

## Description

These detectors are designed to sense and transmit CO<sub>2</sub> levels to any compatible building automation system for the control of ventilation equipment in industrial and commercial applications. Such information is crucial for demand control ventilation that ensures adequate indoor air quality while minimizing the energy costs of conditioning outside air.

These self-calibrating detectors use the sensor's on-board microprocessor to remember the lowest CO<sub>2</sub> concentration measured in a 24 hour period. The sensor assumes this low point is at outside levels. (The smart sensor discounts periodic elevated readings that might occur if, for example, a space was used 24 hours per day over a few days.) After collecting 14 days worth of low concentration points, the sensor performs a statistical analysis comparing sensor readings to background levels. If there have been any small changes that could be attributable to sensor drift, a small correction factor is made to the sensor calibration to adjust for this change.

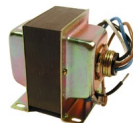
If a space does not experience a periodic drop to outside levels (e.g. where occupancy is 24 hours, 7 days/week), the auto-calibration software should be deactivated. If the software has been deactivated (via menu buttons), calibration may be required every two to three years.

These detectors are designed to help meet ventilation requirements specified in the ASHRAE Standard 62.1-2010 *Ventilation for Acceptable Indoor Air Quality*.

**NOTE:** This data sheet is for the SAE-1011/1012/1062 models only. For information about the discontinued SAE-1001/1002/1051 models (that the current models replaced), see the SAE-1000 Series data sheet (717-035-37).

## Accessories

XEE-6111-040	Transformer, 120-to-24 VAC, 40 VA, <b>single-hub</b>
XEE-6112-040	Transformer, 120-to-24 VAC, 40 VA, <b>dual-hub</b>



## Features

- ◆ Five year calibration guarantee (in auto-calibration mode), in compliance with CA Title 24, Section 121(c)
- ◆ Monitors CO<sub>2</sub> over default range of 0–2000 ppm (range is configurable up to 0–7500 ppm)
- ◆ Choice of field-adjustable analog current or voltage output signals (4–20 mA, 0–5 VDC, or 0–10 VDC), linearized over full range
- ◆ NDIR (Non-Dispersive Infrared) sensor, single beam with a patented self-calibration algorithm
- ◆ Optional on-board form “A” (NO SPST) relay with field-adjustable trip point (SAE-1012 only)
- ◆ LCD display (not visible on SAE-1011 when the cover is closed) for displaying ppm level and configuring options
- ◆ Menu-driven configuration set-up and testing
- ◆ Powered by either 20–28 volt AC or DC source with no change to circuit required

## Models

SAE-1011*	Space CO <sub>2</sub> sensor, with hidden LCD display (replaces older SAE-1001)
SAE-1012*	Space CO <sub>2</sub> sensor, with SPST relay (replaces older SAE-1002)
SAE-1062	Duct CO <sub>2</sub> sensor (replaces older SAE-1051)

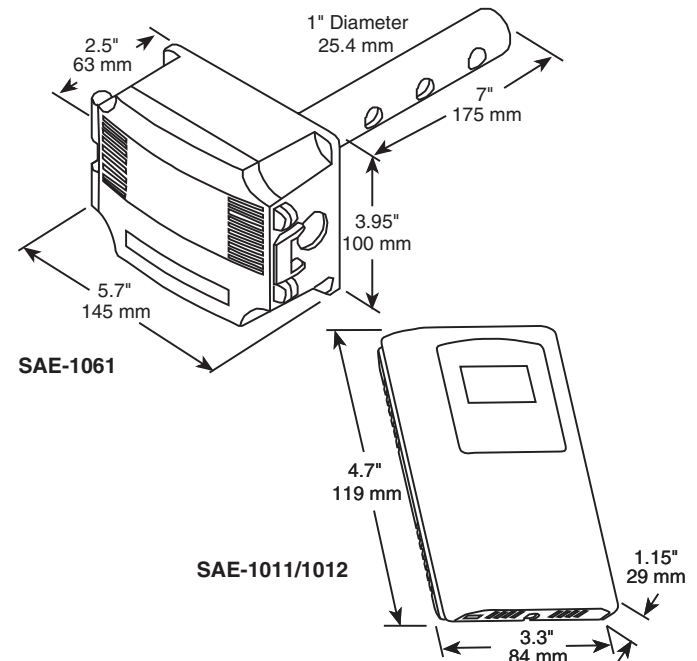
**\*NOTE:** All models have an LCD display, but the one inside the SAE-1011 is hidden from view when the cover is closed. Only the SAE-1012 has a relay.

## Specifications

<b>Gas Detected</b>	Carbon dioxide (CO <sub>2</sub> )
<b>Measurement Type</b>	Non-Dispersive Infrared (NDIR), diffusion sampling
<b>Monitor Range</b>	0–2000 ppm (factory default) configurable from 0–7500 (in 500 ppm increments)
<b>Standard Accuracy</b>	±75 ppm @ 1000 ppm @ 72° F (22° C) when compared to certified calibration gas
<b>Temperature Dependence</b>	< 0.2% full scale per °C
<b>Stability</b>	< 2% full scale over life of sensor (15 years typical)
<b>Pressure Dependence</b>	0.13% of reading per mm Hg
<b>Altitude Correction</b>	Configurable from 0–5000 ft.
<b>Response Time</b>	< 2 minutes for 90% step change
<b>Warm-up Time</b>	< 2 minutes
<b>Coverage Area</b>	1000 sq. feet (100 sq. m) typical
<b>Operation Conditions</b>	32–122° F (0–50° C), 0–95% RH non-condensing
<b>Power Supply</b>	20–28 VAC/VDC (non-isolated half-wave rectified)
<b>Consumption</b>	100 mA max. @ 24 VDC, 185 mA max. @ 24 VAC (with all options)
<b>Protection Circuitry</b>	Reverse voltage protected and output limited
<b>Configuration</b>	Via internal push-buttons
<b>Wiring Connections</b>	Screw terminal block (14–22 AWG)
<b>Output Signal</b>	4–20 mA active (sourcing), 0–5 VDC, or 0–10 VDC
<b>Output Drive Capability</b>	550 ohm max. for current output, 10K ohm min. for voltage output
<b>Output Resolution</b>	10 bit PWM
<b>Relay Output (SAE-1012 only)</b>	
Configuration	One form “A” contact (NO SPST), 2 A @ 140 VAC, 2 A @ 30 VDC, power factor = 1
Trip Point	500 to 5,000 ppm, configurable in 100 ppm increments
Hysteresis/Deadband	25 to 200 ppm, configurable in 25 ppm increments

<b>LCD Display</b>	(Not visible in SAE-1011 when the cover is closed) displays configuration menus and ppm level, 1 ppm resolution, 1.4 W x 0.6" H (35 x 15 mm), alpha-numeric 2 line x 8 characters, with selectable backlight
<b>Weight</b>	SAE-1011/1012 5 oz. (141 g) SAE-1062 11 oz. (312 g)
<b>Manufacturing</b>	ISO 9001 registered quality system
<b>Regulatory</b>	CE and RoHS Compliant Certified to comply with CA Title 24, Section 121(c), as well as sub-paragraph 4.F that specifies accuracy will be maintained within tolerance for a minimum of 5 years without recalibration and that a detected sensor failure will cause the controller to take appropriate corrective action.

## Dimensions



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