

### Features

**Compact stand-alone operation air duct detector housing with clear cover to monitor for the presence of smoke\*\***

**Includes factory installed TrueAlarm photoelectric smoke detector and features:**

- On-board TrueAlarm sensitivity drift compensation and dirt accumulation tracking
- Multi-function status LED indicator on detector
- Magnetic test that initiates an alarm and provides detailed diagnostic information
- Clear cover allows visual inspection
- Test ports provide functional smoke testing access with cover in place
- Input power of 120 VAC, 24 VAC, or 24 VDC
- UL listed to Standard 268A

**On-board relay output features:**

- Fail-safe operation that is normally energized and transfers upon alarm, loss of power, or detector removal
- Contacts are Form C, rated 5 A @ 120 VAC or 28 VDC, resistive

**Operation requires Control Station 4098-9842:**

- Provides power-on LED, alarm LED, local tone-alert signal, local tone-alert silence, and keyed test/reset switch
- Control station is ordered separately

**Mounts to rectangular ducts or round ducts**

- Minimum size is 8" (203 mm) square or 18" (457 mm) diameter

**Magnetically operated functional test:**

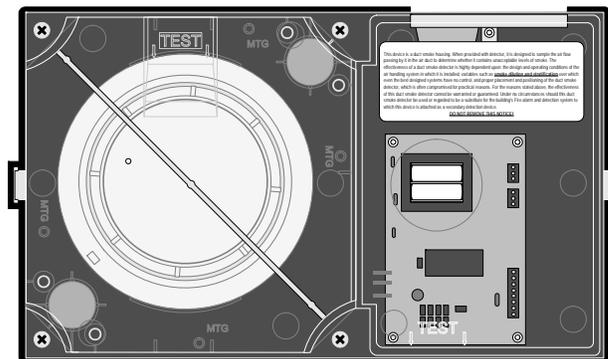
- Initiates alarm and displays dirt accumulation status using the detector status LED
- Assists with maintenance priorities by categorizing detector status and identifying dirty detectors

**Sampling tubes (ordered separately):**

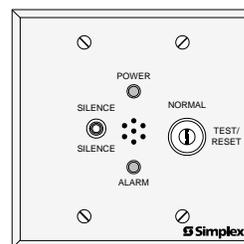
- Available in multiple lengths to match duct size
- Installed and serviced with housing in place

\*\* Please note that smoke detection in air ducts is intended to provide notification of the presence of smoke *in the duct*. It is not intended to, and will not, replace smoke detection requirements for open areas or other non-duct applications.

\* 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 3240-0026.241 for allowable values and/or conditions concerning material presented in this document. This product was not ULC listed or FM approved 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.



4098-9687 Stand-Alone Duct Detector Housing, Front View



4098-9842 Control Station

### Description

**Stand-Alone Operation.** Model 4098-9687 stand-alone duct detector housings with smoke detector are for applications that operate independent of a fire alarm control panel. They provide a TrueAlarm smoke detector for monitoring air conditioning or ventilating ducts. Sampling tubes are installed into the duct allowing air to be directed to the smoke detector mounted in the housing.

**Remote Control Station 4098-9842** provides a red alarm LED, a green power-on LED, a piezoelectric tone-alert, a tone-alert silence switch, and a key switch for selecting normal operating mode or to initiate a test or reset operation. (This control station is required.)

**Detector Operation.** If an alarm is detected, the on-board relay contacts transfer, the control station tone-alert sounds, and the alarm LED illuminates. Activating the Silence switch will silence the tone-alert. After the source of the alarm is located and resolved, turning the key switch to Test/Reset will reset the detector.

**Fail-Safe Relay Operation.** The output relay contacts are held energized during normal operation. Upon loss of power or removal of the detector, the contacts will transfer.

## Duct Detector Selection Chart

Model	Description	Compatibility
4098-9687	Stand-alone operation duct detector with internal output relay, input power is 120 VAC, 24 VAC, or 24 VDC*	Requires 4098-9842 Test Station (ordered separately)

### Control Station (required, ordered separately)

Model	Description	Mounting
4098-9842	Control Station with power-on green LED, red alarm LED, tone-alert, silence switch and key switch for test/reset, on stainless steel plate	Use double gang box, 3" H x 4" W x 2" D (76 mm x 102 mm x 51 mm)

\* Stand-alone duct detector housing includes an internally mounted model 4098-9601 TrueAlarm photoelectric detector and an exhaust tube. A correctly sized sampling tube (ordered per application) is required, refer to chart below.

## Sampling Tube Selection Chart, Ordered Separately Per Duct Width, Select One

Overall Duct Width	Tube Required	Suggested Cut Length
12" (305 mm)	<b>4098-9854</b>	1/2" (12.7 mm) longer than duct width
13" to 23" (330 mm to 584 mm)	<b>4098-9855</b>	1/2" (12.7 mm) longer than duct width
24" to 46" (610 mm to 1168 mm)	<b>4098-9856</b>	3 in" (76 mm) longer than duct width
46" to 71" (1168 mm to 1803 mm)	<b>4098-9857</b>	3 in" (76 mm) longer than duct width
71" to 95" (1803 mm to 2413 mm)	<b>4098-9858</b>	3 in" (76 mm) longer than duct width

## 4098-9842 Control Station Indicator Reference

Operation Status	Power-On LED	Alarm LED	Tone-Alert	Control Relay
<b>Normal</b>	On	Off	Off	Coil energized
<b>Alarm</b>	All On			Coil de-energized
<b>Trouble</b> , missing detector head	Off	On	On	
<b>Trouble</b> , power fail	All Off			

## TrueAlarm Detector Status LED Indications

LED Indication	Status
Pulses approximately every 4 seconds	Normal
Steady On	Alarm

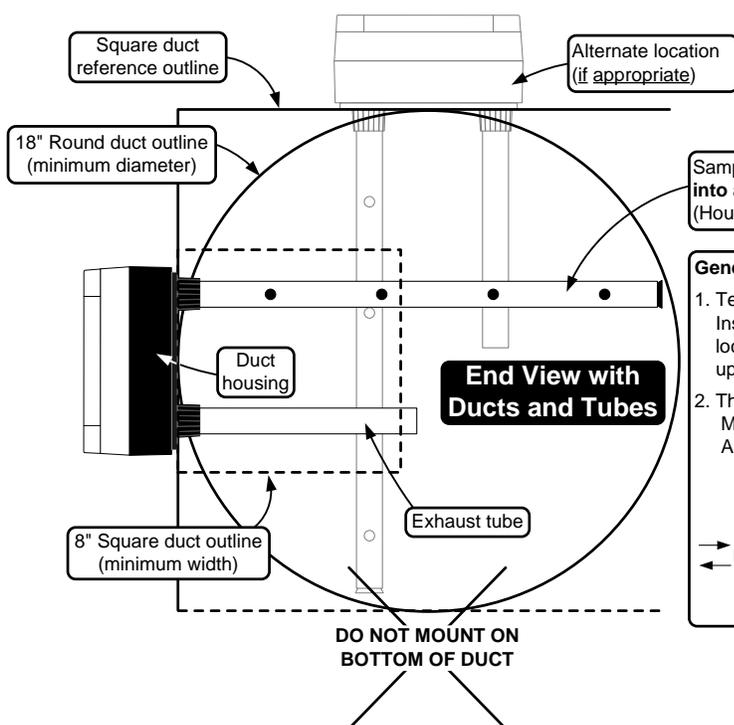
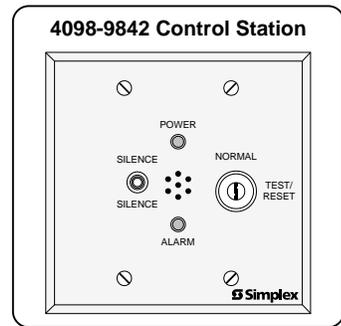
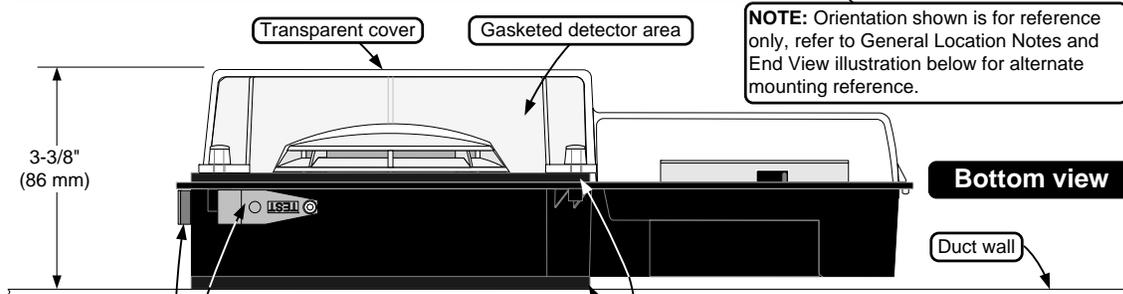
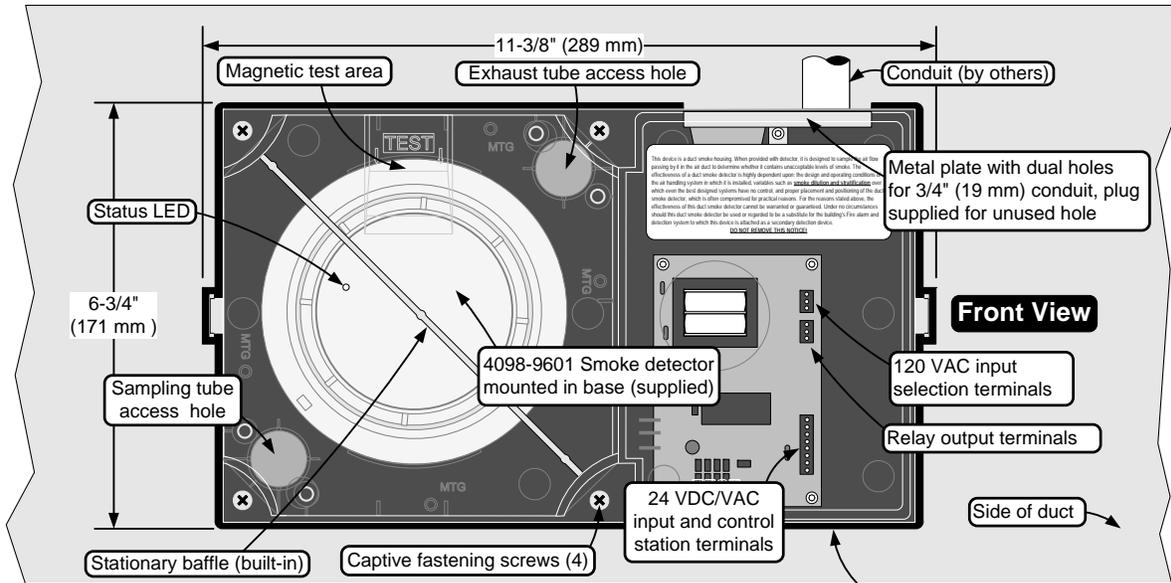
### Detector LED Response to Magnetic Test \*\*

LED Indication	Followed By	Status	Action
LED turns ON	Alarm is initiated	<b>Normal</b> , sensitivity is within compensation range	None
LED pulses <i>quickly</i> , 6 times in 3 seconds, then turns ON	Alarm is initiated	<b>More sensitive</b> , out of normal compensation range	Cleaning or other <b>service is required</b>
LED pulses <i>slowly</i> , 4 times in 8 seconds, then turns ON	Alarm is initiated	<b>Less sensitive</b> , out of normal compensation range	
	Does not initiate Alarm	<b>Detector is malfunctioning</b>	<b>Service is required</b>

\*\* Testing requires placing a magnet at the designated location on the duct housing cover for 4 seconds and referring to the response from the red LED status indicator on the detector. Refer to Installation Instructions 574-777 for further test and maintenance information.

# Stand-Alone Duct Detector Housing Detail Reference

**NOTE:** Refer to Installation Instructions 574-777 for additional detail and maintenance information.

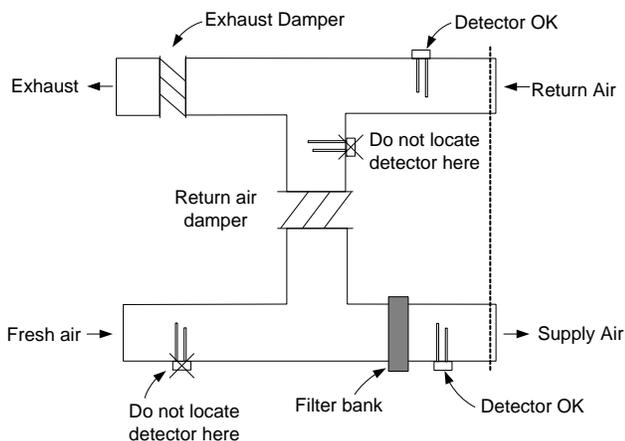


Sampling tube, keyed for proper hole alignment **with holes facing into airflow** (template is provided for proper tube installation). (Housing is shown as position 2 per note 2 below.)

**General Location Notes:**

- Testing performed under the auspices of the Fire Detection Institute (FDI) recommended when sampling tubes are not located vertically, that they be positioned horizontally in the upper half of the duct to account for possible stratification.
- Three duct side mounting options are available as shown below. Mount housing at 90° to airflow for all orientations. Arrows indicate allowed airflow directions.

## Stand-alone Duct Detector Location Reference



**Additional Information.** Refer to NFPA 90A, *Standard for the Installation of Air Conditioning and Ventilating Systems*; NFPA 72, the *National Fire Alarm and Signaling Code*; and the *NEMA Guide for Proper Use of Smoke Detectors in Duct Applications*, and Installation Instructions 574-776.

### Duct Detector Location Considerations:

1. Proper duct smoke detection location must ensure adequate airflow within the duct housing.
2. Duct air velocity rating is 300 to 4000 ft/min (91 to 1220 m/min). Pressure differential between intake and exhaust tubes is required to be between 0.015 to 1.55 inches of water (0.381 to 39.37 mm).
3. Ensure accessibility for test and service.
4. Proper Locations: downstream side of filters to detect fires in the filters; in return ducts, ahead of mixing areas; upstream of air humidifier and cooling coil.
5. Other locations and orientations may be required for proper duct smoke detection depending on duct access, system design, and duct airflow testing. Contact your local Simplex product supplier for assistance.

### Locations to Avoid:

1. Where dampers closed for comfort control would interfere with airflow.
2. Next to outside air inlets (unless the intent is to monitor smoke entry from that area).
3. In return air damper branch ducts and mixing areas where airflow may be restricted.

## Specifications

Voltage, Selectable at Housing	120 VAC, 60 Hz	24 VAC, 60 Hz	24 VDC
Voltage Range	102 to 132 VAC	20.4 to 26.4 VAC	20.4 to 32 VDC
Standby Current	30 mA	100 mA	35 mA
Alarm Current	40 mA	125 mA	45 mA
Contact Rating, Form C Contacts	5 A resistive @ 120 VAC or 28 VDC		

### General Specifications

Air Velocity Range (linear ft/min)	300 to 4000 ft/min (91 to 1220 m/min)
UL Listed Temperature Range	32° to 100° F (0° to 38° C)
Operating Temperature Range	32° to 122° F (0° to 50° C)
Storage Temperature Range	0° to 140° F (-18° to 60° C)
Humidity Range	10% to 95% RH, non-condensing
Housing Color and Material	Black ABS base with clear polycarbonate cover
Sampling and Exhaust Tube Material	Black CPVC, custom extrusion; sampling tubes are pre-drilled
Wiring Connections, Housing and Control Station	Terminal blocks, 18 to 12 AWG (0.82 mm <sup>2</sup> to 3.31 mm <sup>2</sup> )

### Control Station 4098-9842

Distance from Housing	500 ft (152 m) maximum
Indicators and Controls	Green power-on LED, red alarm LED, local sounder silence toggle switch, key switch to select normal or test/reset mode (refer to table on page 2 for status indication list)
Wiring Requirements	5 conductors, 18 AWG typical wiring, assume 25 mA maximum for conductor sizing

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