SmartX Living Space Sensors

Product Description

SmartX sensors are a family of living space sensors for use with SmartX IP controllers that use the EcoStruxure Building Operation user interface. These sensors use an RJ-45 sensor bus that provides communication and power from the SmartX IP controller. For quick installation, up to four SmartX sensors may be connected to each SmartX IP controller through the RJ-45 sensor bus using Cat 5/6 cable (22 to 26 AWG). A Bluetooth® adapter is available for commissioning and service. It is temporarily connected to installed communicating sensors and allows for quick setup and configuration. The Bluetooth adapter communicates to upload devices (smart phone, laptop, tablet, etc.) with the Living Space Sensor EcoStruxure Building Operation app installed via USB or Bluetooth communications.

SmartX living space sensors are modular and are ordered in two parts: the sensor base and the cover. Four SmartX communicating sensor base models are available that can be paired with any one of six covers. CO₂, Relative Humidity, and Temperature sensor base options provide an efficient, cost effective solution for living space air quality and comfort needs. Covers are available with a 61 mm (2.4”) backlit color touchscreen and a three button non-display version for override and setpoint. Blank covers with no user interface are also available. All modular covers variants are available with and without passive infrared occupancy sensors.

Two complete sensor/cover combination models are available:
- SXWSATXXXSLX - Temperature-only with LCD display. Communicating with three button cover. This is a low cost temperature sensor with a basic display.
- SXWSATXXXRXX - A two-wire, resistive-only, non-communicating temperature sensor is offered for a low cost conformance part. This uses an I/O port on the controller.

Combination models come with a sensor base and cover and have the same form factor as the modular sensor bases and covers. Combination units will not work with other covers.

SmartX living space sensors measure the levels of CO₂ (if equipped), RH (if equipped), and temperature of air in a living space application. The CO₂ sensor operates within accuracy specifications for an interval of two years and can be field calibrated. The RH and temperature sensors are warranted to meet accuracy specifications for a period of two years.

Features

- Contemporary, sleek housing
- 61 mm (2.4”) backlit color touchscreen cover available
- LCD (SXWSATXXXSLX only)
- Digital temperature indication (selectable for 0.1 or 1 degree display resolution of °F or °C).
- Digital humidity indication (selectable for 0.1 or 1% RH display resolution)
- Long-life humidity sensing element with excellent resistance to contamination and condensation
- Digital CO₂ indication (0-2000 ppm display resolution)
- Field calibratable non-dispersive infrared CO₂ sensor
- Pushbutton override capabilities allow occupants to switch to timed occupied mode for after hours operation
- Displays selected system values such as setpoints, outdoor air temperature, and operating mode
- Provides the ability to change operating modes
- Passive Infrared (PIR) occupancy sensor covers available
- Directly connects to the sensor bus of the MP Series controller with EcoStruxure Building Operation software version 2.0
- Sensor bus provides power and communication via RJ-45 over Cat 5/6 cable (22 to 26 AWG)
Specifications

**CO₂ Sensor**
- Sensor type: Non-dispersive infrared (NDIR), diffusion sampling
- Output range: 0 to 2000 ppm
- Accuracy: ±30 ppm ±2% of measured value
- Repeatability: ±20 ppm ±1% of measured value
- Response time: <60 seconds for 90% step change

**RH Sensor**
- HS sensor: Thin-film capacitive
- Accuracy: ±2% from 10 to 80% RH @ 25°C (77 °F)
- Hysteresis: 1.5% typical
- Linearity: Included in accuracy specification
- Stability: ±1% @ 20°C (68 °F) annually for 2 years
- Output range: 0 to 100% RH
- Temperature coefficient: ±0.1% RH/°C above or below 25 °C (77 °F) typical

**Temperature Sensor (Non-communicating Models)**
- Sensor type: 10K Type 3 thermistor
- Accuracy: ±0.2 °C (±0.4 °F) typical
- Resolution: 0.1 °C (0.2 °F)
- Output range: 0 to 50 °C (32 to 122 °F)

**Temperature Sensor (Communicating Models)**
- Accuracy: ±0.2 °C (±0.4 °F) typical

**Occupancy Sensor**
- Sensor type: Passive infrared (PIR)
- Operating Environment
  - Operating temperature: 0 to 50 °C (32 to 122 °F)
  - Operating humidity range: 0 to 95% RH, non-condensing
- Housing material: High impact ABS plastic
- Flammability rating: UL 94 V-0
- Input power: 2 watts, 24 Vdc over sensor bus

**Wiring Terminals**
- Non-communicating models: Screw, 2-wire, 18-24 AWG
- Communicating models: RJ-45 female sensor bus

**Regulatory Information**
- Agency approvals: UL 916, European conformance CE: EN61000-6-3
  - EN61000 Series - industrial immunity standard
  - FCC Part 15 Class B, REACH, RoHS, Green Premium, RCM (Australia), ICES-003 (Canada), EAC (Russia)

---

Dimensions mm (in.)

**Software Specifications**

**Using the eCommission Bluetooth Adapter to Configure**

- Custom field-configurable sensor displays
- Auto-ranging of displayed values
- Occupant command capabilities
- Adjustable minimum/maximum limit setpoint values
- Controller driven, automatically configured, customized display/command values

**Communications**

**SmartX Sensor Bus**

SmartX sensor bus communications wiring provides power and communication interface to the SmartX MP-X Series controllers. SmartX sensor bus connects up to four sensor devices per controller using RJ-45 connectors and Cat 5/6 cable (22 to 26 AWG)*. The maximum total length of the SmartX sensor bus is 61 m (200 ft.).

*Due to power constraints there are some limitations on the number of sensors the Sensor Bus can support. For specific sensor combinations supported, see the Sensor Bus Configuration Calculator on the last page of this document.
Available Products
SmartX Sensor Bases

<table>
<thead>
<tr>
<th>Model Number</th>
<th>Temp</th>
<th>RH</th>
<th>CO₂</th>
<th>Cover</th>
<th>System Bus</th>
<th>Resistive Only (10K T3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SXWSBTXXSXX</td>
<td>X</td>
<td></td>
<td></td>
<td>Not Included</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWSBTHXXSXX</td>
<td>X</td>
<td>X</td>
<td></td>
<td>Not Included</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWSBCTXSSXX</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Not Included</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWSBHTCXXSXX</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>Not Included</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWSATXXSXLX</td>
<td>X</td>
<td></td>
<td></td>
<td>Included</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWSATXXRX</td>
<td>X</td>
<td></td>
<td></td>
<td>Included</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

SmartX Covers

<table>
<thead>
<tr>
<th>Model Number</th>
<th>61 mm (2.4”) Color Touchscreen</th>
<th>Override</th>
<th>Setpoint</th>
<th>Occupancy Sensor (PIR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SXWCDXSELXX</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SXWCSXSELXX</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>SXWCBXSELXX</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SXWCDPSELXX</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWSCPSELXX</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>SXWCBPSELXX</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

Sensor and Cover Combination Models
Communicating Temperature Only User Interface with LCD

- Configurable through the eCommsion Bluetooth Adapter or EcoStruxure Building Operation software
- LCD displays temperature, heating, cooling status
- Setpoint and override

Non-communicating Temperature Only, No User Interface

- 2-wire resistive output
- 10K Type 3 thermistor
- Uses I/O port on controller
Cover Variants - Communicating Sensors
Blank, No User Interface

- Configurable through the eCommission Bluetooth Adapter or EcoStruxure Building Operation software
- Occupancy sensor version available

3-Button User Interface, Setpoint and Override

- Configurable through the eCommission Bluetooth Adapter or EcoStruxure Building Operation software
- Setpoint and override buttons
- Halo indicates heating and cooling status
- Occupancy sensor version available

Touch Screen User Interface

- Configurable through the eCommission Bluetooth Adapter or EcoStruxure Building Operation software
- 61 mm (2.4") color touchscreen
- CO₂, RH, temperature, setpoint and override displayed
- Heating, cooling, ecomode status
- Occupancy sensor version available
Architecture
MP-X Controller and Sensor Bus with Communicating Sensors

MP-X Controller

Cat 5/6 cable (22 to 26 AWG) terminated via RJ-45.
61 m (200 ft.) total maximum length.
Up to four communicating sensors on sensor bus. For specific combinations of sensors supported by the Sensor Bus, see the Sensor Bus Configuration Calculator on the last page of this document.

MP-X Controller and Non-communicating Sensors

MP-X Controller

Each sensor uses an I/O port on the controller.
Maximum number of inputs varies by controller type.
Sensor Bus Configuration Calculator

Calculate Power/mW to Validate Sensor Bus Configuration

Add power/mW for all covers, combination units and bases to be used on a single sensor bus for total sensor bus wattage. The sensor bus will support current of up to 2000 mW. Device combinations totalling more than 2000 mW will not be supported on the sensor bus.

Sensor Bus Power Table

<table>
<thead>
<tr>
<th>Description</th>
<th>Model Number</th>
<th>Power/mW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor Base, Temperature</td>
<td>SXWSBTXXXXSXX</td>
<td>90</td>
</tr>
<tr>
<td>Sensor Base, Temperature, Humidity</td>
<td>SXWSBTHXXSXX</td>
<td>90</td>
</tr>
<tr>
<td>Sensor Base, Temperature, CO₂</td>
<td>SXWSBTXCXSXX</td>
<td>490</td>
</tr>
<tr>
<td>Sensor Base, Temperature, Humidity, CO₂</td>
<td>SXWSBTHCXSXX</td>
<td>490</td>
</tr>
<tr>
<td>Sensor, Temp, LCD, Setpoint, Pushbutton Operation with Cover Plate</td>
<td>SXWSTXXXSLX</td>
<td>80</td>
</tr>
<tr>
<td>Sensor, Temp, 10K T3, Non-communicating, with Cover Plate</td>
<td>SXWSTXXXRXX</td>
<td>0</td>
</tr>
<tr>
<td>Cover Plate, Blank Cover</td>
<td>SXWSCBXSXXELXX</td>
<td>0</td>
</tr>
<tr>
<td>Cover Plate, User Interface, Basic</td>
<td>SXWSCDXSELXX</td>
<td>190</td>
</tr>
<tr>
<td>Cover Plate, Override, Setpoint</td>
<td>SXWSC3XSELXX</td>
<td>190</td>
</tr>
<tr>
<td>Cover Plate, User Interface, Basic, Occupancy</td>
<td>SXWSCDPSXXELXX</td>
<td>210</td>
</tr>
<tr>
<td>Cover Plate, Override, Setpoint, Occupancy</td>
<td>SXWSC3PSXXELXX</td>
<td>210</td>
</tr>
<tr>
<td>Cover Plate, Blank Cover, Occupancy</td>
<td>SXWSCBPSELXX</td>
<td>20</td>
</tr>
<tr>
<td>eCommission Bluetooth Adapter</td>
<td>SXWBTAECEE10001*</td>
<td>300</td>
</tr>
</tbody>
</table>

*The eCommission Bluetooth Adapter is used temporarily for commissioning and servicing only.

Key Combinations

- Blank covers:
  - Up to four of any combination of sensor base types
- 3-button and touchscreen covers:
  - Up to two sensor bases with CO₂
  - Up to four non-CO₂ sensor bases
- LCD temperature combination sensors:
  - Up to four are supported