

SpaceLogic RS-485 Adapters

EcoStruxure™ Building



Introduction

The SpaceLogic™ RS-485 Adapters are RJ45 to screw terminal adapters offered as accessories for RP and MP controllers. The adapters facilitate the controllers' connection to and use in RS-485 based networks such as BACnet MS/TP, Modbus RTU, Sensor Bus, and Room Bus. The adapters provide screw termination for the wiring and help to avoid miswiring.

The RS-485 Adapters are available in three models:

- Isolated RS-485 Adapter
- Non-isolated RS-485 Adapter
- RS-485 Power Adapter

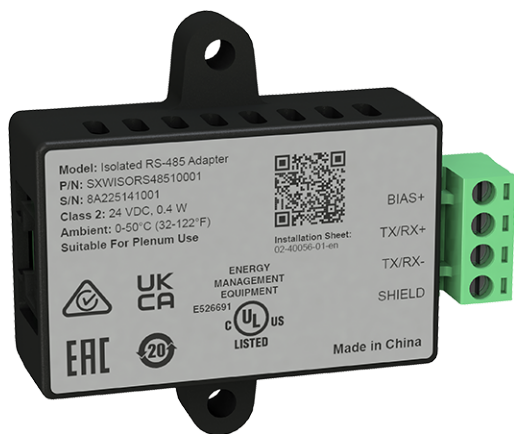
For information on which adapter(s) can be used for a particular controller model, and to which RS-485 port it can be connected, see sections "Support and Use of..."

Isolated RS-485 Adapter

The Isolated RS-485 Adapter has an isolated RS-485 transceiver, and it is used when connecting an RP or MP controller to a BACnet MS/TP network comprised of isolated controllers, such as MNB BACnet devices (zone controllers) and selected others. The adapter is intended for use with IP based RP and MP controllers that support reconfiguration from BACnet/IP to BACnet MS/TP communications. The adapter is frequently used in retrofit projects.

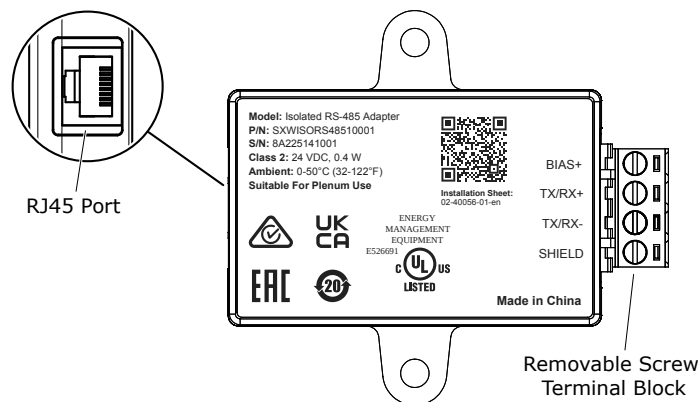
SpaceLogic RS-485 Adapters

The adapter is also used when connecting an RP or MP controller to other isolated RS-485 devices such as some Modbus RTU network controllers. It is required that the controller model supports Modbus and that one of its RS-485 port(s) is configured for Modbus communications.



Isolated RS-485 Adapter

The adapter converts the controller RS-485 RJ45 port to screw terminals, which is required to be able to connect the controller to a BACnet MS/TP or Modbus RTU network and the RS-485 port screw terminals of an automation server.



Isolated RS-485 Adapter, connectors

The adapter is equipped with an RJ45 port and a 4-position removable screw terminal block.

To connect the adapter to the controller, it is recommended to use a Cat 5 (or higher) UTP cable with eight conductors and RJ45 connectors, a cross-sectional area of 22 to 26 AWG (0.34 to 0.14 mm²), a maximum cable length of 0.3 m (12 in.), and a rating that meets the requirements of the target environment. The cable is not included and needs to be purchased separately.

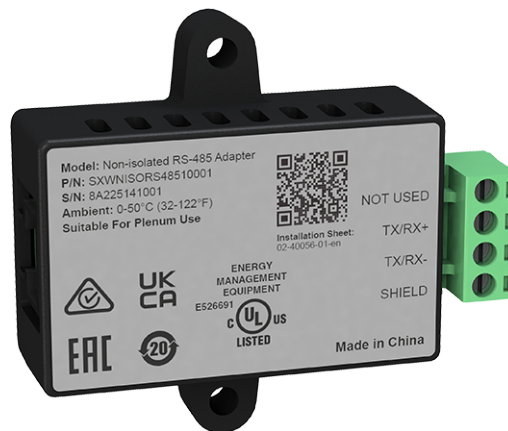
The adapter has a protruding bracket on each long side with a mounting hole to facilitate installation of the device with two screws (not included). The device can also be fastened using

cable ties or mounted in line with a cable run. The adapter is suitable for plenum use.

Non-isolated RS-485 Adapter

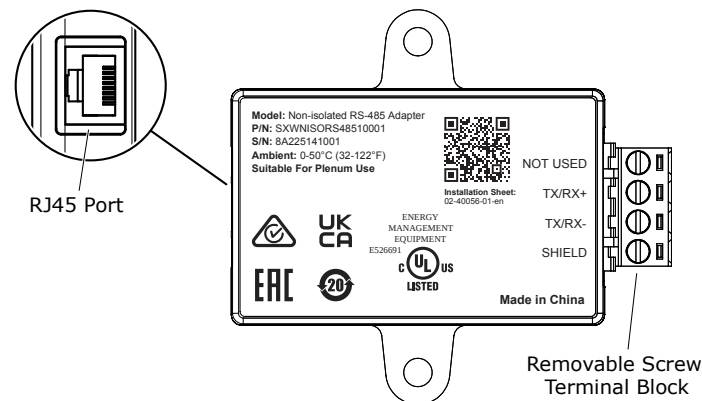
The Non-isolated RS-485 Adapter is used when connecting an RP or MP controller to a BACnet MS/TP network that includes non-isolated controllers, such as the b3 BACnet family of zone controllers. The adapter is intended for use with IP based RP and MP controllers that support reconfiguration from BACnet/IP to BACnet MS/TP communications. The adapter is frequently used in retrofit projects.

The adapter is also used when connecting an RP or MP controller to a Modbus RTU network that includes non-isolated Modbus devices. It is required that the controller model supports Modbus and that one of its RS-485 port(s) is configured for Modbus communications.



Non-isolated RS-485 Adapter

The adapter converts the controller RS-485 RJ45 port to screw terminals, which is required to be able to connect the controller to a BACnet MS/TP or Modbus RTU network and the RS-485 port screw terminals of an automation server.



Non-isolated RS-485 Adapter, connectors

SpaceLogic RS-485 Adapters

The adapter is equipped with an RJ45 port and a 4-position removable screw terminal block.

To connect the adapter to the controller, it is recommended to use a Cat 5 (or higher) UTP cable with eight conductors and RJ45 connectors, a cross-sectional area of 22 to 26 AWG (0.34 to 0.14 mm²), a maximum cable length of 0.3 m (12 in.), and a rating that meets the requirements of the target environment. The cable is not included and needs to be purchased separately.

The adapter has a protruding bracket on each long side with a mounting hole to facilitate installation of the device with two screws (not included). The device can also be fastened using cable ties or mounted in line with a cable run. The adapter is suitable for plenum use.

RS-485 Power Adapter

The RS-485 Power Adapter is used with RP and MP controllers to support the connection of various types of devices to an RS-485 based network such as Modbus RTU, Sensor Bus, or Room Bus. The adapter is a flexible device that can be used for several different applications, which mainly fall into the following categories:

- Convert a controller RS-485 RJ45 port to screw terminals
- Enable injection of 24 VDC from an external power supply to an RS-485 bus

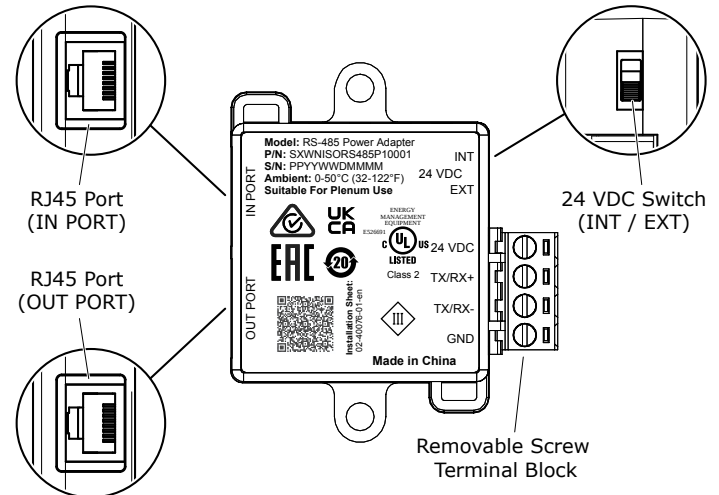


RS-485 Power Adapter

The adapter can be used to convert the controller RS-485 RJ45 port to screw terminals, which is required to be able to connect the controller to a Modbus RTU network and the RS-485 port screw terminals of an automation server. The adapter should not be used to connect an MP or RP controller to a BACnet MS/TP network, as it can cause ground loops and poses a risk of miswiring of 24 VDC and bias terminals.

The adapter can be used for injecting 24 VDC from an external 24 VDC power supply to Sensor Bus or Room Bus. This is useful, for example, in applications where you want to extend the bus by

connecting (daisy-chaining) additional devices, which the controller would otherwise not be able to power. The external power supply is connected to the bus via the adapter.



RS-485 Power Adapter, connectors and switch

The adapter is equipped with dual RJ45 ports, a 4-position removable screw terminal block, and a 2-pole slide switch.

The RJ45 ports are marked IN PORT and OUT PORT. You use the IN PORT to connect the adapter to the controller when you want to convert the controller RS-485 RJ45 port to screw terminals for connection to a Modbus RTU network. You use both ports to connect the adapter to Sensor Bus or Room Bus (IN PORT toward the controller) when you want to connect an external 24 VDC power supply to the bus.

The screw terminal block allows connection either to a Modbus RTU network or to an external 24 VDC power supply.

The switch allows the choice to inject 24 VDC via the adapter to the RS-485 bus either from an external 24 VDC power supply or from the RP or MP controller RS-485 port. The switch positions are marked EXT and INT. You move the switch to EXT (External) to use an external 24 VDC power supply to power devices on Sensor Bus or Room Bus. You move the switch to INT (Internal) to use the RP or MP controller to supply 24 VDC (3 W or 2 W) to devices on a Modbus RTU network. If the Modbus devices do not need power supply from the controller, the 24 VDC terminal on the adapter is left unconnected.

To connect the adapter to the controller and/or the bus, it is recommended to use Cat 5 (or higher) UTP cable(s) with eight conductors and RJ45 connectors, a cross-sectional area of 22 to 26 AWG (0.34 to 0.14 mm²), and a rating that meets the requirements of the target environment. The cable(s) are not included and need to be purchased separately.

SpaceLogic RS-485 Adapters

The total length of the bus, from the controller to the end of the bus, should not exceed the following limits:

- Sensor Bus: 61 m (200 ft)
- Room Bus and Modbus: 72 m (236 ft)

The adapter has a protruding bracket on each long side with a mounting hole to facilitate installation of the device with two screws (not included). The device can also be fastened using cable ties or mounted in line with a cable run. The adapter has two anchor points that can be used to fasten cable ties or other accessories for bundling wires. The adapter is suitable for plenum use.

Part Numbers

Product	Part number
Isolated RS-485 adapter	SXWISORS48510001
Non-isolated RS-485 adapter	SXWNISORS48510001
RS-485 power adapter	SXWNISORS485P10001

Specifications

SpaceLogic RS-485 Adapters	
Electrical	
Isolated RS-485 Adapter	
DC input supply voltage	24 VDC (powered by the BACnet/IP controller)
Maximum power consumption	0.4 W
Non-isolated RS-485 Adapter	
DC input supply voltage	0 V
Maximum power consumption	0 W
RS-485 Power Adapter – 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
Maximum out port bus load	3 W
Environment	
All device models	
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)
Ambient temperature, storage	-40 to +70 °C (-40 to +158 °F)
Humidity	Maximum 95 % RH non-condensing

SpaceLogic RS-485 Adapters

Material	
All device models	
Plastic flame rating	UL94 V-0
Plenum rating	UL 2043
Ingress protection rating	IP 20
Mechanical	
Isolated RS-485 Adapter	

Dimensions	See drawing below
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mm (inches)

2x Ø 4.80 (0.189)

No. 6, 8, M3, or M4 sheet metal and/or self-tapping screws with rounded or flanged hex head.

31.5 (1.240)

40 (1.575)

56 (2.205)

66.8 (2.630)

74.3 (2.925)

63 (2.480)

9.5 (0.374)

23.5 (0.925)

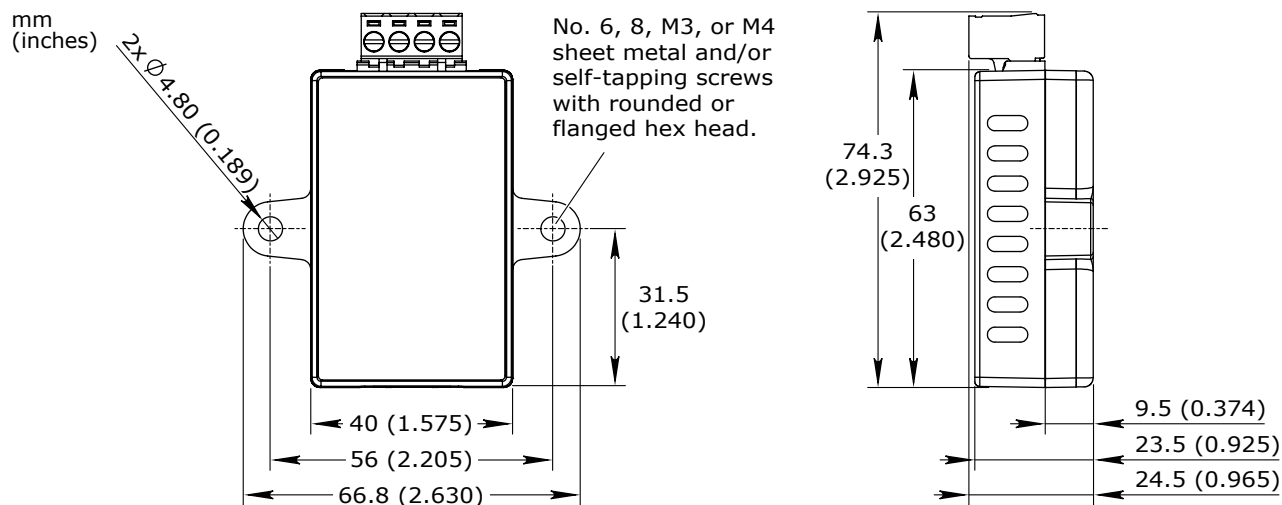
24.5 (0.965)

Weight	80 g (2.82 oz)
Installation on RP-C Advanced, RP-C Pro, or RP-V Advanced	Connection to RS-485 Com B via Cat 5 UTP cable (not included) ^a
a) For more information, see the SpaceLogic RS-485 Adapter Installation Sheet.	
Installation on MP-V Pro	Connection to RS-485 Com A via Cat 5 UTP cable (not included) ^a
a) For more information, see the SpaceLogic RS-485 Adapter Installation Sheet.	
Installation on MP-C Pro or RP-C Pro Plus	Not supported
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.	

Maximum Cat 5 UTP cable length The Cat 5 UTP cable is not included.	0.3 m (12 inches)
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Non-isolated RS-485 Adapter	
Dimensions	See drawing below

SpaceLogic RS-485 Adapters



Weight

40 g (1.41 oz)

Installation on RP-C Advanced, RP-C Pro, or RP-V Advanced

Connection to RS-485 Com A or Com B via Cat 5 UTP cable (not included)^a

a) For more information, see the SpaceLogic RS-485 Adapter Installation Sheet.

Installation on MP-V Pro, MP-C Pro, EasyLogic RP-C, or EasyLogic RP-V

Connection to RS-485 Com A via Cat 5 UTP cable (not included)^a

a) For more information, see the SpaceLogic RS-485 Adapter Installation Sheet.

Installation on RP-C Pro Plus

Connection to RS-485 Com A, Com B, or Com C via Cat 5 UTP cable (not included)^a

a) For more information, see the SpaceLogic RS-485 Adapter Installation Sheet.

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.

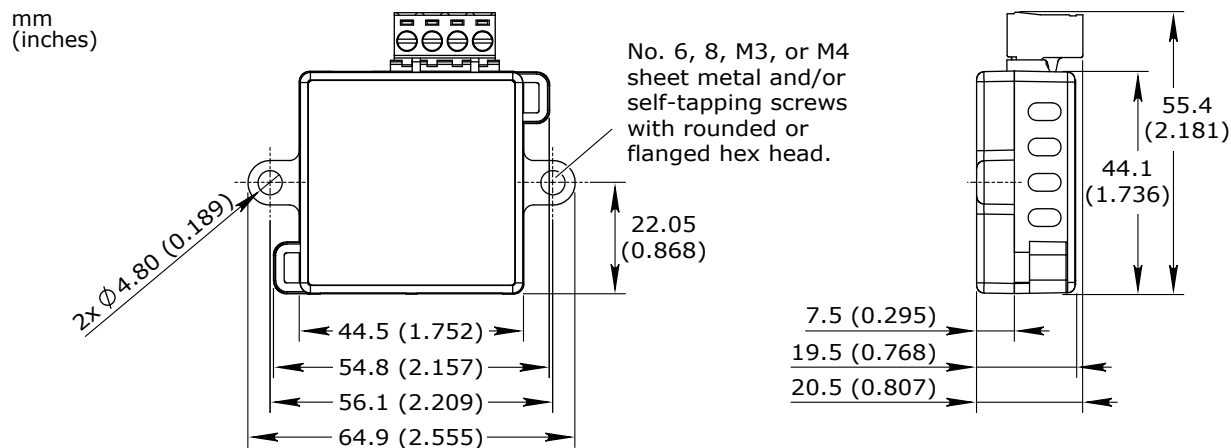
Maximum Cat 5 UTP cable length
The Cat 5 UTP cable is not included.

0.3 m (12 inches)

RS-485 Power Adapter

Dimensions

See drawing below



Weight

24 g (0.84 oz)

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Installation

a) For more information, see the SpaceLogic RS-485 Power Adapter Installation Sheet.

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.

Agency compliances

All device models

Emission

RCM; BS/EN 61000-6-3; BS/EN IEC 63044-5-2; FCC Part 15, Sub-part B, Class B

Immunity

BS/EN 61000-6-2; BS/EN IEC 63044-5-3

Safety standards

BS/EN 60730-1; BS/EN 60730-2-11; BS/EN IEC 63044-3; UL 916 C-UL US Listed^a

a) All device models are marked "Energy Management Equipment".

Fire performance in air-handling spaces^a

UL 2043

a) All device models are approved for plenum applications.

Hardware

Isolated RS-485 Adapter

Connectors

RS-485, 4-pole removable screw terminal block
RS-485, RJ45 port

Non-isolated RS-485 Adapter

Connectors

RS-485, 4-pole removable screw terminal block
RS-485, RJ45 port

RS-485 Power Adapter

Connectors

RS-485, 4-pole removable screw terminal block
RS-485, dual RJ45 ports

Transceiver type

Failsafe
Isolated

External biasing

Determined by external network

Total Unit Load (UL) per device

0.18 UL

Switch

2-pole slide switch

Support and Use of RS-485 Adapters for Connection to a BACnet MS/TP Network

BACnet/IP Controller - Reconfigured for MS/TP ^a	Isolated RS-485 Adapter (RS-485 port on controller ^b)	Non-isolated RS-485 Adapter (RS-485 port on controller ^b)	RS-485 Power Adapter (RS-485 port on controller ^b)
RP-C Advanced (Controllers with BACnet MS/TP support) ^c	yes ^d (Com B)	yes ^d (Com A or Com B)	no ^e
RP-C Pro	yes (Com B)	yes (Com A or Com B)	no ^e
RP-C Pro Plus	no	yes (Com A, Com B, or Com C)	no ^e

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Continued

BACnet/IP Controller - Reconfigured for MS/TP ^a	Isolated RS-485 Adapter (RS-485 port on controller ^b)	Non-isolated RS-485 Adapter (RS-485 port on controller ^b)	RS-485 Power Adapter (RS-485 port on controller ^b)
MP-V Pro (Controllers with BACnet MS/TP support) ^f	yes ^g (Com A)	yes ^g (Com A)	no ^e
MP-C Pro	no	no	no

- a) For RP-C Advanced, RP-C Pro, and MP-V Pro, the BACnet MS/TP support requires EcoStruxure Building Operation version 4.0.2 or later. For RP-C Pro Plus, version 5.0.1 or later is required. For MP-C Pro, BACnet MS/TP is not supported.
- b) RS-485 port(s) on the controller supporting connection to the adapter.
- c) Controllers with part numbers: SXWRCF12A10002, SXWRCF12B10002, SXWRCF12C10002, and SXWRCF16A10003.
- d) Not supported by controllers with part numbers: SXWRCF12A10001, SXWRCF12B10001, SXWRCF12C10001, and SXWRCF16A10002.
- e) The RS-485 Power Adapter should not be used to connect an MP or RP controller to a BACnet MS/TP network as it can cause ground loops and poses a risk of miswiring of 24 VDC and bias terminals.
- f) Controllers with part numbers: SXWMPV7AX10002 and SXWMPV9AX10002.
- g) Not supported by controllers with part numbers: SXWMPV7AX10001 and SXWMPV9AX10001.

Support and Use of RS-485 Adapters for Connection to a Modbus RTU Network

Controller - Configured for Modbus	Isolated RS-485 Adapter (RS-485 port on controller ^a)	Non-isolated RS-485 Adapter (RS-485 port on controller ^a)	RS-485 Power Adapter (RS-485 port on controller ^a)
RP-C Advanced (Controllers with BACnet MS/TP support) ^b	yes ^c (Com B)	yes ^c (Com A or Com B)	yes (Com A or Com B)
RP-C Pro	yes (Com B)	yes (Com A or Com B)	yes (Com A or Com B)
RP-C Pro Plus	no	yes (Com A, Com B, or Com C ^d)	yes (Com A, Com B, or Com C ^c)
RP-V Advanced	yes (Com B)	yes (Com A or Com B)	yes (Com A or Com B)
MP-V Pro (Controllers with BACnet MS/TP support) ^e	yes ^{fg} (Com A)	yes ^{fg} (Com A)	yes ^{fg} (Com A)
MP-C Pro	no	yes ^f (Com A)	yes ^f (Com A)
EasyLogic RP-C	no	yes (Com A)	yes (Com A)
EasyLogic RP-V	no	yes (Com A)	yes (Com A)
EasyLogic MP-C	no	no	no

- a) RS-485 port(s) on the controller supporting connection to the adapter. A separate Cat 5 UTP cable is required to connect the adapter to the controller. The cable is not included and needs to be purchased separately. Maximum cable length: 0.3 m (12 inches).
- b) Controllers with part numbers: SXWRCF12A10002, SXWRCF12B10002, SXWRCF12C10002, and SXWRCF16A10003.
- c) Not supported by controllers with part numbers: SXWRCF12A10001, SXWRCF12B10001, SXWRCF12C10001, and SXWRCF16A10002.
- d) The RS-485 Com C port is by default configured for Modbus.
- e) Controllers with part numbers: SXWMPV7AX10002 and SXWMPV9AX10002.
- f) For MP-V Pro and MP-C Pro, the Modbus support requires EcoStruxure Building Operation version 5.0.1 or later.
- g) Not supported by controllers with part numbers: SXWMPV7AX10001 and SXWMPV9AX10001.

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Support and Use of RS-485 Power Adapter for Power Injection on Sensor Bus

Controller	RS-485 Power Adapter (RS-485 port on controller ^a)
RP-C Advanced	yes (Com A ^b or Com B)
RP-C Pro	yes (Com A ^b or Com B)
RP-C Pro Plus	yes (Com A ^b , Com B, or Com C)
RP-V Advanced	yes (Com A ^b or Com B)
MP-V Pro	yes (Com A ^b)
MP-C Pro	yes (Com A ^b)
EasyLogic RP-C	yes (Com A ^b)
EasyLogic RP-V	yes (Com A ^b)
EasyLogic MP-C	no

a) RS-485 port(s) on the controller supporting connection to Sensor Bus.

b) The RS-485 Com A port is by default configured for Sensor Bus.

Support and Use of RS-485 Power Adapter for Power Injection on Room Bus

Controller	RS-485 Power Adapter (RS-485 port on controller ^a)
RP-C Advanced	yes (Com A or Com B ^b)
RP-C Pro	yes (Com A or Com B ^b)
RP-C Pro Plus	yes (Com A, Com B ^b , or Com C)
RP-V Advanced	yes (Com A or Com B ^b)
MP-V Pro	no
MP-C Pro	no
EasyLogic RP-C	no
EasyLogic RP-V	no
EasyLogic MP-C	no

a) RS-485 port(s) on the controller supporting connection to Room Bus.

b) The RS-485 Com B port is by default configured for Room Bus.

SpaceLogic RS-485 Adapters

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.



UK Conformity Assessed

S.I. 2016/1091 - Electromagnetic Compatibility Regulations 2016

S.I. 2012/3032 - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

S.I. 2013/3113 - Waste Electrical and Electronic Equipment Regulations 2013

This equipment complies with the rules, of the UK regulations, for governing the UKCA Marking for the United Kingdom specified in the above directive(s).



CE - Compliance to European Union (EU)

2014/30/EU Electromagnetic Compatibility Directive (EMCD)

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.



UL 916 Listed products for the United States and Canada, Energy Management Equipment. UL file E526691.

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