EDWARDS
United Technologies

LIFE SAFETY *&* INCIDENT MANAGEMENT

Intelligent Smoke Detector
SIGA-DS2I

UL S853

Overview

Signature Series SIGA-DS2I optical 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 highly stable communications means these detectors can be installed on existing wiring for most retrofit installations — no special twisted or shielded cable required.

The SIGA-DS2I notifies the control panel of changes in sensitivity due to environmental conditions such as dirt, smoke, temperature, and humidity. When it reaches its preset limit, the detector issues a maintenance warning that alerts maintenance personnel of the need for service. The SIGA-DS2I remains operational with enough of a safety margin to allow for a service call before performance is affected. This avoids downtime and trouble conditions.

Like all Signature Series detectors, the SIGA-DS2I is an intelligent device that gathers analog information from its optical smoke sensor, 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.

Standard Signature Series Features

- Advanced optical smoke sensing technology
- Uses existing wiring
- Ground fault detection by module
- Up to 250 devices per loop (125 detectors and 125 modules)
- Two levels of environmental compensation
- Two levels of dirty detector warning
- Two pre-alarm settings
- Two sensitivity settings
- Non-volatile memory
- Electronic addressing
- Identification of dirty or defective detectors
- Automatic day/night sensitivity adjustment
- Bicolor (green/red) status LED
- Standard, relay, fault isolator, and audible mounting bases
- Normal Polling Flash Disable Selection
- UL268 Listed

Application

The SIGA-DS2I 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 optical 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.
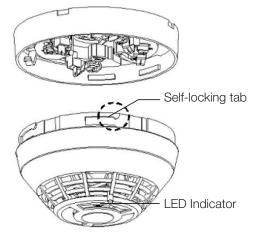
Sensing and reporting technology

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.

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.

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.

Device addressing is electronic, and can be set using a hand-held tool or panel configuration software.

Self-locking tab

LED Indicator

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 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.
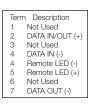
SIGA-AB4G - This sounder base is designed for use where localized or group alarm signaling is required. The SIGA-AB4G is compatible with all Signature Series smoke and heat detectors.
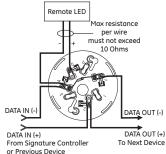
Typical Wiring

The detector mounting bases accept #18 AWG (0.75mm^2), #16 (1.0mm^2), #14 AWG (1.5mm^2), and #12 AWG (2.5mm^2) wire sizes.

Note: Sizes #16 AWG (1.0mm^2) and #18 AWG (0.75mm^2) are preferred for ease of installation.

Standard Detector Base, SIGA-SB, SIGA-SB4

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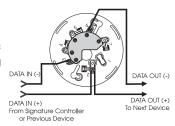
Remote LED

Max resistance per wire must not exceed 10 Ohms

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

DATA IN (-)

DATA OUT (-)

DATA IN (+)
From Signature Controller or Previous Device

DATA OUT (+)
To Next Device

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
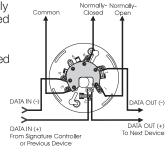- when the isolator next to the short closes, reopens within 10 msec.

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

DATA IN (-)

DATA OUT (-)

DATA IN (+)
From Signature Controller or Previous Device

DATA OUT (+)
To Next Device

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.
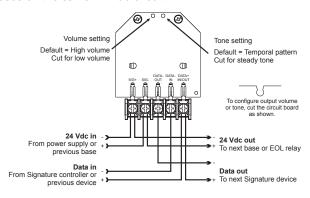
Common

Normally-Closed

Normally-Open

DATA IN (-)

DATA OUT (-)

DATA IN (+)
From Signature Controller or Previous Device

DATA OUT (+)
To Next Device

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, 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.

Volume setting
Default = High volume
Cut for low volume

Tone setting
Default = Temporal pattern
Cut for steady tone

SIG+ SIG- DATA- DATA- DATA+
      OUT   IN   IN/OUT

To configure output volume or tone, cut the circuit board as shown.

24 Vdc in
From power supply or previous base

24 Vdc out
To next base or EOL relay

Data in
From Signature controller or previous device

Data out
To next Signature device

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.

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.

Compatibility

Signature detectors are compatible with control panels using Signature Series loop controllers. SIGA-DS2I and SIGA-DH2I are supported on EST3 and EST3X loop controllers using 5.2 or greater.

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.

Page 3 of 4

DATA SHEET E85001-1009-I
Not to be used for installation purposes. Issue 1

Specifications

Operating voltage	15.20 to 19.95 VDC
Current	
Normal operating	51 µA
Alarm	68 µA
Stand-alone alarm	18 mA
Air velocity[1]	0 to 4,000 ft./min (0 to 20 m/s)
UL smoke sensitivity range	0.53 to 3.94 %/ft. (1.7 to 12.35 %/m) obscuration
Alarm Sensitivity Settings	Normal or Least Sensitive
Wall mounting	Distance from ceiling: 12 in. (305 mm) max.
Compatible bases	
Standard	SIGA-SB, SIGA-SB4
Relay	SIGA-RB, SIGA-RB4
Isolator	SIGA-IB, SIGA-IB4
Audible	SIGA-AB4G
Compatible detector testers	Testifire 1000, Testifire 2000
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Relative humidity	0 to 93% noncondensing
Storage temperature	-4 to 140°F (-20 to 60°C)
Environmental compensation	Automatic

[1]For duct installation, use a SIGA-DMP duct detector mounting plate.

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
SIGA-DS2I	Intelligent Optical Detector	0.4 (0.16)
Accessories		
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	Audible (Sounder) Base for Fire Detectors	0.3 (0.15)
SIGA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (.04)