A complement to any room, the Reliable Controls SMART-Sensor™ Electronic Paper Display (EPD) delivers a modern networked-sensor solution that allows you to connect with up to 10 configurable parameters related to your space.

Objects are accessed using a high-resolution glass EPD interface. The interface clearly indicates object name, value, and equipment status. Even third-party BACnet objects connected to the Reliable Controls system can be accessed directly from the EPD screen. Available in standard and square model enclosures, all EPD models include touch buttons and an onboard thermistor for space temperature sensing. Options include a micro-USB connector, front light, $CO_2$ sensor, volatile organic compound (VOC) sensor, humidity sensor, inputs and outputs, and occupancy sensor.

| | |
|---|---|
| Project: | Dealer Information: EMS Energy Management Systems (Pvt) Ltd. |
| Engineer: | |
| Approved by: | |


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Designed and manufactured in Canada for use in distributed control systems.

## PRODUCT FEATURES

### Aesthetic Design

- Slim profile with thin backplate.
- Standard model is designed to install into rectangular electrical boxes used in North America.
- Square model is designed to install into square or circular electrical boxes used in Europe, Southeast Asia, and other regions.

### Easy Programming

- 10 programmable objects, such as inputs, outputs, and values.
- Program object values for user adjustment or as display only.
- Configure objects to display on the home screen.
- Icons for display: On, off, auto, manual, cool, heat, occupancy, fan, and fan speed.
- Configure up to seven objects to display simultaneously.

### Onboard Temperature Sensor

- Dedicated 10 kΩ thermistor.

### Language Library

- The SMART-Sensor EPD hosts an onboard language library that contains over 90 common industry words and phrases in seven languages. Users can select from the following:
  - English.
  - French.
  - Spanish.
  - Portuguese.
  - German.
  - Italian.
  - Simplified Chinese.

### Warranty

- 5 years.

### Multiple Screen Styles

- Home screen displays default space conditions.
- List screen displays all programmed objects.
- Accessibility screen displays all values and icons in large format.

### Connection and Addressing

- Use buttons to enter a unique address on the SMART-Net network.
- Valid addresses are 1–16.
- Four-wire connection.

### Built-In Configuration Tools

- Use the SMART-Sensor EPD as an MSet Tool, Flow Tool, or Diagnostics Tool.

### Optional Front Light

- EPD screen glows faintly in low light or night conditions while in use, then turns off after 10 seconds of inactivity.

### Order Options

- $CO_2$ sensor.
- Humidity sensor.
- Two inputs and two outputs.
- Occupancy sensor.
- VOC sensor. Must be ordered with humidity sensor option.
- Particulate matter sensor.
- Jack option. Adds micro-USB connector and required network terminations to allow local access to the host controller using an X-Port-2 Converter with additional custom cables. Cannot be ordered on devices with both an occupancy sensor and a setpoint slider.


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## TECHNICAL SPECIFICATIONS

### Current Consumption from Controller

- Base model consumes 15 mA at 5 VDC.
- -CO2 option adds 20 mA.
- -FL option adds 4 mA.
- -IO option adds 10 mA.
- -OC option adds 0.2 mA.
- -V option adds 20 mA.
- -PM option adds 35 mA.

### Display

- 200 x 200 pixels.
- 23 x 23 mm (15/16” x 15/16”).
- Black and white.

### Humidity Sensor (-H Option)

- 0.1% display resolution.
- 0%–100% range.
- Accuracy ±2.4% maximum from 0%–90%.

### VOC Sensor (-V Option)

- Automatic background calibration.
- Heated metal oxide sensor.
- 0-32,767 ppb range.
- Indoor air quality applications.
- Accuracy:
  - Typically 25% of measured value.
  - Maximum 50% of measured value.
- Resolution:
  - 1 ppb (0 to 2,008 ppb).
  - 6 ppb (2,008–11,110 ppb).
  - 32 ppb (11,111–32,767 ppb).

### Temperature Specifications

- 12-bit A/D converter.
- User calibrated to ±0.1°C (0.18°F) accuracy.
- Onboard thermistor: 0°C to 50°C (32°F to 122°F).
- Thermistor input: –40°C to 120°C (–40°F to 250°F).

### Language Support

- Supports seven languages.

### Front Light (-FL Option)

- White LED front light.

### Inputs and Outputs (-IO Option)

- Two thermistor or dry-contact inputs on devices with the -IO option. Only one input is available on models with the -V option. Only one output is available on models with the -PM option.
- Supports 10K type III thermistor only (0°C/32°F=29.49 kΩ).
- Two solid-state relay outputs that switch 24 VAC/VDC at 500 mA maximum.

### $CO_2$ Sensor (-CO2 Option)

- Automatic background calibration period of 8 days.
- Single-beam nondispersive infrared sensor.
- 0–3,276 ppm range.
- Accuracy ±40 ppm.
- Nonlinearity <1% of full scale.

### Occupancy Sensor (-OC Option)

- Passive infrared radiation sensor.
- 64 detection zones.
- 94° horizontal range/82° vertical range.
- 5 m (16.4 ft) maximum detection distance.


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## TECHNICAL SPECIFICATIONS

### Particulate Matter Sensor (-PM Option)

- Laser scattering particulate matter sensor.
- PM2.5 measures particles 0.3 to 2.5 µg.
- PM10 measures particles 0.3 to 10 µg.
- Sensing range 0–1000 µg/$m^3$.
- Accuracy at 25°C (77°F) 50% RH.
  - ±5 µg/$m^3$ at 0–100 µg/$m^3$.
  - ±10% of measured value at 100–1000 µg/$m^3$.
- Fan sampling method.
- Maximum three sensors connected in a line connection.

### SMART-Net Wiring Terminals

- 24–14 AWG (0.20–2.08 $mm^2$).
- Stranded or solid core.
- Copper conductors only.
- Low capacitance <82 pF/m (25 pF/f).

### I/O Wiring Terminals (-IO Option)

- 18–12 AWG (1.0–4.0 $mm^2$) without wire protector.
- 22–14 AWG (0.34–2.5 $mm^2$) with wire protector (standard model only).
- Stranded or solid core.
- Copper conductors only.
- Low capacitance <82 pF/m (25 pF/f).

### Weight

- 0.086 kg (0.19 lb).

### Micro-USB Connector (-J Option)

- Micro-USB connector and required network terminations to allow local access to the host controller using an X-Port-2 Converter with additional custom cables. Provides two-pin connections to the host controller's MS/TP network.
- Cannot be ordered with devices that combine the -OC and -S options.
- Requires CC-MULTI-XP2 cable accessory to connect the X-Port-2 Converter to the micro-USB connector.

### Ambient Limits

- Operating: 0°C to 50°C (32°F to 122°F).
- Shipping: –25°C to 60°C (–13°F to 140°F).
- Humidity: 10%–90% RH noncondensing.

### Mounting Hardware Included

- Standard model ships with two 6-32 1" truss head Phillips mounting screws.
- Square model ships with two M3.5 25 mm Phillips mounting screws.

### Certifications

- CE.
- FCC CFR 47 Part 15 Class B.
- ICES-3 (B).
- UL 916 Listed.
- WEEE.


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## TECHNICAL SPECIFICATIONS

### Dimensions

- Standard model:
  12 cm L x 7 cm W x 1 cm H
  (4 3/4" L x 2 3/4" W x 3/8" H).
- Standard model with $CO_2$ sensor:
  12 cm L x 7 cm W x 2.5 cm H
  (4 3/4" L x 2 3/4" W x 1" H).
- Standard model with SS3 Deep Backplate accessory*:
  12.2 cm L x 7.2 cm W x 3.4 cm H
  (4 13/16" L x 2 13/16" W x 1 5/16" H).
- Square model:
  9.2 cm L x 9.2 cm W x 1 cm H
  (3 5/8" L x 3 5/8" W x 3/8").
- Square model with SS3 Deep Backplate accessory**:
  9.4 cm L x 9.4 cm W x 3.4 cm H
  (3 11/16" L x 3 11/16" W x 1 5/16" H).

*Standard model devices with particulate matter sensor include the SS3 Deep Backplate.

**Square model devices with $CO_2$ or particulate matter sensor include the SS3 Deep Backplate.


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## ORDERING

### Models

#### SS3-E

- SMART-Sensor EPD standard model with thin backplate, warm gray.

#### SS3-E-SQ

- SMART-Sensor EPD square model with thin backplate, warm gray.

### Options

- -CO2 adds $CO_2$ sensor.
- -FL adds front light.
- -H adds humidity sensor.
- -IO adds two dry contact/thermistor inputs and two solid-state relay outputs.
- -J adds micro-USB connector and required network terminations.
- -OC adds occupancy sensor.
- -PM adds particulate matter sensor.
- -V adds VOC sensor.
- /W for white enclosure.

### Accessories

#### SNX

- SMART-Net Expansion Board.

#### ENC-SS3-DBP

- SS3 Deep Backplate standard model, warm gray.

#### ENC-SS3-SQ-DBP

- SS3 Deep Backplate square model, warm gray.

#### ENC-SS3-DBP/W

- SS3 Deep Backplate standard model, white.

#### ENC-SS3-SQ-DBP/W

- SS3 Deep Backplate square model, white.

#### EC-SS3-CC

- Conduit coupler, warm gray.

#### EC-SS3-CC/W

- Conduit coupler, white.

#### CC-MULTI-XP2

- Cables for connecting X-Port-2 to controller SMART-Net, MS/TP terminal blocks, and SMART-Sensor micro-USB (-J) option connection.

### Build Your Order

To create the order number, add your options to the base model. For example, SS3-E-CO2-FL-J/W is the order number for a SMART-Sensor EPD with a $CO_2$ sensor, a front light, and a micro-USB connector with network terminations in a white enclosure.

Some combinations of options are not available. Confirm your order number is available in eBusiness.

Order limitations are as follows:

- -J option requires a CC-MULTI-XP2 accessory.
- -V option must be ordered with -H option.
- SS3-E models with the -PM option ship with the ENC-SS3-DBP accessory.
- SS3-E-SQ models with the -CO2 or -PM option ship with the ENC-SS3-SQ-DBP accessory.


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## PRODUCT IMAGES

SMART-Sensor EPD standard model

SMART-Sensor EPD standard model with CO2 sensor side profile

SMART-Sensor EPD square model

SMART-Sensor EPD square model side profile


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SMART-Sensor EPD with micro-USB connector wiring


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## SCREENS

List screen

Home screen


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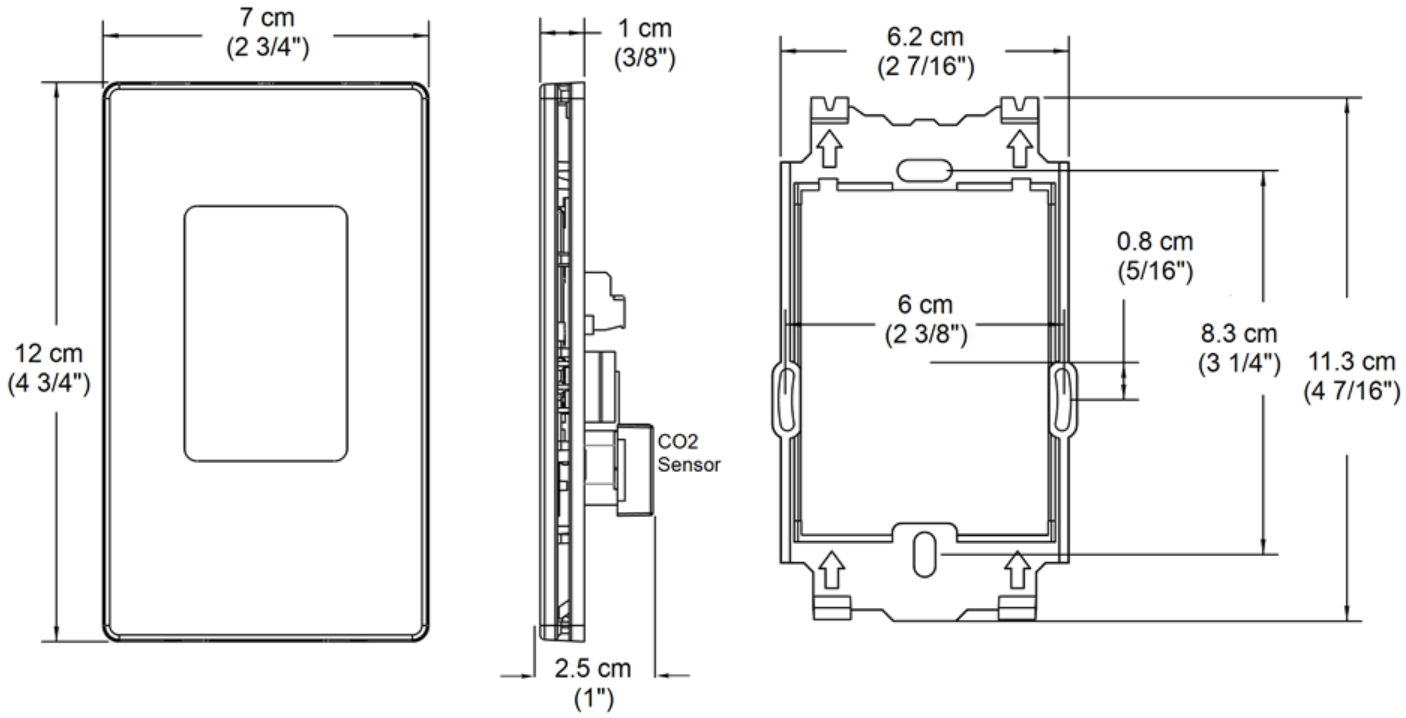
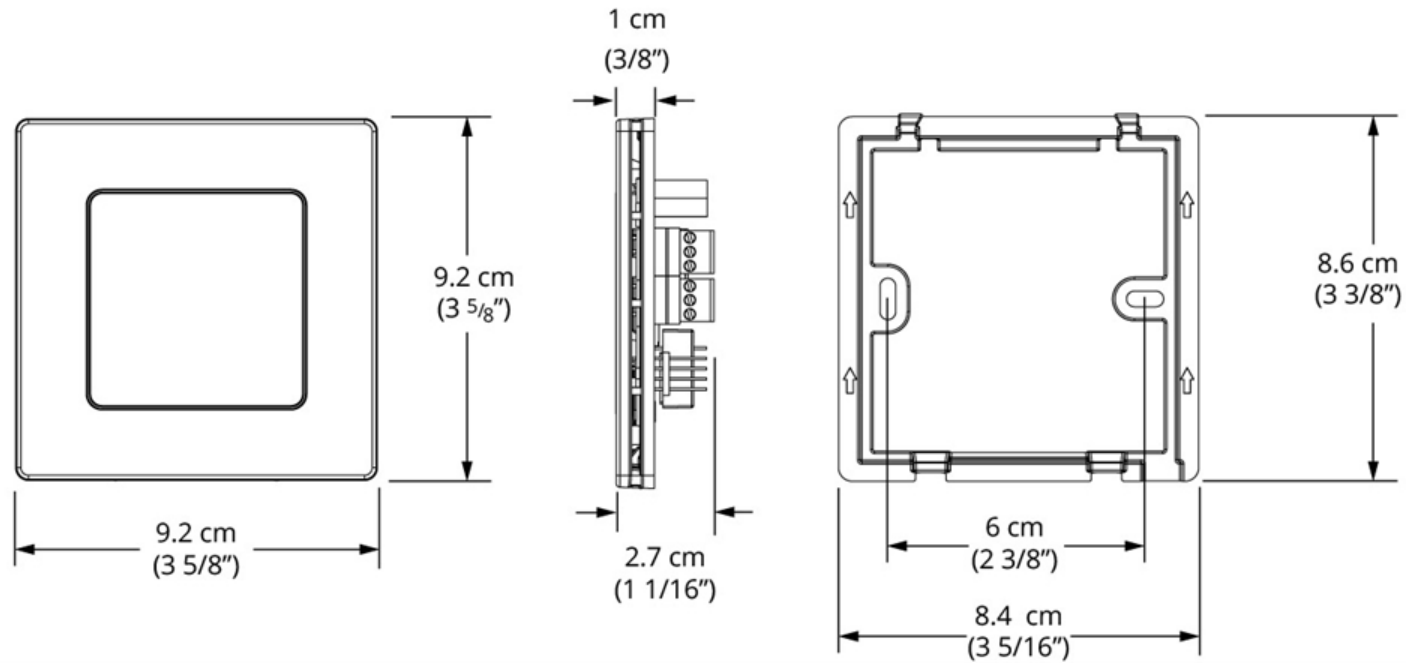
## DIMENSIONS




SMART-Sensor EPD standard model with thin backplate




SMART-Sensor EPD square model with thin backplate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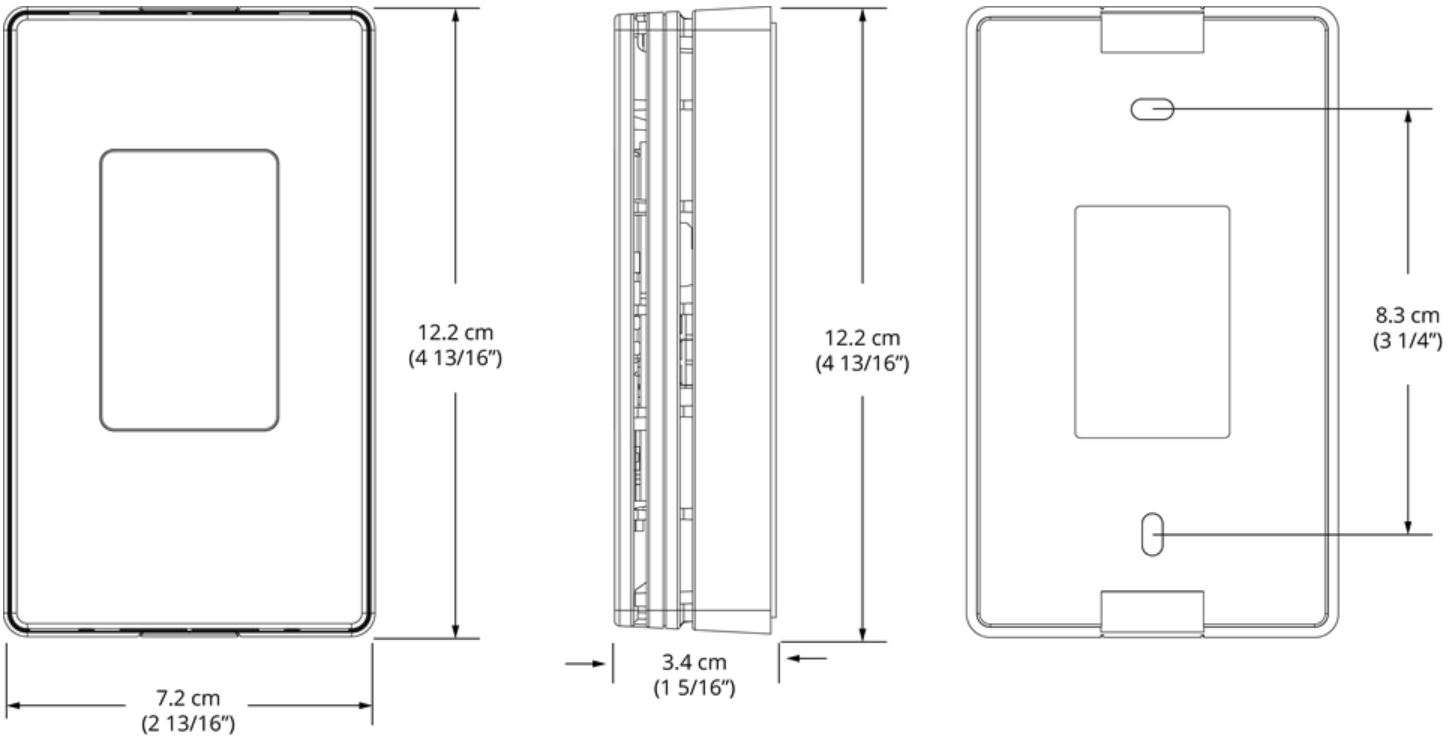
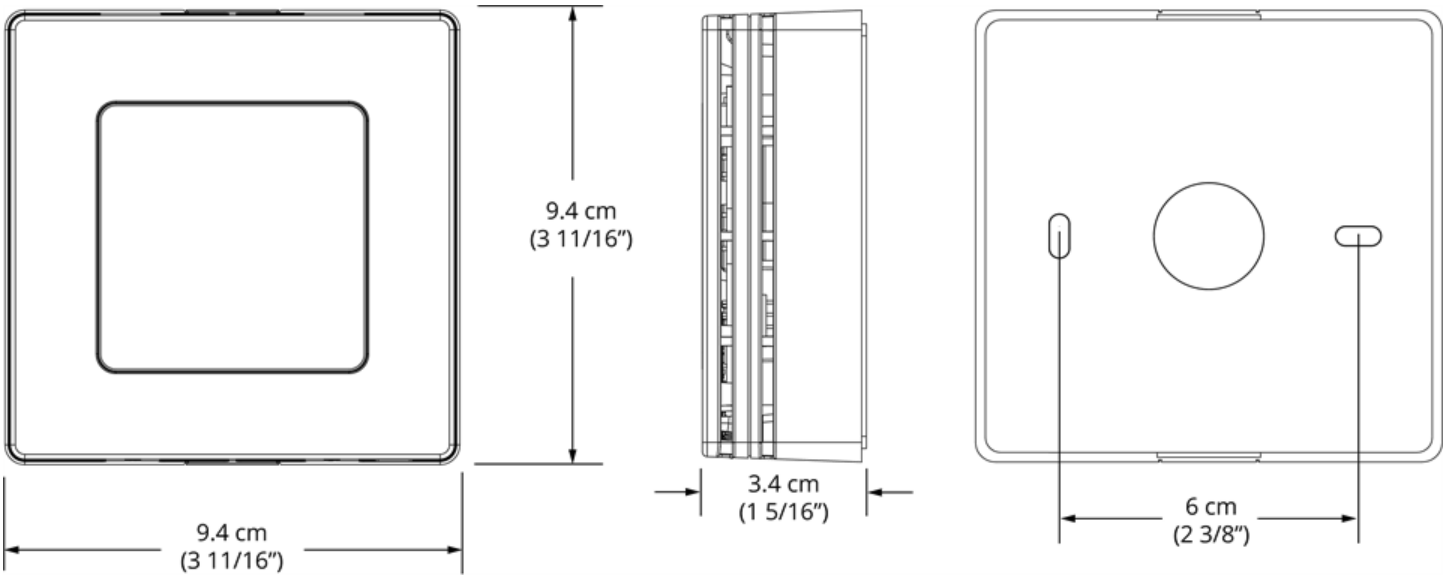
## DIMENSIONS




SMART-Sensor EPD standard model with SS3 Deep Backplate accessory




SMART-Sensor EPD square model with SS3 Deep Backplate accessory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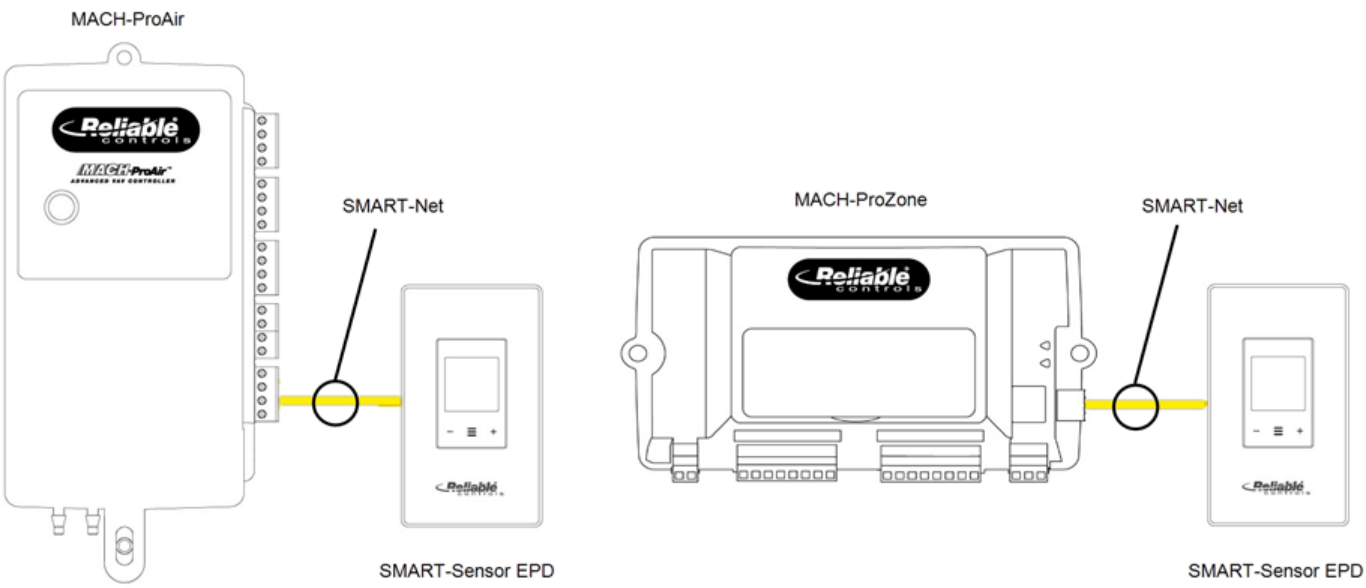
## DIAGRAMS




**SMART-Net network wiring**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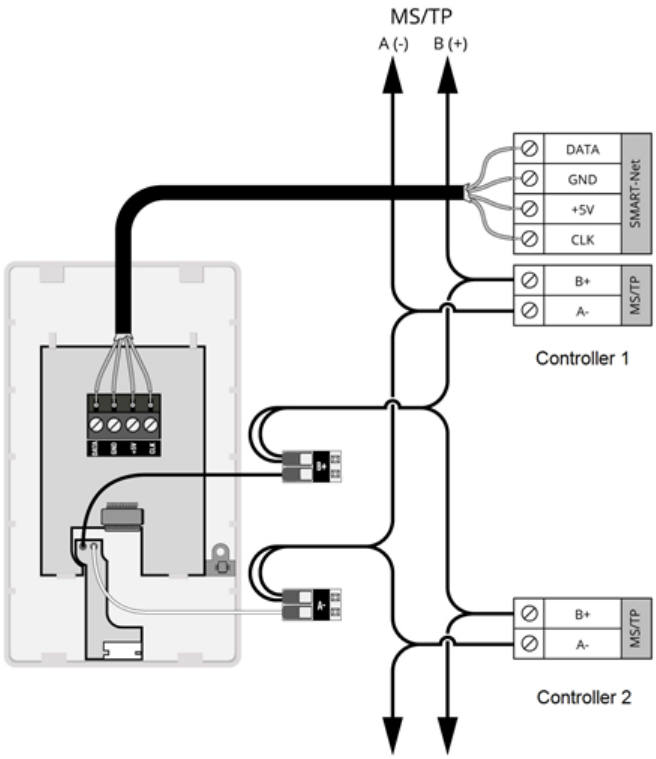
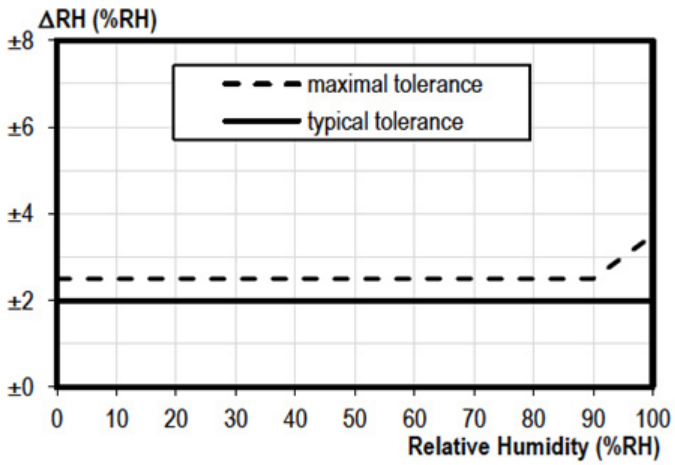
## DIAGRAMS




**MS/TP connection for SMART-Sensor with micro-USB connector**

## RELATIVE HUMIDITY SENSOR ACCURACY





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