EcoStruxure Control Expert

Installation Manual

Original instructions

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Safety Information

Important Information

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.

Before You Begin

Do not use this product on machinery lacking effective point-of-operation guarding. Lack of effective point-of-operation guarding on a machine can result in serious injury to the operator of that machine.

⚠WARNING

UNGUARDED EQUIPMENT

- Do not use this software and related automation equipment on equipment which does not have point-of-operation protection.
- Do not reach into machinery during operation.

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

This automation equipment and related software is used to control a variety of industrial processes. The type or model of automation equipment suitable for each application will vary depending on factors such as the control function required, degree of protection required, production methods, unusual conditions, government regulations, etc. In some applications, more than one processor may be required, as when backup redundancy is needed.

Only you, the user, machine builder or system integrator can be aware of all the conditions and factors present during setup, operation, and maintenance of the machine and, therefore, can determine the automation equipment and the related safeties and interlocks which can be properly used. When selecting automation and control equipment and related software for a particular application, you should refer to the applicable local and national standards and regulations. The National Safety Council's Accident Prevention Manual (nationally recognized in the United States of America) also provides much useful information.

In some applications, such as packaging machinery, additional operator protection such as point-of-operation guarding must be provided. This is necessary if the operator's hands and other parts of the body are free to enter the pinch points or other hazardous areas and serious injury can occur. Software products alone cannot protect an operator from injury. For this reason the software cannot be substituted for or take the place of point-of-operation protection.

Ensure that appropriate safeties and mechanical/electrical interlocks related to point-of-operation protection have been installed and are operational before placing the equipment into service. All interlocks and safeties related to point-of-operation protection must be coordinated with the related automation equipment and software programming.

NOTE: Coordination of safeties and mechanical/electrical interlocks for point-of-operation protection is outside the scope of the Function Block Library, System User Guide, or other implementation referenced in this documentation.

Start-up and Test

Before using electrical control and automation equipment for regular operation after installation, the system should be given a start-up test by qualified personnel to verify correct operation of the equipment. It is important that arrangements for such a check are made and that enough time is allowed to perform complete and satisfactory testing.

⚠WARNING

EQUIPMENT OPERATION HAZARD

- Verify that all installation and set up procedures have been completed.
- Before operational tests are performed, remove all blocks or other temporary holding means used for shipment from all component devices.
- Remove tools, meters, and debris from equipment.

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

Follow all start-up tests recommended in the equipment documentation. Store all equipment documentation for future references.

Software testing must be done in both simulated and real environments.

Verify that the completed system is free from all short circuits and temporary grounds that are not installed according to local regulations (according to the National Electrical Code in the U.S.A, for instance). If high-potential voltage testing is necessary, follow recommendations in equipment documentation to prevent accidental equipment damage.

Before energizing equipment:

- Remove tools, meters, and debris from equipment.
- Close the equipment enclosure door.
- Remove all temporary grounds from incoming power lines.
- Perform all start-up tests recommended by the manufacturer.

Operation and Adjustments

The following precautions are from the NEMA Standards Publication ICS 7.1-1995:

(In case of divergence or contradiction between any translation and the English original, the original text in the English language will prevail.)

- Regardless of the care exercised in the design and manufacture of equipment or in the selection and ratings of components, there are hazards that can be encountered if such equipment is improperly operated.
- It is sometimes possible to misadjust the equipment and thus produce unsatisfactory or unsafe operation. Always use the manufacturer’s instructions as a guide for functional adjustments. Personnel who have access to these adjustments should be familiar with the equipment manufacturer’s instructions and the machinery used with the electrical equipment.
- Only those operational adjustments required by the operator should be accessible to the operator. Access to other controls should be restricted to prevent unauthorized changes in operating characteristics.

About the Document

Document Scope

This document describes the installation and upgrade of EcoStruxure Control Expert.

Validity Note

This document has been updated for the release of EcoStruxure Control Expert 16.2.

Product Related Information

⚠WARNING

LOSS OF CONTROL

- Perform a Failure Mode and Effects Analysis (FMEA), or equivalent risk analysis, of your application, and apply preventive and detective controls before implementation.
- Provide a fallback state for undesired control events or sequences.
- Provide separate or redundant control paths wherever required.
- Supply appropriate parameters, particularly for limits.
- Review the implications of transmission delays and take actions to mitigate them.
- Review the implications of communication link interruptions and take actions to mitigate them.
- Provide independent paths for control functions (for example, emergency stop, over-limit conditions, and error conditions) according to your risk assessment, and applicable codes and regulations.
- Apply local accident prevention and safety regulations and guidelines.[1]
- Test each implementation of a system for proper operation before placing it 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.

The examples given herein are for information only.

⚠WARNING

UNINTENDED EQUIPMENT OPERATION

Adapt examples given herein to the specific functions and requirements of your industrial application before you implement them.

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

General Cybersecurity Information

In recent years, the growing number of networked machines and production plants has seen a corresponding increase in the potential for cyber threats, such as unauthorized access, data breaches, and operational disruptions. You must, therefore, consider all possible cybersecurity measures to help protect assets and systems against such threats.

To help keep your Schneider Electric products secure and protected, it is in your best interest to implement the cybersecurity best practices as described in the Cybersecurity Best Practices document.

Schneider Electric provides additional information and assistance:

- Subscribe to the Schneider Electric security newsletter.
- Visit the Cybersecurity Support Portal web page to:
  - Find Security Notifications.
  - Report vulnerabilities and incidents.
- Visit the Schneider Electric Cybersecurity and Data Protection Posture web page to:
  - Access the cybersecurity posture.
  - Learn more about cybersecurity in the cybersecurity academy.
  - Explore the cybersecurity services from Schneider Electric.

Product Related Cybersecurity Information

Refer to *Modicon Controller Systems Cybersecurity, User Guide* under Related Documents, page 9.

Available Languages of the Document

The information contained herein is available in these languages:

- English (35014793)
- French (35014792)
- German (35014794)
- Spanish (35014795)
- Italian (35014796)
- Chinese (35012191)

NOTE: After clicking one of the above download links, you may need to select your country before you can download the documentation.

Related Documents

Title of documentation	Reference number
Modicon Controller Systems Cybersecurity, User Guide	EIO0000001999 (ENG) EIO0000002004 (CHS) EIO0000002001 (FRE) EIO0000002000 (GER) EIO0000002002 (ITA) EIO0000002003 (SPA)
Schneider Electric License Manager, User Manual	EIO0000001070 (ENG) EIO0000001071 (FRE) EIO0000001072 (GER) EIO0000001074 (SPA) EIO0000001073 (ITA) EIO0000001075 (CHS)
Schneider Electric Floating License Manager, User Manual	EIO0000001078 (ENG) EIO0000001079 (FRE) EIO0000001080 (GER) EIO0000001082 (SPA) EIO0000001081 (ITA) EIO0000001083 (CHS)
EcoStruxure™ Control Expert, Security Editor, Operation Guide	EIO0000004105 (ENG) EIO0000004106 (FRE) EIO0000004107 (GER) EIO0000004108 (ITA) EIO0000004109 (SPA) EIO0000004110 (CHS)
EcoStruxure™ Control Expert, Topology Manager, User Manual	EIO0000002756 (ENG) EIO0000004373 (CHS) EIO0000004371 (FRE) EIO0000004372 (GER) EIO0000004370 (ITA) EIO0000004369 (SPA)
EcoStruxure™ Control Expert, Operating Modes	33003101 (ENG) 33003102 (FRE) 33003103 (GER) 33003104 (SPA) 33003696 (ITA) 33003697 (CHS)
EcoStruxure™ Control Expert, Program Languages and Structure, Reference Manual	35006144 (ENG) 35006145 (FRE) 35006146 (GER) 35006147 (SPA) 35013361 (ITA) 35013362 (CHS)
EcoStruxure™ Control Expert, Control, Block Library	33002535 (ENG) 33002536 (FRE) 33002537 (GER) 33003686 (ITA) 33002538 (SPA) 33003687 (CHS)
Communication Drivers, Installation Manual	35006152 (ENG) 35006153 (FRE) 35006154 (GER) 35013950 (ITA) 35006155 (SPA) 35012192 (CHS)
Modicon M580, Complex Topologies, System Guide	NHA58892 (ENG) NHA58893 (FRE) NHA58894 (GER) NHA58895 (ITA) NHA58896 (SPA) NHA58897 (CHS)

To find documents online, visit the Schneider Electric download center (www.se.com/ww/en/download/).

Information on Non-Inclusive or Insensitive Terminology

As a responsible, inclusive company, Schneider Electric is constantly updating its communications and products that contain non-inclusive or insensitive terminology. However, despite these efforts, our content may still contain terms that are deemed inappropriate by some customers.

Terminology Derived from Standards

The technical terms, terminology, symbols and the corresponding descriptions in the information contained herein, 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
IEC 61131-2:2007	Programmable controllers, part 2: Equipment requirements and tests.
ISO 13849-1:2023	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
ISO 14119:2013	Safety of machinery - Interlocking devices associated with guards - Principles for design and selection
ISO 13850:2015	Safety of machinery - Emergency stop - Principles for design
IEC 62061:2021	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 61784-3:2021	Industrial communication networks - Profiles - Part 3: Functional safety fieldbuses - General rules and profile definitions.
2006/42/EC	Machinery Directive
2014/30/EU	Electromagnetic Compatibility Directive
2014/35/EU	Low Voltage Directive

In addition, terms used in the information contained herein 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.

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Oracle is a registered trademark and VirtualBox is a trademark of ORACLE AMERICA, INC and/or its affiliates.

General Information

Presentation of EcoStruxure Control Expert

Installation Media

Install EcoStruxure Control Expert with the installation package (.iso image file) that you can download from your Schneider Electric country website. Proceed as follows:

Step	Action
1	Visit www.se.com.
2	In the search bar, type `Control Expert` and press **Enter**.
3	On the search results page, click **Select location** to open the **Select your location** window. **NOTE:** If you do not find the EcoStruxure Control Expert software in the search results, contact your local Schneider Electric Sales representative.
4	Select your country. **Result**: Your country-specific search results are displayed.
5	Click the link to EcoStruxure Control Expert software.

Software Functionality Levels

You can install EcoStruxure Control Expert with two functionality levels.

EcoStruxure Control Expert	It includes the Topology Manager that manages system projects. One or more controllers (each with their own control project) and various devices constitute a system project. The control projects can be managed individually by starting one or more EcoStruxure Control Expert editor instances from the Topology Manager. It uses a client/server architecture, page 14. Setup installs both the EcoStruxure Control Expert (client) instance and the Control Expert server on the computer. The Control Expert repository is the database that is managed by EcoStruxure Control Expert and contains system project data. **NOTE:** Refer to *EcoStruxure™ Control Expert, Topology Manager, User Manual* for information on how to work with system projects.
EcoStruxure Control Expert Classic	It is a single-user application that allows managing one control project at a time.

Languages

The following display languages are available for EcoStruxure Control Expert and EcoStruxure Control Expert Classic:

- English
- French
- German
- Spanish
- Italian
- Chinese

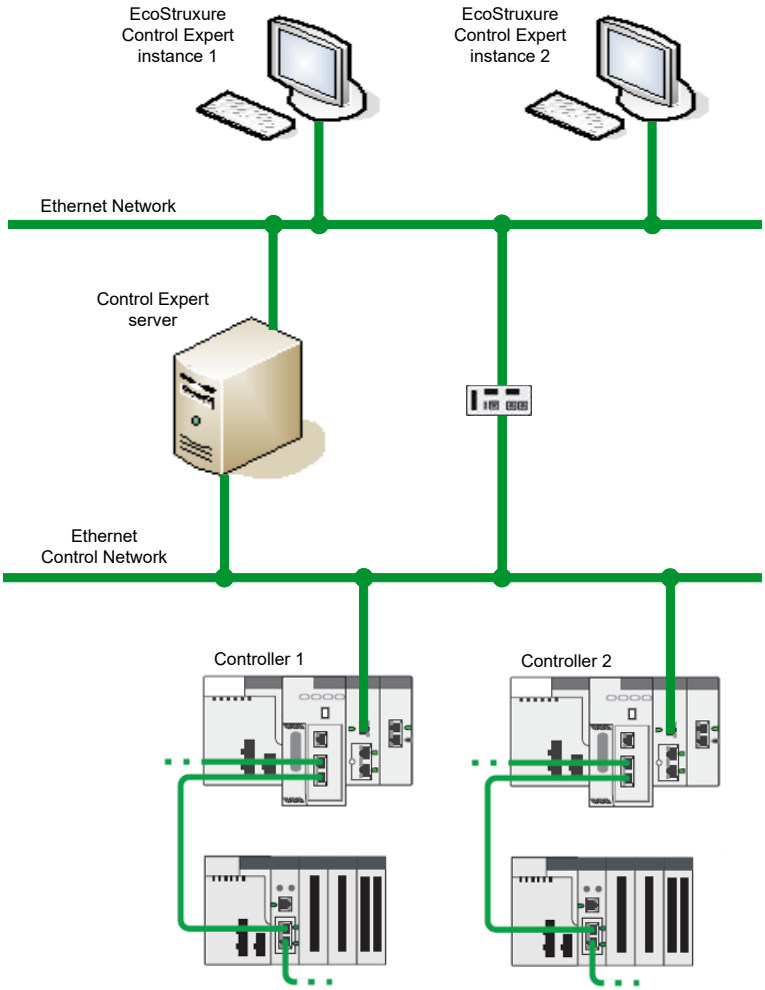
After the installation, you can change the display language, page 48.

EcoStruxure Control Expert Architectures

The following architectures can be used with EcoStruxure Control Expert:

- **All-in-one architecture**: Consists of one computer where EcoStruxure Control Expert instances are started and connected locally to the Control Expert server (default configuration).
- **Distributed architecture** consisting of:
  - One computer acting as Control Expert server (EcoStruxure Control Expert instances that connect locally to the server can also be used on this computer).
  - One or more remote computers where EcoStruxure Control Expert instances are started and connected to the Control Expert server.

The following figure shows an example of a distributed architecture.



NOTE: On each computer of either architecture, you can use EcoStruxure Control Expert Classic instances concurrently with EcoStruxure Control Expert.

System and Installation Requirements

Performance Considerations

The configuration of the computer determines the EcoStruxure Control Expert performance, which can be affected by the number of open windows, the amount of animated data that is accessed, and the size of the applications/system projects that are open.

Hardware and System Requirements

The following table describes the hardware and system requirements to install and use EcoStruxure Control Expert.

Component	Requirements
CPU	3.0 GHz or greater Intel Core i7 or greater (or equivalent)
RAM	16 GB
Storage	20 GB free space for the software installation, execution, and for saving applications SSD drives
Operating system	The following operating systems are supported: • Microsoft Windows 10, 64-bit, version 22H2 or greater • Microsoft Windows 10 Enterprise LTSC 2021, version 21H2 • Microsoft Windows 11, 64-bit, version 21H2 or greater • Microsoft Windows Server 2019 Standard, version 1809 • Microsoft Windows Server 2022, version 21H2 or greater
Display	VGA (800 x 600) minimum resolution Maximum supported resolution: 5120 x 1440 with Scale and Layout at 125% or greater
Input devices	Keyboard and mouse or compatible pointing device
Ports	USB port
Licenses, page 37	License activation on the Internet **NOTE:** Offline activation is also possible.

Operating System Service Pack, Security Patch, and Language Requirements

Ensure that the latest Windows Service Pack and Security Patches are installed.

Ensure that the language that you select for EcoStruxure Control Expert is installed on your operating system (for example, Chinese). Otherwise, messages that are generated by the operating system use the operating system display language.

.NET Framework Installation Requirements

The following components are required before installing EcoStruxure Control Expert:

- .NET Framework 3.5 SP1

  To install .NET Framework 3.5 on supported Windows and Windows Server operating systems, either automatically or manually, ensure that the computer is connected to the Internet and that the Windows Update service is enabled.

- .NET Framework 4.8

  NOTE: .NET 4.8 Framework is already installed on Windows 10 version 1903 and subsequent supporting versions.

Depending on the Windows version and/or the computer configuration, .NET 3.5 SP1 can be:

- Not installed
- Installed but not enabled (The corresponding Windows feature is not set to *ON*)
- Installed and enabled (Only this configuration is compatible with the installation of EcoStruxure Control Expert)

NOTE: If either .NET Framework is not installed or incorrectly configured, Setup displays a message.

Using a Virtual Machine

EcoStruxure Control Expert runs on the following virtual machines:

- VMware Workstation Pro 16 and 17
- Oracle VirtualBox 6.1.0 and 7.0.22
- Microsoft Hyper-V

Before starting EcoStruxure Control Expert, ensure that the 3D graphics acceleration of the virtual machine is disabled. Otherwise, you may experience incorrect graphic display.

Ensure that out of the total amount of installed RAM, at least 8 GB remain available to the host computer.

Firewall

After EcoStruxure Control Expert is installed and the computer is restarted, the `SE.Automation.SystemManager.Service.exe` service is executed.

If a firewall is active on the computer, ensure that the execution of this service is authorized on the computer acting as Control Expert server. Otherwise, EcoStruxure Control Expert instances cannot connect to the server.

Access Rights

User Access Rights

EcoStruxure Control Expert is installed so that it is available to all the users of the computer.

Administrator rights are not required to start EcoStruxure Control Expert.

However, you must have Administrator rights to perform the following actions:

- Installing, repairing, modifying, and removing EcoStruxure Control Expert.
- Changing the display language.
- Updating the **Hardware Catalog** (CANopen, DTM) and the Types Library.
- Managing Custom Libraries and Families in the **Types Library Manager**.
- Using the PROFIBUS Remote Master (PRM) DTM.

User access rights are managed by Security Editor. For more information, refer to the *Prerequisites* in the topic *Starting EcoStruxure Control Expert Classic*, page 46.

Folder Access Rights

Ensure that all the folders used by EcoStruxure Control Expert are accessible in Read/Write mode, and that the folder at the path *C:\UnityProTemp* (hidden) has the following rights: Read, Execute, Write.

To view the folder paths, in the EcoStruxure Control Expert menu bar, click **Tools > Options > General > Paths**. The following locations are available:

- Project path
- Import/export file path
- XVM path
- Project settings templates path
- Project settings template file
- Custom Library path
- Working drive
- Log file path

If a path is not accessible, a message is displayed and the operation needing access is not executed.

NOTE: Because some components accessed by EcoStruxure Control Expert are shared, ensure that the access rights are the same for all users logging into the computer.

Client/Server Communication Ports

The following table describes the ports that are used by EcoStruxure Control Expert.

Port	Description	Value
Base port	Port (UDP and TCP) that is used for client/server communication.	20160
File transfer port	Port (TCP) that is used for client/server file transfers. The port is automatically transferred to EcoStruxure Control Expert (client) instances.	20161
Critical messaging port	Port (TCP) that is used to maintain a continuous client/server communication link. It is used by the SE.Automation.SystemManager.exe and SE.Automation.ToolAgent.exe processes.	20162

Communication Drivers

Overview

Installing EcoStruxure Control Expert installs the following communication drivers:

- Modbus serial
- USB
- XIP

The drivers create the connection between the computer and the controller. You can select the driver that you want to use in EcoStruxure Control Expert.

Driver Configuration and Installation

Generally, it is not necessary to change the configuration of installed drivers. However, you can use the **Driver Manager** tool to reconfigure a driver or install additional drivers.

For information about driver configuration and installation, refer to *Communication Drivers, Installation Manual*.

NOTE: The necessary information to manually install the Uni-Telway driver is displayed in the Installation Wizard at the end of the EcoStruxure Control Expert installation process.

Communication Driver Ports

Each connection requires one driver instance, which uses one port, except for drivers communicating with the XWAY protocol (for example, XIP), which use two ports.

The ports used by a driver instance are open while the driver instance is running. Driver instances can be started and stopped with the **Driver Manager** tool.

NOTE: It is a good practice to uninstall a driver if it is not used.

These ports can be used by a driver instance:

Port range	Driver	Protocol family
27700–27709	Modbus serial	Modbus
27710–27719	Modbus Plus (MB+)	Modbus Plus
27730–27739	FIP	XWAY
27780–27789	XIP	

NOTE: You can change the base port number (27700) by editing the *FirstPort* value of the *Computer\HKEY_LOCAL_MACHINE\SOFTWARE\Schneider Electric\NetAccess* Windows registry key.

Examples:

The first and second instances of the Modbus serial driver use ports 27700 and 27701 respectively.

The first instance of the XIP driver uses ports 27780 and 27781.

Opening the Driver Manager Tool

To open the **Driver Manager** tool, enter `Driver Manager` in the Windows search bar.

Demonstration Projects and Additional Resources

Demonstration Projects

There is an EcoStruxure Control Expert Classic demonstration project for each controller platform.

Demonstration project files (.stu) are copied to the computer during the installation at the path *C:\Users\Public\Public Documents\Schneider Electric\Control Expert X*, where *X* is the installed version.

The projects are read-only but you can change this attribute from the project properties or by saving the project with a new name.

Additional Resources

The following additional resources are available in the *Extras* folder. The folder is copied to the computer during the installation of EcoStruxure Control Expert at the path *C:\Users\Public\Public Documents\Schneider Electric\Control Expert X*, where *X* is the installed version.

Subfolder	Content description
Config DRS	Contains configuration files for Dual Ring Switches (DRSs). For more information on DRS configuration files, refer to the topic describing DRS predefined configuration files (see *Modicon M580, Complex Topologies, System Guide*).
Converter Quantum M580	Contains the *PLCSTAT* DFB for Modicon M580 controllers. Use this DFB after migration from the Quantum to the M580 platform if the application contains a *PLCSTAT* DFB.
Excel Import Export Tool	Contains a tool that facilitates the export and import of variables to Microsoft Excel.
Operator Screens	Contains operator screen templates for M580 redundant controllers.
UDE	Contains documentation for EcoStruxure Control Expert Application Programming Interfaces (APIs) that help automate project engineering tasks, such as creating applications, adding modules, importing a section, building the project, or downloading the project to the controller.

First-Time Installation

Overview

This chapter describes a first-time installation of EcoStruxure Control Expert on a computer.

NOTE: If Unity Pro is installed on the computer, refer to Upgrading From EcoStruxure Control Expert or Unity Pro, page 26 for information on operations to perform before and after installing EcoStruxure Control Expert.

Installing EcoStruxure Control Expert

Installation Types

You can choose between these installation types during the installation procedure.

Installation type	Description
Typical	Installs the following software components and functionalities, page 13: • EcoStruxure™ Control Expert • EcoStruxure™ Control Expert Classic • Security Editor • PLC Simulator Optionally, you can install the following software components: • Schneider Electric Software Update (SESU): This application allows you to receive notifications about new firmware and software updates, and install them. An internet connection is required. • Floating License Manager: This application allows you to share seats of floating Schneider Electric software licenses within your organization.
Custom	You can choose which of the following functionalities or software components to install: • EcoStruxure™ Control Expert (requires EcoStruxure™ Control Expert Classic) • EcoStruxure™ Control Expert Classic • Security Editor • PLC Simulator • Schneider Electric Software Update (SESU) • Floating License Manager

Additional Components Installed

The following software components are installed regardless of the installation type:

- communication drivers, page 19
- PL7 convertor utility
- Concept convertor utility
- OS Loader
- Libset Installer: You can use this tool to install a set of library (Libset) versions that are not available on your computer, if required.

  NOTE: Only Libset 12.0 and subsequent supporting versions are automatically installed. For more information, refer to *Libset (Set of Libraries)* (see *EcoStruxure™ Control Expert, Operating Modes*).
- Device Type Managers (DTMs) associated to controllers and modules available in the EcoStruxure Control Expert **Hardware Catalog**
- License Manager

NOTE: Some equipment supported by EcoStruxure Control Expert or EcoStruxure Control Expert Classic may require the installation of additional software to use and configure the equipment, such as Altivar Process Variable Speed Drives or Advantys islands DTMs.

Optional Applications and Libraries

Before closing the Installation Wizard, you can download the following applications and libraries:

- EcoStruxure Automation Device Maintenance (replaces OS Loader)
- EcoStruxure Control Expert Dif
- EcoStruxure Control Expert Dif
- Modicon General Purpose Library V1 for EcoStruxure Control Expert
- Modicon General Purpose Library V2 for EcoStruxure Control Expert

An Internet connection is required.

To install the application or library, use its installer after the download completes.

Certificates

For information on certificates, refer to Certificates for EcoStruxure Control Expert, page 42.

Installation Folders

The default EcoStruxure Control Expert installation folder path is *C:\Program Files (x86)\Schneider Electric\EcoStruxure Control Expert X*. You can change the path during the installation.

NOTE: Do not exceed 110 characters if specifying a different installation folder path.

The Custom Libraries installation folder is: *C:\ProgramData\Schneider Electric \EcoStruxure Control Expert X\CustomLibset\vX*.

Where *X* is the EcoStruxure Control Expert version you are installing.

Installation Procedure

Ensure that your computer meets the system and installation requirements to install and run EcoStruxure Control Expert, page 15. Then perform the installation:

Step	Action
1	Double-click the installation package image file (.iso) that you downloaded, page 13. **Result**: The content of the file is displayed in the Windows **File Explorer**.
2	Double-click *setup.exe* to open the Installation Wizard.
3	Select the language and click **OK**.
4	Click **Install** to install the prerequisites and communication drivers, page 19.
5	Read, and if you agree, accept the *End User License Agreement* (EULA).
6	Choose the installation type, page 21.
7	Choose the software components to install.
8	To begin the installation, click **Install**.
9	When the installation is complete, choose the optional applications and libraries to download, page 22. Click **Finish** to close the Installation Wizard. **Result:** The *Release Notes* open in the default browser and a dialog box opens prompting you to restart the computer.
10	Click **Yes** to restart the computer.

Silent Installation

Overview

The silent installation of EcoStruxure Control Expert does not require user intervention during the installation after you choose which software components and functionalities to install, page 13.

The silent installation requires manually editing the *CE_SilentConfig.ini* file located in the root of the installation package (.iso) using a text editor and executing the file. The installation requirements, page 16 and additional installed components, page 22 are the same as for a manual installation.

You can use the silent installation to upgrade an earlier supported version of EcoStruxure Control Expert.

To use the silent installation, you must have Administrator rights on the computer.

Migration of System Projects of an Earlier Version

If system projects that were automatically exported from an earlier version of EcoStruxure Control Expert are present on the computer, they are imported when you install the new version if they fulfill the following requirements:

- They support upward compatibility.
- They are not password-protected.

If other system projects that do not fulfill these requirements are present, you can view and manage them in the **Earlier Projects** section of the Topology Manager **Start Page** after upgrading.

For more information on the export, refer to Silent Installation, page 24.

For more information on the import, refer to the topic describing the **Start Page** (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*).

NOTE: If system projects are available for import but the Control Expert server is not available, the silent installation is canceled and an event is logged in the Windows **Event Viewer**. For more information, refer to connections to the EcoStruxure Control Expert Server, page 44.

Editing the Silent Installation Configuration File

To configure which EcoStruxure Control Expert components are installed, proceed as follows.

Step	Action
1	Copy the *CE_SilentConfig.ini* file from the extracted EcoStruxure Control Expert installation package (.iso) and paste it to your local hard drive.
2	Double-click the *CE_SilentConfig.ini* file. **Result**: The file opens in the default text editor.
3	Edit the parameters: • *InstallDir*: Defines the installation path. If you enter a path, it must contain, at least, one folder. Leaving the parameter blank installs EcoStruxure Control Expert at the default path, page 22. • *DesktopShortcut*: `1` adds the icons to the desktop. Blank does not add icons. • *QuickLaunch*: `1` adds the icons to the Quick Launch bar. Blank does not add icons. • Other parameters: ◦ Blank: Does not install the component. ◦ `1`: Installs the component. **NOTE:** The Installation Wizard automatically manages the installation of required components. For example, it installs Control Expert Classic, Security Editor, and PLC Simulator if you choose to install Control Expert (*Topology_Manager*=`1`).
4	Save changes and close the file.

Starting the Silent Installation

To install EcoStruxure Control Expert in silent mode, proceed as follows.

Step	Action
1	Open a command prompt as Administrator.
2	Type *X*`:\setup.exe /s /v"/qn INIFILEPATH=`*fullpath*`"` where: • *X* is the drive where the installation files (.iso) are mounted. • *fullpath* is the full path of the *CE_SilentConfig.ini* file that you have edited (for example, *C:\MyFolder\CE_SilentConfig*
3	Press **Enter**. Result: The installation starts in the background.
4	Close the command prompt.

Upgrading From EcoStruxure Control Expert or Unity Pro

Overview

This chapter describes how to upgrade from an earlier version of EcoStruxure Control Expert, EcoStruxure Control Expert Classic, or Unity Pro. The process includes the management of the applications and settings.

If you upgrade from Unity Pro 5.0 or earlier, also refer to Preparing for the Upgrade From Unity Pro 5.0 or Earlier, page 30 for additional information.

Database and Library Management

The following tables describe the actions you can perform with the EcoStruxure Control Expert Installation Wizard based on the version that is installed and the impact of each action on databases and libraries.

From version/To version	15.2	15.3	16.0	16.1	16.2
15.2	Repair	Upgrade	Upgrade	Upgrade	Upgrade
15.3	Remove	Repair	Upgrade	Upgrade	Upgrade
16.0	Remove	Remove	Repair, Modify	Upgrade	Upgrade
16.1	Remove	Remove	Remove	Repair, Modify	Upgrade
16.2	Remove	Remove	Remove	Remove	Repair, Modify

Action in Installation Wizard	Impact on databases and libraries
Repair, page 50	Installed databases and libraries(1) are not repaired.
Modify, page 49	It installs the databases and/or libraries that are required by the components you install.
Remove, page 51	The databases and libraries(1) are removed. **NOTE:** Before installing the earlier version, DTM Libraries and other components must be manually removed, page 52. **NOTE:** If you install EcoStruxure Control Expert after removing an existing installation, the Installation Wizard proceeds as it would for a first-time installation.
Upgrade, page 26	The following databases and libraries of the EcoStruxure Control Expert installation are backed up and restored during the upgrade: • The Security Editor database • The system project database • The Custom, EDS, and GSD Libraries • The CANopen Library The Libset of the EcoStruxure Control Expert installation is replaced by the Libset 12.0 and subsequent supporting Libset versions included with the EcoStruxure Control Expert upgrade. To install earlier Libset versions, from the Windows Start menu, click **EcoStruxure Control Expert > Install libset** tool. **NOTE:** After you upgrade to EcoStruxure Control Expert 16.0 or any subsequent supported version, the Security Editor database is restored the first time you start Security Editor. You are prompted for the *SecurityAdmin* user password of the earlier version and you must set a new password.

(1) Databases and libraries consist of:

- The Security Editor database
- The system project database
- The *Libset (Set of Libraries)* (see *EcoStruxure™ Control Expert, Operating Modes*)
- The Custom, Electronic Data Sheet (EDS), and General Station Description (GSD) Libraries
- The CANopen Library

Preparing for the Upgrade

Overview

Before upgrading from an earlier version of EcoStruxure Control Expert or Unity Pro, save or export your existing project files to reuse them.

This topic describes the steps for EcoStruxure Control Expert and EcoStruxure Control Expert Classic/Unity Pro project files.

Exporting EcoStruxure Control Expert System Projects

If you created system projects (Topology Manager), upgrading EcoStruxure Control Expert on the computer acting as Control Expert server, automatically exports the system projects to the *Migration* folder at the path *%ProgramData%\Schneider Electric\ControlExpert.Topology.X* where *X* is the version of EcoStruxure Control Expert that they were created with.

Before proceeding with the upgrade, ensure that your system projects are upward compatible (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*); otherwise, they cannot be used with the subsequent supporting version.

EcoStruxure Control Expert Classic and Unity Pro File Formats

Project files in the *.STU* format from your installed version are not compatible with subsequent versions of EcoStruxure Control Expert Classic.

You can use the following version-independent file formats to restore your projects in subsequent supporting versions of EcoStruxure Control Expert Classic, page 34.

File format	Description
.STA archived application file format	These files are not version dependent. However, they can only be created with projects that can be successfully built. This file format allows you to connect to the controller in Equal mode after opening the project with a subsequent supporting version of EcoStruxure Control Expert. **NOTE:** Each time a built project is saved in *.STU* format with Unity Pro 4.1 or later, an archived application file is automatically created with the *.auto.sta* file name extension and saved at the same location as the *.STU* file. **NOTE:** Archived application files created as of EcoStruxure Control Expert Classic 15.3 can also be imported in EcoStruxure Control Expert. For more information, refer to the topic describing the import of control projects (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*).
.XEF application exchange file format	These files are used to export a global project without the global DTM configuration and are not version dependent. Use this file format if the project cannot be built. Importing an *.XEF* file requires a **Rebuild All** of the project.
.ZEF full application exchange file format	These files are used to export projects with the configurations created using DTMs and are not version dependent. Use this file format if the project cannot be built. It is a good practice to export your projects to this file format in addition to other formats. Importing a *.ZEF* file requires a **Rebuild All** of the project. **NOTE:** Full application exchange files (*.ZEF*) can also be imported in EcoStruxure Control Expert. For M580 controller projects, the file must be created with EcoStruxure Control Expert Classic as of version 15.0. For more information, refer to the topic describing the import of control projects (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*).

For additional information about file formats, refer to:

- *Services in Offline Mode* (see *EcoStruxure™ Control Expert, Operating Modes*)
- *User Applications and Projects File Formats* (see *EcoStruxure™ Control Expert, Program Languages and Structure, Reference Manual*)

For information about project compatibility between EcoStruxure Control Expert Classic/Unity Pro versions and controller firmware versions, refer to *EcoStruxure Control Expert, Application Versions and Controller Firmware, Compatibility Rules, User Manual*.

Saving EcoStruxure Control Expert Classic or Unity Pro Files to .STA Format

Step	Action
1	Start the installed version of EcoStruxure Control Expert Classic or Unity Pro.
2	Open the project file (*.STU*) by clicking **File > Open**, selecting a file, and clicking **Open**.
3	Click **File > Save Archive**. **NOTE:** The command is only available if the following conditions apply: • The project was generated. • The **Tools > Project Settings > General > PLC embedded data > Upload information** property is selected and at least **Comments** or **Animation tables** is selected.
4	Choose a location to save the file and click **Save**. **NOTE:** Do not save files in the default Schneider Electric folders *C:\Program Files \Schneider Electric* or *C:\Program Files (x86)\Schneider Electric*. Files saved in these folders are deleted during an upgrade.

Exporting EcoStruxure Control Expert Classic or Unity Pro Files to .XEF or .ZEF Format

Step	Action
1	Start the installed version of EcoStruxure Control Expert Classic or Unity Pro.
2	Open the project file (*.STU*) by clicking **File > Open**, selecting a file, and clicking **Open**.
3	Click **File > Export Project**.
4	Choose a location to save the file. **NOTE:** Do not save files in the default Schneider Electric folders *C:\Program Files \Schneider Electric* or *C:\Program Files (x86)\Schneider Electric*. Files saved in these folders are deleted during an upgrade.
5	Click **Export** and select the *.ZEF* or *.XEF* export file format.

Preparing for the Upgrade From Unity Pro 5.0 or Earlier

Overview

This topic contains information about the upgrade from Unity Pro 5.0 or earlier.

If you are upgrading from Unity Pro 3.1 or earlier and have used Custom Libraries (user-created libraries with Families containing objects such as EFs, EFBs, DFBs, and DDTs) and/or a Private ASI catalog, refer to the sections describing how to save them.

Considerations when Upgrading from Unity Pro 5.0 or Earlier

The following table describes specific use cases when upgrading from Unity Pro 5.0 or earlier and the actions to perform.

Unity Pro version	Description	Actions
5.0	The Installer of the DTM Library does not fully manage the removal of the previous DTM versions installed with Unity Pro 5.0. This may lead to an incorrect installation of the DTMs (for example, Generic DTMs).	Before upgrading, uninstall previous versions of the LOKI and Generic DTMs with the Windows **Add or remove programs** functionality.
Earlier than 3.0	For built projects, packing the memory of a Premium controller in RUN mode may lead to an unintended controller stop.	Open the *.STA* archive file of the project with Unity Pro 3.0 or later and select the **Rebuild All** of the project. Then, download the rebuilt project to the controller. This requires stopping the controller but helps avoid future unintended controller stops when packing the memory in RUN mode. For more information, refer to Service in Offline Mode (see EcoStruxure™ Control Expert, Operating Modes).
Earlier than 2.0	The pin layout of the Elementary Function Block (EFB) **COM_DB** was changed with Unity Pro 2.0.	Applications containing this EFB and designed with a version earlier than 2.0 must be exported and imported. In addition, new variables must be assigned to the inputs and outputs of the EFB. For more information, refer to COMP_DB: Comparison (see EcoStruxure™ Control Expert, Control, Block Library).

Saving Custom Libraries and Families of Unity Pro 3.1 and Earlier

To save a Custom Library Family and the objects it contains, proceed as follows.

NOTE: For Unity Pro 4.0 and subsequent Unity Pro versions, the Custom Libraries and Families of the installed version are kept at their original location after you upgrade. Refer to *Restoring Manually DFBs, DDTs, and FFBs in the Types Library Manager*, page 35.

Step	Action
1	Start the installed Unity Pro by clicking **Start > Programs > Schneider Electric > SoCollaborative > Unity Pro > Unity Pro xx** where *xx* refers to the Unity Pro package.
2	In the menu bar, click **Tools > Types Library Manager**.
3	Select a Family and right-click it.
4	Click **Create an installable family**.
5	Choose a location to save the Family. **NOTE:** Do not save files in the default folders *C:\Program Files\Schneider Electric \Unity Pro* or *C:\Program Files (x86)\Schneider Electric\Unity Pro*. Files saved in these folders are deleted during an upgrade.
6	If *sub-types* need to be included, select the **Include sub-types** check box.
7	Click **OK**. **Result**: Several *DSC* files and folders containing the Custom Library, the Family, and its content are created.
8	Save your other Families by repeating steps 3 to 7.
9	Close the **Types Library Manager**.

For more information, refer to ***Types Library Manager***, *Creating an Installable Family* (see EcoStruxure™ Control Expert, Operating Modes).

Saving the Private ASI Catalog

If a Private ASI catalog is used, copy the following files to another folder to reuse them after you upgrade:

- *...\Schneider Electric\ConfCatalog\Database\Asi \1031\private.ctg, private2. ctg*
- *...\Schneider Electric\ConfCatalog\Database\Asi \1033\private.ctg, private2. ctg*
- *...\Schneider Electric\ConfCatalog\Database\Asi \1034\private.ctg, private2. ctg*
- *...\Schneider Electric\ConfCatalog\Database\Asi \1036\private.ctg, private2. ctg*
- *...\Schneider Electric\ConfCatalog\Database\Asi \1040\private.ctg, private2. ctg*
- *...\Schneider Electric\ConfCatalog\Database\Asi \2052\private.ctg, private2. ctg*

NOTE: Do not save files in the default folders *C:\Program Files\Schneider Electric\Unity Pro* or *C:\Program Files (x86)\Schneider Electric\Unity Pro*. Files saved in these folders are deleted during an upgrade.

Installing the EcoStruxure Control Expert Upgrade

Overview

When you upgrade EcoStruxure Control Expert, the Installation Wizard searches for installed components, removes them, and installs the new version based on the selected installation type, page 21.

On a computer acting as Control Expert server, after the upgrade is complete, you are prompted to migrate the system projects of the earlier version, page 33.

Administrator Rights

To upgrade EcoStruxure Control Expert, you must have Administrator rights on the computer.

Installation Procedure

- Ensure that your existing application data is saved and the preparation work is completed. If you upgrade from Unity Pro, ensure that it is uninstalled.
- Ensure that your computer meets the system and installation requirements to install and run EcoStruxure Control Expert, page 15.

Then, you can upgrade your EcoStruxure Control Expert installation:

Step	Action
1	Double-click the installation package image file (.iso) that you downloaded, page 13. **Result**: The content of the file is displayed in the Windows **File Explorer**.
2	Double-click *setup.exe* to open the Installation Wizard.
3	Select the language and click **OK**.
4	Click **Install** to install the prerequisites and communication drivers, page 19.
5	Read, and if you agree, accept the End User License Agreement (EULA).
6	Choose the installation type from the *Installation Types* table in the topic *Installing EcoStruxure Control Expert*, page 21.
7	Choose the software components to install.
8	To begin the installation, click **Install**.
9	When the installation is complete, choose the optional applications and libraries to download. Click **Finish** to close the Installation Wizard. **Result:** The *Release Notes* open in the default browser and a dialog box opens prompting you to restart the computer.
10	Click **Yes** to restart the computer.

Importing EcoStruxure Control Expert System Projects and Topology Export Files

Importing System Projects

On a computer acting as Control Expert server, after the upgrade of EcoStruxure Control Expert is complete, you are prompted to migrate (import) the system projects of the earlier version that are located in the *Migration* folder and that are upward compatible, page 28.

If a system project is password-protected, you must enter the password to migrate it. You can choose to migrate only the system projects that are not password-protected.

You can also manually import upward-compatible system projects from the **Earlier Projects** section of the Topology Manager **Start Page** (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*).

> **NOTE:** After you import a system project created with EcoStruxure Control Expert 16.0 or earlier and containing an M580 controller with firmware version 4.0 or greater, you must change the default firmware password from the **System Project** section of the **User Preferences** window. This requires that you edit or build the control project of the M580 controller. As a result, if you deployed the control project before importing it, you cannot connect to the controller in equal state from the EcoStruxure Control Expert instance where you imported it. To make online changes, you must deploy the control project again, which requires stopping the controller.

Importing Topology Export Files

After you import a topology export file (.xpt) created with EcoStruxure Control Expert 16.0 or earlier and containing an M580 controller with firmware version 4.0 or greater, you must change the default firmware password from the **System Project** section of the **User Preferences** window or apply the firmware password that is set. This requires that you edit or build the control project of the M580 controller. As a result, if you deployed the control project before importing it, you cannot connect to the controller in equal state from the EcoStruxure Control Expert instance where you imported it. To make online changes, you must deploy the control project again, which requires stopping the controller.

For more information on the build state, refer to the topic describing the import of objects in the topology (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*).

Restoring Project Files and Settings After Upgrading

Overview

After the installation of the EcoStruxure Control Expert upgrade is complete, project files and settings can be recovered by restoring them in the following order:

1. Only if you upgraded from Unity Pro 3.1 or earlier:
   - Custom Libraries and Families, page 34
   - The Private ASI Catalog, page 35
2. For all versions: DFBs, Derived Data Types (DDTs), and FFBs. Refer to the table of *EcoStruxure Control Expert Classic and Unity Pro File Formats*, page 28.
3. For EcoStruxure Control Expert Classic only:
   - Archived application files (*.STA*), page 36
   - Application exchange files (*.XEF*, *.ZEF*), page 36

     NOTE: *.STA* and *.ZEF* can also be imported in EcoStruxure Control Expert. Refer to the *Unity Pro File Formats* table in the topic Preparing for the Upgrade, page 28.

Restoring Custom Libraries and Families

To restore a Unity Pro Custom Library Family that you saved, page 31, proceed as follows.

Step	Action
1	Close EcoStruxure Control Expert and EcoStruxure Control Expert Classic.
2	From the Windows Start menu, click **EcoStruxure Control Expert > Types Library Update**.
3	Navigate to the folder where the Custom Library Family is stored, page 31, select the *FAMILY.DSC* file, and click **Open**.
4	Select the Libset version where you want to install the Family.
5	Click **Install family**. **Result**: The Custom Library Family is restored and a message box is displayed. **NOTE:** If you receive the message `The installation has succeeded but there are warnings. Details are in file: <C:\WINNT\logunit\install.log>`, you can disregard it and click **OK**.
6	Repeat steps 3 to 5 for each Family that you want to restore.
7	Start EcoStruxure Control Expert Classic by clicking, from the Windows Start menu, **EcoStruxure Control Expert > Control Expert Classic**.
8	To view the Custom Library, its Families, and their content, click **Tools > Types Library Manager** and select the Libset version where you restored the Families.

For more information, refer to ***Types Library Manager*** (see *EcoStruxure™ Control Expert, Operating Modes*).

Manually Restoring DFBs, DDTs, and FFBs in the Types Library Manager

You can manually restore Custom Libraries, their Families, and the objects they contain, even if they were not saved.

This operation is useful in the following situations:

- You did not save Custom Libraries and Families, page 31 before upgrading.
- You have used custom FFBs defined with the EFB Toolkit. Refer to ***Types Library Manager***, *Updating a Family of a Library* (see EcoStruxure™ Control Expert, Operating Modes)

The Custom Libraries folders are determined by the installed Unity Pro version and the operating system. They are saved automatically during the installation process at the following paths, where *x.y* or *xx.yy* is the version of the earlier Unity Pro installation.

Version	Operating system	Path
Unity Pro 3.1 or earlier	–	*C:\Program Files\Schneider Electric\Application Data \Schneider Electric\Unity Pro\CustomLibset \OldCustomdbxx.yy*
Unity Pro 4.0 or later	Windows 7, 10, or 11	*C:\ProgramData\Schneider Electric\Unity Pro \CustomLibset\Vx.y*
	Windows XP	*C:\Program Files\Schneider Electric\Application Data \Schneider Electric\Unity Pro\CustomLibset\Vx.y*

To manually restore the Custom Libraries and Families, proceed as follows.

Step	Action
1	Copy the content of the Custom Library from the corresponding folder.
2	Paste the content of the Custom Library folder into the new EcoStruxure Control Expert Custom Library folder at the path *C:\ProgramData\Schneider Electric\Control Expert* ••.• *\CustomLibset\Vx.y*, where ••.• is the installed version and *x.y* the earlier Unity Pro version.
3	Repeat steps 1 and 2 for the Vx.y versions where the Custom Library is required.

Restoring the Private ASI Catalog

If you saved the private *ASI* catalog files, they must be restored to their original location, page 31.

Restoring Archived Application Files (.STA)

Use the *.STA* archived application file format if the controller cannot be stopped.

Follow these steps to restore the saved archived application files for each project:

Step	Action
1	Start EcoStruxure Control Expert Classic by clicking, from the Windows Start menu, **EcoStruxure Control Expert > Control Expert Classic**.
2	Click **File > Open** and select the *.STA* file.
3	Click **Open**.
4	Save the project as project file (*.STU*).

For more information about restoring saved or exported projects, refer to the table of *EcoStruxure Control Expert Classic and Unity Pro File Formats*, page 28.

Restoring Application Exchange Files (.XEF and .ZEF)

Restoring an *.XEF* application exchange file or a *.ZEF* full application exchange file requires a **Rebuild All** of the project.

Follow these steps to restore the exported application exchange files for each project:

Step	Action
1	Start EcoStruxure Control Expert Classic by clicking, from the Windows Start menu, **EcoStruxure Control Expert > Control Expert Classic**.
2	Click **File > Open** and select the *.XEF* or *.ZEF* file.
3	Click **Open**.
4	Save the project as project file (*.STU*).

For more information about restoring saved or exported projects, refer to the table of *EcoStruxure Control Expert Classic and Unity Pro File Formats*, page 28.

Using Software Licenses

This chapter describes the types of licenses that are available for EcoStruxure Control Expert and how to register your licenses.

Refer to these documents for more information on the use of licenses:

- For node-locked licenses, refer to *Schneider Electric License Manager, User Manual*.
- For floating licenses, refer to *Schneider Electric Floating License Manager, User Manual*.

Also refer to the videos explaining how to activate a node-locked license or a floating license.

Software Licenses

Description

The software license determines the EcoStruxure Control Expert functionality and version that you can use as described in the following table.

Software license	EcoStruxure Control Expert	EcoStruxure Control Expert Classic
EcoStruxure Control Expert S	No	Yes
EcoStruxure Control Expert L	No	Yes(1)
EcoStruxure Control Expert XL	No(2)	Yes(1)
EcoStruxure Control Expert XL with M580 Safety	No(2)	Yes
EcoStruxure Control Expert XL with Topology Manager and M580 Safety	Yes	Yes

(1) You can use M580 safety-related controllers with the M580 Safety Add-On license.

(2) Control Expert is available with the Topology Manager Add-On license.

For information on the controller platforms supported by the different license types, refer to the describing the capabilities of EcoStruxure Control Expert (see *EcoStruxure™ Control Expert, Operating Modes*).

Two types of licenses are available for EcoStruxure Control Expert:

- A node-locked license for use on the local computer where EcoStruxure Control Expert is installed. The license is activated using the License Manager.
- A floating license for use with an authorized number of computers that are connected to the Enterprise License Server. The license is activated using the Floating License Manager.

  NOTE: Use floating licenses to use remote desktop connections a with Windows Server. Several remote desktop connections are supported but limited by the available license-usage rights. With a node-locked license, only one remote desktop connection is allowed, regardless of the number of seats that are activated for the license.

License Requirements When Upgrading

Generally, when you upgrade EcoStruxure Control Expert, the following applies:

- For a major release upgrade (for example, upgrading from version 14.1 to 15.0) or if you upgrade from Unity Pro, a new license activation is required.
- For a minor release upgrade (for example, upgrading from version 15.0 to 15.3), a license activation is not required. The license of the earlier version is valid.

Trial License

EcoStruxure Control Expert installs with a 30-day trial license that is automatically activated at the first start.

The trial license unlocks the product functionality that corresponds to the Control Expert XL with Topology Manager and M580 Safety software license, page 37.

NOTE: When you activate a software license, the trial license is disabled.

License Backward Compatibility

A software license can be used with earlier supported EcoStruxure Control Expert versions.

Software License Registration

Overview

You can register your software license on the Schneider Electric Software Licensing Web Portal (SLP).

The SLP is Schneider Electric Cloud service that lets you manage your Schneider Electric software licenses on the Web. Registration is not mandatory and can be done even if the license is not yet activated.

NOTE: Before registering a license, create your Schneider Electric Web User Account.

When a licence is registered, the number of allowed returns, repairs, and reinstall are increased as described in the following table.

Actions	Single (1 seat)	Group (3 seats)	Team (10 seats)	Entity (100 seats)
Return	1 → 7	2 → 9	5 → 20	25 → 150
Repair	1 → 3	2 → 5	3 → 10	8 → 50
Reinstall	1 → 3	2 → 5	3 → 10	8 → 50

NOTE: A video is available explaining how to register your licenses.

Creating Your Schneider Electric Web User Account

Step	Action
1	Go to www.se.com\licensing, or click on the globe icon  on the **License Manager** / **Floating License Manager** toolbar.
2	Select **Login / Create my account**.
3	Enter your email address that will be your user ID for your Schneider Electric Web User Account. Fill in the mandatory fields and validate.

Registering a License

Step	Action
1	Log in to the Schneider Electric Software Licensing Web Portal (SLP).
2	Select **Register license into my account**.
3	Enter the license **Activation ID** and click **Register**.

Enabling Client/Server Communication

Reinforcing Communication Security Between the Server and Clients

Overview

This topic describes how to connect an EcoStruxure Control Expert instance to a remote Control Expert server.

NOTE: Reinforcing client/server communication security helps reduce vulnerability to cyberattacks.

Configuring the Control Expert server Server Listening IP Address

To manage and restrict access from EcoStruxure Control Expert to the Control Expert server, proceed as follows.

Step	Action
1	On the computer acting as Control Expert server, from the Windows Start menu, expand the **EcoStruxure Control Expert** folder, right-click **Server Configuration**, and click **Run as administrator**. **Result**: The **Server Configuration** tool opens.
2	In the **Listening Connections** section, select the **Listening IP address** value from the list: • **127.0.0.1** *(Local connection)*: The server does not allow connections from remote EcoStruxure Control Expert instances. (Default value.) • **0.0.0.0** *(All connections)*: The server allows connections from a local and remote EcoStruxure Control Expert instances independently of the network they belong to. • **Network adapters of the server computer**: The server only allows connections from EcoStruxure Control Expert instances that are on the same network as the adapter.
3	Click **Apply**, confirm the command, and close the **Server Configuration** tool.

Reinforcing Communication Security

The following procedure that applies to Windows Defender is given as an example only. Other antivirus applications may have different configuration steps.

Step	Action
1	On the computer acting as Control Expert server, open **Windows Defender Firewall with Advanced Security** (wf.msc) using the **Microsoft Management Console** (mmc.exe).
2	Click **Inbound Rules** in the left pane. In the **Action** pane, click **New rule…** to proceed to the **New Inbound Rule Wizard**.
3	In the **Rule Type** settings, select **Custom** and click **Next** to proceed to the **Program** settings.
4	Select **This program path:**, set `C:\Program Files (x86)\Schneider Electric\Control Expert X\Server\SE.Automation.SystemManager.exe` (where *X* is the version that is installed), and click **Next** to proceed to the **Protocols and Ports** settings.
5	Set the following values: • Set **Protocol Type** to **TCP**. • Set **Local Port** to **Specific Ports** and enter `<base port>-<base port + 2>` as port range (for example, `20060-20062`). For information on the base port number, refer to Client/Server Communication Ports, page 18. Click **Next** to proceed to the **Scope** settings.
6	Leave the settings as they are and click **Next** to proceed to the **Action** settings.
7	Select **Allow the connection if it is secure** and click **Next** to proceed to the **Users** settings.
8	Leave the settings as they are and click **Next** to proceed to the **Computers** settings.
9	For Authorized computers, select **Only allow connections from these computers**, add authorized computer names, and click **Next** to proceed to the **Profile** settings.
10	Select **Domain**, clear **Private** and **Public**, and click **Next** to proceed to the **Name** settings.
11	In the **Name** box, enter `SystemManager` and in the **Description** box enter `TCP rules`. Click **Finish**.
12	In the **Inbound Rules** pane, copy and paste the `SystemManager` rule.
13	Select the pasted `SystemManager` rule and click **Properties**. • In the **General** tab, change the description from `TCP rules` to `UDP rules`. • In the **Protocols and Ports** tab: ◦ Set **Protocol Type** to **UDP**, ◦ Set **Local Port** to **Specific Ports** and enter the base port number as port range. For information on the base port number, refer to Client/Server Communication Ports, page 18. Click **OK** to close the **Properties** window.
14	Close the **Microsoft Management Console**.

Certificates for EcoStruxure Control Expert

Certificate Installation

After you install EcoStruxure Control Expert, the first time you open Security Editor, it automatically installs the **ControlExpert** and **SecurityService** certificates that are required to use Control Expert with an all-in-one architecture, page 14.

The certificates are added to the local Windows computer certificate store (certlm.msc) under *Personal\Certificates*.

NOTE: To open Security Editor for the first time, you must set a password for the *SecurityAdmin* user account.

NOTE: To connect EcoStruxure Control Expert instances to a remote Control Expert server in a distributed architecture, ensure that the necessary configurations are made and prerequisites are fulfilled, page 44.

Troubleshooting

If you are unable to connect to the Control Expert server and/or the server does not start because a valid certificate was not found, the following information is available for troubleshooting:

- On the computer acting as Control Expert server, an event of type **Error** is recorded in the Windows **Event Viewer** (**Windows Logs > Application**, **Source** = *ControlExpert.Topology x*, where *x* is the installed version).
- On remote computers from where the EcoStruxure Control Expert instance is attempting to connect to the server, a message box opens.

For more information, refer to the topic describing certificate actions (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*).

Date and Time on Client/Server Computers

When you connect an EcoStruxure Control Expert instance to a remote Control Expert server, ensure that the date and time on both computers is the same if you use the following settings in the **Login Policies** tab of Security Editor:

- **Authentication Mode**: *Centralized*, *Centralized,Local*, or *Local,Centralized*
- **Centralized Protocol**: *Network*

Otherwise, you cannot use EcoStruxure Control Expert editor, import EcoStruxure Control Expert Classic projects, and update the DTM catalog.

Starting Control Expert and Control Expert Classic

Starting EcoStruxure Control Expert

Connection to the Control Expert Server

By default, EcoStruxure Control Expert instances are configured to connect to the local Control Expert server at the address `localhost:<base port>` after you log in. For information on the base port number, refer to Client/Server Communication Ports, page 18.

To connect to a remote Control Expert server, page 14:

- On the server computer, configure the server listening address, page 40.
- On the local computer, the *SecurityAdmin* user must enter the Control Expert server IP address and the *SecurityService* port number (indicated in the **Server** section of Security Editor on the remote computer) in the **Certificate whitelist** tab of Security Editor and trust the certificates.

  For more information, see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*.
- In the EcoStruxure Control Expert instance, change the server IP address in the **Networks and Servers** section of the **User Preferences** window (see *EcoStruxure™ Control Expert, Topology Manager, User Manual*).

  NOTE: Any computer on which EcoStruxure Control Expert is installed can act as Control Expert server. The `SE.Automation.System Manager.exe` server service is configured to start automatically with the computer.

Prerequisites

To start EcoStruxure Control Expert and log in, the following prerequisites must be fulfilled:

- You have activated an EcoStruxure Control Expert license that includes rights for the Topology Manager, page 37 (before the trial license expires).
- On the computer acting as Control Expert server, in Security Editor, **Policies** tab, **Login** is set to either of these values:
  - **Security On, mandatory login**
  - **Security off**
- On the computer acting as Control Expert server, the *SecurityAdmin* user has created or enabled user accounts as follows depending on the **Authentication Mode** configured in the **Login Policies** tab of Security Editor (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*):
  - **Local**: User accounts are created or enabled in the local Security Editor (Control Expert server computer) regardless of the selected local **Login** (**Policies** tab).
  - **Centralized**: User accounts are created or enabled in the remote Security Editor or exist on the Lightweight Directory Access Protocol (LDAP) server.

  For more information on authentication methods, refer to *Login Policies* (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*).

  NOTE: To open Security Editor for the first time, set a password for the *SecurityAdmin* user account.

Starting an EcoStruxure Control Expert Instance

Step	Action
1	From the Windows Start menu, click **EcoStruxure Control Expert > Control Expert**. **Result**: The EcoStruxure Control Expert and the log-in windows open.
2	Enter a valid user name. If a password is set for this user account, enter it. **Result**: The EcoStruxure Control Expert instance connects to the Control Expert server and displays the system projects that exist in the server repository.

NOTE: After you log in, if the local **Login** policy (Security Editor, **Policies** tab) is **Security on, mandatory login** or if you authenticate using a centralized database (**Login Policies** tab), the EcoStruxure Control Expert functionality that you can use is determined by the profile associated to the logged-in user account. For more information, refer to the topic describing profiles (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*).

Starting EcoStruxure Control Expert Classic

Prerequisites

To start EcoStruxure Control Expert Classic, a software license, page 37 must be activated (before the trial license expires).

NOTE: With the default Security Editor login policy, users can use EcoStruxure Control Expert Classic without logging in. If the policy is changed, requiring users to log in, the *SecurityAdmin* user must create and/or enable user accounts as follows:

- For local authentication: In the local Security Editor.
- For centralized authentication: In the remote Security Editor or users must exist on the Lightweight Directory Access Protocol (LDAP) server, depending on the authentication.

For more information, refer to the topics describing user functions and login policies (see *EcoStruxure™ Control Expert, Security Editor, Operation Guide*).

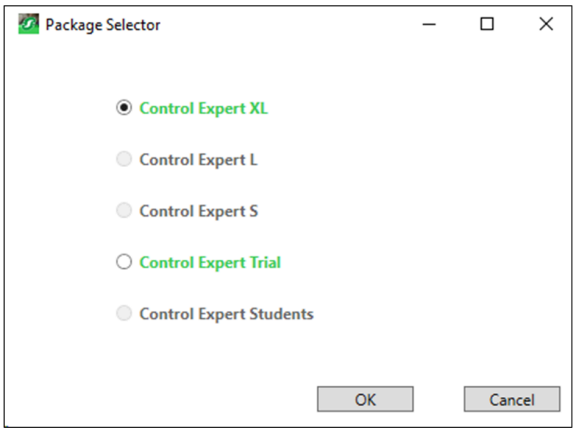
NOTE: To open Security Editor for the first time, you must set a password for the *SecurityAdmin* user.

Starting an EcoStruxure Control Expert Classic Instance

Step	Action
1	From the Windows Start menu, click **EcoStruxure Control Expert > Control Expert Classic**. **Result**: If you are starting EcoStruxure Control Expert Classic after activating a license, the **Package Selector** dialog box opens, page 46. Otherwise, EcoStruxure Control Expert Classic opens.
2	Select a license and click **OK**. **Result**: EcoStruxure Control Expert Classic opens.

License Selection for EcoStruxure Control Expert Classic

The first time you start EcoStruxure Control Expert Classic after activating a software license, you must select the package that corresponds to your software license in the **Package Selector** dialog box.



NOTE: If you have several software licenses activated, the **Package Selector** tool selects by default the highest package level (XL > L > S).

The **Package Selector** tool differentiates the base packages (S, L or XL) but additional functionality included with a license, such as M580 safety, is not indicated. Therefore, select the base package that corresponds to your software license, page 37.

Changing the Display Language

To change the language of EcoStruxure Control Expert and EcoStruxure Control Expert Classic, proceed as follows.

Step	Action
1	From the Windows Start menu, click **EcoStruxure Control Expert > Language selection**. **Result**: The **Control Expert Language Selection** dialog box opens.
2	Select the language you want to use and click **Apply**. **Result**: Your language selection takes effect the next time you start EcoStruxure Control Expert or EcoStruxure Control Expert Classic.

Modifying, Repairing, and Removing EcoStruxure Control Expert

Using the Modify Functionality

Overview

The **Modify** functionality allows you to add software components to an existing EcoStruxure Control Expert installation.

You cannot use the **Modify** functionality to remove installed components.

Modifying the EcoStruxure Control Expert Installation

Step	Action
1	Ensure that the EcoStruxure Control Expert components installed on the computer are closed.
2	Extract the files of the installation package (.iso) to disk or mount the image and double-click *setup.exe* in the root of the installation package. **Result**: The EcoStruxure Control Expert Installation Wizard starts.
3	In the **Program Maintenance** window, select **Modify** and click **Next**. **Result**: The **Custom Setup** window opens.
4	Select the check box of the software components you want to add and click **Next**. For more information, refer to Installing EcoStruxure Control Expert, page 21. **Result**: The **Ready to Install the Program** window opens.
5	Click **Install** to install the components.
6	When the installation is completed, click **Finish** to close the Installation Wizard and restart the computer when prompted. **NOTE:** You can download additional applications and libraries before closing the Installation Wizard.

Using the Repair Functionality

Overview

The **Repair** functionality attempts to repair missing or corrupted files in an existing EcoStruxure Control Expert installation.

Also refer to Database and Library Management, page 27.

NOTE: A corrupted DTM installation cannot be repaired. In that case, remove it with the Windows **Add or remove programs** functionality and then, reinstall it.

NOTE: The **Repair** functionality does not install Libset files. To update Libset files, use the **Libset Installer** tool.

Repairing the EcoStruxure Control Expert Installation

Step	Action
1	Ensure that the EcoStruxure Control Expert components installed on the computer are closed.
2	Extract the files of the installation package (.iso) to disk or mount the image and double-click *setup.exe* in the root of the installation package. **Result**: The EcoStruxure Control Expert Installation Wizard starts.
3	In the **Program Maintenance** window, select **Repair** and click **Next**.
4	Start the repair by clicking **Install** and follow the on-screen instructions.

Repairing the EcoStruxure Control Expert Installation in Silent Mode

Step	Action
1	Open the *CE_Config.ini* file located at the path *C:\Program Files (x86)\Schneider Electric\EcoStruxure Control Expert X* where *X* is the installed EcoStruxure Control Expert version.
2	In the file, on the line starting with *Repair=msiexec.exe*, copy the text from *msiexec.exe /foums* to */qn*. For example, copy *msiexec.exe /foums {a5eaa543-1010-45a1-892e-598f35a6f254} /qn*.
3	Open a command prompt as Administrator.
4	In the command prompt, paste the text and press **Enter** to start the repair.

Using the Remove Functionality

Overview

The **Remove** functionality removes EcoStruxure Control Expert from the computer, except for the following:

- EcoStruxure Control Expert Classic user application files.
- EcoStruxure Control Expert database backup files.
- Components used by other installed Schneider Electric software (for example, certain DTMs or the License Manager).
- Components that you manually installed for EcoStruxure Control Expert such as drivers and DTMs.

Also refer to Database and Library Management, page 27.

When to Remove EcoStruxure Control Expert

Remove EcoStruxure Control Expert in the following cases:

- To install an earlier version than the one installed.
- To install Unity Pro.

Before installing Unity Pro or an earlier version of EcoStruxure Control Expert, remove the following folders if they are not used by another Schneider Electric software:

- `C:\Program Files (x86)\Common Files\Schneider Electric Shared\Tlb`
- `C:\Program Files (x86)\Common Files\Schneider Electric Shared\Common`
- `C:\Program Files (x86)\Common Files\Schneider Electric Shared\SRCSDK`
- `C:\Program Files (x86)\Common Files\Schneider Electric Shared\SSTA`

In addition, to install EcoStruxure Control Expert 16.0, remove the following, using the Windows **Control Panel**:

- The License Manager
- The Floating License Manager
- The Schneider Electric Software Upgrade (SESU) tool

NOTE: Installing Unity Pro or an earlier version of EcoStruxure Control Expert may lead to incompatibilities with other software, such as OPC Factory Server, UDE and UAG.

DTM Libraries

Removing EcoStruxure Control Expert also removes the following DTM Libraries from the computer:

- EcoStruxure Control Expert PSx DTM Library
- Schneider Electric BME NOR DTM Library
- Schneider Electric Edge I/O DTM Library
- Schneider Electric Mx80 HART Gateway DTM Library
- Schneider Electric Placeholder DTM Library
- Schneider Electric PME DTM Library
- CXM DTM

NOTE: The installation packages of these DTM Libraries are provided in the *DTM_Installers* folder of the EcoStruxure Control Expert installation package (.iso). You can use them to individually remove or reinstall DTMs.

Node-Locked Licenses Returns

If you have activated a node-locked license, return the license, page 37 before removing EcoStruxure Control Expert so that you can activate it on another computer.

NOTE: The License Manager is removed if it is not required by another program.

Removing EcoStruxure Control Expert with the Setup File

Step	Action
1	Reboot the computer where EcoStruxure Control Expert is installed.
2	Extract the files of the installation package (.iso) to disk or mount the image and double-click *setup.exe* in the root of the installation package. **Result**: The EcoStruxure Control Expert Installation Wizard starts.
3	In the **Program Maintenance** window, select **Remove** and click **Next**.
4	Start the removal by clicking **Remove** and follow the on-screen instructions.

Removing EcoStruxure Control Expert with the Windows Control Panel

Step	Action
1	Reboot the computer where EcoStruxure Control Expert is installed.
2	From the Windows **Control Panel**, select **Uninstall a program**.
3	Right-click **Control Expert**, select **Uninstall**, and click **Yes** to confirm.
4	Follow the on-screen instructions.

Removing EcoStruxure Control Expert in Silent Mode

Step	Action
1	Reboot the computer where EcoStruxure Control Expert is installed.
2	Open the *CE_Config.ini* file located at the path *C:\Program Files (x86)\Schneider Electric\EcoStruxure Control Expert X* where *X* is the installed EcoStruxure Control Expert version.
3	In the file, on the line starting with *Uninst=msiexec.exe*, copy the text from *msiexec.exe /x* to */qn*. For example, copy *msiexec.exe /x {a5eaa543-1010-45a1-892e-598f35a6f254} /qn*.
4	Open a command prompt as Administrator.
5	In the command prompt, paste the text and press **Enter** to start the removal of EcoStruxure Control Expert.

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