Watertight 4-Wire Low-Flow Duct Smoke Detector

Innovair™
Watertight HVAC Products

The System Sensor DH100ACDCLWP Watertight Innovair™ is a NEMA 4 duct smoke detector rated for installation and use in non-hazardous indoor and outdoor applications.

Features

- NEMA Type 4 UL listed for non-hazardous indoor and outdoor applications
- Air velocity rating from 100 to 4000 feet-per-minute (0.5 to 20.32 m/sec.)
- Patented interconnectability for multi-fan shutdown (up to 10 air handlers)
- Patented telescopic sampling tube
- Patented cover tamper trouble signal
- 24 VAC/DC or 120/240 VAC operation
- High-Low voltage barrier
- Equipped with two DPDT Form C relay contacts
- Built-in reset button
- Outside mounting tabs
- Easy and quick mounting to round or rectangular ducts from 1´–12´ (0.3–3.7 meters) wide
- Easy to clean
- UL recognized field-replaceable power and sensor boards
- Remote test station option
- Remote sounder option
- UL 268A listed
- 3 year warranty

Agency Listings

LISTED S911 | 3240-1653:119 | MEA approved 199-01-E | MSFM approved 2091

The DH100ACDCLWP is UL listed as a watertight enclosure providing protection against falling dirt, rain, windblown dust, splashing and hose directed water. Additionally, this detector features advanced Low-Flow technology, capable of sensing smoke in air velocities from 100 to 4,000 feet-per-minute (0.5 to 20.3 meters-per-second).

The DH100ACDCLWP can be directly mounted to rooftop HVAC equipment or used in other environmentally harsh applications that fall within its specified temperature limits. Since the unit is NEMA 4 rated, no additional enclosure is needed. The Watertight Innovair provides the same form, fit and wiring terminations as the standard Innovair but meets the NEMA 4 requirements, providing unsurpassed environmental protection.

In addition to being the only watertight duct smoke detector on the market, the revolutionary Innovair solves many difficult low airflow duct applications where reliable smoke detection is critical. Innovair with Low-Flow technology can detect smoke in air speed velocities as low as 100 feet-per-minute or as high as 4,000 feet-per-minute.

The Innovair family is designed for simplified installation and easy maintenance. The modular construction allows for easy cleaning and simple field replacement of the UL-recognized power and sensor boards. System Sensor has again set the standard for HVAC smoke detection technology.

WARNING: Duct smoke detectors have specific limitations.
DUCT SMOKE DETECTORS ARE:
NOT a substitute for an open area smoke detector.
NOT a substitute for early warning detection.
NOT a replacement for a building's regular fire detection system.
Refer to NFPA 72 and 90A for additional information about the proper application of duct smoke detectors.

NOTE: To maintain the watertight properties of this duct smoke detector, watertight conduit and fittings must be used. Mount the product with the conduit holes facing downwards, if possible.

Innovair Duct Smoke Detector Specifications

Architectural/Engineering Specifications

The air duct smoke detector shall be a System Sensor Model DH100ACDCLWP series watertight duct smoke detector. The detector shall meet the NEMA 4 standard for enclosures for electrical equipment. It shall be UL listed for non-hazardous locations for installation and use in both indoor and outdoor applications. The detector shall be constructed so as to provide a degree of protection against falling dirt, rain, windblown dust, splashing water, hose-directed water and incidental contact. 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 100 feet per minute to 4000 feet per minute (0.5 to 20.3 m/sec.). 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 spatial 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 131°F (0° to 55°C)
Storage Temperature Range	–22° to 158°F (–30° to 70°C)
Operating Humidity Range	10% to 93% relative humidity non-condensing
Duct Air Velocity Range	100 to 4000 ft./min. (0.5 to 20.32 m/sec.)
NEMA Enclosure Rating	Type 4 – Watertight Indoor/Outdoor

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 5VDC. 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)

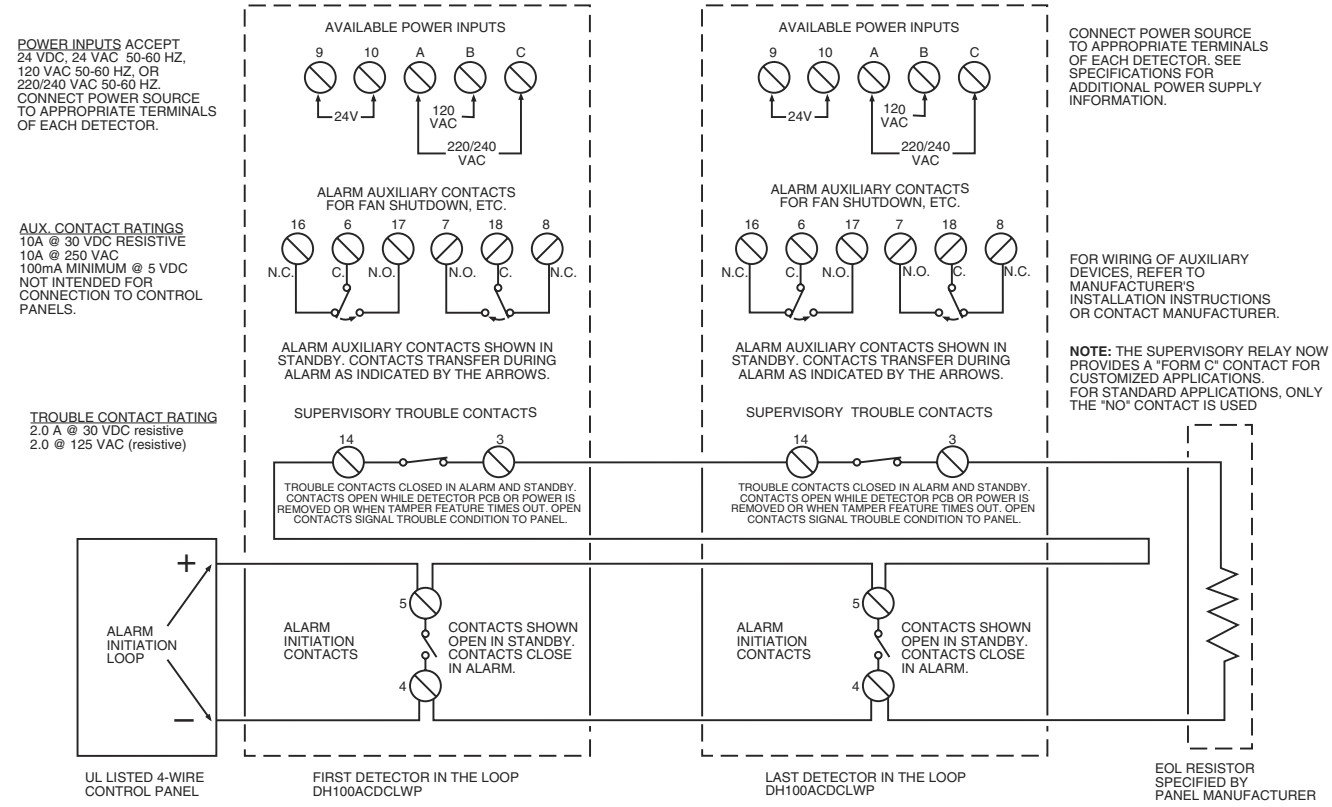
Accessory Current Loads at 24 VDC

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.

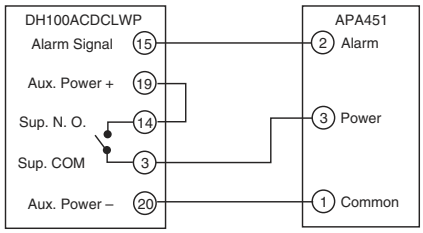
*Note: When a unit is powered at the 120 VAC or 220/240 VAC input, any combination of accessories may be used such that the given accessory loads are: 60 mA or less in the standby state; 110 mA or less in the alarm state.

Wiring Guide

System wiring diagram for 4-wire duct smoke detectors



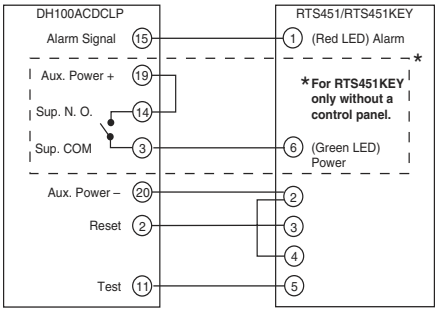
Wiring diagram for DH100ACDCLWP to APA451:



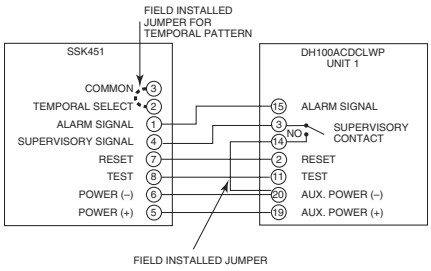
NOTE: Wiring diagram shown is for DH100ACDCLWP 4-wire duct smoke detector system equipped without a control panel.

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

Wiring diagram for the RTS451/RTS451KEY:



Wiring diagram for DH100ACDCLWP to SSK451:



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.
- Up to 10 units may be interconnected.

Accessories

System Sensor provides system flexibility with a variety of accessories, including three remote test devices 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
DH100ACDCLWP	Watertight 4-wire photoelectric duct smoke detector with low-flow technology
A5190	Replacement 4-wire photoelectric 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		

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