Intelligent/Addressable Detectors & Bases

Detectors: E-PD, E-PHD, E-HD, E-PDD
Bases: B4U, RB4U, IB4U, SB4U

Overview

Edwards 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 Edwards intelligent detectors add value throughout their service life. 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 bi-colored LED flashes green for normal operation, and red when in alarm, thus eliminating much of the guesswork when responding to detector status.

- **The E-PD** houses a replaceable optical sensing chamber that detects particles produced by smoke.

- **The E-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 E-PDD** duct detector prevents smoke from circulating throughout the building – *see data sheet S85001-0584.*

- **The E-HD** is a selectable rate of rise or fixed-temperature heat detector with a fixed alarm threshold of 135° F (57° C).

All detectors feature comprehensive self-diagnostic capability. E-PD and E-PHD optical detectors continuously adjust their sensitivity reference value to compensate for changes in the environment such as the presence of dirt, temperature, and humidity. These detectors issue a dirty sensor warning when they reach their preset limit, reducing the chance of a nuisance alarm..

Standard Features

- Optical smoke, heat, and multisensor models available

- Field replaceable optical chamber

- Highly stable design

- Compatible standard, relay, isolator, and audible bases

- Head and terminal base tamper resistent design for fast installation and security

- Self diagnostic capability with on-board storage of data

- Optical detectors feature automatic rate compensated sensitivity adjustment, as well as dirty sensor warnings

- Manufactured to strict international ISO 9001 standards

- Low profile aesthetically pleasing design

DATA SHEET **S85001-0592**

Detector details & Application

E-PHD Optical/Fixed Temperature Detector

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

The detector continuously adjusts its sensitivity reference value based on fluctuating environmental conditions such as the presence of dirt, humidity, or changes in temperature. When the detector has adjusted its sensitivity reference value 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.

The E-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.

E-HD Fixed Temperature Heat Detector

This intelligent analog device can be configured as either a 135F fixed temperature heat sensor, or a combination rate-of-rise with fixed temperature. The heat sensor monitors the temperature of the air and determines whether an alarm should be initiated. The E-HD is capable of performing comprehensive self-diagnostics and storing the data.

Thanks to its advanced thermistor technology, the E-HD detector is ideal for sensing fast, flaming fires and for applications where smoke detection is inappropriate. It is particularly well-suited to areas such as laundries and industries where fluctuations in ambient temperature is expected.

E-PDD Intelligent Addressable Duct Detector
Duct detector prevents smoke from circulating throughout the building – *see data sheet S85001-0613.*

E-PD Optical Smoke Detector

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

The detector continuously adjusts its sensitivity reference value based on fluctuating environmental conditions such as the presence of dirt, humidity, or changes in temperature. When the detector approaches its preset sensitivity reference value 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 E-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. The E-PD detects extremely small particles and triggers an alarm at the first sign of smoke.
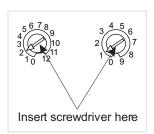
LED Indication

The detector provides a tri-color LED that shows its status.
- Normal: Green LED flashes
- Alarm/active: Red LED flashes
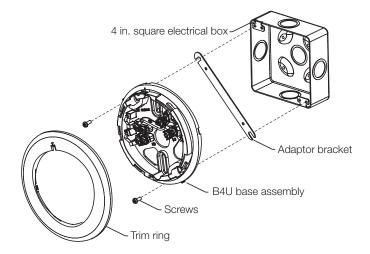
Device Addressing

Use a screwdriver to adjust the two rotary switches on the front of the module. Set the TENS rotary switch (0 through 12) for the 10s and 100s digit and the ONES rotary switch for the 0 through 9 digit.

Insert screwdriver here

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

4 in. square electrical box

Adaptor bracket

B4U base assembly

Screws

Trim ring

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

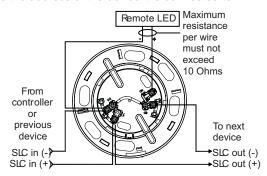The head can be removed by turning it counterclockwise.

Breakaway tab

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.

IB4U Isolator Detector Base

The IB4U Isolator Detector Base is designed to prevent an entire Class A 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.

SLC in (-)
SLC in (+)
From controller or previous device
TB2

SLC out (-)
SLC out (+)
To next device

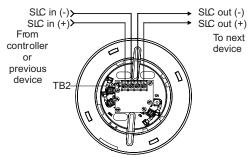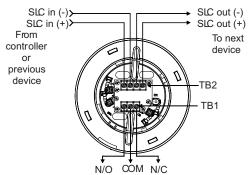| Term	Description
SLC in (+)	DATA + (IN)
SLC in (-)	DATA - (IN)
SLC out (+)	DATA + (OUT)
SLC out (-)	DATA - (OUT)

B4U Standard Base

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

Remote LED

Maximum resistance per wire must not exceed 10 Ohms

From controller or previous device

SLC in (-)
SLC in (+)

To next device

SLC out (-)
SLC out (+)

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 (-)

RB4U Relay Detector Base

The RB4U 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 relay base will activate when the detector plugged into it alarms, and can also be programmed to activate from any other input device on the system.

SLC in (-)
SLC in (+)
From controller or previous device

SLC out (-)
SLC out (+)
To next device

TB2
TB1

N/O COM N/C

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.
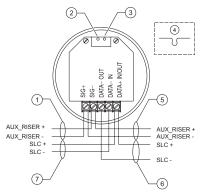4. Break wire run at each terminal. Do not loop signaling circuit field wires around terminals.

SB4U Audible (Sounder) Detector Base

The SB4U is designed to add an audible output function to compatible detectors. The base can operate as an independent local alarm, or as part of a zone or system alarm with synchronized audible output.

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

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

The SB4U is field-configurable for output tone (steady or temporal) and output volume (low dBA or high dBA). The base must be connected to a continuous voltage whether the output tone is set to steady or temporal. The base does not require a separate address because it shares the address of the device it is connected to.

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

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.

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.

Specifications, SB4U Audible Detector Base

Operating voltage	24 VDC or 24 VFWR, nominal
Operating current	See Table 1
Supervisory current	DC = 1.46 mA, FWR = 2.15 mA
Default settings	
Output volume	High dBA
Output tone	Temporal pattern
Sound level output	See Table 2
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
Operating environment	
Temperature	32 to 120°F (0 to 49°C)
Humidity	0 to 93% RH, noncondensing at 90°F (32°C)
Storage temperature	-4 to 140°F (-20 to 60°C)
Compatible detectors	E-PD, E-PHD, and E-HD detectors
Compatible electrical boxes	North American 2-1/2 in. (64 mm) deep 2 gang box Standard 4" square box 1-1/2 in. (38 mm) deep box
Wire size	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)
Base diameter	6.0 in. (152 mm)
Height from box (including detector)	2.58 in. (66 mm)
Maximum distance from ceiling (wall mount)	12 in. (305 mm)

Operating current in mA (RMS)

Voltage	Low dBA	High dBA
16 VDC	17	28
24 VDC	24	41
33 VDC	31	52
16 VFWR	41	48
24 VFWR	51	60
33 VFWR	60	66

VDC = Volts direct current, regulated and filtered
VFWR = Volts full wave rectified

Sound level output (dBA)

Signal	Voltage	Low dBA	High dBA
Reverberant room per UL 464 [1]			
Temporal	16 VDC	71.3	77.2
	24 VDC	75.0	79.8
	33 VDC	77.7	81.5
Steady	16 VDC	75.8	80.5
	24 VDC	79.2	84.1
	33 VDC	82.0	86.0
Reverberant room per UL 268 [2]			
Temporal	16 VDC	77.3	83.2
	24 VDC	81.0	85.8
	33 VDC	83.7	87.5
Steady	16 VDC	81.8	86.5
	24 VDC	85.2	90.1
	33 VDC	88.0	92.0

dBA = Decibels, A-weighted
[1] For UL 464 applications, low dBA settings are for private mode only
[2] For UL268 applications, high setting must be used for evacuation

Specifications, Detectors

	E-PHD	E-PD	E-HD
Air velocity	0 to 5,000 ft/min (0 to 25.39 m/s)		N/A
Smoke sensitivity range	0.67% - 3.66%		
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
Operating voltage	15.2 to 19.95 VDC		
Normal operating current	45 µA, average		
Alarm current			
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, NFPA 72, and CAN/ULC S524-01	Meets UL 268, ULC-S529-02, NFPA 72, and CAN/ULC S524-01	Meets UL 521, ULC-S530-M91, NFPA 72, and CAN/ULC S524-01

Specifications, Bases

	B4U Standard Base	IB4U Isolator Detector Base	RB4U Relay Detector Base
Operating environment Temperature Humidity	32 to 120°F (0 to 49°C) 0 to 93% RH, noncondensing at 90°F (32°C)		
Storage temperature range	-4 to 140°F (-20 to 60°C)		
Compatible detectors	E-PD, E-PHD, and E-HD detectors		
Compatible electrical boxes	North American 2-1/2 in. (64 mm) deep 2 gang box Standard 4 in. square box 1-1/2 in. (38 mm) deep box		
Wire size	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)		
Base diameter	6.0 in. (152 mm)		
Height from box (including detector)	2.08 in. (53 mm)	2.57 in. (65 mm)	
Maximum distance from ceiling (wall mount)	12 in. (305 mm)		

Ordering Information

Model	Description	Ship Wt.: lb. (kg)
E-PHD	Intelligent Analog Optical/Fixed Temperature Detector	0.25 (0.11)
E-PD	Intelligent Analog Optical Smoke Detector	0.25 (0.11)
E-HD	Intelligent Analog Fixed Temperature Heat Detector	0.25 (0.11)
E-PDD	Intelligent Duct Detector (see Data Sheet S85001-0613)	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)
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)

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DATA SHEET S85001-0592
Not to be used for installation purposes. **Issue 2**

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