

## PRODUCT APPLICATION AND INSTALLATION INSTRUCTIONS DSDF (HOCHIKI DH-98) DUCT SMOKE DETECTORS

### DEFINITION

The DSDF is designed for use with Ruskin UL Classified Smoke and Fire/Smoke Dampers. The device detects the presence of smoke in the airstream of ductwork in HVAC systems operating at no less than 300 fpm.

DSDF (flow rated duct smoke detectors) are factory mounted for "single point field power connection" to a standard Ruskin electronic fuse link (EFL) or optional firestat (TS150).

**The DSDF factory mounted with a smoke rated damper is intended to close the damper in accordance with International Building Codes. However, Ruskin's smoke dampers may be setup for "Fail Open" operation, consult Ruskin for details. The DSDF can be field wired back to a UL listed fire alarm panel by others.**

### APPROVAL

Underwriter's Laboratories, Inc. does not have a separate Product Category for factory mounted smoke detectors. The smoke detector and the damper have been individually evaluated by their applicable UL standards.

Since the smoke detector is not rated for use at velocities below 300 fpm, local code may require an alternative means of damper closure such as zone detection or automated damper closure when the system fan is shut down. The local authority having jurisdiction should be consulted prior to installation of the damper and smoke detector.

### APPLICATION

National and local safety standards and codes recognize the ability of air duct systems to transfer smoke, toxic gases and flame from area to area. Smoke can be a serious hazard to life safety unless blowers are shut down and dampers are actuated. **The primary purpose of duct smoke detection is to prevent injury, panic and property damage by reducing the spread of smoke.** Duct smoke detection can also serve to protect the air conditioning system itself from fire and smoke damage, and can be used to assist in equipment protection applications. Duct smoke detectors can be supplied by Ruskin in one of two ways:

1. Factory mounted for single point field wiring connection.
2. Shipped loose for field installation.

**If the detector is shipped loose for field installation refer to the duct smoke detector manufacturer's installation instructions (shipped with each detector) for proper application.**

When presence of smoke in the duct is sensed, or when loss of power occurs the damper will fail close. **Consult NFPA90A, NFPA72 documents and local codes to determine where smoke detectors are required.**

### DAMPERS

The DSDF can be factory mounted on any of the following Ruskin combination fire/smoke and smoke dampers: FSD60, 60-2, 60-3, 60-V, 37, 36, 35, SD60, 60-2, 37, 36, 35.

### DSDF DESCRIPTION/SPECIFICATION

**Model:** Hochiki DH-98 / SLR-24DH

**Type:** Photoelectric (Consult Ruskin for availability of Ionization type detectors).

**Velocity:** 300 to 4,000 fpm.

**Dimensions (L x W x D):** 9 1/8" x 7 1/4" x 2 1/4" (232 x 184 x 57).

**Weight:** 3 lbs.

**Operating Temperature Range:** 32°F to 100°F (0° to 38°C).

**Operating Humidity Range:** 10% to 85% Relative Humidity.

**Operating Voltages:** 24 VAC/VDC or 120/220 VAC operation.

**Contact Ratings:** Refer to information provided with detector.

**Alarm Reset:** Push button on DSDF unit (not remote reset).

### LISTINGS OF DSDF

- UL Listed, file S1383.
- CSFM Listing #3240-0410:155.
- FM # 3005751

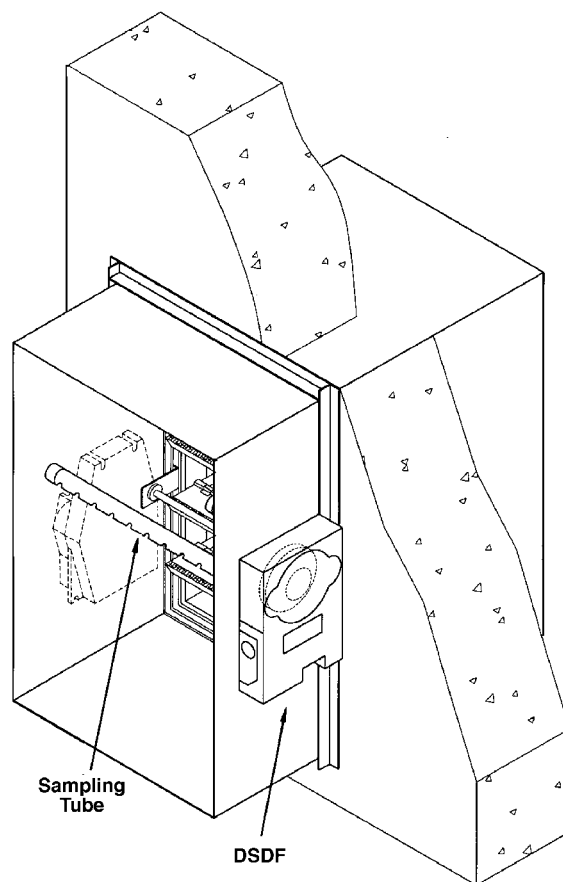
### ACCESSORIES

Annunciators, remote test and reset stations, sounders, strobes, etc. are available from the duct smoke detector manufacturer.

### MAINTENANCE AND SERVICE OF DUCT DETECTORS

Dust, dirt and other foreign matter can accumulate inside a detector and change its sensitivity. Detectors should be tested and maintained periodically. Routine maintenance should be performed at least once a year and more frequently in dirtier environments. Refer to NFPA90A, NFPA72 and detector manufacturer's instructions packaged with each detector for specific maintenance and testing information.

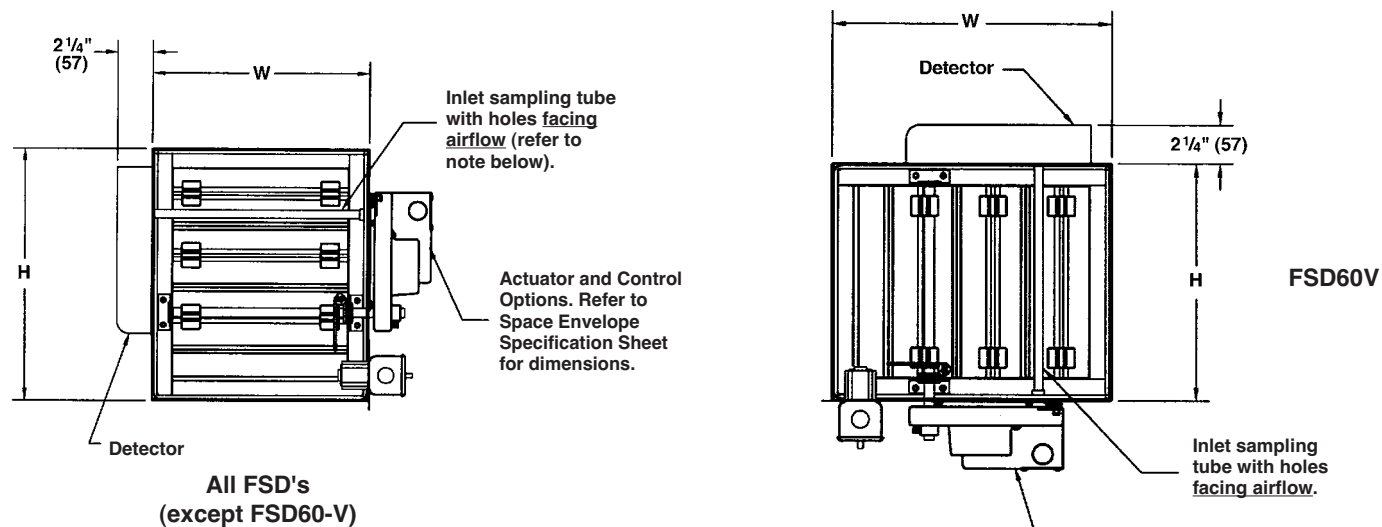
**NOTE:** Dimensions shown in parentheses ( ) indicate millimeters.



SEE COMPLETE MARKING  
ON PRODUCT

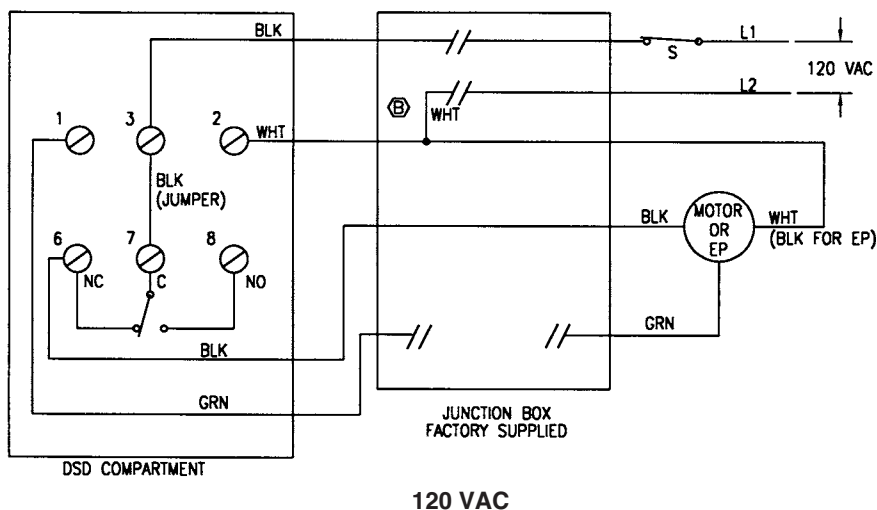
## FACTORY MOUNTING DETAILS

The DSD is standardly mounted on the opposite side of the sleeve from the actuator.



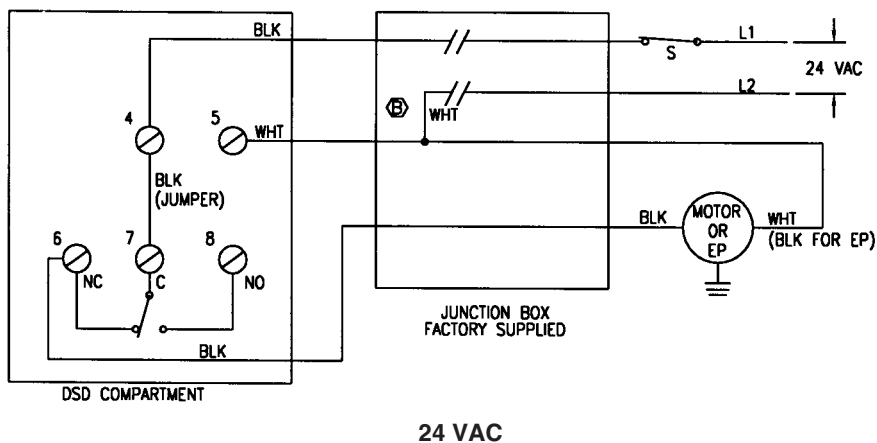
**NOTE:** Ruskin factory installs the duct smoke detector with holes in sampling tube pointed away from the damper. The sampling tube must be rotated in the field so the holes are pointed in the direction of the air flow. Minimum damper size is 8" wide x 6" high (203 x 152) (actual size).

## DSD FACTORY WIRED TO FSD WITH EFL

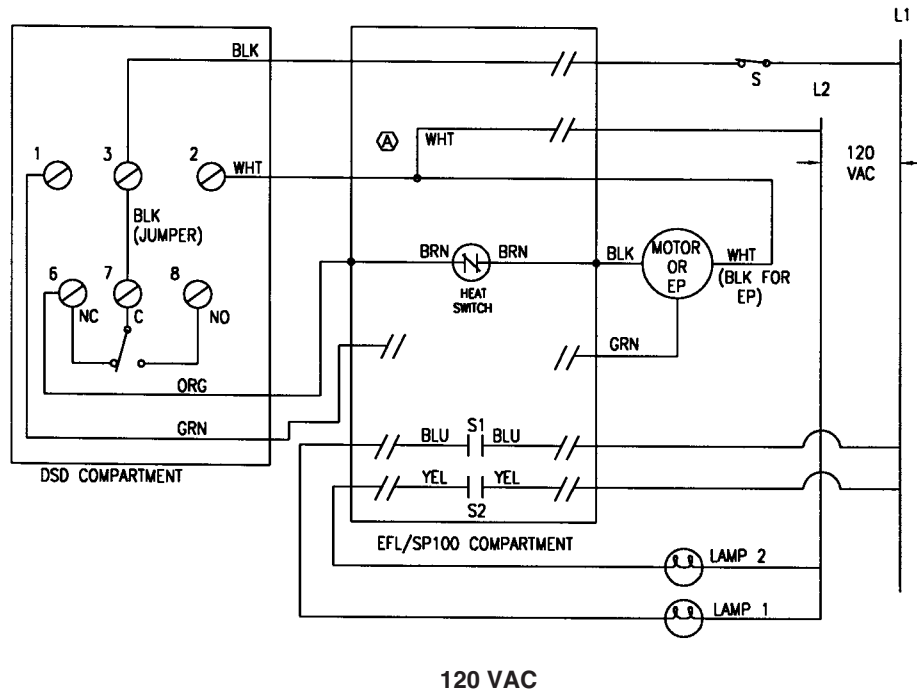


### NOTES

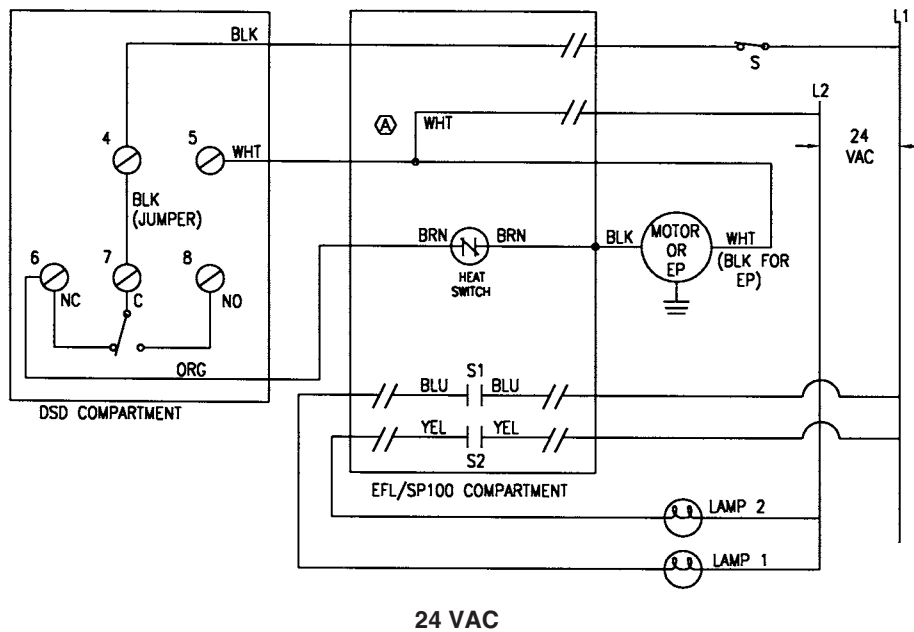
1. Not all screw terminals Ø in the DSD compartment are shown, for clarity.
2. Connectors between screw terminals 6, 7 & 8 are pre-wired by the DSD manufacturer. At smoke condition, contact between 6 & 7 breaks: contact between 7 & 8 makes.
3. Switch "S" by others.
4. These wiring diagrams apply to model DH-98 duct smoke detector (made by HOCHIKI) with either photoelectric or ionization detector head.
5. // Indicated connections needed to be made in the field by qualified electrician.



## DSD FACTORY WIRED TO FSD WITH EFL/SP100



120 VAC

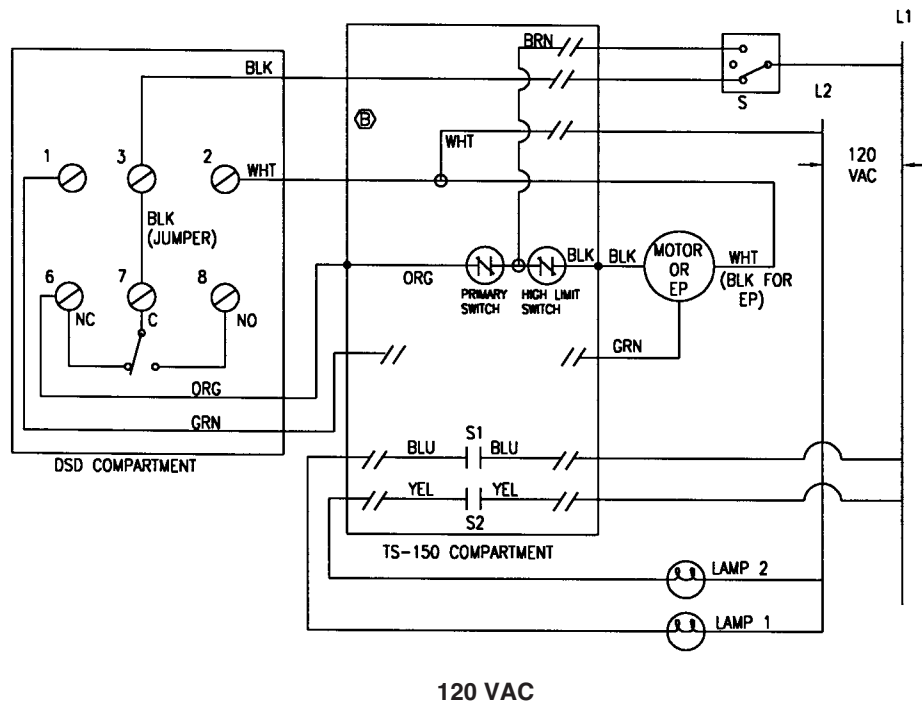


24 VAC

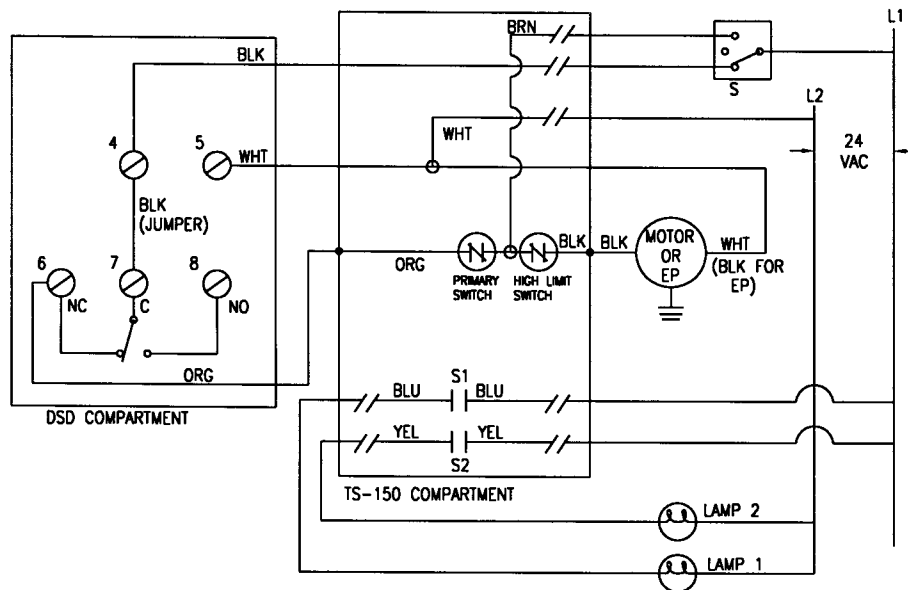
### NOTES

1. Not all screw terminals  $\emptyset$  in the DSD compartment are shown, for clarity.
2. Connectors between screw terminals 6, 7 & 8 are pre-wired by the DSD manufacturer. At smoke condition, contact between 6 & 7 breaks: contact between 7 & 8 makes.
3. Switch "S" lamp 1 and lamp 2 are by others.
4. These wiring diagrams apply to model DH-98 duct smoke detector (made by HOCHIKI) with either photoelectric or ionization detector head.
5. // Indicated connections needed to be made in the field by qualified electrician.

## DSD FACTORY WIRED TO FSD WITH TS-150



120 VAC

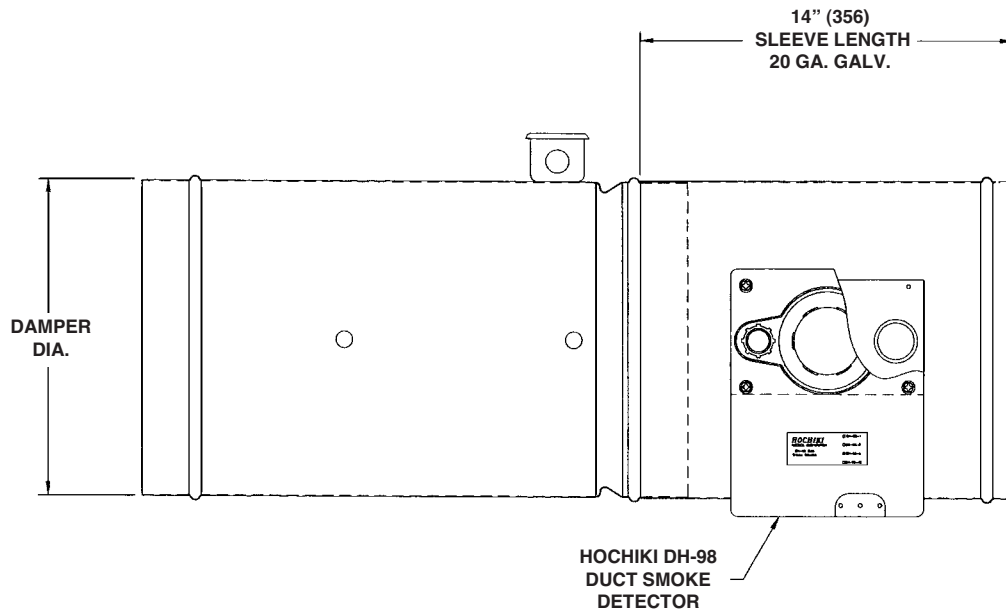


24 VAC

### NOTES

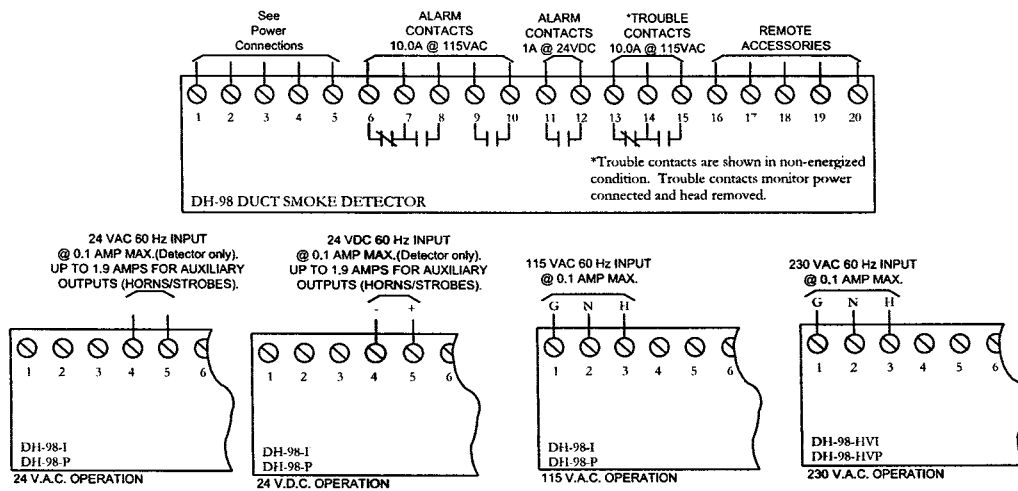
1. Not all screw terminals  $\emptyset$  in the DSD compartment are shown, for clarity.
2. Connectors between screw terminals 6, 7 & 8 are pre-wired by the DSD manufacturer. At smoke condition, contact between 6 & 7 breaks; contact between 7 & 8 makes.
3. Three position switch "S" lamp 1 and lamp 2 are by others.
4. These wiring diagrams apply to model DH-98 duct smoke detector (made by HOCHIKI) with either photoelectric or ionization detector head.
5. // Indicated connections needed to be made in the field by qualified electrician.

# DSDF SHOWN SUPPLIED WITH FSDR25 (TRUE ROUND FIRE/SMOKE DAMPER)



CAN BE FACTORY SUPPLIED MOUNTED  
AND WIRED OR SHIPPED LOOSE.

## ADDITIONAL WIRING DIAGRAM DH-98-P



## FIRE ALARM CONTROL PANEL WIRING

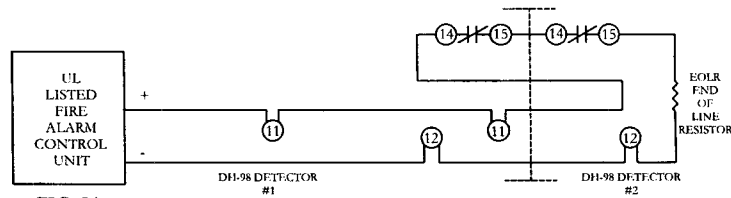


FIG. 5A

### COMMON FUNCTION

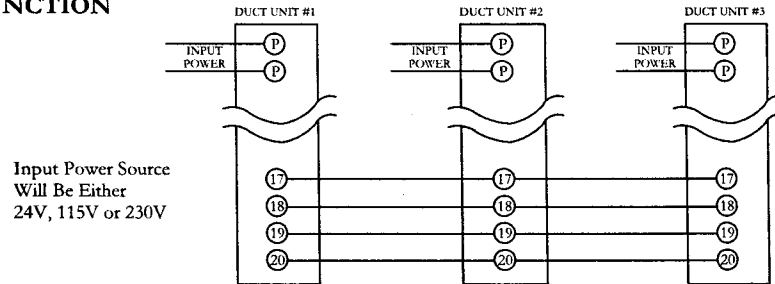


FIG. 5B

Installation requiring common functions must be wired as shown in Figure 5B.

Common functions include one or all of the following:

- \* Remote common alarm indication, remote pilot indication, remote common reset, common shutdown and common visual indication.
- Common fault indication (when green pilot LED is extinguished) cannot be achieved on the DH-98 Duct Units. Individual Remote Pilot LED's must be installed to monitor detector head or power

source removal for each unit.

- In the event of an alarm, the detector head and duct unit alarm (Red) LED's will be illuminated. All remaining duct unit alarm LED's will not be illuminated. All remote alarm LED's fitted to the duct units will be illuminated when any of the units go into alarm. Only the duct unit in alarm will permit resetting of the system from the built in test/reset switch on that particular duct unit.
- A common Remote reset switch will reset all detectors.