

Technology that saves lives

# Intelligent/Addressable Detectors & Bases

Detectors: FX-PD, FX-PHD, FX-PDD, FX-HD

Bases: B4U, RB4U, IB4U, SB4U



## Overview

Kidde intelligent addressable detectors are meticulously engineered to deliver high-performance features, superb reliability, and unbeatable quality. With their highly stable design, these detectors resist air movement caused by heating and air conditioning, making them reliable performers ideally suited to modern building interiors.

The installation and maintenance advantages of Kidde intelligent detectors add value throughout their service life. Replacable optical chambers make maintenance a snap, while the head and terminal base design makes short work of installation and maintenance operations. A plastic breakout on the detector housing optionally prevents removal from the base except with a special tool.

A bright, easy-to-see single tri-color LED flashes green for normal, yellow for trouble, and red for alarm, thus eliminating much of the guesswork when responding to detector status.

- **The FX-PD** houses a replaceable optical sensing chamber that detects particles produced by smoke.
- **The FX-PHD** houses a replaceable optical sensing chamber that detects smoke, as well as a fixed-temperature sensor that detects heat. The detector analyzes data from both sensors to determine when an alarm is initiated.
- **The FX-PDD** duct detector prevents smoke from circulating throughout the building – see *data sheet K85001-0613*.
- **The FX-HD** is a selectable rate of rise or fixed-temperature heat detector with a fixed alarm threshold of 135° F (57° C).

FX-PD and FX-PHD optical detectors have drift compensation enabling continuous adjustment of their sensitivity to compensate

for changes in the environment such as the presence of dust, temperature, and humidity. These detectors issue a CleanMe® signal when they have reached their preset limit, reducing the chance of a nuisance alarm.

## Standard Features

- Optical smoke, heat, and multisensor models available
- World's only field replaceable optical chamber makes cleaning a snap
- Fast alarm reporting with microprocessor in each head also enabling use with any approved existing wiring
- Field-proven highly stable design
- Compatible standard, relay, isolator, and audible bases
- Head and terminal base-tamper resistant design for fast installation & security
- Self diagnostic capability with on-board storage of data
- Optical detectors feature automatic sensitivity drift compensation, as well as CleanMe® sensor maintenance alerts
- Listed to UL 268, CSFM, ULC-S529-02, UL 521, ULC-S530-M91, CAN/ULC S524-01, & ISO 9001 Standards
- Low profile, aesthetically-pleasing design
- Auto programming feature saves installation labor time
- Available alarm verification programming reduces chance of nuisance alarm

## Detector details & Application

### FX-PHD Optical/Fixed Temperature Detector



This intelligent digital device houses an optical sensing chamber that detects smoke, as well as a fixed-temperature sensor that detects heat. The detector analyzes data from both sensors to determine when an alarm is initiated. The FX-PHD is capable of performing comprehensive self-diagnostics and storing the data.

The detector continuously adjusts its sensitivity based on fluctuating environmental conditions such as the presence of dirt, humidity, or changes in temperature, and notifies the panel of any changes in sensor sensitivity. When the detector has adjusted its sensitivity to its maximum limit, it issues a dirty sensor warning, allowing enough of a margin for maintenance personnel to clean the detector before it goes into trouble condition. Cleaning is accomplished simply by replacing the detector's optical chamber.

The FX-PHD combines the suitability of optical sensing for slow burning fires with the sensitivity of fixed-temperature detection for fast flaming fires to arrive at a solution that responds reliably to the widest range of fire types. A sophisticated algorithm processes data from both sensors over time so that an alarm is only reported when conditions precisely match the signature of a fire. This eliminates the shortcomings of single-sensor optical and heat detection, and significantly reduces the risk of nuisance alarms.

### FX-HD Fixed Temperature Heat Detector



This intelligent digital device provides a 135°F (57°C) fixed-temperature heat sensor for the detection of heat due to fire. The heat sensor monitors the temperature of the air and determines whether an alarm should be initiated. The FX-HD also can be programmed as a rate-of-rise heat detector.

Thanks to its advanced thermistor technology, the FX-HD detector is ideal for sensing fast, flaming fires and for applications where smoke detection is inappropriate. The FX-HD is capable of performing comprehensive self-diagnostics and storing the results. It is particularly well-suited to areas such as laundries and industries where fluctuations in ambient temperature is expected.

### FX-PDD Intelligent Addressable Duct Detector



Duct detector prevents smoke from circulating throughout the building – see data sheet K85001-0613.

### FX-PD Optical Smoke Detector



This intelligent digital device uses an optical sensing chamber to detect smoke. The detector analyzes data gathered by the sensor to determine when an alarm is initiated. The FX-PD is capable of performing comprehensive self-diagnostics and storing the data.

The detector continuously adjusts its sensitivity based on fluctuating environmental conditions such as the presence of dirt, humidity, or changes in temperature, and notifies the Kidde intelligent control panel of any changes in sensor sensitivity. When the detector approaches its preset sensitivity threshold, it issues a dirty sensor warning, allowing enough of a margin for maintenance personnel to replace the optical chamber before it goes into trouble condition.

Thanks to its high-performance optical sensing chamber, the FX-PD 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.

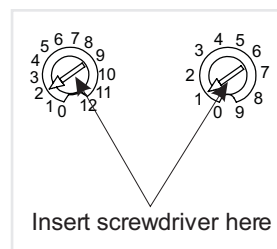
## LED Indication

The detector provides a tri-color LED that shows its status.

- Normal: Green LED flashes
- Alarm/active: Red LED flashes
- Trouble: Yellow LED flashes

## Module Addressing

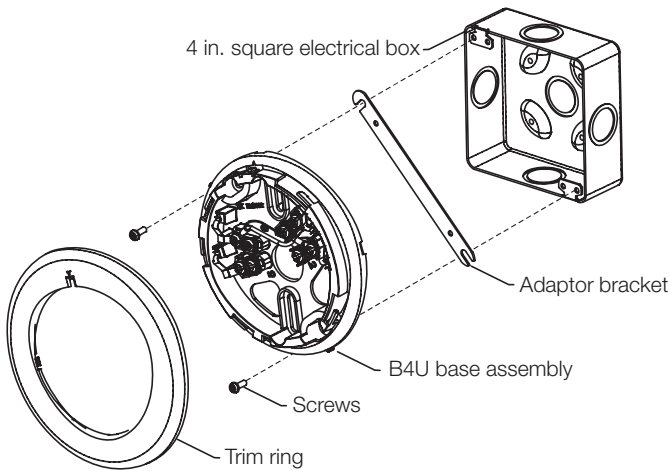
Programming is made easy through the rotary dials located on the back of the detector head. Use a screwdriver to adjust the TENS rotary switch (0 through 12) to set the 10s digit and the ONES rotary switch to set the digit 0 through 9. The FX panel will identify any duplicate addresses.



**Example:** device address 21, set TENS rotary switch to 2 and set the ONES rotary switch to 1.

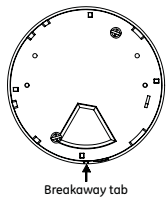
Refer to the Specifications Table for available address numbers.

# Detector Bases



Connect the detector to the base by rotating the detector clockwise until it snaps into the locked position.

The head can be removed by turning it counterclockwise.

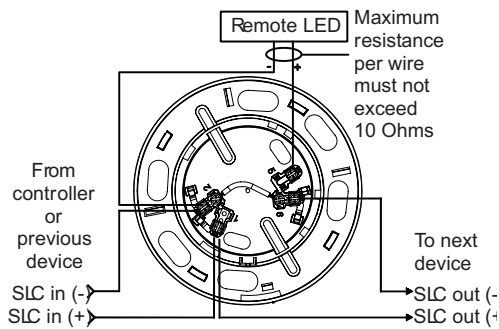


If the head must lock to the base, break away the locking tab shown below using a pair of pliers.

To then remove the detector head, insert a small screwdriver into the slot on the side of the base and press in while simultaneously turning the detector head counterclockwise.

## B4U Standard Base

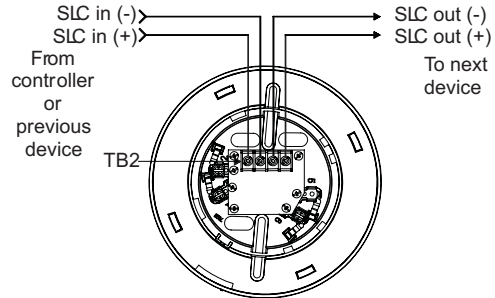
The B4U Digital Standard Detector Base features twist-and-lock detector installation and is compatible with with FX-Series intelligent digital detectors. The base does not require a separate address because it shares the address of the device it is connected to.



| Term | Description            | Term | Description    |
|------|------------------------|------|----------------|
| 1    | SLC in and SLC out (+) | 4    | Not used       |
| 2    | SLC in (-)             | 5    | Remote LED (+) |
| 3    | Not used               | 6    | SLC out (-)    |
| 3    | Not used               | 6    | Remote LED (-) |

## IB4U Isolator Detector Base

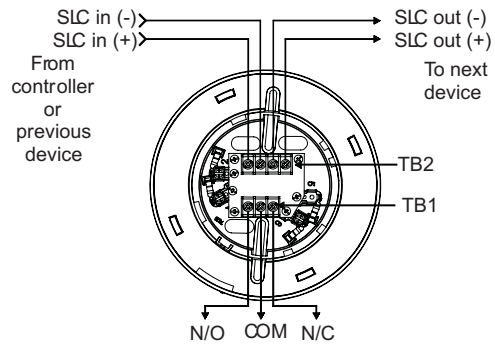
The IB4U Digital Isolator Detector Base is designed to prevent an entire communications loop from being disabled when a short circuit occurs. This is accomplished by isolating the part of the loop containing the short from the remainder of the circuit. These bases automatically restore the entire loop when the cause of the short circuit is corrected. The base can operate as an independent local alarm or as part of a zone.



| Term        | Description  |
|-------------|--------------|
| SLC in (+)  | DATA + (IN)  |
| SLC in (-)  | DATA - (IN)  |
| SLC out (+) | DATA + (OUT) |
| SLC out (-) | DATA - (OUT) |

## RB4U Relay Detector Base

The RB4U Digital Relay Detector Base is designed to add relay functionality to the listed compatible detectors. Form C latching relay contacts are included for the control of appliances such as door closers, fans, dampers, etc. The base can operate as an independent local alarm or as part of a zone.



| Term | Description           | Term        | Description  |
|------|-----------------------|-------------|--------------|
| TB1  | N/O (Normally open)   | SLC in (+)  | DATA + (IN)  |
|      | COM (Common)          | SLC in (-)  | DATA - (IN)  |
|      | N/C (Normally Closed) | SLC out (+) | DATA + (OUT) |
|      |                       | SLC out (-) | DATA - (OUT) |

### Notes

1. Bases do not require separate addresses because they share the address of the device it is connected to.
2. Wire in accordance with NFPA 70, National Electrical Code.
3. Be sure to observe the polarity of the terminals on the terminal block as shown in the diagram.
4. Break wire run at each terminal. Do not loop signaling circuit field wires around terminals.

### SB4U/SB4U-LF Audible (Sounder) Detector Bases

SB4U and SB4U-LF sounder bases are designed to add an audible output function to compatible detectors. These bases can operate as an independent local alarm, or as part of a zone or system alarm with synchronized audible output. The SB4U-LF model provides 520 Hz output suitable for applications requiring low frequency audible tones.

Depending on the system supporting the device loop, these bases can operate as follows:

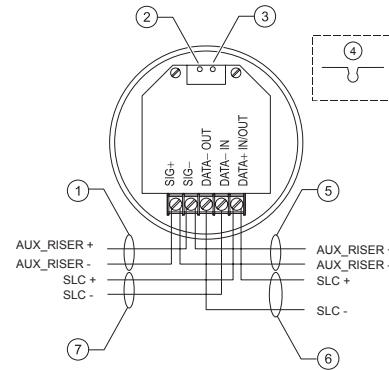
- They can follow the state of the device it supports
- They can be controlled and configured for other operating modes through programming.

The SB4U and SB4U-LF are field-configurable for output tone (steady or temporal) and output volume (low dBA or high dBA). Bases must be connected to a continuous voltage whether the output tone is set to steady or temporal. Bases do not require separate addresses because they share the address of the devices to which they are connected.

**AB4G-SB:** When using the AB4G-SB box, install a reinforcing plate at every knockout used. (Reinforcing plates are included with the box.) Remove the knockout first, then slide the reinforcing plate into the plastic housing. After the plate is in place, install the conduit connector and nut.



**Sleeping rooms:** In sleeping areas, the high dBA output and temporal tone settings must be used. However, if the FACP is producing the three-tone temporal evacuation signal, then the high dBA output and steady tone settings may be used. Some jurisdictions require the low frequency output provided by the SB4U-LF.



1. AUX-RISER IN (from power supply or previous base)
2. Volume setting: default is high volume; cut per item 4 for low volume
3. Tone setting: default is temporal pattern; cut per item 4 for steady tone
4. To configure output volume or tone, cut the circuit board as shown
5. AUX\_RISER OUT To next base or EOL relay
6. SLC OUT to next intelligent addressable device
7. SLC IN from intelligent addressable controller or previous device

## Specifications

| Detectors                                  | FX-PHD  | FX-PD   | FX-HD  |
|--|---|---|--|
| Air velocity                               | 0 to 5,000 ft/min (0 to 25.39 m/s)  |   | N/A  |
| Smoke sensitivity range                    | 0.67% - 3.66%   |   | N/A  |
| ULI fixed-temp alarm rating                | 135°F (57°C)  | N/A   | 135°F (57°C)   |
| ULC fixed-temp alarm rating                | 140°F (60°C)  |   | 140°F (60°C)   |
| Maximum Spacing                            | N/A   |   | 50 ft (15 m) centers   |
| Rate-of-Rise                               | N/A   |   | N/A  |
| Operating voltage                          | 15.2 to 19.95 VDC   |   |  |
| Normal operating current                   | 45 µA, average  |   |  |
| Alarm current                              | 45 µA, average  |   |  |
| Environmental compensation                 | Automatic   |   |  |
| Compatible bases                           | B4U Standard, RB4U Relay, IB4U Isolator, SB4U Audible   |   |  |
| Maximum distance from ceiling wall-mounted | 12 in (305 mm)  |   |  |
| Storage temperature                        | -4 to 140°F (-20 to 60°C)   |   |  |
| Operating environment                      | Temperature: 32 to 120°F (0 to 49°C); Humidity: 0 to 93% RH, noncondensing at 90°F (32°C)                 |   |  |
| Agency listings                            | Meets UL 268, ULC-S529-02, UL 521, ULC-S530-M91, and CAN/ULC S524-01. Manufactured to ISO 9001 standards. | Meets UL 268, ULC-S529-02, and CAN/ULC S524-01. Manufactured to ISO 9001 standards. | Meets UL 521, ULC-S530-M91, and CAN/ULC S524-01. Manufactured to ISO 9001 standards. |

| Bases                                      | B4U Standard Base  | IB4U Isolator Detector Base | RB4U Relay Detector Base |
|--|--|-----------------------------|--------------------------|
| Operating environment                      | 32 to 120°F (0 to 49°C)  |                             |                          |
| Temperature                                | 0 to 93% RH, noncondensing at 90°F ( 32°C)   |                             |                          |
| Humidity                                   | -4 to 140°F (-20 to 60°C)  |                             |                          |
| Storage temperature range                  | FX-PD, FX-PHD and FX-HD detectors  |                             |                          |
| Compatible detectors                       | North American 2-1/2 in. (64 mm) deep 2 gang box<br>Standard 4 in. square box 1-1/2 in. (38 mm) deep box |                             |                          |
| Compatible electrical boxes                | 12, 14, 16, or 18 AWG wire (2.5, 1.5, 1.0, or 0.75 sq. mm) (Sizes 16 and 18 AWG are preferred)           |                             |                          |
| Wire size                                  | 6.0 in. (152 mm)   |                             |                          |
| Base diameter                              | 2.08 in. (53 mm)   |                             | 2.57 in. (65 mm)         |
| Height from box (including detector)       | 12 in. (305 mm)  |                             |                          |
| Maximum distance from ceiling (wall mount) |  |                             |                          |

| Sounder Bases                 | SB4U  | SB4U-LF (low frequency model) |
|-------------------------------|---|-------------------------------|
| Riser operating voltage       | 16 to 33 VDC  |                               |
| Operating Current             | See tables above.   |                               |
| Supervisory Current           | DC = 1.46 mA  | DC = 6.0 mA                   |
| Default Output Volume         | High dBA  |                               |
| Default Tone                  | Temporal  |                               |
| Resonant frequency            | 3.2 kHz   | 520 Hz +/- 10%                |
| Temporal pattern              | 0.5 s on, 0.5 s off, 0.5 s on, 0.5 s off, 0.5 s on, 1.5 s off, repeat cycle   |                               |
| Compatible detectors          | Refer to Ordering Information table.  |                               |
| Compatible electrical boxes   | AB4G-SB surface box for audible base; 4 in. square by 2-1/8 in. (54 mm) deep box;<br>3-1/2 in. octagonal by 2-1/8 in. (54 mm) deep box; Standard European 100 mm <sup>2</sup> box |                               |
| Wire size                     | 12 to 18 AWG (0.75 to 2.50 mm <sup>2</sup> )  |                               |
| Base diameter                 | 6.8 in. (173 mm)  |                               |
| Base height from box          | 0.8 in. (21 mm)   | 1.4 in. (35 mm)               |
| Maximum distance from ceiling | Wall mount — 12 in. (305 mm)  |                               |
| Environment type              | Indoor only   |                               |
| Agency Listings               | UL, ULC, CSFM   | UL, CSFM                      |
| Operating environment         | 32 to 120°F (0 to 49°C)   |                               |
| Temperature                   | 0 to 93% noncondensing  |                               |
| Relative humidity             | -4 to 140°F (-20 to 60°C)   |                               |
| Storage temperature           |   |                               |

## Ordering Information

| Model       | Description   | Ship Wt.: lb. (kg) |
|-------------|---|--------------------|
| FX-PHD      | Intelligent Addressable Optical/Fixed Temperature Heat Detector         | 0.25 (0.11)        |
| FX-PD       | Intelligent Addressable Optical Smoke Detector                          | 0.25 (0.11)        |
| FX-HD       | Intelligent Addressable Fixed Temperature or Rate-of-rise Heat Detector | 0.25 (0.11)        |
| FX-PDD      | Intelligent Addressable Optical Duct Detector                           | 2.4 (1.1)          |
| B4U         | Standard Base   | 0.11 (0.05)        |
| RB4U        | Relay Detector Base   | 0.11 (0.05)        |
| IB4U        | Isolator Detector Base  | 0.11 (0.05)        |
| SB4U        | Audible (Sounder) Detector Base   | 0.11 (0.05)        |
| SB4U-LF     | Audible (Sounder) Detector Base, Low Frequency Model                    | 0.11 (0.05)        |
| AB4G-SB     | Surface Box for Audible Base  | 1.0 (0.45)         |
| RLED        | Remote alarm LED, use with standard base only                           | 0.2 (.09)          |
| 211-10PKG   | Replacement optical chambers (package of 10)                            | 0.25 (0.11)        |
| SM200-12PKG | Smoke! in a Can aerosol smoke detector test spray (package of 12)       |                    |



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