

SpaceLogic RP-V Advanced Room Controllers

EcoStruxure™ Building



Introduction

SpaceLogic™ RP-V is a room-purpose, fully programmable, IP based field controller dedicated for VAV cooling and Heating applications. The RP-V integrates a controller, a damper actuator, and an air flow sensor in a single compact unit for ease of installation. The RP-V can either be used as a standalone BACnet/IP controller or as part of an EcoStruxure BMS with a SpaceLogic AS-P or AS-B server or an Enterprise Server as the parent server. The RP-V can also be reconfigured through the EcoStruxure Building Operation software to use BACnet MS/TP, instead of BACnet/IP. The RP-V features a wireless chip, which enables commissioning of the controller with the Commission mobile application and allows tenants to change the room comfort settings using their smartphones with the Engage mobile application. RP-V comes in two models with different I/O count.

Web services enable web access directly to the RP-V, making the controller an open IoT hub in the room or space area.

The RP-V has the following features:

- IP enabled with dual-port Ethernet switch
- Integrated damper actuator with feedback signal
- Factory-calibrated air flow sensor
- Versatile onboard I/O point mix
- Built-in isolated power supply
- Wireless connectivity
- Advanced monitoring
- Two configurable RS-485 ports

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- Sensor bus for living space sensors
- Room bus for Connected Room Solutions
- Modbus RTU subnetwork
- BACnet MS/TP support (adapter required)
- Engage mobile application for room comfort settings
- Commission mobile application for commissioning of the controller before the BMS is in place
- Full EcoStruxure Building Operation software support, providing efficient engineering tools
- Web services through RESTful API

IP connectivity and flexible network topologies

The BACnet/IP controllers are based on open protocols that simplify interoperability, IP configuration, and device management:

- IP addressing
- BACnet/IP communications
- DHCP for easy network configuration

The BACnet/IP controllers have a dual-port Ethernet switch, which enables flexible network topologies:

- Star
- Daisy chain
- Rapid Spanning Tree Protocol (RSTP) ring

In a star topology, the controller and the parent EcoStruxure BMS server are individually connected to an Ethernet switch. Daisy-chain multiple controllers together to reduce installation time and cost. When using a ring network topology, in the event of a broken IP network or a non-operational controller, RSTP will enable rapid identification of the location of the detected error while maintaining communication with the controllers on either side of the break.

Models with a versatile mix of I/O points

The RP-V Advanced range includes two models with different I/O point count and a versatile mix of I/O point types that match a wide variety of VAV applications. The universal inputs/outputs are highly flexible and can be configured as either inputs or outputs.

I/O Point Types by RP-V Models

I/O Point Types	RP-V-4A	RP-V-5A
Universal I/O Type Ub	4	2
Solid-state relay outputs (MOSFET)	-	3

Configurations by I/O Point Types

Configurations	Universal I/O Type Ub	Solid-state Relay Outputs(MOSFET)
Digital inputs	yes	-
Counter inputs	yes	-
Supervised inputs	yes	-
Voltage inputs (0 to 10 VDC)	yes	-
Current inputs (0 to 20 mA)	yes	-
Temperature inputs	yes	-
Resistive inputs	yes	-
Voltage outputs (0 to 10 VDC)	yes	-
Digital outputs	-	yes
Digital pulsed outputs	-	yes

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Configurations	Universal I/O Type Ub	Solid-state Relay Outputs(MOSFET)
PWM outputs	-	yes
Tristate outputs	-	yes
Tristate pulsed outputs	-	yes

Universal inputs/outputs

The universal inputs/outputs are ideal for any mix of temperature, pressure, flow, status points, and similar point types in a building control system.

As counter inputs, the universal inputs/outputs are commonly used in energy metering applications. As supervised inputs, they are used for security applications where it is critical to know whether or not a wire has been cut or shorted. These events provide a separate indication of alarms and events in the system.

For all analog inputs, maximum and minimum levels can be defined to automatically detect over-range and under-range values.

The universal inputs/outputs are capable of supporting analog outputs of type voltage outputs. Therefore, the universal inputs/outputs support a wide range of devices, such as actuators.

Only devices with safe extra low voltage equipment (SELV/PELV) inputs/outputs should be connected to the universal inputs/outputs.

Solid-state relay outputs

The solid-state relay (SSR) outputs can be used in many applications to switch 24 VAC or 24 VDC on or off for external loads such as actuators, relays, or indicators. SSRs are silent and are not adversely affected by relay contact wear.

Integrated damper actuator with feedback signal

The integrated damper actuator allows for simplified installation of RP-V directly over the damper shaft. This means that separate installation, wiring, and positioning of the damper motor is not needed. RP-V uses the same actuator mechanics as MP-V and many Schneider Electric VAV controller models from the Andover Continuum, TAC Vista, and TAC I/A Series product lines. The feedback signal from the actuator makes it possible to determine the exact position of the damper. The actuator also features a push button for manual positioning of the damper during commissioning.

Factory-calibrated air flow sensor

The factory-calibrated air flow sensor uses a micro-flow channel integrated with the sensor chip that requires only a small air flow

from the velocity probe. The sensor requires no maintenance and a minimum of field adjustments.

Built-in isolated power supply

The RP-V controller has a built-in power supply designed to accommodate 24 VAC input power. The AC power input (L and N) is galvanically isolated from the electronics. This minimizes the risk of damage due to earth currents and permits the input power to be wired without concern for AC polarity matching. With the isolated AC power input, you can use a central transformer for many RP-Vs, instead of one transformer for each RP-V, to reduce installation costs.

Wireless connectivity

RP-V is a Bluetooth Low Energy (BLE) enabled product. You can use this wireless connectivity option to connect the RP-V with a smartphone or tablet running the Commission mobile application or the Engage mobile application for room comfort settings.

Through Wireless Adapter - Advanced connected to the host USB port, Zigbee™ wireless connectivity can be enabled for the RP controller. The controller can extend its point count through the Zigbee wireless network and bring flexibility in your applications. The RP controller equipped with the adapter is 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.

Advanced monitoring

The BACnet/IP controllers support local trends, schedules, and alarms, enabling local operation when the controller is offline or used in standalone applications.

The battery-free power backup of the memory and real-time clock helps prevent data loss and allows seamless and quick recovery after a power disruption.

In WorkStation, you update the firmware of multiple BACnet/IP controllers at the same time and with minimum down time. The EcoStruxure BMS server keeps track of the installed firmware to support backup, restore, and replacement of the controllers and sensors. The server can host controllers of different firmware versions.

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Two configurable RS-485 ports

The RP-V controller has two configurable RS-485 ports, which can be configured to support three different types of networks:

- Sensor bus
- Room bus
- Modbus network

The controller can host two networks, but only one of each network type.

One of the RS-485 ports can alternatively be configured to support BACnet MS/TP network communication with the automation server, instead of BACnet/IP. For more information, see section “BACnet MS/TP support”. The other RS-485 port can then be configured to support either sensor bus, room bus, or Modbus network.

Sensor bus for living space sensors

The BACnet/IP controllers provide an interface designed for the SpaceLogic Sensor family of living space sensors. The SpaceLogic Sensor devices offer an efficient way to sense the temperature, humidity, CO₂, and occupancy in a room. The SpaceLogic Sensor devices are available with different combinations of sensor types and various covers and user interface options, such as touchscreen, setpoint and override buttons, and blank covers.



SpaceLogic Sensor devices

The RP controller sensor bus provides both power and communications for up to four sensors that are daisy-chained using standard Cat 5 (or higher) cables. This maximum number of sensors that can be connected to a controller is regardless of the sensor model and the combination of cover and sensor base type:

- Blank covers: Up to four sensors of any combination of sensor base types

- 3-button and touchscreen covers: Up to four sensors of any combination of sensor base types
- SpaceLogic LCD temperature sensors: Up to four sensors are supported

The maximum total length of the sensor bus is 61 m (200 ft). For more information, see the SpaceLogic Sensors - SXWS Sensors for MP and RP IP Controllers - Specification Sheet.

Room bus for Connected Room Solutions

The RP controller room bus allows RP controller expansion modules to be connected to the controller for people counting, motion detection, luminosity and sound pressure level measurements, Bluetooth Low Energy based applications, and control of electric lights and window blinds.

The RP-V Advanced controller room bus supports up to four connected RP controller expansion modules with the following restrictions:

- Maximum of one DALI light module
- Maximum of one SMI blind module
- Maximum of two Multi-sensor or Insight-Sensor devices

Maximum total length of the room bus is 72 m (236 ft).

For more information, see the Specification Sheets for the RP controller expansion modules.

Modbus RTU subnetwork

The RP controller Modbus network allows standard Modbus devices and the KNX Modbus gateway (RP-C-EXT-KNX) to be connected to the controller.

The Modbus RTU protocol is used for the communication. The RP controller acts the Modbus client and the connected devices act as servers.

For connection to Modbus devices, it is recommended to use the non-isolated RS-485 adapter to provide screw termination. The adapter converts an RS-485 RJ45 interface to screw terminals. The adapter can be ordered from Schneider Electric. For more information, see the “Part Numbers” and “Specifications” sections.

To connect the adapter, it is recommended that you use a Cat 5 (or higher) UTP cable with eight conductors and RJ45 connectors. The cable should be rated for the target environment and have a maximum length of 0.3 m (12 in.). The cable is not included and needs to be purchased separately.

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The maximum number of Modbus devices that can be connected to an RP controller depends on the type of Modbus device and the number of Modbus registers.

The RP-V Advanced controller Modbus network supports up to 10 connected Modbus devices with the following restrictions:

- Maximum of one KNX Modbus gateway (RP-C-EXT-KNX)
- Maximum of 250 Modbus registers per network

64-bit Modbus registers are supported, which can be used in energy metering.

BACnet MS/TP support

The RP controllers support both BACnet IP and MS/TP protocols. The controller can be configured to use either protocol. This feature enables both retrofitting of MNB and b3 BACnet devices while reusing parts of the existing cabling and equipment, as well as a later transition from the BACnet MS/TP (RS-485) network to an IP based network.

An RJ45 to screw terminal block adapter is required to connect the RP controller to the BACnet MS/TP network of the AS-P or AS-B server. The adapter can be ordered from Schneider Electric. The adapter is available in two models, with an isolated or non-isolated RS-485 interface. For more information, see section “Part Numbers”.

To connect the adapter, it is recommended that you use a Cat 5 (or higher) UTP cable with eight conductors and RJ45 connectors. The cable should be rated for the target environment and have a maximum length of 0.3 m (12 in.). The cable is not included and needs to be purchased separately.

In retrofit projects with MNB devices, the RP controllers can be mixed with MNB devices on the BACnet MS/TP network. A mix of up to 50 devices per RS-485 Com port can be connected to an AS-P or AS-B server. The isolated adapter is used for connection of a controller. The adapter is connected to the RS-485 Com B port on the controller.

In retrofit projects with b3 BACnet devices, the RP controllers can be mixed with b3 BACnet devices on the BACnet MS/TP network. A mix of up to 50 devices per RS-485 Com port can be connected to an AS-P or AS-B server. The non-isolated adapter is used for connection of a controller. The adapter can be connected to either the RS-485 Com A or Com B port on the controller.

In retrofit projects with only RP controllers on the BACnet MS/TP network, up to 50 RP controllers per RS-485 Com port can be connected to an AS-P or AS-B server. The non-isolated adapter is used for connection of a controller. The adapter can be connected to either the RS-485 Com A or Com B port on the controller.

Engage mobile application

The Engage mobile application enables control of room temperature, fan speed, lights, and blinds/shades directly from a smartphone. A user can manage these settings when the application is connected to the RP controller.

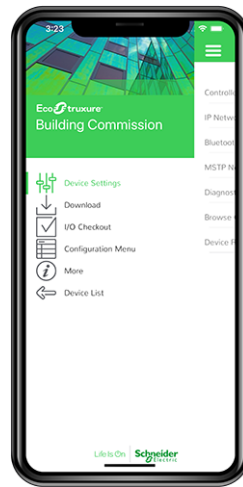
The Engage mobile application is free and available for download from Google Play and Apple App Store.

For more information, see the Engage Specification Sheet.

Commission mobile application

The Commission mobile application is designed for local configuration, field deployment, commissioning of BACnet/IP controllers, and air flow balancing of VAV units. The mobile application reduces the commissioning time, allows flexibility in project execution, and minimizes dependencies on network infrastructure.

The mobile application is designed for use with Android, Apple (iOS), and Microsoft Windows 10 and Windows 11 devices. For more information, see the EcoStruxure Building Commission Specification Sheet.



Commission mobile application

Using the Commission mobile application, you can connect to one or many RP controllers. You can connect to a single RP controller using the controller's built-in Bluetooth connectivity or using the SpaceLogic Bluetooth Adapter connected to a SpaceLogic Sensor. Using a wireless access point or a network switch, you can connect to a network of RP controllers on the local IP network.

Device configuration

With the Commission mobile application, you can easily discover BACnet/IP controllers on the IP network. You can change the configuration of each controller, including the BACnet and IP network settings, location, and parent server. To save

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engineering time, you can save common device settings and then reuse them for controllers of the same model.

Field deployment and I/O checkout

The Commission mobile application does not require an EcoStruxure BMS server or a network infrastructure to be in place. You can use the mobile application to load the controller application directly into the local BACnet/IP controller and deploy the controller. The controller application can be created offline using Project Configuration Tool or WorkStation. You can use the mobile application to change the behavior of an installed standard controller application, such as configuring temperature setpoints. You can also perform an I/O checkout to verify that the controller's I/O points are configured, wired, and operating correctly.

You can perform I/O checkout on the RP controller room bus to verify proper communication over the room bus between the RP controller and the associated RP controller expansion modules. Module type mismatches or address mismatches can then be resolved. After wiring the physical inputs and outputs of the RP controller expansion modules, you can perform the following tasks on the different modules:

- DALI light modules: discover, wink, and associate DALI lights with the logical software points, and test individual lights
- 0-10V light modules: test individual lights
- Blind modules: calibrate and test blinds
- Relay module: test outputs

Air flow balancing

Using the Commission mobile application, you can perform air flow balancing of VAV units controlled by RP-Vs. An intuitive workflow automatically guides you through the process. After the flow balancing, you can generate a report in HTML format for one or more VAV units. The balancing parameters associated with each RP-V are stored in the parent server, which makes it easier to replace the controller if necessary.

Full EcoStruxure Building Operation software support

The power of the RP controller is fully realized when it is part of an EcoStruxure BMS, which provides the following benefits:

- WorkStation/WebStation interface
- Script and Function Block programming options
- Device discovery
- Engineering efficiency
- Preconfigured BMS applications for HVAC and Connected Room Solutions
- Zoning option

WorkStation/WebStation interface

WorkStation and WebStation provide a consistent user experience regardless of which EcoStruxure BMS server the user is logged on to. The user can log on to the parent EcoStruxure BMS server to engineer, commission, supervise, and monitor the BACnet/IP controller and its I/O as well as its attached SpaceLogic Sensor devices. For more information, see the WorkStation and WebStation specification sheets.

Script and Function Block programming options

The fully programmable RP and MP controller models have both Script and Function Block programming options. Existing programs can easily be reused between the EcoStruxure BMS server and the controller.

Device discovery

The enhanced Device Discovery in WorkStation enables you to easily identify BACnet/IP controllers on a BACnet network and to associate the controllers with their parent server.

Engineering efficiency

The engineering and maintenance of BACnet/IP controllers can be done very efficiently using the EcoStruxure Building Operation reusability features. With these features, you can create library items (Custom Types) for a complete controller application that contains programs and all necessary objects such as trends, alarms, and schedules. The controller application in the Custom Types library is reusable across all controllers of the same model. You can use the controller application as a base for creating new controllers intended for similar applications. You can then edit the controller application, and the changes are automatically replicated to all controllers, while each controller keeps its local values.

WorkStation supports both online and offline engineering of BACnet/IP controllers. You can make the configuration changes online or use database mode to make the changes offline. In database mode, the changes are saved to the EcoStruxure Building Operation database so that you can apply the changes to the controllers later.

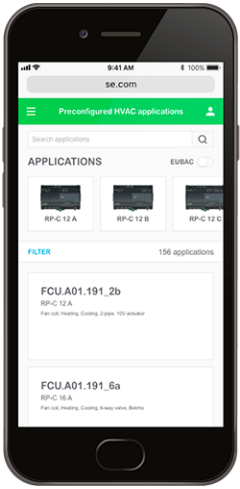
Project Configuration Tool enables you to perform all the engineering off site, without the need for physical hardware, which minimizes the time you need to spend on site. You can run the EcoStruxure BMS servers virtually and engineer the BACnet/IP controllers before you deploy your server and controller applications to the servers and controllers on site. For more information, see the Project Configuration Tool specification sheet.

Preconfigured BMS applications for HVAC and Connected Room Solutions

To improve engineering efficiency and standardize engineering practices, fully designed and tested controller applications are available at bms-applications.schneider-electric.com for use with

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the RP controllers. This library contains applications for different RP controller models and application types, such as fan coil units, VAV, ceiling solutions, lights and blinds. These preconfigured controller applications are packages that include all software programs, and for example graphics, alarms, and documentation such as functional specifications and I/O wiring schedules, that are needed for your projects. The online repository can be accessed using common web browsers on Windows PCs as well as mobile devices running Apple iOS 11.3 (or later) and Android 6.0 Marshmallow (or later).



Download page for preconfigured BMS applications

Part Numbers for RP-V Advanced

Product	Part number
RP-V-4A	SXWRPV4A10001
RP-V-5A	SXWRPV5A10001

Part Numbers for RP-V Accessories

Product	Part number
Adapter for damper shaft diameter 9.5 mm (0.375 inch)	AM-135
In-line air filter	01-2100-272
Isolated RS-485 adapter	SXWISORS48510001
Non-isolated RS-485 adapter	SXWNISORS48510001
RS-485 power adapter	SXWNISORS485P10001
SpaceLogic Wireless Adapter - Advanced	SXWZBAUSB10001
SpaceLogic Bluetooth Adapter	SXWBTAECXX10001

For more information on part numbers for Network Connectivity Accessories, see the Product Selection Guide - EcoStruxure Building.

Zoning option

The Zoning option for WorkStation and WebStation provides access to an interactive zoning tool that enables easy reconfiguration of Connected Room Solutions and flexibility when switching between zones. The WebStation zoning tool provides a graphical interface that enables quick editing of zones from any web browser device.

The RP-V-4A and RP-V-5A models support up to two segments, which can be used to support rezoning in a building.

Web services

The RP controller uses the RESTful API, which allows IT web services to easily interact with software applications. The flexibility of the RESTful API allows the RP controller to handle multiple types of input and return different data formats. With Web services, clients can read/write data (BACnet values) directly from/to the controller. Web services use resource methods GET, PUT, POST, and DELETE to access and use the data. HTTPS is used for communication between the client and the controller.

The Web services function is disabled by default. When enabled, it requires approximately 200 kB of RP controller memory.

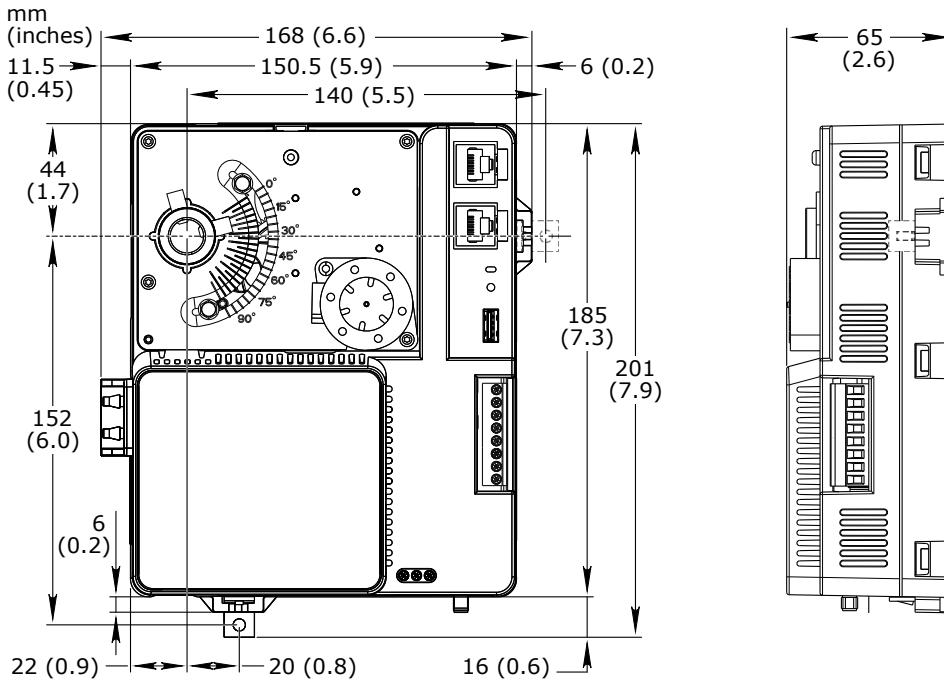
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Specifications

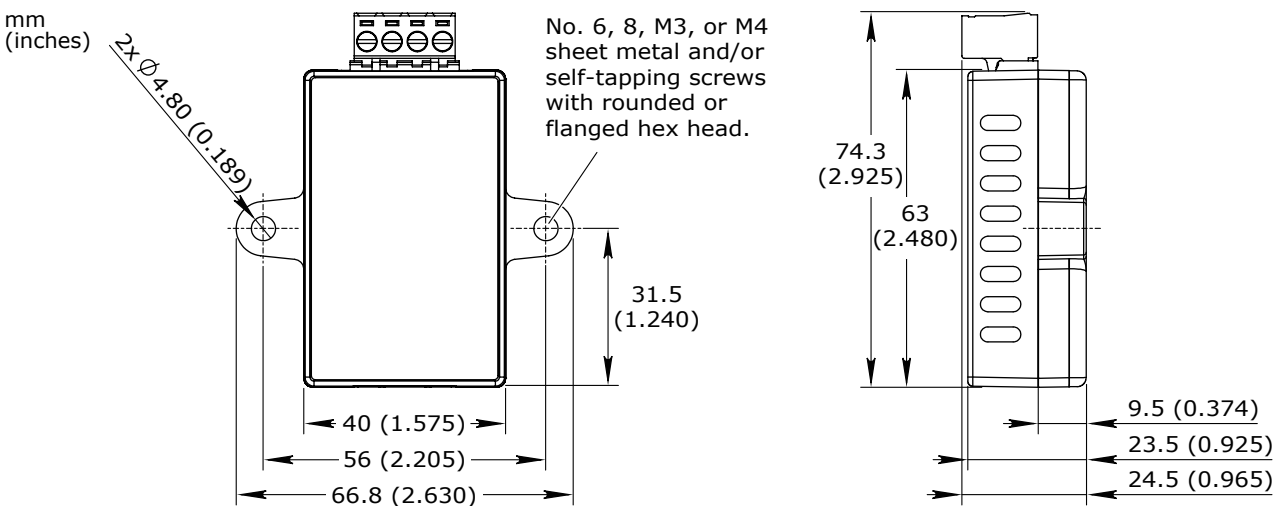
SpaceLogic RP-V Advanced				
AC input				
Type	Isolated Class 2 input			
Nominal voltage	24 VAC			
Operating voltage range	+/-15 %			
Frequency	50/60 Hz			
Maximum power consumption (RP-V-4A and RP-V-5A)	18 VA			
Base Load Including All I/O	SpaceLogic Sensors on Sensor Bus	RP Controller Expansion Modules on Room Bus	USB	Total
7 VA	4.6 VA ^a	2 VA ^a	4.35 VA	18 VA
<small>a) The example of 4.6 VA for the Sensor Bus (Com A) and 2 VA for the Room Bus (Com B) is based on a 2.8 W load on Com A and a 1.2 W load on Com B. This gives an approximate conversion factor of 1.644 VA per Watt, which can be applied to the total Com A and Com B loads, which should not exceed 4 W total for the two ports or 3 W per port.</small>				
Power input protection	MOV suppression and internal fuse			
Environment				
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)			
Ambient temperature, storage	-40 to +70 °C (-40 to +158 °F)			
Maximum humidity	95 % RH non-condensing			
Material				
Plastic flame rating	UL94 V-0			
Ingress protection rating	IP 20			
Mechanical				
Dimensions	168 W x 201 H x 65 D mm (6.6 W x 7.9 H x 2.6 D in.)			

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Weight	1.132 kg (2.496 lb)
Installation	Over the damper shaft
Terminal blocks	Fixed
Isolated and non-isolated RS-485 adapters (for Modbus RTU and BACnet MS/TP network connection)	
DC input nominal voltage	Isolated adapter: 24 VDC Non-isolated adapter: 0 V
Maximum power consumption	Isolated adapter: 0.4 W Non-isolated adapter: 0 W
Dimensions	See drawing below



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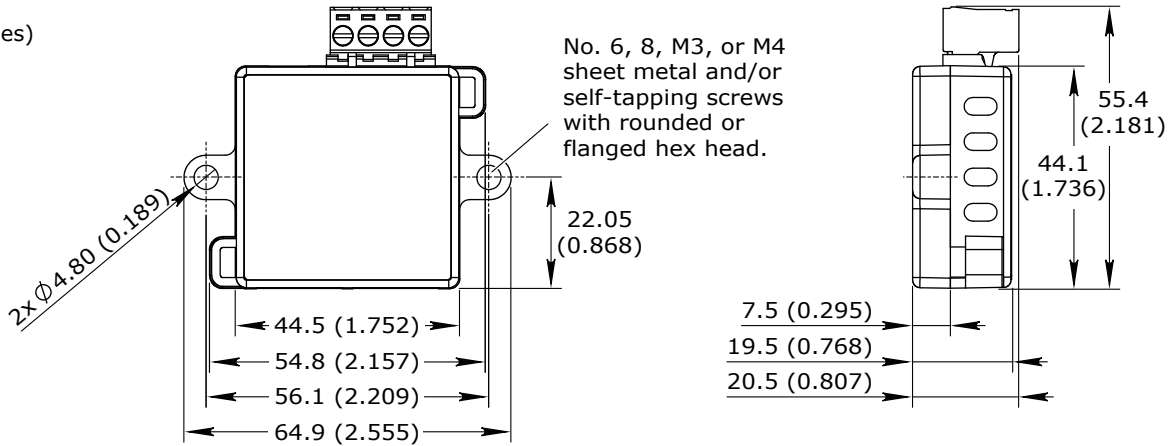
Weight	Isolated adapter: 80 g (2.82 oz) Non-isolated adapter: 40 g (1.41 oz)
Installation, isolated adapter	Connection to RS-485 Com B via Cat 5 UTP cable (not included) ^a
Installation, non-isolated adapter	Connection to RS-485 Com A or Com B via Cat 5 UTP cable (not included) ^a
Installation options	The adapter can be fastened using screws or cable ties or mounted in line with a cable run. ^a Approved for plenum installation (UL 2043)
a) For more information, see the SpaceLogic RS-485 Adapter Installation Sheet.	
Regulatory compliance and approvals	CE, UKCA, FCC, ISED (IC), UL 916, RCM, EU RoHS, WEEE, China RoHS
RS-485 transceiver characteristics (for Isolated RS-485 Adapter)	
Transceiver type	Failsafe Isolated
External biasing	None required
Total Unit Load (UL) per device	0.18 UL
RS-485 power adapter (for power injection on Room Bus or Sensor Bus)	

For more information, see the SpaceLogic and EasyLogic - Hardware Reference Guide.

Dimensions

See drawing below

mm
(inches)



Weight	24 g (0.84 oz)
Installation	Connection to RS-485 bus via Cat 5 UTP cable (not included) ^a
Installation options	The adapter can be fastened using screws or cable ties or mounted in line with a cable run. ^a Approved for plenum installation (UL 2043)
a) For more information, see the SpaceLogic RS-485 Power Adapter Installation Sheet.	
Regulatory compliance and approvals	CE, UKCA, FCC, ISED (IC), UL 916, RCM, EU RoHS, WEEE, China RoHS
Required external power supply ratings	
Output	Regulated 24 VDC Isolated (non-grounded) terminals
Safety class and certification	IEC protection class II Safety agency certification applicable to the country or area where used
Output power	Minimum 3 W (125 mA) Maximum 100 W or 100 VA

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Maximum out port bus load	3 W
Compatibility	
EcoStruxure BMS server communication EcoStruxure Building Operation	version 4.0.1 and later
BACnet MS/TP network support EcoStruxure Building Operation	version 4.0.2 and later
Modbus 64-bit register support EcoStruxure Building Operation	version 5.0.1 and later
Agency compliances	
Emission	RCM; BS/EN 61000-6-3; BS/EN IEC 63044-5-2; FCC Part 15, Subparts B and C, Class B
Immunity	BS/EN 61000-6-2; BS/EN IEC 63044-5-3
Radio	ETSI EN 300 328 V2.2.2
Safety standards a) RP-V-4A and RP-V-5A are marked "Enclosed Energy Management Equipment".	BS/EN 60730-1; BS/EN 60730-2-11; BS/EN IEC 63044-3; UL 916 C-UL US Listed ^a
FCC ID	DVE-RV1
ISED certification number	IC: 24775-RV1
Fire performance in air-handling spaces ^a a) The RP-V-4A and RP-V-5A models are approved for plenum applications.	UL 2043
Real-time clock	
Accuracy, at 25 °C (77 °F)	+/-1 minute per month
Backup time, at 25 °C (77 °F)	7 days minimum
Communication ports	
Ethernet	Dual 10/100BASE-TX (RJ45)
USB	1 USB 2.0 host port (type-A), 5 VDC, 2.5 W
RS-485 port Com A	RS-485 (RJ45), 24 VDC Maximum 3 W load per RS-485 port Maximum 4 W total load for the two RS-485 ports Transient voltage suppressors on communication and power signals
RS-485 port Com B	RS-485 (RJ45), 24 VDC Maximum 3 W load per RS-485 port Maximum 4 W total load for the two RS-485 ports Transient voltage suppressors on communication and power signals
RS-485 transceiver characteristics	
Transceiver type	Failsafe Non-isolated
External biasing	None required
Total Unit Load (UL) per device	Maximum 0.5 UL

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Communications

BACnet	BACnet/IP, port configurable, default 47808 BACnet MS/TP, maximum bus length: 1200 m (4000 ft), maximum baud rate: 76800 BTL B-AAC (BACnet Advanced Application Controller) ^a
a) See the BTL Product Catalog for up-to-date details on BTL listed firmware revisions on BACnet International's home page.	

Wireless connectivity

Bluetooth Low Energy

Communication protocol	Bluetooth® 5.1 Low Energy compliant			
Frequency	2.402 to 2.480 GHz			
Maximum output power	10 dBm			
Maximum communication distance	Line-of-sight: 100 m (328 ft)			
Antenna	Integrated antenna			
RF connector for optional external antenna	SMA connector			
External antenna (optional)	Restricted to the approved antenna type listed below (used in certification)			
Manufacturer	Model (Part number)	Gain	Type	Impedance
Linx Technologies	ANT-2.4-WRT-MON-SMA	0.8 dBi	Monopole	50 ohm

CPU

Frequency	500 MHz
Type	ARM Cortex-A7 single-core
Internal SRAM	6 MB
NOR flash memory	48 MB
Memory backup	128 kB, FRAM, non-volatile

Damper actuator

Torque rating	10 Nm (88.5 lbf.in)
Stroke	0° to 90°, fully adjustable
Timing	Approximately 2 seconds/degree at 60 Hz and 2.4 seconds/degree at 50 Hz
Position indication	Visual indication
Damper position feedback	Yes
Manual override	Push-button clutch release
Damper shaft diameter	12.7 mm (0.5 inch) or 9.5 mm (0.375 inch) Adapter kit AM-135 is required for 9.5 mm (0.375 inch) diameter shafts.
Damper shaft minimum length (from VAV box)	22.2 mm (0.875 inch)

Air flow sensor

Range	0 to 249 Pa (0 to 1 inH ₂ O)
Resolution	0.0167 Pa (0.000067 inH ₂ O)

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Accuracy	±5% of reading (typical) at 25°C (77°F)	
Universal inputs/outputs		
Channels, RP-V-4A	4 Ub, Ub1 to Ub4	
Channels, RP-V-5A	2 Ub, Ub1 to Ub2	
Absolute maximum ratings	-0.5 to +24 VDC	
A/D converter resolution	16 bits	
Universal input/output protection	Transient voltage suppressor on each universal input/output	
Digital inputs		
Range	Dry contact switch closure or open collector/open drain, 24 VDC, typical wetting current 2.4 mA	
Minimum pulse width	150 ms	
Counter inputs		
Range	Dry contact switch closure or open collector/open drain, 24 VDC, typical wetting current 2.4 mA	
Minimum pulse width	20 ms	
Maximum frequency	25 Hz	
Supervised inputs		
5 V circuit, 1 or 2 resistors Monitored switch combinations	Series only, parallel only, and series and parallel	
Resistor range For a 2-resistor configuration, each resistor must have the same value +/- 5 %	1 to 10 kohm	
Voltage inputs		
Range	0 to 10 VDC	
Accuracy	+/- (7 mV + 0.2 % of reading)	
Resolution	1.0 mV	
Impedance	1 Mohm	
Current inputs		
Range	0 to 20 mA	
Accuracy	+/- (0.01 mA + 0.4 % of reading)	
Resolution	1 µA	
Impedance	47 ohm	
Resistive inputs		
10 ohm to 10 kohm accuracy R = Resistance in ohm	+/- (7 + 4 x 10 ⁻³ x R) ohm	
10 kohm to 60 kohm accuracy R = Resistance in ohm	+/- (4 x 10 ⁻³ x R + 7 x 10 ⁻⁸ x R ²) ohm	

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Continued

Temperature inputs (thermistors)	
Range	-50 to +150 °C (-58 to +302 °F)
Supported thermistors	
Honeywell	20 kohm
Type I (Continuum)	10 kohm
Type II (I/NET)	10 kohm
Type III (Satchwell)	10 kohm
Type IV (FD)	10 kohm
Type V (FD w/ 11k shunt)	Linearized 10 kohm
Satchwell D?T	Linearized 10 kohm
Johnson Controls	2.2 kohm
Xenta	1.8 kohm
Balco	1 kohm
Measurement accuracy	
20 kohm	-50 to -30 °C: +/-1.5 °C (-58 to -22 °F: +/-2.7 °F) -30 to 0 °C: +/-0.5 °C (-22 to +32 °F: +/-0.9 °F) 0 to 100 °C: +/-0.2 °C (32 to 212 °F: +/-0.4 °F) 100 to 150 °C: +/-0.5 °C (212 to 302 °F: +/-0.9 °F)
10 kohm, 2.2 kohm, and 1.8 kohm	-50 to -30 °C: +/-0.75 °C (-58 to -22 °F: +/-1.35 °F) -30 to +100 °C: +/-0.2 °C (-22 to +212 °F: +/-0.4 °F) 100 to 150 °C: +/-0.5 °C (212 to 302 °F: +/-0.9 °F)
Linearized 10 kohm	-50 to -30 °C: +/-2.0 °C (-58 to -22 °F: +/-3.6 °F) -30 to 0 °C: +/-0.75 °C (-22 to +32 °F: +/-1.35 °F) 0 to 100 °C: +/-0.2 °C (32 to 212 °F: +/-0.4 °F) 100 to 150 °C: +/-0.5 °C (212 to 302 °F: +/-0.9 °F)
1 kohm	-50 to +150 °C: +/-1.0 °C (-58 to +302° F: +/-1.8 °F)
Voltage outputs	
Range	0 to 10 VDC
Accuracy	+/-60 mV
Resolution	10 mV
Minimum load resistance	2.4 kohm
Source current	+4.2 mA
Sink current	-1 mA (0 to 0.4 VDC) -4.2 mA (0.4 to 10 VDC)
Solid-state relay outputs, DO	
Channels, RP-V-4A	0
Channels, RP-V-5A	3, DO1 to DO3

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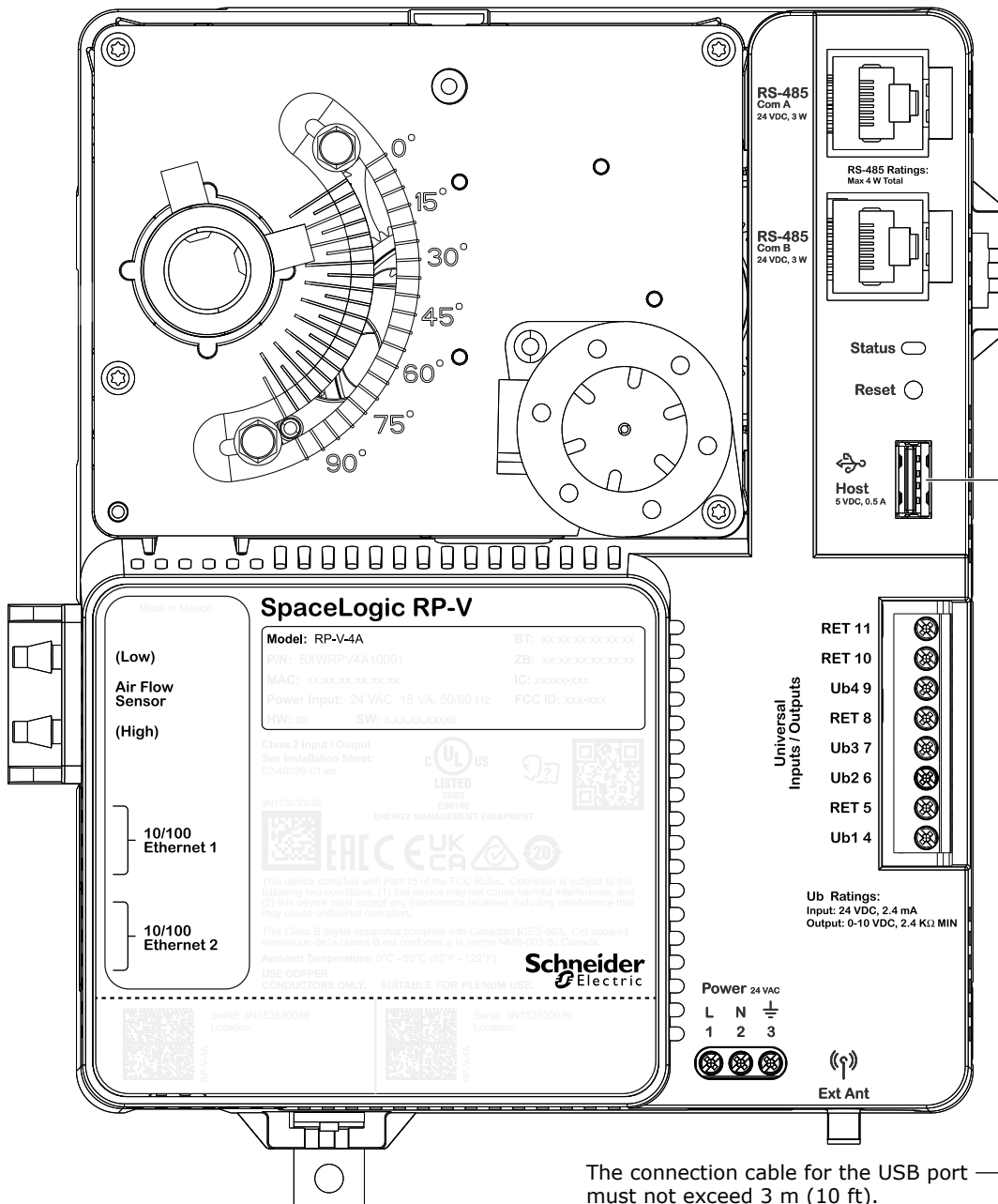
Continued

Output rating	Maximum 1.5 A load per output Maximum 3 A total load for the 3 outputs
AC voltage range	Maximum 30 VAC
DC voltage range	Maximum 30 VDC
Commons	COM for DO1, DO2, and DO3 When the SSR outputs are used to switch AC, the common terminals can be connected to 0 to 30 VAC. When the SSR outputs are used to switch DC, the common terminals can be connected to -30 VDC to +30 VDC.
Common voltage range (AC)	0 to 30 VAC
Common voltage range (DC)	-30 to +30 VDC
Minimum pulse width	100 ms
Solid-state relay output protection	Transient voltage suppressor across each solid-state relay (SSR) output

Terminals

For more information on wiring, see Hardware Reference Guide.

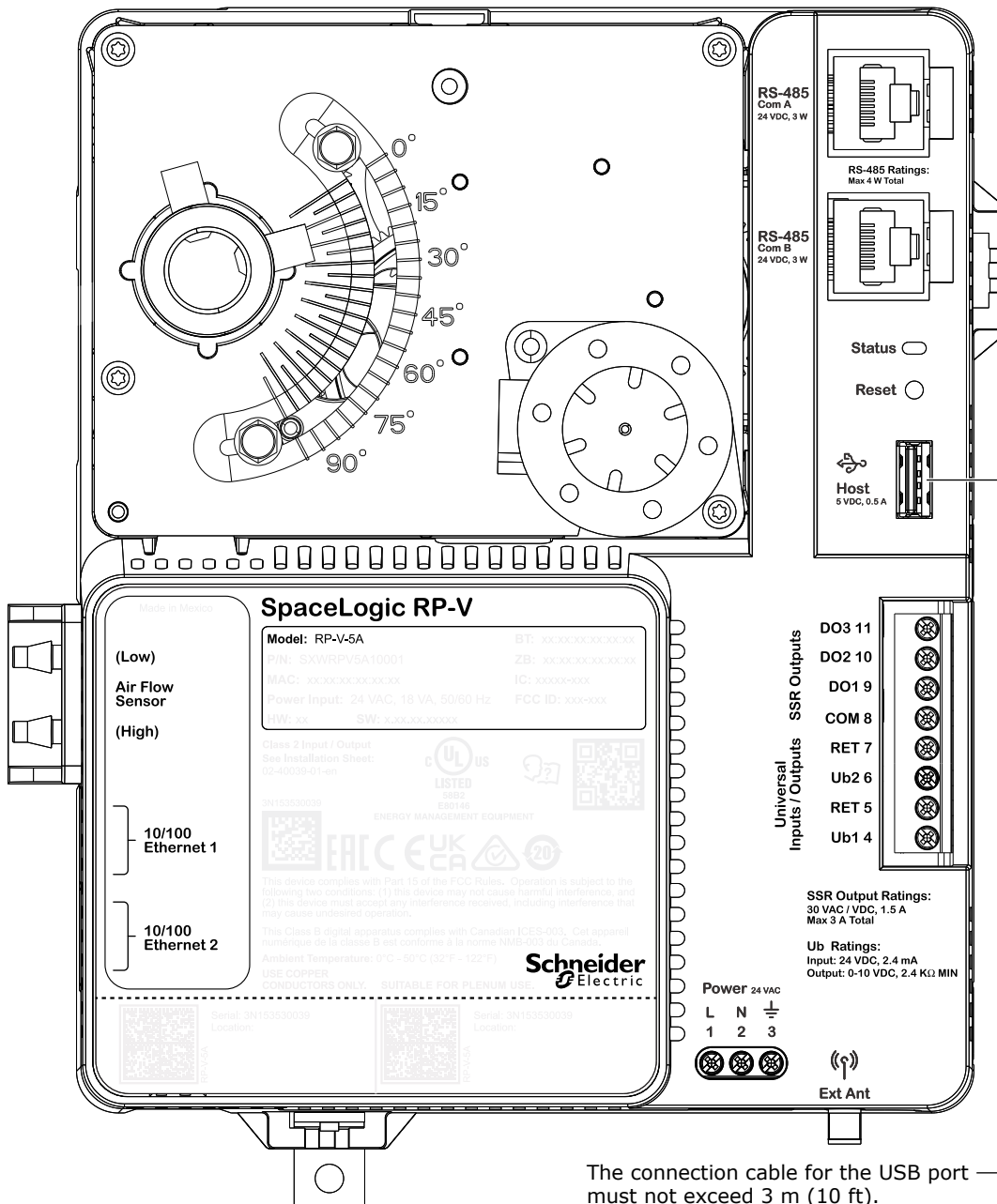
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The connection cable for the USB port must not exceed 3 m (10 ft).

RP-V-4A

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RP-V-5A

Part Numbers for SpaceLogic Sensor Devices, Sensor Bases

Product	Part number
Sensor base with temperature sensor	SXWSBTXXXSXX
Sensor base with temperature and humidity sensors	SXWSBTHXXSXX
Sensor base with temperature and CO ₂ sensors	SXWSBTXCXSXX
Sensor base with temperature, humidity, and CO ₂ sensors	SXWSBTHCXSXX

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Part Numbers for SpaceLogic Sensor Devices, Covers

Product	Housing	Part number
Blank cover	Medium matte white	SXWSCBXSELXX
Blank cover	Optimum glass white	SXWSCBXSELXW
Blank cover	Optimum glass black	SXWSCBXSELXB
Blank cover with occupancy sensor	Medium matte white	SXWSCBPSELXX
Blank cover with occupancy sensor	Optimum glass white	SXWSCBPSELXW
Blank cover with occupancy sensor	Optimum glass black	SXWSCBPSELXB
3-button cover	Medium matte white	SXWSC3XSELXX
3-button cover	Optimum glass white	SXWSC3XSELXW
3-button cover	Optimum glass black	SXWSC3XSELXB
3-button cover with occupancy sensor	Medium matte white	SXWSC3PSELXX
3-button cover with occupancy sensor	Optimum glass white	SXWSC3PSELXW
3-button cover with occupancy sensor	Optimum glass black	SXWSC3PSELXB
Touchscreen display cover	Medium matte white	SXWSCDXSELXX
Touchscreen display cover	Optimum glass white	SXWSCDXSELXW
Touchscreen display cover	Optimum glass black	SXWSCDXSELXB
Touchscreen display cover with occupancy sensor	Medium matte white	SXWSCDPSELXX
Touchscreen display cover with occupancy sensor	Optimum glass white	SXWSCDPSELXW
Touchscreen display cover with occupancy sensor	Optimum glass black	SXWSCDPSELXB
Touchscreen display cover with light control buttons	Optimum glass white	SXWSC2XSELXW
Touchscreen display cover with light control buttons	Optimum glass black	SXWSC2XSELXB
Touchscreen display cover with light control buttons and occupancy sensor	Optimum glass white	SXWSC2PSELXW
Touchscreen display cover with light control buttons and occupancy sensor	Optimum glass black	SXWSC2PSELXB
Touchscreen display cover with light and blind control buttons	Optimum glass white	SXWSC4XSELXW
Touchscreen display cover with light and blind control buttons	Optimum glass black	SXWSC4XSELXB
Touchscreen display cover with light and blind control buttons and occupancy sensor	Optimum glass white	SXWSC4PSELXW
Touchscreen display cover with light and blind control buttons and occupancy sensor	Optimum glass black	SXWSC4PSELXB

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Part Numbers for SpaceLogic Sensor Devices, Combination Models

Product	Housing	Part number
Complete SpaceLogic Sensor model with temperature sensor, buttons for override and setpoint control, and LCD display cover	Medium matte white	SXWSATXXXSLX
Complete SpaceLogic Sensor model with temperature sensor, buttons for override and setpoint control, and LCD display cover	Optimum glass white	SXWSATXXXSLW
Complete SpaceLogic Sensor model with temperature sensor, buttons for override and setpoint control, and LCD display cover	Optimum glass black	SXWSATXXXSLB
Complete non-communicating ^a SpaceLogic Sensor model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Medium matte white	SLASXXX
Complete non-communicating ^a SpaceLogic Sensor model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Optimum glass white	SLAWXXX
Complete non-communicating ^a SpaceLogic Sensor model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Optimum glass black	SLABXXX

a) The SpaceLogic resistive temperature sensor (SLA...) is designed to be connected to I/O points/terminals on RP or MP controllers, or I/O modules. The sensor requires an analog input (temperature input).

SpaceLogic RP-V Advanced

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.

FCC ID: DVE-RV1

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.

IC: 24775-RV1



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)

2014/53/EU Radio Equipment Directive (RED)

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. 2017/1206 - Radio Equipment Regulations 2017

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).



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

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