Intelligent Photoelectric Smoke Detector
Model SIGA-PS

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

Features
- Integral microprocessor
- Non-volatile memory
- Automatic mapping device
- Electronic addressing
- Environmental compensation
- Intelligent detector
- Wide 0.67% to 3.77%/ft. sensitivity range
- Twenty pre-alarm sensitivity values, set in 5% increments¹
- Identification of dirty or defective detectors
- Automatic day/night sensitivity adjustment
- Twin RED/GREEN status LEDs
- Standard, relay, fault isolator, and audible mounting bases
- Designed and manufactured to ISO 9001 standards

Description
EST’s Signature Series Model SIGA-PS Intelligent Photoelectric Smoke Detector gathers analog information from its smoke sensing element and converts it into digital signals. The detector’s onboard microprocessor measures and analyzes these signals. It compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires. Unwanted alarms are virtually eliminated.

The microprocessor in each detector provides four additional benefits - Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation 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. This information is accessible for review any time at the control panel, PC, or by using the SIGA-PRO Signature Program/Service Tool.

The information stored in the detector’s memory includes:
- detector type, serial number, and address
- date of manufacture, hours of operation, and last maintenance date²
- current detector sensitivity and environmental compensation values
- original detector sensitivity values upon manufacturing²
- number of recorded alarms and troubles²
- time and date of last alarm¹
- analog signal patterns just before the last alarm¹
- most recent trouble code logged by the detector — 32 possible trouble codes may be used to diagnose faults.

In the unlikely event that an unwanted alarm does take place, the control panel’s history file can be called up to help isolate the problem and prevent it from happening again.

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. The history log for the detector remains relevant and intact regardless of its new location.

The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or “as-built” drawing information showing wire branches (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of “as-built” drawings is fast and efficient.

Device mapping allows the Signature loop controller to discover:
- unexpected additional device addresses
- missing device addresses
- changes to the wiring in the circuit.

¹ EST3 V.2 only.
² Retrievable with SIGA-PRO programming tool.
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. Each detector on the circuit continues to collect and analyze information from its surroundings. The detector alarms if the preset smoke obscuration level is reached. If the detector is mounted to a relay base, the relay operates. Similarly, if it is mounted to an audible base, the on-board horn sounds.

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. This provides very fast response time and allows a lower baud rate (speed) to be used for communication on the loop. The lower baud rate offers several advantages including:
- less sensitivity to circuit wire characteristics
- less sensitivity to noise glitches on the cable
- less emitted noise from the data wiring
- twisted or shielded wiring is not required.

Electronic Addressing: The loop controller electronically addresses each detector, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each detector has its own unique serial number stored in its “on-board memory”. The loop controller identifies each device on the circuit and assigns a “soft” address to that device’s serial number. If desired, detectors can be addressed using the SIGA-PRO Signature Program/Service Tool.

Environmental Compensation: Detection sensitivity is virtually independent of its installed environment and its physical condition. Environmental compensation means the sensing element adapts to long-term changes caused by dirt, humidity, aging etc. It even compensates for small amounts of normal ambient smoke. Approximately six times every hour the detector adjusts and updates the sensitivity (% obscuration) baseline for its sensing element. Approximately once every hour this information is written to its permanent memory. The detector’s “learned” baseline is not lost, even when the detector is removed for cleaning. Signature Series environmental compensation is so reliable that it meets NFPA72 field sensitivity testing requirements — without the need for external meters.

The detector’s sensitivity setting selected by the installer floats up or down to remain constant relative to the changing baseline. This is called differential sensing.

Sensitivity Range: The SIGA-PS Photoelectric Detector has a sensitivity range or window of 0.67% to 3.77%. The installer selects the detector’s ALARM sensitivity level from five available settings within the range.

Pre-Alarm: The detector stores one of 20 pre-alarm sensitivity values to alert local personnel prior to the sensor reaching a full evacuation sensitivity. Sensitivity values can be set in 5% increments.¹

Automatic Day/Night Sensitivity Selection: Signature Series detectors may be programmed for different sensitivities during day and night periods. This allows the detector to be more sensitive during unoccupied periods when lower ambient background conditions are expected.

Stability: The SIGA-PS detector’s sensitivity remains stable in wind velocities up to 5,000 ft/min (25.3 m/sec). Ambient temperature has very little affect on the detector. The detector may be installed in rooms with ambient temperatures up to 120°F (49°C).

Status LEDs: Twin LEDs are visible from any direction. A flashing GREEN LED shows normal system polling from the loop controller. A flashing RED LED means the detector is in alarm state. Both LEDs on steady shows alarm state - stand-alone mode. Normal GREEN LED activity is not distracting to building occupants, but can be quickly spotted by a maintenance technician.

Quality and Reliability: EST detectors are manufactured in North America to strict international ISO 9001 standards. All electronics utilize surface mount technology (SMT) for smaller size and greater immunity to RF noise. A conformal coating is used for humidity and corrosion resistance. All critical contacts are gold plated.

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.

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. 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 and UL CAN/ULC 536 standards.

Compatibility

The SIGA-PS detectors are compatible only with EST’s Signature Loop Controller.

¹ EST3V2.0 only.
Application

Although photoelectric detectors have a wide range of fire sensing capabilities they are best suited for detecting slow, smoldering fires. The table below shows six standard test fires used to rate the sensitivity of smoke and heat detectors. The table indicates that no single sensing element is suited for all test fires.

EST recommends that this detector be installed according to latest recognized edition of national and local fire alarm codes.

<table>
<thead>
<tr>
<th>Test Fire</th>
<th>SIGA-IS Ion</th>
<th>SIGA-PS Photo</th>
<th>SIGA-HRS and SIGA-HFS Rate-of-Rise/Fixed Temp.</th>
<th>SIGA-PHS Photo/Heat 3D</th>
<th>SIGA-IPHS Ion/Photo/Heat 4D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Wood</td>
<td>optimum</td>
<td>unsuitable</td>
<td>optimum</td>
<td>very suitable</td>
<td>optimum</td>
</tr>
<tr>
<td>Wood Pyrolysis</td>
<td>suitable</td>
<td>optimum</td>
<td>unsuitable</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>Smouldering Cotton</td>
<td>very suitable</td>
<td>optimum</td>
<td>unsuitable</td>
<td>very suitable</td>
<td>optimum</td>
</tr>
<tr>
<td>Poly Urethane Foam</td>
<td>very suitable</td>
<td>very suitable</td>
<td>suitable</td>
<td>very suitable</td>
<td>optimum</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>optimum</td>
<td>very suitable</td>
<td>very suitable</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>Liquid Fire without Smoke</td>
<td>unsuitable</td>
<td>unsuitable</td>
<td>optimum</td>
<td>very suitable</td>
<td>very suitable</td>
</tr>
</tbody>
</table>

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.
Accessories

All 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 3 ½ inch or 4 inch octagon boxes, 1 ½ 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.

Standard Base SIGA-SB, SIGA-SB4 - This is the basic mounting base for EST Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

Relay 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.

Audible Base SIGA-AB4 - 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.

Isolator 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.

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.

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

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Description</th>
<th>Operating Current</th>
<th>Ship Wt. lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGA-PS</td>
<td>Intelligent Photoelectric Detector</td>
<td>15.2 to 19.95 Vdc</td>
<td>.5 (.23)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Description</th>
<th>Ship Wt. lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGA-SB</td>
<td>Detector Mounting Base - Standard</td>
<td>.2 (.09)</td>
</tr>
<tr>
<td>SIGA-SB4</td>
<td>4-inch Detector Mounting Base</td>
<td></td>
</tr>
<tr>
<td>SIGA-RB</td>
<td>Detector Mounting Base w/Relay, c/w SIGA-TS4 Trim Skirt</td>
<td></td>
</tr>
<tr>
<td>SIGA-RB4</td>
<td>4-inch Detector Mounting Base w/Relay, c/w SIGA-TS4 Trim Skirt</td>
<td></td>
</tr>
<tr>
<td>SIGA-IB</td>
<td>Detector Mounting Base w/Fault Isolator</td>
<td></td>
</tr>
<tr>
<td>SIGA-IB4</td>
<td>4-inch Detector Mounting Base w/ Fault Isolator, c/w SIGA-TS4 Trim Skirt</td>
<td></td>
</tr>
<tr>
<td>SIGA-LED</td>
<td>Remote Alarm LED</td>
<td></td>
</tr>
<tr>
<td>SIGA-AB4</td>
<td>Audible (Sounder) Base</td>
<td>.3 (.15)</td>
</tr>
<tr>
<td>SIGA-TS4</td>
<td>Trim Skirt (supplied with 4-inch bases)</td>
<td>.1 (.04)</td>
</tr>
</tbody>
</table>

Ordering Information
Intelligent Heat Detectors
Models SIGA-HFS & SIGA-HRS

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.

- 70 foot (21.3 meter) spacing
- 15°F (9°C)/min rate-of-rise/135°F (57°C) ft. and 135°F (57°C) fixed temperature type
- Intelligent detector c/w integral microprocessor
- Non-volatile memory
- Automatic device mapping
- Electronic addressing
- Identification of defective detectors
- Twin RED/GREEN status LEDs
- Standard, relay, fault isolator, and audible mounting bases
- Designed and manufactured to ISO 9001 standards

Description

EST’s Signature Series Model SIGA-HFS and SIGA-HRS Intelligent Heat Detectors gather analog information from their fixed temperature and/or rate-of-rise heat sensing elements and converts it into digital signals. The detector’s on-board microprocessor measures and analyzes these signals. It compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires. Unwanted alarms are virtually eliminated.

The microprocessor in each detector provides four additional benefits - **Self-diagnostics and History Log**, **Automatic Device Mapping**, **Stand-alone Operation 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. This information is accessible for review any time at the control panel, PC, or by using the SIGA-PRO Signature Program/Service Tool.

The information stored in the detector’s memory includes:

- detector type, serial number, and address
- date of manufacture, hours of operation, and last maintenance date²
- current detector (ambient) temperature values
- current detector sensitivity and environmental compensation values
- number of recorded alarms and troubles²
- time and date of last alarm¹
- analog signal patterns just before the last alarm¹
- most recent trouble code logged by the detector — 32 possible trouble codes may be used to diagnose faults.

In the unlikely event that an unwanted alarm does take place, the control panel’s history file can be called up to help isolate the problem and prevent it from happening again.

**Automatic Device Mapping** - The loop controller learns where each device’s serial number address is installed relative to other devices on the circuit. This 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. The history log for the detector remains relevant and intact regardless of its new location.

The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or "as-built" drawing information showing wire branches (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of as-built drawings is fast and efficient.

¹ EST3 V.2 only.
² Retrievable with SIGA-PRO programming tool.
Device mapping allows the Signature loop controller to discover:
- unexpected additional device addresses
- missing device addresses
- changes to the wiring in the circuit.

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. Each detector on the circuit continues to collect and analyze information from its surroundings. Both the SIGA-HRS and SIGA-HFS detectors alarm if the ambient temperature increases to 135°F (57°C) or for the SIGA-HRS only, the temperature increases at a rate exceeding 15°F (9°C)/minute. If the detector is mounted to a relay base, the relay operates. Similarly, if it is mounted to an audible base, the on-board horn sounds.

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 control panel when it has something new to report. This provides very fast control panel response time and allows a lower baud rate (speed) to be used for communication on the circuit. The lower baud rate offers several advantages including:
- less sensitivity to circuit wire characteristics
- less sensitivity to noise glitches on the cable
- less emitted noise from the data wiring
- twisted or shielded wiring is not required

Electronic Addressing - The loop controller electronically addresses each detector, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each detector has its own unique serial number stored in its on-board memory. The loop controller identifies each device on the circuit and assigns a "soft" address to that device's serial number. If desired, detectors can be addressed using the SIGA-PRO Signature Program/Service Tool.

Installation Spacing - The SIGA-HFS (fixed temperature) and the SIGA-HRS (fixed temperature/rate-of-rise combination) intelligent heat detectors are rated for installation at up to 70 foot (21.3 meter) spacing. These detectors may be installed in rooms with ambient temperatures up to 100°F (38°C).

Status LEDs - Twin LEDs are visible from any direction. A flashing GREEN LED shows normal system polling from the loop controller. A flashing RED LED means the detector is in alarm state. Both LEDs on steady shows alarm state - stand-alone mode. Normal GREEN LED activity is not distracting to building occupants, but can be quickly spotted by a maintenance technician.

Quality and Reliability - EST detectors are manufactured in North America to strict international ISO 9001 standards. All electronics utilize surface mount technology (SMT) for smaller size and greater immunity to RF noise. A conformal coating is used for humidity and corrosion resistance. All critical contacts are gold plated.

Compatibility
The SIGA-HFS and SIGA-HRS detectors are compatible only with EST’s Signature Loop Controller.

Specifications Table

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>SIGA-HFS</th>
<th>SIGA-HRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heat Sensing Element</td>
<td>Fixed Temperature</td>
<td>Fixed &amp; Temperature/Rate-of-Rise</td>
</tr>
<tr>
<td>Alarm Point</td>
<td>Alarms at 135°F (57°C) Ambient</td>
<td>Alarms at 135°F (57°C) Ambient or Temp. increase above 15°F (9°C) per min.</td>
</tr>
<tr>
<td>UL Listed</td>
<td>70 feet (21.3 meters) center to center spacing</td>
<td></td>
</tr>
<tr>
<td>Detector Spacing</td>
<td>Operating Temp: 32°F to 100°F (0°C to 38°C)</td>
<td>Storage Temp: -4°F to 140°F (-20°C to 60°C)</td>
</tr>
<tr>
<td>Operating and Storage Environment</td>
<td>Humidity: 0 to 93% RH, Non-Condensing</td>
<td></td>
</tr>
<tr>
<td>Operating Voltage</td>
<td>15.2 to 19.95 Vdc (19 Vdc nominal)</td>
<td></td>
</tr>
<tr>
<td>Operating Current</td>
<td>Quiescent: 45µA @ 19 V</td>
<td>Alarm: 45µA @ 19V</td>
</tr>
<tr>
<td>Emergency Stand-alone Alarm Mode: 18mA</td>
<td>Pulse Current: 100 µA (100 msec)</td>
<td></td>
</tr>
<tr>
<td>Construction &amp; Finish</td>
<td>High Impact Engineering Polymer - White</td>
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</tr>
<tr>
<td>Compatible Mounting Bases</td>
<td>SIGA-SB Standard Base, SIGA-RB Relay Base, SIGA-IB Isolator Base, SIGA-AB Audible Base</td>
<td></td>
</tr>
<tr>
<td>LED Operation</td>
<td>On-board Green LED - Flashes when polled On-board Red LED - Flashes when in alarm; Both LEDs - Glow steady when in alarm (stand-alone) Compatible Remote Red LED (model SIGA-LED) Flashes when in alarm</td>
<td></td>
</tr>
<tr>
<td>Compatibility</td>
<td>Use With: SIGNATURE Loop Controller</td>
<td></td>
</tr>
<tr>
<td>Address Requirements</td>
<td>Uses one device address</td>
<td></td>
</tr>
<tr>
<td>Agency Listings</td>
<td>UL, ULC, MEA, CSFM</td>
<td></td>
</tr>
</tbody>
</table>

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.
**Application**

The table below shows six standard test fires used to rate the sensitivity of smoke and heat detectors. The table indicates that no single sensing element is suited for all test fires.

EST recommends that this detector be installed according to latest recognized edition of national and local fire alarm codes.

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<tr>
<th>Test Fire</th>
<th>SIGA-IS Ion</th>
<th>SIGA-PS Phot</th>
<th>SIGA-HRS and SIGA-HFS Rate-of-Rise/ Fixed Temp.</th>
<th>SIGA-PHS Photo Heat 3D</th>
<th>SIGA-IPHS Ion/Photo/Heat 4D</th>
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<tr>
<td>Open Wood</td>
<td>optimum</td>
<td>unsuitable</td>
<td>optimum</td>
<td>very suitable</td>
<td>optimum</td>
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<td>suitable</td>
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<td>unsuitable</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>Smouldering Cotton</td>
<td>very suitable</td>
<td>optimum</td>
<td>unsuitable</td>
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<td>optimum</td>
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<tr>
<td>Poly Urethane Foam</td>
<td>very suitable</td>
<td>very suitable</td>
<td>suitable</td>
<td>very suitable</td>
<td>optimum</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>optimum</td>
<td>very suitable</td>
<td>very suitable</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>Liquid Fire without Smoke</td>
<td>unsuitable</td>
<td>unsuitable</td>
<td>optimum</td>
<td>very suitable</td>
<td>very suitable</td>
</tr>
</tbody>
</table>

**Typical Wiring**

The detector mounting bases will 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.
Accessories

All 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 four inch square 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.

**Standard Base SIGA-SB, SIGA-SB4** - This is the basic mounting base for EST Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

**Relay 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.

**Audible Base SIGA-AB4** - 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.

**Isolator 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
- if the isolator next to the short closes, it reopens within 10 msec. The process repeats beginning on the other side of the loop controller.

**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.

### Ordering Information Table

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Description</th>
<th>Ship Wt. lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGA-HFS</td>
<td>Intelligent Fixed Temperature Heat Detector - UL/ULC Listed</td>
<td>.5 (.23)</td>
</tr>
<tr>
<td>SIGA-HRS</td>
<td>Intelligent Fixed Temperature/Rate-of-Rise Heat Detector - UL/ULC Listed</td>
<td></td>
</tr>
<tr>
<td><strong>Accessories</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIGA-SB</td>
<td>Detector Mounting Base</td>
<td></td>
</tr>
<tr>
<td>SIGA-SB4</td>
<td>4-inch Detector Mounting Base c/w SIGA-TS Trim Skirt</td>
<td></td>
</tr>
<tr>
<td>SIGA-RB</td>
<td>Detector Mounting Base w/Relay</td>
<td></td>
</tr>
<tr>
<td>SIGA-RB4</td>
<td>4-inch Detector Mounting Base w/Relay c/w SIGA-TS Trim Skirt</td>
<td>.2 (.09)</td>
</tr>
<tr>
<td>SIGA-IB</td>
<td>Detector Mounting Base w/Fault Isolator</td>
<td></td>
</tr>
<tr>
<td>SIGA-IB4</td>
<td>4-inch Detector Mounting Base w/ Fault Isolator c/w SIGA-TS Trim Skirt</td>
<td></td>
</tr>
<tr>
<td>SIGA-LED</td>
<td>Remote Alarm LED</td>
<td></td>
</tr>
<tr>
<td>SIGA-AB4</td>
<td>Audible (Sounder) Base</td>
<td>.3 (0.15)</td>
</tr>
<tr>
<td>SIGA-TS4</td>
<td>Trim Skirt (supplied with 4-inch bases)</td>
<td>.1 (.04)</td>
</tr>
</tbody>
</table>

### 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 heat cannot reach the detector. Heat from fires in walls, roofs, or on the opposite side of closed doors may not reach the detector to alarm it.

The heat sensor in this device only provides a source of information to supplement the information provided by photoelectric or ionization smoke detectors which may be located nearby. **The heat detector by itself does NOT provide life safety protection.** Under no circumstances should heat detectors be relied on as the sole means of fire protection.
**Intelligent Ionization Smoke Detector**

**Model SIGA-IS**

### 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.

- Integral microprocessor
- Non-volatile memory
- Automatic device mapping
- Electronic addressing
- Environmental compensation
- Intelligent detector
- Wide 0.61% to 1.91%/ft. sensitivity range
- Twenty pre-alarm sensitivity values, set in 5% increments¹
- Identification of dirty or defective detectors
- Automatic day/night sensitivity adjustment
- Twin RED/GREEN status LEDs
- Standard, relay, fault isolator, and audible mounting bases
- Designed and manufactured to ISO 9001 standards

### Description

EST’s Signature Series Model SIGA-IS Intelligent Ionization Smoke Detector gathers analog information from its smoke sensing element and converts it into digital signals. The detector’s on-board microprocessor measures and analyzes these signals. It compares the information to historical readings and time patterns to make an alarm decision. Digital filters remove signal patterns that are not typical of fires. Unwanted alarms are virtually eliminated.

The microprocessor in each detector provides four additional benefits - Self-diagnostics and History Log, Automatic Device Mapping, Stand-alone Operation 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. This information is accessible for review any time at the control panel, PC, or by using the SIGA-PRO Signature Program/Service Tool.

The information stored in the detector’s memory includes:

- detector type, serial number, and address
- date of manufacture, hours of operation, and last maintenance date²
- current detector sensitivity environmental compensation values
- original detector sensitivity values upon manufacturing²
- number of recorded alarms and troubles²
- time and date of last alarm²
- analog signal patterns just before the last alarm²
- most recent trouble code logged by the detector — 32 possible trouble codes may be used to diagnose faults.

In the unlikely event that an unwanted alarm does take place, the control panel’s history file can be called up to help isolate the problem and prevent it from happening again.

**Automatic Device Mapping** - The loop controller learns where each device’s serial number address is installed relative to other devices on the circuit. This 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. The history log for the detector remains relevant and intact regardless of its new location.

The Signature Series Data Entry Program also uses the mapping feature. With interactive menus and graphic support, the wired circuits between each device can be examined. Layout or “as-built” drawing information showing wire branches (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of “as-built” drawings is fast and efficient.

Device mapping allows the Signature loop controller to discover:

- unexpected additional device addresses
- missing device addresses
- changes to the wiring in the circuit.

1 EST3 V.2 only.
2 Retrievable with SIGA-PRO programming tool.
**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. Each detector on the circuit continues to collect and analyze information from its surroundings. The detector alarms if the preset smoke obscuration level is reached. If the detector is mounted to a relay base, the relay operates. Similarly, if it is mounted to an audible base, the on-board horn sounds.

**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. This provides very fast control panel response time and allows a lower baud rate (speed) to be used for communication on the circuit. The lower baud rate offers several advantages including:
- less sensitivity to circuit wire characteristics
- less sensitivity to noise glitches on the cable
- less emitted noise from the data wiring
- twisted or shielded wiring is not required.

**Electronic Addressing** - The loop controller electronically addresses each detector, saving valuable time during system commissioning. Setting complicated switches or dials is not required. Each detector has its own unique serial number stored in its “on-board memory”. The loop controller identifies each device on the circuit and assigns a “soft” address to that device’s serial number. If desired, detectors can be addressed using the SIGA-PRO Signature Program/Service Tool.

**Environmental Compensation** - Detection sensitivity is virtually independent of its installed environment and its physical condition. Environmental compensation means the sensing element adapts to long-term changes caused by dirt, humidity, aging etc. It even compensates for small amounts of normal ambient smoke. Approximately six times every hour, the detector adjusts and updates the sensitivity (% obscuration) baseline for its ionization sensing element. Approximately once every hour this information is written to its permanent memory. The detector’s “learned” baseline is not lost, even when the detector is removed for cleaning. Signature Series environmental compensation is so reliable that it meets NFPA 72 field sensitivity testing requirements — without the need for external meters.

The detector’s sensitivity setting selected by the installer floats up or down to remain constant relative to the changing baseline. This is called differential sensing.

**Sensitivity Range** - The SIGA-IS Ionization Detector has a sensitivity range or window of 0.61% to 1.91% obscuration per foot. The installer selects the detector’s ALARM sensitivity level from five available settings within the range.

**Pre-Alarm** - The detector stores one of 20 pre-alarm sensitivity values to alert local personnel prior to the sensor reaching a full evacuation sensitivity. Sensitivity values can be set in 5% increments.¹

**Automatic Day/Night Sensitivity Selection** - Signature Series detectors may be programmed for different sensitivities during day and night periods. This allows the detector to be more sensitive during unoccupied periods when lower ambient background conditions are expected.

**Stability** - The SIGA-IS detector’s sensitivity remains stable in wind velocities up to 75 ft/min (0.38 m/sec). Ambient temperature has very little affect on the detector. The detector may be installed in rooms with ambient temperatures up to 120°F (49°C).

**Status LEDs** - Twin LEDs are visible from any direction. A flashing GREEN LED shows normal system polling from the loop controller. A flashing RED LED means the detector is in alarm state. Both LEDs on steady shows alarm state - stand-alone mode. Normal GREEN LED activity is not distracting to building occupants, but can be quickly spotted by a maintenance technician.

**Quality and Reliability** - EST detectors are manufactured in North America to strict international ISO 9001 standards. All electronics utilize surface mount technology (SMT) for smaller size and greater immunity to RF noise. A conformal coating is used for humidity and corrosion resistance. All critical contacts are gold plated.

**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.

![Detector Installation Diagram]

**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. 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 and ULC CAN/ULC 536 standards.

¹EST3V.2 only.
Application
Although ionization detectors have a wide range of fire sensing capabilities they are best suited for detecting fast, flaming fires. The table below shows six standard test fires used to rate the sensitivity of smoke and heat detectors. The table indicates that no single sensing element is suited for all test fires.

EST recommends that this detector be installed according to latest recognized edition of national and local fire alarm codes.

<table>
<thead>
<tr>
<th>Test Fire</th>
<th>SIGA-IS Ion</th>
<th>SIGA-PS Photo</th>
<th>SIGA-HRS and SIGA-HFS Rate-of-Rise/Fixed Temp.</th>
<th>SIGA-PHS Photo/Heat 3D</th>
<th>SIGA-IPHS Ion/Photo/Heat 4D</th>
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<tbody>
<tr>
<td>Open Wood</td>
<td>optimum</td>
<td>unsuitable</td>
<td>optimum</td>
<td>very suitable</td>
<td>optimum</td>
</tr>
<tr>
<td>Wood Pyrolysis</td>
<td>suitable</td>
<td>optimum</td>
<td>unsuitable</td>
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<tr>
<td>Smouldering Cotton</td>
<td>very suitable</td>
<td>unsuitable</td>
<td>optimum</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>Poly Urethane Foam</td>
<td>very suitable</td>
<td>very suitable</td>
<td>very suitable</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>optimum</td>
<td>very suitable</td>
<td>very suitable</td>
<td>optimum</td>
<td>optimum</td>
</tr>
<tr>
<td>Liquid Fire without Smoke</td>
<td>unsuitable</td>
<td>unsuitable</td>
<td>optimum</td>
<td>very suitable</td>
<td>very suitable</td>
</tr>
</tbody>
</table>

Typical Wiring
The detector mounting bases will 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.

Compatibility
The SIGA-IS detectors are compatible only with EST’s Signature Loop Controller.
Accessories

All 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 square 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.

Standard Base SIGA-SB, SIGA-SB4 - This is the basic mounting base for EST Signature Series detectors. The SIGA-LED Remote LED is supported by the Standard Base.

Relay 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.

Audible Base SIGA-AB4 - 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.

Isolator 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
- if the isolator next to the short closes, it reopens within 10 msec.

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

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.

Specifications

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Description</th>
<th>Ship Wt. lbs (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGA-IS</td>
<td>Intelligent Ionization Detector - UL/ULC Listed</td>
<td>.5 (.23)</td>
</tr>
<tr>
<td></td>
<td><strong>Accessories</strong></td>
<td></td>
</tr>
<tr>
<td>SIGA-SB</td>
<td>Detector Mounting Base - Standard</td>
<td></td>
</tr>
<tr>
<td>SIGA-SB4</td>
<td>4 inch Detector Mounting Base c/w SIGA-TS4 Trim Skirt</td>
<td>.2 (.09)</td>
</tr>
<tr>
<td>SIGA-RB</td>
<td>Detector Mounting Base w/Relay</td>
<td></td>
</tr>
<tr>
<td>SIGA-RB4</td>
<td>4 inch Detector Mounting Base w/Relay c/w SIGA-TS4 Trim Skirt</td>
<td>.1 (.04)</td>
</tr>
<tr>
<td>SIGA-IB</td>
<td>Detector Mounting Base w/Fault Isolator</td>
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</tr>
<tr>
<td>SIGA-IB4</td>
<td>4 inch Detector Mounting Base w/Fault Isolator c/w SIGA-TS4 Trim Skirt</td>
<td>.1 (.04)</td>
</tr>
<tr>
<td>SIGA-AB4</td>
<td>Audible (Sounder) Base</td>
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Ordering Information

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<tr>
<td>SIGA-IS</td>
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<tr>
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</tr>
<tr>
<td>SIGA-SB</td>
<td>Detector Mounting Base - Standard</td>
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</tr>
<tr>
<td>SIGA-SB4</td>
<td>4 inch Detector Mounting Base c/w SIGA-TS4 Trim Skirt</td>
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</tr>
<tr>
<td>SIGA-RB</td>
<td>Detector Mounting Base w/Relay</td>
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</tr>
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<td>SIGA-RB4</td>
<td>4 inch Detector Mounting Base w/Relay c/w SIGA-TS4 Trim Skirt</td>
<td>.1 (.04)</td>
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<td>SIGA-IB</td>
<td>Detector Mounting Base w/Fault Isolator</td>
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<tr>
<td>SIGA-IB4</td>
<td>4 inch Detector Mounting Base w/Fault Isolator c/w SIGA-TS4 Trim Skirt</td>
<td>.1 (.04)</td>
</tr>
<tr>
<td>SIGA-AB4</td>
<td>Audible (Sounder) Base</td>
<td></td>
</tr>
</tbody>
</table>

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.

Edwards Systems Technology

It is our intention to keep the product information current and accurate. We can not cover specific applications or anticipate all requirements.

All specifications are subject to change without notice. For more information or questions relative to this Specification Sheet, contact EST.

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**Intelligent Duct Smoke Detector Housing**
- Model SIGA-DH

### Features
- Suitable for high air velocity duct applications
  
  Up to 4000 ft/min. (20.3 m/sec.) with Photoelectric Detector.
- **Standard Signature Series detectors**
  
  Designed for use with standard 4D, 3D, and Photoelectric Signature Series smoke detectors. Does not require “special” duct smoke heads.
- **Standard, relay, or isolator detector base**
  
  Detector plugs-in to base then easily installs into housing.
- Install in ducts up to 10 ft. (3.05 m) wide
- Remote LED and test station accessories
- Designed and manufactured to ISO 9001 standards

### Description
The **SIGA-DH Duct Smoke Detector Housing** is specially engineered to exploit all the capabilities of Signature Series intelligent photoelectric and multisensor smoke detectors. EST Signature Series detectors gather analog information from each of their one or more sensing elements and converts it into digital signals. The detector’s onboard microprocessor measures and analyzes these signals. It compares them to historical readings, time patterns and known characteristics to make an alarm decision. Digital filters and complex Algorithms are applied for optimum detector accuracy. Unwanted alarms are virtually eliminated.

Each duct housing is packaged with detailed installation instructions, gaskets and a self-adhesive drilling template for locating and mounting the detector. The large access door is completely removable to allow fast detector installation and field wiring connections. The 16 gauge steel housing is finished in red baked enamel for easy identification. Five one-gang knockouts on the housing provide a convenient location for mounting intelligent Signature Series modules.

The **SIGA-DH Duct Housing** comes with a 6 inch (150 mm) exhaust tube. Air sampling tubes are available in lengths from 8 inches (200 mm) to 10 feet (3048 mm) and must be ordered separately. Compatible smoke detectors, mounting bases, and accessories are listed in the Ordering Information. Refer to individual device catalog literature pages for more detail.

**Intelligent Duct Smoke Detectors**

Compatible Signature Series detectors include the **SIGA-IPHS 4D Multisensor Smoke Detector with THREE INTEGRATED SENSING TECHNOLOGIES.** It combines Ionization, Photoelectric and Heat sensors and processes and analyzes information from each sensor separately using dynamic filters. Also compatible are the **SIGA-PHS 3D Multisensor Detector** and the **SIGA-PS Photoelectric Detector.** The installer selects the alarm sensitivity level from the detector’s wide **0.67 to 3.7% sensitivity range window.** Five settings are available from within the range.

**Environmental Compensation**

Detection sensitivity for Signature Series detectors is virtually independent of their installed environment and their physical condition. Each sensing element adapts to long-term changes caused by dirt, humidity, aging etc. Every 8.6 minutes the detector adjusts and updates the sensitivity (% obscuration) ambient baseline for its smoke sensing element. Every 68 minutes this information is written to its permanent memory.

The detector’s alarm sensitivity setting selected by the installer floats up or down to remain constant relative to the changing baseline. This is called environmental compensation.

**Identification of Dirty or Defective Detectors**

Each detector automatically identifies when it is polluted and causes a “dirty detector” message. The detector’s sensitivity measurement can also be transmitted to the loop controller. This measurement satisfies NFPA sensitivity measurement requirements. The detector’s internal components are self-supervised. Up to 32 trouble codes are generated and displayed for diagnostics.
Non-Volatile Memory
Signature Series smoke detectors permanently store a serial number, type of device and job number. Automatic updates of historic information including hours of operation, last maintenance date, number of alarms and troubles, time and date of last alarm are available. In the unlikely event that an unwanted alarm does take place, the history file can be called up to help isolate the problem and prevent it from happening again.

Electronic Addressing & Device Mapping
The Signature loop controller automatically addresses each detector to save valuable time during system commissioning. Setting complicated switches or dials on each intelligent device is not required. If desired, the detectors can be custom addressed using the Signature Series Data Entry Program.

The wired circuits between each device can be examined using the data entry program along with the self-mapping feature built into all Signature devices. With its graphic support, layout or “as-built” drawing information showing wire branches (T-taps), device types and their address are stored on disk for printing hard copy. This takes the mystery out of the installation. The preparation of “as-built” drawings is fast and efficient.

Device mapping also allows the Signature loop controller to discover:
- unexpected additional device addresses
- missing device addresses
- changes to the wiring in the data loop.

Stand-Alone Operation
On-board intelligence permits Signature devices to operate in stand-alone mode. Should loop controller CPU communications fail for more than four seconds, all devices on that circuit (loop) go into stand-alone mode. The loop acts like a conventional alarm receiving circuit. Each detector on the loop continues to collect and analyze information from its surroundings. The detector alarms if the preset smoke obscuration level is reached and causes a loop alarm. If the detector is mounted to a relay base, the relay operates. Similarly, if it is mounted to an audible base, the on-board horn sounds.

Quality and Reliability
EST detectors are designed and manufactured in North America to ISO 9001 standards. All electronics utilize surface mount technology (SMT) for smaller size and greater immunity to RF noise. A conformal coating is used for corrosion resistance and all critical contacts are gold plated.

Typical Wiring
The detector mounting bases and test station will accept #18 AWG (0.75mm²), #16 (1.0mm²), #14 AWG (1.50mm²) and #12 AWG (2.5 mm²) wire sizes. Note: #14 AWG (1.5 mm²) is not recommended due to difficulty of installation. See Loop Controller and Detector catalog sheets for detailed wiring requirement specifications.

Signature Duct Detector Accessories

Duct Detector Air Sampling Tubes
One air sampling inlet tube must be ordered for each duct smoke detector housing. Refer to Ordering Information for available lengths.

Detector Mounting Bases
One detector mounting base must be ordered for each duct smoke housing. Removing a detector from its base (except isolator base) does not affect other devices operating on the same data loop. Available bases are:
- Standard Base SIGA-SB - This is the basic mounting base. The SIGA-LED Remote LED is supported by the Standard Base.
- Relay Base SIGA-RB - This base includes a relay. Normally open or closed operation is selected during installation. The dry contact is rated for 1 amp @ 30 Vdc (pilot duty). 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. Relay bases are not affected or activated by the SIGA-DTS Duct Test Station.
- Isolator Base SIGA-IB - This base includes a built-in line fault isolator. A detector must be installed for it to operate. The integral isolator relay is controlled by the detector or the loop controller. A maximum of 96 isolator bases can be installed on one loop. The Isolator Base does not support the SIGA-LED Remote LED.

Alarm LED Indicator
The SIGA-LED Alarm Indicator is suitable for use with the SIGA-SB detector base only. A maximum of one can be operated for each detector. It features a red LED on a one-gang plastic plate and can be installed remote or directly on the SIGA-DH Duct Housing.

Duct Test Station
The SIGA-DTS Duct Test Station uses a key switch along with an integral intelligent input module mounted on a two-gang plastic plate. It is supplied with two keys and features a red alarm LED.

When the key is turned to the “TEST” position, the LED lights and the integral module remotely inputs a duct detector test alarm. The actions and sequences programmed at the control panel to activate dampers and other smoke control measures, are easily tested. Detector relay bases are not affected or activated. Resetting the control panel clears the test and returns the system to normal. The key cannot be removed when in the “TEST” position.

The Duct Test Station mounts to standard 2-inch deep North American two-gang and 4-inch square electric boxes and European 100 mm square boxes.

Air Velocity Test Kit
The 6263-S5 Air Velocity Test Kit is specially designed to interface to the SIGA-DH Duct Housing. It is used to test or confirm the air velocity in HVAC ducts where the duct housing is installed.
## Specifications

**SIGA-DH Duct Housing** (NOTE: The SIGA-DH Duct Housing is NOT WEATHERPROOF or DUST TIGHT.)

| Dimensions | 7-3/8 inches (188mm) W x 7 inches (178mm) H x 5 inches (127mm) D |
| Material and Finish | 16 Gauge Cold Rolled Steel, Red - Baked Enamel |
| Conduit Knockouts | Combination 1/2 inch & 3/4 inch |
| Agency Approvals | UL, ULC, MEA, CSFM |
| Compatible Smoke Detectors | SIGA-PS | SIGA-PHS | SIGA-IPHS |
| Air Velocity Range | 300 to 4000 ft/min. (1.5 to 20.3 m/sec) | 300 to 1000 ft/min. (1.5 to 5.0 m/sec) |
| Smoke Sensing Element(s) | Photoelectric - Light Scattering Principle | Photoelectric - Light Scattering Principle | Ionization - Unipolar Photoelectric - Light Scattering Principle |
| | Heat - 135° F (57° C) Fixed Temperature | Heat - Alarms at 65° F (35° C) change in ambient temp. |
| Operating Environment | Temp: 32 - 120° F (0 to 49° C) Humidity: 0 to 93% RH, non-condensing | Temperature: 32 - 100° F (0 - 38° C) Humidity: 0 to 93% RH, non-condensing |
| Storage Environment | Temperature: -4 to 140° F (-20 to 60° C); Humidity: 0 to 93% RH, non-condensing |
| UL/ULC Sensitivity Range | 0.67% to 3.77% obscuration/foot (305mm) | 0.67% to 3.70% obscuration/foot (305mm) |
| User Selected Alarm Sensitivity Settings | Least Sensitive: 3.5%; Less Sensitive: 3.0%; Normal: 2.5%; More Sensitive: 2.0%; Most Sensitive: 1.0% |
| Pre-alarm Sensitivity | 5 % increments, allowing up to 20 pre-alarm settings |
| Electrical and Physical Characteristics | Refer to individual detector catalog sheets |
| Compatible Mounting Bases | SIGA-SB Standard Base, SIGA-RB Relay Base, SIGA-IB Isolator Base |
| Compatible Remote LED | SIGA-LED (LED flashes when in alarm) |
| Controller Compatibility | SIGNATURE Loop Controller |
| Addressing Restrictions | Uses one Module Address |

**SIGA-DTS Duct Test Housing**

| Operating Current | Standby = 250µA; Activated = 400µA |
| Operating Voltage | 15.2 to 19.95 Vdc (19 Vdc nominal) |
| Replacement Key | p/n - P-037449 |
| Storage and Operating Temperature | 32 to 120°F (0 to 49°C) |
| Onboard LED Operation | Red LED - flashes when in alarm or test state |
| Mounting | North American electric box: 2 inch deep 2-gang or 4 inch square ; European electric box: 100 mm square |
| Construction & Finish | High Impact Engineered Plastic 2-gang front plate - White |
| Addressing Restrictions | Uses one Module Address |
Application Notes

The SIGA-DH Duct Smoke Detector Housing requires a clear, flat, accessible area on the duct of at least 7-3/8 inches (188mm) W x 7 inches (175mm) H. The duct housing must be installed on ducts at least 8 inches (200mm) wide. To avoid the effects of stratification, install the detector housing a minimum of six duct widths beyond any bends in the duct. Duct detectors are usually installed on the supply duct after the air filters; or in the return air stream prior to being diluted by outside air.

Sample tube length must span the entire width of the air duct and the tube can be easily cut to any length. Inlet tubes longer than 3 ft. (900mm) must be supported at both ends.

Duct detectors continually sample air flow in a HVAC duct and initiate an alarm condition whenever smoke is detected. An alarm is activated when the quantity (percent obscuration) of combustion products in that air sample exceeds the detector’s sensitivity setting.

Air velocity in the duct maintains the air flow that enters the detector housing through perforations in the air sampling inlet tube and discharges through the outlet exhaust tube. The detector housing must be installed with its INLET air sampling tube upstream of the EXHAUST tube. Before installing the duct detector housing, test the duct air velocity to verify it is within the limits of the Signature smoke detector that is being installed. Also verify that duct air relative humidity is within 0% and 93%.

WARNING: Duct detectors have specific limitations. Duct detectors ARE NOT a substitute for an open area smoke detector. Duct detectors ARE NOT a substitute for early warning detection. Duct detectors ARE NOT a replacement for a building’s regular fire detection system. Smoke detectors ARE NOT designed to detect toxic gases which can build up to hazardous levels in some fires. These devices WILL NOT operate without electrical power. As fires frequently cause power interruptions, EST suggests you discuss further safeguards with your local fire protection specialist.

Ordering Information

<table>
<thead>
<tr>
<th>Catalog Number</th>
<th>Description</th>
<th>Ship Wt lb. (kg)</th>
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<tbody>
<tr>
<td>SIGA-DH</td>
<td>Duct Detector Housing</td>
<td>6.5 (3)</td>
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<tr>
<td>6261-001</td>
<td>8 inch (200mm) Air Sampling Inlet Tube</td>
<td>.25 (.1)</td>
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<tr>
<td>6261-002</td>
<td>24 inch (600mm) Air Sampling Inlet Tube</td>
<td>.5 (.2)</td>
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<tr>
<td>6261-003</td>
<td>42 inch (1060mm) Air Sampling Inlet Tube</td>
<td>1.6 (.8)</td>
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<tr>
<td>6261-006</td>
<td>78 inch (1980mm) Air Sampling Inlet Tube</td>
<td>2.2 (1)</td>
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<tr>
<td>6261-010</td>
<td>120 inch (3048mm) Air Sampling Inlet Tube</td>
<td>4.4 (2)</td>
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<td>SIGA-IPHS</td>
<td>4D Multisensor Detector</td>
<td>.5 (.23)</td>
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<tr>
<td>SIGA-PHS</td>
<td>3D Multisensor Detector</td>
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<tr>
<td>SIGA-PS</td>
<td>Photoelectric Detector</td>
<td>.2 (.09)</td>
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<tr>
<td>SIGA-SB</td>
<td>Standard Base</td>
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<tr>
<td>SIGA-RB</td>
<td>Relay Base</td>
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<td>SIGA-IB</td>
<td>Isolator Base</td>
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<td>SIGA-LED</td>
<td>Alarm LED Indicator</td>
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<td>SIGA-DTS</td>
<td>Duct Test Station</td>
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<tr>
<td>6263-SG</td>
<td>Duct Air Velocity Test Kit</td>
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</tbody>
</table>

Installation and Mounting

EST recommends duct detectors always be installed in accordance with the latest recognized editions of local and national fire alarm codes.

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Edwards Systems Technology

It is our intention to keep the product information current and accurate. We can not cover specific applications or anticipate all requirements. All specifications are subject to change without notice. For more information or questions relative to this Specification Sheet, contact EST.