![Kidde United Technologies logo]

ROTARY
Compatible with FX Series control panels
ADDRESSING

Technology that saves lives

Intelligent Multisensor Smoke and Heat Detector
KIR-PHD

Overview

The KIR-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 ensure reliability over the long-haul, while environmental compensation helps reduce maintenance costs.

The KIR-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 KIR Series detectors, the KIR-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
- Sensor Markings Provide Easy Testing Identification
- Up To 250 Total Addresses Per Loop
- Two levels of environmental compensation
- Two levels of dirty detector warning
- Five sensitivity settings
- Non-volatile memory
- Convenient rotary 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 KIR-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

KIR-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 KIR-PHD is compatible with FX Series intelligent panels.

Installation

KIR Series detector bases 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.

Self-locking tab

LED Indicator
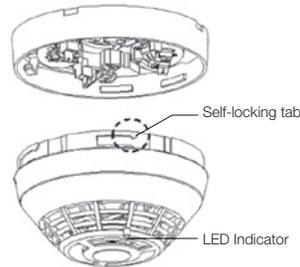
Testing & Maintenance

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 KIR-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.

Device Addressing

Programming is made easy through the rotary dials located on the back of the detector head. Use a screwdriver to adjust the TENS rotary switch (0 through 12) to set the 10s digit and the ONES rotary switch to set the digit 0 through 9. The control panel will identify any duplicate addresses.

Insert screwdriver here
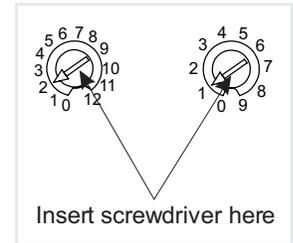
Example: for device address 21, set TENS rotary switch to 2 and set the ONES rotary switch to 1.

Sensing and reporting technology

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

Self-diagnostics and History Log - Each KIR 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.

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 GSA-TS4 Trim Skirt, which is used to cover the "mounting ears" on the base. Sounder bases mount to a 4 inch square boxes only.

KI-ABST/DT Audible Base	KI-SB Standard Base	KI-IB Isolator Base	KI-RB Relay Base	GSA-LED Remote LED

Remote 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.

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 - KIR Series sounder bases are designed for use where localized or group alarm signaling is required.
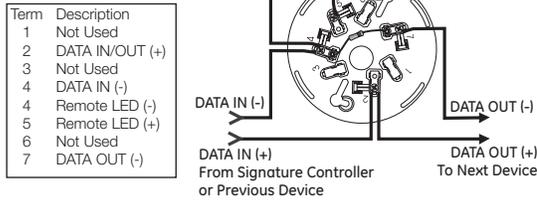
- **KI-ABST** bases provide sounder capability to KIR Series smoke and heat detectors.
- **KI-ABLT** bases provide 520 Hz low frequency sounder capability to KIR Series smoke and heat detectors. The KI-ABLT is suitable for applications requiring low frequency audible tones.

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, KI-SB, KI-SB4

This is the basic mounting base for Kidde KIR Series detectors. The GSA-LED Remote LED is supported by this 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 (+)
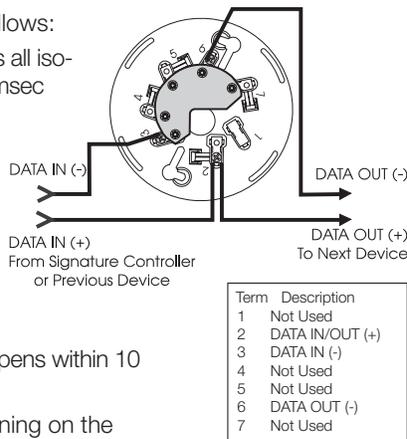From Signature Controller or Previous Device

DATA OUT (+)
To Next Device

Isolator Detector Base, 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.
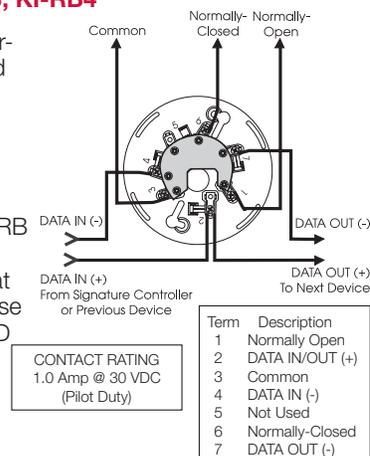
The isolator operates as follows:

- 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.

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

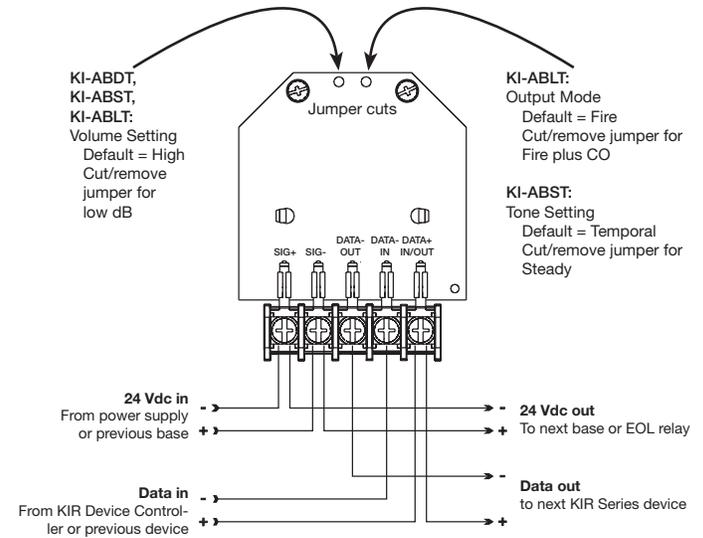| Term	Description
1	Not Used
2	DATA IN/OUT (+)
3	DATA IN (-)
4	Not Used
5	Not Used
6	DATA OUT (-)
7	Not Used

Relay Detector Base, 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.

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 Sounder Bases, Fire Mode

KI-ABST/DT sounder bases

KI-ABDT, KI-ABST, KI-ABLT:
Volume Setting
Default = High
Cut/remove jumper for low dB

Jumper cuts

KI-ABLT:
Output Mode
Default = Fire
Cut/remove jumper for Fire plus CO

KI-ABST:
Tone Setting
Default = Temporal
Cut/remove jumper for Steady

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

24 Vdc in
From power supply or previous base

24 Vdc out
To next base or EOL relay

Data in
From KIR Device Controller or previous device

Data out
to next KIR Series device

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. KIR Series devices can perform this test and the panel can generate a system sensitivity report.
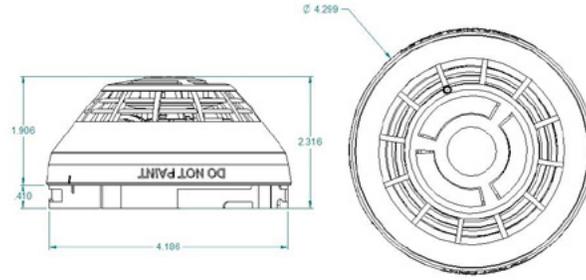
Dimensions

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

Ordering Information

Catalog Number	Description	Ship Wt. lbs (kg)
KIR-PHD	Intelligent Multisensor Smoke and Heat 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 (not for EN54 applications)	
KI-ABST	Audible (Sounder) Base for Fire Detectors	0.3 (0.15)
KI-ABLT	Low Frequency Audible (Sounder) Base Detectors	0.3 (0.15)
KI-DMP	Detector Mounting Plate	3.0 (1.4)
KI-RTA	Detector Removal Tool	
KI-VA	Detector Cleaning Tool	

DATA SHEET **K85001-0660**
Not to be used for installation purposes. **Issue 1**

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