

## Features

Compact 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
- Magnetic test that initiates an alarm and provides detailed diagnostic information
- Clear cover allowing visual inspection
- Test ports provide functional smoke testing access with cover in place
- UL listed to Standard 268A

### SKU availability:

- A4098-9685, 2-Wire standard operation
- A4098-9688, 2-Wire with supervised control for a single remote relay (relay included)
- A4098-9686, 4-Wire operation with supervised control for multiple remote relays (includes one remote relay)

### 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

### Remote module options (ordered separately):

- Red alarm LED (A4098-9830)
- Test stations with LED(s) and keyswitch (refer to page 2 for compatibility)
- Relays for remote control applications

\*\* 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.

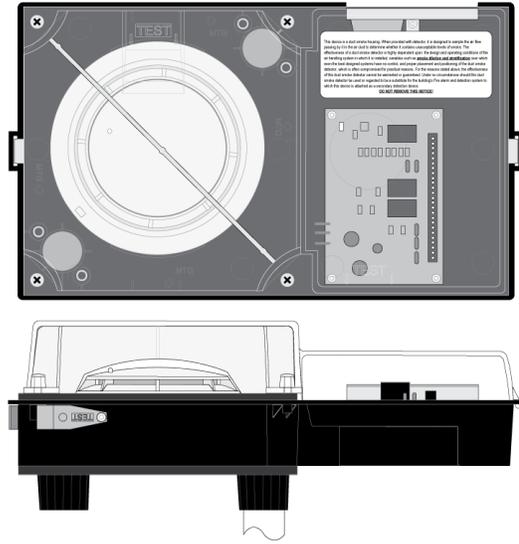


Fig 1: Duct Detector Housing, Front and Bottom View

### Remote Alarm Indicators and Test Stations

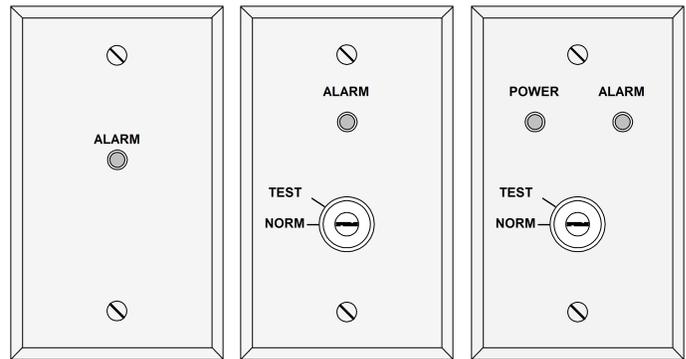


Fig 2: A4098-9830

Fig 3: A4098-9834

Fig 4: A4098-9835

## Introduction

**Operation.** Autocall air duct smoke detector housings 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. These duct detector housings with smoke detectors are compatible with Autocall fire alarm control panels that provide conventional two-wire or four-wire initiating device circuits (IDCs).

## Duct Detector Housings with TrueAlarm Photoelectric Detector for 2-Wire or 4-Wire Operation

### SKU Details

Each supports a remote red alarm LED or a remote test station with LED(s). Models with relay output provide relay coil wiring supervision that will transfer a trouble to the IDC if supervision is lost.

**2-Wire Model A4098-9685** provides basic smoke detection for applications that do not require a remote relay. Power is from the IDC.

**2-Wire Model A4098-9688** provides a supervised relay output for connection to a single A4098-9841 relay. This model is powered from the IDC and requires connection as the only device to ensure relay operation.

**4-Wire Model A4098-9686** provides a supervised relay control output that can control up to 15, 4098-9843 control relays. Relay supervision troubles are indicated by a yellow LED on the interface board. (Resettable 24 VDC is required, see [Specifications](#) on page 6.) Remote test station A4098-9835 is available for use with this model to provide a test keyswitch, a red LED alarm indicator and a green power-on LED.

### Duct Detector Selection Chart

**Table 1: Duct Smoke Detector Housing with Photoelectric Detector\***

SKU	Description	Compatibility	
A4098-9685	2-Wire Duct Detector, standard operation	No relay(s)	Remote LED indicator and test stations per below
A4098-9688	2-Wire Duct Detector with supervised single remote relay output; includes one A4098-9841 relay; <b>Note:</b> Must be only device on IDC for proper relay operation; (When used with the Autocall 4004 or 4005 fire alarm control panel, connect to "high current" IDCs only)	Supplied relay is required for proper operation	
A4098-9686	4-Wire Duct Detector with supervised multiple remote relay output; requires resettable 24 VDC fire alarm power and relay end-of-line resistor A4081-9008; includes one 4098-9843 relay	Up to 15 total 4098-9843 relays (additional relays are ordered separately)	

**Table 2: LED Indicator and Remote Test Stations (Select one if required) Each assembly is on a single gang stainless steel plate, wiring is 18 AWG (0.82 mm<sup>2</sup>) color coded wire leads**

SKU	Description	Compatibility	Mounting
A4098-9830	Red LED alarm indicator	A4098-9685	Use single gang box, 3" H x 2" W x 2" D (76 mm x 51 mm x 51 mm)
A4098-9834	Test Station with keyswitch and red LED alarm indicator (turning switch to "TEST" initiates alarm for system testing)	A4098-9688 A4098-9686	
A4098-9835	Test Station with keyswitch, red LED alarm indicator, and green power-on LED	A4098-9686 only	

**Table 3: Epoxy Encapsulated Remote Relays and End-of-Line Resistor (wiring is 18 AWG (0.82 mm<sup>2</sup>) color coded wire leads)**

SKU	Description	Compatibility	Mounting
A4098-9841	Relay, dual Form C (1/2 A @ 120 VAC); included with A4098-9688	Refer to pages 3 and 4 for additional relay information	Locate relays within 3 ft (1 m) of device being controlled, per NFPA 72
4098-9843	Relay, single Form C (7 A @ 120 VAC); one included with A4098-9686		
A4081-9008	End-of-Line Resistor Harness; 10 kΩ, 1/2 W; (ref. 733-894); required to supervise remote relay coil connection	A4098-9686	At last relay location

\* Each duct housing includes an internally mounted model A4098-9601 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

**Table 4: Sampling Tube Selection Chart**

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

## TrueAlarm Detector Status LED Indications

Table 5: Status LED Indications

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

Table 6: Detector LED Response to Magnetic Test \*\*

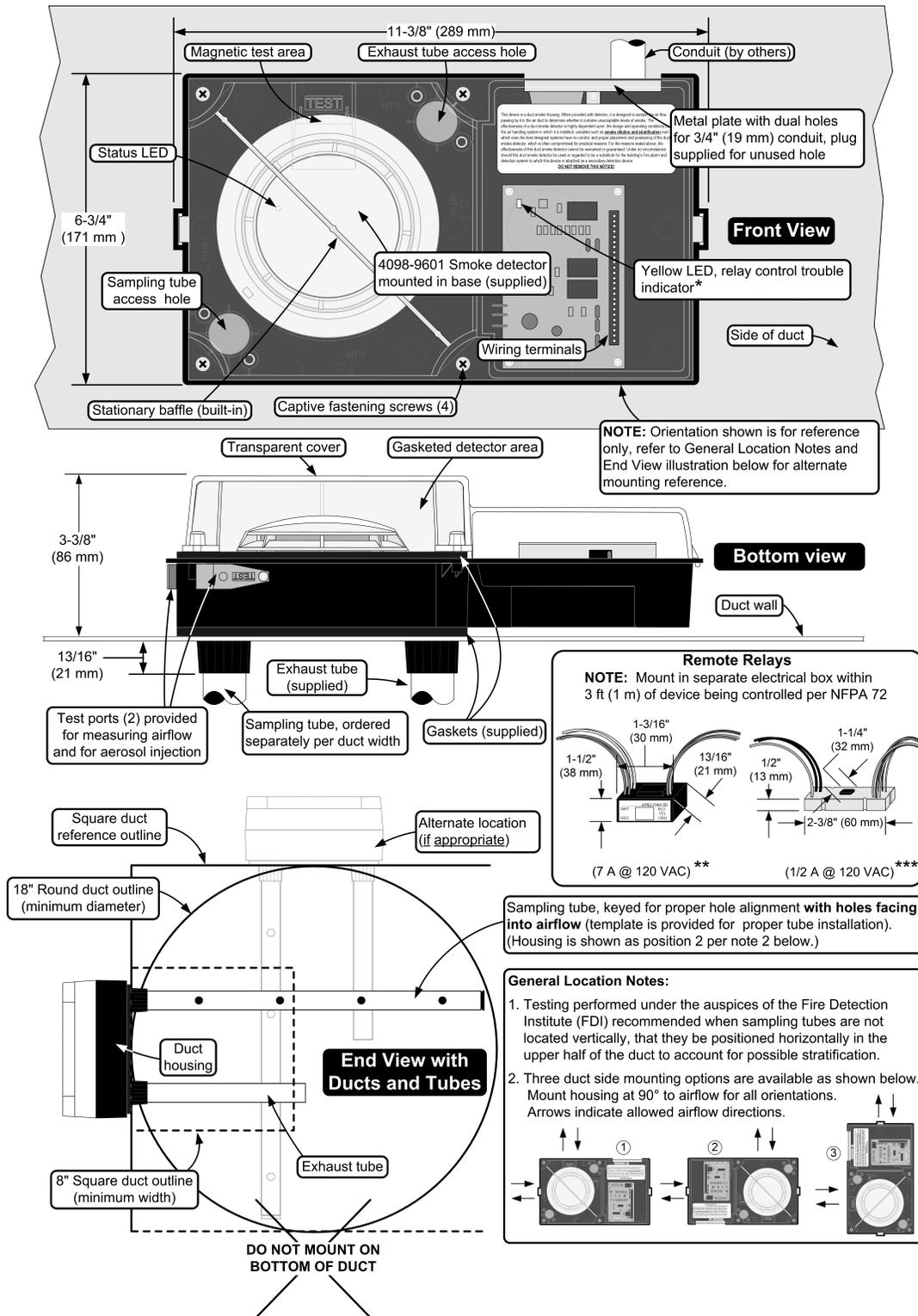
LED Indication	Followed By	Status	Action
LED turns ON	Alarm is initiated	<b>Normal</b> , sensitivity is within compensation range	None
LED pulses quickly, 6 times in 3 seconds, then turns ON	Alarm is initiated	<b>More sensitive</b> , out of normal compensation range	Cleaning or other service is required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

\*\* 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 574-776AC for further test and maintenance information.

# Duct Detector Housings with TrueAlarm Photoelectric Detector for 2-Wire or 4-Wire Operation

## Duct Detector Housing Detail Reference

**Note:** Refer to Installation Instructions 574-776AC for additional detail and maintenance information.

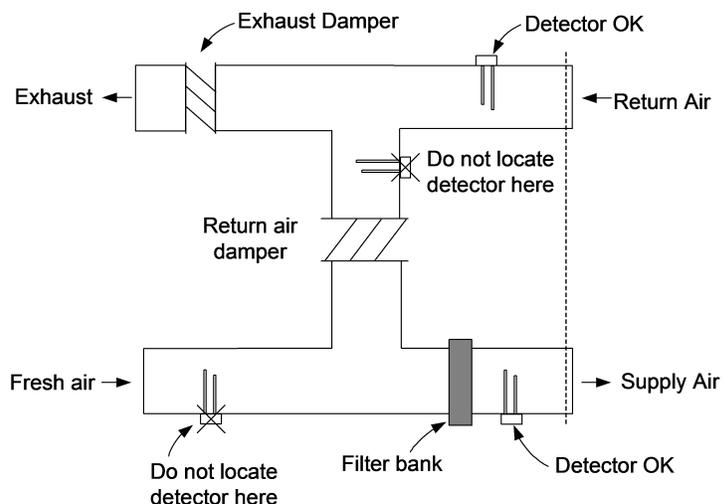


**Note:**

- \*A4098-9686 only
- \*\* Remote Relay 4098-9843
- \*\*\* Remote Relay A4098-9841

### Duct Detector Location Reference

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



## Specifications

**Table 7: General Mechanical & Environmental**

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

**Table 8: Two-Wire Operation, Models A4098-9685 and A4098-9688**

Specification	Rating	
<b>Operating Voltage</b>	18-32 VDC, from compatible IDC	
<b>A4098-9685 (no relay)</b>	<b>Standby Current</b>	100 µA @ 24 VDC
	<b>Alarm Current</b>	40 mA maximum @ 24 VDC
<b>A4098-9688 (with single relay control) Only one A4098-9688 per IDC</b>	<b>Standby Current</b>	2 mA @ 24 VDC (includes relay supervision current)
	<b>Alarm Current</b>	40 mA maximum @ 24 VDC
	<b>Relay Control</b>	A4098-9841 relay only, one maximum
	<b>Relay Rating</b>	Dual Form C, 1 A @ 28 VDC, 1/2 A @ 120 VAC, Resistive
	<b>Relay Location</b>	100 ft (30 m) maximum to relay coil, relay must be within 3 ft (1 m) of device being controlled per NFPA 72

**Table 9: Four-Wire Operation, Model A4098-9686, Requires Resettable and Fused 24 VDC from Fire Alarm Power Supply**

Specification	Rating
<b>Operating Voltage</b>	18-32 VDC (24 VDC nominal)
<b>Standby Current</b>	12 mA @ 24 VDC; 32 mA @ 24 VDC with A4098-9835 Test Station
<b>Alarm Current (one relay activated)</b>	45 mA @ 24 VDC; 65 mA @ 24 VDC with A4098-9835 Test Station Add 15 mA @ 24 VDC for each additional remote 4098-9843 relay
<b>Supervised Remote Relay Control</b>	For use with relay 4098-9843, quantity of 15 maximum, distance of 500 ft (152 m) maximum, requires A4081-9008 (ref. 733-894), 10 kΩ, 1/2 W end-of-line resistor

**Table 10: 4098-9843 Relay Output Ratings, Single Form C, use with Model A4098-9686 Only**

Specification	Rating
<b>Coil Current</b>	15 mA @ 24 VDC, up to 15 maximum per relay control output
<b>Relay Contacts, Resistive Ratings</b>	7 A at 0.35 PF @ 28 VDC & 120 VAC; 250 µA @ 5 VDC
<b>Location Distance</b>	500 ft (152 m) maximum to relay coils; relays must be within 3 ft (1 m) of device being controlled per NFPA 72

**Table 11: Remote Alarm LED & Test Stations**

Specification	Rating
<b>LED Current</b>	1.7 mA, no impact to alarm current
<b>Distance</b>	250 ft (76 m) maximum from duct housing SKUs A4098-9830, A4098-9834, & A4098-9835

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