4-Wire Ionization Duct Smoke Detector



System Sensor's Innovair DH100ACDCI reduces the spread of smoke through HVAC air handling systems. As an ionization duct detector, it's ultra-responsive to submicron-sized smoke particles typically found near a fire source.

The DH100ACDCI senses smoke in velocities from 500 to 4,000 feet per minute. When smoke is detected, all interconnected Innovairs will initiate their relays. However, to quickly locate the fire source, only the detector sensing smoke will alarm. Two DPDT Form-C relay contacts, connected to auxiliary equipment, can also be configured to prevent the spread of smoke through a particular area.

Beyond its reliable performance, the DH100ACDCI is simple to install and maintain. Powered by 24 VAC/DC or 120/240 VAC, it can be easily mounted to round and rectangular ducts, from one to twelve feet in width, with outside mounting tabs. It also offers an adjustable telescopic sampling tube that can be used for duct widths up to 18 inches. The tube locks into place – no additional tools are necessary.

Its modular construction allows for easy cleaning and field replacement of the power and sensor boards. Also simplifying maintenance is a transparent cover that provides convenient visual inspection. If the cover is removed, a patented cover-tamper trouble signal gives a 7-minute delay before the panel or remote accessory is notified of trouble.

At a remote location, the remote test station option ensures that a detector is functioning properly, and the remote sounder/LED indicator options signal if a detector is in alarm. However, the cover does not need to be removed if a detector needs to be reset at the detector. Simply push the built-in reset button.

WARNING: Duct smoke detectors are **NOT** a substitute for open area smoke detectors, **NOT** a substitute for early warning detection and **NOT** a replacement for a building's regular fire detection system. Refer to NFPA 72 and 90A for additional information.

Features

- Ionization technology
- An air velocity rating from 500 feet per minute to 4,000 feet per minute (2.54 meters per second to 20.32 meters per second)
- Patented interconnectability for multi-fan shutdown
- Two DPDT Form-C relay contacts
- 24 VAC/DC or 120/240 VAC
- Versatile mounting options
- Outside mounting tabs
- A patented telescopic sampling tube
- Modular construction
- A patented cover-tamper trouble signal
- A transparent cover
- A remote test station
- Remote sounder/LED indicator options
- A built-in reset button

Agency Listings

UL LISTED 268A

FM APPROVED

Innovair Duct Smoke Detector Specifications

Architectural/Engineering Specifications

The air duct smoke detector shall be a System Sensor Model DH100ACDCI Series Duct Smoke Detector. 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 500 feet per minute to 4000 feet per minute (2.54 to 20.32 meters/second). The unit shall be capable of controlling up to ten (10) air handling systems when interconnected with other detectors. The detector shall be capable of providing a trouble signal in the event that the front cover is removed. It shall be capable of local testing via magnetic switch or remote testing using the SSK451 Multi-Signaling Accessory or the RTS451KEY Remote Test Station. The unit shall be reset by local reset button or remote test station. 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. An integral filter system shall be included to reduce dust and residue effects on detector and housing, thereby reducing maintenance and servicing. Sampling tubes shall either be telescoping or be easily installed by passing through the duct housing after the housing is mounted to the duct. The unit shall provide a spacial separation of no less than ¼˝ (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.

Physical Specifications

Size	14⅜˝ (37 cm.) Length; 5½˝ (14 cm.) Width; 2¾˝ (7 cm.) Depth
Shipping Weight	3¾ lbs. (1.7 kg.)
Operating Temperature Range	32° to 120°F (0° to 49°C)
Operating Humidity Range	10% to 93% relative humidity non-condensing
Air Duct Velocity	500 to 4000 ft./min. (2.54 to 20.32 m/sec.)

Electrical Ratings – DH100ACDCLP (Includes Detector)

Power supply voltage:	20-29 VDC	24 VAC 50-60 Hz	120 VAC 50-60 Hz	220/240 VAC 50-60 Hz
Input capacitance:	270 µF max.	270 µF max.	N/A	N/A
Reset voltage:	3.0 VDC min.	2.0 VAC min.	10 VAC min.	20 VAC min.
Reset time (with RTS451):	.03 to 0.3 sec.	.03 to 0.3 sec.	.03 to 0.3 sec.	.03 to 0.3 sec.
Reset time (by power down):	0.6 sec. max.	0.6 sec. max.	0.6 sec. max.	0.6 sec. max.
Power up time:	34 sec. max.	34 sec. max.	34 sec. max.	34 sec. max.
Alarm response time:	2 to 17 sec.	2 to 17 sec.	2 to 17 sec.	2 to 17 sec.
Sensitivity Test:	See detector label	See detector label	See detector label	See detector label
Current Requirements (Using No Accessories)				
Max. standby current:	15 mA	35 mA RMS	25 mA RMS	15 mA RMS*
Max. alarm current:	70 mA	125 mA RMS	35 mA RMS*	25 mA RMS*

Contact Ratings

Alarm initiation contacts (SPST):	2.0A @ 30 VAC/DC (0.6 power factor)
Alarm auxiliary contacts (DPDT):	10A @ 30 VDC; 10A @ 250 VAC

Note: Alarm auxiliary contacts must switch 100mA minimum at 5 VDC. Alarm auxiliary contacts shall not be connected to initiating circuits of control panels. Use the alarm initiation contact for this purpose.

Trouble contacts (SPDT):	2.0A @ 30 VDC (resistive); 2.0A @ 125 VAC (resistive)

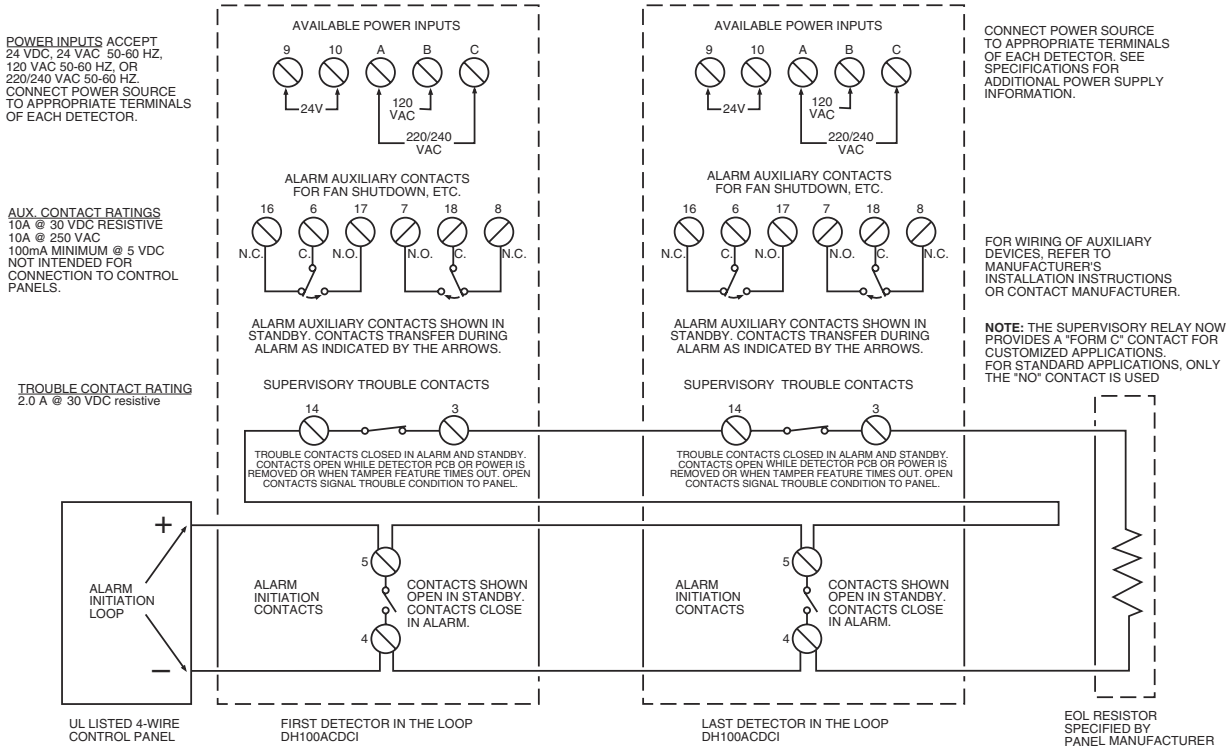
Accessory Current Loads at 24 VDC

Device	Standby	Trouble	Alarm
APA451	12.5 mA Max.	n/a	30 mA Max.
PA400	0 mA	n/a	15 mA Max.
RA400Z	0 mA	n/a	10 mA Max.
RTS451/RTS451KEY	12 mA*	n/a	7.5 mA Max.
SSK451	5 mA Max.	9 mA Max.	30 mA Max.

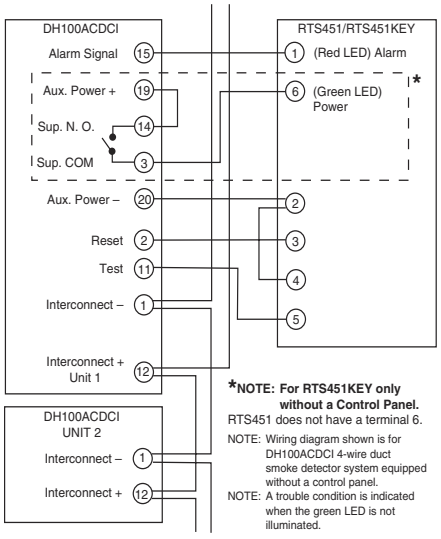
*Note: When a unit is powered at the 120 VAC or 220/240 VAC input, any combination of accessories may be used such that the given accessory loads are: 60 mA or less in the standby state; 110 mA or less in the alarm state.

Wiring Guide

System wiring diagram for 4-wire duct smoke detectors



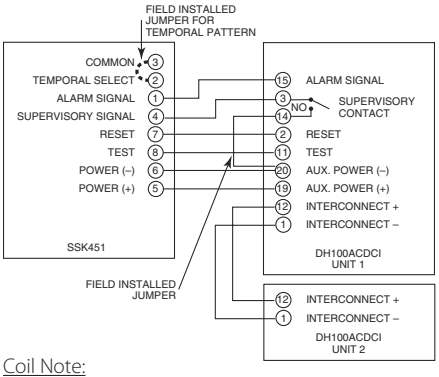
Wiring diagram for the DH100ACDCI to RTS451/ RTS451KEY and interconnect feature:



***NOTE: For RTS451KEY only without a Control Panel.**
RTS451 does not have a terminal 6.
NOTE: Wiring diagram shown is for DH100ACDCI 4-wire duct smoke detector system equipped without a control panel.
NOTE: A trouble condition is indicated when the green LED is not illuminated.

***NOTE: For RTS451KEY only without a Control Panel.**
RTS451 does not have a terminal 6.
NOTE: Wiring diagram shown is for DH100ACDCLP 4-wire duct smoke detector system equipped without a control panel.
NOTE: A trouble condition is indicated when the green LED is not illuminated.

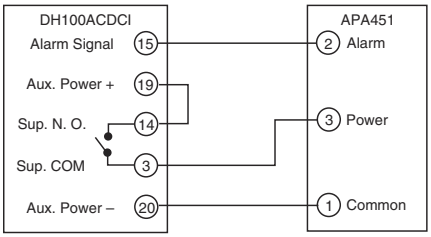
Wiring diagram for DH100ACDCI to SSK451 and interconnect feature:



Coil Note:

Please note that the magnetic coil supplied with the RTS451/RTS451KEY is not required when these accessories are used with the DH100 detectors. The functionality of the magnetic coil has been designed into the circuitry of the Innovair duct smoke detectors.

Wiring diagram for DH100ACDCI to APA451:



NOTE: Wiring diagram shown is for DH100ACDCI 4-wire duct smoke detector system equipped without a control panel.

NOTE: A trouble condition is indicated when the green LED is not illuminated.

Important Interconnect Notes

- When using the interconnect feature, all interconnected units must be powered with the same, independent supply.
- Polarity must be maintained throughout the interconnect wiring. Connect terminal 12 on unit 1 to terminal 12 on unit 2 and so on. Similarly, connect terminal 1 on unit 1 to terminal 1 on unit 2 and so on.

Accessories

System Sensor provides system flexibility with a variety of accessories, including two remote test stations and several different means of visible and audible system annunciation. As with our duct detectors, all duct smoke detector accessories are UL listed.



APA451
Piezo Annunciator
(UL S4011)



RTS451KEY
Remote Test Station
with Key (UL S2522)



PA400W
Mini-Alert Sounder
(UL S3593)
shown with PS24LOW add-on strobe (PS12/24SLENSW smoke lens option available)



RTS451
Remote Test Station
(UL S2522)



RA400Z
Remote Annunciator
(UL S2522)



SSK451
Multi-Signaling
Accessory
(UL 268A)



SSK451
Multi-Signaling Accessory
(UL 268A)
shown with PS24LOW add-on strobe (PS12/24SLENSW smoke lens option available)

Ordering Information

Part No.	Description
DH100ACDCI	4-wire ionization duct smoke detector
A5052	Replacement ionization detector board
A5064	Replacement 4-wire power board
Accessories	

ST-1.5	Metal sampling tube duct widths 1´–2´ (0.3–0.6 m)	MOD400R	Sensitivity test module
ST-3	Metal sampling tube duct widths 2´–4´ (0.6–1.2 m)	RA400Z	Remote annunciator alarm LED
ST-5	Metal sampling tube duct widths 4´–8´ (1.2–2.4 m)	F36-09-11	Replacement air filters (two per package)
ST-10	Metal sampling tube duct widths 8´–12´ (2.4–3.7 m)	M02-04-00	Test magnet
T80-71-00	Replacement telescoping sampling tube	P48-21-00	End cap for metal sampling tubes
P48-55-00	Replacement end cap for T80-71-00	S08-39-01	Photo replacement screen
SSK451	Multi-signaling accessory	PA400W	Mini-Alert sounder
RTS451KEY	Remote test station with key lock	PS24LOW	Mini-Alert add-on strobe
RTS451	Remote test station	PS12/24SLENSW	Wall-mount "SMOKE" lens
APA451	Remote annunciator with piezo alarm	PS12/24SLENSC	Ceiling-mount "SMOKE" lens

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