



Technology that saves lives

# Intelligent Multisensor Smoke, Heat, CO Detector

## KI-OSHCD



### Overview

The Kidde Intelligent Optica Series KI-OSHCD smoke detector brings advanced optical (photoelectric) 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 environmental compensation helps reduce maintenance costs.

The KI-OSHCD 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 Kidde Intelligent Optica Series detectors, the KI-OSHCD is an intelligent device that gathers analog information from multiple optical sensors, converting this data into digital signals. Utilizing dual optical wavelengths combined with multiple detection angles, the KI-OSHCD differentiates particles that are not representative of actual smoke. Particle data is input into digital filters which feed a series of ratios removing signal patterns that are typical of nuisance sources, thus reducing unwanted alarms. To make an alarm decision, the detector's on-board microprocessor measures and analyzes all optical sensor readings and compares this information to preprogrammed settings. 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

- Multi-criteria optical smoke sensing technology
- Integrates advanced smoke with rate-of-rise heat sensing and life safety carbon monoxide detection
- Wide 0.5 to 4.36 %/ft. (1.6 to 13.6 %/m) smoke obscuration
- Integrated nuisance rejection reducing unwanted alarms from general cooking particulates
- Listed to UL 268 7th edition
- Sensor Markings Provide Easy Testing Identification
- Automatic device mapping
- Up To 250 Total Kidde Intelligent 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
- Automatic day/night sensitivity adjustment
- Bicolor (green/red) status LED
- Standard, relay, fault isolator, and audible mounting bases

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

## Application

### Smoke detection

The KI-OSHCD detects particles from a wide range of combustion sources and will trigger an alarm when smoke density in the chamber reaches preprogrammed level. Thanks to its high-performance reflective response technology, the smoke sensor responds quickly and reliably to a wide range of fire types, including both fast and slow burning fires fueled by combustibles typically found in modern multi-use buildings.

### Heat detection

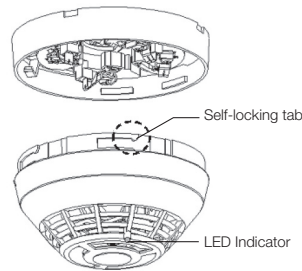
KI-OSHCD's on-board rate-of-rise heat sensor provides a 15°F (9°C) per minute function for the detection of fast-developing fires while also providing a 135°F (57.2°C) fixed detection threshold. The heat sensor monitors the temperature of the air and determines whether an alarm should be initiated.

### CO Detection

Monitored CO detection, such as that provided by the KI-OSHCD, 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

Kidde Intelligent 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

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 KI-OSHCD 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

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

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

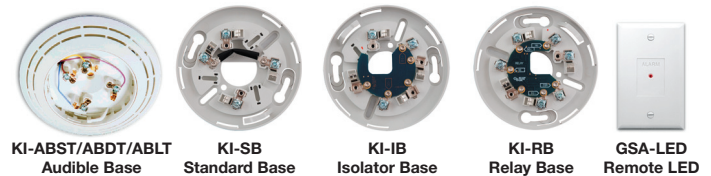
**Self-diagnostics and History Log** - Each Kidde Intelligent Series detector constantly runs self-checks to provide important maintenance information. The results of the self-check are automatically updated and permanently stored in the detector's non-volatile memory.

**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 KI-SB4, KI-RB4, and KI-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 KI-ABST mounts to a 4 inch square box only.



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

**GSA-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** - Kidde Intelligent Series sounder bases are designed for use where localized or group alarm signaling is required.

- **KI-ABDT** bases provide sounder capability to the KI-OSHCD when used with a GSA-T3T4 Temporal Pattern Generator to separate CO (TC4) and Fire (TC3) tone patterns.
- **KI-ABLT** bases provide 520 Hz low frequency sounder capability to the KI-OSHCD when used with a GSA-T3T4 Temporal Pattern Generator to separate CO (TC4) and Fire (TC3) tone patterns. The KI-ABLT is suitable for applications requiring low frequency audible tones.

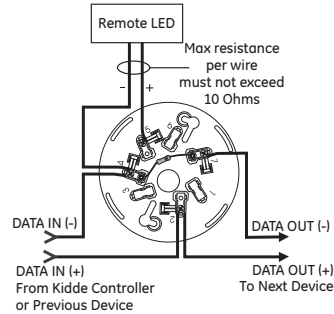
## Typical Wiring

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, KI-SB, KI-SB4

This is the basic mounting base for Kidde Intelligent Series detectors. The GSA-LED Remote LED is supported by this Base.

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 (-)

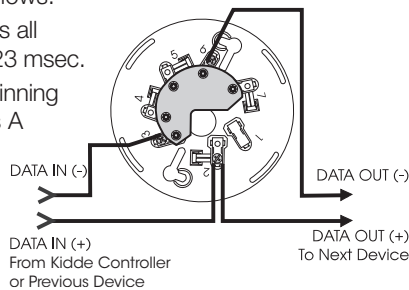


### Isolator Detector Base, KI-IB, KI-IB4

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 GSA-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.

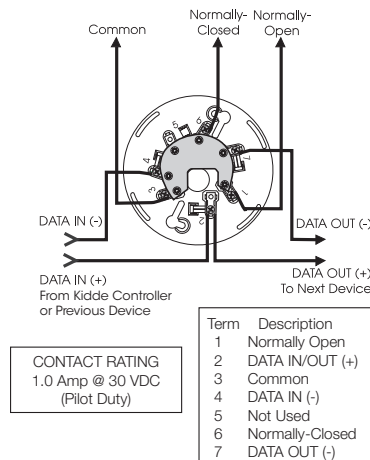


Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	DATA IN (-)
4	Not Used
5	Not Used
6	DATA OUT (-)
7	Not Used

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

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

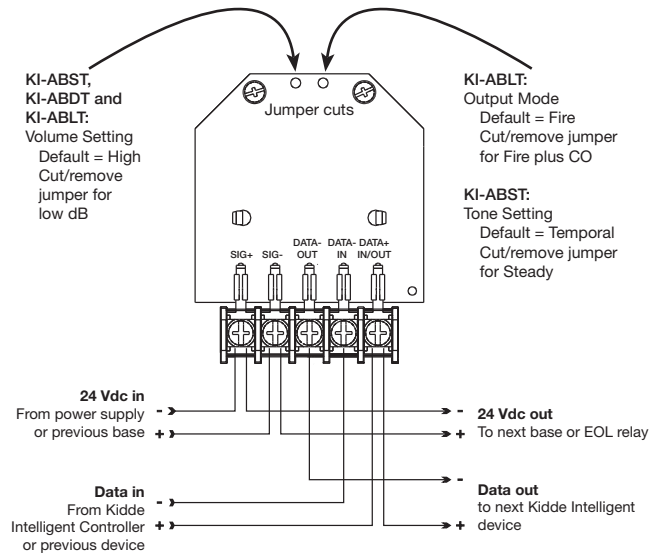
This base includes a relay. Normally Open or Normally Closed operation is selected during installation. The dry contact is rated for 1 amp (pilot duty) @ 30 Vdc. The relay's position is supervised to avoid accidentally jarring it out of position. The KI-RB can be operated as a control relay if programmed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



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

## Audible Sounder Bases, Fire Mode

ABST, ABDT, & ABLT sounder bases

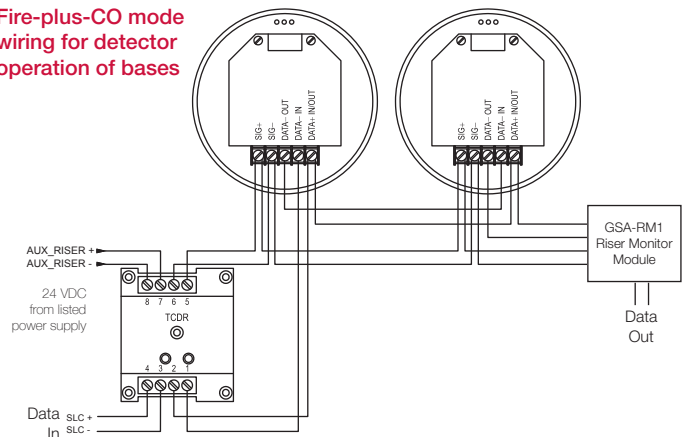


## Audible Sounder Bases, Fire-plus-CO Mode

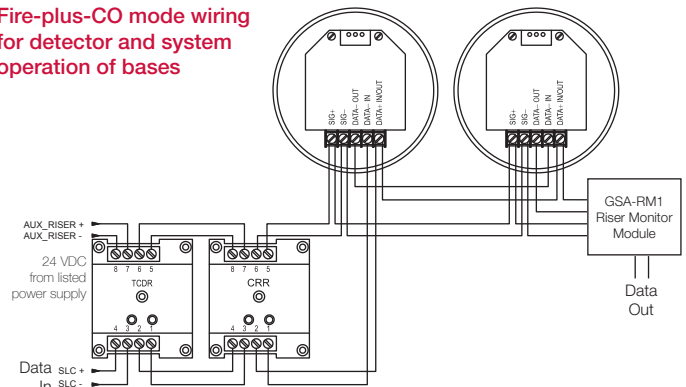
ABDT and ABLT sounder bases only.

These configurations require a GSA-T3T4 Temporal Pattern Generator to separate CO (TC4) and Fire (TC3) tone patterns.

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



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





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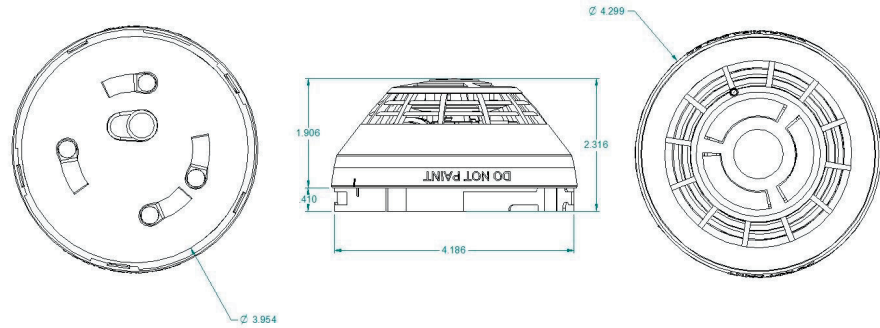
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## Dimensions



## Specifications

Operating voltage	15.20 to 19.95 VDC
Normal operating current	32 µA
Alarm current	45 µA
Smoke Sensitivity Range	UL/ULC: 0.5 to 4.36 %/ft. (1.6 to 13.6 %/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 per UL 2034, CAN/CSA 6.19	70 ppm 60 to 240 minutes; 150 ppm 10 to 50 minutes; 400 ppm 4 to 15 minutes
UL CO false alarm level per UL 2034, CAN/CSA 6.19	30 ppm 30 days 70 ppm 60 minutes
Agency Listings, KI-OSHCD	UL 268-7, UL 521, UL 2075, CSFM, FM. Evaluated to the CO alarm sensitivity limits of UL 2034. ULC Listed to CAN/ULC-S529, CAN/ULC-S530, CAN/CSA 6.19.

## Warnings & Cautions

- 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.
- The heat sensor in this device provides a source of supplemental information. The heat sensor by itself does not provide life safety protection.
- Install per NFPA 72 *National Fire Alarm and Signaling Code*, NFPA 720 *Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment*, and UL 2075 *Standard for Gas and Vapor Detectors and Sensors*.

## Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
KI-OSHCD	Multisensor Smoke, Heat, and CO Detector	0.4 (0.16)

Compatible Bases		
KI-SB	Detector Mounting Base - Standard	
KI-SB4	4-inch Detector Mounting Base c/w Trim Skirt	
KI-RB	Detector Mounting Base w/Relay	
KI-RB4	4-inch Detector Mounting Base w/Relay, c/w Trim Skirt	0.2 (.09)
KI-IB	Detector Mounting Base w/Fault Isolator	
KI-IB4	4-inch Detector Mounting Base w/ Fault Isolator, c/w Trim Skirt	
GSA-LED	Remote Alarm LED	
KI-ABLT	Low Frequency Audible (Sounder) Base for CO and Fire Detectors	0.3 (0.15)
KI-ABDT	Audible (Sounder) Base for CO and Fire Detectors	0.3 (0.15)
KI-ABST	Audible (Sounder) base for fire detectors	0.3 (0.15)
GSA-T3T4	Tone Generator for Detector Sounder Bases with CO mode	0.2 (0.1)
GSA-TS4	Trim Skirt (supplied with 4-inch bases)	0.1 (.04)
SIGA-RTA	Detector Removal Tool	
SIGA-VA	Detector Cleaning Tool	