Development Services

From Concept to Construction

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APPEAL SUMMARY

Status: Decision Rendered

Appeal ID: 15725	**Project Address:** 2922 SE 82nd Ave
Hearing Date: 8/23/17	**Appellant Name:** Dennis Woods
Case No.: B-006	**Appellant Phone:** 503-224-9560
Appeal Type: Building	**Plans Examiner/Inspector:** Kent Hegsted
Project Type: commercial	**Stories:** 3 **Occupancy:** S-1 **Construction Type:** II-B
Building/Business Name: Northwest Self Storage	**Fire Sprinklers:** Yes - Fully Sprinklered
Appeal Involves: Erection of a new structure	**LUR or Permit Application No.:** 17-196244-CO
Plan Submitted Option: pdf [File 1] [File 2] [File 3] [File 4]	**Proposed use:** Self-Storage (S1 with minor B occupancy)

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	OSSC 2014 section 505.2.1 Area Limitations (mezzanines)
Requires	The aggregate area of a mezzanine or mezzanines within a room shall be not greater than one-third of the floor area of that room or space in which they are located. The enclosed portion of a room shall not be included in a determination of the floor area of the room in which the mezzanine is located. In determining the allowable mezzanine area, the area of the mezzanine shall not be included in the floor area of the room.
Proposed Design	Open walls above 8' and fast detection system throughout first floor room with the mezzanine and above/below mezzanine, the detection system will be tied to full building alarm system. (standard smoke detectors could cause false alarms due to drive through, attached are the cut sheets for the proposed type of detectors, The floor-plans on R0.0 designate the proposed area of installation for each type) Reason for appeal: code section above does not define "enclosed" portion of a room that shall not be included in the determination of the floor area nor does the code define how "open" is open as it relates to partitions in the "room" containing the mezzanine. The IBC commentary discusses limiting the mezzanine size "a mezzanine is restricted to a maximum of one-third of the area of the room with which it shares a common atmosphere". Sharing a common atmosphere begins to describe the intent of the code to define what is a room with a mezzanine. We have excluded all rooms on the first floor with full height walls that do not share same atmosphere and all storage units under the mezzanine that have limited shared atmosphere. Below is our proposal to address the 19'7" high partitions remaining in the room that are partially covered by 8' metal panels and roll up doors with support frames in the "room" to be used to size the mezzanine and the hallway under the mezzanine. The storage areas included in the room are

open to structure above 8’0” (11’7” open) and have no ceiling other than 2x2 wire mesh at 10’0” to provide security, we believe these areas share the same atmosphere.

Proposed design uses the non-crosshatched area on the ground floor as a room sharing the same atmosphere as the mezzanine to determine the allowable size for the mezzanine. See attached plan detail 1/R0.0 the non-cross hatched area includes areas with 19’7” ceiling and open hallways under the mezzanine (open mesh above 7’2”’ at 7’ doors). The cross hatched areas are not included in calculations to size the mezzanine. Attached plan also includes wall sections of storage area partitions in the 19’7” area, see detail 4/R0.0. The 19’7” high partitions have metal panels up 8’ and open 2x2 grid above 8’ to 10’, 10’ to 19’7” the partitions are open studs, and 2x2 open metal grid as security across the ceiling at 10’0””. The 8’ metal panels provide privacy and security for the individual storage spaces, the 2x2 grid provides security and openness for shared atmosphere.

As noted above the code does not define how “open” partitions need to be to be considered sharing the same atmosphere except when discussing openness of the mezzanine to the room below and sets the height at guardrail height 42”. We believe the code intent of this provision does not apply to partitions on the first floor. The openness of the mezzanine to the room below was intended to provide early warning of a fire in the room below as mezzanines are allowed to exit through that area. The openness of the mezzanine goes away and is allowed to be enclosed with the addition of an exit path to the exterior. We have proposed two enclosed exits to the exterior. We believe the openness of the 19’7” partitions and the 2x2 mesh above the doorways in the halls under the mezzanine meet the intent of sharing the same atmosphere and to further enhance the early warning for exiting from the facility we are proposing to add fast detection sensors in the open area on the first floor and in all areas above and below the mezzanine to offset any concern with the use of 8’ metal panels on the first floor. The fast detection sensors will be tied to the full building alarm and emergency voice/alarm communication system proposed per exception 505.2.1 (2) for a fully sprinklered Type II building, allowing mezzanine increase to 50% of the room containing the mezzanine.

Reason for alternative The code is silent on how open does a partition need to be for an area to be considered the same atmosphere. Code section “505.2.3 Openness” does reference walls not more than 42” height, we believe this refers to how open the mezzanine is to the room and not how open partitions on the first floor need to be to be considered sharing the same atmosphere.

The proposed partitions, 19’7” high with 8’ metal panels and 11’7” open construction we believe provides the “shared atmosphere” discussed in the IBC commentary for this code section. The addition of fast detection sensors noted above we believe exceeds the requirements of the code and enhances life safety for the facility.

Northwest Self Storage provides privacy and security for their customers through individual storage areas that are not readily visible to other users, partitions are constructed with 8’ metal panels and 2x2 wire mesh above the metal panels (or in some cases spaced hat channels to limit access and provide security), and at tall units 2x2 open metal grid at 10’ across the ceiling is provided. The metal panels and 2x2 wire mesh maintain security and sense of privacy without limiting or interfering with the mechanical ventilation of the shared atmosphere, sprinkler, or lighting systems. This business model is highly desired by NWSS customers. We believe the proposed alternate method described above more than meets the code intent and provides a safe, private and secure environment for NWSS customers.

Appeal item 2

Code Section OSSC 2014 section 2902.3.2 Location of toilet Facilities in occupancies other than malls.

Requires	In occupancies other than covered and open mall buildings, the required public and employee toilet facilities shall be located not more than one story above or below the space required to be provided with toilet facilities, and the path of travel to such facilities shall not exceed a distance of 500 feet.
Proposed Design	The proposed design would provide all of the required toilet facilities for the entire (3) story building on the 1st floor, more than one story above or below the space required to be provided.
Reason for alternative	At completion, this self-storage facility will have 534 units. Based on client data, a storage client will visit their storage unit on average once every 1.3 years. If you look at daily activity, this equates to 1.9 visits per day. I acknowledge the actual load will vary, but want to provide actual usage numbers. It is possible to add additional toilets to the third level or all toilets on the 2nd level to meet the every other floor required by Chapter 29. Based on client experience, this would not serve the users well, and ask that you consider the following. The users of a self-storage facility are not stagnantly occupying the space that is being used for storage typically to the OSSC definition of occupancy. The actual users of a self storage facility are moving personal items from the loading area to their storage unit. There is limited congregation by the users of a self-storage facility because the space is not designed for occupancy, but for circulation and storage of personal items. Under the exceptions for 2902.3.2.1, in group B (other than restaurants and dining facilities), F, H, M, and S occupancies, toilet facilities may be located in an adjacent building on the same property. The path of travel to such facilities shall not exceed a distance of 300 feet and be on an accessible route complying with chapter 11. This is an exception to the requirements for 2902.3.2. The travel distance within the building does not exceed the 300-foot travel distance. The exception allows plumbing fixtures in another building without consideration of the number of stories in the first building. The only consideration is the travel distance requirement of 300 feet. The travel distance within the proposed self-storage building does not exceed the 300-foot travel distance.

APPEAL DECISION

1: Mezzanine openness to common atmosphere with first floor: Denied. Proposal does not provide equivalent Life Safety protection.

2.Location of all restrooms on main floor, in lieu of distribution on every other floor: Granted provided signage is located adjacent to business office / customer entrance(s) with restroom location identified.

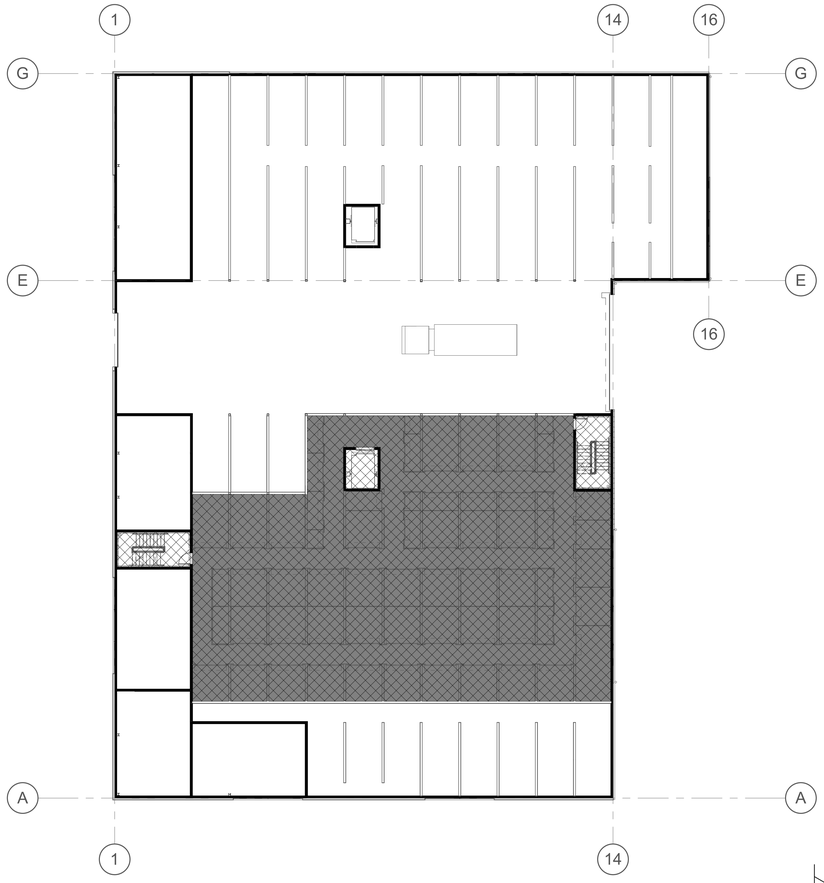
Appellant may contact John Butler (503-823-7339) with questions.

For the item granted, the Administrative Appeal Board finds that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

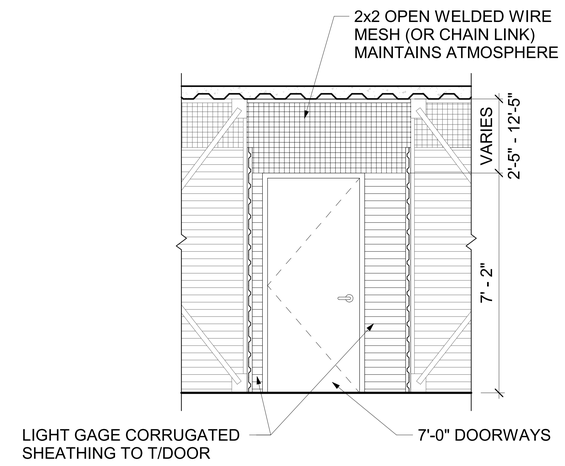
1 R0.0 MEZZANINE EXHIBIT - LEVEL 1 FLOORPLAN
1/16" = 1'-0"

1st FLOOR GROSS AREA:	25,920 SF
MINUS ENCLOSED AREAS:	10,114 SF
1st FLOOR OPEN AREA:	15,806 SF

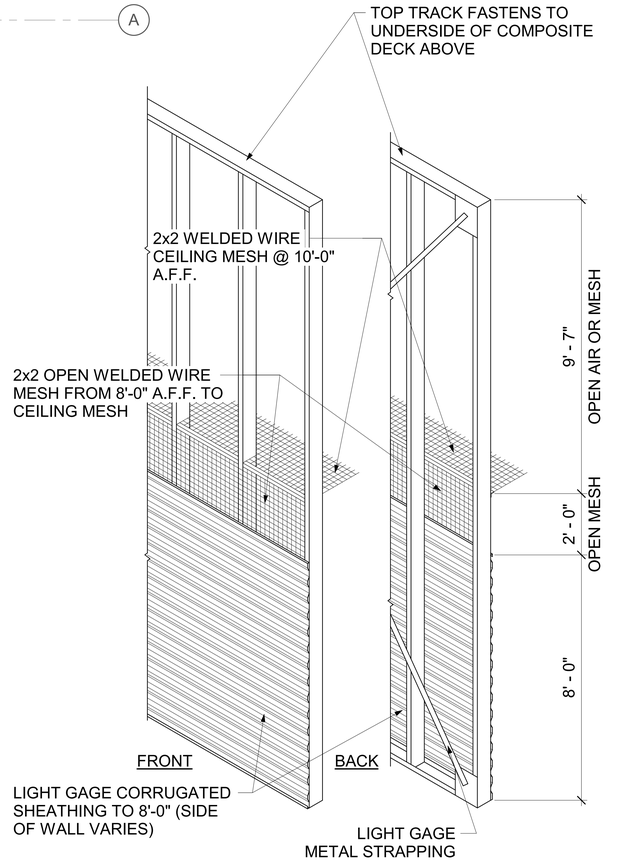


2 R0.0 MEZZANINE EXHIBIT - MEZZANINE FLOORPLAN
1/16" = 1'-0"

1st FLOOR OPEN AREA:	15,806 SF	
DIVIDED BY TWO (505.2.1 EXC. 2):	7,903 SF	
ACTUAL MEZZANINE AREA:	7,727 SF	48.8%



3 R0.0 1st FLOOR HALLWAY DOORS
1/2" = 1'-0"



4 R0.0 STORAGE WALLS @ DOUBLE HEIGHT SPACE
1/2" = 1'-0"

LEGEND

- 1st FLOOR ENCLOSED AREA NOT INCLUDED IN MEZZANINE AREA CALCULATION
- MEZZANINE AREA
- FULL HEIGHT WALL
- PARTIAL HEIGHT WALL WITH CORRUGATED METAL PANEL TO 8'-0" A.F.F. PER DETAIL 4/R0.0
- "JANUS" PROPRIETARY PARTITION SYSTEM TO 8'-0" A.F.F.
- AREA TO BE SERVED BY FAST DETECTION FIRE ALARM W/ CO TYPE SENSORS FOR OPEN ATMOSPHERE TO DRIVE AISLE (SEE ATTACHED HEAT SENSOR 4098-9733)
- AREA TO BE SERVED BY TYPICAL FAST DETECTION FIRE ALARM SYSTEM (SEE ATTACHED PHOTOELECTRIC SENSOR 4098-9714)

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Client

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Project

Northwest Self Storage Brooklyn Ave Facility
2922 SE 82nd ave
Portland, OR 97266

Revision Schedule	
Revision Delta	Issue Date

SHEET TITLE:
MEZZANINE EXHIBIT

DRAWN BY: SWC

CHECKED BY: SWC

SHEET
R0.0

JOB NO. **2160246.00**

MEZZANINE EXHIBIT 8/18/17
PERMIT SET 6/30/17

C:\Users\swc\Documents\Revit Projects\216024600 - NW Self Storage 82nd246-NWSS_82nd-L.rvt 8/22/2017 11:09:29 AM As indicated

Simplex®

Multi-Point Peripherals

UL, ULC, CSFM Listed;
*FM Approved**

TrueAlarm CO Sensor Bases for Smoke, Heat, and Photo/Heat Sensors using IDNet Communications

Features

TrueAlarm addressable CO sensor bases contain a carbon monoxide (CO) sensing module providing both CO toxic gas monitoring *and* enhanced fire detection:

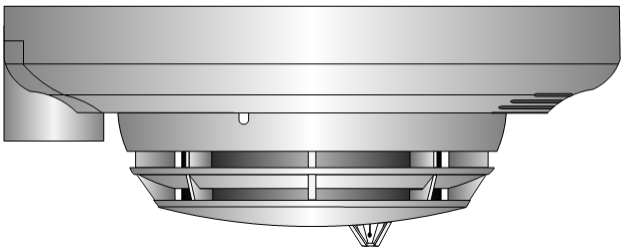
- For use with 4100ES or 4010ES fire alarm control panels with software revision 2.01.02 or higher
- For use with 4100U fire alarm control panels with software revision 12.05 or higher
- CO sensor bases support (and require) a TrueAlarm photoelectric, photo/heat or heat sensor (ordered separately)
- Model 4098-9770 provides standard features, model 4098-9771 also provides a piezoelectric sounder
- CO sensor bases are multi-point devices, consume only one IDNet address, and receive both communications and sensor power from the IDNet channel (the sounder base requires separate 24 VDC system power or NAC connection)
- Listed to UL 268, *Smoke Detectors for Fire Alarm Signaling Systems* and UL 2075, *Gas and Vapor Detectors and Sensors*; allowing systems to be listed to Standard 2034, *Single and Multiple Station Carbon Monoxide Alarms*
- Listed by ULC to CSA 6.19-01 *Residential Carbon Monoxide Alarming Devices*
- Three types of CO influenced operation are available; UL 2034 CO alarm detection; UL 2075 CO (OSHA) level monitoring for ventilation control; and multi-criteria fire sensor analysis with algorithms that combines optical and CO gas monitoring information

Operation of a CO sensor base with a photoelectric or a photo/heat sensor allows:

- Independent sensor operation ***or*** selectable multi-sensor modes of *False Alarm Reduction* ***or*** *Faster Detection*
- **False Alarm Reduction** analyzes CO and photoelectric sensor information together to provide a sophisticated rejection of non-fire conditions normally troublesome as false alarms (steam, dust, aerosols, etc.)
- **Faster Detection** (increased sensitivity) algorithm analyzes CO and photoelectric sensor information to allow the presence of CO to implement an increased photoelectric sensitivity for high value locations (museums, electrical equipment rooms, etc.)

Sounder base operation details:

- When connected to a panel NAC through the 4905-9835 Temporal Code Module, the sounder base can provide temporal code 3 (TC3) for fire, or temporal code 4 (TC4) for toxic carbon monoxide alarms
- 4905-9835 module may also be used to code other (non-fire) dedicated carbon monoxide notification appliances (refer to data sheet S4905-0006)
- Sounder can be manually activated from the panel
- Sounder operation is also listed to UL 464 as an audible notification appliance



TrueAlarm CO Sensor Base with Sounder
(shown with 4098-9754 Photo/Heat Sensor)

Features *(Continued)*

4100ES/4010ES/4100U Panel operation summary:

- CO sensor data is stored and analyzed at the panel; a new CO Service Report provides easy information access (see sample on page 3)
- 4100ES and 4010ES panels provide ten (10) year end of life status indication with CO sensor expiration notices occurring within 12 months and within 6 months, allowing service replacement planning
- 4100U panels provide five (5) year end of life status indication with the 12 and 6 month replacement notices
- Analog sensor information is digitally transmitted to the host control panel via IDNet communications for processing to evaluate and track status
- Carbon monoxide concentration in ppm (parts per million) is available for viewing from the panel user interface
- For OSHA compliant CO gas sensing, CO condition level may be programmed by concentration (must be above 30 ppm)
- 4100ES Audio Control Panels can provide a CO Relocation Message with Temporal Code 4 tone and Voice Evacuation (reference UCSET1393, see S4100-0034)

General features:

- Operation of a CO sensor base with heat sensor provides dual independent sensor operation
- New CO test mode allows functional testing of each sensor technology including the CO sensor
- Optional accessories include remote alarm LED, alarm relay, and mounting adapter plate
- Designed for EMI compatibility
- Provides magnetic test

CO sensor element is easily replaced when end of service life is reached:

- Access to CO sensor replacement cartridge (CORC, 4098-9747) requires removal of interchangeable sensor head providing tamper monitoring (sensor removal causes a trouble condition)

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7300-0026:330 for allowable values and/or conditions concerning material presented in this document. Listings and approvals under Simplex Time Recorder Co. are the property of Tyco Fire Protection Products.

CO Sensor Base Description

Carbon monoxide (CO) is an odorless, colorless, tasteless gas produced by the incomplete combustion of heating fuels such as wood, coal, heating oil, and natural gas. CO is also a byproduct of many materials experiencing unintentional fire or even incipient fire conditions. Monitoring of CO levels can warn of physically harmful concentrations, however, sensing of CO levels below the harmful level can also provide improved understanding of incipient fire conditions when evaluated in combination with photoelectric fire sensor information from the same location.

Simplex® CO sensor bases combine an electrolytic CO sensing module with a TrueAlarm analog sensor to provide a single multiple sensing assembly using one system address. The CO sensor can be enabled/disabled, used in LED/Switch modes and custom control, and can be made public for communication across a fire alarm Network.

CO sensor operation is similar to other TrueAlarm sensors (photoelectric or heat). It provides current analog values, average analog value, "No Answer" troubles, "Wrong Device" troubles, over threshold, concentration in ppm, and monitors for the presence of the CO sensor. Base mounted address selection allows the address to remain with its location when the sensor is removed for service or type change. Address access is from the front, under the removable sensor. An integral red LED indicates power-on by pulsing, or alarm or trouble when steady on, and also provides test mode status (see page 3). Detailed status is available at the fire alarm control panel.

CO Sensing, Detailed Operation

Toxic Gas Sensing, UL 2034/UL 2075. For CO toxic gas detection, the bases provide toxic gas sensing to the UL 2034 and UL 2075 standards. Toxic gas sensing may be selected at the same time as any of the combined CO photo fire detection modes are selected.

Toxic Gas Sensing, OSHA Compliant. For OSHA compliant gas sensing, the desired threshold level (above 30 ppm) is selected at the control panel as required for the application, typically for ventilation control. Refer to page 3 for additional OSHA CO monitoring information.

Enhanced Fire Sensing. Each sensor provides an analog measurement digitally communicated to the control panel for analysis. At the panel, these analog values are used separately, or combined, to evaluate for conditions indicative of fire, incipient fire, excessive heat, and freeze warning. For fire, the addition of a CO sensor provides two new selectable modes of operation: *Nuisance Alarm Reduction Mode* and *Faster Fire Detection*. These two modes were developed using the results of extensive testing of actual fires performed under a wide variety of conditions. (Refer to page 4 for additional operation mode options.)

Nuisance Alarm Reduction Mode allows the host control panel to combine photoelectric sensor input and CO sensor level input to reduce false alarms caused by non-fire conditions. Non-fire conditions can be steam from bathroom showers, particles from dusty environments, aerosols from personal care products, tobacco smoke, cooking smoke, or other similar conditions.

CO Sensing, Detailed Operation *(Continued)*

Nuisance Alarm Reduction Details. For applications of anticipated nuisance alarm conditions, photoelectric sensitivity is normally selected for 3.7%/ft smoke obscuration. However, the addition of CO sensing allows the host control panel to apply software verification similar to the timed alarm verification feature often used with conventional smoke detection.

Faster Fire Detection. For applications where faster response to incipient or slow building fires is desired and environment appropriate, the Faster Fire Detection mode correlates the outputs of the CO sensor and the photoelectric sensor to provide increased sensitivity. This mode provides earlier detection compared to a standard sensitive photoelectric sensor setting, and also provides more false alarm reduction compared to using a sensitive setting in an area not normally considered appropriate.

Faster Fire Detection Details. TrueAlarm photoelectric sensors can be selected to be as sensitive as 0.2%/ft obscuration for applications evaluated as appropriate to that level. However, if the environment is not suitable for that sensitivity level, the Faster Fire Detection mode allows the photoelectric sensor to be selected as a "standard" 2.5%/ft obscuration, but with the presence of a significant level of CO, the combination of CO and photo sensing input can allow an equivalent sensitivity approaching 0.5%/ft obscuration. The host control panel tracks two photoelectric sensitivities, the one selected for photoelectric operation only (typically 2.5%), and the CO correlation sensitivity that it adjusts depending on the amount of CO present.

Control Panel Operations

Smoke sensor features include: sensitivity monitoring satisfying NFPA 72 sensitivity testing requirements, automatic individual sensor calibration checking to verify sensor integrity, automatic environmental compensation, available multi-stage alarm operation, display of sensitivity directly in percent per foot, monitoring of peak activity per sensor, alarm set point, and time of day or multi-stage alarm selection.

Sensor Alarm and Trouble LED Indications. The sensor base LED pulses to indicate communications with the panel. If a sensor is in alarm, or has a trouble condition, the status is annunciated at the control panel and that base LED will turn on steady. During a system alarm, the panel will control LEDs such that a trouble indication will return to pulsing to help identify the sensors in alarm.

Reported CO Sensor troubles are: Disabled, Almost Expired 12 Months, Almost Expired 6 Months, Expired (End of Life), Short, and Sensor Missing/Failed.

Trouble Details. "Almost Expired" is similar to the "Almost Dirty" trouble for a photoelectric sensor. "Expired" trouble is similar to the "Dirty" trouble for a TrueAlarm photoelectric sensor. CO sensor technology does not support automatic sensitivity testing and drift compensation as is available with a photoelectric sensor. End of useful CO sensor life is based upon a set 10 year operational lifetime (5 years for 4100U panels), tracked by date code built into the CO sensor module electronics. Although the CO sensor will continue to function after the expired trouble is indicated, replacement is required to ensure proper detection accuracy.

Control Panel Operations *(Continued)*

Panel Test Mode. To facilitate functional testing of the CO sensor, a new test mode is available in the host control panel. In this mode, the CO sensor, and installed heat or smoke sensor can be easily ***functionally*** tested.

Panel Test Mode Details. When in the CO test mode, the internal multiple sensor analysis algorithms are disabled allowing each sensor to be quickly tested either individually or simultaneously, depending on the test equipment used. CO testing can be performed using a Solo Model 332 aerosol dispenser (or equal). (Testing is available through your local authorized Simplex product supplier.) The base LED will display steady ON when individual sensors are activated during test. Refer to the Application Reference section for more information.

OSHA CO monitoring. For OSHA compliant gas sensing, control panel software supports custom programming based upon CO concentration levels. For example, turn on ventilation if the CO level is above X ppm and then turn off ventilation when the level drops below Y ppm (or select either value as a range if desired). This is separate from alarm set points.

Multi-Point Allocation. 4100ES and 4010ES control panels require only one (1) point at the host panel per CO sensor base. For 4100U control panels, the requirement is three (3) points at the host panel per CO sensor base with the 4098-9754 multi-sensor, and two (2) points for the other sensors. Depending on CO sensor base and sensor choice, up to seven (7) points can be made public to a connected Simplex Fire Alarm Network. Each CO sensor base uses a single address with "sub-points" layered underneath (such as 1-1-0, 1-1-1, 1-1-2, ….1-1-6). (Additional multi-point allocation detail is described in reference data sheet S4090-0011.)

CO Sensor Base Power Requirements. Power for the standard CO sensor base is provided by IDNet communications. *No additional wiring is required for upgrading of existing installed TrueAlarm sensor bases.* CO sensor sounder bases do require system supplied separate 24 VDC (or NAC) wiring, the same as the standard sounder base.

Accessories

2098-9808, Remote red LED Alarm Indicator mounts on a single gang box to provide status indications where the sensor location may not be readily visible. (See illustration to right.)

4098-9822, LED Annunciation Relay activates when base LED is on steady, indicating a local alarm or trouble. Contacts are DPDT, rated 2 A @ 30 VDC; 1/2 A @ 120 VAC for transient suppressed loads (requires external 24 VDC coil power).

Application Reference

Determine sensor locations after careful consideration of the physical layout and contents of the area to be protected.

For fire alarm applications:

- 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:

- Refer to *4098 Detectors, Sensors, and Bases Application Manual*, Part Number 574-709.

For toxic gas sensor placement and mounting:

- Refer to NFPA 720, *Standard for the Installation of Carbon Monoxide (CO) Warning Equipment in Dwelling Units*
- Sensors may be either wall or ceiling mounted
- Per NFPA 720, Section 5.1 (2005 edition):
  5.1.1 A carbon monoxide alarm or detector shall be centrally located outside of each separate sleeping area in the immediate vicinity of the bedrooms.
  5.1.2 Each alarm or detector shall be located on the wall, ceiling, or other location as specified in the installation instructions that accompany the unit.

TrueAlarm CO Service Reports

TrueAlarm CO Service Reports (sample below) contain information on the CO sensors programmed in the panel displaying pertinent data such as current concentration value in ppm, End of Life date, and current state. This report allows determination of which sensors will require attention. (Sample shows 10 year life tracking with a 4100ES or 4010ES panel.)

```
Service Port                                                        Page 1

REPORT 6 : TrueAlarm CO Report                  12:34:56am     MON    06-JUN-14

Channel 1 (M1)

Zone                                              Current    End of
Name       CUSTOM LABEL                           Value    Life Date  State
M1-1-2     Conference Room 17 CO Toxic Gas        457PPM   30-MAY-24  PRI
M1-2-2     Boiler Room CO Toxic Gas                0PPM    30-MAY-24  NOR
TRUE ALARM CO REPORT COMPLETED
         Press RETURN for next Screen OR CTRL-X to abort
```

TrueAlarm Analog Sensing Product Selection Chart

TrueAlarm CO Sensor Base

Model	Description	
4098-9770	CO Base, Standard operation	Select TrueAlarm sensor from list below
4098-9771	CO Base with Sounder	

TrueAlarm Sensors, select one per CO Sensor Base

Model	Description	
4098-9714	Photoelectric Smoke Sensor	Refer to selection table below for available operation modes
4098-9754	Multi-Sensor Photoelectric and Heat Sensing	
4098-9733	Heat Sensor	

CO Base Replacement CO Cartridge and Accessories (ordered separately as required)

Model	Description		
4098-9747	CO Replacement Cartridge (CORC)		
Solo 332	Aerosol Dispenser, suitable for larger diameter detectors; can be used for CO or smoke testing		
Solo C3	CO Aerosol Canister (case of 12)		
Model	**Description**		**Mounting Requirements**
4098-9832	Adapter Plate, **required** for surface mounted 4" electrical boxes		Refer to page 6, mounting reference
2098-9808	Choose **one** if required	Remote red LED Alarm Indicator on single gang stainless steel plate	Single gang box, 1-1/2" minimum depth
4098-9822		Relay, tracks base LED status (unsupervised, to be mounted only in base electrical box)	Mounts in base electrical box (requires 1-1/2" extension on 4" square or octagonal box)

CO Sensor Base Operation Options with Sensor Choice

Sensor Choice	Mode	Operational Mode Choices* (✓ = operation selected)								
		False Alarm Reduction	Faster Detection	TrueSense Photo/Heat	Photo Fire	Heat Fire**	Utility Temp.	Ion Fire	CO Toxic Gas†	CO Fire††
Photoelectric Smoke Sensor 4098-9714	1	✓	—	—	—	—	—	—	option	option
	2	—	✓	—	option	—	—	—	option	option
Photo/Heat Multi-Sensor 4098-9754	3	✓	—	—	—	option	option	—	option	option
	4	—	✓	—	option	option	option	—	option	option
	5		—	✓	option	option	option		option	option
Heat Sensor 4098-9733	6	—	—	—	—	✓	option	—	option	—
	7	—	—	—	—	option	✓	—	option	—

* **NOTE:** Duct detection modes are not applicable and are not available. Refer to the Multi-Point Allocation discussion on page 3 for panel point requirement information.

** Heat Fire Mode is 135° F or 155° F, fixed or rate-of-rise.

† CO Toxic Gas operation is selectable as: Supervisory (which is NOT recommended if communicated off-site), Priority 2 (preferred if communicated off-site), or Utility.

†† CO fire detection mode can be selected only when used with a photoelectric smoke detection sensor set for fire detection mode.

TrueAlarm Analog Sensor Features

Sealed against rear air flow entry

Electronics are EMI/RFI shielded

Heat sensing:

- 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)	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**

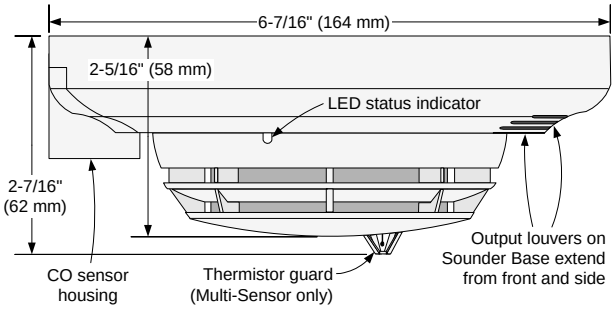
Smoke Sensors:

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

4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed 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. Sensitivities of 0.2%, 0.5%, and 1% are for special applications in clean areas. Standard sensitivities are 1.5%, 2.0%, 2.5%, 3.0%, and 3.7%. Application type and sensitivity are selected and then monitored at the fire alarm control panel. (For detailed application information about sensitivity selection, refer to Installation Instructions 574-709.)

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



Dimension and Feature Reference, Photoelectric or Multi-Sensor on CO Sensor Base

4098-9754 Multi-Sensor

TrueAlarm multi-sensors combines the performances of TrueAlarm photoelectric smoke sensing with TrueAlarm thermal sensing to provide both features in a single assembly. Each sensing element provides data for evaluation at the fire alarm control panel where the following four independent detection modes are evaluated:

- Fixed temperature heat detection
- Rate-of-rise heat detection
- TrueAlarm photoelectric smoke detection
- And TrueSense correlation detection

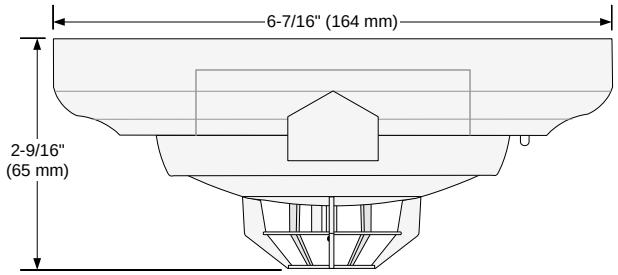
TrueSense analysis correlates both thermal activity *and* smoke activity at a single multi-sensor location using an extensively tested covariance relationship. As a result, TrueSense detection improves response to conditions indicative of faster acting, hot flaming fires when compared to the response of either photoelectric smoke activity or thermal activity alone.

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.



4098-9733 Heat Sensor with CO Sensor Base (with CO Sensor Housing facing forward)

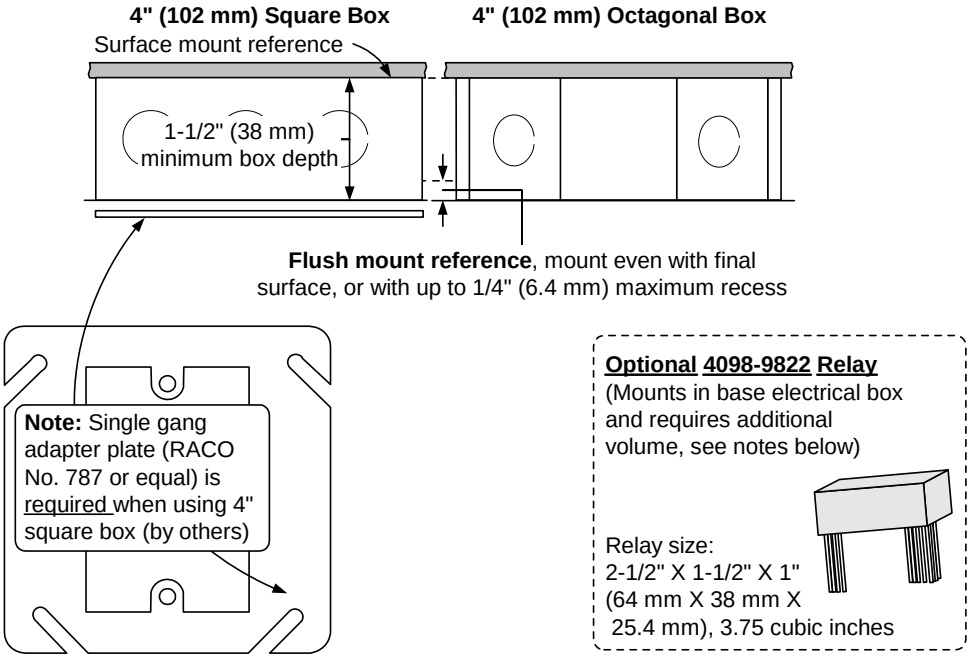
WARNING: In most fires, hazardous levels of smoke and toxic gas can build up before a heat detection device would initiate an alarm. In cases where Life Safety is a factor, the use of smoke detection is highly recommended.

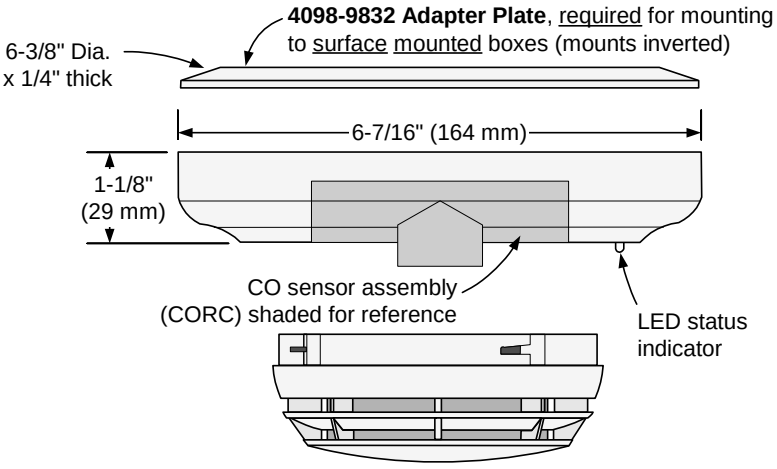
Installation Reference

Electrical Box Requirements: (boxes are by others)

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

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





(Photoelectric sensor shown for reference)

NOTES:

1. Review actual wire size, wire count, box type, and whether 4098-9822 relay is used before determining box size.
2. Mounting to flush mounted box also fits single gang handy box, 2-1/8" (51 mm) deep if wiring allows. (Not applicable if 4098-9822 relay is used.)
3. For surface mounted boxes, use 4" square box with single gang adapter plate (RACO No. 787 or equal, by others) or 4" octagonal box, both require 4098-9832 Adapter Plate.
4. When 4098-9822 relay is used, mount relay in electrical box and use 1-1/2" extension ring (by others) on 4" square or octagonal box of 1-1/2" or 2-1/8" depth as required.
5. Refer to sensor base Installation Instructions 574-707 for additional information.
6. Refer to CORC Replacement Instructions 579-791 for CO cartridge installation and replacement.

Specifications

General Operating Specifications

Communications and Sensor Supervisory Power		IDNet communications, 1 address per base
Communications and Sounder Power 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 supplied from communications, no impact to alarm current
	LED Connections	Color coded wire leads, 18 AWG (0.82 mm^2)
UL Listed Temperature Range		32° F to 100° F (0° C to 38° C)
Operating Temperature Range	with 4098-9733	32° F to 122° F (0° C to 50° C)
	with 4098-9714 or 4098-9754	15° F to 122° F (-9° C to 50° C)
Humidity Range		15 to 95% RH
CO Sensor Base Air Velocity Ratings per Sensor	Photoelectric Sensor 4098-9714 and Multi-Sensor 4098-9754	Air velocity = 0-1000 ft/min (0-305 m/min)
Housing Color		Frost White

Sounder Operation

Sounder Voltage		18 to 32 VDC from steady external source or from NAC
Alarm Current (Sounder On)		17 mA @ 24 VDC, 24 mA maximum @ 32 VDC
Sounder Output		88 dBA minimum @ 10 ft (3 m) per UL Standard 464, *Audible Signaling Appliance*; UL Standard 268, *Smoke Detectors for Fire Protective Signaling Systems* and CSA 6.19-01
Sounder Power Supervision (Selectable)	Supervised	Select for continuous 24 VDC power, loss of power is communicated to panel
	Unsupervised	Select when connected to NAC for sounder power, NAC provides supervision
NAC Powered Operation		When in alarm, will sound when NAC is in alarm, allowing synchronized pattern (Temporal or March Time, etc.) controlled by the NAC control

Reference for CO Monitoring

		Concentration	**Alarm Window**
Requirements Reference for UL 2034 and CSA 6.19-01	Response Time	70 ±5 ppm	60 to 240 minutes
		150 ±5 ppm	10 to 50 minutes
		400 ±10 ppm	4 to 15 minutes
	False Alarm Resistance	30 ±3 ppm	No Alarm for 30 days
		70 ±5 ppm	No Alarm for 60 minutes
Additional UL 2034 CO Sensor Toxic Gas Monitoring Details		1. For CO levels above 40 ppm, the CO alarm level per sensor is determined by calculations performed at the panel based on the time integrated CO levels measured at the sensor. (Levels below 40 ppm are not tracked.) 2. While tracking levels above 40 ppm, if the concentration dips below 40 ppm for periods of time, the time to alarm is extended accordingly.	
UL 2075 Reference, Commercial OSHA Type Operation; Utility Point Mode		With custom control at the fire alarm control panel, Utility Point operations can be performed at lower CO concentration levels than those of UL 2034 **Example:** Start ventilation after 5 minutes at 25 to 35 ppm and also alarm at a reading higher than that range, but lower than UL 2034 allows	

4098-9822 Unsupervised Relay Option

Externally Supplied Relay Voltage	18-32 VDC, steady source recommended (wires to remote LED leads)
Alarm Current	13 mA from separate 24 VDC supply
Contact Ratings, DPDT contacts for resistive/suppressed loads	Power limited rating: 2 A @ 30 VDC
	Non-power limited rating: 1/2 A @ 120 VAC
Relay Operation	Tracks base LED status, relay is on with trouble or alarm at the base

Additional Information Reference

Product	Data Sheet	Product	Data Sheet
Temporal Code 4 Module	S4905-0006	4100ES Control Panels with EPS Power Supplies	S4100-0100
Standard Bases	S4098-0019		
Isolator Bases	S4098-0025	4100ES Audio Control Reference	S4100-0034
Standard Sounder Base	S4098-0028	4100ES Standard Control Panels	S4100-0031
TrueSense Multi-Sensor	S4098-0024	4010ES Control Panels	S4010-0004

Simplex®

True*Alarm* Analog Sensing

*UL, ULC, CSFM Listed; FM Approved; MEA (NYC) Acceptance**

TrueAlarm Analog Sensors – Photoelectric and Heat; Standard Bases and Accessories

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:

- Seven levels of sensitivity from 0.2% to 3.7% (refer to additional information on page 3)

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

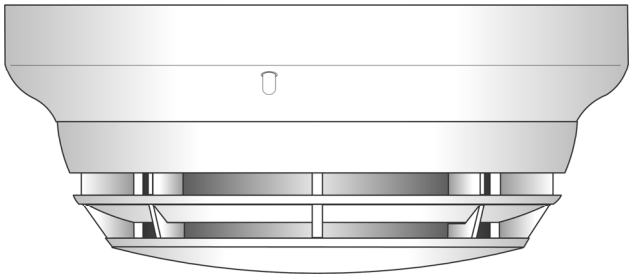
General features:

- Operation is for ceiling or wall mounting
- Listed to UL 268 and ULC-S529
- 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)

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



4098-9714 TrueAlarm Photoelectric Sensor Mounted in Base

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.

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. 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.

True*Alarm* 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

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 to right)

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.

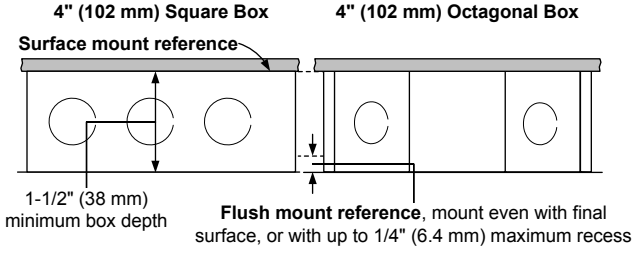
Since TrueAlarm sensors use the same base, different sensor types can be easily interchanged to meet specific location requirements. This feature also allows intentional sensor substitution during building construction. When conditions are temporarily dusty, instead of covering the smoke sensors (causing 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.

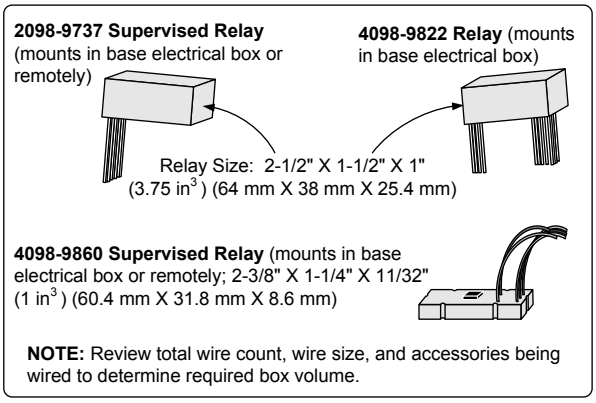
Mounting Reference

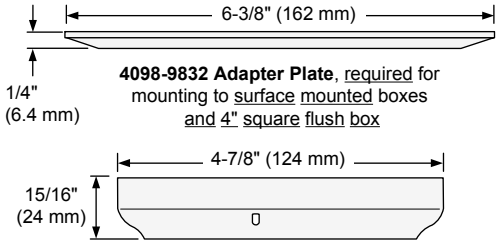
Electrical Box Requirements: (boxes are by others)

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







TrueAlarm Bases
4098-9780, 4098-9789, 4098-9791, & 4098-9792

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
- Rated spacing distance between sensors:

Fixed Temp. Setting	UL & ULC Spacing	FM Spacing, Either Fixed Temperature Setting
135° F / 190° F* (57.2° C / 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.

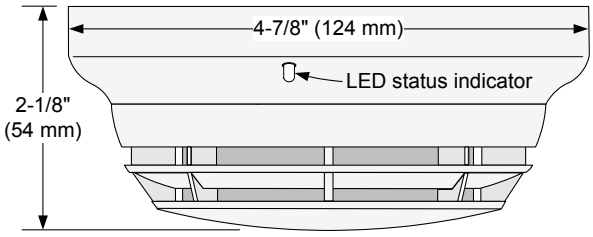
Smoke Sensors:

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

4098-9714 Photoelectric Sensor

TrueAlarm photoelectric sensors use a stable, pulsed 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. Sensitivities of 0.2%, 0.5%, and 1% are for special applications in clean areas. Standard sensitivities are 1.5%, 2.0%, 2.5%, 3.0%, and 3.7%. Application type and sensitivity are selected and then monitored at the fire alarm control panel.*

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.



4098-9714 Photoelectric Sensor with Base

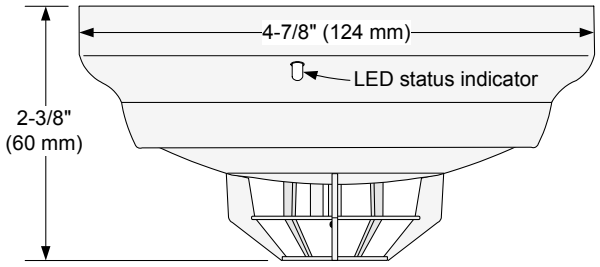
4098-9733 and 4098-9734 Heat Sensors

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.

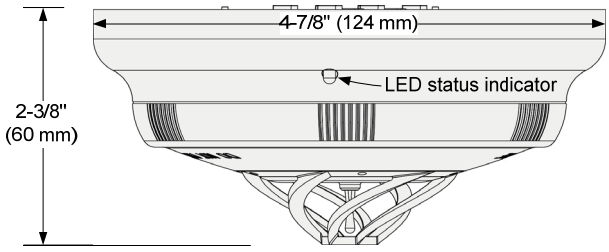
Rate-of-rise temperature detection is selectable at the control panel for either 15° F (8.3° C) or 20° F (11.1° C) per minute. Fixed temperature sensing is independent of rate-of-rise sensing and programmable to operate at 135° F (57.2° C) or 155° F (68° C). The 4098-9734 sensor provides an additional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



4098-9733 Heat Sensor with Base



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

TrueAlarm Sensor Bases (for use with Sensors 4098-9714 and 4098-9733)

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

Model*	Color	Description	Compatibility	Mounting Requirements
4098-9792	White	Standard Sensor Base	No options	4" octagonal or 4" square box, 1-1/2" min. depth; or single gang box, 2" 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" octagonal or 4" square box **Note:** Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference. ** **NOTE:** 4098-9791 and 4098-9780 are NOT compatible with the 2120 CDT
4098-9789 IND	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	

TrueAlarm Sensors

Model*	Model*	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		
4098-9734	White	High Temperature Heat Sensor		

TrueAlarm Sensor/Base Accessories

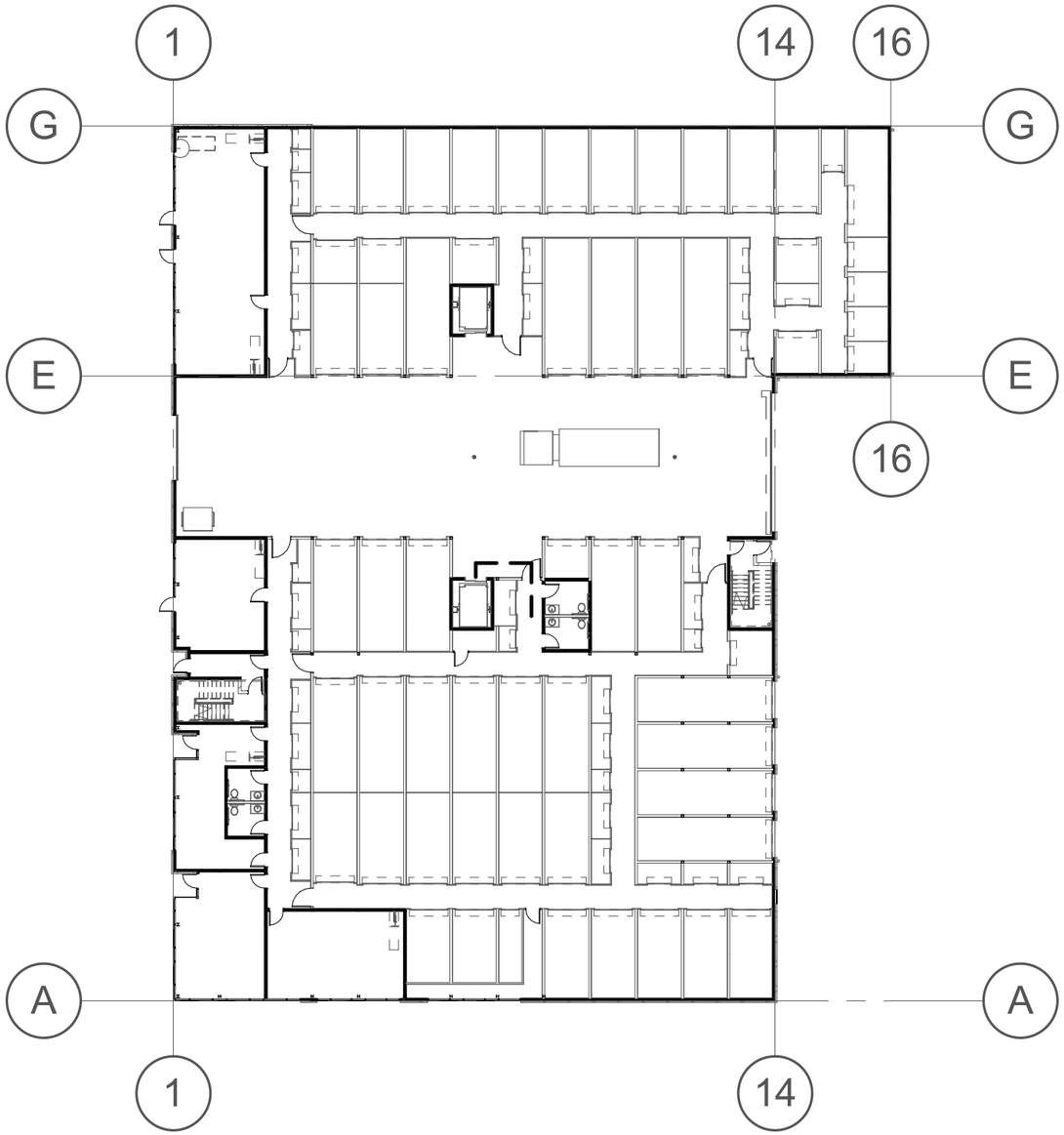
Model	Description	Compatibility	Mounting Requirements
2098-9737	Supervised Relay, mounts remote or in base electrical box	For use with 4098-9791 base	**Remote Mounting** requires 4" octagonal or 4" square box, 1-1/2" minimum depth **Base Mounting** requires 4" octagonal box, 2-1/8" deep with 1-1/2" extension ring
4098-9860	Supervised Relay, mounts remote or in base electrical box	For use with 4098-9780 base	
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" 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" octagonal box, 2-1/8" deep with 1-1/2" extension ring
4098-9832	Adapter Plate	Bases 4098-9792, 4098-9789, 4098-9791, and 4098-9780	**Required** for surface or semi-flush mounted 4" square box and for surface mounted 4" octagonal box

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

Specifications

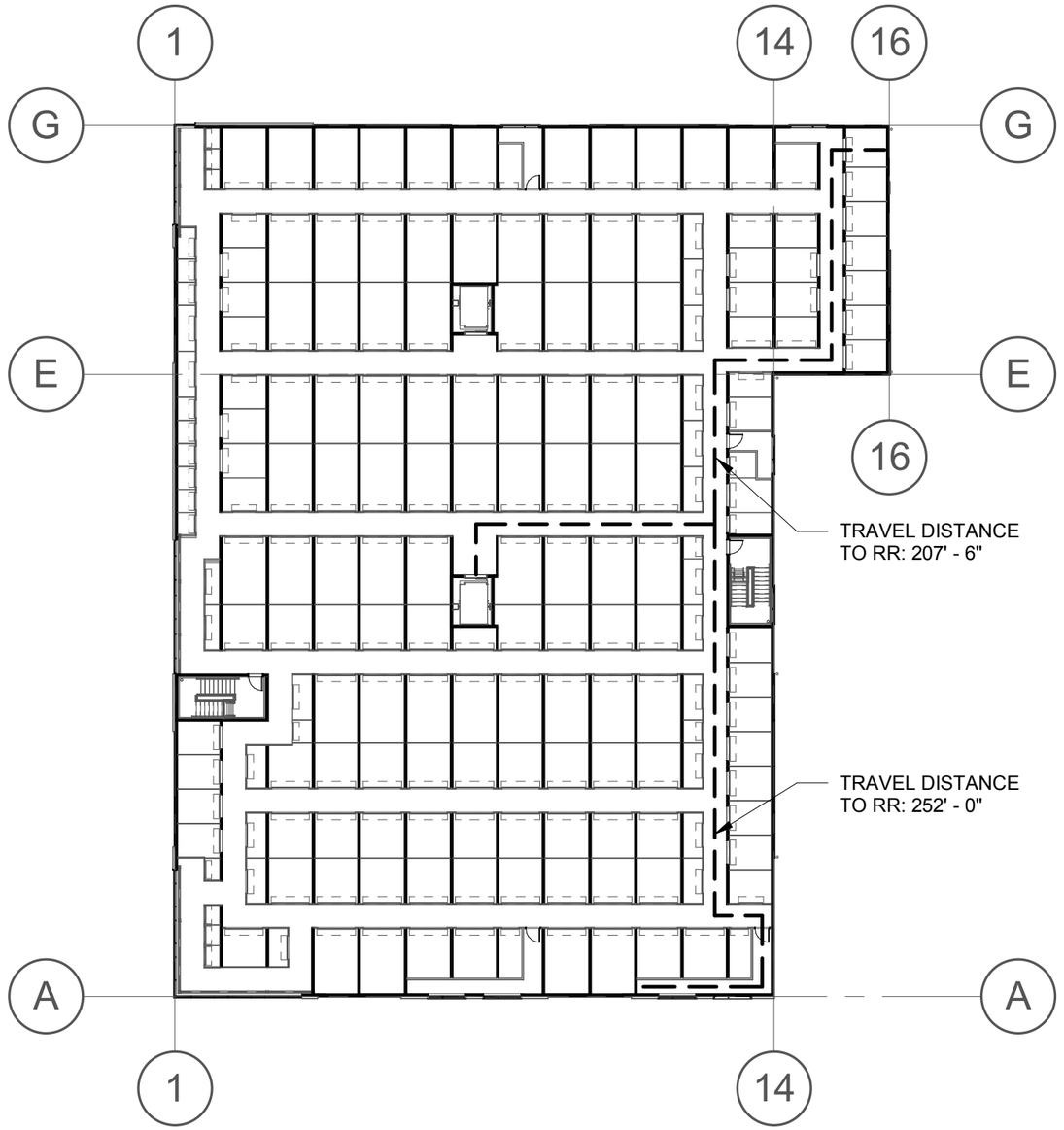
General Operating Specifications

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° to 100° F (0° to 38° C)
Operating Temperature Range	with 4098-9733 Heat Sensor	32° to 122° F (0° to 50° C)
	with 4098-9714 Smoke Sensor	15° to 122° F (-9° to 50° C)
	With 4098-9734 Heat Sensor	32° to 150° F (0° 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		0-4000 ft/min (0-1220 m/min)
Housing Color		Frost White or Black
4098-9791 Base With Supervised Remote Relay 2098-9737 (see page 2 for contact ratings)		
Externally Supplied Relay Coil 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
4098-9780 Base With Supervised Remote Relay 4098-9860 (see page 2 for contact ratings)		
Power		Supplied from communications
4098-9822 Unsupervised Relay, Requirements for Bases 4098-9789. 4098-9791, and 4098-9780 (see page 2 for contact ratings)		
Externally Supplied Relay Coil Voltage		18-32 VDC (nominal 24 VDC)
Supervisory Current		Supplied from communications
Alarm Current		13 mA from separate 24 VDC supply



1 R1.0 RESTROOM EXHIBIT - LEVEL 1 FLOORPLAN

1/32" = 1'-0"



2 R1.0 RESTROOM EXHIBIT - LEVEL 3 FLOORPLAN

1/32" = 1'-0"

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MACKENZIE.

PROJECT:
Northwest Self Storage Brooklyn Ave Facility

ORIGINAL SHEET TITLE:
RESTROOM EXHIBIT

DATE:
8/18/17

DRAWN BY:
SWC

CHECKED BY:
SWC

ORIGINAL SHEET:
A1.10,
A1.13

SUPPLEMENTAL DRAWING:
R1.0

JOB NO:
2160246.00