SoMachine Central
User Guide

06/2017

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The information provided in this documentation contains general descriptions and/or technical characteristics of the performance of the products contained herein. This documentation is not intended as a substitute for and is not to be used for determining suitability or reliability of these products for specific user applications. It is the duty of any such user or integrator to perform the appropriate and complete risk analysis, evaluation and testing of the products with respect to the relevant specific application or use thereof. Neither Schneider Electric nor any of its affiliates or subsidiaries shall be responsible or liable for misuse of the information contained herein. If you have any suggestions for improvements or amendments or have found errors in this publication, please notify us.

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.

Table of Contents

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 describes the graphical user interface of SoMachine Central and the functions it provides.

For further information, refer to the separate documents provided in the SoMachine online help.

Validity Note

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

Related Documents

Title of Documentation	Reference Number
SoMachine Programming Guide	*EIO0000000067 (ENG)*; *EIO0000000069 (FRE)*; *EIO0000000068 (GER)*; *EIO0000000071 (SPA)*; *EIO0000000070 (ITA)*; *EIO0000000072 (CHS)*
SoMachine Compatibility and Migration User Guide	*EIO0000001684 (ENG)*; *EIO0000001685 (FRE)*; *EIO0000001686 (GER)*; *EIO0000001688 (SPA)*; *EIO0000001687 (ITA)*; *EIO0000001689 (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
SoMachine Central Introduction

Overview

Role of SoMachine Central

Starting SoMachine by double-clicking the respective icon on your desktop, launches SoMachine Central.

SoMachine Central is the main interface for:

- administration of projects
- launching the different tools provided by SoMachine Vx.y
- managing the workflow of a project
- managing the versions of a project
- offering system/project functions

Administration of Projects

- Open/close projects
- Create projects
- Save project / save project as
- Import/export of SoMachine Basic projects
- Import/export of Vijeo-Designer projects
- Upload/download projects
- Print project
- Open archives
- Administrate project properties/options
- Provide project statistics

NOTE: Most **File** menu entries are only available in SoMachine Central and deactivated in other tools like SoMachine Logic Builder and Vijeo-Designer.

Launching Tools Provided by SoMachine

The following tools can be launched from SoMachine Central:

- SoMachine Logic Builder
- **Vijeo-Designer**
- **SoMachine Configuration Manager**
- **SoMachine Basic**
- Further maintenance tools (for example **Controller Assistant**)

Managing the Workflow of a Project

Project workflow steps:

- **Configuration**
  Add, remove, and configure devices and communication.
- **Application Design**
  - **Controller**
    Program one or multiple controllers.
  - **HMI**
    Program and design your HMI application.
- **Multiple Download**
  Download your project to the devices.
- **Maintenance**
  Maintain your project with a set of tools.

Managing the Versions of a Project

- Create new versions of a project
- Select and restore a previous version of a project
- Display information on the available versions

Offering System/Project Functions

- SoMachine Logic Builder Options

Chapter 2
User Interface

What Is in This Chapter?

This chapter contains the following sections:

Section 2.1
General Description of the SoMachine Central User Interface

What Is in This Section?

This section contains the following topics:

SoMachine Central User Interface

Frame Window

SoMachine Central provides a frame window with the following elements:

- **Toolbar** *(see page 20)*
- **Tools Access** *(see page 26)* bar
- **Help Center** *(see page 27)*

The frame window offers functions which are needed frequently.

Main Screens

Moreover, SoMachine Central provides 4 main screens which guide you through the project workflow and allow interaction with the workflow.

- **Get started** *(see page 29)* screen
- **Workflow** *(see page 45)* screen
- **Versions** *(see page 47)* screen
- **Properties** *(see page 51)* screen

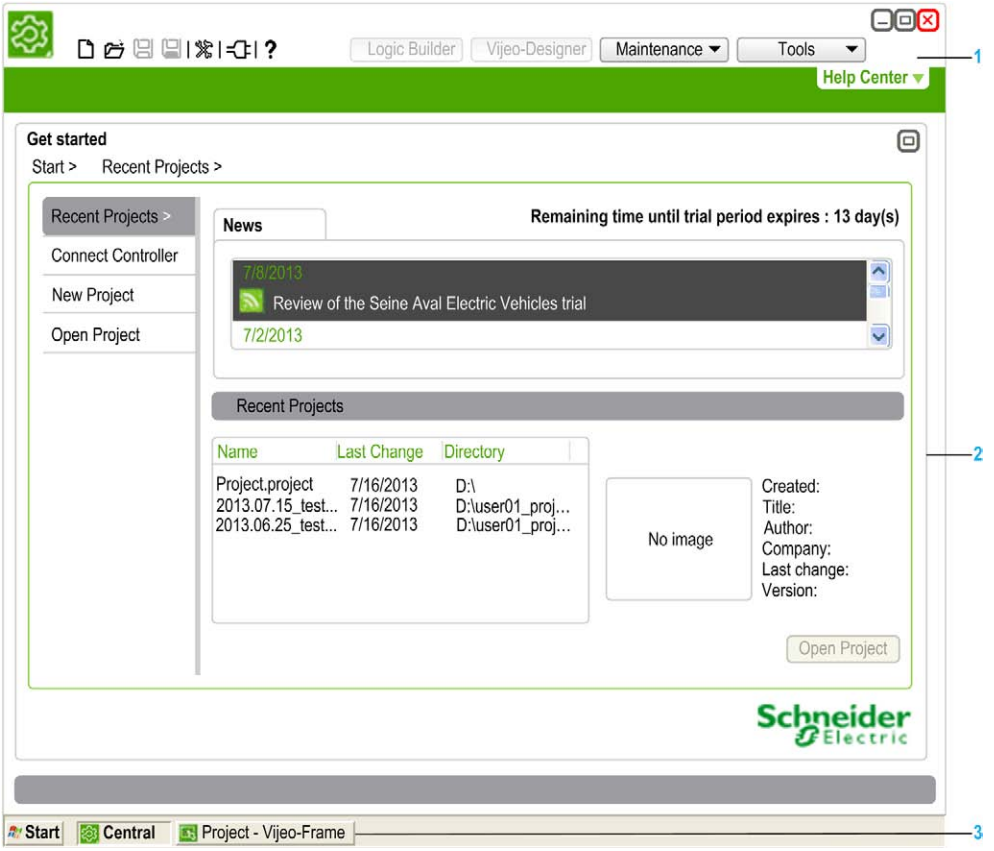
Taskbar

The Windows taskbar is displayed at the bottom of your Windows screen.

The taskbar entries allow you to switch to other opened tools.

The appearance of the SoMachine entries added to the taskbar depends on your Windows operating system.

Elements of the User Interface



1 Frame window
2 Main screen
3 Taskbar

User Interface Color Code

Overview

You can launch several instances of SoMachine Central.

The active instance of SoMachine Central and the tools launched by this instance are displayed in the foreground.

A color code illustrates which windows belong to the same instance.

Color Code

The color code is applied to the title bar and frame of the window.

Default Color	Description
Green	window of the active instance with focus
Shaded green	window of the active instance without focus
Blue	window of an inactive instance
You can customize the colors.	

Section 2.2
General Description of the SoMachine Central Frame Window

What Is in This Section?

This section contains the following topics:

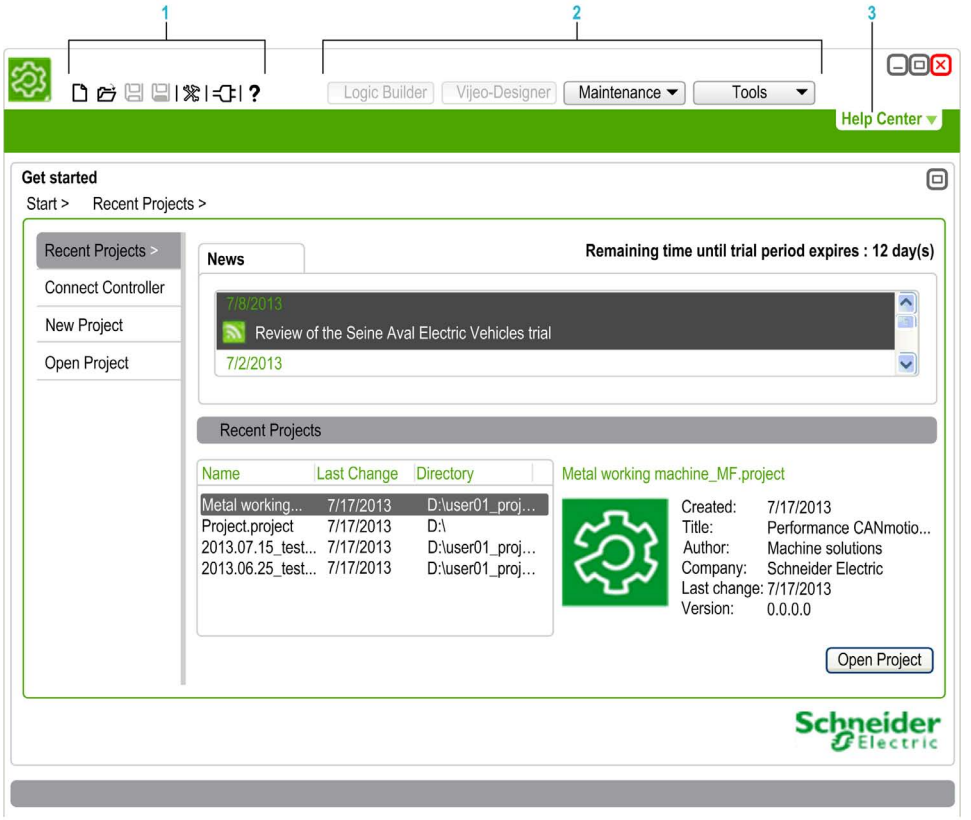
SoMachine Central Frame Window

Overview

SoMachine Central provides a frame window with the elements listed below.

The frame window offers functions which are needed frequently.

Elements of the Frame Window



Element	Description
1	Toolbar *(see page 20)*
2	Tools Access Bar *(see page 26)*
3	Help Center *(see page 27)*

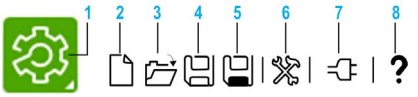
Toolbar

Overview

The toolbar is part of the SoMachine Central frame window.

Each icon of the toolbar displays a tool tip when the mouse pointer is moved on the respective icon without clicking.

Elements of the Toolbar



Icon	Description
1	Open the main menu *(see page 25)*.
2	Create a new project.
3	Open an existing project.
4	Save the project, currently having the focus.
5	Save the project, currently having the focus, under a new name.
6	Open the **System Options** dialog *(see page 22)*.
7	Connect to the controller (**Connect** dialog *(see page 32)*).
8	Open the help center *(see page 27)*.

Overlay Bar

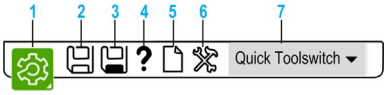
Overview

The overlay bar is provided for every project-related tool which has been launched by SoMachine Central. It offers functions of the SoMachine Central and it provides a fast switch to the SoMachine Central and between the tools.

The overlay bar is always accessible at the title bar of the tool, launched by SoMachine Central, currently having the focus. It can be moved along the title bar with the mouse.

Each icon of the overlay bar displays a tool tip when the mouse pointer is moved on the respective icon without clicking.

Elements of the Overlay Bar



Element	Description
1	SoMachine Central icon ● Left-click to switch back to SoMachine Central. ● Move the mouse pointer on the icon without clicking to expand the overlay bar (**System Options**, **Quick Toolswitch**). Each icon of the overlay bar displays a tool tip when the mouse pointer is moved on the respective icon without clicking.
2	Save the project, currently having the focus.
3	Save the project, currently having the focus, under a new name.
4	Open the help center *(see page 27)*.
5	Create a new project.
6	Open the **System Options** dialog *(see page 22)*. Using this dialog you can edit the following options: ● **Project Versioning** ● **Repository Management** ● **Logic Builder Options** ● **General Options** ● **Preferred directory for open/save projects**
7	**Quick Toolswitch** Click the arrow at the right to launch or to switch to the offered tools (for example Vijeo-Designer).

System Options

Overview

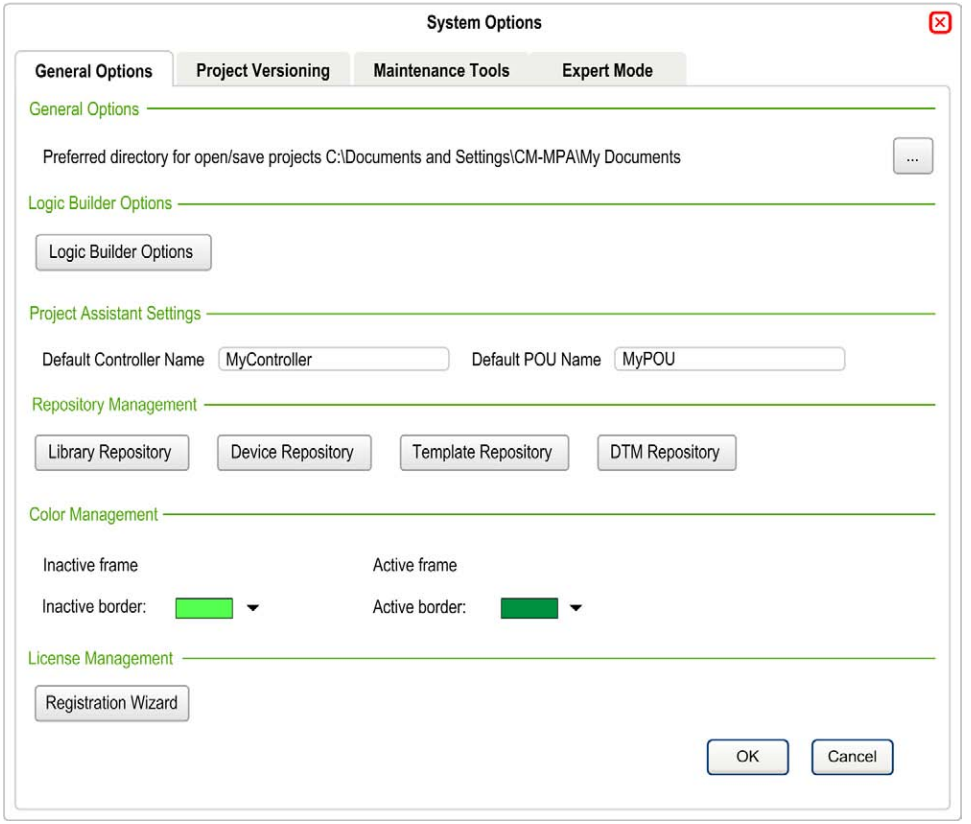
You can open the **System Options** dialog from:

- the toolbar *(see page 20)*
- the overlay bar *(see page 21)*
- the versions screen *(see page 47)*

System Options Dialog Box

The system options are provided by 3 tabs:

- **General Options**
- **Project Versioning**
- **Maintenance Tools**
- **Expert Mode**



General Options Tab

Element	Description
Preferred directory...	Click the **...** button to browse for the preferred directory for opening/saving projects.
Logic Builder Options button	Open the **Options** dialog box of the SoMachine Logic Builder.
Project Assistant Settings	Enter: ● **Default Controller Name** ● **Default POU Name**
Repository Management	
Library Repository button	Open the **Library Repository** dialog box of the SoMachine Logic Builder.
Device Repository button	Open the **Device Repository** dialog box of the SoMachine Logic Builder.
Template Repository button	Open the **Template Repository** dialog box of the SoMachine Logic Builder.
DTM Repository button	Open the **DTM Repository** dialog box of the SoMachine Logic Builder.
Color Management	Select the colors for: ● **Inactive Frame** ● **Active Frame** ● **Inactive border** ● **Active border**
License Management	Click the **Registration Wizard** button to start the **SoMachine Registration Wizard** that guides you through the registration process for the SoMachine software.

Project Versioning Tab

Element	Description
Automatic generation of project version	Use the **ON/OFF** button to switch the automatic creation of versions on/off. A button with the same function is also available in the **Versions** screen.
Versioning mode	Select one of the 2 modes: ● **Time interval** **Interval** is the next value to be set. ● **On save** On each save, a new project version is created.
Interval	Defines the time pattern for automatic project saving (30 minutes to 24 hours). Each time the project is automatically saved, a new project version is created.
Keep versions for the last xx Days/Months (**xx** represents the number of days/months.)	Defines the period for how long the project versions are stored (1...31 days/1...12 months). Click the **Days/Months** button to switch between days and months. Versions exceeding the defined period are deleted. But the following versions are categorically kept: ● latest version per day ● locked versions *(see page 48)*
Increase version number on versioning	Activate this check box to increase the version number of the project each time a new version is created.
Directory for project versioning	Click the **...** button to open a Windows Explorer and to browse for a directory to store the project versions.

Maintenance Tools Tab

Element	Description
Add external maintenance tool button	Opens a Windows Explorer that allows you to browse for a maintenance tool to be added (**.exe* file).
Name column	Names of the added external maintenance tools.
Path column	Paths of the added external maintenance tools.
Remove column	Click the bin icon in the row of the tool to be removed.

Expert Mode Tab

Element	Description
Enable Expert Mode check box	Enable this check box to start the tool selected from the list below as soon as an existing project is opened.

Main Menu

Overview

To open the **Main Menu**, click the icon in the SoMachine Central toolbar *(see page 20)*.

The menu provides the following functions:

- Open the SoMachine Logic Builder.
- Open the Vijeo-Designer.
- **Close Project**
- **Save Project as…**
  - **Save Project as Compiled Library**
  - **Save Project as Template…**
  - **Save Project And Install Into Library Repository**
  - **Save Archive…**
- **Convert...** *(see SoMachine, Programming Guide)*
  - **Convert Twido Project...**
  - **Convert SoMachine Basic Project...**
- **Import…**
  - **Import Vijeo Designer Project...**
  - **Import SoMachine Basic Project...**
- **Export…**
  - **Export Vijeo Designer Project...**
  - **Export SoMachine Basic Project...**
- **Print…** (define the content of the documentation to be printed)
- **Page Setup**
- **About**
- **Exit**

Tools Access Bar

Overview

The tools access bar is displayed at the top of SoMachine Central.

It allows you to switch to other tools integrated to SoMachine.

Each icon of the tools access bar displays a tool tip when the mouse pointer is moved on the respective icon without clicking.

Elements of the Tools Access Bar

Button	Description
Logic Builder	Switch to the SoMachine Logic Builder in configuration mode.
Vijeo-Designer	Switch to the Vijeo-Designer.
SoMachine Basic	Switch to the SoMachine Basic.
Maintenance	Select a maintenance tool to switch to (for example controller assistant, OPC configuration, and so on). **NOTE:** The Diagnostic tool is only to be used with the Modicon LMC078 Motion Controller.
Tools	Select a tool to be launched. The list of offered tools can be enhanced by dragging-and-dropping the respective tool to the **Tools** button. Alternatively it is possible to administrate the list of tools in the system options.

Help Center

Overview

You can open the **Help Center** with the **Help Center** button at the top right of the SoMachine Central or with the **?** button of the toolbar *(see page 20)* or of the overlay bar *(see page 21)*.

The **Help Center** provides the following help topics:

- **General Help**
  - **Global Help** (Programming guides, and so on)
  - **Central Introduction**
  - **System User Guides**
  - **Migration and Compatibility**
- **Learning Center**
  - **Training Manual**
  - **E-Learning**
  - **Videos**
  - **Examples** (Example projects with corresponding documentation)
- **Release information**
  - **Readme**
  - **Release Notes**
  - **EULA**
- **Support**
  - **Contact Support**

Chapter 3
Get Started Screen

What Is in This Chapter?

This chapter contains the following sections:

Section 3.1
Get Started Screen - General

Get Started Screen

Overview

If you launch SoMachine Central, the **Get started** screen is displayed.

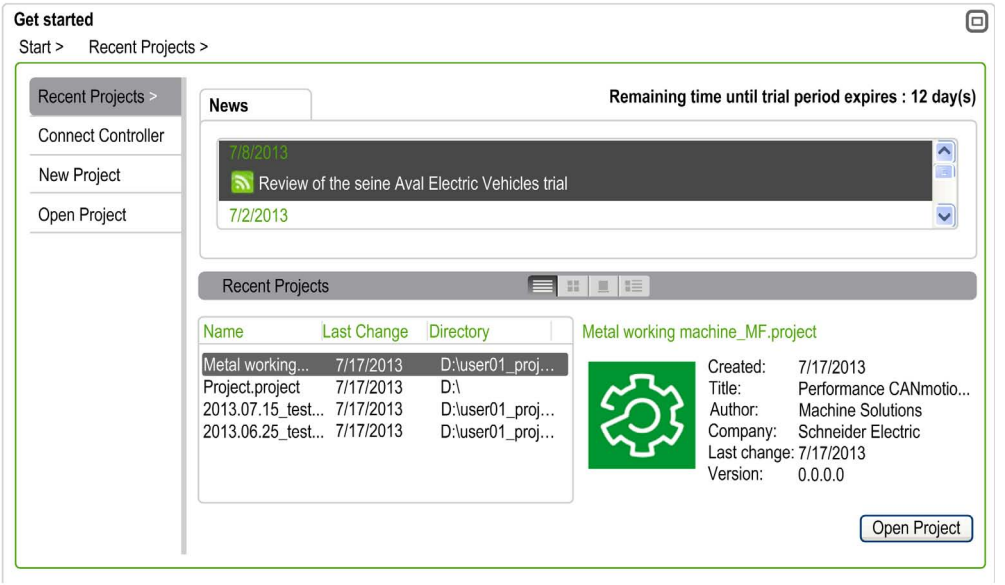
This screen provides the following project functions:

- **Recent Projects**
- **Connect Controller**
- **New Project**
- **Open project**
- List of recently opened projects

Moreover it provides:

- the latest Schneider Electric **News**.

Elements of the Get Started Screen



Element	Description
Navigation path	For backward navigation, click an element of the navigation path displayed at the top of the **Get started** screen.
License status (at the top right)	Information about your **Trial license** (days until trial period expires)
Navigation area on the left-hand side of the **Get started** screen	
Recent Projects button	Return to the list of recently opened projects.
Connect Controller button	• Open a project based on a connected controller. • Create a new project based on a connected controller. • Create a new project based on a template. • Upload a project from a connected controller. • Download a project to a connected controller. • Use maintenance tools on the connected controller. Refer to **Connect** *(see page 32)* dialog.
New Project button	Create • a project using an assistant. • a project from a project template. • an empty project. • a new library.
Open Project button	• Browse and open a project, library, or archive. • Open and automatically convert a SoMachine Basic project or Twido project to a SoMachine project. Refer to the open project dialog *(see page 43)*.
News area	
News	Displays the latest Schneider Electric news.
Recent projects area	
Recent Projects list	Displays a list of recently opened projects/libraries with **Name**, **Last change** and **Directory**. Select a list entry to display project details in the information area beside the list: • **Created** (Date) • **Title** • **Author** • **Company** • **Last change** • **Version** *(see page 36)* • user-defined image
Open Project button	Open a project selected in the **Recent Projects** list.

Section 3.2
Connect Dialog

Connect Dialog

Connect Controller

Step	Action	Result/Comment
1	Click the **Connect Controller** button.	The **Select Controller** dialog box is displayed.
2	The Ethernet network and the USB ports are scanned for available controllers.	The displayed list of controllers contains those controllers in the network that have sent a response to the request of SoMachine.
3	Select a controller in the list and click the **Select** button.	The **Options** dialog box is displayed.
4	Select one of the options: • **Open project file** (**Browse**) • **Create new project** • **Create project with template** • **Upload project from controller** • **Download project to controller** • **Use maintenance tools**	After selecting the option **Upload project from controller** you will be asked for a folder, where the project extracted out of the archive will be stored. In addition, you will be asked **Do you want to open the project which has been extracted from the project archive?** Selecting **No** offers the possibility to manually open the uploaded project later from the folder configured previously.
5	Click the **Continue** button.	The selected option is executed.

Also refer to **Controller Selection** *(see SoMachine Motion, Programming Guide)*.

Open Project File

This option allows you to open a project file. If available in the preferred directory (set in the system options), the project of the connected controller will be opened. If the project of the connected controller is not available or if any other project should be opened, it is possible to open a **File Open** dialog box to select a project.

Create New Project

This option allows you to create a new project. Using this function creates a project which contains a controller of the same type as the connected controller.

Create Project with Template

This option is available if a M241 device with solution cartridge is connected.

This option allows you to create a new project by using a project template. The project template to be used can be selected from a list of templates.

The list of templates only offers templates which match the detected cartridge.

Upload Project from Controller

This option allows you to upload the project provided by the connected controller.

Download Current Project to the Controller

This option is available if a project is opened.

This option allows you to initiate a source download of the opened project to the connected controller.

Use Maintenance Tools

This option allows you to select and launch a maintenance tool.

Section 3.3
New Project Dialog

What Is in This Section?

This section contains the following topics:

New Project Dialog - General

Overview

The first step in the workflow is to open or to create a project.

SoMachine Central offers several ways to create a new project:

- **Using Assistant**
- **Template Based**
- **Empty Project**
- **New Library**

Using Assistant

Select **Using Assistant** to open the **New Project Assistant** dialog box.

With this dialog box SoMachine guides you to start a new project. Based on the information you enter SoMachine proposes the best way for you to start your project.

Template Based

Select **Template Based** to open the **New Project Assistant- Template** dialog box.

This dialog box offers project templates starting with a machine type or a given recommended architecture. Templates allow a short project time by relying on a project that has already been successful.

Empty Project

Select **Empty Project** to open the **New Empty Project** dialog box.

With this dialog box, you can start a new project without any preconfiguration of devices or logic. Use of this option requires more knowledge of configuration and programming logic than when using the assistant or the templates.

New Library

Select **New Library** to open the **New Library** dialog box.

With this dialog box, you can create your own library. Libraries allow you to store parts of your application and machine know-how into a repository. Library objects can exist in different versions.

New Project Assistant

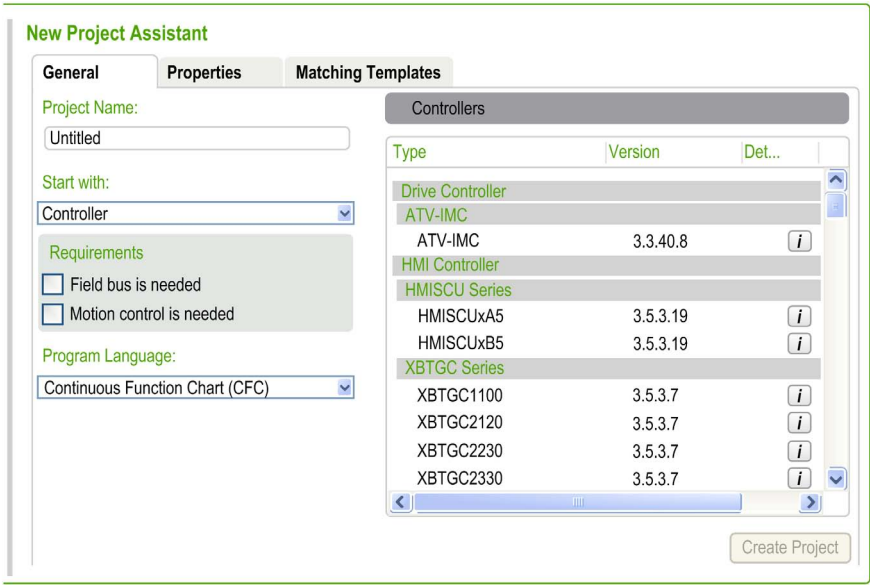
Overview

The **New Project Assistant** helps you to create a project which already contains a controller and a POU already called by the main task.

Before creating the project, you can select which type of controller to use and which type of POU to create.

Elements of New Project Assistant

In the **Get started** screen, select **New Project → Assistant** to open the **New Project Assistant** dialog box.



Element	Description
Project Name	Enter a name for your new project.

Start with	Select the starting point for your project:
	• **Architecture**
	  ❍ The information area on the right side displays the available project templates sorted by name.
	  ❍ **Filters** are displayed below **Start with**.
	• **Controller**
	  ❍ The information area on the right side displays the available controllers sorted and grouped by type.
	  ❍ **Filters** are displayed below **Start with**.
	• **Machine type**
	  ❍ The information area on the right side displays the available project templates grouped by machine types (conveying, hoisting, and so on).
	  ❍ **Filters** are displayed below **Start with**.

Filters (displayed if **Architecture** or **Machine type** is selected for **Start with**)	Select the options to filter the project templates displayed in the information area on the right side.
Filters (displayed if **Controller** is selected for **Start with**)	Select the requirements for your controller: • **Field bus is needed** • **Motion control is needed**

Properties tab	Open the **Project Properties** dialog box to enter additional project information:
	• **General**
	  ❍ **Title**
	  ❍ **Author**
	  ❍ **Company**
	  ❍ **Version**
	  ❍ **Description**
	• **Custom**
	• **Project Image**
	The **Version** is specified using the following format: **major**.**minor**.**build**.**revision**. The components have to be integers greater or equal to 0. For example **4.0.1.0.**
	• **major** and **minor** are required
	• **build** and **revision** are optional
	• **build** is required if **revision** is defined

Matching Template tab	Open a pre-filtered list of project templates using the selected controller (**New Project Assistant - Templates** dialog box *(see page 38)*).
Create Project button	Create your new project. After project creation, the **Workflow** screen *(see page 45)* is displayed.

New Project Assistant - Templates

Overview

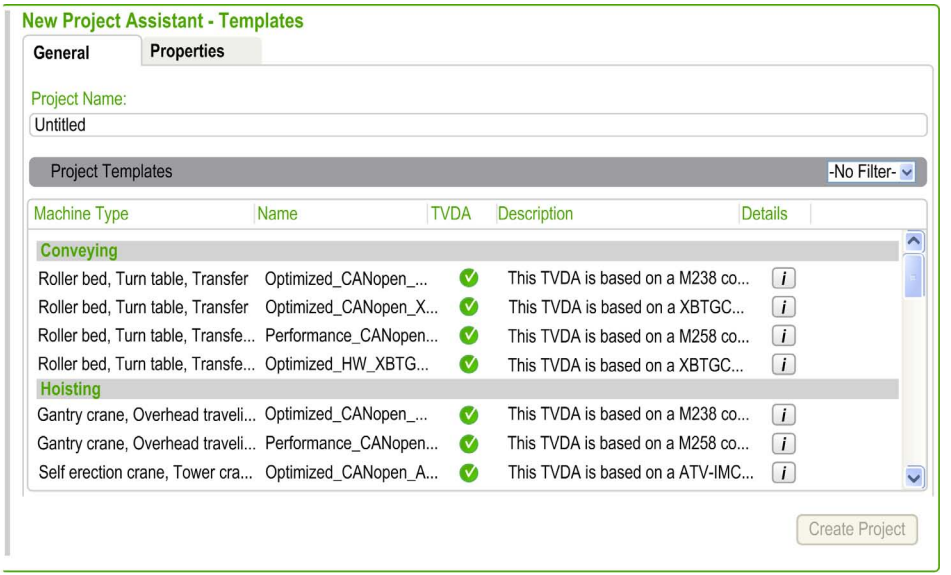
The **New Project Assistant - Templates** dialog helps you to create a project based on a given recommended architecture.

The list of project templates also contains TVDAs (tested validated documented architectures).

Templates allow a short project time by relying on a project that has already been successful.

Elements of New Project Assistant - Templates

In the **Get started** screen, select **New Project** → **With Template** to open the **New Project Assistant - Templates** dialog box.



Element	Description
Project Name	Enter a name for your new project.
Project Templates	Lists the available project templates grouped by machine types (conveying, hoisting, and so on). The following information is displayed for the templates: ● **Machine Type** ● **Name** ● **TVDA** ● **Description** ● **Details**
i button (displayed for each template in the **Details** column)	Open the **Project template properties** window, displaying detailed properties of the template and the respective values.
Filter	Offers the following filter options: ● **- No filter -** ● **Applications** ● **Architectures** ● **User Defined**
Properties tab	Open the **Project Properties** dialog box to enter additional project information: ● **General** ❍ **Title** ❍ **Author** ❍ **Company** ❍ **Version** *(see page 36)* ❍ **Description** ● **Custom** ● **Project Image**
Create Project button	Create your new project. After project creation, the **Workflow** screen *(see page 45)* is displayed.

New Empty Project

Overview

The **New Empty Project** dialog helps you to create a new project without any preconfiguration of devices or logic.

Use of this option requires more knowledge of configuration and programming logic than when using the assistant or the templates.

Elements of New Empty Project

In the **Get started** screen, select **New Project → Empty Project** to open the **New Empty Project** dialog box.

Element	Description
Project Name	Enter a name for your new project.

Properties tab	Open the **Project Properties** dialog box to enter additional project information:
	• **General**
	  ❍ **Title**
	  ❍ **Author**
	  ❍ **Company**
	  ❍ **Version** *(see page 36)*
	  ❍ **Description**
	• **Custom**
	• **Project Image**

Create Project button	Create your new project. After project creation, the **Workflow** screen *(see page 45)* is displayed.

New Library

Overview

The **New Library** dialog helps you to create your own library.

Libraries allow you to store parts of your application and machine know-how into a repository. Library objects can exist in different versions.

Elements of New Library

In the **Get started** screen, select **New Project → New Library** to open the **New Library** dialog box.

Element	Description
Library Name	Enter a name for your new library.
Properties tab	Open the **Project Properties** dialog box to enter additional library information: ● **General** ❍ **Title** ❍ **Author** ❍ **Company** ❍ **Version** *(see page 36)* ❍ **Description** ● **Custom** ● **Project Image**
Create Project button	Create your new project. After project creation, the **Workflow** screen *(see page 45)* is displayed.

Section 3.4
Open Project Dialog

Open Project Dialog

Overview

In the **Get started** screen, select **Open Project**.

The **Open Project** dialog helps you to browse for an existing project, library, or archive.

To open the respective project/library/archive:
- Double-click the file name, or
- Click the **Open** button.

NOTE: If you open a SoMachine Basic project or a Twido project, it is automatically converted *(see SoMachine, Programming Guide)* to a SoMachine project. That is, the M221 or Twido device is replaced by an M241 device.

You can also convert projects and libraries created with CoDeSys V2 by selecting the corresponding project (*.pro) or library (*.lib) files in the **Open Project** dialog box.

NOTE:
Before you open the project or library to be converted, perform the following tasks:
- Install the .eds files available in the CoDeSys_V2 installation to SoMachine by using the Device Repository *(see SoMachine Motion, Menu Commands, Online Help)*.
- Configure the conversion behavior in the **Options → CoDeSys 2.3 converter** dialog box of the SoMachine Logic Builder. It is accessible from SoMachine Central via the **System Options → General Options** dialog box *(see page 23)*.

POUs, visualization, CAM, and CNC elements are converted. Several dialog boxes are displayed for each device and each library. They allow you to select a SoMachine device or library for replacement or to ignore them.

NOTE: The option **Ignore the device. All application specific objects will not be available in the new project.** in the **Device Conversion** dialog box and the option **Ignore the library. The reference will not appear in the converted project.** are selected by default. They have the effect that this dialog box will not be displayed again when the specific device or the specific library is converted. This applies to future SoMachine sessions. To see the dialog boxes again for future conversions, deactivate these options.

To help assure a successful conversion:

- Verify that the new device supports the functions and communication ports that are required in your project.
- Avoid using direct addresses in your application.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Verify that any direct addresses used in your application (for example, `%IB5`) have been converted correctly after device conversion.
- Adapt the configurations manually and make sure that they provide the intended functionality for the converted devices.

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

Chapter 4
Workflow Screen

Workflow Screen - General

Overview

After generating a new project *(see page 35)* or opening an existing project *(see page 43)*, the **Workflow** screen is displayed.

The screen shows a graphical representation of project workflow management.

- **Configuration**
- **Application Design**
  - **Controller**
  - **HMI**
- **Multiple Download**
- **Maintenance**

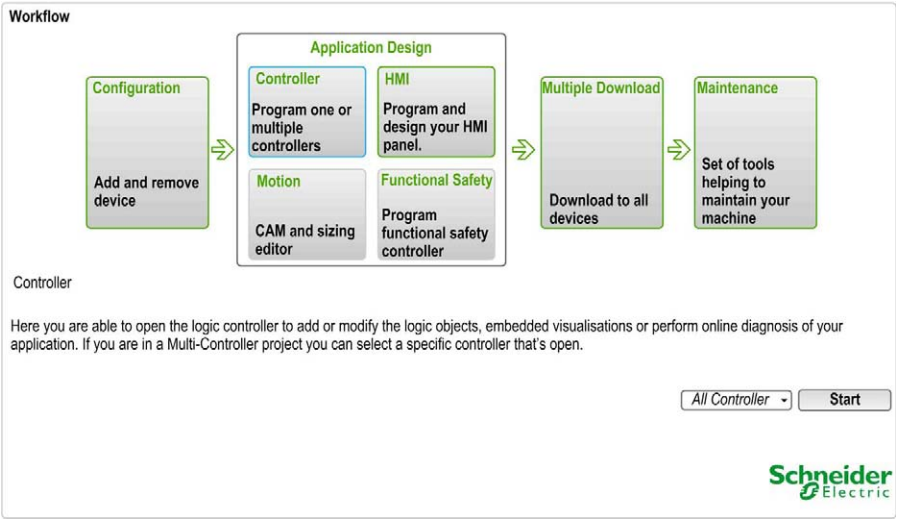
The **Workflow** screen allows you to interact with the workflow.

- **Setup** is done in the **Get started** screen *(see page 30)*.
- For the other steps of project workflow, you can open dialogs or switch to the appropriate software tools (SoMachine Logic Builder, Vijeo-Designer, and so on).

To interact with the workflow, click the respective workflow steps represented as buttons.

If you select a workflow step, detailed information for this step is displayed at the bottom of the screen.

Elements of the Workflow Screen



Element	Description
Configuration	Add, remove and/or configure devices and communication. Click the **Manage Devices** button to open a dialog box for adding and removing devices.
Application Design	• **Controller** Program the controller (or multiple controllers) of your project. Open the list of devices left beside the **Start** button. Select a device and click the **Start** button. The SoMachine Logic Builder is launched for working on the selected device. • **HMI** Program and design your HMI application. Click the **Start** button to launch the Vijeo-Designer for working on the HMI devices.
Multiple Download	Download your project to the devices. Click the **Download** button to open a dialog box for selecting the respective devices. **NOTE:** The HMI application is downloaded before the controller application, independent of the selected download sequence.
Maintenance	Maintain your project. Click this button to open a dialog box for launching the respective maintenance tools (for example controller assistant, OPC configuration, and so on).
Information area (at the bottom of the screen)	Displays detailed information for the step selected in the workflow.

Chapter 5
Versions Screen

Versions Screen - General

Overview

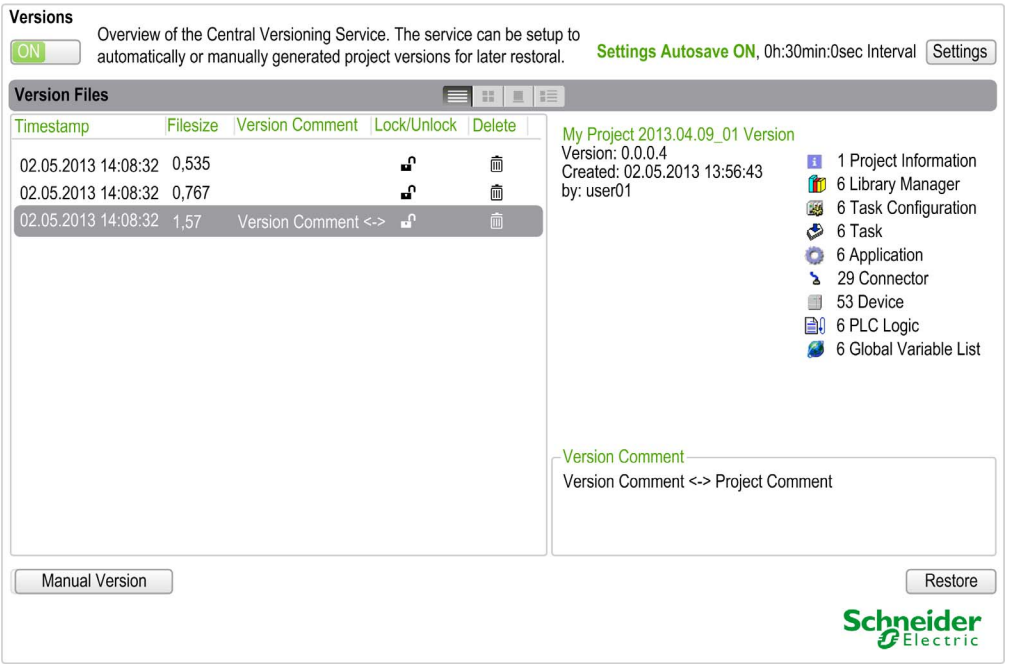
This screen displays a list of the available versions of your project and provides the following versioning functions:

- Lock/unlock a version
- Delete a version
- Restore a version
- Save a new version manually
- Configure the project versioning settings

For the project version selected in the list, the following properties are displayed at right-hand side:

- **Title**
- **Author**
- **Company**
- **Version**
- **Image** (user-defined image)
- **Statistics**
- **Version Comment** (read/write)

Elements of the Versions Screen



Element	Description
ON/OFF button	Switch the automatic creation of versions on/off.
Version Files	Lists the available versions of your project with the following information for each version: • **Timestamp** • **File size** • **Version Comment** • **Lock/Unlock** Use the icon in this column to lock/unlock the respective version. • **Delete** Use the icon in this column to delete the respective version. A locked version cannot be deleted.

Element	Description
Information area	Select a list entry to display project version details in the information area beside the list: • **Title** • **Author** • **Company** • **Version** *(see page 36)* • **Image** (user-defined image) • **Statistics** • **Version Comment** (read/write)
Restore button	Restore the currently selected version in the list of versions. After clicking the **Restore** button, you are asked whether the currently opened project should be saved as a new version.
Manual Version button	Save a new version of the currently opened project.
Settings button	Open the **System Options** dialog box to configure the **Project Versioning** settings *(see page 24)*. A brief description of the currently used settings is displayed left beside the **Settings** button.

Chapter 6
Properties Screen

Properties Screen - General

Overview

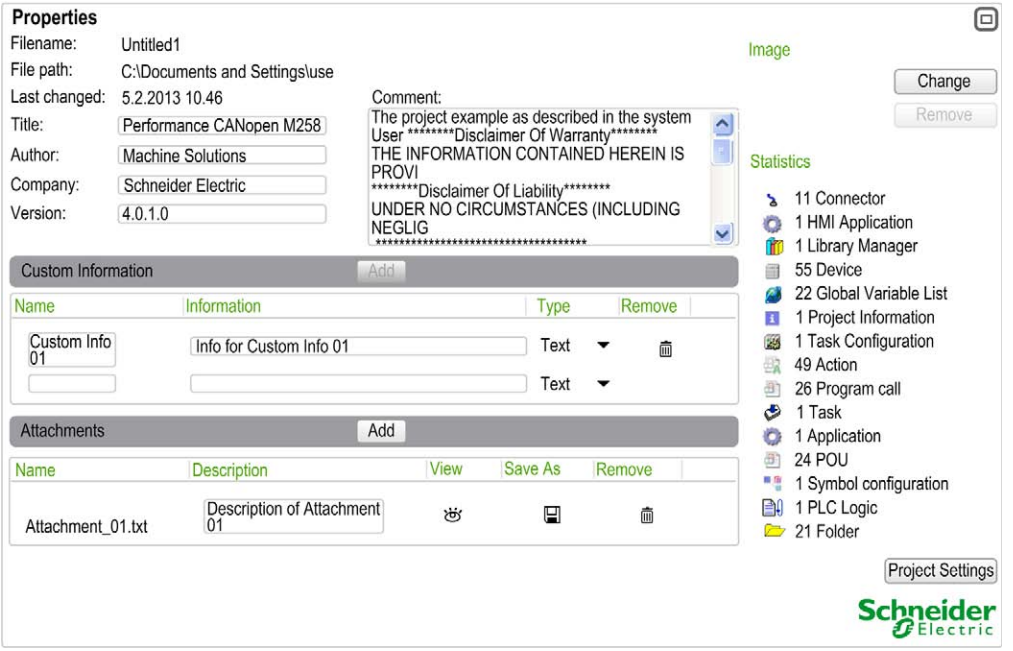
This screen displays the following properties of your project (read-only):

- **Filename**
- **File path**
- **Last changed**
- **Statistics**

Moreover it helps you to edit and save additional information for your projects (read/write):

- **Title**
- **Author**
- **Company**
- **Version**
- **Comment**
- **Image** (user-defined image)
- **Custom Information**
- **Attachments**

Elements of the Properties Screen



Element	Description
Properties (read-only)	
Filename	name of your project file
File path	path, where your project file is stored
Last changed	date and time of last change
Statistics	statistical values for your project For example number of POUs, devices, actions, and so on.
Properties (read/write)	
Title	Enter or edit the project title (default = project name).
Author	Enter or edit information about the project author.
Company	Enter or edit information about your company.
Version	Enter or edit information about the project version *(see page 36)*.
Comment	Enter or edit comments on your project.

Element	Description
Image	Change or remove the user-defined image. ● **Change** button Opens a Windows Explorer to browse for an image to be displayed for your project. ● **Remove** button Removes the currently displayed image.
Custom Information	Create additional fields to personalize your project. ● **Name** Enter a name for the field to be added to the **Project Information** window. ● **Information** Enter text to be displayed for the new information field. ● **Type** Select **Text**, **Number**, **Date**, **Boolean**, or **Version** as type of information. ● **Add** button Add a new line to the **Custom Information** table. ● **Remove** button Delete the currently selected line in the **Custom Information** table.
Attachments	Attach files to your project. ● **Add** button Open a Windows Explorer to browse for a file to be attached for your project. Select the file and confirm with **OK**. The file name is displayed in the **Name** column. Enter a **Description** for the attached file. ● **View** Open the attached file. ● **Save as** Open a Windows Explorer to save the attached file with a new name or in a new folder. ● **Remove** Delete the currently selected attached file from your project
Project Settings button	Opens the **Project Settings** dialog box *(see SoMachine Motion, Menu Commands, Online Help)* of the SoMachine Logic Builder.

Chapter 7
SoMachine Software Tools

Detecting and Launching Software Tools

Detecting Software Tools

SoMachine Central detects known software tools already installed on the PC.

These tools are available in the tools access bar *(see page 26)* and in the overlay bar *(see page 21)*.

The SoMachine Logic Builder and the Vijeo-Designer are part of the SoMachine standard installation.

Other tools (for example maintenance tools) are optional and only available if installed on the PC.

Launching Software Tools

You can launch (or switch to) the different software tools

- by the tools access bar *(see page 26)*
- by the overlay bar *(see page 21)*
- by the taskbar *(see page 15)*
- in the **Workflow** screen *(see page 46)*
  - by **Controller → Start**
  - by **HMI → Start**
- in the **Workflow** screen *(see page 46)* by **Maintenance → Tools**

Chapter 8
Repository Management

Repository Management

Overview

SoMachine Central provides access to the repository management of the SoMachine Logic Builder.

Accessing the Repository Management

To access the repository management dialog boxes, proceed as follows:

Step	Action
1	• Click the **System Options** icon in the toolbar *(see page 20)* or • Click the **Settings** button in the **Versions** screen *(see page 48)*. **Result:** The **System Options** dialog box opens.
2	• Click the **Library Repository** button to open the **Library Repository** dialog box of the SoMachine Logic Builder. • Click the **Device Repository** button to open the **Device Repository** dialog box of the SoMachine Logic Builder. • Click the **Template Repository** button to open the **Template Repository** dialog box of the SoMachine Logic Builder. • Click the **DTM Repository** button to open the **DTM Repository** dialog box of the SoMachine Logic Builder.

Chapter 9
Working with Project Archives

What Is in This Chapter?

This chapter contains the following topics:

Saving a Project as Project Archive

Overview

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

Project archives provide the following advantages:

- You can extract the project archive to another 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.

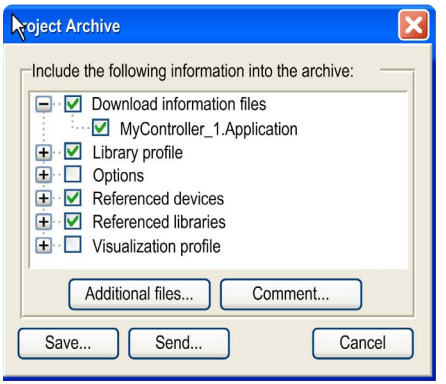
When you create an archive, you can save additional information that are not included in a **.project* file:

- download information file
- third-party libraries
- EDS files

When you extract your archive in SoMachine, the files contained in your archive are automatically installed in your current SoMachine version.

Create a Project Archive on Your Computer

To create a project archive on your computer, proceed as follows:

Step	Action	Result/Comment
1	In the **Main Menu** of the SoMachine Central, execute the command **Save Project as...** → **Save Archive...**.	The **Project Archive** dialog box opens. 
2	Select the information to include in the archive by selecting / deselecting the check boxes of the different categories.	The individual categories are described below this table.
3	Click **Save...**.	The dialog box **Save Project Archive** opens.

Step	Action	Result/Comment
4	In the dialog box **Save Project Archive**, enter a **File name**, browse to the folder where you want to save the archive, and click the **Save** button.	The project archive file is created and saved at the specified location.

Categories of the Project Archive Dialog Box

The **Project Archive** dialog box allows you to select information from the project to include in the project archive. You can select an entire category or specific information within a category:

Category	Description
Download information files	Select this option to include the compile information (the compileinfo file) to the archive of your project. This allows you to log in to the controllers with the archived project without rebuilding the project.
FDT BulkData	Select this option to include DTM information in the project archive.
Library profile	Select the libraries from the list of libraries in the library profile used in the project.
Options	Select the options to include in the archive, as they are defined in the **Tools → Options** dialog box. You can distinguish between local settings and user settings, but also all settings and project-specific settings.
Referenced devices	Select the devices used in the project to include in the archive. Select this category to help to preserve compatibility *(see SoMachine Compatibility and Migration, User Guide)*.
Referenced libraries	Select the libraries located in the **Library Manager** of your project to include in the archive. Select this category to help to preserve compatibility *(see SoMachine Compatibility and Migration, User Guide)*
Visualization Profile	Select the visualization profile in use to include in the archive of the project.

Buttons of the Project Archive Dialog Box

The **Project Archive** dialog box contains the following buttons providing further functions:

Category	Description
Additional files...	Click this button to select individual files or folders to be included in the archive.
Comment	Click this button to open an input field allowing you to enter a comment. This comment will be available when extracting the project archive.
Save	Click this button to save the project archive.
Send	Click this button to send the archive file via e-mail. The e-mail client installed on your computer is started and automatically opens a new email with the archive file in the attachment.
Cancel	Click this button to close the **Project Archive** dialog box without creating a project archive.

Create an Archive on Your Controller

To create an archive on your controller allows having the complete project on your controller and is useful for maintenance tasks.

To achieve this, the following three main tasks has to be done.

1.) Configure the sources to be downloaded.

To define the elements to add to the archive, proceed as follows:

Step	Action
1	In the **Properties** screen *(see page 51)* of SoMachine Central, click the **Project Settings** button.
2	In the dialog box that appears, select **Source Download → Additional Files.** The following options can be selected: Option to connect with the uploaded project: ● Download information files Options which are needed to connect with another SoMachine version: ● Download information files ● Library profile ● Referenced devices ● Referenced libraries ● Visualization profile

For further information, refer to the **Project Settings - Source Download** description *(see SoMachine Motion, Menu Commands, Online Help)*.

2.) Download the project (sources) to the controller.

To archive your project on your controller, proceed as follows:

Step	Action	Comment
1	In SoMachine Central connect to the controller *(see SoMachine Motion, Programming Guide)*.	A dialog box is displayed.
2	Select the **Download project to controller** option.	A dialog box is displayed.
3	Confirm with **Continue**.	The project is archived and downloaded to the controller.

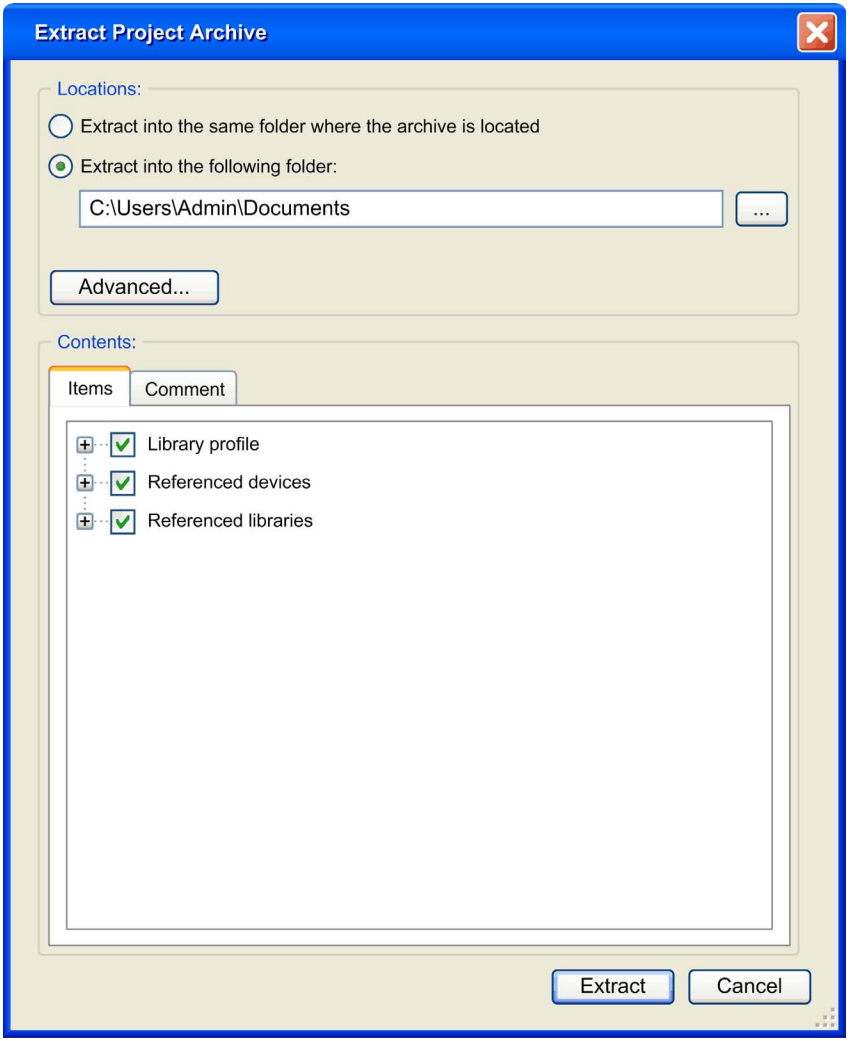
3.) Upload the project (sources) from the controller by selecting the option **Upload project from controller** in the **Select Controller** dialog box *(see page 32)*. Open the project and connect to the controller.

Creating a Project from a Project Archive

Overview

To extract an archive file that has been created by executing the command **Save Project as...** → **Save archive...**, click the **Open Project** button in the **Get Started** screen. In the **Open project** dialog box, select the option **Project Archive Files** from the list right to the **File name** text box to display the files with the extension .projectarchive for selection.

When you have selected a project archive file in the **Open project** dialog box, click the **Open** button, then the **Extract Project Archive** dialog box is displayed. It allows you to configure the location to which the archive is extracted, and which files of the archive are extracted.

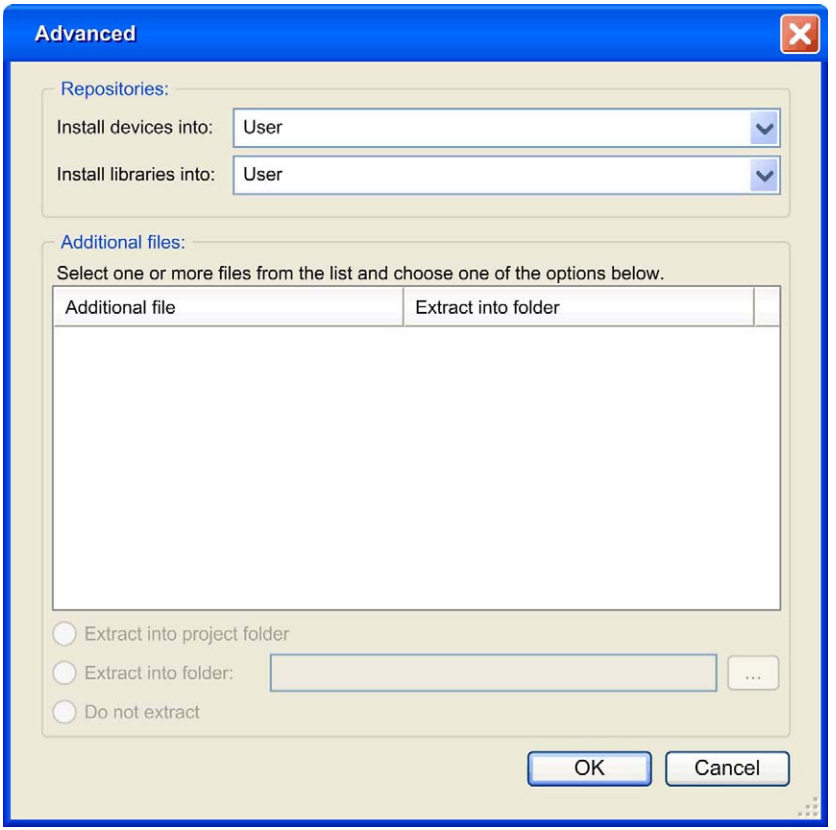


Locations Area of the Extract Project Archive Dialog Box

In the **Locations** area of the **Extract Project Archive** dialog box, choose the folder into which the archive is extracted.

- **Extract into the same folder where the archive file is located.**
- **Extract into the following folder:**
  Enter the path of the folder or click the **...** button to browse for the folder.

Click the **Advanced...** button to open the **Advanced** dialog box. It allows you to determine where to extract specific and additional files of the archive.



Elements of the **Advanced** dialog box:

Element	Description
Repositories	
Install devices into	Select an available device repository from the list. The device files of the archive will be installed in the selected repositories.
Install libraries into	Select an available library repository from the list. The library files of the archive will be installed in the selected repositories.
Additional files	By default, additional files are preset with the option **Do not extract**. You can select one or several file entries in the table and choose one of the options below. The remark in the table is adapted accordingly.
Extract into project folder	The selected file is extracted to the same directory as the project files.
Extract into folder	Specify the desired folder on your system or click the **...** button to browse for the folder.
Do not extract	Resets the selected file to the default mode.

Click the **OK** button to return to the **Extract Project Archive** dialog box.

Contents Area of the Extract Project Archive Dialog Box

The **Contents** area of the **Extract Project Archive** dialog box shows the contents of the archive.

The **Items** tab shows the object categories in a tree structure. By default, all categories and thus all related files are selected for extraction. To exclude a category or specific objects of a category, deselect the respective node.

The **Comment** tab shows the comment that was entered when the project archive was created.

Extracting the Project Archive

To extract the project archive as configured in this dialog box, click the **Extract** button.

If a file that needs to be extracted has the same name as an existing file in the target directory, a message is displayed. You are requested to decide whether you want to replace the local file or not. You can apply this choice to the following name conflicts by activating the option **Apply to all items and files**.

Chapter 10
Working with SoMachine Central

What Is in This Chapter?

This chapter contains the following topics:

General

Overview

In general there are the following project workflow steps:

1. **Setup** (**Get started** screen *(see page 71)*)
   Select a controller and enter basic project information.
2. **Configuration**
   Add, remove, and configure devices and communication.
3. **Application Design** (**Workflow** screen *(see page 73)*)
   - **Controller**
     Program one or multiple controllers.
   - **HMI**
     Program and design your HMI application.
4. **Multiple Download** (**Workflow** screen *(see page 74)*)
   Download your project to the devices.

Ways to Create a New Project

There are various ways to start a new project with SoMachine Central:

- Using an assistant *(see page 36)*
- Template based *(see page 38)*
- Starting with an empty project *(see page 40)*
- Creating a new library *(see page 42)*

Launching SoMachine Central

To launch SoMachine Central:

- Double-click the SoMachine Central icon on your desktop or
- Click **Start → Programs → Schneider Electric → SoMachine Software → Vx.y**

The SoMachine Central **Get started** screen *(see page 71)* is displayed.

Setup

Overview

The following example shows you how to set up your project with the **New Project Assistant**.

Get Started Screen

After launching SoMachine Central the **Get started** screen *(see page 30)* is displayed.

Step	Action
1	In the **Get started** screen, select **New Project → Assistant**. **Result:** The **New Project Assistant** dialog box *(see page 36)* opens.
2	In the **General** tab, enter a **Project Name**.
3	Optional step Click the **Details** tab. **Result:** The **Detail Configuration** dialog box opens.
4	Optional step In the **General** tab, enter additional project information (title, author, and so on). In the **Project Image** tab, you can add an image for your project.
5	Go back to the **New Project Assistant → General** tab.
6	For **Start with** select **Controller**. **Result:** The information area at the right side displays the available controllers sorted and grouped by type.
7	Select your controller under **Logic Controller**.
8	Select the **Program Language**.
9	Click the **Create Project** button. **Result:** The **Workflow** screen *(see page 73)* is displayed.

Configuration

Overview

The following example shows you how to configure your controller after finishing the setup.

Procedure

After finishing the setup *(see page 71)*, the **Workflow** screen *(see page 45)* is displayed.

Step	Action
1	Click the save button in the toolbar *(see page 20)*.
2	Click **Configuration**.
3	Click the **Manage Devices** button. **Result:** A dialog box opens for adding and removing devices. At the left side, you see the available devices. At the right side, you see the controller previously selected in the **Get started** screen.
4	Select your HMI and add it to your project by clicking the **>** button. **Result:** The added HMI is displayed at the right side and the Vijeo-Designer is launched.
5	Close the dialog box.
6	Click the save button in the toolbar *(see page 20)*.

Application Design

Overview

The following example shows you how to work on your project after finishing setup and configuration.

Procedure

After finishing the configuration *(see page 72)*, you can start your application design.

Step	Action
1	Click **Controller**.
2	Open the list of devices left beside the **Start** button, select your controller, and click the **Start** button. **Result:** The SoMachine Logic Builder is launched for working on your project. **NOTE:** To switch back to SoMachine Central use the respective button in the overlay bar *(see page 21)*.
3	Click **HMI**.
4	Click the **Start** button. **Result:** The Vijeo-Designer is opened for working on your project. **NOTE:** To switch back to SoMachine Central use the respective button in the overlay bar *(see page 21)*.
5	Click the save button in the toolbar *(see page 20)*.

Multiple Download

Overview

One of the default options when you select **Multiple Download**, is the **Start all applications after download or online change**. This selected option restarts all download targets in the RUNNING state, provided their respective Run/Stop inputs are commanding the RUNNING state, but irrespective of their last controller state before the multiple download was initiated.

Deselect this option if you do not want all targeted controllers to restart in the RUNNING state.

In addition, before using the **Multiple Download**, test the changes to your application program in a virtual or non-production environment and confirm that the targeted controllers and attached equipment assume their expected conditions in the RUNNING state.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Always verify that your application program will operate as expected for all targeted controllers and equipment before issuing the **Multiple Download…** command with the **Start all applications after download or online change** option selected.

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

For further information, refer to Multiple Download *(see SoMachine Motion, Menu Commands, Online Help)*.

Procedure

After finishing the application design *(see page 73)* and working on your project in SoMachine Logic Builder and Vijeo-Designer you can download your project to the devices.

Step	Action
1	Click **Multiple Download** in the **Workflow** screen *(see page 46)*. Click the **Download** button. **Result:** A dialog box opens displaying the applications available for download (for example your controller application and your HMI application).
2	Select your applications to be downloaded.
3	Select the **Online change options**.
4	Select the **Additional operations**.
5	Confirm with **OK**. **Result:** The selected applications are downloaded to the devices (for example to your controller and your HMI).

Sequence of Downloads

Using the **Move up**/**Move down** button in the **Multiple Download** dialog box, you can adapt the sequence of downloads.

NOTE: The HMI application is always downloaded before any other controller application independent of the selected download sequence.

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.

control network

A network containing logic controllers, SCADA systems, PCs, HMI, switches, ...

Two kinds of topologies are supported:

- flat: all modules and devices in this network belong to same subnet.
- 2 levels: the network is split into an operation network and an inter-controller network.

These two networks can be physically independent, but are generally linked by a routing device.

controller

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

D

DTM

(*device type manager*) Classified into 2 categories:

- Device DTMs connect to the field device configuration components.
- CommDTMs connect to the software communication components.

The DTM provides a unified structure for accessing device parameters and configuring, operating, and diagnosing the devices. DTMs can range from a simple graphical user interface for setting device parameters to a highly sophisticated application capable of performing complex real-time calculations for diagnosis and maintenance purposes.

E

expansion bus

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

H

HMI

(*human machine interface*) An operator interface (usually graphical) for human control over industrial equipment.

I

I/O

(*input/output*)

M

machine

Consists of several *functions* and/or *equipment*.

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.

project file

A project file contains information about the developer and purpose of a project, the configuration of the targeted logic controller and associated expansion modules, the source code of a program, symbols, comments, and all other related information.

T

TVDA

(*tested validated documented architectures*) Control system proposals based on Schneider Electric components.TVDAs cover a wide range of machine types and consider machine performance requirements, installation constraints, and target costs. To optimize the implementation effort, each TVDA comes with a detailed component list, wiring diagrams, and commissioning guide, as well as controller and HMI applications to control components of the system.

Index