4-Wire Photoelectric Duct Smoke Detector-D4240

The InnovairFlex™ Series are the only duct smoke detectors flexible enough to fit configurations from square to rectangular and everything in between.

Features

- Photoelectric, integrated low-flow technology
- Air velocity rating from 100 ft/min to 4,000 ft/min (0.5 m/s to 20.32 m/sec)
- Versatile mounting options: square or rectangular configuration
- Plug-in sensor offers superb false alarm immunity and the latest sensor technology
- Broad ranges for operating temperature (–4°F to 158°F) and humidity (0% to 95% non-condensing)
- Patented sampling tube installs from the front or back of the detector with no tools required
- Increased wiring space with a newly added ¾-inch conduit knockout
- One easy-access Test/Reset button and improved LED status
- Patented interconnect feature for multi-fan shutdown
- New high-contrast terminal designations
- Built-in short-circuit protection from operator wiring errors
- Field-selectable settings for configuring the detector
- Two DPDT Form-C relay contacts
- 24 VAC/DC or 240 VAC
- Backward compatibility with existing Innovair products, including remote accessories

Agency Listings

UL LISTED S911

FM APPROVED 3029700

The InnovairFlex D4240 4-wire photoelectric duct smoke detector features a pivoting housing that fits both square and rectangular footprints and mounts to round or rectangular ductwork. This unit operates in airflow speeds of 100 to 4,000 feet per minute, temperatures of –4°F to 158°F, and a humidity range of 0 to 95 percent (non-condensing). A plug-in sensor head offers improved false alarm immunity and simple installation, testing, and maintenance. An improved cover design isolates the sensor head from the low-flow feature for simple maintenance.

The InnovairFlex housing provides ample wiring space, a ¾-inch conduit knockout, and built-in short-circuit protection to prevent damage to sensitive components during installation. High-contrast terminal designations make wiring easy. With its 2:1 sensor-to-power capability, the power board of the D4240 may be used to monitor a second sensor, D4S, simultaneously (i.e., supply and return side). As many as 50 InnovairFlex detectors can be interconnected. When one unit senses smoke, all interconnected detectors will switch their relays; only the detector sensing smoke will go into alarm, enabling the fire location to be pinpointed.

An easy-access Test/Reset button makes it possible to test the unit with the cover on. Three DIP switches can be used to configure field-selectable settings: cover tamper delay, number of sensors to be controlled, and shut down on trouble option. Each power board has two LEDs that can be used to indicate the status of connected sensors, and a quick reference imprinted on the cover explains the LED status indications (Standby, Maintenance, Trouble, and Alarm). The InnovairFlex duct smoke detector can be customized to meet local codes and specifications without additional wiring. The new InnovairFlex product line is compatible with all previous Innovair models, including remote test accessories.

WARNING: Duct smoke detectors are **NOT** a substitute for open area smoke detectors; **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.

InnovairFlex™ Duct Smoke Detector Specifications

Architectural/Engineering Specifications

The air duct smoke detector shall be a System Sensor InnovairFlex™ D4240 Photoelectric Duct Smoke Detector. The detector housing shall be UL listed per UL 268A specifically for use in air handling systems. The flexible housing of the duct smoke detector shall fit square and rectangular footprints. The detector shall operate at air velocities of 100 feet per minute to 4,000 feet per minute (0.5 to 20.32 meters per second). The unit shall be capable of controlling up to 50 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, test button on the cover, or remote testing using the RTS2-AOS Multi-Signaling Accessory or the RTS151KEY Remote Test Station. Terminal connections shall be of the strip and clamp method suitable for 12–18 AWG wiring.

Physical Specifications

Size: (Rectangular Dimensions)	14.38 in (37 cm) Length; 5 in (12.74 cm) Width; 2.5 in (6.36 cm) Depth
(Square Dimensions)	7.75 in (19.7 cm) Length; 9 in (22.9 cm) Width; 2.5 in (6.35 cm) Depth
Weight:	2.5 lbs (1.14 kg)
Operating Temperature Range:	D4240 & D4S: –4° to 158°F (–20° to 70°C)
Storage Temperature Range:	D4240 & D4S: –22° to 158°F (–30° to 70°C)
Operating Humidity Range:	0% to 95% relative humidity non-condensing
Air Duct Velocity:	100 to 4,000 ft/min (0.5 to 20.32 m/sec)

Electrical Ratings

Power supply voltage:	**20–29 VDC**	**24 VAC 50–60 Hz**	**240 VAC 50–60 Hz**
Input capacitance:	270 μF max.	270 μF max.	N/A
Reset voltage:	3.0 VDC min.	2.0 VAC min.	20 VAC min.
Reset time: (with RTS451)	.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.
Power up time:	35 sec. max.	35 sec. max.	35 sec. max.
Alarm response time:	15 sec.	15 sec.	15 sec.
Sensitivity test:	See detector label	See detector label	See detector label
Current requirements: (using no accessories)			
Max. standby current:	21 mA @ 24 VDC	65 mA RMS @ 24 VAC 60 Hz	10 mA RMS @ 240 VAC 60 Hz
Max. alarm current:	65 mA @ 24 VDC	135 mA RMS @ 24 VAC 60 Hz	18 mA RMS @ 240 VAC 60 Hz

Contact Ratings

Alarm initiation contacts: (SPST)	2.0 A @ 30 VDC (resistive)
Alarm auxiliary contacts: (DPDT)	10 A @ 30 VDC (resistive); 10 A @ 250 VAC (resistive); ½ HP @ 240 VAC ; ¼ HP @ 120 VAC
Note: Alarm auxiliary contacts shall not be connected to initiating circuits of control panels. Use the alarm initiation contact for this purpose.	
Supervisory contacts: (SPDT)	2.0 A @ 30 VDC (resistive); 2.0 A @ 125 VAC (resistive)

Accessory Current Loads at 24 VDC

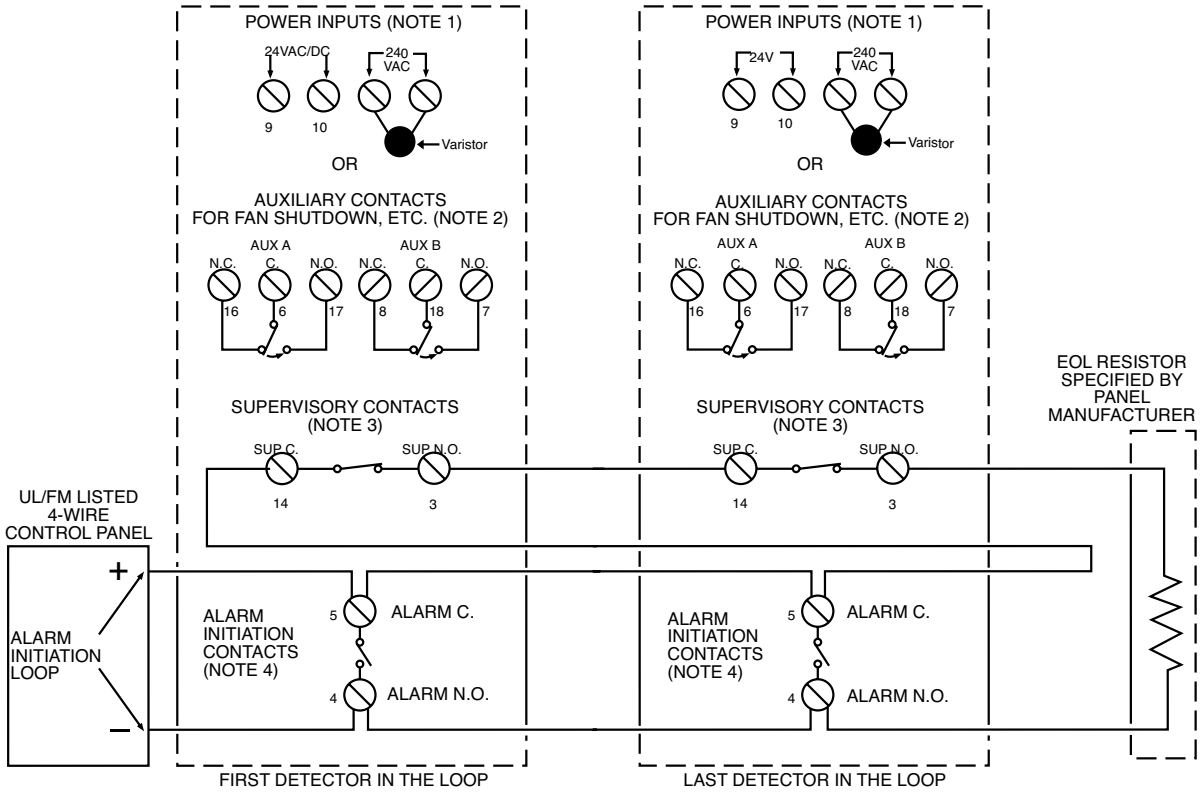
Device	Standby	Trouble	Alarm
APA151	12.5 mA	n/a	30 mA max.
MHR/MHW	0 mA	n/a	29 mA max.
RA100Z	0 mA	n/a	12 mA max.
RTS151/RTS151KEY	0 mA/12 mA	n/a	12 mA max.
RTS2/RTS2-AOS	8.0 mA max.	16 mA max.	40 mA max.

Note: Any combination of accessories may be used such that the given accessory loads are 110 mA or less at the Aux output, and 50 mA or less at the Alarm output

Installing the InnovairFlex Sampling Tube

The InnovairFlex sampling tube may be installed from the front or back of the detector. The tube locks securely into place and can be removed by releasing the front or rear locking tab (front locking tab shown below right).

Wiring for 4-Wire Duct Smoke Detector and Accessories



NOTE 1: 24V Power Inputs accept a non-polarized 24VDC or 24VAC 50-60Hz. 240VAC Power Inputs accept only 240VAC 50-60Hz. Connect power source to appropriate terminals of each detector. See specifications for additional power supply information. Please note that a varistor is put across the 240 VAC terminals to protect the product from transient damage.

NOTE 2: Auxiliary contacts shown in standby position. Contacts switch during alarm as indicated by arrows. Auxiliary contacts are not to be used for connection to the control panel. See specifications for contact ratings.

NOTE 3: Supervisory contacts shown in standby position. Open contacts indicate a trouble condition to the panel. See specifications for contact ratings.

NOTE 4: Alarm Initiation contacts shown in standby position. Closed contacts indicate an alarm condition to the panel. See specifications for contact ratings.

*Please refer to the corresponding installation manual for accessory wiring diagrams.

Important Notes on 2:1 Sensor-to-Power Capability

- 2:1 sensor-to-power capability is not available for all InnovairFlex models. The feature is only available on the D4240 4-wire conventional models.
- 2:1 sensor-to-power capability can be enabled using one D4240 and one D4S.

Important Interconnect Notes

- When using the interconnect feature, all interconnected units must be powered using the same independent supply.
- Polarity must be maintained throughout the interconnect wiring. Connect the INT+ terminal on unit 1 to the INT+ terminal on unit 2 and so on. Similarly, connect the INT/AUX-terminal on unit 1 to the INT/AUX- terminal on unit 2 and so on.
- Up to 50 D4240 units may be interconnected.

* NOTE: Alarm can be reset only at the initiating device and not at the interconnected devices.

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 smoke detectors, all duct smoke detector accessories are UL listed.

RTS151 UL S4011

RTS151KEY UL S2522

APA151 UL S4011

RTS2-AOS UL S2522

RA100Z UL S2522

MHW UL S4011

MHR UL S4011

AOS

Ordering Information

Part No.	Description
D4240	4-wire photoelectric low-flow duct smoke detector
Accessories	
D4S	4-wire photoelectric sensor component only
2D51	4-wire conventional photoelectric sensor head
DST1	Metal sampling tube duct width up to 1 ft (0.3 m)
DST1.5	Metal sampling tube duct widths 1 ft to 2 ft (0.3 to 0.6 m)
DST3	Metal sampling tube duct widths 2 ft to 4 ft (0.6 to 1.2 m)
DST5	Metal sampling tube duct widths 4 ft to 8 ft (1.2 to 2.4 m)
DST10	Metal sampling tube duct widths 8 ft to 12 ft (2.4 to 3.7 m)
P48-21-00	End cap for metal sampling tubes
DH400 OE-1	Weatherproof enclosure
ETX	Metal exhaust tube duct width 1ft (0.3 m)
M02-04-00	Test magnet

MHR	Mini Horn, Red
MHW	Mini Horn, White
APA151	APA151 remote annunciator with Piezo alarm
RA100Z	Remote annunciator alarm LED
RTS151	Remote test station
RTS151KEY	Remote test station with key lock
RTS2-AOS	Multi-signaling accessory

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