

Features

TrueAlarm analog sensing provides the following features

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

For use with the following Simplex products

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

Fire alarm control unit provides the following features

- Peak value logging with accurate analysis of each sensor for individual sensitivity selection
- Sensitivity monitoring meets 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 for each foot
- Display and print detailed sensor information in plain English language

Photoelectric smoke sensors provide the following features

- Sensitivity levels from 0.2% to 3.1%. See [TrueAlarm sensors](#) for more information.

Heat sensors have these features

- 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

- Ceiling or wall mounting
- Listed to UL 268 7th Edition 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 testing
- Different bases support a supervised or unsupervised output relay, 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. The control unit analyses the data, determines an

average value and stores it. Comparing the sensor's present value against its average value and time, determines an alarm or other abnormal condition.

Intelligent data evaluation

Monitoring each sensor's average value provides a continuously shifting reference point. A software filtering process compensates for environmental factors, such as dust and dirt, and component aging, to provide an accurate reference for evaluating new activity. This filtering reduces the probability of false or nuisance alarms caused by shifts in sensitivity, either up or down.

Control unit selection

The control unit stores peak activity for each sensor to assist in evaluating specific locations. The host control unit determines the alarm set point for each TrueAlarm sensor, selectable as more or less sensitive as the individual application requires.

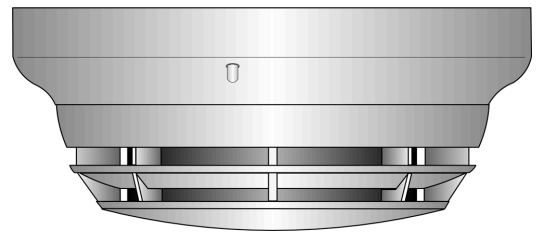


Figure 1: 4098-9714 TrueAlarm photoelectric sensor mounted in base

Timed/multi-stage selection

You can program the sensor alarm set points for timed automatic sensitivity selection, such as more sensitive at night, less sensitive during day. You can program the control unit to provide multi-stage operation for each sensor.

Sensor alarm and trouble LED indication

Each sensor base's LED pulses to indicate communications with the unit. If the control unit determines a sensor is in alarm, is dirty, or has some other type of trouble, the details are annunciated at the control unit and the sensor's base LED will turn on steadily. During a system alarm, the control unit 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.

Sensor bases

4098-9792, standard sensor base

4098-9789, sensor base with wired connections

- 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 unit
- 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 at 28 VDC
- non-power limited rating of 3 A at 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 at 30 VDC, resistive; non-power limited rating of 0.5 A at 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 at 28 VDC; non-power limited rating of 1/2 A at 120 VAC, (requires external 24 VDC coil power)

4098-9832, adapter plate

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

2098-9808, remote red LED alarm indicator

- Mounts on single gang box



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 unit every four seconds.

You can easily interchange different TrueAlarm sensor types to meet specific location requirements. This feature allows intentional sensor substitution during building construction. When conditions are temporarily dusty, you can install heat sensors without reprogramming the control unit, as covering smoke sensors causes them to be disabled. Although the control unit 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

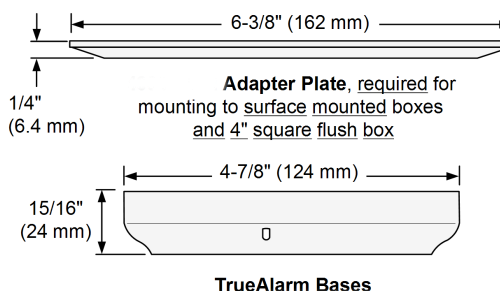
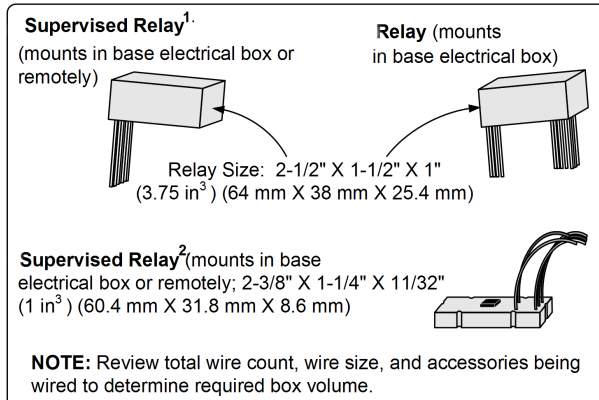
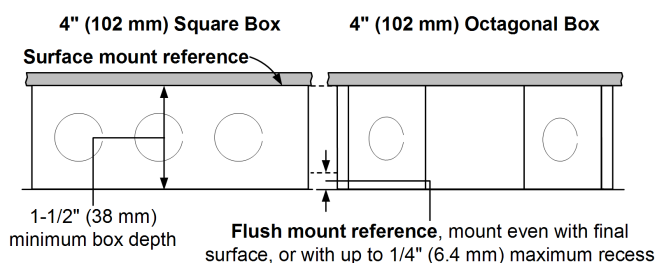


Figure 3: Mounting reference

Table 1: Product mounting - SKU reference

| Product | SKU |
|------------------|--|
| Relay | 4098-9822 |
| Supervised relay | Example 1 2098-9739 Example 2 4098-9860 |
| Adapter plate | 4098-9832 |
| TrueAlarm bases | 4098-9780, 4098-9789, 4098-9791, 4098-9792 |

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 and ULC Spacing | FM Spacing, Either Fixed Temperature Setting |
|--------------------------------|---------------------------|---|
| 135°F (57.2°C) 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. There are three user-selectable sensitivities for special applications for each individual sensor: 0.2%, 0.5%, and 1% for each foot. Standard sensitivity is 1.25% to 3.1% for each foot. The fire alarm control unit runs an algorithm that can vary the sensitivity for normal applications between 1.25% and 3.1% for each foot.

Note: Fixed sensitivity settings higher than 1.0% for each 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.

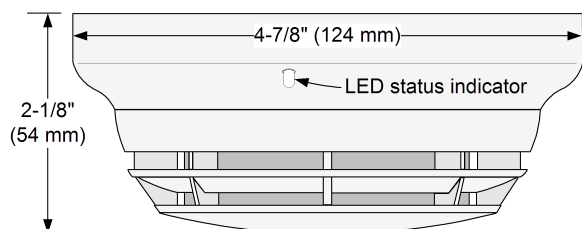


Figure 4: 4098-9714 photoelectric sensor with base

4098-9733 and 4098-9734 heat sensors

TrueAlarm heat sensors are self-restoring and provide rate-compensated, fixed temperature sensing, you can select 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 unit.

You can select rate-of-rise temperature detection at the control unit for either 15°F or 20°F (8.3°C or 11.1°C) for each minute. Fixed temperature sensing is independent of rate-of-rise sensing and you can program it to operate at 135°F or 155°F (57.2°C or 68°C). The 4098-9734 sensor provides an additional 190°F (88°C) set point.

In a slowly 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.

You can program TrueAlarm heat sensors as a utility device to monitor for temperature extremes in the range of 32°F to 155°F (0°C to 68°C). This feature can provide freeze warnings, or alert you to HVAC system problems. Refer to panel specifications for availability.

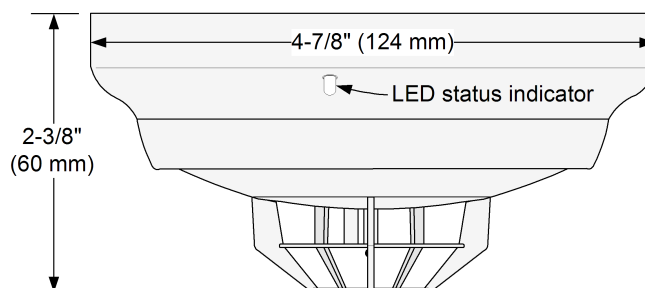


Figure 5: 4098-9733 heat sensor with base

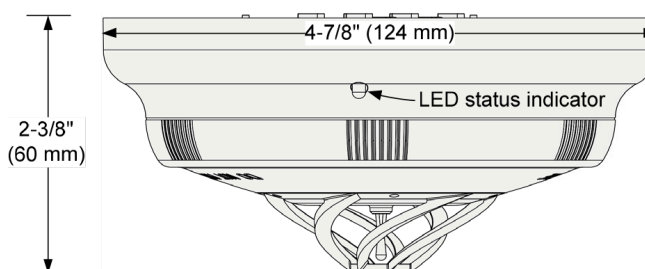


Figure 6: 4098-9734 high temperature heat sensor with base

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*.

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 |
| 4098-9789IND | | | | |
| 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 | Note: Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference. |
| Note: NOT compatible with the 2120 CDT | | | 2098-9808 remote alarm indicator or 4098-9822 unsupervised relay | |
| 4098-9780 | White | 4098-9860 supervised remote relay | | |
| Note: NOT compatible with the 2120 CDT | | 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 | 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 | | | | |
| 4098-9774 | Black | | | |
| 4098-9733 | White | Heat sensor | | |
| 4098-9778 | Black | | | |
| 4098-9734 | White | High temperature heat sensor | | |

Note:

- All of these SKUs are NEMA 1 rated.
- The 4098-9734 Heat Sensor is compatible with IDNet on the 4100ES, 4010ES, and 4007ES only

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 |
| 4098-9860 | Supervised relay, mounts remote or in base electrical box | For use with 4098-9780 base | Base mounting requires 4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring |
| 2098-9808 | 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 |

Note: 2098-9808 is NEMA 1 rated.

Specifications

Table 5: General operating specifications

| Specification | Rating |
|--|---|
| Communications and sensor supervisory power | IDNet or MAPNET II communications, auto-selected, one address for each 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 |

Table 5: General operating specifications

| Specification | | Rating |
|--|-----------------------------|-----------------------------------|
| 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 |
| 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 to 4000 ft/min, 0 to 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. | | |

