SpaceLogic Sensors
SPMOP Outdoor Particulate Matter Sensors



Product Description

The SpaceLogic SPMOP Outdoor Particulate Matter (PM) Sensor represents a technological breakthrough in optical PM sensors. This laser-scatter type sensor detects and counts particles using light scattering principles and features innovative contamination resistance technology to perform highly accurate and reliable PM measurements. SPMOP sensors are used in outdoor applications.

Over a ten-year lifetime, SPMOP sensors provide superior precision measurement of numerous PM types and higher-resolution particle size binning, allowing for the detection of many types of environmental dust and other particles.

The SPMOP detection concentration range is 0 to 1,000 µg/m³ and is intended for duct or outdoor mounting.

This versatile sensor offers selectable PM measurement options of PM1.0, PM2.5, PM4.0 and PM10.

Features

- Laser-scatter type sensor featuring innovative contamination resistance technology for highly accurate measurement of particulate matter
- Easy to install and commission:
  - Latch-on sensor cover
  - Screwless terminal block wiring with spring actuator
  - Analog DIP switch selectable output: 4 to 20 mA, 0 to 5 Vdc, 0 to 10 Vdc
- Unique long-term stability
- Advanced particle size binning
- Precise mass concentration sensing
- Multiple PM measurement options
- Key component for the LEED green building program and WELL Building Standard*

Available Products

	Installation	Output
SPM	O	P

O = Outdoor wall mount

P = PM1.0/2.5/4.0/10 selectable

*Leadership in Energy and Environmental Design (LEED) is a registered trademark of the US Green Building Council. The WELL Building Standard is a trademark of the International WELL Building Institute in the United States and other countries.

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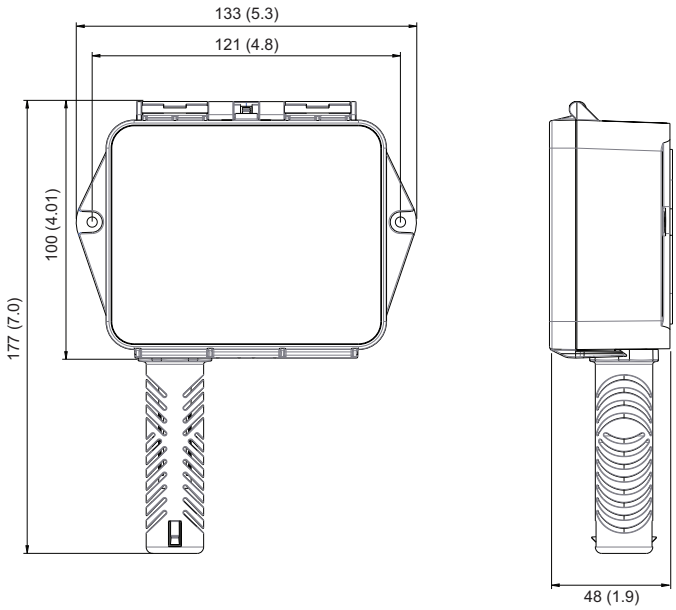
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Specifications

Operating and Storage Environment	
Operating temp. range	-10 to 60 °C (14 to 140 °F)
Operating humidity range	0 to 95% RH (non-condensing)
Storage temp. range	-40 to 60 °C (-40 to 140 °F)
Storage humidity range	0 to 95% RH (non-condensing)
Power supply	3-wire volt mode: 20 to 30 Vdc, 24 Vac, 50 to 60 Hz
Output	Selectable 4 to 20 mA, 0 to 5 Vdc, 0 to 10 Vdc
Power consumption	3.7 VA
Housing material	Polycarbonate; flammability rating UL 94 V0
Mounting location	For outdoor use
IP rating	IP65
Protection class	Class III
PM Sensor	
Sensor type	Laser-scatter
Particulate size	PM1.0, PM2.5, PM4.0, PM10
Resolution	± 1 µg/m³
Mass concentration output range	0 to 1000 µg/m³
Accuracy*	PM1.0 and PM2.5: 0 to 100 µg/m³ +/-[5µg/m³+5% m.v.], 100 to 1000 ug/m³ +/-[10% m.v.] PM4.0 and PM10:** 0 to 100 µg/m³ +/-[25µg/m³], 100 to 1,000 µg/m³ +/-[25% m.v.] (sensor-to-sensor deviation)
Wiring	
Wiring	Screwless terminal block with spring actuator, 16-24 AWG
Warranty	
Limited warranty	2 years
Regulatory Information	
Agency approvals	UL 916 European Conformance CE: EN 60730-1, EN 61000-6-2, EN 61000-6-3, EN 61000 Series - Industrial Immunity, EN 61326-1 FCC Part 15 Class A, Green Premium (REACH, RoHS), RoHS 2 (China), RCM (Australia), ICES-001 (Canada), UKCA (UK)

*Sensor-to-sensor variation.
**PM4.0 and PM10 output values are calculated based on the distribution profile of all measured particles.

Dimensions mm (in.)



Safety Information

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 message may appear throughout this bulletin or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

NOTICE

NOTICE is used to address practices not related to physical injury.

⚠WARNING

WARNING indicates a hazardous situation which, if not avoided **could result in** death or serious injury.

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 the skills and knowledge related to the construction, installation and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

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Safety Precautions

⚠ WARNING



HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Apply appropriate personal protective equipment (PPE) and follow safe electrical work practices. See NFPA 70E or CSA Z462.
- This equipment must only be installed and serviced by qualified electrical personnel.
- Turn off all power supplying this equipment before working on or inside equipment.
- Always use a properly rated voltage sensing device to confirm power is off.
- Replace all devices, doors and covers before turning on power to this equipment.

Failure to follow these instructions can result in death, serious injury or equipment damage.

This product is intended for use in HVAC and building environmental control applications.

It is not intended for direct medical monitoring of patients.

It is not designed for life-safety applications.

Read and understand these instructions before installing this product.

The installer is responsible for all applicable codes.

If this product is used in a manner not specified by the manufacturer, the protection provided by the product may be impaired. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this material.

Installation

NOTICE

INCORRECT PRODUCT INSTALLATION

- Choose an outdoor location in a sheltered area, out of direct sunlight.
- Mount unit with probe pointing down. Unit may be suspended by conduit. Do not obstruct vent openings.

Failure to follow these instructions will lead to incorrect sensor readings.

NOTICE

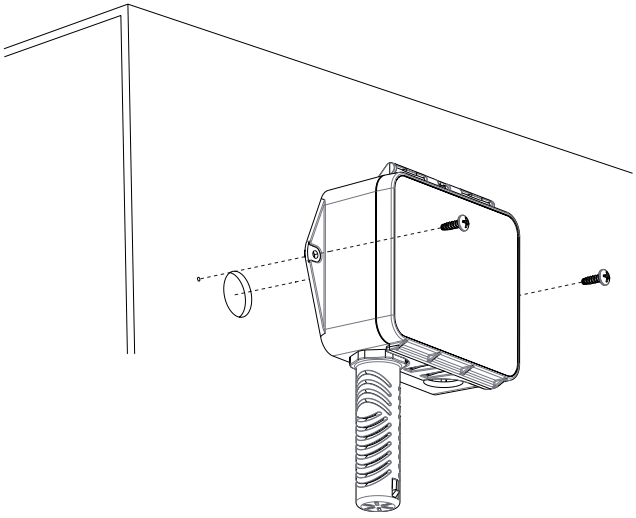
PRODUCT DAMAGE DUE TO ELECTRO-STATIC DISCHARGE

Circuit boards and components can be damaged by static electricity or electro-static discharge (ESD). Observe the following electro-static precautions when handling this product and cables and components connected to the product.

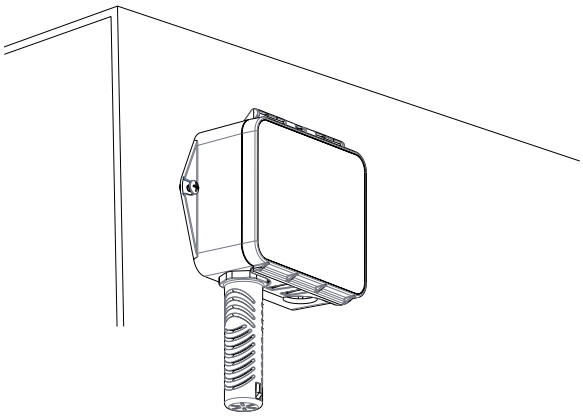
- Keep static-producing material such as plastic, upholstery, carpeting, etc. out of the immediate work area.
- Store the product in ESD-protective packaging when it is not installed in the panel
- When handling the product or a conductive cable/ESD-sensitive component connected to the product, wear a conductive wrist strap connected to ground through a minimum of 1 MΩ resistance
- Do not touch exposed conductors and component leads with skin or clothing.

Failure to follow these instructions can result in equipment damage.

1. Prepare the installation by drilling holes on the wall. Ensure the gasket on the back is depressed to prevent leakage between the product and the wall. Do not over-tighten the screws.



2. Ensure the probes are installed on the wall with no obstruction to airflow around the probe.



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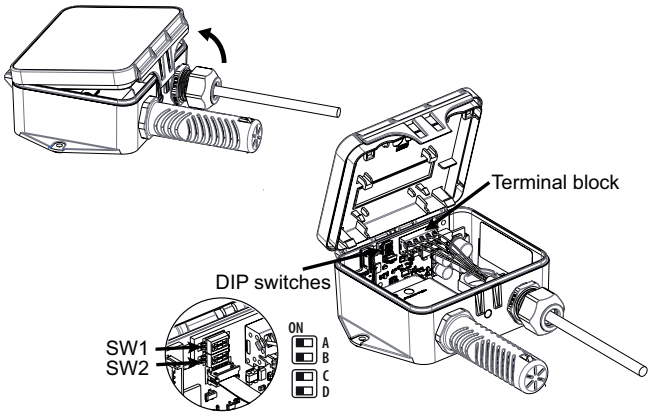
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Installation (cont.)

3. Release the latch on the lid to access the DIP switches and terminal block.



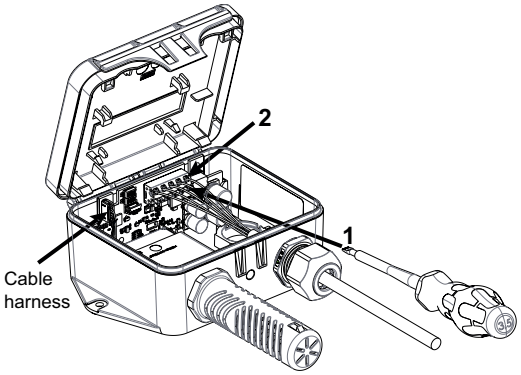
4. Wire the connections according to the diagram in the Wiring section. This device features spring terminals for screwless termination. Open the terminal point by inserting a screwdriver (#1 in diagram), then insert the wire above (#2 in diagram). Release the screwdriver to hold the wire in place. Details on wiring and configuration are contained in the next sections of this document.

NOTICE

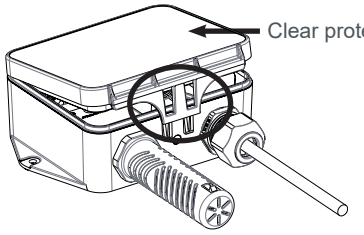
MISSING PM READINGS

- Ensure cable harness is in place after wiring.

Failure to follow these instructions can result in no PM readings.



5. Secure the latch-on cover in the closed position and remove the clear protective mask on the front label of the device.



Wiring

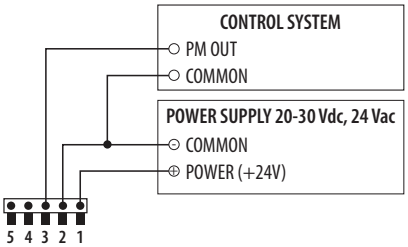
NOTICE

INACCURATE READINGS

- Do not run wiring in the same conduit as AC power wiring. Close proximity to AC power may influence accuracy.

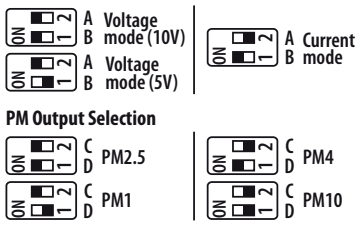
Failure to follow these instructions can result in reduced accuracy and incorrect readings.

Wiring Diagram (Voltage and Current Modes)



Configuration

Set the DIP switches. White squares in the diagram below indicate switch position.



Switch	Function	Description
A	Output	ON - 4-20mA output mode enabled OFF - Voltage output mode enabled
B	Voltage	ON - 0-5V output range enabled OFF 0-10V output range enabled
C/D	PM2.5 output selection	OFF/OFF
C/D	PM1 output selection	OFF/ON

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Configuration (cont.)

Switch	Function	Description
C/D	PM4 output selection	ON/OFF
C/D	PM10 output selection	ON/ON

PM Sensor Negative Output Values in Current Mode

In certain circumstances where the atmosphere is very clean (approaching 0 µg/m³) and there is inherent noise in the measurement, negative values can be observed as reported by the PM sensor when used in current output mode.

Please note that in such specific conditions, the occurrence of negative values does not necessarily indicate an error. Instead, it can be a valid representation of the sensor's response to very low particulate levels combined with measurement noise.

Our sensor is designed to account for these nuances in environmental conditions, and the occasional observation of negative values within the specified range does not signify a malfunction.

China RoHS Compliance Information

Environment-Friendly Use Period (EFUP) Table

部件名称	有害物质 - Hazardous Substances					
Part Name	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr (VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
电子件 Electronic	X	O	O	O	O	O

本表格依据SJ/T11364的规定编制。

O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。

（企业可在此处，根据实际情况对上表中打 "X" 的技术原因进行进一步说明。）

This table is made according to SJ/T 11364.

O: indicates that the concentration of hazardous substance in all of the homogeneous materials for this part is below the limit as stipulated in GB/T 26572.

X: indicates that concentration of hazardous substance in at least one of the homogeneous materials used for this part is above the limit as stipulated in GB/T 26572

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