Simplex

TrueAlarm® Analog Sensing

SSL Listed, UL, ULC Listed, FM Approved*
*NYC, MEA Approved***

TrueAlarm Analog Sensors – Photoelectric, Ionization, and Heat; Compatible Bases and Accessories

Features

TrueAlarm® analog sensing provides digital transmission of analog sensor values via MAPNET II® or IDNet™, two-wire communications†

Fire alarm control panel provides:

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

Photoelectric smoke sensors:

- Seven levels of sensitivity from 0.2% to 3.7%

Heat sensors:

- Fixed temperature sensing
- Rate-of-rise temperature sensing
- Utility temperature sensing

Ionization smoke sensors*:

- Three levels of sensitivity; 0.5%, 0.9% and 1.3%

For use with Simplex:

- 4010, 4020, 4100, and 4120 series control panels
- Universal Transponders and 2120 TrueAlarm CDTs equipped for MAPNET II operation

Magnetic test feature

Functional and architecturally styled chamber enclosure:

- Louvered design enhances smoke capture by directing flow to chamber
- Entrance areas are minimally visible when ceiling mounted

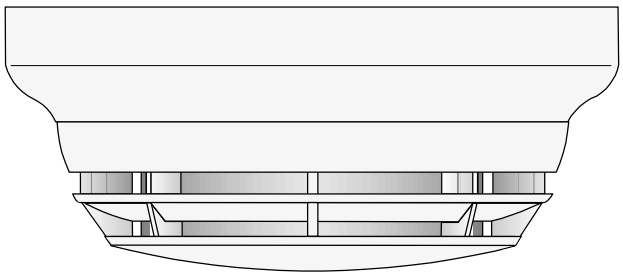
Optional remote LED alarm indicator and base mounted relay

UL listed to standard 268 / SSL listed to AS1603.2

* ULC listed models are designated by a "C" suffix such as 4098-9714C. ULC listing of 4098-9717 is in process, contact Simplex for status.

** Accepted for use – City of New York Department of Buildings – MEA35-93E.

† TrueAlarm analog sensors and MAPNET and IDNet communications are protected by one or more of the following U.S. Patents: 5,155,468; 5,173,683; 5,543,777; 5,400,014; 5,552,765; 5,552,763; 4,796,025; DES. 377,460.



4098-9714 TrueAlarm Photoelectric Sensor Mounted in Base

Description

Digital Communication of Analog Sensing. TrueAlarm analog sensors provide an analog measurement that is 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.

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. For example, a 0.2% level may cause a warning to prompt investigation while a 2.5% level may initiate an alarm.

Sensor Alarm and Trouble LED Indication. The control panel determines when individual sensors need cleaning. Dirty sensors, or other sensor trouble, will automatically be annunciated at the control panel and that sensor's base LED will light steadily. In an alarm condition, the alarmed sensor's LED will light steadily. (LED operation is controlled by the panel. During a system alarm, a sensor LED that was on to indicate a trouble may return to pulsing to conserve communications power.)

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True*Alarm* Sensor Bases and Accessories

Sensor Base Features

Base mounted address selection:

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

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

Magnetically operated functional test

Mounts on standard outlet box

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 (unsupervised)

4098-9791, Sensor base with supervised relay driver output (not compatible with 2120 CDT)**:**

- Relay operation is programmable and manually available at control panel
- Use with remote mount 2098-9737 relay
- Includes wired connections for remote LED alarm indicator **or** 4098-9822 relay

Sensor Base Options

2098-9737, Remote or local mount supervised relay, DPDT contacts:

- **Power limited rating**: 3 A @ 28 VDC for transient suppressed loads (requires external 24 VDC)
- **UL listed non-power limited rating**: 3 A @ 120 VAC, for transient suppressed loads

4098-9822, LED Annunciation Relay:

- Activates when base LED is on steady, indicating local alarm or trouble
- DPDT contacts, rated 2 A @ 28 VDC for transient suppressed loads (requires external 24 VDC)

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 to right)



Description

TrueAlarm sensor bases contain integral addressable electronics that constantly monitor the status of the detachable photoelectric, ionization, 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.

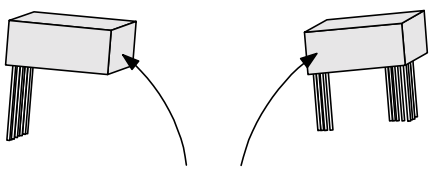
Mounting Reference

Electrical box without relay: 4" octagonal, 1 1/2" deep; 4" square, 1 1/2" deep (requires 4098-9832 Adapter Plate); or single gang, 2" deep
(for further details, see chart on page 4)



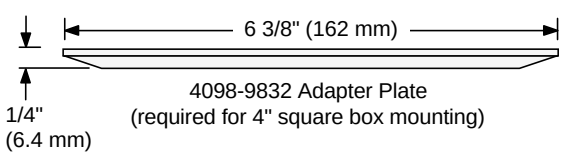
2098-9737 Relay (mounts in base electrical box or remotely)

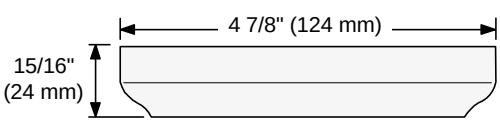
4098-9822 Relay (mounts in base electrical box)



Relay size: 2 1/2" X 1 1/2" X 1" (3.75 cubic inches)
(64 mm X 38 mm X 25.4 mm)

Note: Mounting relay in sensor base electrical box requires a 4" octagonal box, 2 1/8" deep with 1 1/2" extension ring minimum, or equal. Review total wire count, wire size, and accessories being wired to determine required box volume.





TrueAlarm Bases
4098-9789, -9791, & -9792

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True*Alarm* 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
- SSL Listed to AS1603.1 – afp 1202 / afp1203

Smoke Sensors:

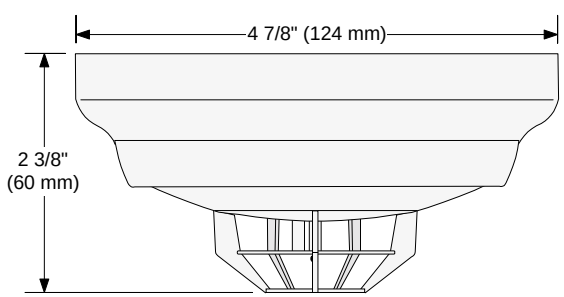
- Photoelectric or ionization technology sensing
- 360° smoke entry for optimum response
- SSL listed to AS1603.2 -1997
  - 4098-9714 Photo Sensor – afp1225
  - 4098-9717 Ion Sensor – afp-1246

4098-9733 Heat Sensor

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). 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*.)



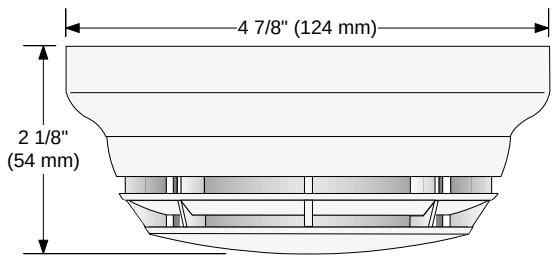
4098-9733 Heat Sensor with Base

<u>WARNING</u>: 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.

4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed infrared LED light source and a silicon photodiode receiver to provide consistent and accurate low power smoke sensing. Seven levels of sensitivity are available for each individual sensor, ranging from 0.2% to 3.7% per foot of smoke obscuration. Sensitivity is selected and monitored at the fire alarm control panel.

The sensor head design provides 360° smoke entry for optimum response to smoke from any direction. A built-in screen keeps insects from entering the smoke chamber. Due to its photoelectric operation, air velocity is not normally a factor, except for impact on area smoke flow.

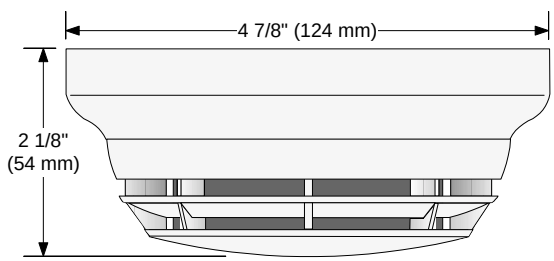


4098-9714 Photoelectric Sensor with Base

4098-9717 Ionization Sensor

TrueAlarm Ionization sensors use a single radioactive source with an outer sampling ionization chamber and an inner reference ionization chamber to provide stable operation under fluctuations in environmental conditions such as temperature and humidity. Smoke and invisible combustion gases can freely penetrate the outer chamber. With both chambers ionized by a small radioactive source [Am 241 (Americium)], a very small current flows in the circuit. The presence of particles of combustion will cause a change in the voltage ratio between chambers. This difference is measured by the electronics in the sensor base and digitally transmitted back to the control panel for processing.

Three levels of sensitivity are available for each ionization sensor: 0.5, 0.9, and 1.3% per foot of smoke obscuration.



4098-9717 Ionization Sensor with Base

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 Code*. On smooth ceilings, smoke sensor spacing of 30 ft (9.1 m) may be used as a guide. For detailed application information, refer to *4098 Detectors, Sensors, and Bases Application Manual*, part number 574-709.

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TrueAlarm Analog Sensing Product Selection Chart

TrueAlarm Sensor Bases

Model	Description	Compatibility	Mounting Requirements
4098-9792	Standard Sensor Base, no options	Sensors 4098-9714, -9733, & -9717	4” octagonal or 4” square box, 1 1/2” min. depth; or single gang box, 2” min. depth
4098-9789	Sensor Base with connections for Remote LED Alarm Indicator **or** Unsupervised Relay	• Sensors 4098-9714, -9733, & -9717 • 2098-9808 remote LED alarm indicator **or** 4098-9822 relay	4” octagonal or 4” square box **Note:** Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference.
4098-9791	Sensor Base with connections for **Supervised** Remote Relay **and** connections for Remote Alarm Indicator **or** Unsupervised Relay	• Sensors 4098-9714, -9733, & -9717 • 2098-9737 remote relay (supervised) • 2098-9808 remote alarm indicator or 4098-9822 relay (unsupervised)	

TrueAlarm Sensors

Model	Description	Compatibility	Mounting Requirements
4098-9714	Photoelectric Smoke Sensor	Bases 4098-9792, 4098-9789, and 4098-9791	Refer to base requirements
4098-9717	Ionization Smoke Sensor		
4098-9733	Heat Sensor		

TrueAlarm Sensor/Base Accessories

Model	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” octagonal or 4” square box, 1 1/2” minimum depth • Base Mounting requires 4” octagonal box, 2 1/8” deep with 1 1/2” extension ring
2098-9808	Remote Red LED Alarm Indicator on single gang stainless steel plate	Bases 4098-9789 and 4098-9791	Single gang box, 1 1/2” minimum depth
4098-9822	Relay, tracks base LED status (unsupervised, mounts only in base electrical box)		4” octagonal box, 2 1/8” deep with 1 1/2” extension ring
4098-9832	Adapter Plate	Bases 4098-9792, -9789, & -9791	• **Required** for surface or semi-flush mounting to 4” square box • **Required** for surface mounting to 4” octagonal box

Refer to Simplex publication 574-709, *4098 Detectors, Sensors, and Bases Application Manual*, for additional application information.

Specifications

General Operating Specifications		
Communications and Sensor Supervisory Power		MAPNET II or IDNet, auto-select, 24-40 VDC w/data, 400 µA typical, 1 address per base
Communications Connections		Screw terminals for in/out wiring, #18 to #14 AWG
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
SSL Listing No.		afp-1202/1203 – Heat, afp-1225 – Photo, afp-1246 - Ion
Operating Temperature Range, Each Base	with 4098-9717 or 4098 -9733	32° F to 122° F (0° C to 50° C)
	with 4098-9714	15° F to 122° F (-9° C to 50° C)
Humidity Range		10 to 95% RH
Air Velocity Range	4098-9714, Photoelectric Sensor	0-2000 ft/min (0-610 m/min)
	4098-9717, Ionization Sensor	0-200 ft/min (0-61 m/min)
Housing Color		Frost White
4098-9791 Base With Supervised Remote Relay 2098-9737		
Externally Supplied Relay Voltage		18-32 VDC (nominal 24 VDC)
Supervisory Current		270 µA, from 24 VDC supply
Alarm Current with 2098-9737 Relay		28 mA, from 24 VDC supply
4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789 and 4098-9791		
Externally Supplied Relay Voltage		18-32 VDC (nominal 24 VDC)
Supervisory Current		Supplied from communications
Alarm Current		13 mA from separate 24 VDC supply

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All specifications and other information shown were current as of printing and are subject to change without notice.

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