

SpaceLogic RP-C-EXT-IS-BLE

RP Controller Expansion Modules

EcoStruxure™ Building



Insight-Sensor

Introduction

SpaceLogic™ RP-C-EXT-IS-BLE Insight-Sensor connects to the SpaceLogic RP controllers and is used for people counting, motion detection, and luminosity and sound level monitoring, and supports Bluetooth Low Energy based applications such as beaconing and remote control communication.

The Insight-Sensor provides real-time occupant information that enables immediate control of HVAC for optimized energy consumption and indoor environment, for example, by adapting the fan speed to occupancy level or turning off the lights when unoccupied.

The Insight-Sensor is connected to the RP controller using an RJ45 type quick connector.

The Insight-Sensor's three flexible mounting brackets (springs) enable quick and easy installation on a suspended ceiling tile. The Insight-Sensor also comes with a mounting ring, which allows the device to be installed in open ceiling applications.

The Insight-Sensor is part of the RP controller expansion modules product range. The Insight-Sensor can be combined with the RP controller expansion modules for lighting and blind control to provide a connected room solution.

SpaceLogic RP-C-EXT-IS-BLE

Features

The SpaceLogic Insight-Sensor has the following features:

- Power and communications through the room bus
- People counting through thermal image sensor with software configurable detection areas
- Motion detection through passive infrared sensor
- Luminosity measurement through ambient light sensor
- Sound pressure level measurement through an analog acoustic sensor, which enables monitoring of sound levels in both enclosed and open spaces
- Temperature and humidity measurement provided for dew point calculation
- Bluetooth Low Energy for beaconing applications such as indoor positioning - a service to be provided by third party Beaconing follows standard iBeacon profile - compatible with multiple indoor positioning providers
- Bluetooth Low Energy for wireless connection to RP-C-RC-BLE remote control
- Status LED for the device
- Rotary switch for address configuration
- Insight-Sensor Engineering Tool for deployment of the people counting feature during engineering and commissioning of multiple Insight-Sensor devices

Room bus

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-C Pro and RP-C Pro Plus controller room bus supports up to nine connected RP controller expansion modules with the following restrictions:

- Maximum of two DALI light modules
- Maximum of two SMI blind modules
- Maximum of seven Multi-sensor or Insight-Sensor devices

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

- Maximum of two DALI light modules
- Maximum of two SMI blind modules
- Maximum of four Multi-sensor or Insight-Sensor devices

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).

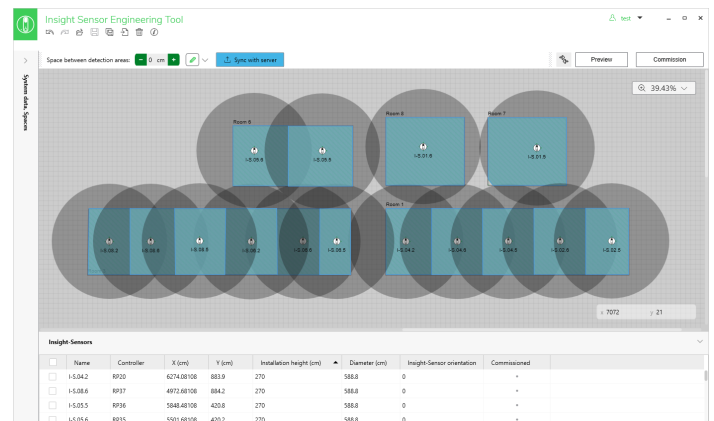
People counting

The thermal image sensor senses the heat radiation from each individual. The device applies advanced image processing to the thermal images, and the result is a people count number, which is periodically transmitted to the RP controller. The information from the device cannot be used to identify people.

The thermal image sensor's detection area can be configured to reduce overlapping areas between two devices to minimize the risk of a person being counted twice. The detection area can also be adjusted to exclude heat radiating objects such as radiators and windows heated by solar rays, and to exclude corridors and other adjacent areas through which people just pass by. The configuration can be done using the EcoStruxure Building Operation software or the standalone Insight-Sensor Engineering Tool.

Insight-Sensor Engineering Tool

Insight-Sensor Engineering Tool is a standalone tool that facilitates the deployment of the people counting feature during engineering and commissioning of multiple Insight-Sensor devices. The tool enables configuration of multiple Insight-Sensor devices with automatic calculation of each sensor's detection area. During commissioning, the tool can visualize the live value and position of people counted for each Insight-Sensor device in a space.



Engineering view

SpaceLogic RP-C-EXT-IS-BLE

Sound pressure level measurement

The Insight-Sensor measures the sound pressure level using an analog solution, without involving any digital audio processing, codec, or recording. Each measured value is an average value of one second of analog integration. The measurements are performed every two minutes. The device is not capable of recording or streaming audio samples.

Bluetooth Low Energy beacon and remote control

The Insight-Sensor is a Bluetooth Low Energy (BLE) device. The Insight-Sensor support for Bluetooth beacon enables nearby

mobile devices with a specific app installed to interact when in close proximity to the broadcasting Insight-Sensor. The Bluetooth beacon can be used for services such as indoor positioning of the mobile device. The service and mobile app need to be provided by a third party. The Bluetooth connection can also be used for communication with the RP-C-RC-BLE remote control, which makes it possible to control the lighting, blinds, and air conditioning in a zone of an office building.

Part Numbers

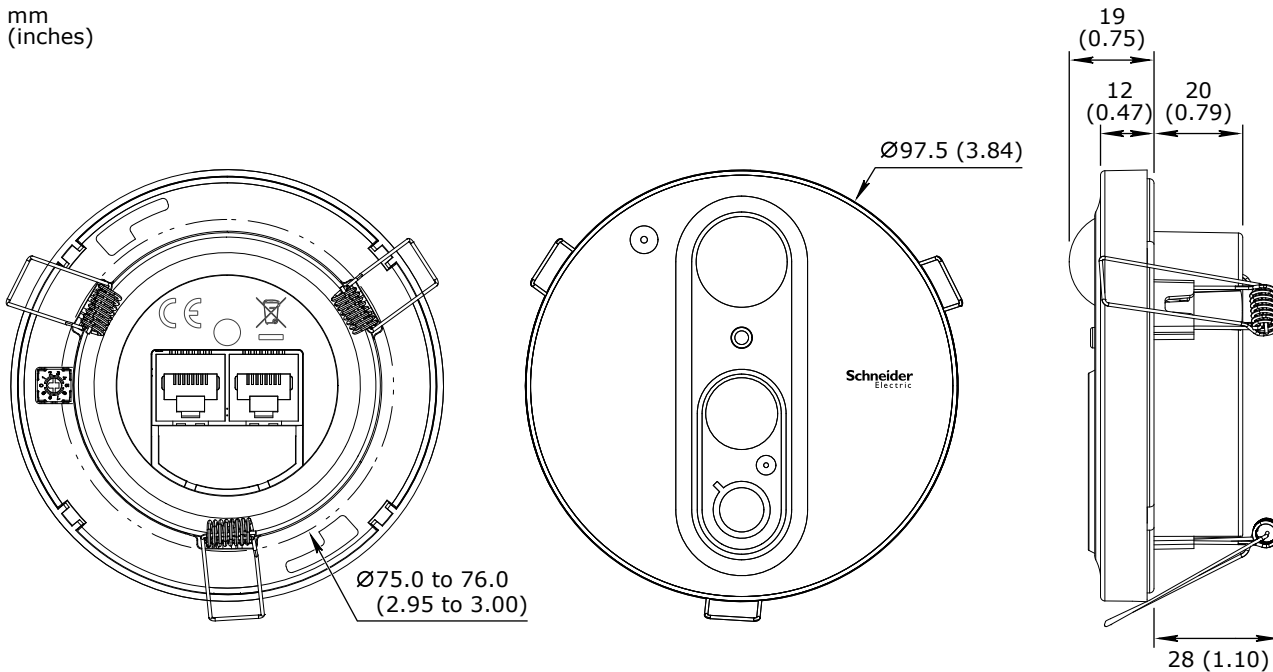
Product	Part number
RP-C-EXT-IS-BLE	SXWREISBLE10001
RP-C-EXT-MR-K5 SpaceLogic Sensor Mounting Ring Kit 5 pcs	SXWREMR5XX10001

Specifications

SpaceLogic RP-C-EXT-IS-BLE	
Electrical	
DC input supply voltage	24 VDC Powered by the RP controller through the room bus (RJ45)
Maximum power consumption	0.35 W
Environment	
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)
Ambient temperature, storage	-20 to +70 °C (-4 to +158 °F)
Humidity	20 to 90 % RH non-condensing
Material	
Plastic flame rating	UL94 V-0
Ingress protection rating	IP 20
Cover color	Signal white (RAL9003)
Mechanical	

SpaceLogic RP-C-EXT-IS-BLE

mm
(inches)



Overall external diameter	97.5 mm (3.84 in.)
Diameter of mounting clearance hole	75.0 to 76.0 mm (2.95 to 3.00 in.)
External washer thickness	12 mm (0.47 in.)
Overall external thickness	19 mm (0.75 in.)
Internal thickness	20 mm (0.79 in.)
Overall internal depth	28 mm (1.10 in.)
Weight, Insight-Sensor with mounting springs (3x)	0.088 kg (0.194 lb)
Weight, Insight-Sensor with mounting ring	0.098 kg (0.216 lb)

Installation Plastic unit to be fitted flush in a suspended ceiling tile with a thickness of up to 45 mm (1.77 in.). The mounting springs enable quick and easy installation in a suspended ceiling. The mounting ring allows the device to be installed in a ceiling with drywall anchors or to a 102 mm (4 in.) junction box.

Compatibility

EcoStruxure BMS server communication EcoStruxure Building Operation	version 4.0.1 and later
Extended mounting height range, from 2.5–3.0 m (8–10 ft) to 2.3–3.3 m (7.5–10.8 ft) EcoStruxure Building Operation	version 6.0.1 and later
Insight-Sensor Engineering Tool support EcoStruxure Building Operation	version 7.0.1 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	EN 300 328 V2.1.1

SpaceLogic RP-C-EXT-IS-BLE

Safety standards	BS/EN 60730-1; BS/EN 60730-2-11; BS/EN IEC 63044-3; UL 916 C-UL US Listed
FCC ID	DVE-IS1
ISED certification number	IC: 24775-IS1
Fire performance in air-handling spaces ^a	UL 2043
a) The SpaceLogic Insight-Sensor is approved for plenum applications.	
Communication ports	
Room bus	RS-485 Dual RJ45 ports for daisy-chain configurations Use a Cat 5 (or higher) cable Maximum total length of the room bus: 72 m (236 ft)
Room bus protection	Transient voltage suppressors on communication and power signals
Wireless connectivity	
Bluetooth Low Energy	
Communication protocol	Bluetooth® 5.1 Low Energy compliant
Frequency	2.402 to 2.480 GHz
Maximum communication distance	Line-of-sight: 50 m (164 ft)
Maximum output power	3 dBm
Antenna	Integrated antenna
Beacon protocol	iBeacon
Hardware	
Main microcontroller	
CPU type	ARM Cortex-M4 single-core
Frequency	38.4 MHz
SRAM (embedded)	256 KB
Flash memory (embedded)	1024 KB
Flash memory (serial)	16 MB
Sub microcontroller	
CPU type	ARM Cortex-M4 single-core
Frequency	80 MHz
SRAM (embedded)	320 KB
Flash memory (embedded)	1 MB
Flash memory (serial)	2 MB
Additional hardware	
Status indicator	LED (green and red) that shows the status of the device
Address switch	Rotary switch 0 to 9

SpaceLogic RP-C-EXT-IS-BLE

Set button

Push-button switch

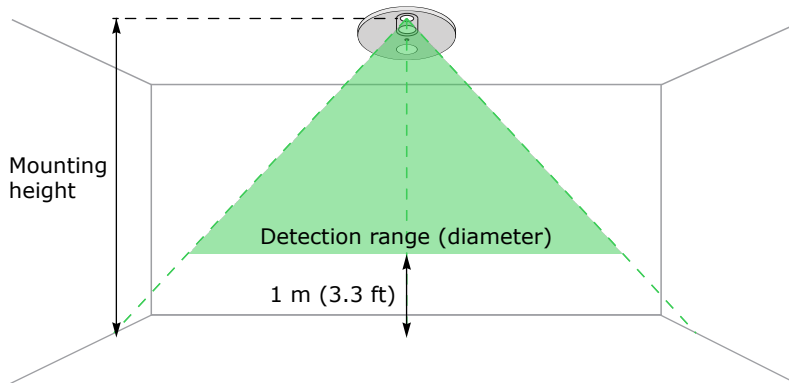
People counting

Sensor

Longwave infrared (LWIR) microbolometer

Detection range

See image and table below.



Sensor mounting height

3.3 m (10.8 ft)

3.0 m (10 ft)

2.7 m (9 ft)

2.5 m (8 ft)

2.3 m (7.5 ft)

a) At the level of 1 m (3.3 ft) above the floor.

Sensor detection range (diameter)^a

8.0 m (26 ft)

7.0 m (22 ft)

5.8 m (19 ft)

5.2 m (17 ft)

4.5 m (14 ft)

Average counting accuracy^a

Up to 90%

a) Correct installation and configuration required.

Motion detection

Sensor

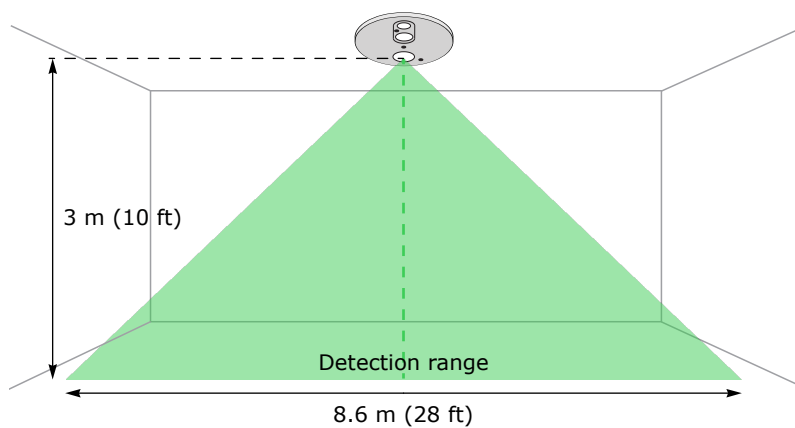
Quad-type passive infrared (PIR) sensor with Fresnel lens

Detection range

See image and table below.

SpaceLogic RP-C-EXT-IS-BLE

Continued



Sensor mounting height

- 3.0 m (10 ft)
- 2.7 m (9 ft)
- 2.5 m (8 ft)

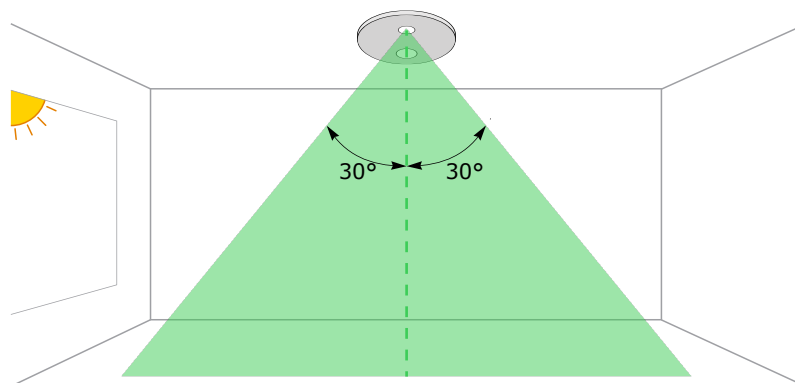
Sensor detection range (diameter)

- 8.6 m (28 ft)
- 8.0 m (26 ft)
- 7.4 m (24 ft)

Luminosity measurements

Sensor

Ambient Light Sensor (ALS)



Spectral response

Human eye

Luminosity range

0 to 10,000 lux

Field of view

30 degrees from vertical

Sound pressure level measurements

Sensor

Microelectromechanical system (MEMS) acoustic sensor

Dynamic pressure

35 to 79 dBA

Accuracy

+/- 3 dBA

Bandwidth

10 Hz to 8 kHz

SpaceLogic RP-C-EXT-IS-BLE

Continued

Temperature measurements

Range 0 to 50 °C (32 to 122 °F)

Accuracy +/-1 °C (+/-1.8 °F)

Humidity measurements

Range 0 to 100% RH

Accuracy +/-4% (within the range of 20 to 80% RH)
+/-6% (outside the range of 20 to 80% RH)

SpaceLogic RP-C-EXT-IS-BLE

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-IS1

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-IS1



Regulatory Compliance Mark (RCM) - Australian Communications and Media Authority (ACMA)

This equipment complies with the requirements of the relevant ACMA standards made under the Radiocommunications Act 1992 and the Telecommunications Act 1997. These standards are referenced in notices made under section 182 of the Radiocommunications Act and 407 of the Telecommunications Act.



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



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).

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