Simplex

*UL Listed, FM Approved**

Datasheet

Addressable Initiating Peripherals

E-Series Analog Heat Sensor 4098-9733E and Bases for Extended Exposure to High Humidity

Features

E-Series heat sensors

- Communicate analog thermal information to the sensor base
- Epoxy encapsulated electronic thermal sensor design with gold plated contacts, high humidity thermistor, and stainless steel screws
- A fast response thermistor that is inherently rate compensated
- Operation for ceiling or wall mounting

E-Series sensor bases

- Digital transmission of analog sensor values through IDNet or MAPNET II, two-wire communications
- The base mounted address remains with its location
- The integral red LED pulses for power-on, and turns steady on for alarm or trouble
- The locking anti-tamper design mounts on a standard box
- Designed for EMI compatibility
- Magnetically operated functional test

Base options and accessories

- Control of supervised or unsupervised remote relay
- Remote LED alarm indicator output
- Relays and LED alarm indicators
- Communications isolator base or sounder base

Fire alarm control unit (FACU) features

- Fixed temperature sensing, rate-of-rise temperature sensing, or both
- Utility temperature sensing
- Automatic, once per minute individual sensor calibration check that verifies sensor integrity
- Ability to display and print detailed sensor information in plain English language

Compatible Simplex products

- 4007ES, 4010, 4010ES, and 4100ES series FACUs, and 4008 series FACUs with reduced feature set for IDNet operation. Refer to data sheet *S4008-0001* for details.
- 4020, 4100, and 4120 series FACUs, Universal Transponders, and 2120 TrueAlarm CDTs equipped for MAPNET II operation

UL listed

UL listed to Standard 521 for the following applications:

- 60 ft x 60 ft (18.3 m) spacing for 135° F (57.2° C) alarm
- 40 ft x 40 ft (12.2 m) spacing for 155° F (68° C) alarm

Sounder operation is listed to UL Standard 464 as an audible notification appliance.

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.

Description

4098-9733E heat sensors

4098-9733E heat sensors are self-restoring and provide rate compensated, fixed temperature sensing, selectable with or without rate-of-rise temperature sensing. The sensor's thermistor measures the local temperature for analysis at the FACU.

Figure 1: 4098-9733E heat sensor mounted in a standard size base

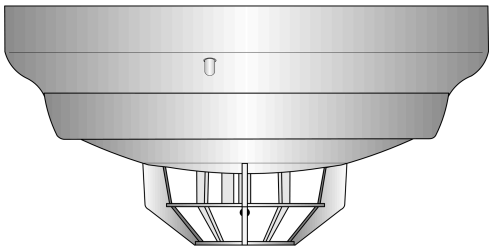
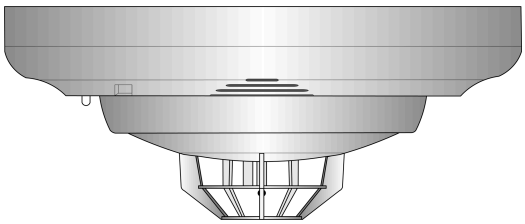


Figure 2: 4098-9733E heat sensor mounted in a sounder base



Temperature selection

Rate-of-rise temperature detection is selectable at the FACU for either 15°F (8.3°C) or 20°F (11.1°C) a 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 initiates when the temperature reaches its rated fixed temperature setting.

Utility device temperature monitoring

Utility device temperature monitoring can be programmed 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 FACUs for availability.

Digital communication of analog sensing

Sensor bases contain integral addressable electronics that monitor analog information from the detachable heat sensors. Each sensor's information is digitized and transmitted to the system FACU approximately every four seconds using Simplex addressable communications. The FACU processes the information to evaluate for pre-selected alarm levels or other off-normal conditions.

Sensor alarm and trouble LED indication

Each sensor base's LED pulses to indicate communications with the FACU. If the FACU determines that a sensor is in alarm or has some other type of trouble, the details are annunciated at the FACU and that sensor base's LED is turned on steadily. During a system alarm, the FACU controls the LEDs so that an LED that indicates a trouble returns to pulsing to help identify the alarmed sensors.

* This product was not ULC listed or approved by CSFM or MEA (NYC) or as of document revision date. 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.

Application reference

Heat 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. For detailed application information, refer to *4098 Detectors, Sensors, and Bases Application Manual (574-709)*.

Remote LED alarm indicator

Figure 3: 2098-9808 remote red LED alarm indicator

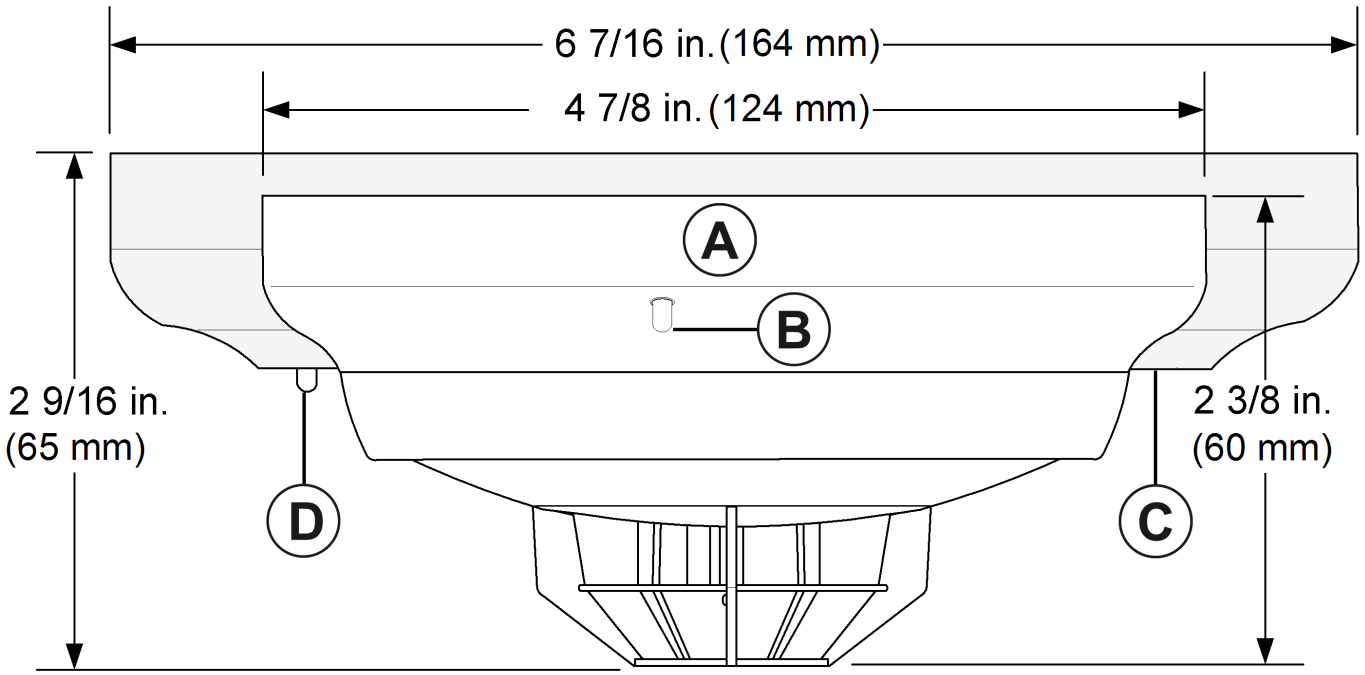


For bases located out of easy viewing, the 2098-9808 remote red LED alarm indicator duplicates the base LED status indication. It is mounted on a single-gang stainless steel plate for mounting on a standard electrical box. See Figure 3.

Sensor and base mechanical reference

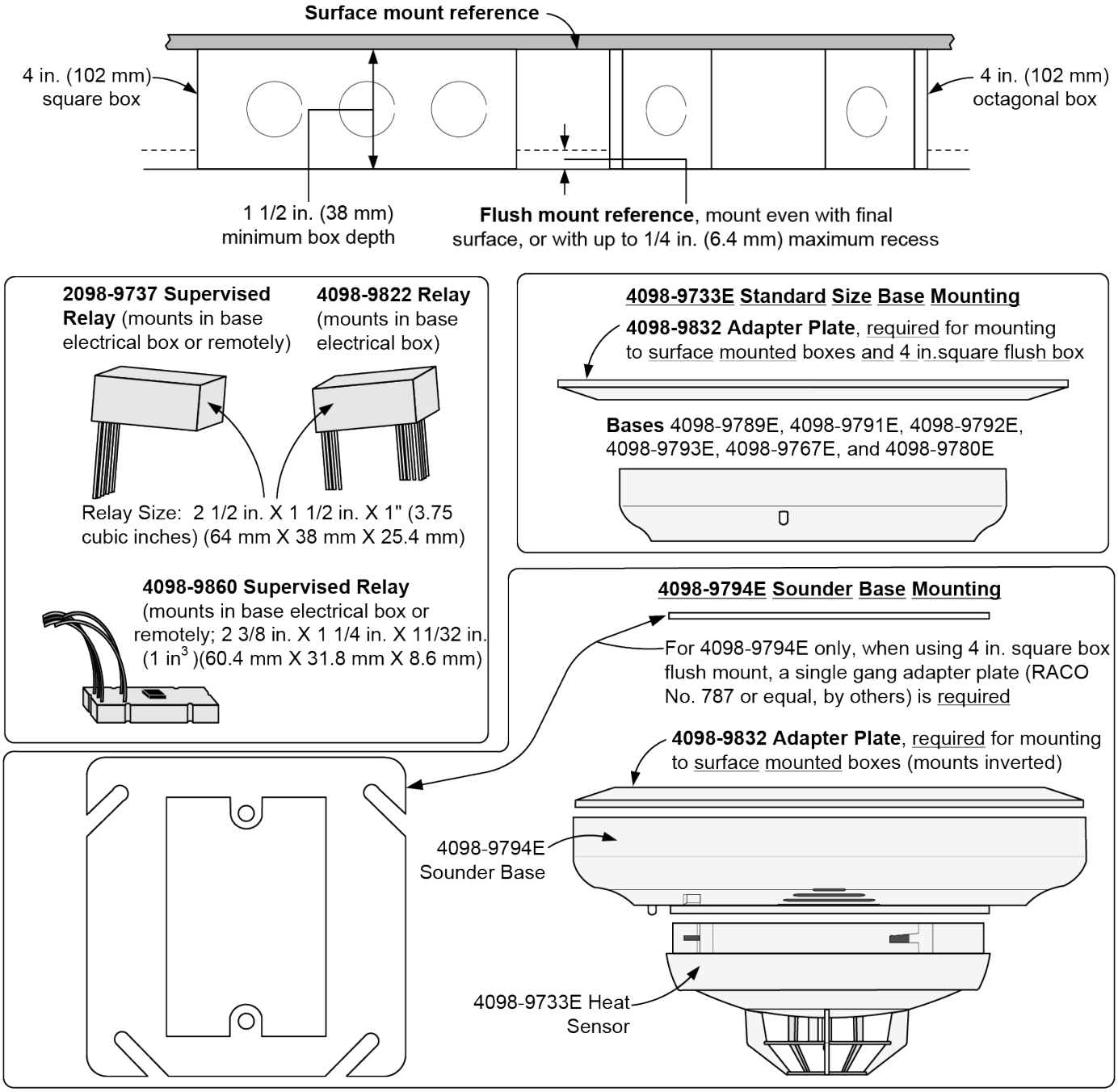
The 4098-9733E is sealed against rear air flow entry and the electronics are EMI/RFI shielded. Dimensions are shown in the illustrations below.

Figure 4: Dimensions



Callout	Description
A	Standard size base outline
B	LED status indicator
C	Sounder base outline
D	LED status indicator

Mounting reference



Note:

1. Review the wire size, wire count, box type, and whether a locally mounted relay is used before determining the box size.

2. When a locally mounted relay is used, mount the relay in electrical box and use an 1 1/2 in. extension ring (by others) on 4 in. square or an octagonal box of 1 1/2 in. or 2 1/8 in. depth as required.

3. Flush mounting also fits a single gang box, 2 1/8 in. (51 mm) deep if compatible with wiring requirements. Not applicable if a locally mounted relay is used.

E-Series heat sensor product selection chart

Table 1: Heat sensors

Model	Description
4098-9733E	Heat Sensor

Table 2: Sensor bases

Model	Description	Compatibility	Mounting Requirements
4098-9792E	Standard Sensor Base	No options available	4 in. octagonal or 4 in. square box, 1 1/2 in. minimum depth, or single gang box, 2 in. minimum depth
4098-9793E	Isolator Base. For use with IDNet communications only. Input is automatically separated from output when a communications short circuit occurs	No options available. For use only with Simplex models 4007ES, 4008, 4010, 4010ES, 4100ES, and 4100U FACUs	
4098-9767E	Isolator2 Base. For use with IDNet2 communications only. Input is automatically separated from output when a communications short circuit occurs	No options available. For use only with 4007ES, 4010ES, 4100ES FACUs providing IDNet2.	
4098-9789E	Sensor Base with wire connections for Remote LED Alarm Indicator or Unsupervised Relay	2098-9808 Remote LED Alarm Indicator or 4098-9822 Relay	4 in. octagonal or 4 in. square box **Note:** Box depth requirements depend on total wire count and wire size, refer to accessories list below for reference.
4098-9791E	Four-wire Sensor Relay Base with connections for Supervised Remote Relay and connections for Remote Alarm Indicator or Unsupervised Relay. You can program relay operation and manually operate from the FACU.	2098-9737 Remote Relay, supervised	
		2098-9808 Remote Alarm Indicator or 4098-9822 Relay, unsupervised **Note:** Not compatible with 2120 CDT	
4098-9780E	Two-wire Sensor Relay Base with connections for Supervised Remote Relay and connections for Remote Alarm Indicator or Unsupervised Relay. You can program relay operation and manually operate from the FACU.	4098-9860 Supervised Remote Relay	
		2098-9808 Remote Alarm Indicator or 4098-9822 Unsupervised Relay **Note:** Not compatible with 2120 CDT	
4098-9794E	Sounder Base with built-in piezoelectric sounder. Sounder power can be from 24 VDC or from a compatible NAC. You can independently activate sounder operation from the host FACU. You can synchronize sounder output through communications or with the NAC, if NAC powered	2098-9808 Remote LED Alarm Indicator or 4098-9822 Relay **Note:** Not compatible with 2120 CDT	
		Total quantity of sounder bases available for coding on the same communications channel may vary with FACU application and availability of NAC power, refer to specific FACU requirements	

Table 3: Accessories

Model	Description	Compatibility	Mounting Requirements
2098-9737	Supervised Relay, mounts remotely or in base electrical box, same size as 4098-9822	For use with 4098-9791E base	Remote Mounting requires 4 in. octagonal or 4 in. square box, 1 1/2 in. minimum depth Base Mounting requires 4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring
4098-9860	Supervised Relay, mounts remote or in base electrical box	For use with 4098-9780E base	
2098-9808	Remote Red LED Alarm Indicator on single gang stainless steel plate	For use with bases 4098-9789E and 4098-9791E	Single gang box, 1 1/2 in. minimum depth
4098-9822	Relay, tracks base led status, activates when base LED is on steady indicating local alarm or trouble. Unsupervised, mounts only in base electrical box		4 in. octagonal box, 2 1/8 in. deep with 1 1/2 in. extension ring
4098-9832	Adapter Plate. Required for some mounting applications. 6 3/8 in. (162 mm) diameter, 1/4 in. (6.4 mm) deep	Compatible with each base; can also be used for cosmetic retrofitting to existing 6 3/8 in. diameter base product	Required for surface or semi-flush mounted 4 in. square box and for surface mounted 4 in. octagonal box
For additional information, refer to *4098 Detectors, Sensors, and Bases Application Manual (574-709)* .			

Specifications

Table 4: Spacing distance between sensors

Fixed temperature setting	UL 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

Table 5: General operating specifications

Specification	Rating
Communications and sensor supervisory power	IDNet or MAPNET II communications, auto-selected, 1 address for each base
Communications connections	Screw terminals for in/out wiring, 18 to 14 AWG (0.82 mm² to 2.08 mm²)
Remote LED alarm indicator and relay connections	Color coded wire leads, 18 AWG
Remote LED alarm indicator current	1 mA typical, no impact to alarm current
UL listed temperature range	32°F to 100°F (0°C to 38°C)
Operating temperature range	32°F to 122°F (0°C to 50°C)
Storage temperature range	0°F to 140°F (-18°C to 60°C)
Humidity range	10 to 95% RH
Housing color	Frost white

Table 6: 4098-9791E 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
Relay contacts	DPDT contacts for resistive or suppressed loads. A power limited rating of 3 A at 28 VDC. A non-power limited rating of 3 A at 120 VAC. Requires external 24 VDC coil power

Table 7: 4098-9780E base with supervised remote relay 4098-9860

Specification	Rating
Power	Supplied from communications
Relay Contacts	SPDT contacts for resistive or suppressed loads. A power limited rating of 2 A at 30 VDC, resistive. A non-power limited rating of 0.5 A at 120 VAC, resistive

Table 8: 4098-9822 unsupervised relay, requirements for bases 4098-9789E, 4098-9791E, and 4098-9794E

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
Relay contacts	DPDT contacts for resistive or suppressed loads. A power limited rating of 2 A at 28 VDC. A non-power limited rating of 0.5 A at 120 VAC

Table 9: 4098-9794E sounder base, sounder operation

Specification		Rating
Sounder voltage		18 to 32 VDC from steady external source or from NAC
Alarm current, sounder on		20 mA at 24 VDC, 24 mA maximum at 32 VDC
Sounder output		88 dBA minimum at 10 ft (3 m) in accordance with UL Standard 464, Audible Signaling Appliances and UL Standard 268, Smoke Detectors for Fire Protective Signaling Systems
Sounder power supervision, selectable	Supervised	Select for continuous 24 VDC power, loss of power is communicated to FACU
	Unsupervised	Select when connected to NAC for sounder power, NAC provides supervision
NAC powered operation		When a sounder is activated by the FACU, the sounder output tracks connected NAC to allow synchronized coding for example Temporal or March Time.

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