

# Duct Smoke Detectors



## DESCRIPTION

Per building codes for commercial and industrial air handling systems, smoke detectors sample air moving through an HVAC duct and shut down fans, dampers, etc. when smoke is detected to prevent the spread of smoke throughout the building.

## OPERATION

The four-wire photoelectric or ionization smoke detectors can be powered with 24 VAC, 24 VDC, 120 VAC or 240 VAC, and are compatible with air system velocities from 500 to 4,000 feet per minute. The smoke detectors have two Form C contacts (DPDT) for fan/damper control and one Form C supervisory trouble contact (SPDT), a reset button and highly visible power and alarm LEDs are conveniently located on the front cover.

Air in the duct is sampled by either the plastic sampling tube, provided with each unit for use in small duct applications from 12" to 18" (30.5 to 45.7 cm) wide, or a metal sampling tube which is available as an option.

The detectors provide a built-in interconnect which allows up to ten 4-wire units to be daisy-chained together to control multiple fans and dampers. No additional relays or complex wiring is required. Its patented cover-missing signal provides twenty minutes for testing and maintenance before sending a trouble signal if the cover is still missing.

The duct smoke detectors are compatible with a full line of UL listed accessories including remote test stations and audible and visible annunciators.

## FEATURES

- Interconnect for multi-fan shutdown
- Patented sampling tube included
- High/low voltage barrier meets NEC
- Mounts directly to any type of duct
- Low air flow technology
- Multi-voltage operation
- A cover tamper switch
- Front cover reset button
- Remote display outputs

## SPECIFICATIONS

### Electrical

Power requirement (w/o remote devices) 220/240 VAC (50-60 Hz) at 15 mA standby\*, 25 mA max. alarm\*; 120 VAC (50-60 Hz) at 25 mA standby\*, 35 mA max. alarm\*; 24 VAC (50-60 Hz) at 35 mA standby, 125 mA max. alarm; 20-29 VDC at 15 mA standby, 70 mA max. alarm  
*\*Note: When a unit is powered with 120 VAC or 220/240 VAC, any combination of accessories may be used such that the given accessory loads are 60 mA or less in standby and 110 mA or less in alarm state.*

### Sensor

Sensor type  
Type of Operation

Photoelectric or ionization  
Alarm control with push button or optional remote accessory reset. 2 form C auxiliary contacts, 1 form C supervisory contact. Trouble signal for sensor board missing, sensor board below minimum sensitivity setting or failure of supply voltage.

Contact  
- alarm initiation  
- alarm auxiliary

(1) SPST 2.0 A @ 30 VAC/DC  
(2) DPDT 10 A @ 30 VDC or 10 A @ 250 VAC  
Alarm auxiliary contacts must switch 100 mA minimum at 5 VDC. The alarm initiation contact should always be connected to the initiating circuits of control panels.

DH100AC/DC  
Innovair™



CSFM Approved  
Listing No.  
3240-1209:155

MEA Approved  
No. 369-98-E

City of LA  
Report RR8281

MSFM Permits  
1994 and 2009

**SPECIFICATIONS**

**Type of Operation (cont...)**

- supervisory/trouble (1) SPDT 2.0 A @ 30 VDC
- Alarm trip settings Fixed
- Alarm reset/test Magnetic test, push button reset with LED status indicators

**Environmental**

Permissible

- air velocity range
  - DH100ACDCI 500 to 4000 feet per minute
  - DH100ACDCLP 100 to 4000 feet per minute
- detector duct protection Sampling tube filters included
- temperature range, photoelectric 32° to 131°F (0° to 55°C)
- ionization 32° to 120°F (0° to 49°C)
- humidity range 10% to 93% relative humidity, non-condensing

**Physical**

Enclosure, standard

- wire SEMS terminal accept 12-22 AWG solid or stranded wire
- cable entry 2 knockouts for 3/4 in. conduit
- material Noryl housing with Lexan cover

Dimensions

- width 14.375 in. (370 mm)
- heights 5.5 in. (140 mm)
- depth 2.75 in. (70 mm)

Weight

3.75 lbs. (1.7 kg)

**Approvals/Listings**

UL 268A, CSFM, City of LA, MEA, MSFM

**Warranty**

Three years limited

**ORDERING INFORMATION**

**Part Numbers**

- Duct smoke detector
- ionization **DH100 ACDCI**
- photoelectric **DH100 ACDCLP**
- “Low-flow technology”

**OPTIONS**

**Metal sampling tube**

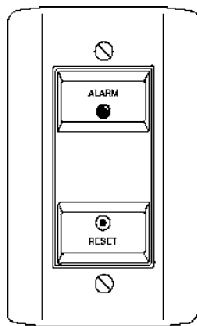
- for 1' to 2' duct width **ST-1.5**
- for 2' to 4' duct width **ST-3**
- for 4' to 8' duct width **ST-5**
- for 8' to 12' duct width **ST-10**

**Outdoor enclosure**

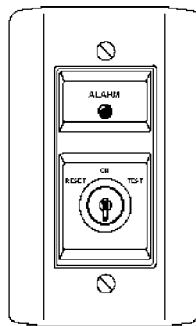
- NEMA 3R, UL 50 **DH400OE-1**

**Remote accessories**

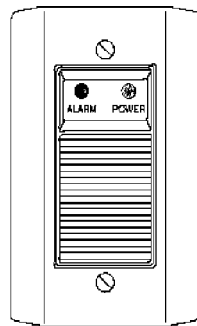
- remote magnet test/reset **RTS451**
- key-activated test/rest **RTS451KEY**
- remote annunciator **APA451**
- remote annunciator **RA400Z**
- sounder **PA400**
- add-on strobe **PS12/24SLENSW**
- Multi-signaling accessory **SSK451**



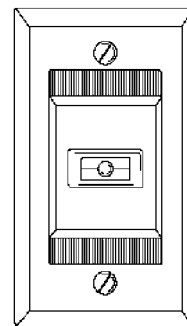
RTS451  
Remote Test  
Station  
(UL S2522)



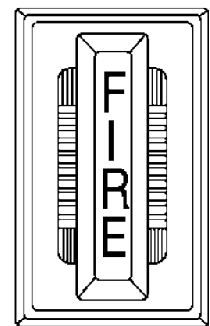
RTS451KEY  
Remote Test  
Station with Key  
(UL S2522)



APA451  
Piezo  
Annunciator  
(UL S4011)



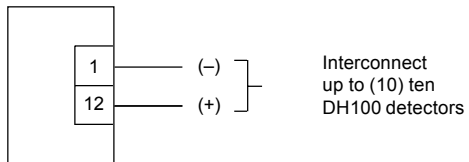
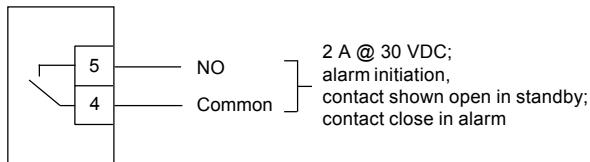
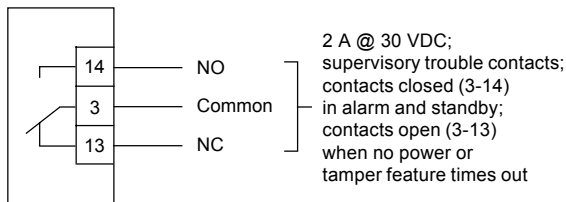
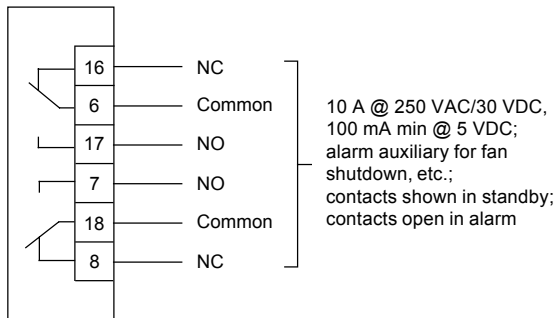
RA400Z  
Remote  
Annunciator  
(UL S2522)



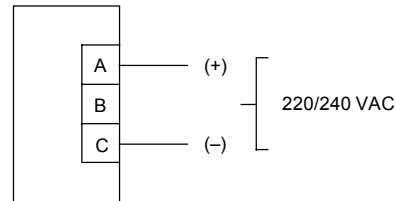
PA400 with  
PS24LOW Add-on Strobe  
(PS12/24LENSW  
smoke lens option available)  
(UL S3593)

**WIRING CONFIGURATION**

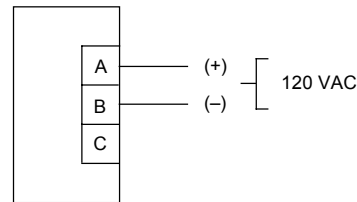
**DH100ACDC**



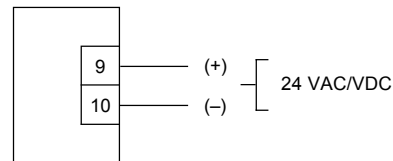
**A. 220/240 VAC Power supply**



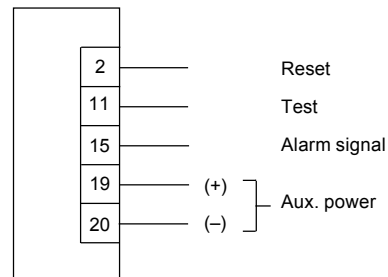
**B. 120 VAC power supply**



**C. 24 VAC/VDC power supply**



**Remote accessories connection - Displays/Stations**



Note: • All wiring must comply with local codes and regulations.