



EcoStruxure Augmented Operator Advisor

EcoStruxure™ Augmented Operator Advisor

Augmented reality for instant diagnosis, contactless maintenance, increased efficiency, and lower costs



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References

Modicon TM3
I/O expansion modules for Modicon controllers
Analog I/O modules

Number and type of channels	Input range	Output range	Resolution	Input format (mA)	Reference	Weight (kg)
2 voltage inputs	-15...+10 VDC 0...10 VDC 0...20 mA, 4...20 mA	16.000 or 10.000 4 sign	16.000 or 10.000 4 sign	Source Sink	TM3AI2H TM3AI2G	0.110 0.200
4 voltage inputs	-15...+10 VDC 0...10 VDC 0...20 mA, 4...20 mA	16.000 or 10.000 4 sign	16.000 or 10.000 4 sign	Source Sink	TM3AI4H TM3AI4G	0.100 0.200
4 voltage or temperature inputs	-15...+10 VDC 0...10 VDC 0...20 mA, 4...20 mA	16.000 or 10.000 4 sign	16.000 or 10.000 4 sign	Source Sink	TM3AI4H TM3AI4G	0.110 0.200
4 differential temperature inputs	0...10 VDC 0...20 mA, 4...20 mA	16.000 or 10.000 4 sign	16.000 or 10.000 4 sign	Source Sink	TM3AI4H TM3AI4G	0.110 0.200
8 self-diagnosis	-15...+10 VDC	16.000 or 10.000 4 sign	16.000 or 10.000 4 sign	Source Sink	TM3AI8H TM3AI8G	0.100 0.200

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TM3AI2H

Module TM3 - 2 analog inputs high resolution

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Product Datasheet User guide Catalogue CAD Document

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Main

range of product Modicon TM3

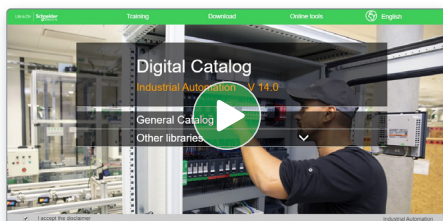
product or component type Analog input module

range compatibility Modicon M251

Each commercial reference presented in a catalog contains a hyperlink. Click on it to obtain the technical information of the product:

- Characteristics, Dimensions and drawings, Mounting and clearance, Connections and schemas, Performance curves
- Product image, Instruction sheet, User guide, Product certifications, End of life manual

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EcoStruxure™ Augmented Operator Advisor

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EcoStruxure Augmented Operator Advisor

Augmented reality for instant diagnosis, contactless maintenance, increased efficiency, and lower costs

Solution for industrial augmented reality applications

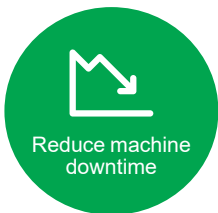


EcoStruxure Augmented Operator Advisor

EcoStruxure Augmented Operator Advisor puts real-time information at your fingertips, whenever and wherever it is needed. The custom application improves operational efficiency with augmented reality, enabling operators to superimpose current data and virtual objects onto a cabinet, machine, or plant. This software combines contextual and local dynamic information for mobile users, enabling them to experience a fusion of the physical, real-life environment with virtual objects.

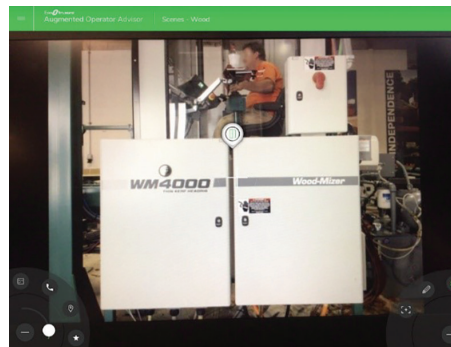


EcoStruxure™ Architecture



Reduce downtime

EcoStruxure Augmented Operator Advisor reduces downtime by opening electrical cabinet doors virtually and diagnosing the device status instantly in real-time without the need for lockout or electrical qualifications.



Closed electrical cabinet



Virtually-open electrical cabinet

+ Real-time data through augmented reality

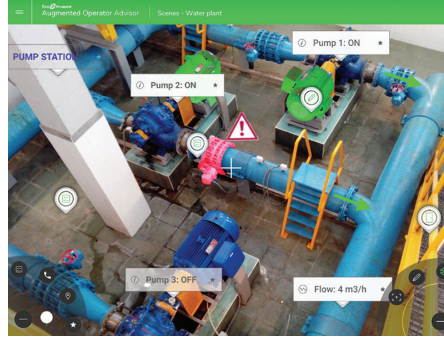
Augmented reality for instant diagnosis, contactless maintenance, increased efficiency, and lower costs



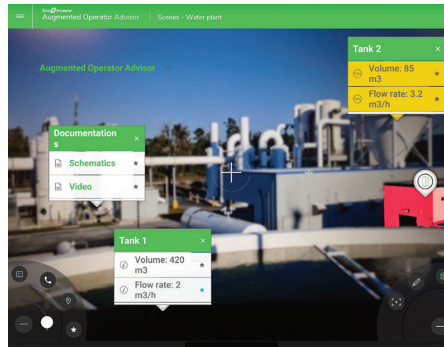
Decrease search time information

Speed-up operation and maintenance

EcoStruxure Augmented Operator Advisor speeds up the efficiency of operations and maintenance by offering immediate access to relevant information in the field like real-time data, machine history, user manuals, instructions, diagrams, etc.



Overall view of the industrial site



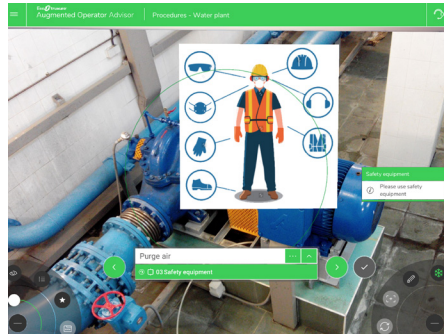
Outside the industrial site



Guided and facilitated interventions

Fewer human errors

EcoStruxure Augmented Operator Advisor enables technicians to locate the right equipment and guides them step-by-step to complete the procedures.



Standard operating procedure



Procedure augmented with images/video



[EcoStruxure Augmented Operator Advisor](#)
[Click to view video \(1 min 10 sec\)](#)

+ Instant diagnosis and contactless maintenance

EcoStruxure Augmented Operator Advisor

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EcoStruxure Augmented Operator Advisor



EcoStruxure Augmented Operator Advisor App interface

Presentation

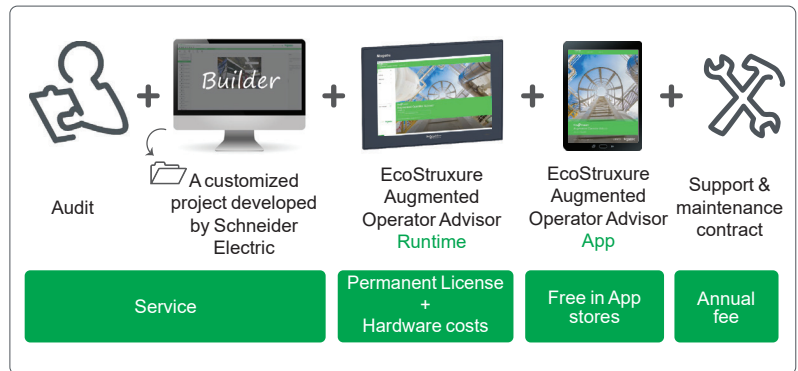
EcoStruxure Augmented Operator Advisor uses augmented reality technology to optimize the operation and maintenance of industrial sites and equipment.

It works as follows:

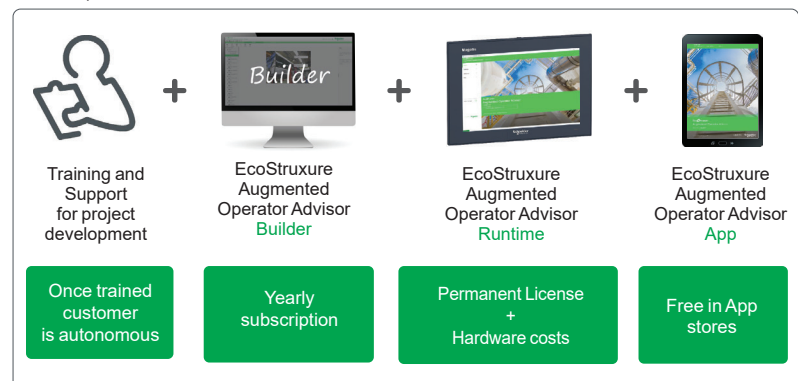
- 1 The advisor takes photos of the machines or electrical cabinet of the site and creates a project with the Builder This Builder is an online software tool allowing customers to create custom projects for the EcoStruxure Augmented Operator app run on a mobile device.
- 2 The advisor further adds point of interests, documents, videos and variables which will be displayed on the mobile device.
- 3 When the operator points a mobile device camera at the site or the monitored equipment, the EcoStruxure Augmented Operator Advisor App uses special image comparison techniques to match the visible scene in the field of view of the mobile device camera with previously stored photos of the same scene.
- 4 The Advisor then overlays points of interest markers on the live scene visible on the mobile device.
- 5 Now when the operator taps the point of interest (POI) markers, a wide variety of information such as process variables, documents, Web pages, videos are displayed.

EcoStruxure Augmented Operator Advisor is delivered in two business models:

- Project mode where customized projects are developed in-house and delivered to the customers end users.



- Do-it-yourself mode where projects are developed by the customers (Machine builders) themselves.

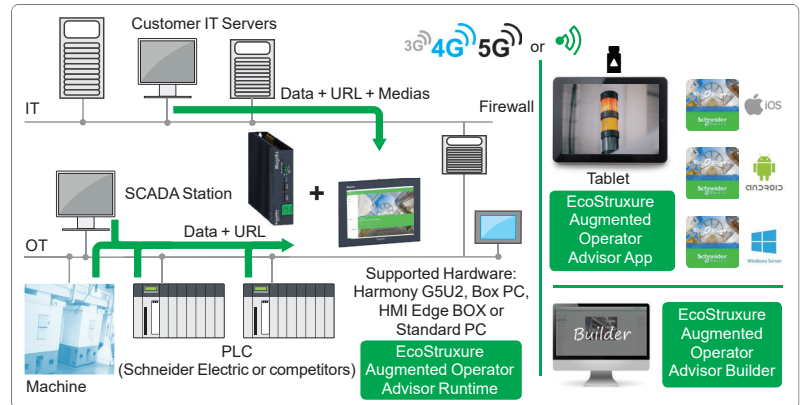


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Architecture

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



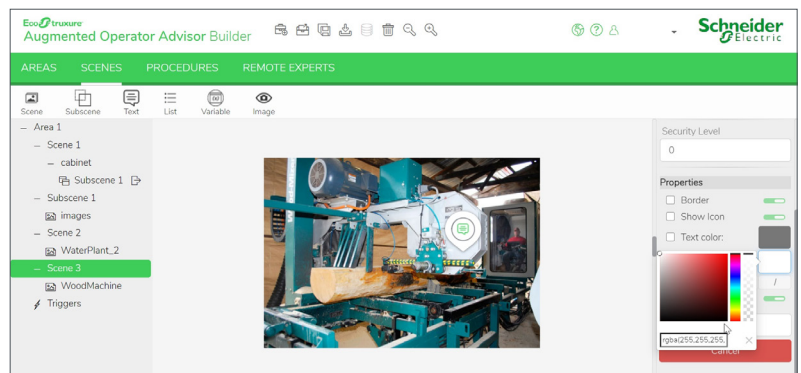
EcoStruxure Augmented Operator Advisor Architecture

■ EcoStruxure Augmented Operator Advisor Builder:

The EcoStruxure Augmented Operator Advisor Builder is available as a Web-based application where the software is accessed and used over the internet. The EcoStruxure Augmented Operator Advisor Builder can also be available off line not requiring an internet connection with a specific installable version. It is used to create projects, where the user can:

- organize and structure the areas, scenes, subscenes, and points of interest in a project
- create and position the points of interest on photographs
- define what happens when the operator taps the point of interest
- build procedures (1) to explain a set of tasks the operator must carry out
- define dynamic URLs depending on the current scene which can be reused to define multiples physical scenes

The built project must be uploaded to the device where the EcoStruxure Augmented Operator Advisor Runtime software is installed.



EcoStruxure Augmented Operator Advisor Builder

(1) Procedures are only available with particular license types.

Note: To view real-time values of process variables produced by the equipment being monitored, Node-RED or EcoStruxure Operator Terminal Expert applications should be installed.

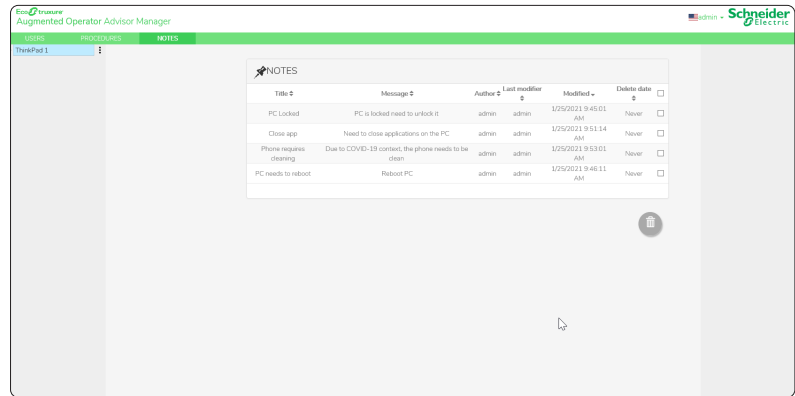
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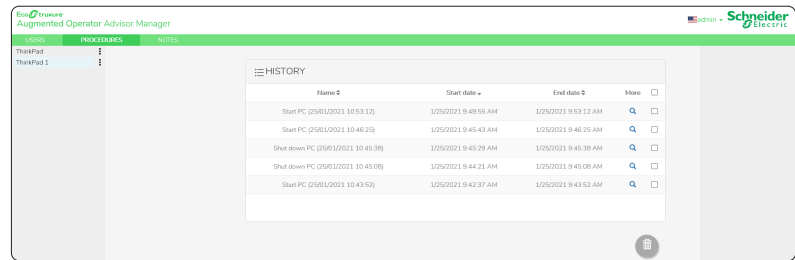
Architecture (continued)

■ EcoStruxure Augmented Operator Advisor Runtime software (1): This is a server-based Windows software installed on a Harmony (2) or a standard Windows PC to execute the projects. It gathers together all the required information and sends it to the mobile device to be displayed in the points of interest by the EcoStruxure Augmented Operator Advisor App. It also manages the database containing the photographs of scenes and equipment of the uploaded project.

□ With Runtime export of notes, you can see the list of all notes created by the operators in the App. Operators create their own notes in scenes or sub-scenes when running the App on their mobile device and this information can be used to make improvements to the project. The export of notes to a .CSV file allows them to be archived and used as part of a wider system.



□ With Runtime Procedure History, you can see a report of all procedures followed by the operators in the App. The details like name and version of the project, date and time when the procedures were followed, name of the user who followed the procedure and the individual steps taken can be seen. The export of procedure history to a .CSV file allows them to be archived and used as part of a wider system.



(1) Both EcoStruxure Augmented Operator Advisor App and EcoStruxure Augmented Operator Advisor Runtime should be connected to the same WiFi network or 3G/4G/5G mobile network to be able to communicate with each other.

(2) Harmony HMIG5U2 Open Box PC or Harmony iPC.

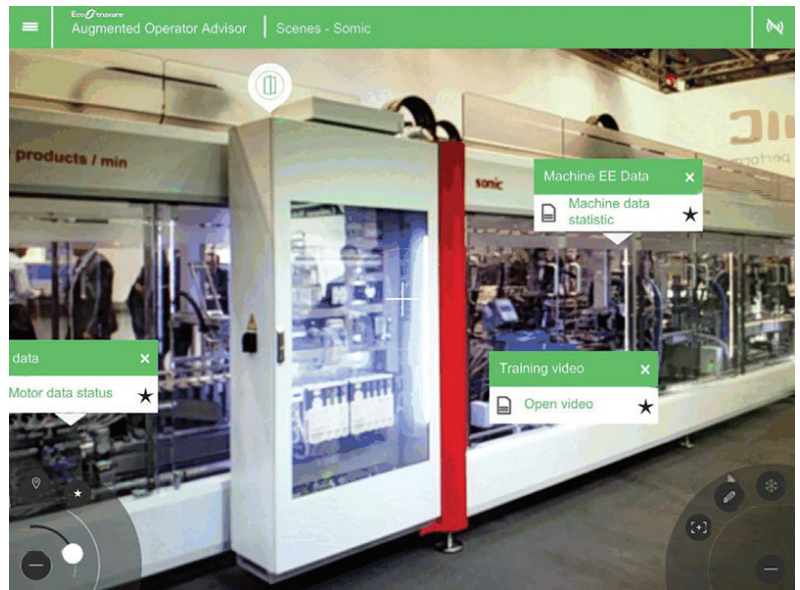
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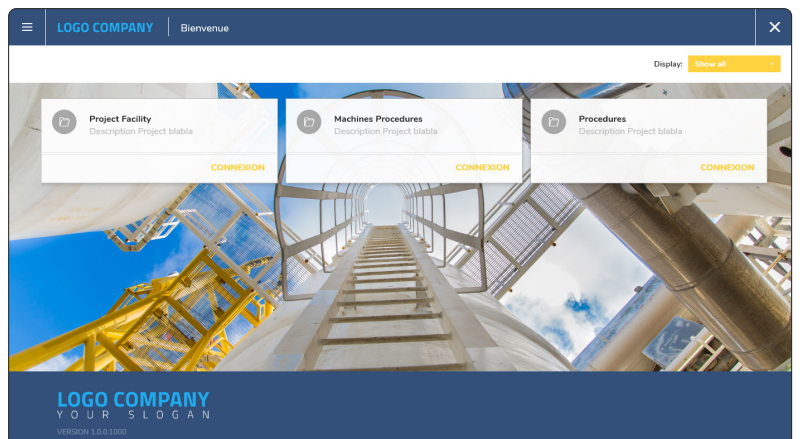
Architecture (continued)

■ EcoStruxure Augmented Operator Advisor App (1): This is an application running on a mobile device that views reality and compares it to photographs of scenes stored in the EcoStruxure Augmented Operator Advisor project. When the scene being viewed by the camera and the stored image match, the user interface controls and points of interest associated with the scene are displayed. The App is available in English, French, German, Italian, Spanish, Simplified Chinese, Japanese, and South Korean languages.



EcoStruxure Augmented Operator Advisor App

□ Customised App Theme (2): The application can be modified to show a customised corporate identity using a theme file. The application remains in the Schneider Electric App Store accounts, which means that the customers will maintain their applications up-to-date and will not have to manage the mobile software.



Example of the Customized App Theme

□ Zoom and pan out: With this feature, scenes can be zoomed and panned out at the same time making the navigation and closing of POI easy near the edge of scenes.

(1) Both EcoStruxure Augmented Operator Advisor App and EcoStruxure Augmented Operator Advisor Runtime should be connected to the same WiFi network or 3G/4G/5G mobile network to be able to communicate with each other.

(2) This feature is not available in all countries. Please contact your local Schneider Electric sales office for more information.

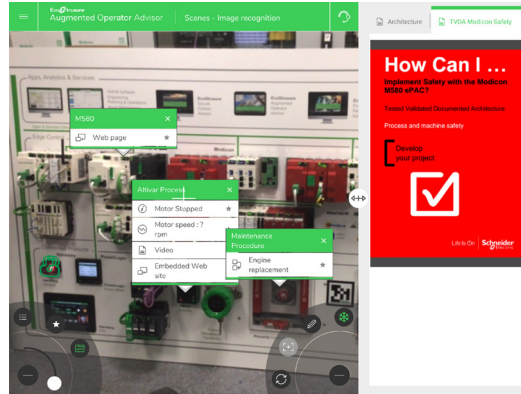
Note: To view real-time values of process variables produced by the equipment being monitored, Node-RED or EcoStruxure Operator Terminal Expert applications should be installed.

EcoStruxure Augmented Operator Advisor

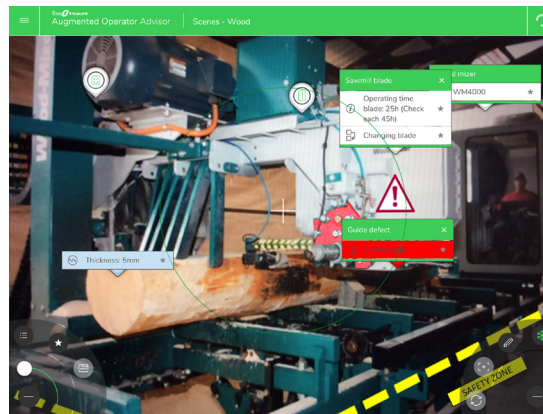
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Architecture (continued)

□ Embedded browser: The embedded browser simultaneously displays the relevant documents along with the augmented reality information. You can also interact with other softwares such as SAP or Maximo by displaying webpages.



□ Customise with POI color: The POI color feature allows you to highlight and differentiate individual POIs with background colors. The desired color can be selected or entered in the RGBA color code



Note: This feature has to be enabled in the Builder for it to be displayed in the App.

□ Training mode: This mode allows users to prepare and execute off-site procedures by executing a dry-run of the procedure in the comfort of their office.



EcoStruxure Augmented Operator Advisor

References

The EcoStruxure Augmented Operator Advisor App can be freely downloaded from the App store on iOS, Android and Windows. The EcoStruxure Augmented Operator Advisor App can be used permanently during 42 days of free trial to evaluate the entire solution in your environment.

The EcoStruxure Augmented Operator Advisor Builder software can be accessed from the link www.schneider-electric.com/ecostruxure-augmented-operator-advisor to create Augmented Reality projects. The online license must be activated from the EcoStruxure Augmented Operator Advisor Builder itself.

The EcoStruxure Augmented Operator Advisor Runtime software can be freely downloaded from the link www.schneider-electric.com/ecostruxure-augmented-operator-advisor to execute projects on PC without activation code (42 days trial).

Also, the free trial version (42 days trial) allows you to evaluate the complete solution (Builder, RunTime, and App) in your environment. There is no limitation on the number of areas, points of interest, and procedures. You can purchase licenses and activate the software at any time during the trial period.

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EcoStruxure Augmented Operator Advisor Builder software			
Description	License type	Compatible Web browsers	Reference
Augmented Operator Builder Essential	Single 1 year license, Paper	Google® Chrome™ (version 69 or higher)	AOABS3CZSSXMZZ
	Single 1 year license, Digital	Microsoft® Internet Explorer™ (version 11 or higher)	AOABS3CZSSXAZZ
Augmented Operator Builder Essential Renewal	Single 1 year license, Paper	Mozilla® Firefox™ (version 63 or higher)	AOAES3CZSSXMZZ
	Single 1 year license, Digital	Microsoft® Edge™ (version 15 or higher)	AOAES3CZSSXAZZ
Augmented Operator Builder Performance	Single 1 year license, Paper		AOABM3CZMSXMZZ
	Single 1 year license, Digital		AOABM3CZMSXAZZ
Augmented Operator Builder Performance Renewal	Single 1 year license, Paper		AOAPM3CZMSXMZZ
	Single 1 year license, Digital		AOAPM3CZMSXAZZ
Augmented Operator Local Builder Essential	Single 1 year license, Paper		AOALEICZSSXMZZ
	Single 1 year license, Digital		AOALEICZSSXAZZ
Augmented Operator Local Builder Essential Renewal	Single 1 year license, Paper		AOALERCZSSXMZZ
	Single 1 year license, Digital		AOALERCZSSXAZZ
Augmented Operator Local Builder Performance	Single 1 year license, Paper		AOALPICZMSXMZZ
	Single 1 year license, Digital		AOALPICZMSXAZZ
Augmented Operator Local Builder Performance Renewal	Single 1 year license, Paper		AOALPRCZMSXMZZ
	Single 1 year license, Digital		AOALPRCZMSXAZZ
Augmented Operator Builder Essential/ Performance Local Projects Add-on to existing Builder license	Single license, Paper		AOALPJCZZSPMZZ
	Single license, Digital		AOALPJCZZSPAZZ

EcoStruxure Augmented Operator Advisor Runtime software			
Description	License type	Compatible HMIs	Reference
Augmented Operator RT Essential Level 1, Mono-area projects and up to 20 points of interest by project	Single permanent license, Paper	Harmony HMIG5U2 Open Box	AOARS1CZSSPMZZ
	Single permanent license, Digital	Harmony iPC: HMIBSU, HMIBMI, HMIBMO, HMIBMU, HMIBMP, HMIPSP/Industrial PC, and Standard Windows PC	AOARS1CZSSPAZZ
Augmented Operator RT Essential Level 2, Mono-area projects and up to 50 points of interest by project	Single permanent license, Paper		AOARS2CZSSPMZZ
	Single permanent license, Digital		AOARS2CZSSPAZZ
Augmented Operator RT Essential Level 3, Mono-area projects and unlimited number of points of interest by project	Single permanent license, Paper		AOARS3CZSSPMZZ
	Single permanent license, Digital		AOARS3CZSSPAZZ
Augmented Operator RT Performance Level 1, Mono-area projects and up to 20 points of interest and 10 procedures by project	Single permanent license, Paper		AOARM1CZMSPMZZ
	Single permanent license, Digital		AOARM1CZMSPAZZ
Augmented Operator RT Performance Level 2, Mono-area projects and up to 50 points of interest and 20 procedures per project	Single permanent license, Paper		AOARM2CZMSPMZZ
	Single permanent license, Digital		AOARM2CZMSPAZZ
Augmented Operator RT Performance Level 3, Mono-area projects and unlimited number of points of interest and procedures by project	Single permanent license, Paper		AOARM3CZMSPMZZ
	Single permanent license, Digital		AOARM3CZMSPAZZ
Augmented Operator RT Multi-Area, Multi-area projects and unlimited number of points of interest and procedures by project	Single permanent license, Paper		AOARX3CZXSPMZZ
	Single permanent license, Digital		AOARX3CZXSPAZZ

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AOABM3CZMSXAZZ	9
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