Intelligent Multisensor Smoke and Heat Detector
SIGA-PHD, SIGA-PHDB

Overview
The Signature Series SIGA-PHD detector brings advanced multisensor 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-PHD provides an optical smoke sensor and a rate-of-rise heat sensor with a fixed temperature setting. Together these sensors efficiently detect smoldering fires, as well as fast flaming fires.

Like all Signature Series detectors, the SIGA-PHD gathers analog information from its 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.

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
- Wide 0.53 to 3.94 %/ft. (1.7 to 12.35 %/m) smoke obscuration
- Uses existing wiring
- Automatic device mapping
- Sensor Markings Provide Easy Testing Identification
- 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

Smoke detection
The SIGA-PHD 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
SIGA-PHD’s on-board rate-of-rise heat sensor provides a 15 °F (9 °C) per minute for the detection of fast-developing fires while also providing a 135 °F (57.2 °C) fixed detection threshold. The heat sensors monitor the temperature of the air and determines whether an alarm should be initiated.

Compatibility
The SIGA-PHD detector is compatible only with the Signature Loop Controller.

Installation
Signature Series detectors mount to North American 1-gang boxes, 3-1/2 inches 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
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
The SIGA-PHD 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.

Sensing and reporting technology
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
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. Sounder bases mount to a 4 inch square boxes 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-AB4G bases provide sounder capability to Signature Series smoke and heat detectors. They are not for use with devices that include a CO sensor.
- SIGA-AB4GT bases provide sounder capability to Signature Series smoke and heat detectors, as well as Signature detectors that include a CO Sensor 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 Signature Series smoke and heat detectors, as well as Signature detectors that include a CO Sensor 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.

DATA SHEET E85001-0650
Not to be used for installation purposes. Issue 1.2
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. Sizes #16 AWG (1.0mm²) and #18 AWG (0.75mm²) are preferred for ease of installation.

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 this Base.

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>1</td>
<td>Not Used</td>
</tr>
<tr>
<td>2</td>
<td>DATA IN/OUT (+)</td>
</tr>
<tr>
<td>3</td>
<td>Not Used</td>
</tr>
<tr>
<td>4</td>
<td>Remote LED ( )</td>
</tr>
<tr>
<td>5</td>
<td>Remote LED (+)</td>
</tr>
<tr>
<td>6</td>
<td>Not Used</td>
</tr>
<tr>
<td>7</td>
<td>DATA OUT ( -)</td>
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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, it reopens within 10 msec.

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

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<tbody>
<tr>
<td>1</td>
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<tr>
<td>2</td>
<td>DATA IN/OUT (+)</td>
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<tr>
<td>3</td>
<td>DATA IN ( -)</td>
</tr>
<tr>
<td>4</td>
<td>Not Used</td>
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<tr>
<td>5</td>
<td>Not Used</td>
</tr>
<tr>
<td>6</td>
<td>DATA OUT ( -)</td>
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<tr>
<td>7</td>
<td>Not Used</td>
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Relay Detector Base, SIGA-RB, SIGA-RB4
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.

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<tbody>
<tr>
<td>1</td>
<td>Not Used</td>
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<tr>
<td>2</td>
<td>DATA IN/OUT (+)</td>
</tr>
<tr>
<td>3</td>
<td>Common</td>
</tr>
<tr>
<td>4</td>
<td>DATA IN ( -)</td>
</tr>
<tr>
<td>5</td>
<td>Not Used</td>
</tr>
<tr>
<td>6</td>
<td>Normally-Closed</td>
</tr>
<tr>
<td>7</td>
<td>DATA OUT ( -)</td>
</tr>
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Audible Sounder Bases, Fire Mode
AB4GT, AB4G, AB4G-LF sounder bases

Warnings & Cautions
- This detector does not operate without electrical power. As fires frequently cause power interruption, discuss further safeguards with the local fire protection specialist.
- This detector does not sense fires in areas where smoke or heat cannot reach the detector. Smoke or heat from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector.
- Photoelectric detectors have a wide range of sensing capabilities, and are best suited for detecting slow, smoldering fires. The heat sensor in this device provides a source of supplemental information. The heat sensor by itself does not provide life safety protection.
- In Canada, install according to the CAN/ULC-S524 Standard for the Installation of Fire Alarm Systems, the CSA C22.1 Canadian Electrical Code, and the local authority having jurisdiction.
- Upon completion of the original installation and following any modifications or additions to the system, perform a calibrated sensitivity test per NFPA code. Signature Series devices can perform this test and the panel can generate a system sensitivity report.
**Dimensions**

**Specifications**

- **Operating voltage**: 15.20 to 19.95 VDC
- **Normal operating current**: 51 µA
- **Alarm current**: 68 µA
- **Vibration level**: 10 to 35 Hz, with an amplitude of 0.01 in.
- **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 (8°C/min)
- **Fixed temperature rating**: 135°F (57.2°C). Actual alarm point 129 to 141°F (53.9 to 60.6°C).
- **Air velocity**: 0 to 4,000 ft./min (0 to 20.32 m/s)
- **Wall mounting**: 12 in. (305 mm) max. from ceiling
- **Spacing, heat detectors**: Max. 50 ft. (15.2 m) centers
- **Compatible bases**: See Ordering Information
- **Compatible detector testers**: Testifire 1000, Testifire 2000
- **Operating environment**: 32 to 100°F (0 to 38°C), 0 to 93% RH, noncondensing
- **Construction**: High Impact Engineering Polymer, White
- **Storage temperature**: -4 to 140°F (-20 to 60°C)
- **Environmental compensation**: Automatic
- **Agency Listings**: CAN/ULC-S529, CAN/ULC-S530, UL 268, UL 268A, UL 521 CSFM, FM approved.

**Ordering Information**

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Description</th>
<th>Ship Wt. lbs (kg)</th>
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</thead>
<tbody>
<tr>
<td>SIGA-PHD</td>
<td>Intelligent Multisensor Smoke and Heat Detector</td>
<td>0.4 (0.16)</td>
</tr>
<tr>
<td>SIGA-PHDB</td>
<td>Intelligent Multisensor, Smoke and Heat Detector, Black. Use with SIGA-TSB.</td>
<td>0.4 (0.16)</td>
</tr>
</tbody>
</table>

**Compatible Bases**

- **SIGA-SB**: Detector Mounting Base - Standard
- **SIGA-SB4**: 4-inch Detector Mounting Base c/w Trim Skirt
- **SIGA-RB**: Detector Monitoring Base w/Relay
- **SIGA-RB4**: 4-inch Detector Mounting Base w/Relay, c/w Trim Skirt
- **SIGA-IB**: Detector Monitoring 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 ENS4 applications)
- **SIGA-AB4G-LF**: Low Frequency Audible (Sounder) Base for CO and Fire Detectors
- **SIGA-AB4GT**: Audible (Sounder) Base for CO and Fire Detectors
- **SIGA-TS4**: Trim Skirt (supplied with 4-inch bases)
- **SIGA-TSB**: Trim Skirt for 4" Base, Black
- **SIGA-DMP**: Detector Mounting Plate
- **SIGA-RTA**: Detector Removal Tool
- **SIGA-VA**: Detector Cleaning Tool