

# Intelligent Multisensor Smoke, Heat, CO Detector

SIGA-PHCD, SIGA-PHCDB

## Overview

The Signature Series SIGA-PHCD detector brings advanced multisensing technology to a practical design that increases efficiency, saves installation time, cuts costs, and extends life safety and property protection capabilities. Continuous self-diagnostics ensures reliability over the long-haul, while environmental compensation helps reduce maintenance costs.

The SIGA-PHCD provides the best of all worlds with comprehensive life safety monitoring. The combination of optical smoke detection with rate-of-rise heat sensing technology provides efficient identification of smoldering fires, as well as fast flaming fires. With the added element of CO monitoring, this detector pulls double duty: continually monitoring the environment for signs of fire — as well as its invisible yet deadly companion, carbon monoxide.

Like all Signature Series detectors, the SIGA-PHCD gathers analog information from their sensing elements and converts this data into digital signals. To make an alarm decision, the detector's on-board microprocessor measures and analyzes smoke and heat 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 detector also analyzes the smoke and heat sensors independently from the CO sensor to determine whether to initiate a fire alarm, a life safety CO alarm, or both.

## Standard Features

**Note:** Some features described here may not be supported by all control systems. Check your control panel's Installation and Operation Guide for details.

- Next Generation Detection Technology
- Integrates optical smoke with rate-of-rise heat sensing and carbon monoxide detection
- Wide 0.53 to 3.94 %/ft. (1.7 to 12.35 %/m) smoke obscuration
- Sensor Markings Provide Easy Testing Identification
- Uses existing wiring
- Automatic device mapping
- Up To 250 Total Signature Addresses 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
- Automatic day/night sensitivity adjustment
- Bicolor (green/red) status LED
- Standard, relay, fault isolator, and audible mounting bases

## Application 1

### Smoke detection 2

The SIGA-PHCD 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.

### Heat detection 4

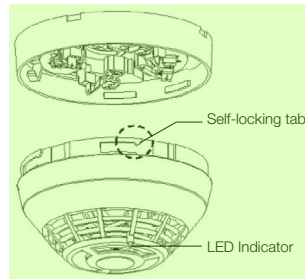
SIGA-PHCD's on-board rate-of-rise heat sensor provides a 15 °F (9 °C) per minute for the detection of fast-developing fires. The heat sensor monitors the temperature of the air and determines whether an alarm should be initiated.

### CO Detection 6

Monitored CO detection, such as that provided by the SIGA-PHCD 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. 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 8

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 11

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.

### Smoke Sensor Sensitivity 13

The SIGA-PHCD determines when its optical sensor is dirty or defective and can transmit sensitivity data to the loop controller. A sensitivity report can also be printed to satisfy NFPA sensitivity measurements, which must be conducted at the end of the first year and every two years thereafter. The availability of maintenance features depends on the fire alarm system used.

### CO Sensor Life 15

The CO sensor has a 10-year life from the date of manufacture or when the control panel indicates a sensor end-of-life condition, whichever comes first. When the sensor reaches its end of life, the detector signals a "COMMON TRBL ACT" condition on the control panel. Pressing the **Details** button on the control panel displays "END OF LIFE ACT" providing verification that it is an end-of-life trouble of the CO sensor. This trouble remains active until the detector is replaced, even if the panel is reset.

## Sensing and reporting technology 17

The microprocessor in each detector provides additional benefits – Self-diagnostics and History Log, Automatic Device Mapping, and Fast, Stable Communication.

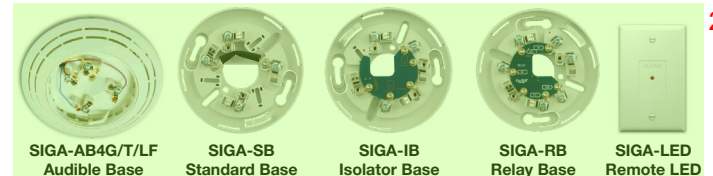
**Self-diagnostics and History Log** - Each Signature Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory.

**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.

**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 22

**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 inch square box only.



**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.

**Sounder Bases** - Signature Series sounder bases are designed for use where localized or group alarm signaling is required.

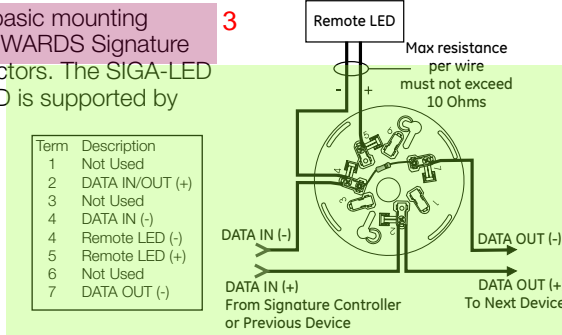
- SIGA-AB4GT** bases provide sounder capability to the SIGA-PHCD when used with a SIGA-TCDR Temporal Pattern Generator to separate CO (TC4) and Fire (TC3) tone patterns.
- SIGA-AB4G-LF** bases provide 520 Hz low frequency sounder capability to the SIGA-PHCD when used with a SIGA-TCDR Temporal Pattern Generator to separate CO (TC4) and Fire (TC3) tone patterns. The SIGA-AB4G-LF is suitable for applications requiring low frequency audible tones.

## Typical Wiring 1

The detector mounting bases accept #18 AWG (0.75mm<sup>2</sup>), #16 (1.0mm<sup>2</sup>), #14 AWG (1.5mm<sup>2</sup>), and #12 AWG (2.5mm<sup>2</sup>) wire sizes. Sizes #16 AWG (1.0mm<sup>2</sup>) and #18 AWG (0.75mm<sup>2</sup>) are preferred for ease of installation.

## Standard Detector Base, SIGA-SB, SIGA-SB4 5

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

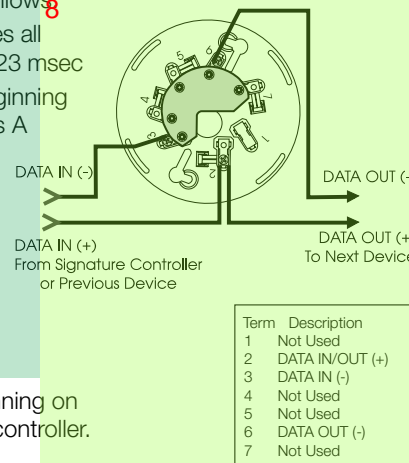


## Isolator Detector Base, SIGA-IB, SIGA-IB4 6

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:

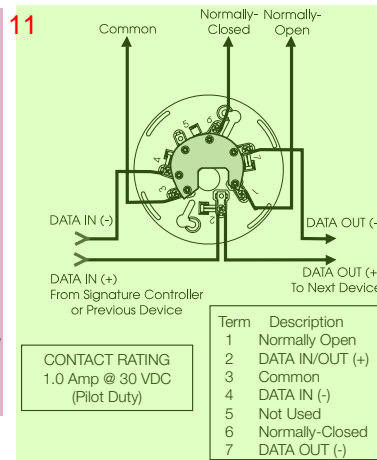
- a short on the line causes all isolators to open within 23 msec
- at 10 msec intervals, beginning on one side of the Class A circuit nearest the loop controller, the isolators close to provide the next isolator down the line with power
- when the isolator next to the short closes, it reopens within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



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

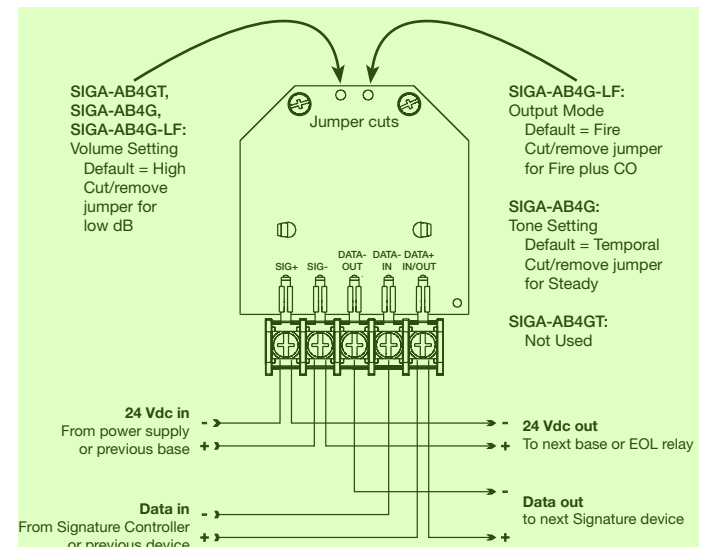
## Relay Detector Base, SIGA-RB, SIGA-RB4 10

This base includes a relay. Normally Open or Normally 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. The relay base does not support the SIGA-LED Remote LED.



## Audible Sounder Bases, Fire Mode 13

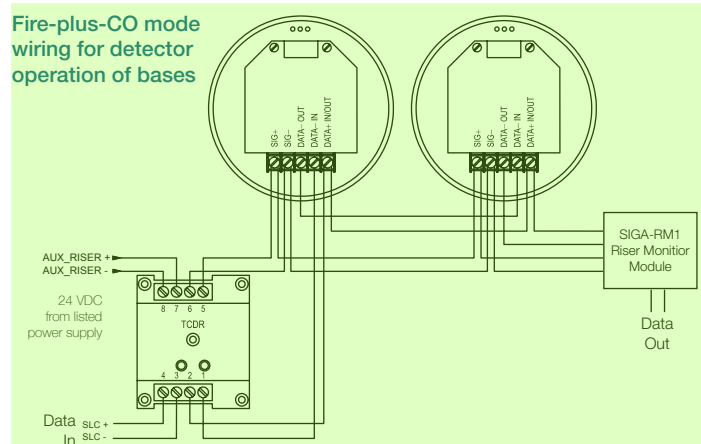
### AB4GT, AB4G, AB4G-LF sounder bases 14



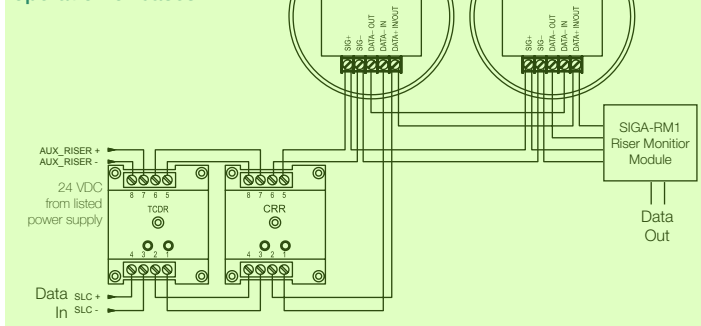
## Audible Sounder Bases, Fire-plus-CO Mode 16

### AB4GT and AB4G-LF sounder bases only. 17

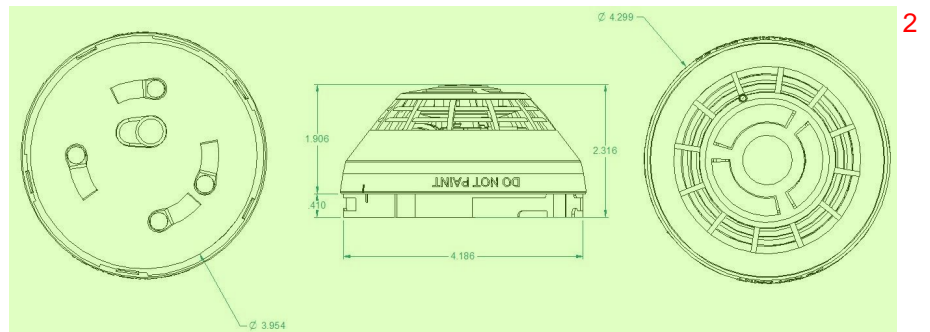
These configurations require a SIGA-TCDR Temporal Pattern Generator to separate CO (TC4) and Fire (TC3) tone patterns.



## Fire-plus-CO mode wiring for detector operation of bases 12



## Dimensions 1



## Specifications 3

Operating voltage	15.20 to 19.95 VDC	4
Normal operating current	51 $\mu$ A	
Alarm current	68 $\mu$ A	
Smoke Sensitivity Range	UL/ULC: 0.53 to 3.94 %/ft. (1.7 to 12.35 %/m) obscuration	
Rate-of-rise rating	15°F/min (9°C/min)	
Fixed temperature rating	135°F (57.2°C). Actual alarm point 129 to 144°F (53.9 to 62.2°C).	
Vibration level	10 to 35 Hz, with an amplitude of 0.01 in.	
Wall mounting	12 in. (305 mm) max. from ceiling	
Spacing, heat detectors	Max. 50 ft. (15.2 m) centers	
Compatible detector testers	Testifire 1000, Testifire 2000	
Operating environment	32 to 100°F (0 to 38°C), 0 to 90% RH, noncondensing	
Construction	High Impact Engineering Polymer, White	
Storage temperature	-4 to 140°F (-20 to 60°C)	
Environmental compensation	Automatic	
UL CO alarm level	70 ppm 60 to 240 minutes; 150 ppm 10 to 50 minutes;	
per UL 2034, CAN/CSA 6.19	400 ppm 4 to 15 minutes	
UL CO false alarm level	30 ppm 30 days	
per UL 2034, CAN/CSA 6.19	70 ppm 60 minutes	
Agency Listings, SIGA-PHCD	UL 268, UL 521, UL 2075. FM approved. Evaluated to the CO alarm sensitivity limits of UL 2034.	
Agency Listings, SIGA-PHCD-CA	ULC Listed to CAN/ULC-S529, CAN/ULC-S530, CAN/CSA 6.19. CSFM.	

## Ordering Information 5

Catalog Number	Description	Ship Wt. lbs (kg)	6
SIGA-PHCD	Multisensor Smoke, Heat, and CO Detector	0.4 (0.16)	
SIGA-PHCD-CA	Multisensor Smoke, Heat, and CO Detector, Canadian Market	0.4 (0.16)	
SIGA-PHCDDB	Multisensor Smoke, Heat, and CO Detector, Black. Use with SIGA-TSB Trim Ring.	0.4 (0.16)	

Compatible Bases			7
SIGA-SB	Detector Mounting Base - Standard		
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	0.2 (.09)	
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-LF	Low Frequency Audible (Sounder) Base for CO and Fire Detectors	0.3 (0.15)	
SIGA-AB4GT	Audible (Sounder) Base for CO and Fire Detectors	0.3 (0.15)	
SIGA-TCDR	Tone Generator for Detector Sounder Bases with CO mode	0.2 (0.1)	
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (.04)	
SIGA-TSB	Trim Skirt for 4" Base, Black	0.1 (.04)	
SIGA-RTA	Detector Removal Tool		
SIGA-VA	Detector Cleaning Tool		