SoMachine Compatibility and Migration
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, service, 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 provides information to help you maintain the compatibility of your SoMachine application, project, device firmware, Vijeo-Designer application, device description, and other aspects of your installation, when migrating to more advanced versions of SoMachine and its supporting libraries and software.

Validity Note

This document has been updated for the release of SoMachine V4.3.

Related Documents

Document title	Reference
SoMachine Functions and Libraries User Guide	*EIO0000000735 (ENG)*; *EIO0000000792 (FRE)*; *EIO0000000793 (GER)*; *EIO0000000795 (SPA)*; *EIO0000000794 (ITA)*; *EIO0000000796 (CHS)*
SoMachine Programming Guide	*EIO0000000067 (ENG)*; *EIO0000000069 (FRE)*; *EIO0000000068 (GER)*; *EIO0000000071 (SPA)*; *EIO0000000070 (ITA)*; *EIO0000000072 (CHS)*
SoMachine Central User Guide	*EIO0000001659 (ENG)*; *EIO0000001660 (FRE)*; *EIO0000001661 (GER)*; *EIO0000001663 (SPA)*; *EIO0000001662 (ITA)*; *EIO0000001664 (CHS)*
SoMachine Device Type Manager (DTM) User Guide	*EIO0000000673 (ENG)*; *EIO0000000674 (FRE)*; *EIO0000000675 (GER)*; *EIO0000000676 (SPA)*; *EIO0000000677 (ITA)*; *EIO0000000678 (CHS)*

You can download these technical publications and other technical information from our website at *http://www.schneider-electric.com/en/download*.

Product Related Information

⚠ WARNING

LOSS OF CONTROL

- The designer of any control scheme must consider the potential failure modes of control paths and, for certain critical control functions, provide a means to achieve a safe state during and after a path failure. Examples of critical control functions are emergency stop and overtravel stop, power outage and restart.
- Separate or redundant control paths must be provided for critical control functions.
- System control paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- Observe all accident prevention regulations and local safety guidelines.[1]
- Each implementation of this equipment must be individually and thoroughly tested for proper operation before being placed into service.

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

[1] For additional information, refer to NEMA ICS 1.1 (latest edition), "Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control" and to NEMA ICS 7.1 (latest edition), "Safety Standards for Construction and Guide for Selection, Installation and Operation of Adjustable-Speed Drive Systems" or their equivalent governing your particular location.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Only use software approved by Schneider Electric for use with this equipment.
- Update your application program every time you change the physical hardware configuration.

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

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in this manual, or that appear in or on the products themselves, are generally derived from the terms or definitions of international standards.

In the area of functional safety systems, drives and general automation, this may include, but is not limited to, terms such as *safety*, *safety function*, *safe state*, *fault*, *fault reset*, *malfunction*, *failure*, *error*, *error message*, *dangerous*, etc.

Among others, these standards include:

Standard	Description
EN 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2008	Safety of machinery: Safety related parts of control systems. General principles for design.
EN 61496-1:2013	Safety of machinery: Electro-sensitive protective equipment. Part 1: General requirements and tests.
ISO 12100:2010	Safety of machinery - General principles for design - Risk assessment and risk reduction
EN 60204-1:2006	Safety of machinery - Electrical equipment of machines - Part 1: General requirements
EN 1088:2008 ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2006	Safety of machinery - Emergency stop - Principles for design
EN/IEC 62061:2005	Safety of machinery - Functional safety of safety-related electrical, electronic, and electronic programmable control systems
IEC 61508-1:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: General requirements.
IEC 61508-2:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Requirements for electrical/electronic/programmable electronic safety-related systems.
IEC 61508-3:2010	Functional safety of electrical/electronic/programmable electronic safety-related systems: Software requirements.
IEC 61784-3:2008	Digital data communication for measurement and control: Functional safety field buses.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the present document may tangentially be used as they are derived from other standards such as:

Standard	Description
IEC 60034 series	Rotating electrical machines
IEC 61800 series	Adjustable speed electrical power drive systems
IEC 61158 series	Digital data communications for measurement and control – Fieldbus for use in industrial control systems

Finally, the term *zone of operation* may be used in conjunction with the description of specific hazards, and is defined as it is for a *hazard zone* or *danger zone* in the *Machinery Directive* (*2006/42/EC*) and *ISO 12100:2010*.

NOTE: The aforementioned standards may or may not apply to the specific products cited in the present documentation. For more information concerning the individual standards applicable to the products described herein, see the characteristics tables for those product references.

Chapter 1
General Information

General Information

Overview

SoMachine and the devices supported by SoMachine are continuously improved. Therefore, new updates of SoMachine and its associated supports are released on a regular basis.

SoMachine Software provides, in most cases, a simple, and straight forward way to migrate projects created with previous versions of SoMachine to the current version.

NOTE:

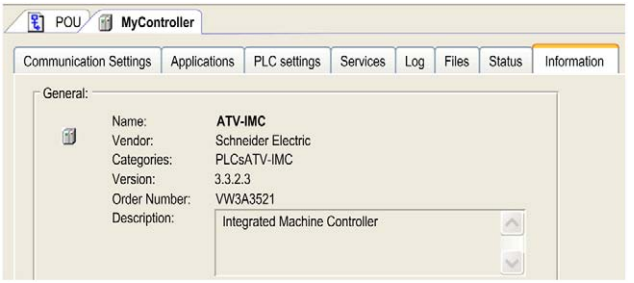
- We encourage you to launch the Schneider Electric Software Update (SESU) regularly to obtain the latest SoMachine updates.
- You should also visit regularly the Schneider Electric website *www.schneider-electric.com* to download the latest device firmware available.

In specific situations, you may encounter compatibility concerns regarding these updates, and actions are required to establish consistency with your existing systems and project files for the following elements:

- SoMachine files created with a previous SoMachine version (projects, archives, exports)
- device firmware versions (controllers, HMI terminals)
- related software (Vijeo-Designer)

SoMachine Software

By installing a new version of SoMachine, new component versions are available, which include:

Component	Description
Compiler version	The compiler is the software that converts your project into the binary code that is downloaded and executed on the controller. The compiler is called when you execute a **Build**, **Build All**, **Rebuild**, or **Generate Code** action in SoMachine. The version of the compiler used is independent of your SoMachine version and can be defined by selecting: **Project → Project Settings → Compile options** By default, the latest compiler version is selected and most often you will want to keep this default.
Device description version	The device description defines the properties of a device such as configurability, programmability, and possible connections to other devices. When you insert a device inside a project, SoMachine uses the device description to define the properties of the device. The device description version is displayed in the **Information** tab of the device of your project: 
Library version	A library is a container of variable lists, data structures (DUTs), functions, and function blocks (POU) that can be used in your projects. The versions of libraries used in an application are visible in the **Library Manager** *(see SoMachine, Functions and Libraries User Guide)*.

There are 2 types of project files which are created by SoMachine:

File Type	Description
**.project* **.library*	The version of a SoMachine project/library file is determined by the application file version and the application profile. **application file version:** The version of the application file is defined by the version of SoMachine that saved this application file. It acts as a container that specifies the storage format for the content of the application. **application profile:** The application profile contains the versions of device descriptions, the versions of the libraries used, the compiler version, and the visualization profile (refer to *Visualization* part of SoMachine online help). The application profile applies to all the applications of the project/library. When a SoMachine project has an additional application (Vijeo-Designer/SoMachine Basic), it is saved in the **.project* file.
**.projectarchive*	A project archive can be created by using SoMachine and be saved on your PC as a **.projectarchive* file. This file contains one project and can contain download information files, referenced devices, and referenced libraries. You can also do a source download to create an archive as an *Archive.prj* file in your controller.

The following elements can have compatibility concerns between SoMachine versions:

- Project files *(see page 17)*
- Archives files *(see page 17)*
- Device firmware *(see page 23)*
- Vijeo-Designer software *(see page 35)*

Device Firmware

The firmware is the software embedded in the controller.

The firmware version is displayed in the **Connect Controller** screen in the SoMachine Central and in the SoMachine Logic Builder **Controller Selection** dialog *(see SoMachine, Programming Guide)*.

Vijeo-Designer Software

The Vijeo-Designer software allows you to create your HMI applications.

The SoMachine installation includes the installation of Vijeo-Designer but this software is independent of SoMachine and can be installed or updated without the SoMachine software.

For compatibility information with Vijeo-Designer, refer to Compatibility of SoMachine and Vijeo-Designer versions *(see page 35)*

Chapter 2
Compatibility Situations

Overview

This chapter provides information on compatibility situations you may encounter when you install a new version of the SoMachine software, acquire a new device or a new version of Vijeo-Designer software.

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
Using a New Version of SoMachine Software

Overview

This section describes the compatibility situations you may encounter when installing a new version of SoMachine.

Refer the *SoMachine Installation and Configuration Manager User Manual* for information about installation procedure.

What Is in This Section?

This section contains the following topics:

Using Existing SoMachine Projects

Overview

You can use existing projects created with a previous SoMachine version by different ways:

- **Open** a *.project file
- **Extract Archive** a *.projectarchive file
- **Source Upload** a *.prj file from a controller

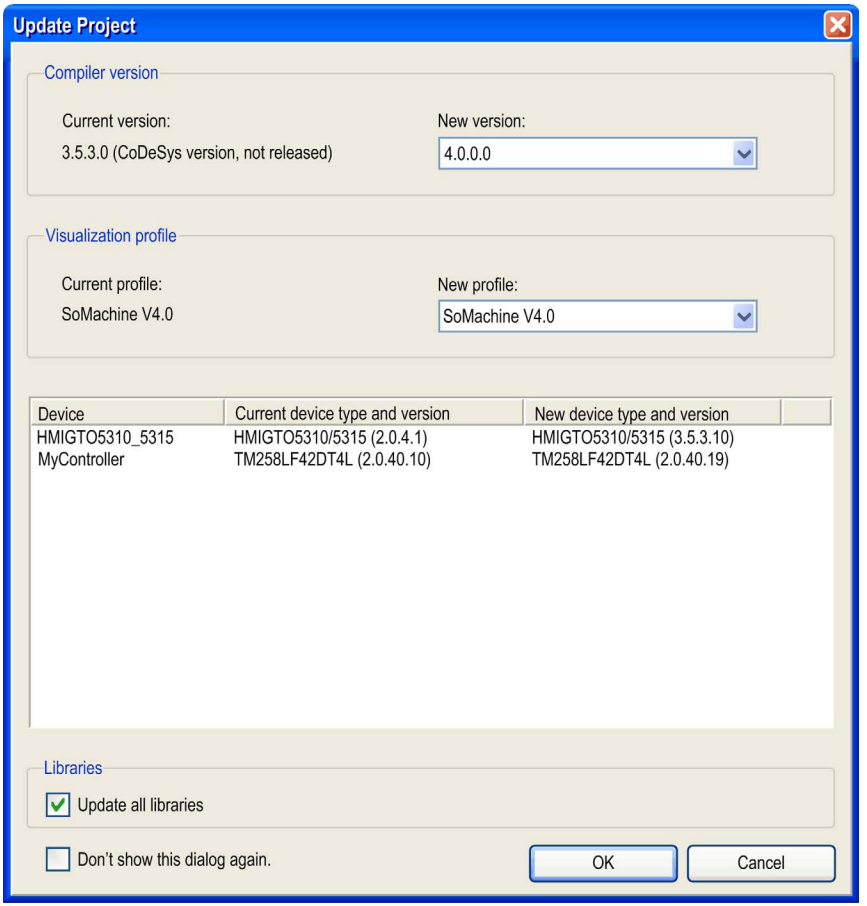
Using a project archive is the preferred method for migrating a project because a .projectarchive file contains the following additional information that are not included in a .project file:

- download information file
- libraries
- device description files

When you extract the archive in the new SoMachine version, the device and library files can automatically be installed into the corresponding SoMachine repositories.

NOTICE
LOSS OF DATA Always make a backup of your project file before you use it with a new SoMachine version. **Failure to follow these instructions can result in equipment damage.**

When you open a project that was created with an earlier SoMachine version than the version you are using, the **Update project** dialog box is displayed:



Element	Description
Compiler version	**Current version** and **New version** of the compiler software. The compiler is the software that converts your project into the binary code that is downloaded and executed on the controller. Refer to Compiler version *(see page 12)* and to SoMachine/CoDeSys Compiler Version Mapping *(see page 44)*.
Visualization profile	**Current profile** and **New profile** of the visualization. The **Visualization profile** defines ● the names and versions of the **Visualization Libraries** which get automatically included in the project when a visualization object is created. ● a selection of visualization elements provided by the included libraries. For detailed information, refer to the *Visualization* part of the SoMachine online help.
Devices list	If you click **OK**, the devices listed in the **Current device type and version** column are updated to the devices in the **New device type and version** column.
Libraries	If the **Update all libraries** option is activated and you click **OK**, ● the direct referenced libraries are updated. ● the libraries with at least one forward compatible library version installed in the **Library Repository** and the version mapping of former legacy versions will be updated to the latest forward compatible library version. **NOTE:** The placeholder libraries are updated even if the **Update all libraries** option is not selected. For detailed information, refer to *Updating Libraries and Library References (see SoMachine, Functions and Libraries User Guide)*.
OK	Click **OK** to update ● the complier version when saving the project. ● the visualization profile. ● the devices according to the selected new version in the **Update project** dialog box. ● the libraries if the check box **Update all libraries** is activated in the **Update project** dialog box.
Cancel	Click **Cancel** if you do not want to make any changes to your project.

Using Your Legacy SoMachine Projects

Starting with SoMachine V4.1, it is possible to install different full versions of SoMachine (available on DVD or USB) in parallel.

NOTE: SoMachine V4.1 SP1 replaces SoMachine V4.1. It is not installed in parallel.

There is no need to uninstall an existing version of SoMachine before you start the installation of a new SoMachine version.

Therefore if you do not intend to use the latest features and functions of the new SoMachine version, open your legacy project with the version it was created with.

Using Your SoMachine Projects with Update

If you wish to take advantage of the features and functions of the new version of SoMachine, you will want to update your projects.

Click **OK** if you want to update your project to the new version of SoMachine.

The following elements are updated:
- the complier version when saving the project,
- the visualization profile.
- the devices according to the selected new version in the **Update project** dialog box
- the libraries if the check box **Update all libraries** is activated in the **Update project** dialog box

A build and a download of the project to the controller is necessary after the update.

NOTE: Any errors that are detected during the update process are displayed in the **Messages** view *(see SoMachine, Menu Commands, Online Help)* of Logic Builder.
For a description of this command, refer to the *SoMachine Menu Commands Online Help* section of the SoMachine Online Help.

NOTE:
After the update of the project,
- you may encounter device firmware compatibility issues *(see page 23)*,
- you will no longer be able to open the project in an earlier SoMachine version.

Using Your SoMachine Projects Without Update

If you do not want to make any changes to your project and still want to be able to connect to a controller to which the original project was downloaded, select **Cancel** in the **Project update** dialog.

NOTE: If you do not update your project, the latest functionalities of SoMachine are not available.

In this case the following message is displayed:

If you do not update your project, you may encounter that the code generated by this SoMachine version is not the same as the one generated by the SoMachine version the project was originally built with. To help to ensure full compatibility, use the corresponding SoMachine version.
Click **OK** to continue, being aware of this issue.
Click **Cancel** to return to the **Update project** dialog.

Click **OK** in this message box to confirm for not updating your project.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Always verify that your application program will operate as it had under the previous compiler version within SoMachine.
- Thoroughly test the newly compiled version with the version of the device firmware compatible with the new version of SoMachine.

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

For more information on how to reduce the effect of a new version of SoMachine on your projects, refer to the migration practices *(see page 27)*.

You can log in to your controller without building and downloading the project only if a **Download Information Files** file (**.compileinfo*) was created in the same directory as the project on your PC.

Refer to Code Generation, Compile Information *(see SoMachine, Programming Guide)*.

NOTE: If your projects include or are based on HMI, the HMI runtime is updated during the download of the project *(see page 33)*.

Updating Single Devices Individually

If you click **Cancel** in the **Update project** dialog box, the devices in your project are not updated.

To update single devices individually, refer to the updating devices part *(see SoMachine, Programming Guide)* of the online help.

Using Legacy Device Repositories

To use legacy repositories (for example device repositories, library repositories, and so on) of an earlier SoMachine version installed in parallel to your current SoMachine version, proceed as follows:

Step	Action	Comment
1	In the SoMachine toolbar *(see SoMachine Central, User Guide)*, click the **System Options** icon.	The **General Options** tab of the **System Options** dialog box is displayed.
2	Click the **Logic Builder Options** button.	The **Options** dialog box of the SoMachine Logic Builder is displayed.
3	Select **Directories (Devices, Libraries, ...)** in the list on the left-hand side.	The **Directories (Devices, Libraries, ...)** dialog box of the SoMachine Logic Builder is displayed.
4	Activate the **Include legacy repositories** check box.	Now you can use the legacy repositories in your SoMachine project.

Projects Using HMIs / HMI Controllers

The Vijeo-Designer software has its own rules which are defined in **Vijeo-Designer** (**Help → User Manuals → 3 Before You Begin → 3.2 Compatibility**).

Vijeo-Designer can open an application created by an earlier version and can automatically convert this application into the new version.

NOTE: The converted application can no longer be opened with an earlier version of Vijeo-Designer.

By downloading the HMI application part with SoMachine V4.1 (or with Vijeo-Designer), you will be prompted to update the HMI runtime version.

NOTE: In case of an HMI controller, access to the controller with an earlier SoMachine version is no longer possible.

Projects with External Elements

If you did not follow the migration practices *(see page 27)* when using your previous SoMachine versions, you may encounter the following concerns with external elements:

- a project that contains a device description installed from an EDS file, such that the device cannot be recognized by the new SoMachine version. You must install the device in the **Device Repository**,
- a project which contains a library that is not part of the SoMachine installation, such that the library cannot be recognized by the new SoMachine version. You must add the library in the **Library Manager**.

Creating a Project in a New SoMachine Version

Overview

When you create a project in SoMachine:

- You may encounter device firmware compatibility *(see page 23)* concerns.
- You will not be able to open the project in an earlier SoMachine version because it detects that the project is incompatible.

Using a Device with an Earlier Firmware Version

Overview

When logging in or downloading a new or an updated project with a new version of SoMachine, you may encounter a compatibility concern with your current controller firmware:

In this popup, the requested version is the device description version of the active application; the online version is the firmware version of the controller.

In this case, updating the device firmware is necessary. Device firmware is provided with the SoMachine installation disks (managed by SoMachine Configuration Manager) or can be found on the Schneider Electric website: www.schneider-electric.com.

Refer to the migration considerations *(see page 27)* to understand how to avoid this situation in future versions of SoMachine.

Refer to the chapter *Compatibility of Controller and Device Description Versions* *(see page 32)* to understand the compatibility rules (which device version can be downloaded to which controller firmware version).

Section 2.2
Using a New Version of Vijeo-Designer Software

Using a New Version of Vijeo-Designer Software

Overview

If you want to use Vijeo-Designer with SoMachine, you should not use a different version from the one provided with SoMachine.

For more information, refer to the compatibility chapter in the Appendix *(see page 35)*.

Section 2.3
Using a New Controller

Using a New Controller

Overview

Schneider Electric updates the controller frequently providing new features and functions. Therefore there may be a difference between the version you receive as a new product, the current version being put into stock from the factory, and the version of your SoMachine installation.

Controller with an Earlier Firmware Version

You received a controller with a firmware version earlier than the one of the devices in your SoMachine project.

In this case, updating the controller firmware is necessary. Controller firmware is provided inside the SoMachine installation or can be found on the Schneider Electric website: *www.schneider-electric.com*.

If you do not update your controller, you are able to log in to your controller only if the compatibility rule is respected *(see page 32)*.

Controller with a Later Firmware Version

You may receive a controller with a firmware version later than the one of the devices in your SoMachine project.

In this case, updating the project *(see page 20)* is necessary.

Alternatively, consider downgrading the firmware of your controller.

NOTE: A project created with an earlier SoMachine version cannot be downloaded to a controller with a later SoMachine V4.1 compatible firmware.

Controller Running a Solution Project (S-Type)

If your controller is running a SoMachine V3.1 solution project, use one of the following options:

- Update *(see page 20)* your SoMachine V3.1 solution project to SoMachine V4.1 and update the controller firmware compatible to version 4.1.
- Change the firmware of the controller by the new firmware V3.1 *(see page 33)* supporting the application libraries. Device firmware is provided with the SoMachine installation disks (managed by SoMachine Configuration Manager) or can be found on the Schneider Electric website: *www.schneider-electric.com*.

Also refer to Compatibility of Legacy S-Type Devices *(see page 37)*.

Chapter 3
Migration Considerations

Project Archives Helping to Preserve Compatibility

Overview

Before you install a new version of SoMachine software, or when your project is finalized, you should create an archive of your project. The archive contains all files included and referenced in the project with settings and profiles.

Project archives provide the following advantages:

- You can extract the project archive to any computer with SoMachine installed. In this way, you can share your projects with others or run it on another computer.
- Creating an archive can help reduce compatibility concerns with later versions of SoMachine.

This chapter provides information on the specific settings that help to preserve compatibility.

For general information on creating project archives, refer to the SoMachine *Central User Guide (see SoMachine Central, User Guide)*.

Settings Helping to Preserve Compatibility

When you create an archive on your local computer in the **Main Menu** of the SoMachine Central by executing the command **Save Project as... → Save Archive...**, the **Project Archive** dialog box opens.

In the **Project Archive** dialog box, the following topics can affect compatibility and therefore you can select them when appropriate:

Information	Description
Download information files	When this is selected, the compile information (the **.compileinfo* file) is saved with your project file. This allows you to log in to the controllers with the archived project without rebuilding the project.
Referenced devices	When this is selected, the devices in the **Device Repository** of your project are saved into the archive with their versions. Devices installed with EDS files are included.
Referenced libraries	When this is selected, the libraries in the **Library Repository** of your project are saved into the archive with their versions. Third-party libraries are included.

Appendices

Overview

What Is in This Appendix?

The appendix contains the following chapters:

Appendix A
Compatibility Annexe

Overview

This section provides the annexes regarding the compatibility between SoMachine versions.

What Is in This Chapter?

This chapter contains the following topics:

Compatibility of Controller and Device Description Versions

Overview

Logic controller firmware and device description versions are made of 4 digits: X.Y.Z.T.

An *Application.app* file can be downloaded to a controller if the device description used to create this file is compatible with the controller firmware.

Compatibility Rule

The controller firmware and the device description are compatible if the following rules are respected:

- X.Y digits must be identical
- The Z digit of the controller must be greater or equal to the Z digit from the device description.
- T digit is irrelevant

Example

A device description version 2.0.20.30 of an M238 controller is compatible with the following controller firmware versions:

- 2.0.20.11
- 2.0.20.14
- 2.0.20.30
- 2.0.30.13
- 2.0.31.3

But it is not compatible with the firmware versions 2.0.10.8.

Compatibility of HMI and Controller Versions

Overview

When building a solution with some HMI and controllers communicating to each other, you must use controllers and HMI devices at the same firmware / runtime compatibility level.

When you download an application with an HMI from SoMachine, the HMI runtime is automatically updated to the latest version.

NOTICE
COMMUNICATION INTERRUPTION Do not use a different controller firmware version or a different HMI runtime other than that which is specified in the table below for the given SoMachine version. **Failure to follow these instructions can result in equipment damage.**

The table provides the relation between the SoMachine version, the controller firmware, and the HMI runtime for SoMachine V2.0 and V3.x versions:

SoMachine version used	**V2.0 RL1**	**V2.0 RL2**	**V2.0 RL2**	**V3.0**	**V3.1**
HMI runtime	**V5.1.1.1179**	**V5.1.11.1200**	**V5.1.20.1404**	**V6.0.0.212**	**V6.1.0.393**
M238 firmware version	V2.0.20.11	V2.0.20.14	V2.0.20.30	V2.0.30.13	V2.0.31.10 or later
M258 firmware version	V2.0.1.2	V2.0.1.14	V2.0.1.36	V2.0.2.32	V2.0.31.27 or later
LMC058 firmware version	V2.0.1.2	V2.0.1.14	V2.0.1.36	V2.0.2.32	V2.0.31.27 or later
ATV IMC firmware version	V1.1ie01	V1.1ie01	V1.1ie03	V1.1ie19 patch 2	V1.1.2.13 or later
M241 firmware version	-	-	-	-	-
M251 firmware version	-	-	-	-	-

The table provides the relation between the SoMachine version, the controller firmware, and the HMI runtime for SoMachine V4.0 and later versions:

SoMachine version used	**V4.0**	**V4.1**	**V4.1 SP1 (SP1.1, SP1.2, SP2)**	**V4.2**	**V4.3**
HMI runtime	**V6.1.4.236**	**V6.2.0.449**	**V6.2.2.252 (V6.2.2.254, V6.2.3.217, V6.2.4)**	**V6.2.4.1xxx**	**V6.2.4.1xxx**
M238 firmware version	V4.0.1.16	V4.0.1.22	V4.0.1.23	V4.0.1.xx	V4.0.1.xx
M258 firmware version	V4.0.1.24	V4.0.2.6	V4.0.2.33 (SP2: V4.0.2.51)	V4.0.3.2	V4.0.3.2
LMC058 firmware version	V4.0.1.24	V4.0.2.6	V4.0.2.33 (SP2: V4.0.2.51)	V4.0.3.2	V4.0.3.2
ATV IMC firmware version	V4.0.1.15	V4.0.1.15	V4.0.1.15	V4.0.1.15	V4.0.1.15
M241 firmware version	V4.0.1.34	V4.0.2.11	V4.0.2.42 (SP2: V4.0.3.18)	V4.0.5.11	V4.0.6.x
M251 firmware version	-	V4.0.2.11	V4.0.2.42 (SP2: V4.0.4.15)	V4.0.5.11	V4.0.6.x
*refer to the *Release Notes* for the latest firmware adaptations					

Compatibility of SoMachine and Vijeo-Designer Versions

Overview

If you want to use Vijeo-Designer with SoMachine, you should not use a different version from the one provided with SoMachine.

The table gives the Vijeo-Designer for each SoMachine version:

SoMachine Version	**V1.0**	**V1.1**	**V2.0 RL1**	**V2.0 RL2**	**V3.0**	**V3.1**	**V4.0**	V4.1 ● SP1 ● SP1.1 ● SP1.2 ● SP2	**V4.2 / V4.3**
Vijeo-Designer Version	5.0.1	5.0.2	5.1 S20R8	5.1 S20R9	6.0	6.1 up to SP3	6.1 SP4	6.2.0 ● SP2 ● SP2.1 ● SP3 ● SP4	6.2.0 SP4.1

General Principle of Vijeo-Designer Installation

- A later major version of Vijeo-Designer is installed in parallel to an earlier major version (for example 6.1 in parallel to 6.0).
- A Vijeo-Designer service pack overwrites a Vijeo-Designer installation of the same major version (for example 6.1 SP2 overwrites 6.1 SP1.
  NOTE: As an exception, Vijeo-Designer 6.1 SP4 is installed in parallel to Vijeo-Designer 6.1 SP3 or earlier.

Compatibility of SoMachine Projects Using DTM Devices

Overview

Generally the DTM design supports only one DTM of a certain version on a PC.

Installing DTMs

Before you open a project using DTM devices, you have to install the respective DTMs using SoMachine Configuration Manager.

Launching SoMachine and Updating the Device Repository

Step	Action	Comment
1	After installing the DTMs, launch SoMachine.	The **SoMachine DTMs Monitor** dialog box is displayed showing a **List of new SoMachine DTMs found**.
2	Select the DTMs you want to import to the **Device Repository**.	This is done by activating the check boxes in the **Scan** column.
3	Click **Import selected DTMs**.	The selected DTMs are imported to the **Device Repository**.

Opening and Updating Your Project

Step	Action	Comment
1	After updating the **Device Repository**, open your project.	The **Update project** dialog box is displayed.
2	Select **OK** in the **Update project** dialog box.	The devices (and DTMs) are updated.

Compatibility of Legacy S-Type Devices

Overview

With SoMachine V4.1 no legacy controllers are installed.

That is, no S-type controllers are installed.

Also refer to section Using a New Controller *(see page 25)*.

Replacement of S-Type Devices

After opening a project containing S-type devices the **Update project** dialog box *(see page 17)* lists the legacy devices (S-type) and in a second column the associated generic devices (G-type).

Click **OK** to convert the legacy devices to the associated generic devices automatically.

Legacy S-Type Devices	Converted to G-Type Devices
M238 controllers	
TM238LFAC24DRS0	TM238LFAC24DR
TM238LFDC24DTS0	TM238LFDC24DT
M258 controllers	
TM258LF42DTS0	TM258LF42DT
TM258LF42DT4LS0	TM258LF42DT4L
TM258LF66DT4LS0	TM258LF66DT4
TM258LF42DRS0	TM258LF42DR
XBTGC controllers	
XBTZGCCANS0	XBTZGCCAN
XBTZGCANMS0	XBTZGCANM
LMC058 controllers	
LMC058LF42S0	LMC058LF42
LMC058LF424S0	LMC058LF424
ATV IMC controller	
VW3A3521S0	VW3A3521

Compatibility of Controller Connection Mechanism

Overview

- SoMachine V3.1 and earlier supports the **active path** mechanism for connecting to controllers.
- From SoMachine V4.0 the **IP address** mechanism is supported in addition.

For detailed information refer to the respective chapters in the SoMachine programming guide (Communication Settings *(see SoMachine, Programming Guide)*, Controller Selection *(see SoMachine, Programming Guide)*).

Restrictions for Legacy Controllers

For legacy controllers (firmware V3.1 compatible and earlier) the following functionalities are available:

- find controller
- select controller
- connect controller

For legacy controllers (firmware V3.1 compatible and earlier) the following functionalities are not available:

- identify controller
- get information

Communication Settings

You can edit the communication settings *(see SoMachine, Menu Commands, Online Help)* under **Project Settings → Communication settings**.

For a description of this command, refer to the *SoMachine Menu Commands Online Help* section of the SoMachine Online Help.

Compatibility of Namespaces

Overview

SoMachine V4.1 introduces a feature by which for some libraries it is mandatory to specify a namespace in front of each symbol used out of this library.

For details, refer to Namespace *(see SoMachine, Functions and Libraries User Guide)* in the SoMachine *Functions and Libraries User Guide*.

Therefore, after updating a project from an earlier SoMachine version, you might encounter undeclared symbol compiler error messages.

To solve this, write the corresponding namespace, followed by a dot, in front of the undeclared symbol.

Compatibility of Libraries

Overview

It is possible to manage concurrent communication of EtherNet/IP and Modbus TCP devices with the TM251MESE controller. To make the libraries independent from the device network, the libraries, used to control some devices, have been updated in order to have the same namespace whatever the device network protocol used to control them.

Therefore, after updating a project from an earlier SoMachine version, you might encounter one of the following compiler error messages:

- Unknown type: SEMFDP…
- Unknown type: SEMFDM…

These messages are raised if your application was controlling the following devices on Modbus TCP:

- Lexium 32
- Altivar 32
- Altivar 71

Updating Your Project

During the update, two libraries are automatically replaced by other libraries:

The libraries...	...are replaced by...
• FieldbusDevicesModbusTcp, and • FieldbusDevicesPLCOpen	• GMC Independent Lexium, • GMC Independent ModbusTCP, • GMC Independent Altivar, and • GMC Independent PLCOpen MC.

Once the project is updated, you have to perform the following replacements:

If the application was using…	…replace the deprecated namespace…	…by the new namespace…
PLCopen function blocks (name starting with `MC_`)	SEMFDP (FieldbusDevicesPLCopen)	GIPLC (GMC Independent PLCopen MC)
Vendor specific function blocks for Altivar (name ending with `_ATV`)	SEMFDM (FieldbusDevicesModbusTCP)	GIATV (GMC Independent Altivar)
Vendor specific function blocks for Lexium (name ending with `_LXM`)	SEMFDM (FieldbusDevicesModbusTCP)	GILXM (GMC Independent Lexium)

For more information on the namespace, refer to General Description of Libraries *(see SoMachine, Functions and Libraries User Guide)*.

Compatibility Limitations

Loading a Boot Application Created With SoMachine V4.1 to Controller Firmware Compatible With SoMachine V3.0

There is a rule in compatibility *(see page 23)* which says that it is not possible to log in to a controller which has an earlier firmware (for example V3.0) with a project created with a later SoMachine version (for example V4.1).

But by FTP or with a USB memory key it is possible to load a boot application created with SoMachine V4.1 to a controller running firmware V3.0. The boot application will not be loaded at next reboot and cannot run.

The controller will be in HALT state.

Update the device firmware to the required version.

Updating SoMachine V1.1 Projects

Update SoMachine V1.1 projects in a first step to SoMachine V3.1. After that, update to the latest SoMachine version.

Updating a SoMachine V3.1 Project to SoMachine V4.1 SP1 Has Influences on DTMs

After updating a project made in SoMachine V3.1 to SoMachine V4.1 SP1, the Advantys OTB DTM and the TM5-7 DTM may be unresponsive or unreliable.

If this happens, copy and paste the same DTM. The new node will work fine.

You can then remove the old DTM node.

New Process of Retrieving the State of CANopen Slaves with SoMachine V4.0

In SoMachine V3.1, it was possible to use internal variables implicitly created when adding a CANopen slave to access some information on the current state of the device. For example, `MyOTB.nStatus` or `MyOTB.bSlaveAvailable`.

These internal structures are no longer supported in SoMachine V4.0 and later versions. Instead, use the `GET_STATE` function blocks of the CIA405 library to retrieve the state of your CANopen slaves.

Mapping Variables on Single Bits Feature Only for SoMachine V4.0 and Later

The feature that allows you to map variables on single bits is only available for devices that have been created with SoMachine V4.0 or later.

In SoMachine projects that have been updated from an earlier version, this feature is not available for the existing / updated devices.

To make the feature available for these devices, create a new device node and delete the old one.

Updating a SoMachine V3.1 Project Requires Extensions for Libraries

When you update a SoMachine V3.1 project, error messages in the **Messages** view *(see SoMachine, Menu Commands, Online Help)* may indicate that the extensions for libraries are missing.

Add the required extension to the library:

Example:

`GET_STATE --> CIA405.GET_STATE.`

3S CanOpenStack Library

If you use the 3S CanOpenStack library in your project, the following **Build** error may be detected and displayed in the **Messages** view *(see SoMachine, Menu Commands, Online Help)*:

C0035: Program name or function block instance expected instead of 'xxx'. where **'xxx'** is a POU inside your project (for example, a POU named START or STOP).

As the library 3S CanOpenStack is of the category **Intern** (not intended for direct usage), it is a best practice to enable the option **Only allow qualified access to all identifiers** in the **Properties** dialog box of this library for overcoming the **Build** error.

Updating Projects with HMISCU/XBTGC

If you update a project created with SoMachine V3.1 including HMISCU/XBTGC devices and containing the HSC and PTO_PWM modules, the **HSC** and **PTO_PWM** nodes may be displayed with red crosses in the **Devices tree** after the update. This indicates that the devices are outdated.

To remove the red crosses, update the device manually by right-clicking the HMISCU/XBTGC nodes and executing the command **Update Device...** from the context menu and selecting the same device.

Variables Defined in GVL of a Library Not Correctly Shared After Updating SoMachine V3.1 Projects

When you update a SoMachine V3.1 project, the message **The POU xxx is no longer available within your compiled application but it is still configured in the symbol configuration** may be displayed in the **Messages** view *(see SoMachine, Menu Commands, Online Help)*. It indicates that variables defined in a GVL of a library are not correctly shared in the symbol configuration editor *(see SoMachine, Programming Guide)*.

To share again this variable in the symbol configuration, proceed as follows:

Step	Action
1	Double-click the **Symbol Configuration** node in the **Tools tree** to open the symbol configuration editor inside the updated project in your SoMachine version later than SoMachine V3.1.
2	Deselect the variable that is not correctly shared.
3	Close the symbol configuration editor.
4	Reopen the symbol configuration editor.
5	**Build** the application.
6	Select the variable again in the symbol configuration editor.

Connecting to Controllers in Remote Subnets

In SoMachine V3.1, a Remote Connection tool is available for connecting to controllers in remote subnets.

In SoMachine V4.1 and later versions, connections to controllers in remote subnets are established with the **Controller Selection** view of the device editor *(see SoMachine, Programming Guide)* by using the **Connection Mode** types for **Remote TCP**. For connections via OPC, use the **Static Remote Connections** tab of the Gateway Management Console.

In SoMachine V4.2 and later versions, connections to controllers in remote subnets can be established from the **Static Remote Connections** tab of the Gateway Management Console. To open the Gateway Management Console, right-click the gateway icon in the Windows notification area. For further information, refer to the *Gateway Management Console User Guide* online help.

Direct Addresses of Type `myvar AT %Mn : BOOL` Cause Error Messages

When you build a legacy application (created with SoMachine V3.1 or earlier), with SoMachine V4.1 or later, the message **Direct Address %M?n malformed** may be displayed if you use direct addresses of the type `myvar AT %Mn : BOOL` in your variable declarations.

You can skip this message by selecting **Ignore**.

In any case, this usage will lead to **Build** errors that will be displayed in the **Messages** view *(see SoMachine, Menu Commands, Online Help)*.

To avoid these **Build** errors, replace the address declaration by the type `myvar AT %MXn.0 : BOOL`.

EtherNet/IP Adapter Removed During Update

If you have defined an M251 MESE EtherNet/IP adapter function on an **Ethernet#1** connector in an application built with SoMachine V4.1 SP1 or earlier, and you intend to convert this application to a later version, then the EtherNet/IP adapter previously configured will be deleted.

Limitations for SoMachine V4.1 SP2 or V4.2 Applications Including the EtherNet/IP Adapter Service

Starting from firmware V4.0.4.x (SoMachine V4.1 SP2) for M251MESE and V4.0.5.x (SoMachine V4.2) for M241 and M251MESC, the EtherNet/IP adapter service has the following limitations:

- The File Object is removed.
- The Modbus Object is removed.
- The value displayed for the RPI (Requested Packet Interval) parameter is not valid for M251MESE with SoMachine earlier than V4.1SP2 and for M241 with SoMachine earlier than V4.2.
- The RUN/IDLE status of the `PLC_R` structure is not valid.
- The UCMM (Unconnected Message Manager) Error Count and Class 3 Error Count of the `PLC_R` structure are not valid.

Modbus IOScanner for Serial Line: `Read/Write (FUNC23)` Is Not Transformed Automatically

`Read/Write (FUNC23)` used in Modbus IOScanner for Serial Line in SoMachine V3.1 or earlier is not automatically transfomed to `Read (FUNC03)` and `Write (FUNC16)` in SoMachine V4.1 or later if the slave does not support the `Read/Write` function.

Modify the application manually by separating the `Read/Write` function into one `Read` and one `Write`.

Devices Imported from EDS Files Are Not Updated

Whenever you update a legacy project file containing devices for which no new device description files are installed in the current SoMachine device repository, these devices are not recognized by SoMachine. This applies in particular to devices imported from EDS files.

To avoid this, install these devices before updating your project. For further information, refer to the chapters Using Existing SoMachine Projects *(see page 22)* and Migration Considerations *(see page 27)*.

Updating Library Parameters of a POU

If you have renamed parameters of a POU for a library between versions, the old parameter names will still be used in the POU code.

In order to use the new parameter names, execute the **Update Parameters** command *(see SoMachine, Menu Commands, Online Help)* manually on the corresponding POU call usage.

For a description of this command, refer to the *SoMachine Menu Commands Online Help* section of the SoMachine Online Help.

SoMachine/CoDeSys Compiler Version Mapping

Overview

The following mapping table gives an overview of which CoDeSys compiler version is used by default in a certain SoMachine version.

SoMachine

SoMachine Software Version	Mapped Display Version	CoDeSys Compiler Version
SoMachine V1.0	V1.0.10.0	3.2.2.43
SoMachine V1.1	V1.1.10.0	3.3.1.2
SoMachine V2.0 RL1	V2.0.18.8	3.3.1.40
SoMachine V2.0 RL2	V2.0.20.20	3.3.1.40
SoMachine V3.0	V3.0.14.5	3.4.1.50
SoMachine V3.1	V3.1.10.1	3.4.1.90
SoMachine V4.0	V4.0.0.0	3.5.3.60
SoMachine V4.1	V4.1.0.0	3.5.3.82
SoMachine V4.1 SP1	V4.1.0.1	3.5.3.83
SoMachine V4.1 SP1.1	V4.1.0.2	3.5.3.84
SoMachine V4.1 SP1.2	V4.1.0.3	3.5.3.85
SoMachine V4.1 SP2	V4.1.0.4	3.5.3.86
SoMachine V4.2	V4.1.0.4	3.5.3.86
SoMachine V4.3	V4.1.0.5	3.5.3.87

The mapped display version is used for example in the **Project Settings → Compile Options** dialog and the **Project Update** dialog.

Appendix B
Device Conversion

Conversion of ATV32 to ATV320 Devices

Overview

Convert an ATV32 device configuration to an ATV320 device configuration by using the SoMove configuration software. As a prerequisite, the configuration file (*.psx) corresponding to the ATV32 device to convert is required.

Procedure Overview

The migration of ATV32 to ATV320 devices is performed in three steps that are described in this document:

Step	Action
1	Generating the ATV32 configuration file (*.psx) *(see page 45)*.
2	Converting the ATV32 device configuration to an ATV320 device configuration *(see page 46)*.
3	Importing the converted ATV320 project into SoMachine *(see page 46)*.

How to Generate the ATV32 Configuration File

The following procedure describes how to generate the ATV32 configuration file (*.psx) directly from the device by using SoMove V2.6 or later:

Step	Action	Result
1	Launch SoMove.	The SoMove start page opens.
2	Execute the command **Tools → Edit Connection / Scan**.	–
3	In the **Edit Connection** dialog box, select the connection settings that correspond to the ATV32 device you want to convert. For further information, refer to the SoMove online help.	–
4	Click **Apply**.	The **Edit Connection** dialog box is closed.
5	Execute the command **Transfer → Load from Device** from the SoMove start page.	–
6	Select a file to save the SoMove project.	–
7	Select the file type **SoMove project files (*.psx)**.	–
8	Click **Save**.	The upload process starts.

How to Convert ATV32 to ATV320 Devices

To convert an ATV32 to an ATV320 device, perform the following steps:

Step	Action	Result
1	Launch SoMove.	The SoMove start page opens.
2	Execute the command **Tools → Device Conversion**.	The **Device Conversion** dialog box opens.
3	Select the ATV32 configuration file (*.psx) that you want to convert, and click **Open**.	The **Device Conversion for ATV32** dialog box opens.
4	Select **ATV320** from the **Select Target** list and click **Convert**.	The **Select ATV320** dialog box opens.
5	Select the option **ATV320 Book** or **ATV320 Compact** according to your requirements.	The compatible **Reference**, **Firmware Version**, **Supply Voltage**, and **Nominal Power** parameters are displayed for the selected option.
6	Click **OK**.	The message **Device conversion is successful** is displayed.
7	Click **OK** to close the message.	The converted ATV320 project opens.

How to Import the Converted ATV320 Project Into SoMachine

To import the converted ATV320 device configuration into SoMachine, perform the following steps:

Step	Action	Result
1	Launch SoMove.	The SoMove start page opens.
2	Execute the command **Tools → Edit Connection / Scan**.	–
3	In the **Edit Connection** dialog box, select the connection settings that correspond to the ATV320 device you want to update. For further information, refer to the SoMove online help.	–
4	Click **Apply**.	The **Edit Connection** dialog box is closed.
5	Execute the command **Transfer → Store to Device**.	–
6	Close SoMove.	–
7	Open your SoMachine project, and select **Altivar 320** in the **Devices tree**.	–
8	Upload the device configuration for the ATV320 device. For more information, refer to the Device Type Manager (DTM) - User Guide *(see SoMachine, Device Type Manager (DTM), User Guide)*.	–

Glossary

A

application

A program including configuration data, symbols, and documentation.

C

configuration

The arrangement and interconnection of hardware components within a system and the hardware and software parameters that determine the operating characteristics of the system.

controller

Automates industrial processes (also known as programmable logic controller or programmable controller).

D

DUT

(*data unit type*) Along with the standard data types the user can define own data type structures, enumerationen types, and references as data type units in a DUT editor.

E

EDS

(*electronic data sheet*) A file for fieldbus device description that contains, for example, the properties of a device such as parameters and settings.

expansion bus

An electronic communication bus between expansion I/O modules and a controller.

G

GVL

(*global variable list*) Manages global variables within a SoMachine project.

I

I/O

(*input/output*)

P

POU

(*program organization unit*) A variable declaration in source code and a corresponding instruction set. POUs facilitate the modular re-use of software programs, functions, and function blocks. Once declared, POUs are available to one another.

program

The component of an application that consists of compiled source code capable of being installed in the memory of a logic controller.

R

RPI

(*requested packet interval)* The time period between cyclic data exchanges requested by the scanner. EtherNet/IP devices publish data at the rate specified by the RPI assigned to them by the scanner, and they receive message requests from the scanner with a period equal to RPI.

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