



# EcoStruxure Augmented Operator Advisor

## Quick Start Guide

EIO0000003000.12  
06/2022



# Legal Information

The Schneider Electric brand and any trademarks of Schneider Electric SE and its subsidiaries referred to in this guide are the property of Schneider Electric SE or its subsidiaries. All other brands may be trademarks of their respective owners.

This guide and its content are protected under applicable copyright laws and furnished for informational use only. No part of this guide may be reproduced or transmitted in any form or by any means (electronic, mechanical, photocopying, recording, or otherwise), for any purpose, without the prior written permission of Schneider Electric.

Schneider Electric does not grant any right or license for commercial use of the guide or its content, except for a non-exclusive and personal license to consult it on an "as is" basis. Schneider Electric products and equipment should be installed, operated, serviced, and maintained only by qualified personnel.

As standards, specifications, and designs change from time to time, information contained in this guide may be subject to change without notice.

To the extent permitted by applicable law, no responsibility or liability is assumed by Schneider Electric and its subsidiaries for any errors or omissions in the informational content of this material or consequences arising out of or resulting from the use of the information contained herein.

As part of a group of responsible, inclusive companies, we are updating our communications that contain non-inclusive terminology. Until we complete this process, however, our content may still contain standardized industry terms that may be deemed inappropriate by our customers.

---

# Table of Contents

Safety Information .....	5
About the Book .....	6
Presentation of EcoStruxure Augmented Operator Advisor.....	11
Getting Started.....	22
Installing EcoStruxure Augmented Operator Advisor.....	24
EcoStruxure Augmented Operator Advisor Builder.....	27
Installing the EcoStruxure Augmented Operator Advisor Runtime .....	30
Configuring Users and Security Settings .....	37
Frequently Asked Questions (FAQs).....	38
Glossary.....	41



---

# 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.

## About the Book

### Document Scope

This document describes how to get started with EcoStruxure Augmented Operator Advisor.

It is recommended that you undertake an EcoStruxure Augmented Operator Advisor training course before using the product.

### Validity Note

This document is valid for Version 2.9 of EcoStruxure Augmented Operator Advisor.

For product compliance and environmental information (RoHS, REACH, PEP, EOLI, etc.), go to [www.se.com/ww/en/work/support/green-premium/](http://www.se.com/ww/en/work/support/green-premium/).

The technical characteristics of the devices described in the present document also appear online. To access the information online, go to the Schneider Electric home page [www.se.com/ww/en/download/](http://www.se.com/ww/en/download/).

The characteristics that are described in the present document should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the document and online information, use the online information as your reference.

Registered trademarks:

- EcoStruxure™, Vijeo™, and Harmony™ are registered trademarks of Schneider Electric.
- Chrome™, Google Pixel C™, and Android™ are registered trademarks of Google LLC.
- Microsoft Edge™, and Windows™ are registered trademarks of Microsoft Corporation.
- Firefox™ is a registered trademark of The Mozilla Foundation.

- 
- iOS™ and iPad™ are registered trademarks of Apple.
  - Samsung Galaxy™ is a registered trademark of Samsung Electronics Co Ltd.
  - Intel® Core™ is a registered trademark of Intel Corporation.
  - Linux® is a registered trademark of Linus Torvalds.

## Related Documents

Title of documentation	Reference number
EcoStruxure Augmented Operator Advisor Builder User Manual	EIO0000003006 (ENG) EIO0000003007 (FRE) EIO0000003008 (GER) EIO0000003009 (SPA) EIO0000003010 (ITA) EIO0000003011 (CHS) EIO0000003033 (JPN) EIO0000003564 (KOR)
EcoStruxure Augmented Operator Advisor Runtime User Manual	EIO0000003606 (ENG) EIO0000003607 (FRE) EIO0000003608 (GER) EIO0000003609 (SPA) EIO0000003610 (ITA) EIO0000003611 (CHS) EIO0000003612 (JPN) EIO0000003613 (KOR)
EcoStruxure Augmented Operator Advisor App User Manual	EIO0000003598 (ENG) EIO0000003599 (FRE) EIO0000003600 (GER) EIO0000003601 (ESP) EIO0000003602 (ITA) EIO0000003603 (CHS) EIO0000003604 (JPN) EIO0000003605 (KOR)

You can download these technical publications, the present document and other technical information from our website [www.se.com/en/download/](http://www.se.com/en/download/).

---

## Product Related Information

The application of this product requires expertise in the design and operation of control systems.

### **▲ 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.
- Separate or redundant control and monitoring paths must be provided for critical control functions.
- System control and monitoring paths may include communication links. Consideration must be given to the implications of unanticipated transmission delays or failures of the link.
- EcoStruxure Augmented Operator Advisor must not be used as a primary means of monitoring critical control functions.
- Each EcoStruxure Augmented Operator Advisor implementation 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.**

### **▲ WARNING**

#### **PROCEDURE NOT COMPLETED**

Before launching a procedure, ensure that your battery is sufficiently charged to complete the operation.

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

### **▲ WARNING**

#### **UNINTENDED EQUIPMENT OPERATION**

- Allow only authorized personnel with expertise in the design and operation of control systems to program, install, alter, and apply this product.
- Follow local and national safety codes and standards.

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

---

## **⚠ WARNING**

### **LOSS OF INFORMATION**

Ensure that the information to be displayed to the operator is adapted to the size of the display device, especially for smartphones.

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

## **⚠ CAUTION**

### **FALSE SCENE DETECTION**

- Use tags in situations where similar equipment and/or environments could result in false scene detection.
- Attach tags firmly to the equipment with sufficient protection against damage or deterioration of the tag.

**Failure to follow these instructions can result in injury or equipment damage.**

## **NOTICE**

### **UNAUTHORIZED OPERATOR ACCESS**

- Keep user names and passwords secret.
- Protect tablet and runtime device access with a password or other security mechanism.
- Do not share access with others.
- Change default passwords upon first connection.
- Regularly update passwords.
- Apply relevant local IT rules.
- Do not save confidential information in post-its or notebooks.
- Do not attach confidential or sensitive user documents in projects.

**Failure to follow these instructions can result in equipment damage.**

## **Important Information**

The following algorithms are used for encryption: RSA, AES, SHA-256.

---

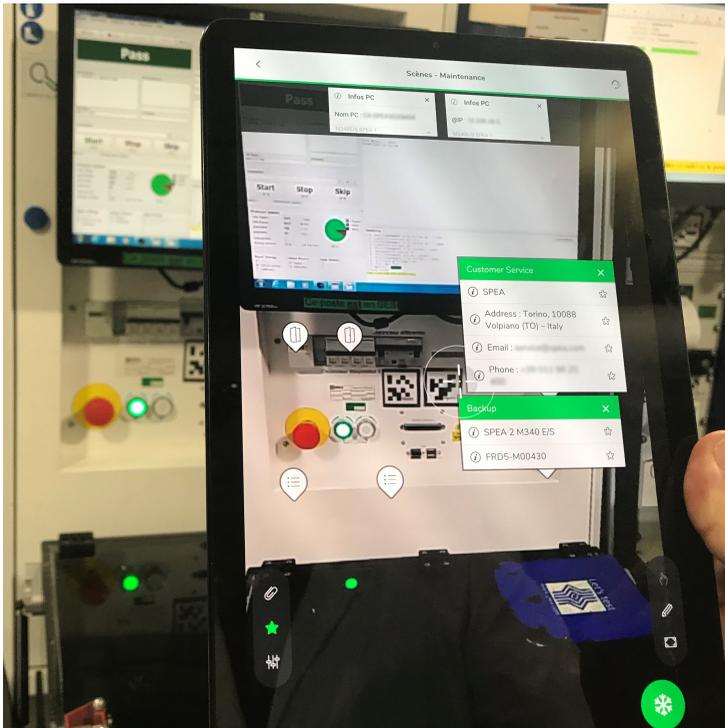
# Presentation of EcoStruxure Augmented Operator Advisor

## Overview

EcoStruxure Augmented Operator Advisor uses a technology called augmented reality to optimize the operation and maintenance of industrial sites and equipment:

- The operator points a tablet computer at the site or equipment to be monitored.
- EcoStruxure Augmented Operator Advisor uses special image comparison techniques to match the scene visible in the field of view of the tablet camera with previously stored photographs of the same scene.
- When a match is made, markers called points of interest are overlaid on the live scene visible on the tablet.
- The operator taps the point of interest markers to display information. A wide variety of information can be displayed, including:
  - Process variables
  - Values extracted from an SQL database
  - Documents, instruction sheets or wiring diagrams
  - Web pages
  - Videos
  - Audio
  - Procedures

You can also view all the information overlaid on the stored images of the site or equipment to be monitored without being physically in front of it.



EcoStruxure Augmented Operator Advisor introduces a number of other key concepts:

- An area is a zone within each site or building (such as production lines, plant rooms, storage areas, workshops, laboratories, and office areas) that you want to monitor using EcoStruxure Augmented Operator Advisor.

**NOTE:** The number of areas you can monitor depends on the type of license you purchase, page 24.

- Scenes are things to monitor within an area, for example, machines, electrical cabinets, or production lines.
- Subscenes are a part of a scene, typically a close up view of a particular area of the scene. A subscene can contain its own points of interest.
- Procedures are a set of instructions that the operator must carry out in a predefined order to complete the task. Instructions can include scenes that must be recognized by the EcoStruxure Augmented Operator Advisor App using augmented reality.

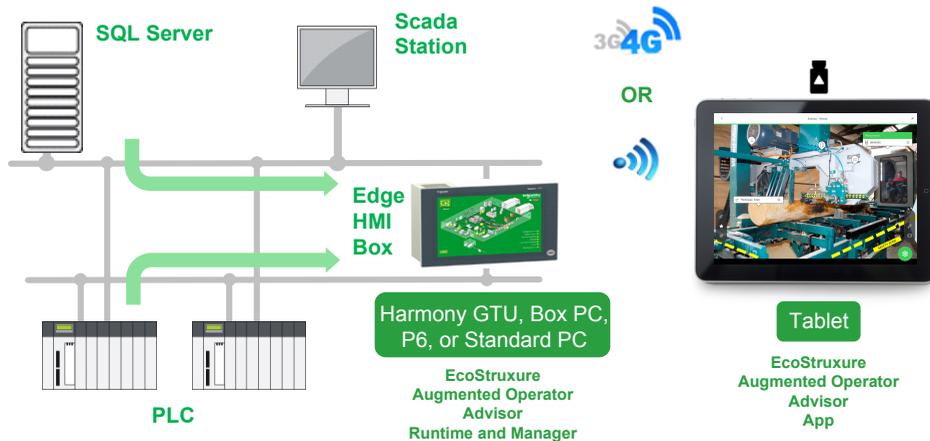
**NOTE:** Procedures are only available with particular license types, page 24.

- A project is a container for all the information in areas, scenes, subscenes and procedures.

# Components of EcoStruxure Augmented Operator Advisor

EcoStruxure Augmented Operator Advisor is made up of the following main components:

- EcoStruxure Augmented Operator Advisor Builder, an application running in the cloud.
- EcoStruxure Augmented Operator Advisor Runtime, a server-based Windows software.
- EcoStruxure Augmented Operator Advisor App, an application running on a tablet computer.



For the EcoStruxure Augmented Operator Advisor App to be able to communicate with the EcoStruxure Augmented Operator Advisor Runtime component, both must be connected to the same WiFi network or 3G/4G mobile network.

To view the real-time values of process variables produced by the equipment being monitored, one of the following applications must also be installed:

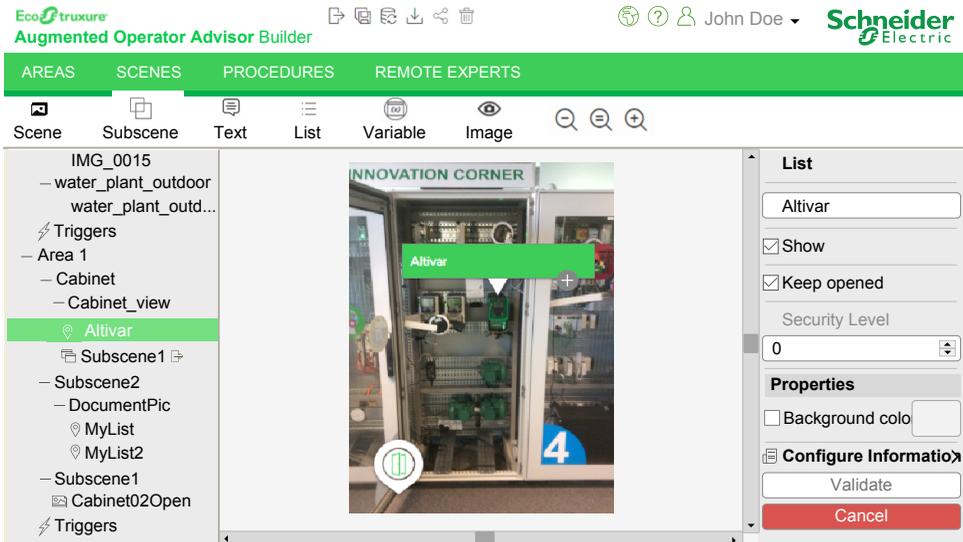
- Node-RED, page 20
- EcoStruxure Operator Terminal Expert, page 20

The solution also includes a Web-based management tool, EcoStruxure Augmented Operator Advisor Manager.

## EcoStruxure Augmented Operator Advisor Builder

The EcoStruxure Augmented Operator Advisor Builder is an application running in the cloud. The user creates projects, within which areas, scenes and procedures are defined.

A scene is a high-resolution photograph, onto which points of interest are positioned and the information to be displayed is configured.



When all scenes have been defined, the project must be built and then imported to the device where the EcoStruxure Augmented Operator Advisor Runtime is installed.

## EcoStruxure Augmented Operator Advisor Runtime

EcoStruxure Augmented Operator Advisor Runtime is installed on a Harmony GTU Open Box PC, Harmony iPC / Industrial PC, or standard Windows PC. It gathers together all the information to be displayed in the points of interest and sends it to be displayed by the EcoStruxure Augmented Operator Advisor App. It also manages the database containing the photographs of scenes and equipment contained in the project.

## EcoStruxure Augmented Operator Advisor App

The EcoStruxure Augmented Operator Advisor App views reality (what the operator sees using the camera integrated in the tablet) and compares it to photographs of scenes stored in the EcoStruxure Augmented Operator Advisor project. The scene being viewed by the camera and the stored image must match for detection to occur.

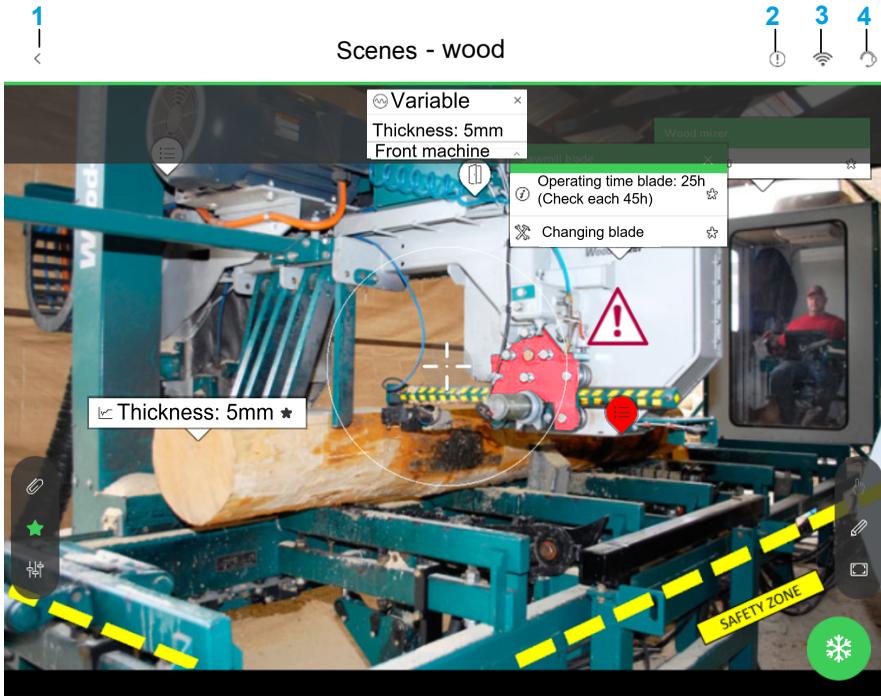
After a scene has been recognized by the App, the following user interface controls can be used :



Legend	Name	Description
1	Settings	Tap to display the <b>Settings</b> menu.
2	Favorites	Tap to display or hide the <b>Favorites</b> bar at the top of the screen. Information about the scene is updated in the <b>Favorites</b> bar even when the scene is frozen, or if the point of interest is closed, or if another scene is being viewed.
3	Document browser	Tap to open or close the built-in document browser (see EcoStruxure Augmented Operator Advisor, App, User Manual).
4	Action	When the cross in the center of the screen is over a point of interest, tap to launch the corresponding action (display a document, open a subsce, ...).
5	Note	<p>Tap to add a note on the scene. Tap and hold to add a note with your latest screenshot attached to it. This can be used, for example, to leave information for other operators. Tap the note attachment to display it in full screen.</p> <p>Tap  to edit the note if you want to modify or remove it. If you remove it from the App, the note remains available in the EcoStruxure Augmented Operator Advisor Manager.</p> <p>You can add up to 10 notes in a scene. Each note can contain up to 255 characters and up to 3 attachments (20 MB maximum).</p> <p><b>NOTE:</b> If the App is not connected to the EcoStruxure Augmented Operator Advisor Runtime while creating the note, the note is saved locally on the tablet. A notification is available in the notification center to inform you about</p>

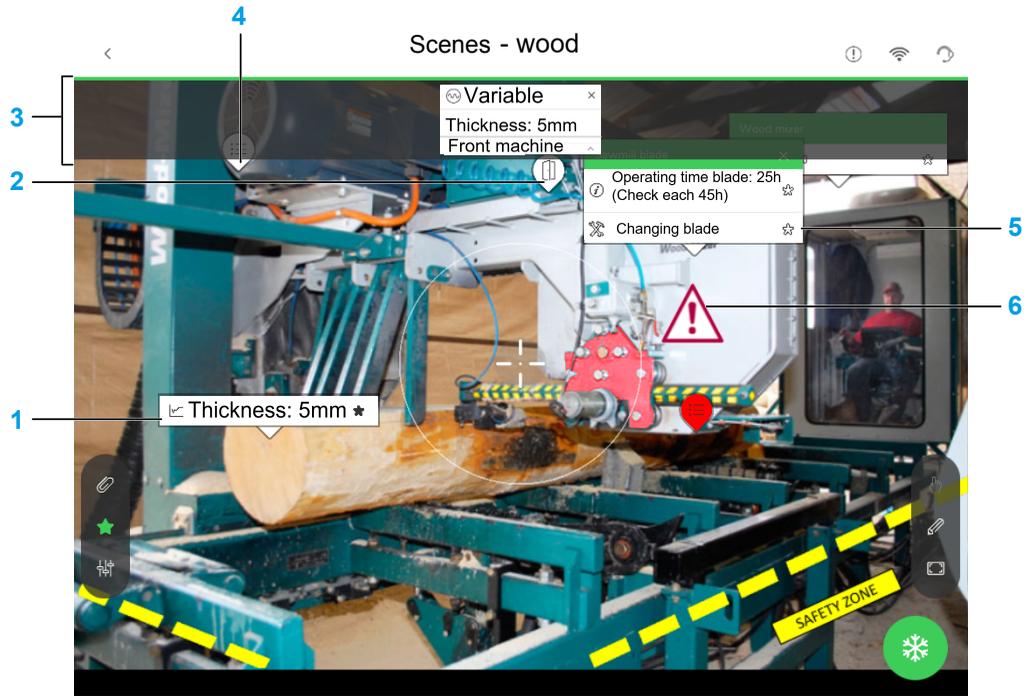
Legend	Name	Description
		this temporary state. When the connection is reestablished, the note is uploaded automatically to the EcoStruxure Augmented Operator Advisor Runtime.
6	Screenshot	Tap to make a screenshot of the scene. The screenshot is saved locally and it can be attached to a note.
7	Freeze	Tap  to freeze the display, this allows you to put down or lower the tablet and still see the scene and points of interest. Project actions continue and the <b>Favorites</b> bar continues to be updated.

The other components of the user interface are as follows:



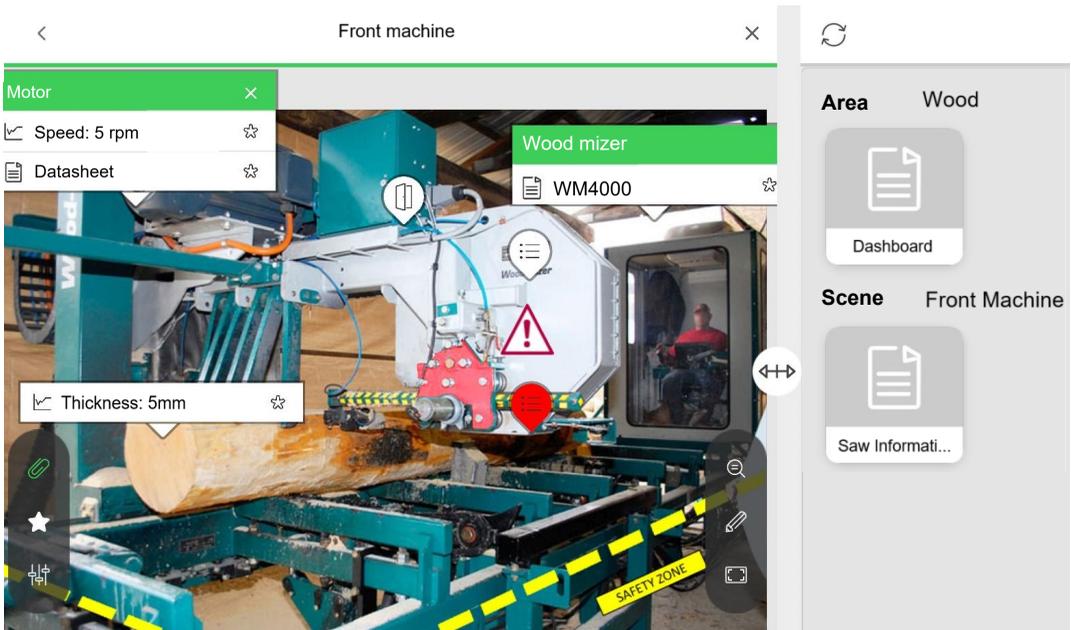
Legend	Name	Description
1	Home	Tap to return to the <b>Home</b> page.
2	Notification center icon	Indicates a message from the Notification center. Tap to display the notification messages.
3	Connection to the runtime device	Indicates whether the App is connected to the runtime device (black icon on a white background) or not connected (flashes red).
4	Remote Assist icon	Tap to display the list of assigned experts. Click an expert ID to open the Dynamics 365 Remote Assist application and contact the expert. <b>NOTE:</b> The Dynamics 365 Remote Assist application has to be installed on the same tablet. <b>Remote Assist</b> is available on Android and iOS tablets.

A point of interest is a position in a scene for which additional diagnostic or technical information is available. Various types of points of interest can be displayed as follows:

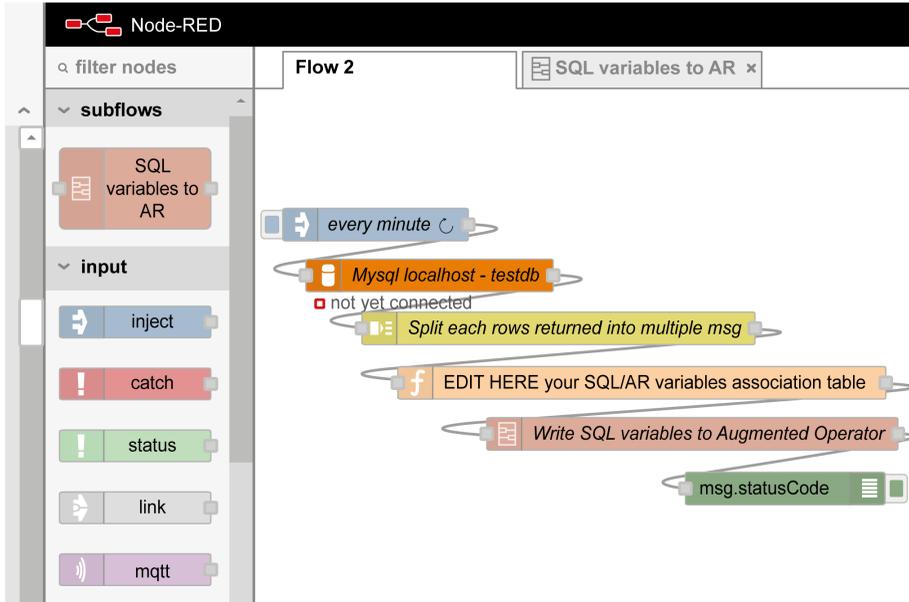


1	Variable point of interest	Display the real-time value of the variable.  Tap ★ next to the point of interest to add the information item to the <b>Favorites</b> bar at the top of the screen.
2	Subscene	Tap to display the selected subscene.
3	Favorite bar	Regroups all your favorite points of interest and allows you to quickly access your information. You can add up to 10 favorites in an area.  <b>NOTE:</b> Information displayed in the favorite bar is not updated by points of interest settings such as font size, color, or theme.
4	List point of interest	Tap to display a list of information items, such as process variables or documents.
5	Procedure item	Tap to launch the procedures (see EcoStruxure Augmented Operator Advisor, App, User Manual).
6	Image point of interest	An image overlaid on the scene image.

Alternatively, if the tablet is not in front of the equipment to be monitored, the EcoStruxure Augmented Operator Advisor App can view the available scenes and procedures contained in the project. When you open a scene, an image of the scene with the points of interest is displayed, the real-time values of process variables are generated and the triggers associated with the scenes are still active as if you are monitoring the equipment with a camera. It also displays the documents attached to an area or scenes in the document browser, in a split screen.



# Node-RED



Node-RED is an open source, visual programming tool that requires few or no programming skills. It uses pre-programmed, reusable blocks of code called nodes. Nodes are wired together to create flows of data. You can connect Node-RED flows to points of interest to display SQL database values in your augmented reality applications.

If you are going to use Node-RED, download it from [nodered.org](http://nodered.org) and install it on the runtime device (see EcoStruxure Augmented Operator Advisor, Runtime, User Manual).

The EcoStruxure Augmented Operator Advisor Runtime is compatible with the Node.js 14.x LTS, as recommended by Node-RED.

EcoStruxure Augmented Operator Advisor nodes can be found in **Start > EcoStruxure Augmented Operator Advisor > Runtime Nodes Folder**

## EcoStruxure Operator Terminal Expert (or Pro-face BLUE)

EcoStruxure Operator Terminal Expert is human machine interface (HMI) configuration software that enables you to create and edit application panels to control automation systems for the Harmony HMI range, for example, the GTU terminal (Premium and Open boxes) and Harmony industrial PCs (panel and box).

---

You can display values from EcoStruxure Operator Terminal Expert / Pro-face BLUE variables in EcoStruxure Augmented Operator Advisor.

Supported versions are EcoStruxure Operator Terminal Expert / Pro-face BLUE 3.2.

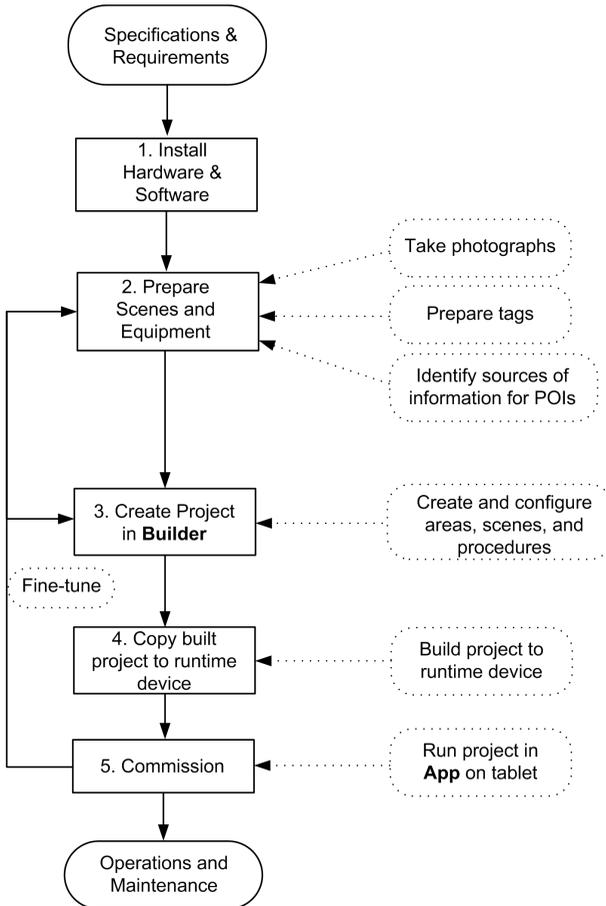
If possible, do not modify the EcoStruxure Operator Terminal Expert / Pro-face BLUE **localhost** configuration. If modifications are required, you must install an SSL certificate that matches with your DNS name.

---

# Getting Started

## Overview

Proceed as follows to start using EcoStruxure Augmented Operator Advisor:



## Step 1: Install Hardware and Software

First, ensure that the required environment is operational:

- Set up and test hardware components and network connections.

- 
- Install the EcoStruxure Augmented Operator Advisor App and EcoStruxure Augmented Operator Advisor Runtime.

Refer to *Installing EcoStruxure Augmented Operator Advisor*, page 24 for details.

## Step 2: Prepare Scenes and Equipment

The next step is to take high-resolution photographs of all the sites, buildings, and items of equipment to be monitored.

Refer to *Guidelines for Taking Photographs* (see *EcoStruxure Augmented Operator Advisor, Builder, User Manual*) for details.

Some of the scenes or equipment may not be easily identifiable due to:

- Physically identical or very similar items of equipment that need to be monitored separately.
- Poorly or very brightly lit scenes that prevent taking the required high-contrast photographs.

To avoid potential identification errors, you can attach unique tags to these items of equipment or place a tag somewhere visible in the scene. When the EcoStruxure Augmented Operator Advisor App running on the tablet scans the item of equipment or scene, it scans and identifies the tags and displays the corresponding points of interest.

Refer to *Tagging Equipment* (see *EcoStruxure Augmented Operator Advisor, Builder, User Manual*) for details.

At this stage, you also need to identify all the external sources of information (documents, external programs, process variables, and SQL database fields) that are to be monitored. This information will be needed when configuring points of interest in the EcoStruxure Augmented Operator Advisor Builder project (see the next step).

## Step 3: Create EcoStruxure Augmented Operator Advisor Project

Next, create a project using EcoStruxure Augmented Operator Advisor Builder.

EcoStruxure Augmented Operator Advisor Builder is software that you use to:

- Organize and structure the areas, scenes, subscenes, and points of interest in a project.
- Create and position the points of interest on photographs.
- Attach documents directly to a scene or associate them with information in list points of interest.

- 
- Define what happens when the operator taps the point of interest.
  - Build procedures to explain a set of tasks the operator must carry out.

Refer to the EcoStruxure Augmented Operator Advisor Builder User Manual for details.

## Step 4: Deploy the Project to EcoStruxure Augmented Operator Advisor Runtime

Only authorized users are allowed to deploy the project.

When the project is complete, perform a build that will create a signed zip file of the project (see EcoStruxure Augmented Operator Advisor, Builder, User Manual).

Then import the built project zip file, page 36 to the **Project** tab of the EcoStruxure Augmented Operator Advisor Runtime.

## Step 5: Commission

Finally, create user accounts, page 37 and test the project using the EcoStruxure Augmented Operator Advisor App running on a tablet. If necessary, fine-tune the solution by modifying the EcoStruxure Augmented Operator Advisor project, retaking photographs, adding tags to scenes or subscenes, and so on.

When all scenes and items of equipment are being recognized by the EcoStruxure Augmented Operator Advisor App and the correct items of information are appearing in all points of interest, the solution can be put into operation.

## Installing EcoStruxure Augmented Operator Advisor

### License Requirements

Trial versions of EcoStruxure Augmented Operator Advisor Runtime and EcoStruxure Augmented Operator Advisor Builder are available. They are free to download and use for up to 42 days. At any time during the trial period, you can purchase licenses and activate the software.

The following license types are available:

License Type	Maximum number of...		
	Areas	Points of interest	Procedures
<b>EcoStruxure Augmented Operator Advisor Builder</b>			
Trial	Unlimited	Unlimited	Unlimited
Essential	Unlimited	Unlimited	0
Performance	Unlimited	Unlimited	Unlimited
<b>EcoStruxure Augmented Operator Advisor Runtime</b>			
Trial	Unlimited <sup>(1)</sup>	Unlimited <sup>(1)</sup>	Unlimited <sup>(1)</sup>
Essential Level 1	1	20	0
Essential Level 2	1	50	0
Essential Level 3	1	Unlimited	0
Performance Level 1	1	20	10
Performance Level 2	1	50	20
Performance Level 3	1	Unlimited	Unlimited
Multi-area	Unlimited	Unlimited	Unlimited
(1) The EcoStruxure Augmented Operator Advisor Runtime Trial license has no limitation on the number of areas, points of interest, and procedures and remains active until the trial period expires. It is recommended that you delete the Trial license after you have activated a new license to avoid exceeding the license capabilities.			

You can also purchase the Local projects add-on license, which allows you to build local projects without an expiration date. However, this license can be used with projects containing only one area.

## License Activation

Use the License Manager to activate the license for:

- EcoStruxure Augmented Operator Advisor Runtime
- local EcoStruxure Augmented Operator Advisor Builder
- local EcoStruxure Augmented Operator Advisor Builder add-on

Remember to delete any Trial licenses after activating a new license.

The license and the add-on for the cloud EcoStruxure Augmented Operator Advisor Builder are online licenses that must be activated from the cloud Builder itself.

**NOTE:** Do not register or activate any cloud EcoStruxure Augmented Operator Advisor Builder license from the License Manager.

To activate a license in the cloud EcoStruxure Augmented Operator Advisor Builder:

Step	Action
1	Log in to cloud EcoStruxure Augmented Operator Advisor Builder.
2	Click your login name in the top right corner of the main window.
3	Choose <b>License information</b> .
4	Click <b>Change license</b> . If you want to activate an add-on, select the add-on and click <b>Activate</b> .
5	Type the activation ID in the empty text field.
6	Click <b>Register</b> .

## EcoStruxure Augmented Operator Advisor App

The EcoStruxure Augmented Operator Advisor App is compatible with:

- iOS, version 14.4 or later:
  - Compatible with: iPad (9th generation), iPad Pro (11–inch display, 5th generation), iPhone SE (64 GB)
- Android, version 7.0 or later:
  - Compatible with: Samsung Galaxy Tab A7 and S7, Samsung A32 5G
- Tablet PCs running Windows 10 64-bit, version 1803 or later:
  - Compatible with: Microsoft Surface Pro 8 (i7 processor, 8 GB RAM, 128 GB SSD), Panasonic Toughbook FZ-G2

**NOTE:** Smartphones offer a limited user experience. Use a tablet to take full advantage of the EcoStruxure Augmented Operator Advisor App.

The EcoStruxure Augmented Operator Advisor App does not require a license.

For iOS and Android, it is available from the application store:

Step	Action
1	Search for <b>EcoStruxure Augmented Operator</b> .
2	Follow the download and installation instructions.
3	After installation is complete, launch the App. This will create the necessary local folders on your device.

For Windows:

---

Step	Action
1	Make sure that you have administrator rights on the tablet PC.
2	Go to the URL <a href="http://www.se.com">www.se.com</a> and search for EcoStruxure Augmented Operator Advisor.
3	Click the relevant link and follow the instructions to download EcoStruxure Augmented Operator Advisor App for Windows.
4	Launch the installation file.
5	Follow the installation instructions to complete the installation process.
6	Click <b>Finish</b> to exit the installer after the installation process is completed.
7	After installation is complete, launch the App. This will create the necessary local folders on your device.

# EcoStruxure Augmented Operator Advisor Builder

## Overview

EcoStruxure Augmented Operator Advisor Builder is an application that runs in a web browser, also called Cloud Builder. No installation is required. The PC running EcoStruxure Augmented Operator Advisor Builder must have internet access.

**NOTE:** Alternatively, you can install the software locally on your PC. Internet access is not required. To use the Local Builder, contact the sales department for the installation file.

The following web browsers can be used:

- Google® Chrome™ (version 101 or later)
- Mozilla® Firefox™ (version 100 or later)
- Microsoft® Edge™ (version 101 or later)

## Installing the Local Builder

The local EcoStruxure Augmented Operator Advisor Builder is installed on a standard Windows PC.

---

The following minimum requirements must be met:

- Operating system: Windows 10 Pro 64-bit, version 1703 or later
- CPU: Intel® Core™ i5 processor
- RAM: 8 GB
- BIOS-level hardware virtualization support

The following prerequisites must be satisfied before installing the local EcoStruxure Augmented Operator Advisor Builder:

- Microsoft .NET Framework, version 4.7.2 or later must be installed.
- The hardware virtualization support must be turned on in the BIOS settings.
- Hyper-V must be turned on in Windows, for use by Docker Desktop.
- Docker Desktop for Windows, version 2.2.0.5 or later must be:
  - installed,
  - running, and
  - using Linux containers
- The hard drive on which the local Builder is installed must be encrypted to secure the user database, for example, using BitLocker.

To configure Docker Desktop before installing the local Builder:

Step	Action
1	On the PC, open Docker Desktop and click <b>Settings</b> .
2	Click the <b>General</b> tab, then <ul style="list-style-type: none"><li>• Select the <b>Start Docker Desktop when you log in</b> checkbox</li><li>• Clear the <b>Use the WSL 2 based engine</b> checkbox</li></ul>
3	Click <b>Apply &amp; Restart</b> .
4	Verify if Docker Desktop runs with Linux containers: <ol style="list-style-type: none"><li>1. Right-click the Docker Desktop icon in the Windows taskbar</li><li>2. In the list of items that opens, <b>Switch to Windows containers...</b> must be available if you are using Linux containers. If not available, then click <b>Switch to Linux containers...</b> to activate it.</li></ol>

To install the local Builder:

Step	Action
1	Verify that you have administrator rights on the PC.
2	Go to the URL <a href="http://www.se.com">www.se.com</a> and search for EcoStruxure Augmented Operator Advisor.
3	Click the relevant link and follow the instructions to download the local Builder.

Step	Action
4	On the PC, launch the installation file. <b>Result:</b> The installation wizard starts.
5	Follow the installation wizard instructions to complete the installation process. <b>NOTE:</b> When a Docker Desktop dialog box opens, accept to share the proposed location.
6	Click <b>Finish</b> to exit the installation wizard after the installation process is completed.
7	Apply relevant local IT rules and best practices to secure and backup your device.

## User Management for Local Builder

Only one **admin** user profile is available in the local Builder.

All Windows users of the PC where the software is installed can log in if they were added by a Windows administrator to the list of authorized users.

To add users to the list (Windows administrator only):

Step	Action
1	On the PC, open a file explorer.
2	In the left sidebar, right-click <b>This PC</b> , then in the drop-down menu click <b>Manage</b> . <b>Result:</b> The <b>Computer Management</b> window appears.
3	In the left sidebar, click <b>Local Users and Groups</b> , then double-click <b>Groups</b> .
4	In the list of groups, right-click <b>docker-users</b> , then in the drop-down menu click <b>Properties</b> .
5	Click <b>Add</b> and type the Windows identifier of the user, then click <b>OK</b> .
6	Click <b>Apply</b> to save your modifications.

To complete the configuration for each added Windows user:

Step	Action
1	On the PC, in the Windows session of the user, open Docker Desktop and click <b>Settings</b> .
2	Click the <b>General</b> tab, then <ul style="list-style-type: none"> <li>Select the <b>Start Docker Desktop when you log in</b> checkbox</li> <li>Clear the <b>Use the WSL 2 based engine</b> checkbox</li> </ul>
3	Click <b>Apply &amp; Restart</b> .
4	Click the <b>Resources</b> tab, then click <b>FILE SHARING</b> .

Step	Action
5	Verify if the shared folder exists in drive C, or add the following: <b>C:\ProgramData\Schneider Electric\EcoStruxure Augmented Operator Advisor Builder\LocalBuilder</b>
6	Click <b>Apply &amp; Restart</b> . <b>Result:</b> This user can log in to the local Builder.

## Launching the EcoStruxure Augmented Operator Advisor Builder

To launch the cloud Builder:

Step	Action
1	Start a web browser and enter the following URL: <a href="https://app.schneider-electric.com/ecostruxure-augmented-operator-advisor">https://app.schneider-electric.com/ecostruxure-augmented-operator-advisor</a> .
2	Log in using email address and password, or request a new login by clicking <b>Register here</b> .

To launch the local Builder:

Step	Action
1	In the list of installed Windows programs, click <b>EcoStruxure Augmented Operator Advisor &gt; Local Builder</b> .
2	Log in using your <b>Username</b> and <b>Password</b> .  If logging in for the first time, use the default username and password (admin/admin), then enter a new password.

## Installing the EcoStruxure Augmented Operator Advisor Runtime

### Overview

The EcoStruxure Augmented Operator Advisor Runtime can be installed on any of the following:

- Harmony GTU: Harmony HMIG5U21, HMIG5U22 Open Box

- 
- Harmony iPC: HMIBMI, HMIBMO, HMIBMU, HMIBMP, HMIPSP
  - Harmony P6: HMIP6
  - Standard Windows PC

## Prerequisites

The following minimum requirements must be met:

- Operating system: Windows 10
- Hard disk space: 600 MB (minimum)
- RAM: 4 GB
- Screen resolution: 1024 x 768 (minimum)

The following web browsers can be used:

- Google® Chrome™ (version 101 or later)
- Mozilla® Firefox™ (version 100 or later)
- Microsoft® Edge™ (version 101 or later)

The following prerequisites must be satisfied before installing the EcoStruxure Augmented Operator Advisor Runtime:

- Microsoft .NET Framework version 4.7.2 or later must be installed.
- The physical access to the runtime device must be secured by installing it in a closed cabinet inside your site or building.
- The EcoStruxure Augmented Operator Advisor Runtime must be installed only by a user with administrator rights on the runtime device.
- All folders and files installed and used by the software must be stored in a location where administration rights are required.
- The hard drive on which EcoStruxure Augmented Operator Advisor Runtime is installed must be encrypted to secure the user database, for example, using BitLocker.
- Only authorized users are allowed to deploy the project. Setup permissions to restrict the access to the project data folder on the runtime device.

---

# Installing EcoStruxure Augmented Operator Advisor Runtime

## NOTE:

- The OS logging can trace the access to the device.
- There is no specific mechanism to store events linked to deployment.
- The EcoStruxure Operator Terminal Expert signature is used to ensure consistency between the runtime device and EcoStruxure Operator Terminal Expert Runtime.

To install the EcoStruxure Augmented Operator Advisor Runtime:

Step	Action
1	Go to the URL <a href="http://www.se.com">www.se.com</a> and search for EcoStruxure Augmented Operator Advisor.
2	Click the relevant link and follow the instructions to download the EcoStruxure Augmented Operator Advisor Runtime.
3	Unzip the downloaded file.
4	On the runtime device, launch the installation file. <b>Result:</b> The installation wizard starts.
5	Follow the installation wizard instructions to complete the installation process.  When choosing the destination folder, you can click <b>Next</b> to install to default destination folder or <b>Change</b> to change the destination folder.  If a message appears during installation, proceed as follows: <ul style="list-style-type: none"><li>• If the message indicates that the Microsoft Visual C++ installation has failed, click <b>Yes</b> to continue. The installation will continue normally.</li><li>• If the message indicates an issue with the cabinet file Data1.cab, then close the message window and stop the installation. Restart the installation procedure again at step 3. However, when unzipping, install to a different destination folder, or if possible, install to a different disk drive on your device.</li></ul>
6	Click <b>Finish</b> to exit the installer after the installation process ends.
7	Install an SSL certificate, page 33 to complete the installation.  Apply relevant local IT rules and best practices to secure and backup your device.

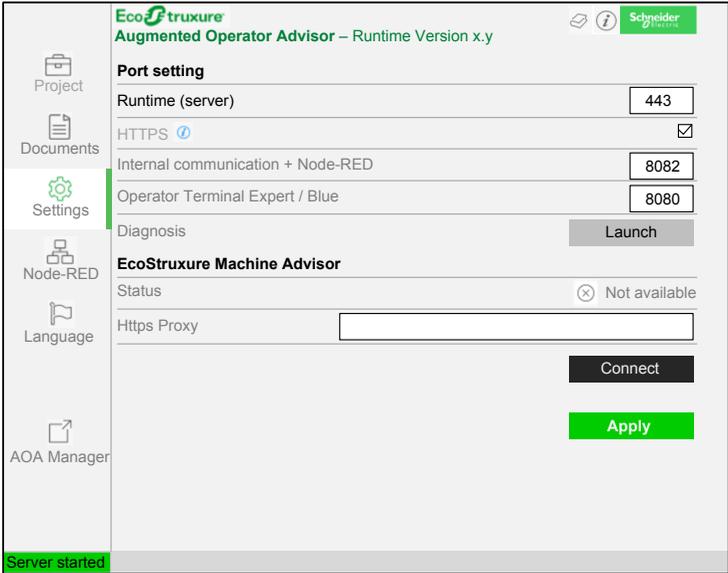
EcoStruxure Augmented Operator Advisor Runtime is started automatically each time the runtime device is restarted. When you close the runtime user interface, you can choose to stop the runtime background services, or to leave them running. To manually start EcoStruxure Augmented Operator Advisor Runtime, click **EcoStruxure Augmented Operator Advisor > Runtime** in the list of installed Windows programs.

# Installing the SSL Certificate

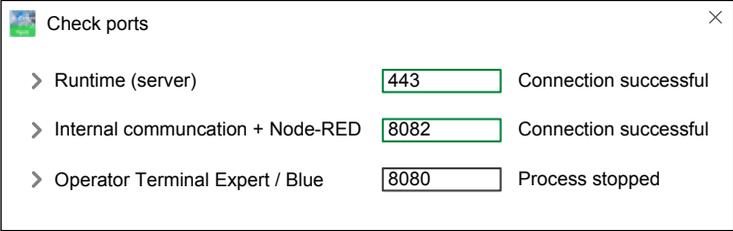
To use a secure connection (HTTPS), you must acquire and install an SSL certificate.

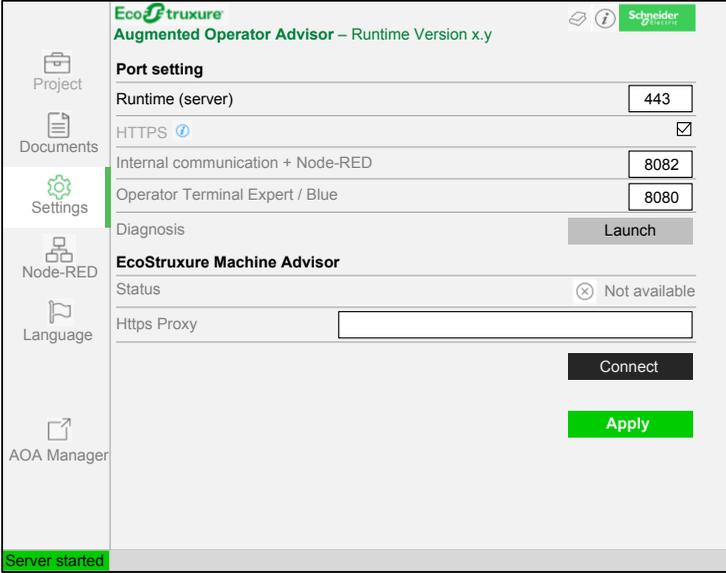
You can install:

- either a certificate, signed by a public certificate authority,
- or a self-signed certificate, signed by your certificate authority

Step	Action
1	In the Windows menu, click <b>EcoStruxure Augmented Operator Advisor</b> .
2	Open the <b>Runtime Certificate</b> folder.
3	Copy the certificate and associated key files provided by the certificate authority in this folder.
4	Rename the certificate file to <b>server.crt</b> and the key file to <b>server.key</b> .
5	Launch the EcoStruxure Augmented Operator Advisor Runtime and click the <b>Settings</b> tab.
6	<p>Define the <b>Runtime (server)</b> port to 443 and select the <b>HTTPS</b> checkbox.</p> 
7	Click <b>Apply</b> .
8	<p>If you are using a self-signed certificate, the certificate authority file must be installed on any tablets using EcoStruxure Augmented Operator Advisor App, and on any PCs using EcoStruxure Augmented Operator Advisor Manager.</p> <p>Contact your local IT department to install the certificate authority file.</p>

# Testing the Configuration

Step	Action
1	Launch the <b>EcoStruxure Augmented Operator Advisor &gt; Runtime</b> from the list of installed Windows programs, and click <b>Settings</b> .
2	<p>Click <b>Launch</b> to run the configuration.</p> <div data-bbox="315 378 1048 609"><p>Check ports</p><ul style="list-style-type: none"><li>&gt; Runtime (server) 443 Connection successful</li><li>&gt; Internal communication + Node-RED 8082 Connection successful</li><li>&gt; Operator Terminal Expert / Blue 8080 Process stopped</li></ul></div> <ul style="list-style-type: none"><li>• Take note of the <b>Runtime (server)</b> port number. This will be required by the operator user when configuring the application on the tablet (see EcoStruxure Augmented Operator Advisor, App, User Manual).</li><li>• If you use Node-RED, the same <b>Internal communication + Node-RED</b> port number should be used while configuring <b>Augmented Operator Server</b> node in Node-RED editor to communicate with EcoStruxure Augmented Operator Advisor Runtime.</li><li>• Node-RED and <b>Operator Terminal Expert / Blue</b> need to be started separately.</li><li>• EcoStruxure Augmented Operator Advisor Runtime is running correctly when <b>Runtime (server)</b> and <b>Internal communication + Node-RED</b> are indicated as <b>Connection successful</b>.</li><li>• If any port is not available it is highlighted in red and the process using that port is indicated.</li></ul> <p>Close the <b>Check ports</b> window.</p>

Step	Action
3	<p>You can then change the specific ports manually. If you modify, click <b>Apply</b> and wait until the confirmation message appears.</p>  <p>Click <b>OK</b> to close the confirmation window.</p> <p>Click <b>Launch</b> to verify if the newly requested ports are available.</p>
4	<p>To verify the secure connection, open a web browser and type this URL:</p> <p>https://localhost:&lt;PORT&gt;</p> <p>where &lt;PORT&gt; is the port number configured for <b>Runtime (server)</b> in <b>Settings</b>.</p> <p>If the SSL connection and the certificate installation are successful, a lock icon  appears beside the URL address field.</p>

## Configuring the Windows Firewall

To configure the firewall when using the Windows Firewall, follow this procedure to open the required TCP port:

Step	Action
1	From the Windows <b>Start</b> menu, open <b>Control Panel</b> .
2	Select <b>Windows Firewall</b> .

Step	Action
3	Select <b>Advanced settings</b> in the left column of the Windows Firewall window.
4	Select <b>Inbound Rules</b> in the left column of the Windows Firewall with Advanced Security window.
5	Select <b>New Rule</b> in the right column.
6	Select <b>Port</b> in the New Inbound Rule Wizard and then click <b>Next</b> . <b>NOTE:</b> You must create a <b>Port</b> rule. Do not create a <b>Program</b> rule.
7	Select which protocol this rule will apply to <b>TCP</b> , select <b>Specific local ports</b> , type the port number configured for Runtime, page 34 in <b>Settings</b> , and then click <b>Next</b> .
8	Select <b>Allow the connection</b> and then click <b>Next</b> .
9	Select when this rule applies (check all of them for the port to always stay open) and then click <b>Next</b> .
10	Give this rule a name and then click <b>Finish</b> to add the new rule.

If you are using a firewall other than the Windows Firewall, consult the documentation of the manufacturer.

## Importing a Project to EcoStruxure Augmented Operator Advisor Runtime

Before you can import a project, copy the built project .zip file created in EcoStruxure Augmented Operator Advisor Builder to the EcoStruxure Augmented Operator Advisor runtime device.

To import a project:

Step	Action
1	Launch the EcoStruxure Augmented Operator Advisor Runtime and click <b>Project</b> .
2	Click <b>Import New Project</b> and browse the project zip file, then click <b>Open</b> . <b>Result:</b> The project is imported to the EcoStruxure Augmented Operator Advisor Runtime. The project information is displayed. <b>NOTE:</b> If you reinstall the EcoStruxure Augmented Operator Advisor Runtime, you need to import the project again.

---

# Configuring the Connection with EcoStruxure Machine Advisor

After you have created your project in EcoStruxure Augmented Operator Advisor Builder, and associated the project to a machine type in EcoStruxure Machine Advisor, connect the EcoStruxure Augmented Operator Advisor Runtime to EcoStruxure Machine Advisor if you want to use the EcoStruxure Machine Advisor documents in your project.

If you are using a proxy:

Step	Action
1	Launch the EcoStruxure Augmented Operator Advisor Runtime and click <b>Settings</b> .
2	Enter the address of your proxy in the <b>Https Proxy</b> field.
3	Click <b>Apply</b> and wait until the confirmation message appears.

To configure the connection with EcoStruxure Machine Advisor:

Step	Action
1	Launch EcoStruxure Machine Advisor and open the <b>FLEET OVERVIEW</b> , then open the machine that you want to connect.
2	On the machine page, click <b>CONNECT EDGE</b> , then copy the <b>One Time Password</b> code that appears.
3	Launch the EcoStruxure Augmented Operator Advisor Runtime and click <b>Settings</b> .
4	Click <b>Connect</b> under EcoStruxure Machine Advisor. <b>Result:</b> The <b>Connect</b> dialog box opens.
5	Enter the <b>One Time Password</b> code.
6	Click <b>Connect</b> . <b>Result:</b> The EcoStruxure Augmented Operator Advisor Runtime is connected to EcoStruxure Machine Advisor.

## Configuring Users and Security Settings

### Overview

There are three types of users of EcoStruxure Augmented Operator Advisor:

- Builder users

- 
- Runtime/Manager administrators
  - Operator users

**Builder users** are those who will access EcoStruxure Augmented Operator Advisor Builder. Users without credentials can sign-up in the builder login screen.

**Runtime/Manager administrators** are those who are responsible for configuring users and security settings using the EcoStruxure Augmented Operator Advisor Manager. Runtime/Manager administrators must have administrator rights (maximum security level).

**Operator users** are those who will use the EcoStruxure Augmented Operator Advisor App. Based on their user rights (security level) they will have access to different objects in the app. In the builder project, objects are attributed with a security level numerical value. Operator users with a security level numerical value equal to or greater than the objects security level may view and interact with the object. Otherwise, the object is hidden or not accessible.

You now need to create operator users for your project (see EcoStruxure Augmented Operator Advisor, Runtime, User Manual).

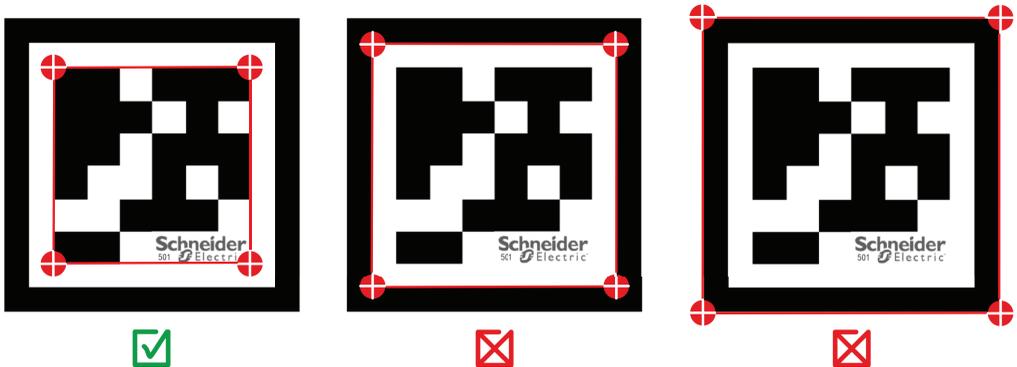
## Frequently Asked Questions (FAQs)

### What can I do if the tag is not detected properly?

Follow these rules when using tags:

- Place the tag on a solid flat surface or on a window.
- Do not use a tag in an environment with a grid or a mesh: the detection can be very slow or impossible, as the software will have difficulty differentiating between the tag and the grid/mesh.
- Reference photos must be taken directly in front of the tag. The photo plane must be parallel to the tag plane for best results.
- The detection camera plane must be also parallel to the tag plane. If a tag is placed at the top of a scene, consider tilting the tag downward to respect this parallelism. Any deviation from parallel of this photo will reduce the probability of tag detection.

- When identifying the tag placement in the images, align the dotted lines between the four red crosses with the edge of the tag itself, as follows:



If the tag is not detected properly, do the following:

1. Print the tag in matt (non-glossy) finish.
2. Make sure the tag is attached on a flat surface of uniform color.
3. Try using a larger tag.
4. Try using a different tablet for tag detection.

## Why are some characters missing in the field entries?

The EcoStruxure Augmented Operator Advisor Builder software does not recognize special characters, such as \, /, :, ?, <, >, or |.

## Why am I not able to install EcoStruxure Augmented Operator Advisor Runtime?

To be able to install the EcoStruxure Augmented Operator Advisor Runtime:

- You must have administrator rights on your system.
- You must configure the Windows Firewall correctly, page 35.
- You must activate your license key.
- You must check if the TCP port is free, page 34.

---

## Why does my trigger fail?

If the trigger action does not occur when you expect an event, display the variable in a point of interest to check that the conditions of the trigger are fulfilled.

## Why do I get a low memory warning from my web browser?

This can happen when Node-RED is running at the same time as EcoStruxure Augmented Operator Advisor Manager. Close the Node-RED editor, or some of its flows, to free additional memory.

## Why do I see a decrease in performance of detection and tracking?

Verify if your tablet has switched to power save mode. Reboot or switch back to normal mode to increase performance.

## Why do some points of interest not react when I touch them?

Verify if you need to recalibrate the touch area of your tablet. Switch between landscape and portrait orientation, then retry touching the point of interest.

## What can I do if I see a decrease in the performance of my runtime device?

Monitor and ensure that the following Windows services are running correctly:

- **AOANginx**
- **AOANodeRed**
- **AOAPython**
- **AOAWatchdog**

---

# Glossary

## A

### **area:**

An area is a zone within each site or building (such as production lines, plant rooms, storage areas, workshops, laboratories, and office areas) that you want to monitor using EcoStruxure Augmented Operator Advisor. If you have the appropriate license type, you can create an area for each part of the site to monitor within an EcoStruxure Augmented Operator Advisor project.

### **augmented reality:**

Technology that superimposes a computer-generated image on a user view of the real world, providing a composite view of the image with points of interest superimposed.

## D

### **document browser:**

Documents attached to an area, a scene, or a point of interest can be displayed in the document browser, in a split screen.

## E

### **EcoStruxure Operator Terminal Expert:**

EcoStruxure Operator Terminal Expert is human machine interface (HMI) configuration software that enables you to create and edit application panels to control automation systems for Harmony GTU terminal (Premium and Open boxes) and Harmony industrial PCs (Panel and Box).

## N

### **Node-RED:**

Node-RED is an open source, visual programming tool that requires few or no programming skills. Instead, it uses pre-programmed, reusable blocks of code called nodes. Nodes can be wired together to create flows of data.

---

## P

### **point of interest:**

A point of interest is a position in an area, scene or subscene for which additional diagnostic or technical information is available. Various types of points of interest can be defined, including technical documentation, design drawings, information contained in a spreadsheet, and the real-time values of process variables generated.

### **procedure:**

Procedures are a set of instructions that the operator must carry out in a predefined order to complete the task. Instructions can include scenes that must be recognized by the EcoStruxure Augmented Operator Advisor App using augmented reality.

### **process variable:**

A process variable is the measured value of a particular part of a process being monitored or controlled, for example, temperature, pressure level, or flow rate.

### **project:**

An EcoStruxure Augmented Operator Advisor project is made up of areas, scenes and procedures. Build the project and then import it to the EcoStruxure Augmented Operator Advisor Runtime. The operator can then access the project on a tablet running the EcoStruxure Augmented Operator Advisor App.

## S

### **scene:**

A scene corresponds to an image overlaid with points of interest.

### **SQL:**

Structured Query Language.

### **subscene:**

A part of a scene, typically a close up view of a particular area of the scene. A subscene can contain its own points of interest.

## T

### **tag:**

A two-dimensional matrix. Tags can be printed and attached to items of equipment that are physically identical or very similar. The tags are scanned as part of a scene by the EcoStruxure Augmented Operator Advisor App and the correct points of interest for the item of equipment displayed.

---

**Training mode:**

In **Training mode**, you can test a procedure or train operators to use procedures in the EcoStruxure Augmented Operator Advisor App, without needing to recognize the scene. **Training mode** allows you to skip steps, to go through them in a different order, or to complete the procedure by directly jumping to the last step.

**U****URI:**

Uniform Resource Identifier. This is used to point to an object such as a file, and defines which application is used to open it. This may require the installation of third party applications.

**V****variable:**

A variable is a type of a point of interest that is replaced by the real-time value of a software object from a process or database, for example, a system bit, when the scene containing the variable is displayed on the tablet.

Schneider Electric  
35 rue Joseph Monier  
92500 Rueil Malmaison  
France

+ 33 (0) 1 41 29 70 00

[www.se.com](http://www.se.com)

As standards, specifications, and design change from time to time, please ask for confirmation of the information given in this publication.

© 2022 Schneider Electric. All rights reserved.

EIO0000003000.12