

## Smoke Detector Specification

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. System Sensor
2. Approved Equal

B: Approving Agencies and Standards by the following:

- U.L. Standard 268A, Standard for Smoke Detectors for Duct Applications
- NFPA Standard 90A, Installation of Air Conditioning and Ventilating Systems
- NFPA 90A3, “Standard for the Installation of Air Conditioning and Ventilating Systems”
- NFPA 92A, Recommended Practice for Smoke Control Systems
- NFPA Standard 72, National Fire Alarm Code
- NFPA Standard 101, Life Safety Code
- ASHRAE Handbook and Product Directory, “Fire and Smoke Control”
- or latest standard.

C: Proof of Compliance By means of the following:

1. Product label indicating at a minimum; manufacturer’s name and model number; date of manufacture; UL file number and logo; and NYC MEA number

D: All Model numbers from the manufacturer must be listed and approved with the UL and listed in the UL Online Certifications Directory for that manufacturer.

E. Product description:

1. The detector housing shall be UL listed per UL 268A specifically for use in air handling systems. The detector shall operate at air velocities of 100 feet per minute to 4000 feet per minute (0.5 to 20.32 m/sec.).

2. The unit shall be capable of controlling up to ten (10) air handling systems when interconnected with other detectors.

3. The detector shall be capable of providing a trouble signal in the event that the front cover is removed.

4. It shall be capable of local testing via magnetic switch or remote testing

5. The unit shall be reset by local reset button or remote test station.

6. The duct smoke detector housing shall incorporate an airtight smoke chamber in compliance with UL 268A, Standard for Smoke Detectors for Duct Applications. The housing shall be capable of mounting to either rectangular or round ducts without adapter brackets.

7. An integral filter system shall be included to reduce dust and residue effects on detector and housing, thereby reducing maintenance and servicing.

8. Sampling tubes shall either be telescoping or be easily installed by passing through the duct housing after the housing is mounted to the duct.

9. The unit shall provide a spacial separation of no less than 1/4” (6.4 mm) and/or a physical barrier between the high and low voltage terminals. The enclosure shall meet all applicable NEC and NFPA standards regarding electrical junction boxes. Terminal connections shall be of the strip and clamp method suitable for 12–18 AWG wiring.

F. General installation requirements

1. Smoke detectors shall be located:

- Downstream of the air filters and ahead of any branch connections in air supply systems having a capacity greater than 2,000 cfm (944 L/sec).

- At each story prior to the connection to a common return and prior to any recirculation or fresh air inlet connection in air return systems having a capacity greater than 15,000 cfm (7080 L/sec), and serving more than one story.
  2. The Smoke Detector shall be located within the duct, protruding into the duct, or located outside the duct so that the smoke detector detects visible or invisible particles of combustion flowing within the duct. Actuation of the device shall allow operation of other certain control functions and integration with building fire alarm and control system.
  3. Smoke detection devices used for duct application shall include smoke detector sensors within a housing mounted outside the duct utilizing sampling tubes, or area smoke detectors listed for in-duct or partial in-duct mounting.
  4. Smoke Detector shall have alarm contacts available in the detector to initiate air movement control or to perform other control functions.

#### G. Specific Installation

##### 1. Duct mounted:

a. Air stream sampling shall be accomplished by sampling tubes that penetrate and traverse of either the supply or return air ducts or both as required by code or as shown on contract drawings. The sampling tubes shall be positioned so air that air will be drawn through the detector, sampled, and then returned to the air stream in the duct.

b. Follow manufacturer instructions and drill only holes in duct that are necessary for proper manufacturer recommended installation. If allowed by manufacturer, duct smoke detector assemblies may be mounted within the duct or located on the sides or top of a duct.

c. Proper sampling tube length inserted into duct shall be determined by manufacturer installation requirements. If duct is more than three feet wide, drill an appropriate diameter hole directly opposite but two to three inches lower to support the sampling tube of lengths longer than three feet.

d. Tubes shall be marked or, as indicated in manufacturer's installation instructions, provided with inhibitors to ensure that the tubes are installed in their proper duct input and output ports.

##### 2. An area smoke detector:

a. Detectors listed for use in open air applications shall not be used inside a duct in place of a duct smoke detector.

b. Detector shall be listed for the application, may be mounted on an outlet box or be mounted on the exterior of the duct, with the sensing area of the detector protruding into the space to be sensed.

c. Tubes used for installation with an area smoke detector shall be marked or, as indicated in manufacturer's installation instructions, provided with inhibitors to ensure that the tubes are installed in their proper input and output ports.

3. Access panels shall be incorporated in the duct side walls for maintenance and test.

4. For future maintenance, an installation log with the following information shall be handed to the owner along with Operation and installation manuals as per closeout procedures.

- a. Information for log shall be:
  1. Floor and tag of each detector
  2. System assigned for each detector
  3. Model number and serial number of each detector
  4. Original field test date and result

H. Maintenance.

1. All Smoke detectors should be tested periodically and maintained at regular intervals. Manufacturer's specific recommended practices should be followed by end user or owner for maintenance and testing. Also, refer to Section 4-4 and Appendix B of NFPA 90A, and Chapter 7 of NFPA 72.

1. All detectors should be:
  - (a) Tested or inspected at least annually to ensure that they sample the air stream.
  - (b) Tested at least annually causing them to initiate an alarm at their installed location to ensure that they are operative and produce the intended response.
  - (c) Checked within one year after installation and every alternate year thereafter to assure that they are within their listed and marked sensitivity range.
  - (d) Continue log information from closeout procedures.