# SmartX AS-P Server

## SmartX Server


## Introduction

At the core of an EcoStruxure BMS is a SmartX server, such as the SmartX AS-P server. The SmartX 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.

## Features

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

### Communications hub

Capable of coordinating traffic from above and below its location, the SmartX AS-P server can deliver data directly to you or to other servers throughout the site. The SmartX 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

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

A SmartX AS-P server has the following ports:

- Two 10/100 Ethernet ports
- Two RS-485 ports
- One LonWorks TP/FT port (not available on AS-P-NL model)
- 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 or act as a client to a second site 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 SmartX 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 SmartX AS-P server. The USB host port can also be used to provide power and communications for the SmartX Zigbee Adapter.

### Zigbee wireless network support

Through the SmartX Zigbee Adapter connected to the host USB port, Zigbee™ wireless connectivity can be enabled for the SmartX server. The SmartX server can extend its point count through the Zigbee wireless network and bring flexibility in your applications. For more information on the SmartX Zigbee Adapter and supported wireless devices, see the SmartX Zigbee Adapter Specification Sheet.

03-32031-03-en, January 2021

# SmartX AS-P Server

## SmartX Server

### 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 a SmartX AS-P server to engineer, commission, supervise, and monitor the SmartX AS-P server as well as its attached I/O 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 SmartX AS-P server can natively communicate with three of the most popular standards for buildings: BACnet, LonWorks, and Modbus.

### Native BTL-listed BACnet support

A SmartX AS-P server communicates directly to BACnet/IP and BACnet MS/TP networks. The SmartX 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. A SmartX AS-P server can also serve as a BACnet Broadcast Management Device (BBMD) to facilitate BACnet systems that span multiple IP subnets.

### Native LonWorks support

The SmartX 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 SmartX 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 SmartX AS-P server also comes in a model named AS-P-NL, which does not have LonWorks support.

### Native Modbus support

The SmartX AS-P server natively integrates Modbus RS-485 master and slave configurations, as well as 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 SmartX AS-P server also supports integration and communication with Schneider Electric supplied BMS systems and devices that use the following standards for buildings: I/NET, MicroNet, NETWORK 8000, and Andover Continuum Infinet.

### Web Services support

The SmartX 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 SmartX servers support MQTT as an option for publishing information to other systems. MQTT is a messaging transport protocol which has become increasingly popular in recent years. With its small footprint, light bandwidth

03-32031-03-en, January 2021

# SmartX AS-P Server

## SmartX Server

utilization, and simplicity, it is ideal for M2M and IoT communication. Use MQTT to enable the Enterprise Server and SmartX servers to publish values to other systems through any MQTT broker or server, for example, Amazon, Microsoft, 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 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 mininum 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 SmartX AS-P server and its family of I/O modules were designed to meet the unique needs of each installation. Depending on the configuration, each SmartX 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 SmartX IP Controller – IP-IO modules provide a versatile mix of I/O points for any application. For more information, see the SmartX IP Controller – 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 SmartX 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 SmartX server to a storage location on a PC or network. Through the Enterprise Server, users have the ability to perform scheduled backups of associated SmartX servers to network storage for even greater levels of protection.

03-32031-03-en, January 2021

# SmartX AS-P Server

## SmartX Server

### IT friendly

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

### TLS support

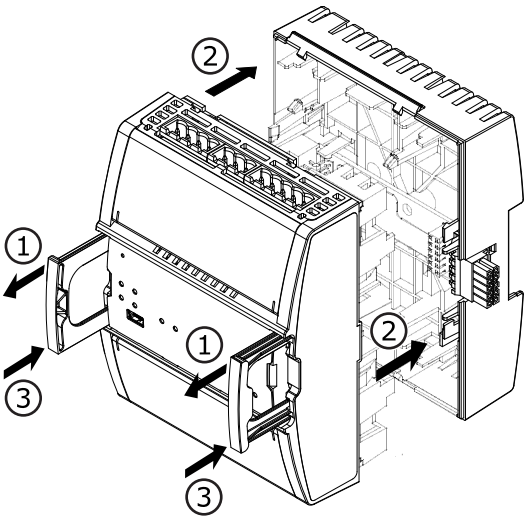
Communication between clients and the EcoStruxure BMS servers can be encrypted using Transport Layer Security (TLS 1.2). The servers are delivered with a default self-signed certificate. Commercial Certification Authority (CA) server certificates are supported to lower the risk of malicious information technology attacks. Use of encrypted communication can be enforced for both WorkStation and WebStation access.

### 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

### 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.




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.

## Specifications

### 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

03-32031-03-en, January 2021


Life Is On Schneider Electric

# SmartX AS-P Server

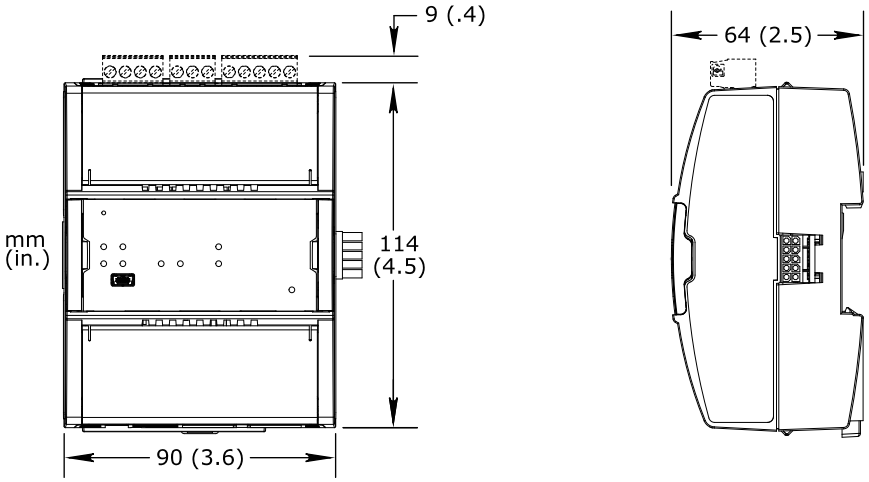
## SmartX Server

### 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.)




Weight including terminal base ..... 0.321 kg (0.71 lb)
Weight excluding terminal base ..... 0.245 kg (0.54 lb)

### Agency compliances

Emission ..... RCM; EN 61000-6-3; EN 50491-5-2; FCC Part 15, Sub-part B, Class B
Immunity ..... EN 61000-6-2; EN 50491-5-3
Safety standards ..... EN 60730-1; EN 60730-2-11; EN 50491-3; UL 916 C-UL US Listed
Product ..... 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] ..... TP/FT-10
a) SmartX Controller – AS-P-NL (SXWASPXXX10002) does not support LonWorks.

### Communications

BACnet ..... BACnet/IP, port configurable, default 47808
BACnet profile ..... BACnet Building Controller (B-BC), AMEV AS-B

# SmartX AS-P Server

## SmartX Server

BACnet certification.....BTL Certification (BTL Listing[a], WSPCert)
a) See the BTL Product Catalog for up-to-date details on BTL listed firmware revisions on BACnet International'shomepage.

Modbus .....Modbus TCP, client and server
.....Serial, RS-485, master or slave

TCP.....Binary, port fixed, 4444

HTTP.....Non-binary, port configurable, default 80

HTTPS.....Encrypted supporting TLS 1.2, 1.1, and 1.0, port configurable default 443

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

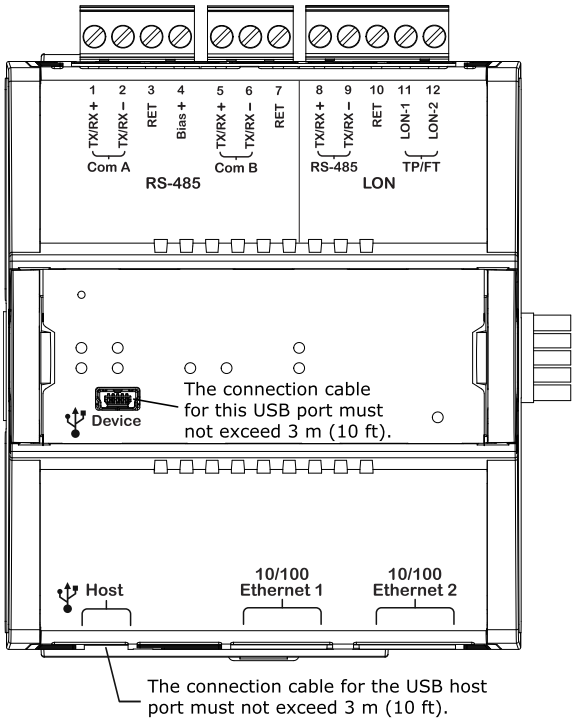
03-32031-03-en, January 2021

# SmartX AS-P Server

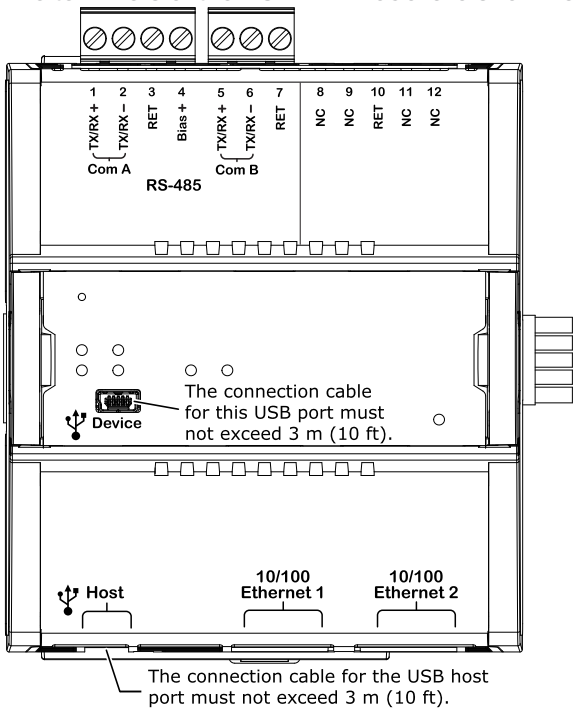
## SmartX Server

### Terminals

The terminals of the AS-P model are shown below.




The terminals of the AS-P-NL model are shown below.




### LNS

LNS version..... OpenLNS

# SmartX AS-P Server

## SmartX Server

.....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

SmartX Controller – AS-P ..... SXWASPXXX10001

SmartX Controller – AS-P-NL .....SXWASPXXX10002

TB-ASP-W1, Terminal Base for SmartX Controller – AS-P
(Required for each SmartX Controller – AS-P) ..... SXWTBASW110002

### Add-on options

SW-EWS-1, EcoStruxure Web Services (run-time) option
Consume only for one SmartX server .....SXWSWEWSXX0001

SW-EWS-2, EcoStruxure Web Services (run-time) option
Serve & Consume for one SmartX server.....SXWSWEWSXX0002

SW-EWS-3, EcoStruxure Web Services (run-time) option
Serve & Consume, plus Historical trend log data for one SmartX server.....SXWSWEWSXX0003

SW-GWS-1, Web Services (Generic Consume) option
For one SmartX server.....SXWSWGWSXX0001

SW-SNMP-1, Alarm notifications via SNMP option
For one SmartX server .....SXWSWSNMPX0001

SW-SMARTDRIVER-1, Communication to external devices via SmartDriver
For one SmartDriver license .....SXWSWSDRV00001

SW-SMART-CONNECT, Smart Connector deployment license
For one Smart Connector deployment .....SXWSWSCDL100001

SW-ASDBTS-1, TimescaleDB connection option
For one SmartX server .....SXWSWASDBXS001

SW-ASMQTT-1, MQTT publish option
For one SmartX server (not required if the parent Enterprise Server has a license) .....SXWSWMQTTXRW01

### Software requirements

External log storage option.....PostgreSQL 11.0 and later
.....TimescaleDB 1.2 and later

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.

03-32031-03-en, January 2021

# SmartX AS-P Server

## SmartX Server

## 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.

**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) per the provisions of the following standards: EN 50491-1 Product Standard; EN 60730-1, EN 60730-2-11, and EN 50491-3 Safety Standards.

**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.

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



03-32031-03-en, January 2021