AS-P
SpaceLogic™ Servers

EcoStruxure™ Building

Introduction

At the core of an EcoStruxure BMS is an automation server, such as the SpaceLogic* AS-P server. The AS-P server performs key functionality, such as control logic, trend logging, and alarm supervision, and supports communication and connectivity to the I/O and field buses. The distributed intelligence of the EcoStruxure BMS helps ensure fault tolerance against detected faults and provides a fully featured user interface through WorkStation and WebStation.

* Formerly known as SmartX.

Features

The AS-P server is a powerful device that can act as a standalone server and also control Central IO modules and monitor and manage field bus devices. In a small installation, the embedded AS-P server acts as a standalone server, mounted with its Central IO modules in a small footprint. In medium and large installations, functionality is distributed over multiple automation servers that communicate over TCP/IP.

The AS-P server has the following features:

- Communications hub
- Variety of connectivity options
- Zigbee wireless network support
- Authentication and permissions through powerful systems
- WorkStation/WebStation interface
- Native BTL-listed BACnet support

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- BACnet/SC node, hub, or router
- Native LonWorks support
- Native Modbus support
- Additional building protocol support
- Web Services support based open standards
- EcoStruxure Web Services support
- MQTT IoT protocol support
- External log storage option
- Reporting
- Scalable custom configurations
- I/O expansion option
- Text and graphics-based programming tools
- eMMC memory for data and backup
- IT friendly networking based on the TCP/IP suite of communication protocols
- TLS support
- Patented two-piece design
- Auto-addressing
- Simple DIN-rail installation
- Secure boot

Communications hub

Capable of coordinating traffic from above and below its location, the AS-P server can deliver data directly to you or to other servers throughout the site. The AS-P server can run multiple control programs, manage local I/O, alarms, and users, handle scheduling and logging, and communicate using a variety of protocols. Because of this, most parts of the system function autonomously and continue to run as a whole even if communication is interrupted or individual EcoStruxure BMS servers or devices go offline.

Variety of connectivity options

An AS-P server has numerous ports that enable it to communicate with a wide range of protocols, devices, and servers.

An AS-P server has the following ports:

- Two 10/100 Ethernet ports
- Two RS-485 ports
- One LonWorks TP/FT port (not available on the AS-P-NL and AS-P-NLS models)
- One built-in I/O bus port
- One USB device port
- One USB host port

The first Ethernet port is dedicated to the site network. The second Ethernet port is fully configurable. The second port can be configured to extend the site network so that various devices and clients can be connected. Another option is to configure the second port as a separate network, which means that the port can host a private network. This port configuration with dual networks requires hardware version 0.62 or higher. If the second port is not used, it can be disabled.

The USB device port allows you to upgrade and interact with the AS-P server using Device Administrator.

Using a USB Ethernet adapter, you can connect a laptop PC to the USB host port and run Device Administrator, WorkStation, and WebStation to upgrade, configure, and access the AS-P server. The USB host port can also be used to provide power and communications for Wireless Adapter - Advanced.

Zigbee wireless network support

Through Wireless Adapter - Advanced connected to the host USB port, Zigbee™ wireless connectivity can be enabled for the automation server. The automation server can extend its point count through the Zigbee wireless network and bring flexibility in your applications. The automation server equipped with the adapter is together a Zigbee Certified Product that is compliant with Zigbee 3.0. For more information on the adapter and supported wireless devices, see the Wireless Adapter - Advanced Specification Sheet.

Authentication and permissions

An EcoStruxure BMS provides a powerful permission system that is easy to manage, flexible, and adapts to all kinds of system sizes. The permission system provides a high standard of authentication. Authentication is done against the built-in user account management system or against Windows Active Directory Domains. The built-in account management system allows an administrator to establish password policies that meet stringent cybersecurity guidelines. When Windows Active Directory is used, the administration costs are lower because users do not have to be managed in multiple directories.

WorkStation/WebStation interface

Through any client, the user experience is similar regardless of which EcoStruxure BMS server the user is logged on to. The user can log directly on to an AS-P server to engineer, commission, supervise, and monitor the AS-P server as well as its attached Central IO modules and field bus devices. See the WorkStation and WebStation specification sheets for additional information.

Open building protocol support

One of the cornerstones of the EcoStruxure BMS is support for open standards. The AS-P server can natively communicate with three of the most popular standards for buildings: BACnet (including BACnet/SC), LonWorks, and Modbus.

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Native BTL-listed BACnet support

An AS-P server communicates directly to BACnet/IP and BACnet MS/TP networks. The AS-P servers are BTL-listed as BACnet Building Controllers (B-BC), the most advanced BACnet Device Profile. This capability provides access to an extensive range of BACnet devices from Schneider Electric and other vendors. See the BTL Product Catalog for up-to-date details on BTL listed firmware revisions on BACnet International's home page. An AS-P server can also serve as a BACnet Broadcast Management Device (BBMD) to facilitate BACnet systems that span multiple IP subnets.

BACnet/SC (Secure Connect) support

The Enterprise Server and automation servers support BACnet/SC applications as a BACnet/SC node, hub*, and router. This allows the Enterprise Server and automation servers to be in BACnet/SC networks and support applications that connect BACnet/IP or MS/TP networks with BACnet/SC networks. A major benefit of BACnet/SC is that it allows more secure transport of BACnet traffic and information between BACnet/SC devices over private and public networks without the need for BBMDs, VLANs, and VPNs, because the BACnet/SC protocol uses WebSocket technology and TLS 1.3 encryption. In addition, BACnet/SC uses certificate management to help ensure only those devices authorized to be on a BACnet/SC network can operate on that network.

* EcoStruxure Building Operation version 4.0.3 and later.

Native LonWorks support

The AS-P server has a built-in FTT-10 port to communicate to the TP/FT-10 LonWorks network. Integrated LonWorks functionality enables access to LonWorks devices from Schneider Electric and other vendors. LonWorks networks can be commissioned, bound, and configured from the AS-P server using the built-in LonWorks Network Management Tool. No third-party tools are needed. A protocol analyzer with powerful debugging and network quality monitoring features can be achieved using third-party software, without additional hardware needed. To increase ease of use, LNS device plug-ins are supported. This allows for easier engineering and maintenance of LonWorks devices from Schneider Electric and other vendors. There are some limitations on how LNS device plug-ins can be used.

The AS-P server is also available in two models named AS-P-NL and AS-P-NLS, which do not have LonWorks support.

Native Modbus support

The Enterprise Server and automation servers natively integrate Modbus RS-485 client and server configurations, as well as Modbus TCP client and server. This allows full access to third-party products and the range of Schneider Electric products that communicate on the Modbus protocol, such as power meters, UPS, circuit breakers, and lighting controllers.

Additional building protocol support

The AS-P server also supports integration and communication with Schneider Electric supplied BMS systems and devices that use the Andover Continuum Infinet standard for buildings.

Web Services support

The AS-P server supports the use of Web Services based on open standards, such as SOAP and REST, to consume data into the EcoStruxure BMS. Use incoming third-party data (temperature forecast, energy cost) over the Web to determine site modes, scheduling, and programming.

EcoStruxure Web Services support

EcoStruxure Web Services, Schneider Electric's Web Services standard, is natively supported in the EcoStruxure BMS servers. EcoStruxure Web Services offers extra features between compliant systems whether within Schneider Electric or other authorized systems. These features include system directory browsing, read/write of current values, alarm receipt and acknowledgement, and historical trend log data. EcoStruxure Web Services requires user name and password to log on to the system.

MQTT IoT protocol support

The Enterprise Server and automation servers support MQTT as an option for publishing data to, and receiving updates from, other systems. MQTT is a messaging transport protocol that with its small footprint, light bandwidth utilization, and simplicity, is ideal for M2M and IoT communication. The MQTT capability supports communication with any MQTT broker, for example, Amazon, Microsoft, Google or IBM.

External log storage option

EcoStruxure BMS servers can be configured to automatically store all historical data, trend log data, event log and audit trail data, in a high-capacity, open, and well-proven database. If data needs to be available for longer periods of time, an external log storage can be incorporated into the EcoStruxure BMS without the need for extensive engineering work. The database supported is TimescaleDB, which is built on PostgreSQL. The capacity is limited only by the size of the selected storage media.

The data in the external log storage is available natively to the viewers built into the EcoStruxure Building Operation clients and to the built-in reporting functionality. No other software is required to access the data throughout the full retention period. The data is readily available for any analytics software that you already use, due to the open nature of PostgreSQL. Most reporting tools have native support for PostgreSQL.

The TimescaleDB extension to PostgreSQL optimizes the solution for time-stamped data and is well-suited for the EcoStruxure Building Operation historical data.

The system architecture is very flexible. All EcoStruxure BMS servers in an EcoStruxure BMS can write to and read from the

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same TimescaleDB database, or multiple databases can be used.

You can use the powerful Log Processor functionality for custom processing of trend data for viewing in charts, dashboards and for inclusion in reports. The Log Processor enables advanced calculations on one or multiple trend logs and point values.

Examples of advanced calculations:

- Energy usage normalization
- Virtual submeters and summaries
- Calculation of Mean Kinetic Temperature
- Unit conversions
- Average, maximum, and minimum over custom periods

The output of the Log Processor can be saved in the database, including the External Log Storage or calculated automatically on demand.

Reporting

The EcoStruxure BMS servers provide built-in functionality for basic reporting that can deliver reports in any text format and XLSX, without any dependencies to other external software. Reports for XLSX can be enriched by using advanced functionality such as formulas, conditional formatting, charts and sparklines.

Reports can be generated on schedule, on an alarm event or other custom conditions, and you can get the output delivered via email or written to file.

Scalable custom configurations

The AS-P server and its family of Central IO modules were designed to meet the unique needs of each installation. Depending on the configuration, each AS-P server can control up to 464 I/O points. Because power and communications are delivered along a common bus, multiple modules can be plugged together without tools in a simple one-step process using the built-in connectors.

I/O expansion

For applications that require remote I/O resources, the SpaceLogic IP-IO modules provide a versatile mix of I/O points for any application. For more information, see the SpaceLogic IP-IO Specification Sheet.

Text and graphics-based programming tools

Unique to the industry, the EcoStruxure BMS servers have both Script and Function Block programming options. This flexibility helps assure that a suitable programming method can be selected for the application.

eMMC memory for data and backup

The automation server has a 4 GB eMMC memory, which is used, for example, for the application, historical data, and backup storage. Users can also manually back up or restore the automation server to a storage location on a PC or network. Through the Enterprise Server, users have the ability to perform scheduled backups of associated automation servers to network storage for even greater levels of protection.

IT friendly

The EcoStruxure BMS servers communicate using the networking standards. This makes installations easy, management simple, and transactions more secure.

Supported protocols

- IP addressing
- TCP communications
- DHCP for easy network configuration
- DNS for simple lookup of addresses
- HTTP/HTTPS for Internet access through firewalls, which enables remote monitoring and control
- NTP (Network Time Protocol) for time synchronization throughout the system
- SMTP or SMTPS with support for SSL/TLS based authentication, enables sending email messages triggered by schedule or alarm
- SNMP enables network supervision and reception of application alarms in designated network management tools
- WebSocket Secure (WSS) and TLS 1.3 encryption (BACnet/SC applications)
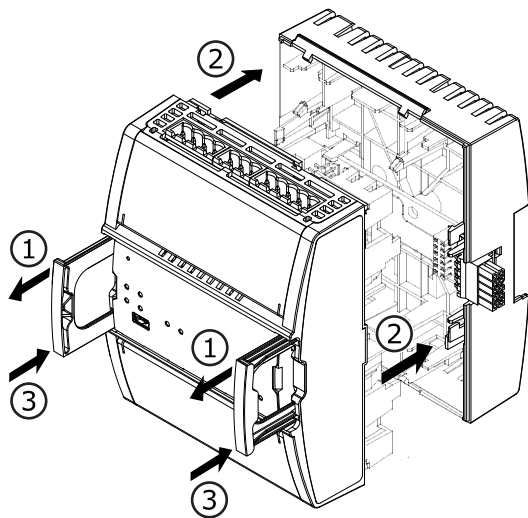
TLS support

Communication between clients and the EcoStruxure BMS servers, and between EcoStruxure BMS servers, can be encrypted using Transport Layer Security (TLS). The servers are delivered with a default self-signed certificate. Commercial Certification Authority (CA) server certificates are supported to lower the risk of malicious information technology attacks. Use of encrypted communication can be enforced for both WorkStation and WebStation access.

Patented two-piece design

Each module can be separated from its terminal base to allow the site to be wired prior to the installation of the electronics. The patented locking mechanism serves as handles for removing the module from its base. All critical components have a protective cover that permits convection cooling to occur.

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Two-piece design

Auto-addressing

The auto-addressing feature helps eliminating the need for setting DIP switches or pressing commission buttons. Each module automatically knows its order in the chain and assigns itself accordingly – significantly reducing engineering and maintenance time.
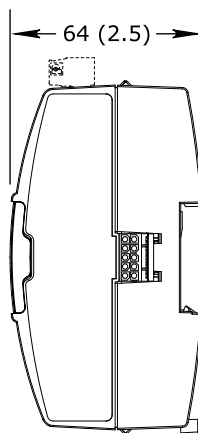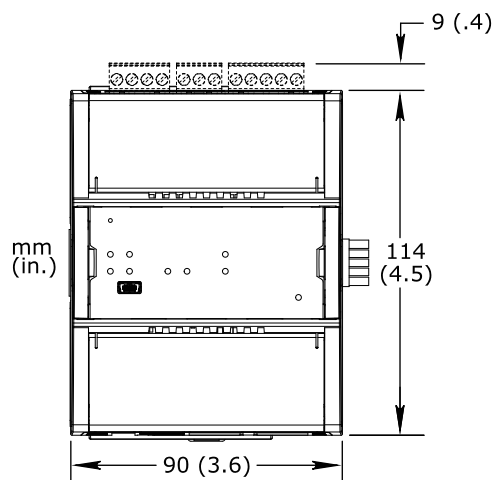
Simple DIN-rail installation

Fasteners easily snap into a locked position for panel installation. The fastener has a quick-release feature for easy DIN-rail removal.

Secure boot

Secure boot is a security standard to help ensure that a device boots using only software that is trusted by Schneider Electric.

Secure boot is supported by the AS-P server models AS-P-S and AS-P-NLS.

Specifications

AS-P	
Electrical	
DC input supply power	10 W
DC input supply voltage	24 VDC
Environment	
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)
Ambient temperature, storage	-20 to +70 °C (-4 to +158 °F)
Maximum humidity	95 % RH non-condensing
Material	
Plastic flame rating	UL94-5VB
Enclosure	PC/ABS
Ingress protection rating	IP 20
Mechanical	
Dimensions including terminal base	90 W x 114 H x 64 D mm (3.6 W x 4.5 H x 2.5 D in.)

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Weight including terminal base	0.321 kg (0.71 lb)
Weight excluding terminal base	0.245 kg (0.54 lb)
Agency compliances	
Emission	RCM; BS/EN 61000-6-3; BS/EN 50491-5-2; FCC Part 15, Sub-part B, Class B
Immunity	BS/EN 61000-6-2; BS/EN 50491-5-3
Safety standards	BS/EN 60730-1; BS/EN 60730-2-11; BS/EN 50491-3; UL 916 C-UL US Listed
Product	BS/EN 50491-1
Real-time clock	
Accuracy in runtime mode	NTP server
Accuracy in backup mode, at 25 °C (77 °F)	+/-52 seconds per month
Backup time, at 25 °C (77 °F)	10 days
Communication ports	
Ethernet	Dual 10/100BASE-TX (RJ45)
USB	1 USB 2.0 device port (mini-B) 1 USB 2.0 host port (type-A), 5 VDC, 2.5 W
RS-485	Dual 2-wire ports, bias 5.0 VDC
LonWorks[a] a) AS-P-NL (SXWASPXXX10002) and AS-P-NLS (SXWASPSBX10002) do not support LonWorks.	TP/FT-10
Communications	
BACnet	BACnet/IP, port configurable, default 47808 BACnet/SC, port configurable, no default port
BACnet profile	BACnet Building Controller (B-BC), AMEV AS-B
BACnet certification a) See the BTL Product Catalog for up-to-date details on BTL listed firmware revisions on BACnet International's homepage.	BTL Certification (BTL Listing[a], WSPCert)

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Modbus[a]	Modbus TCP, client and server Serial, RS-485, client and server
a) AS-P-S (SXWASPSBX10001) and AS-P-NLS (SXWASPSBX10002) require a separate Modbus license (SXWSWX000MBRTU).	

TCP	Binary, port fixed, 4444

HTTP	Non-binary, port configurable, default 80

HTTPS a) Disabled by default.	Encrypted supporting TLS 1.3, 1.2, 1.1[a], and 1.0[a], port configurable default 443

WSS[a] a) BACnet/SC applications	Encrypted supporting TLS 1.3, port configurable

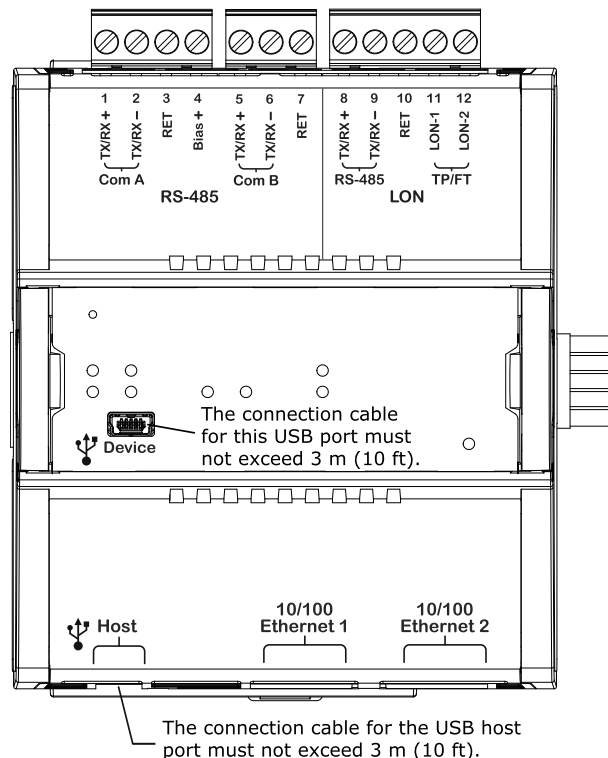| SMTP	Email sending, port configurable, default 25

SMTPS	Email sending, port configurable, default 587

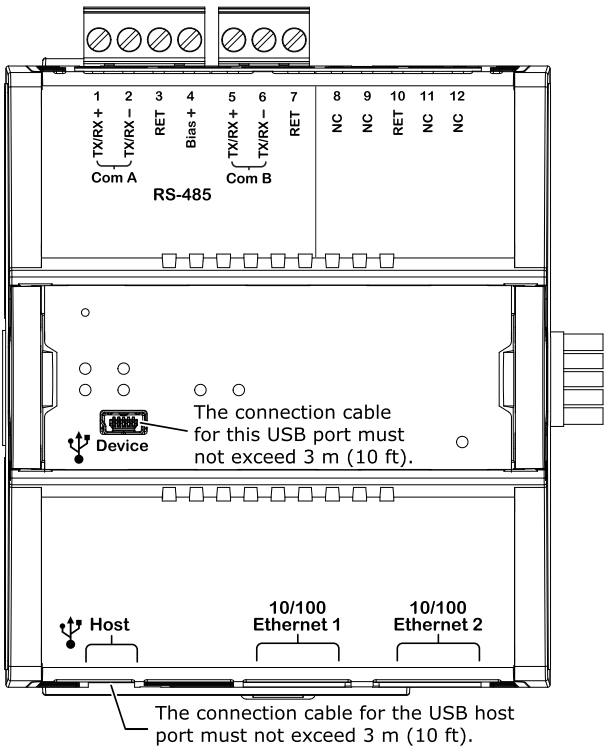| SNMP	version 3 Network supervision using poll and trap Application alarm distribution using trap

Terminals

The terminals of the AS-P and AS-P-S models are shown below.

The terminals of the AS-P-NL and AS-P-NLS models are shown below.

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The connection cable for this USB port must not exceed 3 m (10 ft).

The connection cable for the USB host port must not exceed 3 m (10 ft).

LNS	
LNS version	OpenLNS Installed on WorkStation PC

LonMark	
Resource files version	14.00

CPU	
Frequency	500 MHz
Type	SPEAr1380, ARM Cortex-A9 dual-core
DDR3 SDRAM	512 MB
eMMC memory	4 GB
Memory backup	Yes, battery-free, no maintenance

Part numbers	
SpaceLogic AS-P	SXWASPXXX10001
SpaceLogic AS-P-S	SXWASPSBX10001
SpaceLogic AS-P-NL	SXWASPXXX10002
SpaceLogic AS-P-NLS	SXWASPSBX10002
TB-ASP-W1, Terminal Base for AS-P servers (Required for each AS-P server)	SXWTBASW110002
AS-P connector kit	SXWASPCON10001

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Software bundles	
AS-P-S and AS-P-NLS	
In the following description, a Connected Product is a communicating device directly connected to a BACnet, Modbus, Infinet, or Zigbee network driven by the AS-P server. A device connected to an RP or MP controller, a non-communicating sensor, valve, or actuator, or a LonWorks local node is not a Connected Product.	
AS-P – Standalone SW Support for 10 Connected Products and 6 Central IO modules.	SXWSWXBU0000SA
AS-P – Standard SW Support for 25 Connected Products, 30 Central IO modules, and Enterprise Server communication.	SXWSWXBU0000SD
AS-P – Enhanced SW Support for 100 Connected Products, 30 Central IO modules, and Enterprise Server communication.	SXWSWXBU0000EN
AS-P – Full SW Support for 250 Connected Products, 30 Central IO modules, and Enterprise Server communication.	SXWSWXBU0000FU
Modbus – SpaceLogic AS-P Server Modbus software add-on, for AS-P-S and ASP-NLS bundles.	SXWSWX000MBRTU
AS-P Bundle Upgrade – Standalone to Standard Upgrades from 10 to 25 Connected Products, from 6 to 30 Central IO modules, and adds Enterprise Server communication.	SXWSWXUP00SASD
AS-P Bundle Upgrade – Standalone to Enhanced Upgrades from 10 to 100 Connected Products, from 6 to 30 Central IO modules, and adds Enterprise Server communication.	SXWSWXUP00SAEN
AS-P Bundle Upgrade – Standalone to Full Upgrades from 10 to 250 Connected Products, from 6 to 30 Central IO modules, and adds Enterprise Server communication.	SXWSWXUP00SAFU
AS-P Bundle Upgrade – Standard to Enhanced Upgrades from 25 to 100 Connected Products.	SXWSWXUP00SDEN
AS-P Bundle Upgrade – Standard to Full Upgrades from 25 to 250 Connected Products.	SXWSWXUP00SDFU
AS-P Bundle Upgrade – Enhanced to Full Upgrades from 100 to 250 Connected Products.	SXWSWXUP00ENFU
AS-P and AS-P-NL	
AS-P Upgrade Non-Secure Boot – Standalone Standalone AS-P upgrade. Upgrades AS-P or AS-P-NL from EcoStruxure Building Operation software version 3.x to 4.0. Not compatible with secure boot hardware.	SXWSWASPUP34SA
AS-P Upgrade Non-Secure Boot – Standard Standard AS-P upgrade. Upgrades AS-P or AS-P-NL from EcoStruxure Building Operation software version 3.x to 4.0. Not compatible with secure boot hardware.	SXWSWASPUP34SD
AS-P Upgrade Non-Secure Boot – Enhanced Enhanced AS-P upgrade. Upgrades AS-P or AS-P-NL from EcoStruxure Building Operation software version 3.x to 4.0. Not compatible with secure boot hardware.	SXWSWASPUP34EN
AS-P Upgrade Non-Secure Boot – Full Full AS-P upgrade. Upgrades AS-P or AS-P-NL from EcoStruxure Building Operation software version 3.x to 4.0. Not compatible with secure boot hardware.	SXWSWASPUP34FU
Add-on options	
AS-P, AS-P-S, AS-P-NL, and AS-P-NLS	
SW-EWS-1, EcoStruxure Web Services (run-time) option Consume only for one automation server	SXWSWEWSXX0001

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SW-EWS-2, EcoStruxure Web Services (run-time) option Serve & Consume for one automation server	SXWSWEWSXX0002
SW-EWS-3, EcoStruxure Web Services (run-time) option Serve & Consume, plus Historical trend log data for one automation server	SXWSWEWSXX0003
SW-GWS-1, Web Services (Generic Consume) option For one automation server	SXWSWGWSXX0001
SW-SNMP-1, Alarm notifications via SNMP option For one automation server	SXWSWSNMPX0001
EcoStruxure Building Operation SmartDriver option For one AS-P server or Enterprise Server	SXWSWSDRVX0001
SW-ASDBTS-1, TimescaleDB connection option For one automation server	SXWSWASDBXS001
SW-ASMQTT-1, MQTT option For one automation server (not required if the parent Enterprise Server has a license)	SXWSWMQTTXRW01
SAML Authentication option For one SpaceLogic automation server	SXWSWASSAML001

Software requirements

External log storage option

TimescaleDB 1.2 and later
PostgreSQL version compatible with the TimescaleDB version

Quality assurance testing has been performed by Schneider Electric with TimescaleDB and PostgreSQL installed natively in Windows 10, Windows Server 2012, 2016, and 2019. Other deployment scenarios have not been tested by Schneider Electric.

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Regulatory Notices

Federal Communications Commission
FCC Rules and Regulations CFR 47, Part 15, Class B
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.
Industry Canada
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Regulatory Compliance Mark (RCM) - Australian Communications and Media Authority (ACMA)
This equipment complies with the requirements of the relevant ACMA standards made under the Radiocommunications Act 1992 and the Telecommunications Act 1997. These standards are referenced in notices made under section 182 of the Radiocommunications Act and 407 of the Telecommunications Act.

UL 916 Listed products for the United States and Canada, Open Class Energy Management Equipment. UL file E80146.

CE - Compliance to European Union (EU)
2014/30/EU Electromagnetic Compatibility Directive
2011/65/EU Restriction of Hazardous Substances (RoHS) Directive
2015/863/EU amending Annex II to Directive 2011/65/EU
This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union as specified in the above directive(s).

WEEE - Directive of the European Union (EU)
This equipment and its packaging carry the waste of electrical and electronic equipment (WEEE) label, in compliance with European Union (EU) Directive 2012/19/EU, governing the disposal and recycling of electrical and electronic equipment in the European community.

UK Conformity Assessed
S.I. 2016/1091 - Electromagnetic Compatibility Regulations 2016
S.I. 2012/3032 - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
S.I. 2013/3113 - Waste Electrical and Electronic Equipment Regulations 2013
This equipment complies with the rules, of the UK regulations, for governing the UKCA Marking for the United Kingdom specified in the above directive(s).

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