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# Intelligent Smoke Detector with Optional CO Sensor

SIGA2-PS, SIGA2-PCOS

## Overview

Signature Series SIGA2-P(CO)S photoelectric detectors bring advanced sensing technology to a practical design that increases efficiency, saves installation time, cuts costs, and extends life safety and property protection capabilities. Continuous self-diagnostics ensure reliability over the long-haul, while innovative field-replacable smoke chambers make detector maintenance literally a snap. With its modular CO sensor, this detector pulls double-duty — continually monitoring the environment for signs of smoke, as well as its invisible yet deadly companion, carbon monoxide.

Like all Signature Series detectors, the SIGA2-P(CO)S is an intelligent device that gathers analog information from its smoke and CO sensor (if present), converting this data into digital signals. To make an alarm decision, the detector's on-board microprocessor measures and analyzes sensor readings and compares this information to historical data. Digital filters remove signal patterns that are not typical of fires, thus virtually eliminating unwanted alarms.

The SIGA2-PCOS includes an advanced carbon monoxide sensor and daughterboard. When the electrochemical cell reaches its end of life after approximately six years, the detector signals a trouble condition to the control panel. The sensor/daughterboard module is field-replaceable.

## Standard Features

- Optical smoke sensing technology with optional carbon monoxide sensor
- Field-replacable smoke chamber
- Field-replacable carbon monoxide sensor/daughterboard module
- Uses existing wiring
- Automatic device mapping
- Ground fault detection by module
- Up to 250 devices per loop
- Two levels of environmental compensation
- Two levels of dirty detector warning
- Twenty pre-alarm settings
- Five sensitivity settings
- Non-volatile memory
- Electronic addressing
- Environmental compensation
- Identification of dirty or defective detectors
- Automatic day/night sensitivity adjustment
- Bicolor (green/red) status LED
- Standard, relay, fault isolator, and audible mounting bases

## Application

### Smoke detection

The SIGA2-PS detects extremely small particles of combustion and triggers an alarm at the first sign of smoke. Thanks to its high-performance forward scattering reflective response technology, the photoelectric smoke sensor responds quickly and reliably to a wide range of fire types, especially slow burning fires fuelled by combustibles typically found in modern multi-use buildings.

### Carbon monoxide detection

CO detection has rapidly become a standard part of life safety strategies everywhere. Monitored CO detection is becoming mandated with increasing frequency in all types of commercial applications, but particularly in occupancies such as hotels, rooming houses, dormitories, day care facilities, schools, hospitals, assisted living facilities, and nursing homes. In fact, more than half of the U.S. population already lives in states requiring the installation of CO detectors in some commercial occupancies. This is because carbon monoxide is the leading cause of accidental poisoning deaths in America. Known as the "Silent Killer," CO is odorless, tasteless, and colorless. It claims nearly 500 lives, and results in more than 15,000 hospital visits annually.

## Installation

Signature Series detectors mount to North American 1-gang boxes, 3-1/2 inch or 4 inch octagon boxes, and to 4 inch square electrical boxes 1-1/2 inches (38 mm) deep. They mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. See mounting base installation and wiring for more information.

## Testing & Maintenance

Each detector automatically identifies when it is dirty or defective and causes a "dirty detector" message. The detector's sensitivity measurement can also be transmitted to the loop controller. A sensitivity report can be printed to satisfy NFPA sensitivity measurements which must be conducted at the end of the first year and every two years thereafter.

The user-friendly maintenance program shows the current state of each detector and other pertinent messages. Single detectors may be turned off temporarily from the control panel. Availability of maintenance features is dependent on the fire alarm system used. When the CO sensor's electrochemical cell reaches its end of life, the detector signals a trouble condition to the control panel. The sensor/daughterboard module is field-replaceable. Scheduled maintenance (Regular or Selected) for proper detector operation should be planned to meet the requirements of the Authority Having Jurisdiction (AHJ). Refer to current NFPA 72, NFPA 720, and ULC CAN/ULC 536 standards.

This detector will NOT sense fires that start in areas where smoke cannot reach the detector. Smoke from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

## Sensing and reporting tech

The microprocessor in each detector provi
efits - Self-diagnostics and History Log, Au
ping, Stand-alone Operation and Fast, Sta

**Self-diagnostics and History Log** - Eac
detector constantly runs self-checks to pr
nance information. The results of the self-
updated and permanently stored in the de
memory

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**Automatic Device Mapping** - The loop controller learns where each device's serial number address is installed relative to other devices on the circuit. The mapping feature provides supervision of each device's installed location to prevent a detector from being reinstalled (after cleaning etc.) in a different location from where it was originally.

**Stand-alone Operation** - A decentralized alarm decision by the detector is guaranteed. On-board intelligence permits the detector to operate in stand-alone mode. If loop controller CPU communications fail for more than four seconds, all devices on that circuit go into stand-alone mode. The circuit acts like a conventional alarm receiving circuit.

**Fast Stable Communication** - On-board intelligence means less information needs to be sent between the detector and the loop controller. Other than regular supervisory polling response, the detector only needs to communicate with the loop controller when it has something new to report.

## Accessories

**Detector mounting bases** have wiring terminals that are accessible from the "room-side" after mounting the base to the electrical box. The bases mount to North American 1-gang boxes and to 3½ inch or 4 inch octagon boxes, 1½ inches (38 mm) deep. They also mount to European BESA and 1-gang boxes with 60.3 mm fixing centers. The SIGA-SB4, SIGA-RB4, and SIGA-IB4 mount to North American 4 inch sq. electrical boxes in addition to the above boxes. They include the SIGA-TS4 Trim Skirt which is used to cover the "mounting ears" on the base. The SIGA-AB4G mounts to a 4" square box only.

**SIGA-AB4G/T Audible Base**

**SIGA-SB Standard Base**

**SIGA-IB Isolator Base**

**SIGA-RB Relay Base**

**SIGA-LED Remote LED**

**Remote LED SIGA-LED** - The remote LED connects to the SIGA-SB or SIGA-SB4 Standard Base only. It features a North American size 1-gang plastic faceplate with a white finish and red alarm LED.

**SIGA-TS4 Trim Skirt** - Supplied with 4 inch bases, it can also be ordered separately to use with the other bases to help hide surface imperfections not covered by the smaller bases.

**SIGA-AB4G and SIGA-AB4GT** - These sounder bases are designed for use where localized or group alarm signaling is required. The SIGA-AB4G is compatible with Signature Series smoke and heat detectors. The SIGA-AB4GT sounder base, when used with the SIGA-TCDR Temporal Pattern Generator module, adds an audible output function to any Signature Series detector, including fire and CO detectors.

# Typical Wiring

The detector mounting bases accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.5mm²), and #12 AWG (2.5mm²) wire sizes.

Note: Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation. See Signature Loop Controller catalog sheet for detailed wiring requirement specifications.

## Standard Detector Base, SIGA-SB, SIGA-SB4

This is the basic mounting base for Edwards Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

| Term | Description |
|---|---|
| 1 | Not Used |
| 2 | DATA IN/OUT (+) |
| 3 | Not Used |
| 4 | DATA IN (-) |
| 5 | Remote LED (-) |
| 6 | Remote LED (+) |
| 7 | Not Used |
| 8 | DATA OUT (-) |

## Isolator Detector Base, SIGA-IB, SIGA-IB4

This base includes a built-in line fault isolator for use on Class A circuits. A detector must be installed for it to operate. The isolator base does not support the SIGA-LED Remote LED.

The isolator operates as follows:

- a short on the line causes all isolators to open within 23 msec
- at 10 msec intervals, beginning on one side of the Class A circuit nearest the loop controller, the isolators close to provide the next isolator down the line with power
- when the isolator next to the short closes, reopens within 10 msec.

The process repeats beginning on the other side of the loop controller.

| Term | Description |
|---|---|
| 1 | Not Used |
| 2 | DATA IN/OUT (+) |
| 3 | DATA IN (-) |
| 4 | Not Used |
| 5 | Not Used |
| 6 | DATA OUT (-) |
| 7 | Not Used |

## Relay Detector Base, SIGA-RB, SIGA-RB4

This base includes a relay. Normally open or closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) @ 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The SIGA-RB can be operated as a control relay if programmed to do so at the control panel (EST3 V.2 only). The relay base does not support the SIGA-LED Remote LED.

CONTACT RATING
1.0 Amp @ 30 VDC
(Pilot Duty)

| Term | Description |
|---|---|
| 1 | Normally Open |
| 2 | DATA IN/OUT (+) |
| 3 | Common |
| 4 | DATA IN (-) |
| 5 | Not Used |
| 6 | Normally-Closed |
| 7 | DATA OUT (-) |

## Audible Detector Base for CO and Fire Detectors, SIGA-AB4GT

The Signature Series AB4GT sounde SIGA-TCDR Temporal Pattern Gener function to any Signature Series dete this device, refer to *Data Sheet 8500 CO and Fire Detectors*.

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1. Volume setting. Default is high volume. For low volume, cut trace per item 4.
2. Reserved for future use. Do not cut.
3. Reserved for future use. Do not cut.
4. To configure output volume, cut trace as shown.
5. To next SIGA-AB4GT sounder base or EOL relay.
6. SLC_OUT to next intelligent addressable device.
7. SLC_IN from intelligent addressable controller or previous device.
8. From SIGA-TCDR Temporal Pattern Generator or previous SIGA-AB4GT sounder base.

## Audible Detector Base, SIGA-AB4G

This base is designed for use where localized or group alarm signaling is required. When the detector senses an alarm condition, the audible base emits a local alarm signal. The optional SIGA-CRR Polarity Reversal Relay can be used for sounding to other audible bases on the same 24 Vdc circuit.

Relay and Audible Bases operate as follows:

- at system power-up or reset, the relay is de-energized
- when a detector is installed in the base with the power on, the relay energizes for four seconds, then de-energizes
- when a detector is removed from a base with the power on, the relay is de-energized
- when the detector enters the alarm state, the relay is energized.

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## Compatibility

SIGA2-P(CO)S detectors are compatible only with the Signature L

## Warnings & Cautions

This detector will not operate without electrical power. As fires frequently cause power interruption, we suggest you discuss further safeguards with your fire protection specialist.

This detector will NOT sense fires that start in areas where smoke cannot reach the detector. Smoke from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

## Specifications

| | SIGA2-PS | SIGA2-PCOS |
|---|---|---|
| Normal operating current | 45 µA | 70 µA |
| Alarm current | 18 mA | 18 mA |
| Standalone alarm current | 45 µA | 70 µA |
| Operating voltage | 15.20 to 19.95 VDC | |
| Air velocity | 0 to 4,000 ft./min (0 to 20 m/s). | |
| Construction | High impact engineering polymer | |
| Wall mounting | Maximum 12 in (305 mm) from ceiling | |
| Mounting | Plug-in | |
| Shipping weight | 0.44 lb. (164 g) | |
| Compatible bases | See Ordering Information | |
| Operating environment | 32 to 120°F (0 to 49°C), 0 to 93% RH, noncondensing | |
| Storage temperature | –4 to 140°F (–20 to 60°C) | |
| Environmental compensation | Automatic | |

## Ordering Information

| Catalog Number | Description | Ship Wt. lbs (kg) |
|---|---|---|
| SIGA2-PS | Intelligent Photoelectric Detector | 0.4 (0.16) |
| SIGA2-PCOS | Intelligent Photoelectric Detector with carbon monoxide sensor | 0.4 (0.16) |
| SIGA2-PCOS-CA | Intelligent Photoelectric Detector with carbon monoxide sensor (for use in Canadian markets only). | 0.4 (0.16) |

| Accessories | | |
|---|---|---|
| SIGA-SB | Detector Mounting Base - Standard | 0.2 (.09) |
| SIGA-SB4 | 4-inch Detector Mounting Base c/w Trim Skirt | |
| SIGA-RB | Detector Mounting Base w/Relay | |
| SIGA-RB4 | 4-inch Detector Mounting Base w/Relay, c/w Trim Skirt | |
| SIGA-IB | Detector Mounting Base w/Fault Isolator | |
| SIGA-IB4 | 4-inch Detector Mounting Base w/ Fault Isolator, c/w Trim Skirt | |
| SIGA-LED | Remote Alarm LED (not for EN54 applications) | |
| SIGA-AB4G | Audible (Sounder) Base for Fire Detectors | 0.3 (0.15) |
| SIGA-AB4GT | Audible (Sounder) Base for CO and Fire Detectors | 0.3 (0.15) |
| SIGA-TCDR | Temporal Pattern Generator | 0.3 (0.15) |
| SIGA-TS4 | Trim Skirt (supplied with 4-inch bases) | 0.1 (.04) |
| 2-SPRC1* | Replacement Smoke Chamber (for SIGA2-PS detectors) | 0.1 (.04) |
| 2-SPRC2* | Replacement Smoke Chamber (for SIGA2-PCOS detectors) | 0.1 (.04) |
| 2-CORPL* | Replacement CO Sensor | 0.1 (.04) |

*Release pending.

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