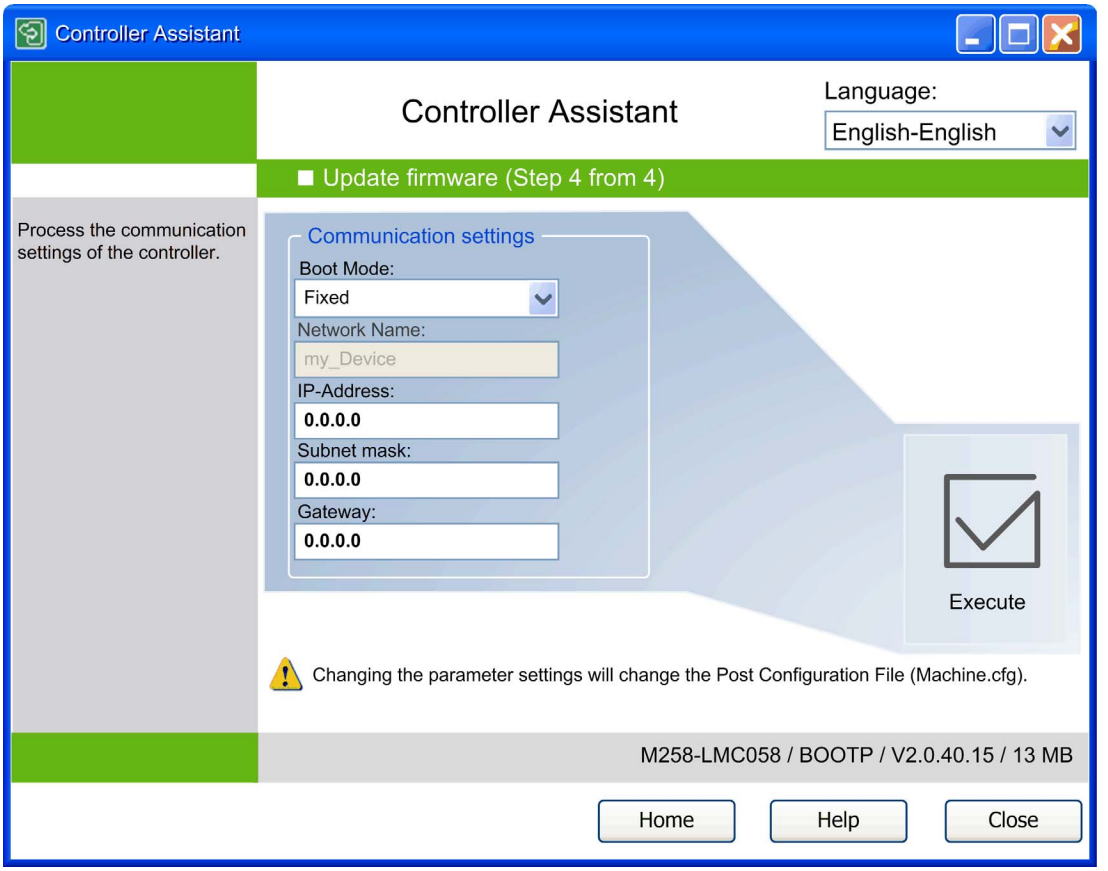


Click the button **Next...** to continue.

The dialog for specifying the communication settings is accessed. Depending on the selection made in the are **Update mode**, this will be the dialog **Update firmware (step 4 of 4)** or **Update firmware (step 3 of 3)**.

Step 4

Fourth step of the **Update firmware** dialogs, for specifying the communication settings



The communication settings vary depending on the controller. The illustration shows the communication setting for LMC058 / M258 / TM241 / TM251 / TM221 controllers.

For these controllers, the parameter **Boot Mode** is by default set to the value **Fixed** and the **IP-Address** is set to **0.0.0.0**. This has the effect that the communication settings on the controller remain unchanged. You can adapt the communication settings to your individual requirements.

NOTE: For LMC058 / M258 / TM241 / TM251 / TM221 controllers, the changed parameters are written to the post configuration file *Machine.cfg* which overwrites the parameters of the SoMachine application.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION ● Verify that there is only one master controller configured on the network or remote link. ● Verify that all devices have unique addresses. ● Obtain your IP address from your system administrator. ● Confirm that the device's IP address is unique before placing the system into service. ● Do not assign the same IP address to any other equipment on the network. ● Update the IP address after cloning any application that includes Ethernet communications to a unique address. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Click the **Execute** button to start the update process, updating the firmware in the Controller Assistant image.

Hint

NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Updating Firmware - PacDrive M Controllers

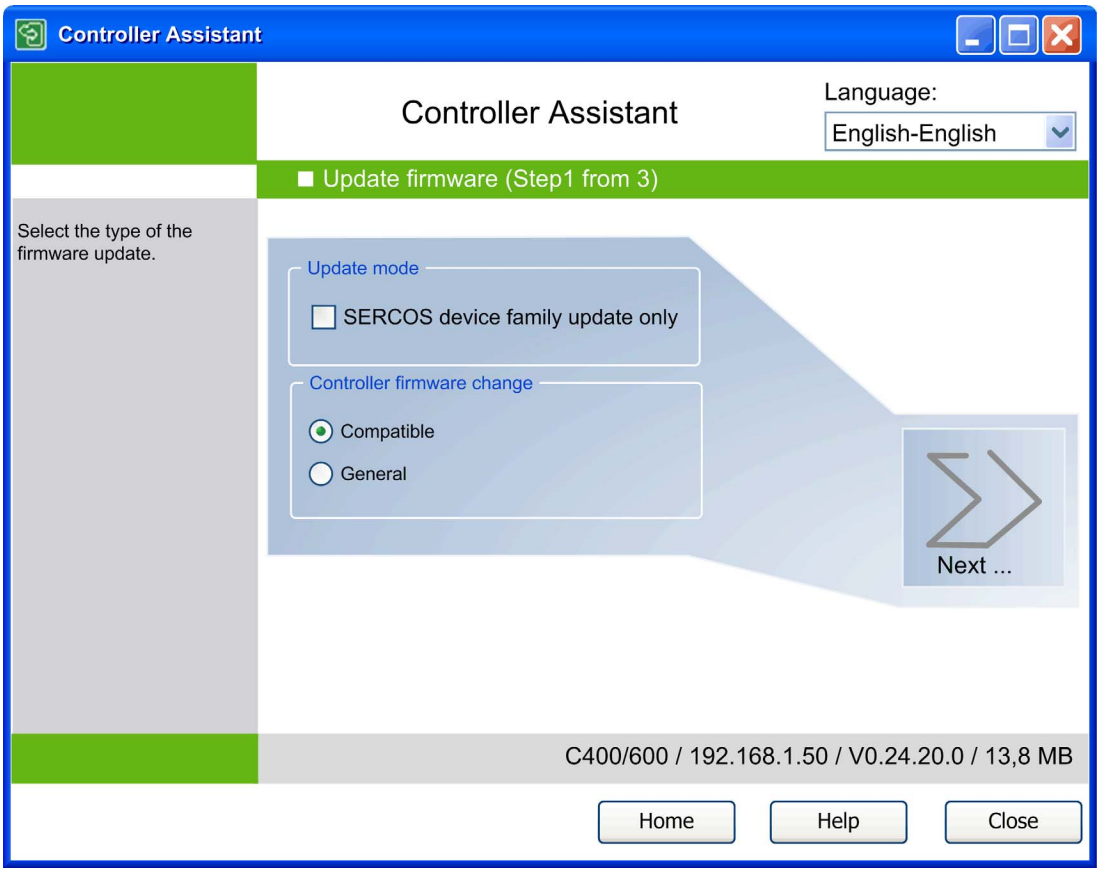
Overview

To update the firmware without deleting the application in the controller, click the button **Update firmware...** in the **Process image / Create image new** dialog. The first step of the **Update firmware** dialogs is displayed.

This chapter describes how to update PacDrive M controllers:

Step 1

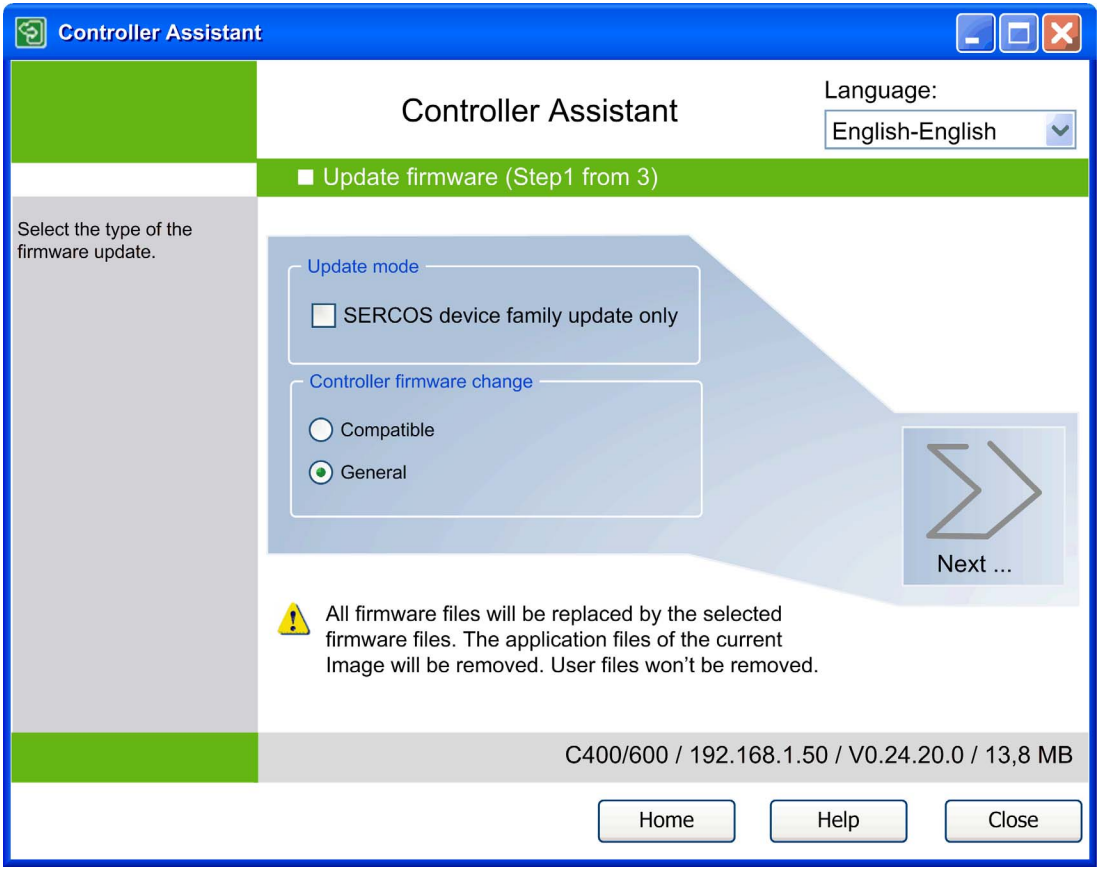
First step of the **Update firmware** dialogs, option **Compatible** selected



Description of the elements

Element		Description
Update mode		This option is only available for SoMachine Motion controllers: Select the option **SERCOS device family update only** to update only the firmware of the Sercos devices within an image. If you do not select this option, select the controller firmware version in the next step (refer to step 2 of this update firmware procedure *(see page 115)*). The entire controller firmware will be changed. If you select this option, the area **Controller firmware change** of the dialog is hidden. The separate dialog for selecting the controller firmware version (step 2 of this update firmware procedure) is skipped.
Controller firmware change		Choose the desired type of controller firmware change.
	Compatible	Select the option **Compatible** to provide only compatible firmware versions for selection. For PacDrive M (C200, C400/600, Max-4, P600), a compatible firmware version is detected with the version number: The first 2 digits and the tenth digit match within the third digit. Compatible is, for example, V0.16.42.0 to V0.16.43.0 or V0.16.44.0. Not compatible is for example, V0.16.42.0 to V0.16.32.0 or V0.20.1.0. For M2•• controllers, all firmware versions that are higher than the current one are compatible. By default, the latest firmware version is selected. A compatible firmware update only replaces system files. Application and user files are not removed.
	General	Select the option **General** to provide all firmware versions for selection. By default, the latest firmware version is selected. The firmware files and the application files of the current image are removed. User files are not removed.

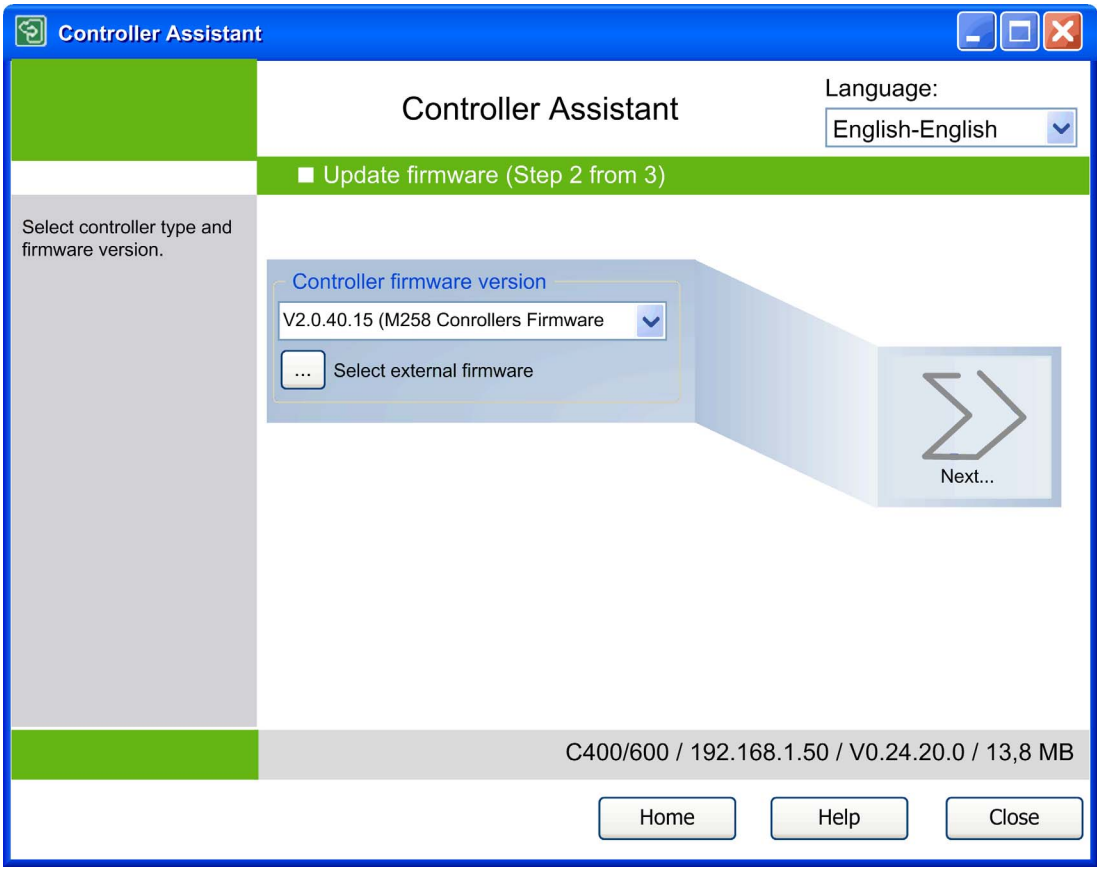
First step of the **Update firmware** dialogs, option **General** selected



Click the button **Next...** to continue with step 2.

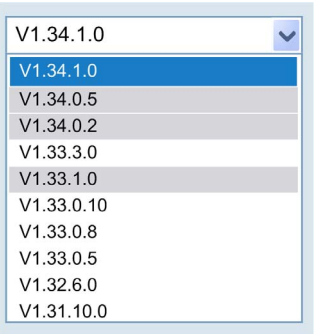
Step 2

Second step of the **Update firmware** dialogs, for selecting the firmware version



From the **Controller firmware version** list, select the type of controller to be updated.

For PacDrive M and SoMachine Motion controllers, those firmware versions that are compatible to each other are marked as a group in the same color (bright or dark) in the **Controller firmware version** list.



In the selection list above V1.33.0.10, V1.33.0.8 and V1.33.0.5, for instance, are compatible to each other. In contrast, V1.33.3.0 and V1.33.1.0 are not compatible to V1.33.0.10.

Select a firmware version from the list or click the  button to browse for an external firmware as follows:

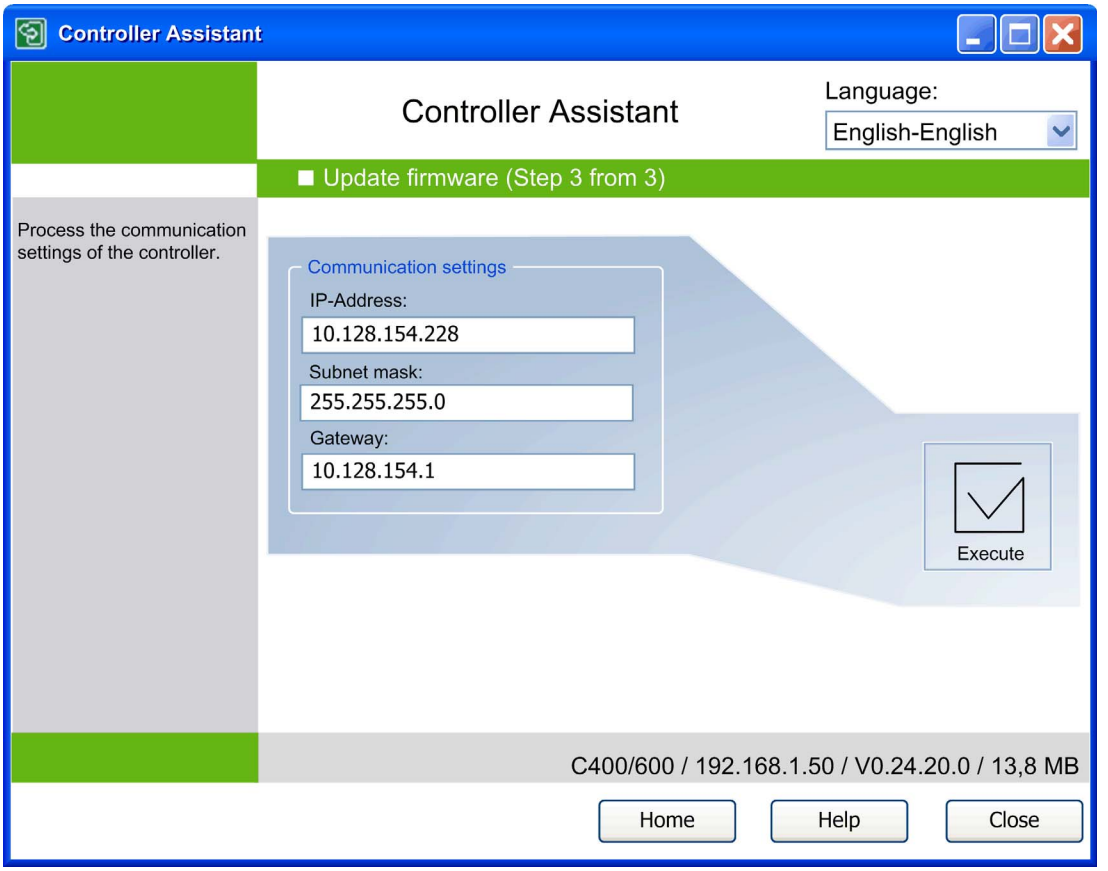
Click the button **Select external firmware** to add a firmware from any location within the file system. Following a prompt, you can add the firmware to the default firmware directory. It will then be available permanently. The **OK** button is only activated if the firmware directory is valid. Via **Select firmware directory**, you can select the directory containing the firmware versions of the controllers. This directory can be declared as the standard firmware directory after inquiry. Choose in the subsequent dialog if you want to select the standard firmware directory for the PacDrive M firmware files.

NOTE: The PacDrive M firmware is required for the controllers MAx-4, C200, C400/600 and P600.

Click the button **Next...** to continue with step 3.

Step 3

Third step of the **Update firmware** dialogs, for specifying the communications settings



Enter the communication settings.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING
UNINTENDED EQUIPMENT OPERATION ● Verify that there is only one master controller configured on the network or remote link. ● Verify that all devices have unique addresses. ● Obtain your IP address from your system administrator. ● Confirm that the device's IP address is unique before placing the system into service. ● Do not assign the same IP address to any other equipment on the network. ● Update the IP address after cloning any application that includes Ethernet communications to a unique address. **Failure to follow these instructions can result in death, serious injury, or equipment damage.**

Click the **Execute** button to start the update process.

Hint

NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Section 4.5
Processing Communication Settings

Description of the Process Communication Settings Dialog

Overview

To open the **Process Communication Settings** dialog, click the button **Process communication settings...** in the **Process image / Create image new** dialog.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING

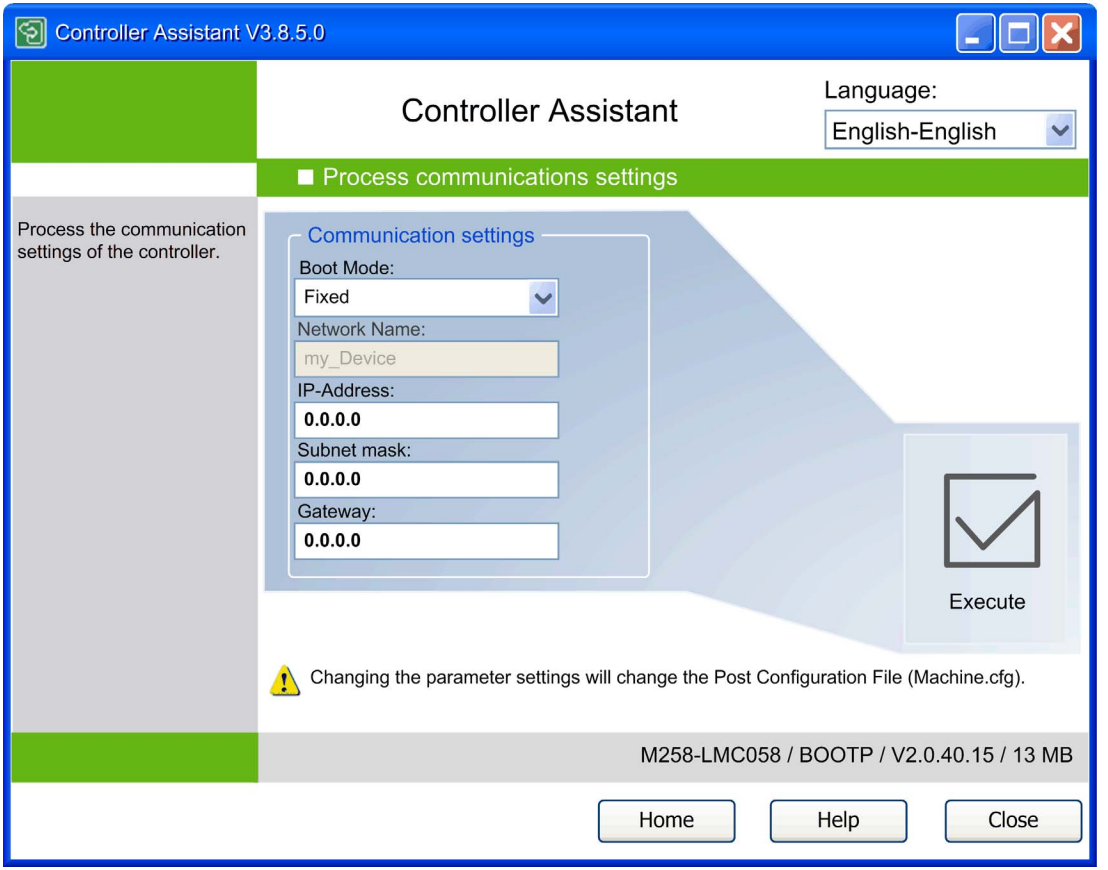
UNINTENDED EQUIPMENT OPERATION

- Verify that there is only one master controller configured on the network or remote link.
- Verify that all devices have unique addresses.
- Obtain your IP address from your system administrator.
- Confirm that the device's IP address is unique before placing the system into service.
- Do not assign the same IP address to any other equipment on the network.
- Update the IP address after cloning any application that includes Ethernet communications to a unique address.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Enter the communications settings. Click the **Execute** button to confirm.

Process Communication Settings dialog



The communication settings vary depending on the controller. The illustration shows the communication setting for LMC058 / M258 / TM241 / TM251 / TM221 controllers.

For these controllers, the parameter **Boot Mode** is by default set to the value **Fixed** and the **IP-Address** is set to **0.0.0.0**. This has the effect that the communication settings on the controller remain unchanged. You can adapt the communication settings to your individual requirements.

NOTE: For LMC058 / M258 / TM241 / TM251 / TM221 controllers, the changed parameters are written to the post configuration file *Machine.cfg* which overwrites the parameters of the SoMachine application.

Carefully manage the IP addresses because each device on the network requires a unique address. Having multiple devices with the same IP address can cause unpredictable operation of your network and associated equipment.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Verify that there is only one master controller configured on the network or remote link.
- Verify that all devices have unique addresses.
- Obtain your IP address from your system administrator.
- Confirm that the device's IP address is unique before placing the system into service.
- Do not assign the same IP address to any other equipment on the network.
- Update the IP address after cloning any application that includes Ethernet communications to a unique address.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Chapter 5
Using Controller Assistant

What Is in This Chapter?

This chapter contains the following sections:

Section 5.1
Firmware Update of a Device

How to Perform a Firmware Update

Introduction

The Controller Assistant provides two different ways to update the firmware:

- The first firmware update procedure automatically removes the application in the controller.
- The second firmware update procedure does not remove the application from the controller.

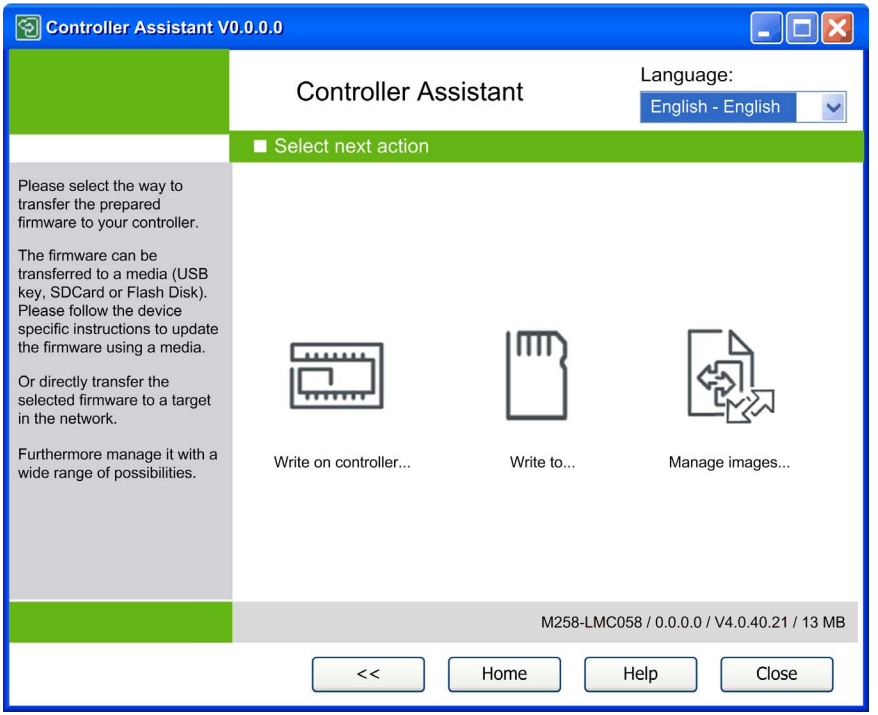
How to Perform a Firmware Update Automatically Removing the Application

In order to execute a firmware update and automatically removing the application of a controller, directly click the **Update firmware...** button in the **Home** dialog. Proceed as described in the Updating the Firmware chapter *(see page 17)*.

How to Perform a Firmware Update Without Removing the Application

In order to execute a complete firmware update of a controller without removing the application, proceed as follows:

Step	Action
1	On the **Home** dialog, click the **Manage images...** button. **Result**: The **Manage images** dialog opens.
2	In the **Manage images** dialog, click the **Read from...** controller button. **Result**: The **Controller selection** dialog opens.
3	Select the required connection type and controller and click the **Reading** button. **Result**: The image is transmitted from the controller to the computer. After this has been accomplished successfully, you are automatically redirected to the **Home** dialog.
4	Click the button **New / Process...** and then **Update firmware...**. **Result**: The dialog for updating the firmware opens.

Step	Action
5	Execute individual steps for updating the firmware in the current image (Changes are only effected in the image on your computer). In the final step, you can decide whether you want to create a backup copy of the image read by the controller (recommended). **Result**: After the update of the firmware, the **Select next action** dialog opens. 
6	On the **Select next action** dialog, click the **Write on controller....** button. **Result**: The **Controller selection** dialog opens.
7	Select the required connection type and controller and click the **Write** button. **Result**: The image is transmitted from your computer to the controller. After the transmission you are automatically returned to the **Home** dialog.

Hint

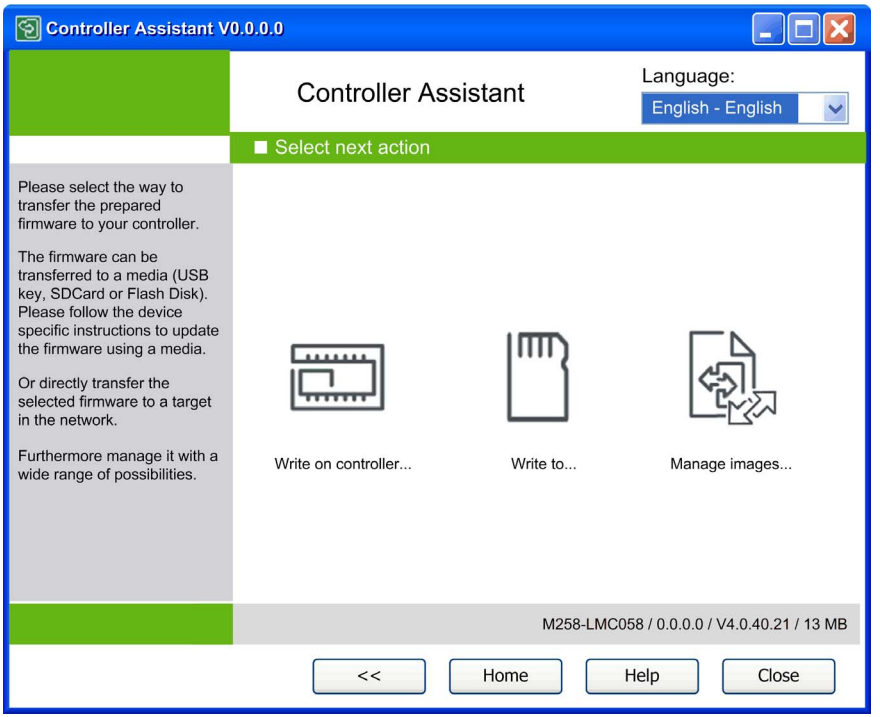
NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Section 5.2
Creating a New Flash Disk

How to Create a New Flash Disk

Procedure

In order to create a new flash disk with any firmware, proceed as follows:

Step	Action
1	On the **Manage images** dialog, click the **New / Process...** button and then **Create new image...**. **Result**: The **Create image** dialog opens.
2	Execute the individual steps for creating an image. **Result**: After the new image has been created, the **Select next action** dialog opens. 

Step	Action
3	On the **Select next action** dialog, click the **Write to....** compact flash disk button. **Result**: The **Drive selection** dialog opens.
4	Select the drive in which you first inserted the flash disk and click the **Write** button. **Result**: The image is transmitted from your computer to the flash disk. After this has been accomplished successfully, you are automatically redirected to the **Manage images** dialog.

NOTE: If you work on a PC with the operating system Windows 7, the dialog box **User Account Control** can additionally be displayed for several functions (refer to the chapter Controller Assistant on Windows 7 *(see page 13)*).

Glossary

C

controller image

The sum of the controller files managed in Controller Assistant are designated as image. The Controller Assistant can read in an image from different sources such as a controller, a flash disk, or a file.

I

IP

(*Internet protocol* Part of the TCP/IP protocol family that tracks the Internet addresses of devices, routes outgoing messages, and recognizes incoming messages.

M

MAC address

(*media access control address*) A unique 48-bit number associated with a specific piece of hardware. The MAC address is programmed into each network card or device when it is manufactured.

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