## Features

**TrueAlarm analog sensing provides:**

- Digital transmission of analog sensor values via IDNet or MAPNET II two-wire communications

**For use with the following Simplex products:**

- 4007ES, 4010, 4010ES, 4100ES, and 4100U Series control panels; and 4008 Series control panels with reduced feature set (refer to data sheet *S4008-0001* for details)
- 4020, 4100, and 4120 Series control panels, Universal Transponders, and 2120 TrueAlarm CDTs equipped for MAPNET II operation

**Fire alarm control panel provides:**

- Peak value logging allowing accurate analysis of each sensor for individual sensitivity selection
- Sensitivity monitoring satisfying NFPA 72 sensitivity testing requirements; automatic individual sensor calibration check verifies sensor integrity
- Automatic environmental compensation, multi-stage alarm operation, and display of sensitivity directly in percent per foot
- Ability to display and print detailed sensor information in plain English language

**Photoelectric smoke sensors provide:**

- Sensitivity levels from 0.2% to 3.1%. See TrueAlarm Sensors for more information.

**Heat sensors provide:**

- Three fixed temperature sensing thresholds: 135° F, 155° F and 190° F
- Rate-of-rise temperature sensing
- Utility temperature sensing
- Listed to UL 521 and ULC-S530

**General features:**

- Operation is for ceiling or wall mounting
- Listed to UL 268 and ULC-S529
- NEMA 1 rated. See TrueAlarm Analog Sensing Product Selection Chart for more information.
- Louvered smoke sensor design enhances smoke capture by directing flow to chamber; entrance areas are minimally visible when ceiling mounted
- Designed for EMI compatibility
- Magnetic test feature is provided
- Different bases are available to support a supervised or unsupervised output relay, and/or a remote LED alarm indicator

**Additional base reference:**

- For isolator bases, refer to data sheet S4098-0025
- For sounder bases, refer to data sheet S4098-0028
- For photo/heat sensors, refer to data sheet S4098-0024 (single address) and S4098-0033 (dual address)

## Description

**Digital Communication of Analog Sensing**

TrueAlarm analog sensors provide an analog measurement digitally communicated to the host control panel using Simplex addressable communications. At the control panel, the data is analyzed and an average value is determined and stored. An alarm or other abnormal condition is determined by comparing the sensor's present value against its average value and time.

**Intelligent Data Evaluation**

Monitoring each sensor's average value provides a continuously shifting reference point. This software filtering process compensates for environmental factors (dust, dirt, etc.) and component aging, providing an accurate reference for evaluating new activity. With this filtering, there is a significant reduction in the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

**Control Panel Selection**

Peak activity per sensor is stored to assist in evaluating specific locations. The alarm set point for each TrueAlarm sensor is determined at the host control panel, selectable as more or less sensitive as the individual application requires.

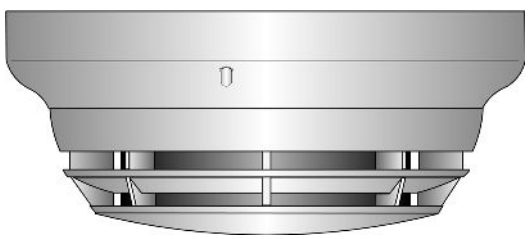


**Figure 1: 4098-9714 TrueAlarm Photoelectric Sensor Mounted in Base**

**Timed/Multi-Stage Selection**

Sensor alarm set points can be programmed for timed automatic sensitivity selection (such as more sensitive at night, less sensitive during day). Control panel programming can also provide multi-stage operation per sensor.

**Sensor Alarm and Trouble LED Indication**

Each sensor base's LED pulses to indicate communications with the panel. If the control panel determines a sensor is in alarm, or is dirty or has some other type of trouble, the details are annunciated at the control panel and that sensor base's LED will be turned on steadily. During a system alarm, the control panel will control the LEDs such that an LED indicating a trouble will return to pulsing to help identify the alarmed sensors.

## TrueAlarm Sensor Bases and Accessories

### Sensor Base Features

**Base mounted address selection:**

- Address remains with its programmed location
- Accessible from front (DIP switch under sensor)

**General features:**

- Automatic identification provides default sensitivity when substituting sensor types
- Integral red LED for power-on (pulsing), or alarm or trouble (steady on)
- Locking anti-tamper design mounts on standard outlet box
- Magnetically operated functional test

* These products have been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listings 7272-0026:218, 7271-0026:231, 7270-0026:216, and 7300-0026:217 for allowable values and/or conditions concerning material presented in this document. Additional listings may be applicable, contact your local Simplex product supplier for the latest status. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Fire Protection Products.



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## Sensor Bases

**4098-9792, Standard Sensor Base**

**4098-9789, Sensor Base with wired connections for:**

- 2098-9808 Remote LED alarm indicator or 4098-9822 relay (relay is unsupervised and requires separate 24 VDC)

**Supervised Relay Bases** (not compatible with 2120 CDT):

- **4098-9791, 4-Wire Sensor Base,** use with remote or locally mounted 2098-9737 relay, requires separate 24 VDC
- **4098-9780, 2-Wire Sensor Base,** use with remote or locally mounted 4098-9860 relay, no separate power required
- Supervised relay operation is programmable and can be manually operated from control panel
- Includes wired connections for remote LED alarm indicator **or** 4098-9822 relay (relay is unsupervised and requires separate 24 VDC)

## Sensor Base Options

**2098-9737, Remote or local mount supervised relay:**

- DPDT contacts for resistive/suppressed loads, power limited rating of 3 A @ 28 VDC; non-power limited rating of 3 A @ 120 VAC (requires external 24 VDC coil power)

**4098-9860, Remote or local mount supervised relay:**

- SPDT dry contacts, power limited rating of 2 A @ 30 VDC, resistive; non-power limited rating of 0.5 A @ 125 VAC, resistive

**4098-9822, LED Annunciation Relay:**

- Activates when base LED is on steady, indicating local alarm or trouble
- DPDT contacts for resistive/suppressed loads, power limited rating of 2 A @ 28 VDC; non-power limited rating of 1/2 A @ 120 VAC, (requires external 24 VDC coil power)

**4098-9832, Adapter plate:**

- Required for surface or semi-flush mounting to 4" square electrical box and for surface mounting to 4" octagonal box
- Can be used for cosmetic retrofitting to existing 6-3/8" diameter base product

**2098-9808, Remote red led Alarm Indicator:**

- Mounts on single gang box (shown in illustration)




**Figure 2: Remote red LED Alarm Indicator**

## Description

TrueAlarm sensor bases contain integral addressable electronics that constantly monitor the status of the detachable photoelectric or heat sensors. Each sensor's output is digitized and transmitted to the system fire alarm control panel every four seconds.

Since TrueAlarm sensors use the same base, different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing them to be disabled), heat sensors may be installed without reprogramming the control panel. Although the control panel will indicate an incorrect sensor type, the heat sensor will operate at a default sensitivity providing heat detection for building protection at that location.

## Mounting Reference

**Electrical Box Requirements:** (boxes are by others)

**Without relay in the box:** 4" octagonal or 4" square, 1-1/2" deep; single gang, 2" deep

**With relay in the box :** 4" octagonal or 4" square, 1-1/2" deep, with 1-1/2" extension ring

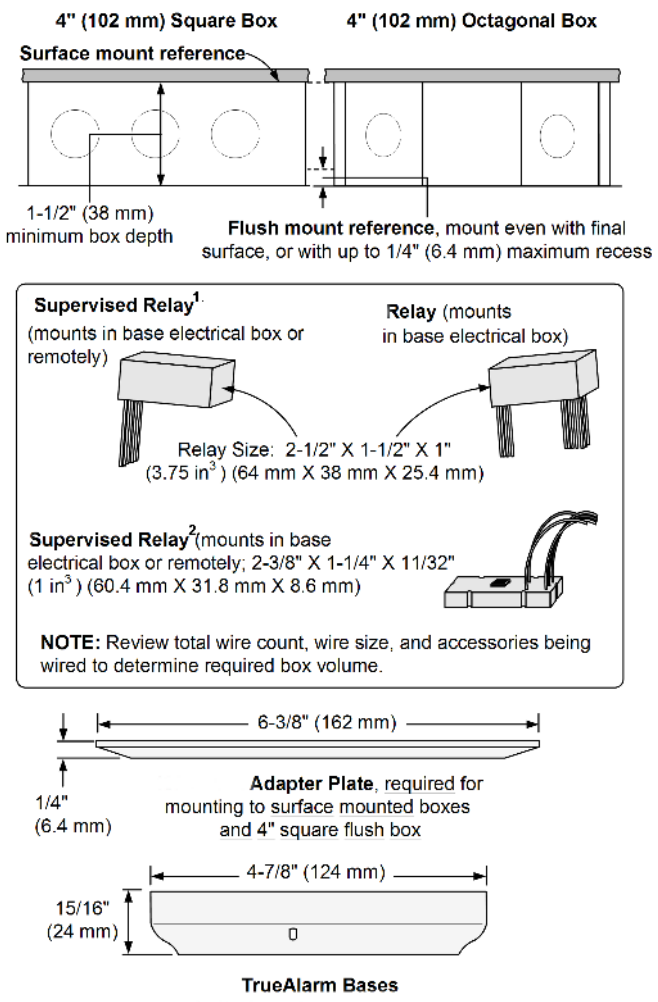



**Figure 3: Mounting Reference**

**Table 1: Product mounting - SKU reference**

| Product | SKU |
|---|---|
| Relay | 4098-9822 |
| Supervised Relay | 1. 2098-9739<br>2. 4098-9860 |
| Adapter plate | 4098-9832 |
| TrueAlarm Bases | 4098-9780, 4098-9789, 4098-9791, 4098-9792 |



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## TrueAlarm Sensors

### Features

- Sealed against rear air flow entry
- Interchangeable mounting
- EMI/RFI shielded electronics
- Heat sensors:
  - Selectable rate compensated, fixed temperature sensing with or without rate-of-rise operation
  - Rated spacing distance between sensors:

| Fixed Temp. Setting | UL & ULC Spacing | FM Spacing, Either Fixed Temperature Setting |
|---|---|---|
| 135° F (57.2° C)<br>190° F (88° C)* | 60 ft x 60 ft (18.3 m) | 20 ft x 20 ft (6.1 m) for fixed temperature only; **RTI = Quick** |
| 155° F (68° C) | 40 ft x 40 ft (12.2 m) | 50 ft x 50 ft (15.2 m) for fixed temperature with either rate-of-rise selection; **RTI = Ultra Fast** |

**Note:** *190° F (88° C) ratings apply only to the 4098-9734 sensor.

**Smoke Sensors:**

- Photoelectric technology sensing
- 360° smoke entry for optimum response
- Built-in insect screens

### 4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed LED light source and a silicon photodiode receiver to deliver consistent and accurate low power smoke sensing. Three user selectable sensitivities for special applications are available for each individual sensor, 0.2%, 0.5%, and 1% per foot. Standard sensitivity is 1.25% to 3.1% per foot. The fire alarm control panel runs an algorithm that can vary the sensitivity for normal applications between 1.25% and 3.1% per foot.

**Note:** Fixed sensitivity settings higher than 1.0% per foot are not UL268 7th Edition compliant.

The sensor head design provides 360° smoke entry for optimum response to smoke from any direction. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.

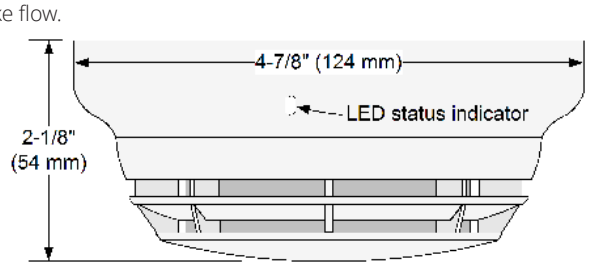



**Figure 4: 4098-9714 Photoelectric Sensor with Base**

### 4098-9733 and 4098-9734 Heat Sensors

TrueAlarm heat sensors are self-restoring and provide rate compensated, fixed temperature sensing, selectable with or without rate-of-rise temperature sensing. Due to its small thermal mass, the sensor accurately and quickly measures the local temperature for analysis at the fire alarm control panel.

Rate-of-rise temperature detection is selectable at the control panel for either 15° F (8.3° C) or 20° F (11.1° C) per minute. Fixed temperature sensing is independent of rate-of-rise sensing and programmable to operate at 135° F (57.2° C) or 155° F (68° C). The 4098-9734 sensor provides an additional 190° F (88° C) set point.

In a slow developing fire, the temperature may not increase rapidly enough to operate the rate-of-rise feature. However, an alarm will be initiated when the temperature reaches its rated fixed temperature setting.

TrueAlarm heat sensors can be programmed as a utility device to monitor for temperature extremes in the range from 32° F to 155° F (0° C to 68° C). This feature can provide freeze warnings or alert to HVAC system problems. ***Refer to specific panels for availability.***

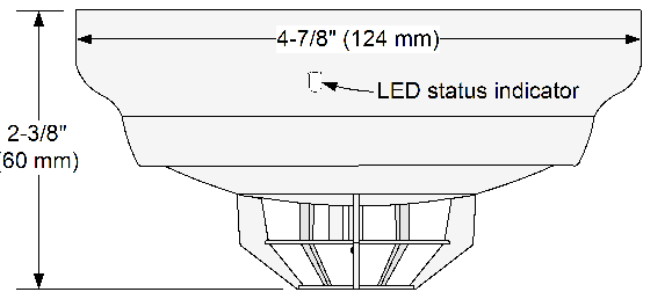



**Figure 5: 4098-9733 Heat Sensor with Base**

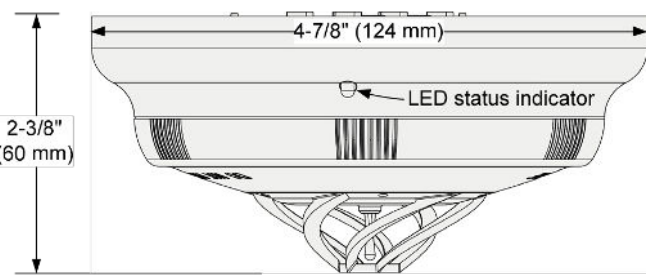



**Figure 6: 4098-9734 High Temperature Heat Sensor with Base**

**WARNING:** In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.

### Application Reference

Sensor locations should be determined only after careful consideration of the physical layout and contents of the area to be protected. Refer to NFPA 72, ***the National Fire Alarm and Signaling Code***. On smooth ceilings, smoke sensor spacing of 30 ft (9.1 m) may be used as a guide.*

* For detailed application information including sensitivity selection, refer to Installation Instructions 574-709.



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## TrueAlarm Analog Sensing Product Selection Chart

**Table 2: TrueAlarm Sensor Bases (for use with Sensors 4098-9714 and 4098-9733)**

| SKU | Color | Description | Compatibility | Mounting Requirements |
|---|---|---|---|---|
| 4098-9792 | White | Standard Sensor Base | No options | 4 in. octagonal or 4 in. square box, 1 1/2 in. min. depth; or single gang box, 2 in. min. depth |
| 4098-9776 | Black | | | |
| 4098-9789 | White | Sensor Base with connections for Remote LED Alarm Indicator **or** Unsupervised Relay | 2098-9808 Remote Alarm Indicator **or** 4098-9822 Unsupervised Relay | 4 in. octagonal or 4 in. square box<br>**Note:**<br>Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference.<br>** 4098-9791 and 4098-9780 are NOT compatible with the 2120 CDT |
| 4098-9789<br>4098-9789IND<br>4098-9789IND | White | | | |
| 4098-9775 | Black | | | |
| 4098-9791 ** | White | 4-Wire Sensor Supervised Relay Base with connections for LED Indicator **or** Unsupervised Relay | 2098-9737 Supervised Remote Relay | |
| | | | 2098-9808 Remote Alarm Indicator **or** 4098-9822 Unsupervised Relay | |
| 4098-9780** | White | 2-Wire Sensor Supervised Relay Base with connections for LED Indicator **or** Unsupervised Relay | 4098-9860 Supervised Remote Relay | |
| | | | 2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay | |

**Note:** * SKU numbers ending in IND are assembled in India.

Refer to Application Manual 574-709 and Installation Instructions 574-707 for additional information.

**Table 3: TrueAlarm Sensors**

| SKU | Color | Description | Compatibility | Mounting Requirements |
|---|---|---|---|---|
| 4098-9714 [1] | White | Photoelectric Smoke Sensor | Bases 4098-9775, 4098-9776, 4098-9792, 4098-9789, 4098-9791, and 4098-9780 | Refer to base requirements |
| 4098-9714 IND [1] | | | | |
| 4098-9774 [1] | Black | | | |
| 4098-9733 [1] | White | Heat Sensor | | |
| 4098-9778 [1] | Black | | | |
| 4098-9734 [1] | White | High Temperature Heat Sensor | | |

[1]NEMA 1 rated.

**Table 4: TrueAlarm Sensor/Base Accessories**

| SKU | Description | Compatibility | Mounting Requirements |
|---|---|---|---|
| 2098-9737 | Supervised Relay, mounts remote or in base electrical box | For use with 4098-9791 base | **Remote Mounting** requires 4 in. octagonal or 4 in. square box, 1 1/2 in. minimum depth<br>**Base Mounting** requires 4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring |
| 4098-9860 | Supervised Relay, mounts remote or in base electrical box | For use with 4098-9780 base | |
| 2098-9808 [1] | Remote Red LED Alarm Indicator on single gang stainless steel plate | Bases 4098-9789, 4098-9791, and 4098-9780 | Single gang box, 1 1/2 in. minimum depth |
| 4098-9822 | Unsupervised Relay, tracks base led status; Note: Mounts only in base electrical box | Bases 4098-9789, 4098-9791, and 4098-9780 | 4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring |
| 4098-9832 | Adapter Plate | Bases 4098-9792, 4098-9789, 4098-9791, and 4098-9780 | **Required** for surface or semi-flush mounted 4 in. square box and for surface mounted 4 in. octagonal box |

[1] NEMA 1 rated.

## Specifications

**Table 5: General operating specifications**

| Specification | | Rating |
|---|---|---|
| Communications and sensor supervisory power | | IDNet or MAPNET II communications, auto-selected, 1 address per base |
| Communications connections | | Screw terminals for in/out wiring, 18 to 14 AWG (0.82 $mm^2$ to 2.08 $mm^2$) |
| Remote LED alarm indicator current | | 1 mA typical, no impact to alarm current |
| Remote LED alarm indicator and relay connections | | Color coded wire leads, 18 AWG (0.82 $mm^2$ ) |
| UL listed operating temperature range | | 32°F to 100°F (0°C to 38°C) |
| Operating temperature range | with 4098-9733 Heat Sensor | 32°F to 122°F (0°C to 50°C) |
| | with 4098-9714 Smoke Sensor | 15°F to 122°F (-9°C to 50°C) |
| | with 4098-9734 Heat Sensor | 32°F to 150°F (0°C to 66°C) |



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**Table 5: General operating specifications**

| Specification | Rating |
|---|---|
| Storage temperature range | 0°F to 140°F (-18°C to 60°C) |
| Humidity range | 10% to 95% RH |
| 4098-9714 smoke sensor air velocity rating | 0-4000 ft/min (0-1220 m/min) |
| Housing color | Frost white or black |

**Table 6: 4098-9791 Base with Supervised Remote Relay 2098-9737**

| Specification | Rating |
|---|---|
| Externally supplied relay coil voltage | 18 VDC to 32 VDC (nominal 24 VDC) |
| Supervisory current | 270 µA, from 24 VDC supply |
| Alarm current with 2098-9737 relay | 28 mA, from 24 VDC supply |
| **Note:** See Sensor Base Options for contact ratings. | |

**Table 7: 4098-9780 Base with Supervised Remote Relay 4098-9860**

| Specification | Rating |
|---|---|
| Power | Supplied from communications |

**Table 8: 4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789, 4098-9791, and 4098-9780**

| Specification | Rating |
|---|---|
| Externally supplied relay coil voltage | 18 VDC to 32 VDC (nominal 24 VDC) |
| Supervisory current | Supplied from communications |
| Alarm current | 13 mA from separate 24 VDC supply |
| **Note:** See Sensor Base Options for contact ratings. | |



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