Architectures for Retail

Design Guide
12/2024

se.com/ww/en/work/solutions/for-business/retail/

Life Is On Schneider Electric

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1. Safety Information

1.1. 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 you alert of 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.

1.2. 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.

2. Introduction

2.1. Purpose and Scope

As the retail industry deals with higher energy expenses and labor challenges, it's clear that a sustainable approach is vital for long-term success. With a lack of workers in stores, retailers need innovative ways to improve operations and customer experiences. Decarbonization is now a top priority, leading to the demand for energy-efficient and eco-friendly solutions in retail. To tackle these challenges, integrating smart solutions in retail spaces is crucial, offering opportunities to save energy, streamline operations, and cut costs.

This guide is meant to assist panel builders who are already familiar with the electro-mechanical part of panels, but maybe not the connectivity part linked with Energy Management Systems (EMS) and Building Management Systems (BMS), empowering them to understand and efficiently implement these technologies in the dynamic retail environment to optimize space.

This guide covers three different architectures: lite, basic, and advanced. All the architectures include the connectivity part linked with Energy Management Systems (EMS). The difference lies in the level of automation provided via the Building Management Systems (BMS). These architectures are suitable for small buildings such as restaurants, supermarkets, stores, boutiques and pharmacies.

Note: The rules and recommendations given in this guide focus on the implementation and commissioning of solutions and architectures in PrismaSeT low-voltage (LV) switchboards. When used in other contexts, the operation and the performance of the solutions can differ. The rules and recommendations apply to implementation of digital architectures and related products. The settings are limited to the key parameters of the communication. Implementation and settings of the electrical functions supported by the products are not provided in this document: this information can be found in the User Guides for the products.

2.2. EcoStruxure for Retail Overview

EcoStruxure for Retail provides an integrated, IoT-based platform that delivers best-in-class energy, refrigeration, environmental, security, and IT control across your assets. This helps to ensure business continuity, loss prevention, equipment reliability, energy and operational efficiency, and an engaging dining experience.

3. About the document

3.1. References

Document name	Reference
Smart Panel Assembly Guide	ESXP1G003EN
EcoStruxure™ Building Activate User Guide	DOCA0343EN
EcoStruxure™ Panel Server User Guide	DOCA0172EN
Wireless Communication Architectures with EcoStruxure™ Panel Server	DOCA0289EN

Table 1: Reference documents

Note: all documents and software can be found on the Schneider Electric website https://www.se.com

3.2. Glossary

Term	Description
EEH	EcoStruxure Energy Hub
EBA	EcoStruxure Building Activate
EV	Electrical Vehicle
HACCP	Hazard Analysis and Critical Control Point
HVAC	Heating, Ventilation and Air Conditioning
LV	Low-Voltage
PV	Photovoltaic
RTU	Remote Terminal Unit (term used for used in Serial Line communication)
RTU (HVAC)	Roof Top Unit
UPS	Uninterruptible Power Supply
WAGES	Water Air Gas Electric Steam

Table 2: Glossary

4. Architecture Selection

The choice between the different architectures will depend on the need specified by the End User. The table below includes customer use cases, and details of which architectures they can be implemented in.

	Lite	Basic	Advanced
Energy Metering			
Site energy consumption with distribution by usage and location	X	X	X
Real-time energy consumption to detect inefficiencies and have alarms in case of abnormal consumption	X	X	X
WAGES (Water, Air, Gas, Electricity and Steam) monitoring other than Electricity	X	X	X
Lighting			
Lighting control with schedule	X	X	X
Optimized lighting control depending on daylight conditions and room occupancy		X	X
HVAC			
Basic scheduling on the controller itself	X		
Optimized HVAC control depending on room occupancy		X	X
Kitchen equipment			
Alarms on load status and voltage loss	X	X	X
Schedule to define the running time slots	X	X	X
Hood			
Monitoring hood status & alarms in case not running or voltage loss	X	X	X
Optimized setpoint depending on the use of grills and fryers			X
Refrigeration			
Monitoring temperature and door status, alarms (voltage loss, temperature, door status)	X	X	X
HACCP report	X	X	X
Setpoint managed globally			X
UPS			
Monitoring and alarming	X	X	X
Fire/Access Control			
Turn OFF kitchen cooking equipment in case of fire	X	X	X
Hood control in case of fire		X	X
Emergency lights monitoring	X	X	X
Access and intrusion alarm management			X
Microgrid			
PV self-management	X	X	
Optimized solution with battery and PV			X
eMobility			
Standalone EV charger	X	X	
Fully integrated solution management			X
User Interface			
Mobile and web applications	X (1)	X (2)	X (2)
One local operator panel for all systems			X

(1) Energy Management, Alarms, Loads Control and Schedule
(2) HVAC, Energy Management, Alarms, Loads Control and Schedule

5. Architectures

This guide includes three different architectures: lite, basic and advanced. Based on the specified use cases needed, the End User can select the architecture that best fits their requirements. Depending on the architecture selected, the products and communication protocols used may change for the different use cases.

5.1. Architecture 1 – Lite

5.1.1. Description

The simplest architecture, considered the lite solution, utilizes a Panel Server (Universal or Advanced) and EcoStruxure Energy Hub (EEH) for energy and asset management. The Panel Server is connected to the network through an Ethernet switch, and EcoStruxure Energy Hub is connected to the network, then to the Schneider Electric cloud through an Internet box or a 4G/5G connection point. EEH desktop and application can then be used to manage the site.

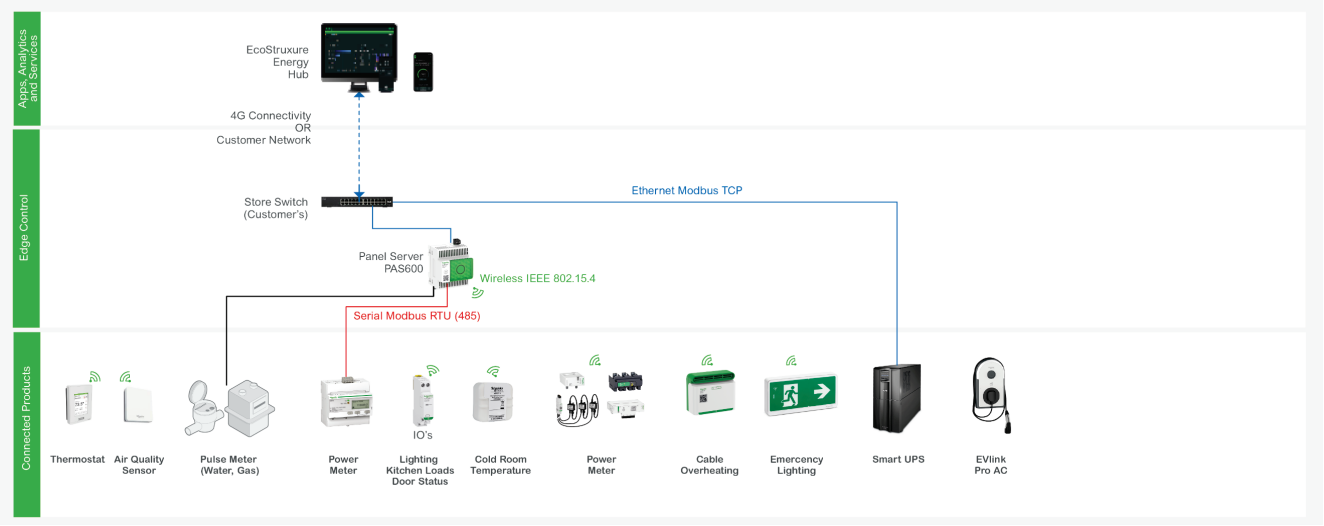

Illustration 1: Lite Architecture Example for Retail

Energy Metering

- iEM3100/3200/3300 Series energy meters or PowerTag Energy sensors can provide a comprehensive view of both energy consumption and generation on site, as well as measuring active and reactive energy transmitted and received, and providing alarms in case of overconsumption.
  - iEM Series communicates with the Panel Server via Modbus Serial (A9MEM…3150/55, 3250/55, 3350/55, 3555).
  - PowerTag Energy communicates wirelessly to the Panel Server using IEEE 802.15.4 and can provide an alarm in case of voltage loss.
- Pulse Meters for WAGES (Water, Air, Gas, Electricity and Steam) can be connected to the two available digital inputs of the 24 Vdc variant of Panel Server (PAS600L, PAS800L). The pulse weight and pulse unit of each pulse input can be configured using EcoStruxure Power Commission software or EcoStruxure Panel Server web pages.

Lighting

Regular (non-emergency) lighting can be controlled using PowerTag Control IO modules by following a set schedule and/or manually. They communicate with the Panel Server using IEEE 802.15.4.

HVAC

HVAC devices for this architecture include:

- SE8000 Room Controller
- Wireless Air Quality Sensor

The room controller enables basic scheduling directly on the device and communicates wirelessly to the air quality sensor using ZigBee 3.0 Green Power.

Kitchen Equipment

Kitchen equipment can be controlled and monitored via the following devices:

- PowerTag Energy can be used to monitor power and energy in real time and provides alarms in case of voltage loss or overconsumption.
- PowerTag Control IO module enables kitchen loads to be controlled following a set schedule.

Both of these devices communicate to the Panel Server using IEEE 802.15.4.

Hood

The hood can be controlled and monitored via the following devices:

- PowerTag Energy can be used to monitor the hood in real time and provides alarms in case of voltage loss or overconsumption.
- PowerTag Control IO module can be used to turn the hood on/off, following a set schedule.

Both of these devices communicate to the Panel Server using IEEE 802.15.4.

Refrigeration

Cold rooms can be monitored via one or more of the following devices:

- PowerTag Energy can be used to monitor power and energy in real time and provides alarms in case of voltage loss or overconsumption.
- PowerTag Control 2DI module can be used to monitor door status and set an alarm when the door is opened.
- PowerTag Ambient can be used as a cold room temperature sensor and enables temperature alarms. An HACCP report can then be generated via the EEH Site Manager App.

All of these devices communicate to the Panel Server using IEEE 802.15.4.

UPS

The UPS is connected directly to the Ethernet switch, which gives access to provide monitoring and alarming via email.

Fire/Safety

- Kitchen loads and devices can be shut off in case of fire in the cooking area using the ANSUL button. The ANSUL system is a type of fire suppression system specifically designed for commercial kitchens, particularly effective at extinguishing grease fires.
- Emergency lighting is run using the Exiway Light SATI LINK/Activa-link or Exiway Trend Activa-link ranges. These lights can communicate wirelessly with one another and with the Panel Server and be monitored remotely. Automated self-testing (for the lights and battery) is performed, with alarming in case of failure. Smartphone and email notifications are available through the EEH Site Manager App. With the app, it is also possible to generate an Emergency Light test report, which is mandatory once a year (depending on the local regulation).

Microgrid

PV information is available using an energy meter.

eMobility

EV information is available using an energy meter.

User Interface

EcoStruxure Energy Hub desktop and application provide an interface for energy management, alarms, load control, and scheduling.

5.1.2. Bill of Materials

The bill of materials includes references for the Schneider Electric products featured in the architecture.

Usage	Product	Reference
Energy and Asset Management	EcoStruxure Energy Hub	**Available references**
Ethernet Switch	Modicon unmanaged switch 5 or 8	**Available references**
Gateway	Panel Server Universal Panel Server Advanced	**PAS600L**, **PAS600** **PAS800L**, **PAS800**, **PAS800P**
HVAC Controller	SE8000 Room Controller	**Available references**
Air Quality Sensor	Wireless CO_2 Temperature and Humidity Wireless Temperature and Humidity	**SED-CO2-G-5045** **SED-TRH-G-5045**
Cold Room Temperature Sensor	PowerTag Ambient	**A9XST114**
Energy Meter	Acti9 iEM3100/3200/3300 Series	**Available references**
Power Meter	PowerTag Energy	**Available references**
Load Control	PowerTag Control IO Module	**A9XMC1D3**
Door Status	PowerTag Control 2DI Module	**A9XMC2D3**
Cable Overheating	PowerLogic HeatTag	**SMT10020**
Emergency Lighting	Exiway Light Activa-link Exiway Trend Activa-link Exiway Light SATI LINK	**OVA47210…15**, **OVA44210...15** **OVA59130…32**, **OVA59230/31**, **OVA59330/31**, **OVA59430/31**
Smart UPS	Smart UPS Inverter	**Available references**
Electric Vehicle Charging	EVlink Pro AC	**Available references**

5.2. Architecture 2 – Basic

5.2.1. Description

The second architecture is the basic solution with additional features to suit the customer's needs. The basic architecture utilizes a SpaceLogic RP-C Pro Room Controller, a Panel Server and a Dicube controller, which are all connected to the EcoStruxure Building Activate Flex Server, which is connected to the Schneider Electric cloud. It uses EcoStruxure Building Activate (EBA) as the energy and asset management solution.

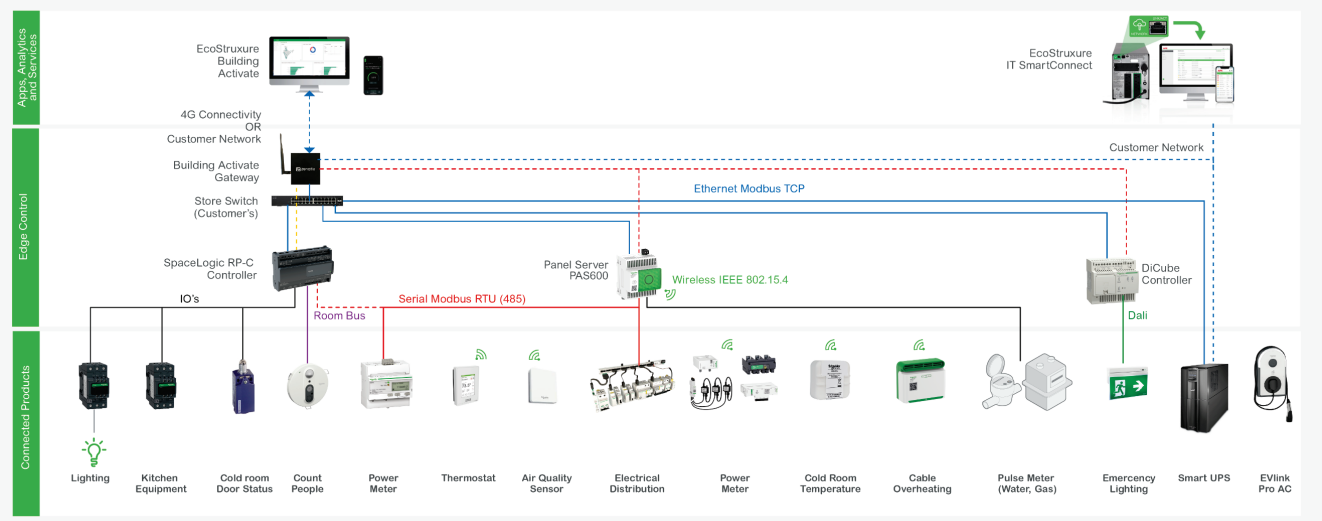

Illustration 2: Basic Architecture Example for Retail

Energy Metering

- iEM3100/3200/3300 Series energy meters or PowerTag Energy sensors can provide a comprehensive view of both energy consumption and generation on site, as well as measuring active and reactive energy transmitted and received, and providing alarms in case of overload.
  - iEM Series communicates with the Panel Server via Modbus Serial (A9MEM…3150/55, 3250/55, 3350/55, 3555).
  - PowerTag Energy communicates to the Panel Server using IEEE 802.15.4 and can provide an alarm in case of voltage loss.
- Pulse Meters for WAGES (Water, Air, Gas, Electricity and Steam) can be connected to the two available digital inputs of the 24 Vdc variant of Panel Server (PAS600L, PAS800L). The pulse weight and pulse unit of each pulse input can be configured using EcoStruxure Power Commission software or EcoStruxure Panel Server web pages.
  It is possible to add a LoRa transmitter on the USB port of the EBA Flex Server in order to integrate LoRa devices, such as a transceiver for pulse counters.

Lighting

- Regular (non-emergency) lighting can be managed using the SpaceLogic RP-C Controller which drives the TeSys contactors.
- Optimized lighting control can be managed using the SpaceLogic Insight-Sensor for people counting and multi-sensor expansion module.
  The Insight-Sensor is connected to the RP-C controller using an RJ45-type quick connector. The Insight-Sensor can be combined with expansion modules for lighting and blind control.

HVAC

Optimized HVAC control can be managed using:

- The SpaceLogic Insight-Sensor for people counting connected to the SpaceLogic RP-C Controller and
- The SE8000 room controller connected to the EBA gateway.

The Insight-Sensor is designed to detect and count people in an area inside a building. The people counting function can be used, for example, for space (occupancy) management and control of HVAC. It can provide real-time occupant information that enables immediate control of HVAC for optimized energy consumption and indoor environment, when the paired SE8000 room controller is programmed to do so.

Kitchen Equipment

Kitchen equipment can be controlled and monitored via one or more of the following devices:

- Kitchen equipment can be managed using the SpaceLogic RP-C Controller which drives the TeSys contactors.
- PowerTag Energy can be used to monitor power and energy in real time and provides alarms in case of voltage loss or overconsumption.

Hood

The hood can be controlled and monitored via the following devices:

- The hood can be managed using the SpaceLogic RP-C Controller which drives the TeSys contactors.
- PowerTag Energy can be used to monitor the hood in real time and provides alarms in case of voltage loss or overconsumption.

Refrigeration

Cold rooms can be monitored via one or more of the following devices:

- PowerTag Energy can be used to monitor power and energy in real time and provides alarms in case of voltage loss or overconsumption. They communicate to the Panel Server using IEEE 802.15.4.
- A door status switch is wired directly to the SpaceLogic RP-C Controller to enable alarms when the door is opened.
- PowerTag Ambient can be used as a cold room temperature sensor and enables temperature alarms and can be used to produce a HACCP report. It communicates to the Panel Server using IEEE 802.15.4.

UPS

- The UPS can be connected directly to the Ethernet switch, or through the EcoStruxure Building Activate Flex Server, which gives access to provide monitoring and alarming via email.
- The Smart UPS utilizes SNMP protocol and is ready to be connected to IT SmartConnect.

Fire/Safety

- Kitchen loads and devices can be shut off in case of fire in the cooking area through the use of ANSUL button. The ANSUL system is a type of fire suppression system specifically designed for commercial kitchens, particularly effective at extinguishing grease fires.
- For emergency lighting, the Exiway Dicube Gateway is used. Dicube is a scalable system equipped with a control unit that automatically runs operating and autonomy tests on the connected blocks. You can carry out effective maintenance, thanks to data centralization and email alert settings. It can manage 128 light fixtures for one control unit and one line controller and, by adding a second line controller, the system can manage up to 256 light fixtures.

Microgrid

PV information is available using an energy meter.

eMobility

EV information is available using an energy meter.

User Interface

EcoStruxure Building Activate desktop and application provide an interface for HVAC, energy management, alarms, load control, and scheduling.

5.2.2. Bill of Materials

The bill of materials includes references for the Schneider Electric products featured in the architecture.

Usage	Product	Reference
Ethernet Switch	Modicon Unmanaged Ethernet Switch	**Available references**
Building Management	EcoStruxure Building Activate	**Available references**
Building Activate Gateway	EcoStruxure Building Activate Flex Server EcoStruxure Building Activate Flex Server, cellular EcoStruxure Building Activate Flex Server, cellular, Wi-Fi	**ESXBFXSVR00B008** **ESXBFXSVR0BC008** **ESXBFXSVRBCW008**
SpaceLogic RP-C Controller	SpaceLogic RP-C Pro Room Controller	**SXWRCF16B10002** **SXWRCF16A10003**
HVAC Controller	SE8000 Room Controller	**Available references**
Air Quality Sensor	Wireless CO_2 Temperature and Humidity Wireless Temperature and Humidity	**SED-CO2-G-5045** **SED-TRH-G-5045**
People Counting	SpaceLogic Insight-Sensor SpaceLogic Room Controller Multi-Sensor Expansion Module	**SXWREISBLE10001** **SXWREMSBLE10001**
Cold Room Temperature Sensor	PowerTag Ambient	**A9XST114**
Kitchen Equipment and Lighting	TeSys Deca Contactors	**Available references**
DiCube Controller	Dicube Exiway – Control Unit Dicube Exiway – Line Controller Dicube Exiway – Control Unit + Line Controller	**OVA53198** **OVA53168** **OVA53199**
Emergency Lighting	Exiway Smartled Dicube/DALI Exiway Smartbeam recessed Dicube/DALI Exiway Smartbeam surface Dicube/DALI Exiway Smartduo Dicube/DALI Exiway Smartexit Dicube/DALI	**OVA48524…9** **OVA48952…6** **OVA48946…7** **OVA48060** **OVA48604…7**, **OVA48850/51**
Gateway	Panel Server Universal or Panel Server Advanced	**PAS600L**, **PAS600** **PAS800L**, **PAS800**, **PAS800P**
Electrical Distribution – Control and Status	I/O Smart Link	**A9XMSB11**
Energy Meter	Acti9 iEM3100/3200/3300 Series	**Available references**
Power Meter	PowerTag Energy	**Available references**
Cable Overheating	PowerLogic HeatTag	**SMT10020**
Electric Vehicle Charging	EVlink Pro AC	**Available references**
UPS Management	IT SmartConnect	**Available references**
Smart UPS	Smart UPS Inverter	**Available references**

5.3. Architecture 3 – Advanced

5.3.1. Description

Architecture 3 is the most advanced, and the solution with the most customer use cases available. The advanced architecture utilizes a SpaceLogic AS-B or AS-P automation server, a Panel Server, and a Dicube controller, all connected to the EcoStruxure Building Activate Flex Server, which is connected to the Schneider Electric Cloud. It uses EcoStruxure Building Activate as its energy and asset management solution.

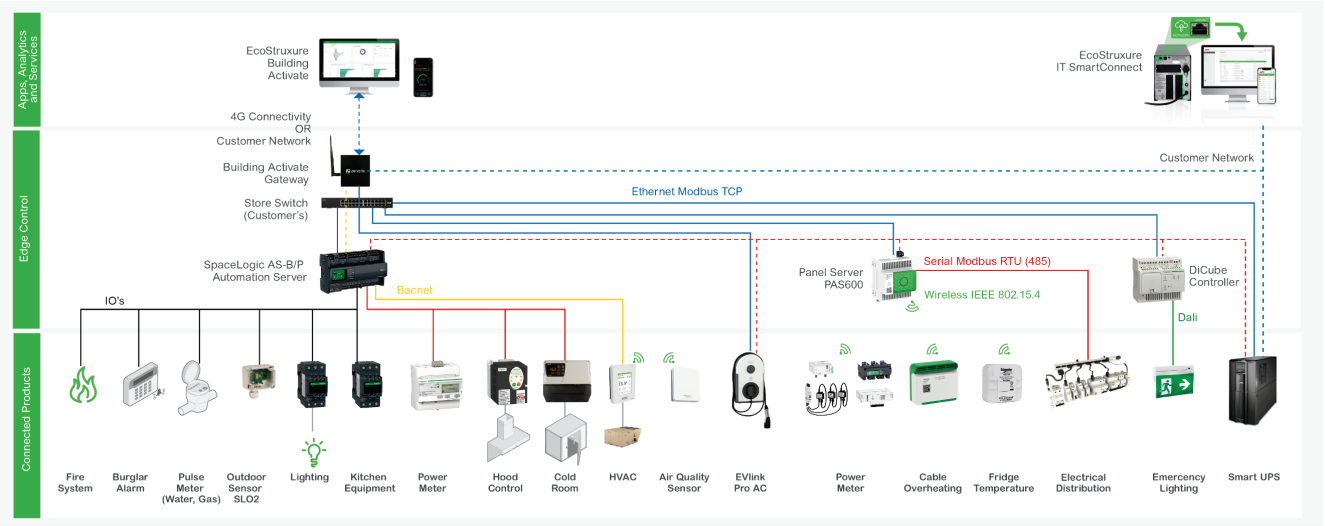

Illustration 3: Advanced Architecture Example for Retail

Energy Metering

- iEM3100/3200/3300 Series energy meters or PowerTag Energy sensors can provide a comprehensive view of both energy consumption and generation on site, as well as measuring active and reactive energy transmitted and received, and providing alarms in case of overload.
  - iEM Series communicates with the Panel Server via Modbus Serial (A9MEM…3150/55, 3250/55, 3350/55, 3555).
  - PowerTag Energy communicates wirelessly to the Panel Server using IEEE 802.15.4 and can provide an alarm in case of voltage loss.
- Pulse Meters for WAGES (Water, Air, Gas, Electricity and Steam) can be connected to the two available digital inputs of the 24 Vdc variant of Panel Server (PAS600L, PAS800L). The pulse weight and pulse unit of each pulse input can be configured using EcoStruxure Power Commission software or EcoStruxure Panel Server web pages.

Lighting

- Regular (non-emergency) lighting can be managed using the SpaceLogic AS-B/P automation server, which drives the TeSys contactors.
- Optimized lighting control can be managed using the SpaceLogic SE8000 room controller system, which is wired to the SpaceLogic AS-B/P automation server, along with the Wireless ZigBee Pro Motion/Temperature/Humidity Sensor. This enables occupancy-based control sequences using EcoStruxure Building Activate.

HVAC

Optimized HVAC control can be managed using the SpaceLogic SE8000 room controller system, which is wired to the SpaceLogic AS-B/P automation server, with the Wireless ZigBee Pro Motion/Temperature/Humidity Sensor.
This sensor enables occupancy-based control sequences using EcoStruxure Building Activate.
You can also optimize your HVAC systems by using the optional occupancy detection and scheduling features.

Kitchen equipment

Kitchen equipment can be controlled and monitored via one or more of the following devices:

- Kitchen equipment can be managed using the SpaceLogic AS-B/P automation server which drives the TeSys contactors.
- PowerTag Energy can be used to monitor power and energy in real time and provides alarms in case of voltage loss or overconsumption.

Hood

Hood control is managed using a Variable Speed Drive which communicates directly with the SpaceLogic AS-P/B automation server via Modbus. This enables optimized setpoints, depending on the use of grills and fryers, and provides an instant overview of energy consumption. It can automatically adjust the speed of the hood depending on the heat coming from the cooking area to save energy.

Refrigeration

Cold rooms can be monitored via one or more of the following devices:

- PowerTag Ambient can be used as a cold room temperature sensor which communicates to the Panel Server using IEEE 802.15.4.
- Connectable Controllers and Interface for Cold Rooms can be connected via Modbus to the SpaceLogic AS-B/P automation server and enable automated temperature recording for HACCP report, alarming, and globally managed setpoints. Coldface AIR series controllers and switchboards enable control of all static or ventilated cold room functions via a single device. The information is available directly on the local operator display.

UPS

- The UPS can be connected directly to the Ethernet switch, or through the EcoStruxure Building Activate Flex Server, which gives access to provide monitoring and alarming via email.
- The Smart UPS utilizes SNMP protocol and is ready to be connected to IT SmartConnect.

Fire/Access Control

- Kitchen loads and devices can be shut off in case of fire in the cooking area through the use of ANSUL button. The ANSUL system is a type of fire suppression system specifically designed for commercial kitchens, particularly effective at extinguishing grease fires.
- Hood can be switched on in case of fire using the Variable Speed Drive.
- For emergency lighting, the Exiway Dicube Gateway is used. Dicube is a scalable system equipped with a control unit that automatically runs operating and autonomy tests on the connected blocks. You can carry out effective maintenance, thanks to data centralization and email alert settings. It can manage 128 light fixtures for one control unit and one line controller and, by adding a second line controller, the system can manage up to 256 light fixtures.
- Access and intrusion alarm management through SpaceLogic AS-B/P automation server. If the expected input is used, the commands are met.

Microgrid

PV self-management and optimized solution with battery and PV.

eMobility

The fully integrated solution management for the EVlink ProAC charger is enabled by connecting the charging station to the SpaceLogic AS-B/P automation server via Modbus. It is possible to manage the setpoints locally through the operator panel display, which is connected directly to the controller.

User Interface

- EcoStruxure Building Activate desktop and application provide an interface for HVAC, energy management, alarms, load control, and scheduling.
- The SpaceLogic Operator Display or SpaceLogic Advanced Display provide a local user interface for all systems directly on the panel.

5.3.2. Bill of Materials

The bill of materials includes references for the Schneider Electric products featured in the architecture.

Usage	Product	Reference
Ethernet Switch	Modicon Unmanaged Ethernet Switch	**Available references**
Building Management	EcoStruxure Building Activate	**Available references**
Building Activate Gateway	EcoStruxure Building Activate Flex Server EcoStruxure Building Activate Flex Server, cellular EcoStruxure Building Activate Flex Server, cellular, Wi-Fi	**ESXBFXSVR00B008** **ESXBFXSVR0BC008** **ESXBFXSVRBCW008**
SpaceLogic AS-B/P Automation Server	SpaceLogic Server – AS-B SpaceLogic Server – AS-P	**Available references** **Available references**
Operator Panel	SpaceLogic Operator Display SpaceLogic Advanced Display	**HMIST6400SL** **SXWADBUND10003**
Outdoor Sensor SL O2	RH Sensor: Outdoor, SH0100	**006902361**
HVAC Controller – RTU	SE8000 Room Controller	**Available references**
Air Quality Sensor	Wireless CO_2 Temperature and Humidity Wireless Temperature and Humidity	**SED-CO2-G-5045** **SED-TRH-G-5045**
Cold Room Temperature	PowerTag Ambient	**A9XST114**
Hood Control	Altivar 212 HVAC Variable Speed Drive	**All references**
Cold Room Controller	Connectable Controllers and Interface for Cold Rooms	**RCNH300DTX1700**
Lighting/Kitchen Equipment Contactor	TeSys Deca Contactors	**Available references**
DiCube Controller	Dicube Exiway – Control Unit Dicube Exiway – Line Controller Dicube Exiway – Control Unit + Line Controller	**OVA53198** **OVA53168** **OVA53199**
Emergency Lighting	Exiway Smartled Dicube Exiway Smartbeam recessed Dicube Exiway Smartbeam surface Dicube Exiway Smartduo Dicube Exiway Smartexit Dicube	**OVA48500-12**, **OVA48520-3** **OVA48952-6** **OVA48946-7** **OVA48060** **OVA48604-7**, **OVA48850-51**
Gateway	Panel Server Universal or Panel Server Advanced	**PAS600L**, **PAS600** **PAS800L**, **PAS800**, **PAS800P**
Energy Meter	Acti9 iEM3100/3200/3300 Series	**Available references**
Power Meter	PowerTag Energy	**Available references**
Electrical Distribution – Control and Status	I/O Smart Link	**A9XMSB11**
Cable Overheating	PowerLogic HeatTag	**SMT10020**
Electric Vehicle Charging	EVlink Pro AC	**Available references**
UPS Management	EcoStruxure ITConnect	**Available references**
Smart UPS	Smart UPS Inverter	**Available references**

6. Panel Layout Rules and Recommendations

6.1. PrismaSeT Panel Selection

A PrismaSeT G low-voltage switchboard with an IP55 enclosure is ideal for any of the architectures outlined in this guide. It can be wall-mounted or floor standing, and is available in three column widths: 300/600/850 mm.

Benefits of using this type of enclosure include:

- PrismaSeT G IP55 is designed as a “kit”. All configurations and combinations are possible, with full access.
- Thanks to its modular design, it can be easily modified to integrate new functional units as needed.
- Maintenance operations, carried out with the switchboard de-energized, are fast and straightforward due to easy access to devices.
- The total compatibility of Schneider Electric devices with the PrismaSeT enclosure is a key advantage in helping to ensure a high level of installation dependability.

6.2. Panel Layout Recommendations

The layout of the panel follows general installation guidelines for a low-voltage switchboard, with additional recommendations for installations that include automation hardware. For specific rules and recommendations regarding the installation and positioning of products, refer to the **Smart Panel Assembly Guide**, found in section **3.1 References**.

The products should be installed in the panel according to the functionality. This means organizing your panel into different areas for:

1. Switchgear – All of the switchgear should be placed together and organized according to the functionality and load type. As an example, you could separate the switchgear into different rows for kitchen equipment, lighting, HVAC/air conditioning, refrigeration, etc.
2. Emergency Lighting – When a Dicube emergency lighting system is used, install the control unit, line controller(s) and any other protection devices together.
3. Building Management – Install all of the automation hardware together. As an example, it could all be installed on one side of the panel. This can be organized further by functionality, such as hood control together, and the automation server and modules together.
4. UPS – Install the IT and billing/payment equipment together.

For the basic and advanced architectures which utilize the Building Activate Flex Server, it must be installed outside the panel. The gateway must be installed ≥ 2m (6.562 ft) above the ground. For additional installation requirements, see the **EcoStruxure Building Activate User Guide** found in section **3.1 References**.

6.3. Wireless Recommendations

This section is intended to provide information and guidelines to help obtain reliable wireless communication within the scope of the architectures presented in this guide. The wireless communication protocols utilized in the architectures are wireless IEEE 802.15.4 and Wi-Fi.

6.3.1. IEEE 802.15.4 Communication – Inside the Panel

For all three architectures, wireless IEEE 802.15.4 communication can be used downstream of the Panel Server. The applicable devices which utilize wireless communication inside the panel include:

- PowerLogic HeatTag
- PowerTag Energy
- PowerTag Control

One Panel Server can cover the column containing the gateway (maximum width of 800 mm) plus two columns on either side, for a total of five columns covered. The IEEE 802.15.4 signal can be extended, inside or outside of the panel, when using the Advanced Panel Server and external antenna. The maximum concurrent number of wireless devices per Panel Server is defined in the **Panel Server User Guide**, found in section **3.1 References**.

For the specific installation requirements for these devices, refer to **Wireless Communication Architectures with EcoStruxure Panel Server**, found in section **3.1 References**.

6.3.2. IEEE 802.15.4 Communication – Outside the Panel

There are some devices which utilize wireless communication from outside the panel, which communicate with the Panel Server. The Panel Server may be installed inside the panel, or in an open space. Because the Panel Server can be located inside a metal panel, using the Advanced Panel Server (PAS800) and the external IEEE 802.15.4 antenna can help improve the signal if necessary.

The devices which are placed outside the panel and must communicate with the Panel Server are the Exiway Activa-link/SATI LINK connected emergency lighting and PowerTag Ambient temperature sensor. For such devices, it is recommended to use the external IEEE 802.15.4 antenna which has to be put outside the panel (usually on the top of it).

Exiway Activa-link/SATI LINK Connected Lighting

- The limit for 1 gateway is 20 devices.
- The devices communicate with each other in radio frequency, creating a mesh network. Each unit works as a repeater helping to ensure a robust signal propagation.
- Install the devices at a maximum distance of 10 meters from each other.

PowerTag Ambient

PowerTag Ambient temperature sensor uses ZigBee 3.0 Green Power, so the device must be placed within the range of the Panel Server or a ZigBee repeater.

6.3.3. Wi-Fi Communication – Outside the Panel

The SE8000 Room Controller can communicate using Wi-Fi, depending on the product reference used in the architecture. In the basic architecture presented in this guide, the SE8000 uses Wi-Fi to connect with the Ethernet Switch. This requires the use of an Ethernet Switch with Wi-Fi capability.

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