



## INSTALLATION INSTRUCTION FOR HOCHIKI NS DCP ANALOG SMOKE SENSORS

These instructions apply to all Hochiki America NS DCP (Digital Communication Protocol) analog sensors and bases. These units must be installed and maintained in accordance with applicable N.F.P.A. standards, local codes and any authority having jurisdiction. Please refer to N.F.P.A. 72 Standard for Automatic Fire Detectors for installation guidelines and testing procedures. Also refer to Hochiki America Technical Bulletin HA-96 Analog for testing, cleaning, and maintenance.

Smoke detectors should be tested upon completion of installation and at least semiannually thereafter, in accordance with N.F.P.A. 72, section on "Inspection, Tests and Maintenance".

To install the detector, insert the detector into the base. Turn the detector clockwise until it stops. Tighten tamper screw. Use "3M" Weatherban #606 nonflammable sealing compound to seal field wiring conduit openings in the mounting back box. Compliance with this request may reduce the occurrence of the "STACK EFFECT".

SPECIFICATIONS					
CATEGORY	ALG-V/ALK-V/-V2/-D	AIE-EA	ATG-EA	HSB-NSA-6	YBN-NSA-4
Absolute Maximum Applied Voltage	41.0 VDC (ALG-V) 39.5 VDC (ALK-V/-V2/-D)	41.0 VDC	41.0 VDC	41.0 VDC	41.0 VDC
Operating Voltage Range (V <sub>H</sub> ) (S-SC)	24 ~ 40.7 VDC (ALG-V) 22.9 ~ 39.5 VDC (ALK-V/-V2/-D)	24 ~ 40.7 VDC	24 ~ 40.7 VDC	24 ~ 40.7 VDC	24 ~ 40.7 VDC
Sensitivity Range	SEE CHART BELOW	0.55-1.15 %/ft.	57.2°C ~ 65.5°C (135°F~150°F)	N/A	N/A
Current Consumption (S-SC) Normal Mode	390µA Typical 540µA Maximum (ALG-V) 800µA Maximum (ALK-V/-V2/-D)	350µA Typical 460µA Maximum	350µA Typical 500µA Maximum	N/A	N/A
Current Consumption (S-SC) Low Power Mode	120µA @ 0.75s 110µA @ 1.50s	140µA @ 0.75s 100µA @ 1.50s	110µA @ 0.75s 100µA @ 1.50s	N/A	N/A
Current Consumption (S-SC) When Polled	2mA	2mA	2mA	N/A	N/A
Alarm Current (S-SC)	(See Base)	(See Base)	(See Base)	8mA (Typical)	8mA (Typical)
Remote LED Current	(See Base)	(See Base)	(See Base)	8mA (Typical)	8mA (Typical)
Device Type Code	88 Hex	A8 Hex	98 Hex	N/A	N/A
Operating Temperature	-10°C ~ 50°C (14°F ~ 122°F)	-10°C ~ 50°C (14°F ~ 122°F)	-10°C ~ 50°C (14°F ~ 122°F)	-10°C ~ 50°C (14°F ~ 122°F)	-10°C ~ 50°C (14°F ~ 122°F)
UL listed temperature	0°C ~ 37.8°C (32°F ~ 100°F)	0°C ~ 37.8°C (32°F ~ 100°F)	0°C ~ 47°C (32°F ~ 115°F)	0°C ~ 47°C (32°F ~ 115°F)	0°C ~ 47°C (32°F ~ 115°F)
Storage Temperature	-20°C ~ 60°C (-4°F ~ 140°F)	-20°C ~ 60°C (-4°F ~ 140°F)	-20°C ~ 60°C (-4°F ~ 140°F)	-20°C ~ 60°C (-4°F ~ 140°F)	-20°C ~ 60°C (-4°F ~ 140°F)
Test	*	*	*	N/A	N/A
Dimensions	3-15/16"D X 1-1/2"H	3-15/16"D X 1 3/4"H	3-15/16"D X 1-9/16"H	5-7/8"D X 15/32"H	4-1/8"D X 5/16"H
Environment	Indoor Use Only	Indoor Use Only	Indoor Use Only	Indoor Use Only	Indoor Use Only
Visual Alarm/Power Indicator	Bi-Directional	Bi-Directional	Bi-Directional	See Sensor	See Sensor
Address Setting	*	*	*	N/A	N/A

\* = See Control Panel For proper address setting and testing procedure.

SENSITIVITY RANGES			
VELOCITY (fpm)	ALG-V (%/ft.)	ALK-V/-V2 (%/ft.)	ALK-D (%/ft.)
300	.88 ~ 3.57	0.5 ~ 3.80	0.5 ~ 2.68 0 ~ 4000FT/MIN.
2000	.88 ~ 2.81	0.5 ~ 2.74	
4000	.88 ~ 2.52	0.5 ~ 2.68	

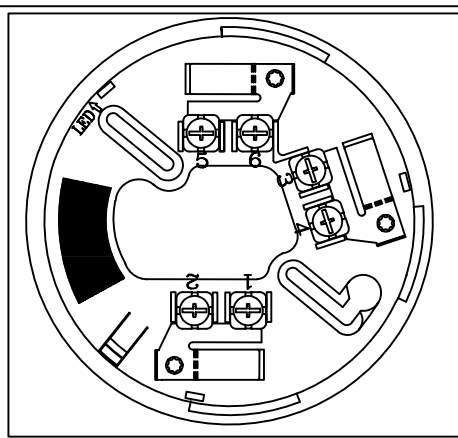
BASE	BOX MOUNTING		
	3"-O	4"-O	4"-S
YBN STYLE	YES	NO	NO
HSB STYLE	YES	YES	YES

### WARNING!!!!

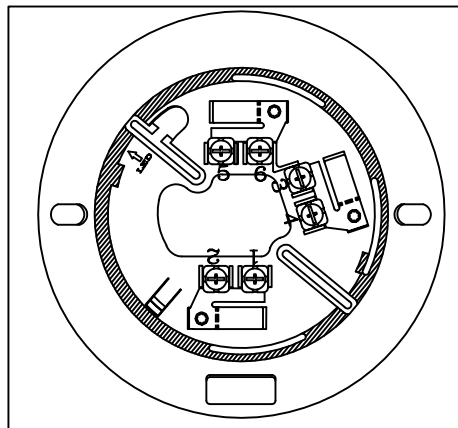
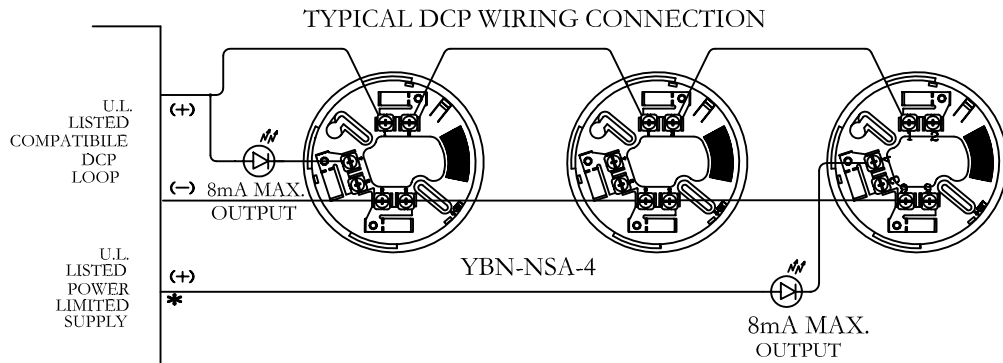
Failure to follow these instructions may result in the failure of the detector to initiate an alarm condition. Hochiki America is not responsible for detectors that have been improperly installed, tested or maintained.

### ATTENTION!!!!

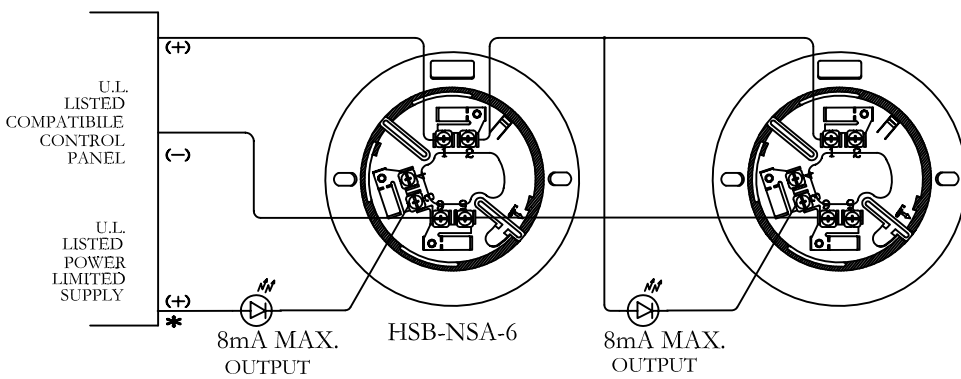
INSTALLATION WIRING SHALL NOT EXCEED 50 OHMS (14-18 AWG.)



YBN-NSA-4 BASE



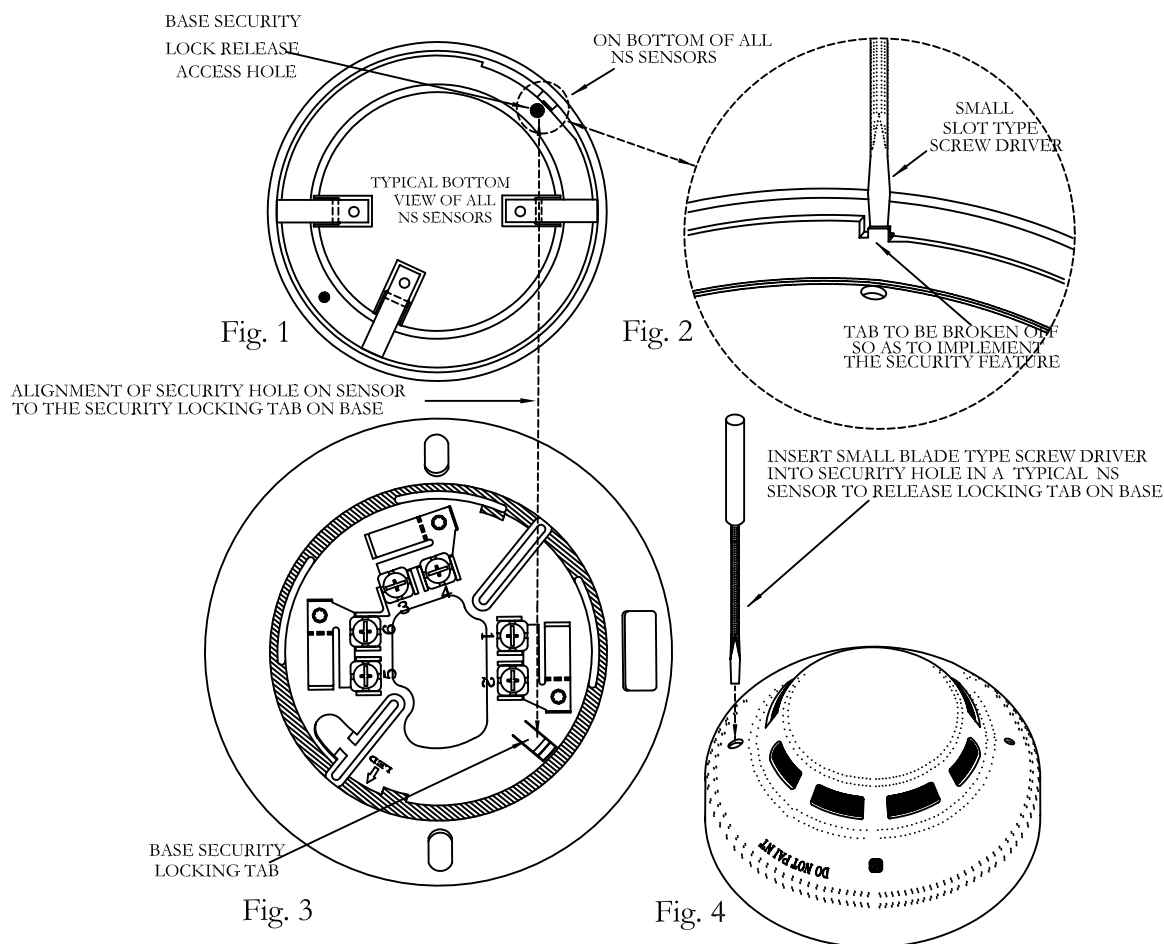
HSB-NSA-6 BASE



\* - OPTIONAL WIRING CONFIGURATIONS FOR REMOTE OUTPUT

### INSTRUCTION FOR IMPLEMENTING THE SECURITY FEATURE

The following instructions will enable the user to activate the security feature and to release the base security locking tab so as to remove the sensor from the base.



- 1) Take any sensor and turn it over to view the bottom as shown in Fig. 1. Using a small blade type screw driver break the tab as shown in Fig. 2. This will allow the base security locking tab, as shown in Fig. 3 to stay elevated. This will prevent the sensor from being removed from it's base.
- 2) To remove the sensor from its base, take a small diameter screw driver and insert it into the large hole on the outer rim of the sensor (see Fig. 4). Use caution when pushing the base security locking tab down. Only use enough force to remove the sensor. While pushing the tab down rotate the sensor counter clockwise enough to clear the base security locking tab. Once this is accomplished the sensor can be completely removed.

**CAUTION!!! DO NOT USE EXCESSIVE FORCE WHEN UNLOCKING THE BASE SECURITY LOCKING TAB**

DWG # HA-06-043  
PG 2 OF 4, 3/08  
PART# 1700-09985

## **In-duct Applications for the ALK-D Photoelectric Smoke Detectors.**

The ALK-D photoelectric smoke sensor is rated to provide early detection of smoke and products of combustion present in air moving at through an HVAC duct supply, return, or both. These sensors can be used to prevent the recirculation of smoke in areas by the air handling system's fan and blowers. Complete systems may be shut down in the event of smoke detection.

The and ALK-D sensor can be utilized in applications where the standard external mount duct detectors cannot be used. Examples include plenum spaces, air ducts, or applications requiring detection in extremely low or no air velocity. The ALK-D is rated from 0 to 4000ft./minute air flow.

**NOTE:** For correct installation guidelines please refer to NFPA 72 (National Fire Alarm Code), NFPA 90A (Standard for Installation of Air Conditioning and Ventilation Systems), NFPA 92A (Recommended Practice for Smoke Control Systems), and NFPA 5000 (Building Construction and Safety Code).

To verify correct installation, the air velocity should be measured and found to be between 0 and 4000 ft./minute. Use of a velocity meter such as the ALNOR 6000AP or equivalent will be required.

### **Location Requirements:**

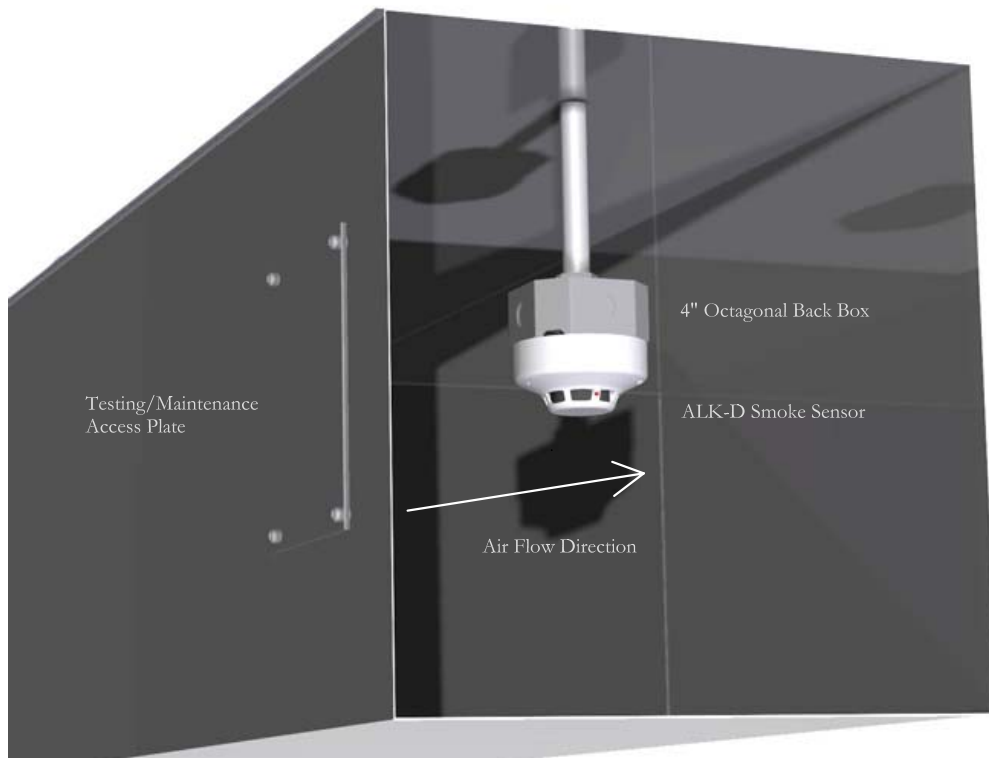
These guidelines contain general information on duct smoke detector installation, but does not preclude NFPA or other information listed. Hochiki America Corporation assumes no responsibility for improperly installed duct detectors or applications. When installing the ALK-D please consider the itmes following below.

- 1) Uniform non-turbulent airflow (laminar) must be present at site where the smoke detector is to be mounted. Determination that the airflow is between 0 and 4000 ft./minute is required.
- 2) To minimize the impact of turbulence and stratification on detector performance, a duct detector should be placed as far down stream of any obstruciton or bend in the ductwork.
- 3) Identify a location that meets all the requirements of code compliance. Examples of such locations could be air supply, air return, or both. Make sure the location chosen allows easy access for inspection and serviceability.
- 4)When installing detectors on the return side, install duct units prior to the air being exhausted from the building or diluted with outside air.
- 5) When installing detectors downsteam of filters, be aware that filter fires may be detected, but if the filters themselves become blocked, insufficient air flow in the duct may affect detector response. Duct detectors installed in the supply air side may monitor upstream equipment and/or filters.
- 6) Where possible, install duct detectors upstream of air humidifiers and downstream of dehumidifiers.
- 7) To prevent false alarms, the duct detector should not be mounted in areas of extreme high or low air temperatures. Areas of high humidity, or areas that contain eccessive gases or dust should be avoided.

### **Electrical Installation:**

For electrical installation and wiring please refer to page 2 of this instruction manual.

## Mechanical Installation:



## Mounting:

Mount the YBN-NSA-4 base to the 4 inch octagonal back box using the base adaptor provided. Wire the mounting base as shown on page 2 of these instructions. Install the smoke sensor onto the base and proceed to testing.

## Operational Testing:

To ensure the proper operation of the ALK-D smoke sensor, verify that that the sensors have been connected to a compatible control panel and the LEDs on the sensors are flashing to indicate communication with the control panel. Using the TSE-A100 smoke generating pole, transfer smoke into the smoke sensor. The sensor will go into alarm. During an alarm condition the LEDs on the sensors will not flash but latch on Red. The fire alarm control panel may be reset to clear the alarm condition.

## Maintenance:

Each installation location must be assessed on its own merits. If the protected area is very dirty, the smoke sensors may need to be checked more frequently (perhaps on a quarterly or semi-annual basis). The best method of cleaning the smoke sensors is to blow out the chamber and labyrinth with clean, dry, compressed air. Alcohol and a soft bristled brush may be used if the sensor chamber is extremely dirty.

Do not use cleaning fluids or chemicals to clean the sensors that are not outlined in this instruction. Improper cleaning and handling of the sensor could void the warranty. Contact your local code or AHJ for required maintenance schedules.