I. LOCATION REQUIREMENTS

Duct Smoke Detector Location Requirements: To prevent false alarms the detectors should not be mounted in areas of extreme high or low temperatures, in areas where high humidity exist, or in areas where duct air may contain gases or excess dust. The duct detector should, when possible, be located a minimum of six duct widths downstream from a source of turbulence (bends, inlets, or deflection plates). At these locations, air flow is less turbulent and the air/smoke mixture should be more homogeneous. Refer to NFPA 90A, 72, and 101 for more information. See Figure 1A and 1B.

Exception: Where it is physically impossible to locate the duct detector accordingly, the duct detector can be positioned closer than six duct widths, but no more than 10 duct widths. Refer to NFPA 90A, 72, and 101 for more information.

II. MOUNTING THE DETECTOR

A. DUCT PREPARATION
1. Remove paper backing from mounting template AP 121 (packed in installation kit) and affix to duct at desired location.
2. Using template as a guide, drill 4 mounting holes (3/32" diameter) for duct mounting screws (4 #12 x 1/2" sheet metal screws packaged in installation kit). D fill or punch holes for sampling tubes in air ducts (1-3/8" diameter), using template to clean all holes.

B. VERIFY AIR FLOW AND DIRECTION

The duct D detectors are designed for use in ducts where the air velocities are from 300 to 4000 feet per minute. Verify this by checking specifications of installation and if necessary, use an ALnor Model 6000P velocity meter (or equivalent) to check the air velocity. See Figure 2 for sampling tube orientation to air flow direction.

C. SAMPLING TUBE ASSEMBLY (See Figure 2)

The sampling tubes may be ordered to desired length or ordered in one of 3 standard lengths and cut per requirements. The intake sampling tube consists of a piece of steel piping with a series of holes drilled the entire length of the tube and should extend the entire width of the duct. The holes must be facing into the air flow (see Figure 2). The exhaust tube consists of a piece of steel piping approximately 7-1/2" long.

INTAKE SAMPLING TUBE STANDARD LENGTHS

ST3.0 For duct widths of 3.0 to 5.0
ST5.0 For duct widths of 5.0 to 7.0
ST7.5 For duct widths of 7.5 to 10.0

1. Cut the intake sampling tube to the desired length.
2. Firmly insert the stopper (packed in installation kit) to the end of the INTAKE sampling tube.

D. MOUNT SAMPLING TUBES (See Figure 2)

1. Sampling tube connectors are equipped with set screws, which allow the tubes to be mounted only in directions shown in Figure 2. Establish proper orientation considering airflow direction.
2. Insert intake and exhaust tubes into connectors, align set screw to set screw hole in side of duct housing to the air duct.

E. MOUNT THE DUCT HOUSING (See Figure 1B & 2)

Move duct housing mounting tube to desired location. Use 4 mounting screws (4 #12 x 1/2" sheet metal screws, packaged in installation kit) to secure the housing to the air duct.

F. VERIFY AIR SAMPLING (See Figure 3)

To verify proper sampling of air, use a Dwyer Model 4000 differential pressure gauge (or equivalent). See Figure 3 for gauge connections. The pressure differential between intake sampling tube and exhaust tube should be greater than 0.01" of water and less than 1.2" of water.

III. ELECTRICAL INSTALLATION

A. GENERAL INFORMATION

Wiring must conform to applicable local codes, ordinances and regulations covering these types of devices. Wire the detectors according to the engineering drawings for the particular job requirements. These detectors are not intended for open area protection, nor should they be used for open air protection. Refer to NFPA 90A and NFPA 72 for general and additional information on Duct Smoke Detectors concerning operation and installation. Terminals are suitable for up to 14 gauge wire.

B. DETECTOR WIRING

1. With power source de-energized and the smoke detector not installed, wire all connections per engineering drawings. Refer to the applicable figures below depending on your duct housing model number.
2. With all wiring in place, install the detector head.
3. Energize the detector.

C. TESTING THE INSTALLATION

Mixs DH-98-A and DH-98-HVI

With the duct housing cover removed, place the magnet (HA Part #0700-01117) on the detector as shown in Figure 4 for approximately six (6) seconds. The detector should not alarm. Place the magnet on the opposite side (Figure 5) for another six (6) seconds. The detector LED should illuminate and the duct housing should go into alarm. This test will verify that the detector is within its intended limits.

Mixs DH-98-P and DH-98-HVP

The SLR photoelectric detector has a built-in sensitivity window verification feature. If the detector is within its calibrated sensitivity range the detector LEDs will flash Green in standby or normal operation. If the detector drifts outside its sensitivity range the LED’s will flash Red to indicate an out of sensitivity condition.

NOTE: Any of the DH-98-A, DH-98-P, DH-98-HVI or the DH-98-HVP detectors may be replaced into existing housing and panel (HA Part #0700-01117) as shown in Figure 6.

**These products are compatible exclusively with the alarm control panels that utilize Hochiki's protocol, DCP.
These duct sensors are analog addressable and can be calibrated by a U.L. Listed analog control panel. See the FACP Installation Instructions for specific directions.

Note: All duct detector models can be tested with actual smoke. Remove the duct detector cover. Test the detector head by lighting a piece of cotton clothesline and placing it approximately 3 inches from the detector head. Blow across the lit end of the clothesline toward the detector. The LEDs on the detector should illuminate within one minute. After performing this test sequence, reinstall the duct detector cover.

**D. WIRING DIAGRAMS - DH-98I, DH-98P, DH-98-HVI and DH-98-HVP**

These duct sensors are analog addressable and can be calibrated by a U.L. Listed analog control panel. See the FACP Installation Instructions for specific directions.

**III. ELECTRICAL INSTALLATION, continued**

**D. WIRING DIAGRAMS, continued**

**DH-98-A/DH-99-A WIRING DIAGRAM**

The DH-98-A/DH-99-A and DH-98-AR/DH-99-AR are not self-contained sensors. This product is compatible only with fire alarm control panels that utilize Hochiki's Digital Communications Protocol, DCP. For example the FireNET Control Panel.

**DH-98-AR / DH-99-AR WIRING DIAGRAM**

Specifications subject to change without notice. * August 2014

**CAUTION:** Since the analog loop is current limited similar to a conventional two-wire loop, the DH-98-AR/DH-99-AR cannot be guaranteed to operate under all conditions. This analog duct housing must be treated as a two-wire conventional duct detector when considering auxiliary functions necessary for smoke control. When smoke control is absolutely necessary, the conventional four-wire duct detector (DH-98-P, DH-98-I, DH-98-HVP, DH-98-HVI) used with a contact monitoring module will satisfy the condition.
The DH-98/99 series duct detectors have the ability to interconnect (all alarm relays operate with a single alarm) using the same independent power supply. Polarity must be observed throughout the connection using terminals 16 and 18 from each unit. Up to 30 units may be interconnected.

**INTERCONNECT WIRING DIAGRAM (MULTIPLE FAN SHUTDOWN)**
D9-98I, DH-98P, DH-98HVI and DH-98HVP

The DH-98/99 series duct detectors have the ability to interconnect (all alarm relays operate with a single alarm) using the same independent power supply. Polarity must be observed throughout the connection using terminals 16 and 18 from each unit. Up to 30 units may be interconnected.

**REMOTE ACCESSORY WIRING**
Remote accessory terminals 16 to 20 are not supervised and the output voltage will be present when the duct detector is in alarm or the test/reset switch is operated.

**INTERCONNECT WIRING DIAGRAM (MULTIPLE FAN SHUTDOWN)**
D9-98I, DH-98P, DH-98HVI and DH-98HVP

The DH-98/99 series duct detectors have the ability to interconnect (all alarm relays operate with a single alarm) using the same independent power supply. Polarity must be observed throughout the connection using terminals 16 and 18 from each unit. Up to 30 units may be interconnected.