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Description

The InnovairFlex D4120 4-wire photoelectric duct smoke detector features a pivoting housing that fits both square and rectangular footprints and mounts to round or rectangular duct work. This unit senses smoke in the most challenging conditions, operating in airflow speeds of 100 to 4,000 ft. Per minute, temperatures of -4°F to 158°F, and a humidity range of 0 to 95% (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 3/4" 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 D4120 may be used to monitor a second sensor, D4S, simultaneously (i.e., supply and return side). As many as 50 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, thus pinpointing the fire source.

An easy-access Test/Reset button make 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 LED's 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.

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 front or back of the detector with no tools required
- Increased wiring space with a newly added 3/4" 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 120 VAC
- Backward compatibility with existing Innovair products, including remote accessories

Ordering Information

Model Number	Part Number	Description
D4120	D4120	4-Wire Photoelectric Low-flow Duct Smoke Detector
D4S	D4S	4-Wire Photoelectric Sensor, component only
D4P120	D4P120	4-Wire Photoelectric Power Board, component only 24 VAC/DC, 120VAC
2D51	2D51	4-Wire Conventional Photoelectric Sensor Head Replacement
DST1	DST1	Metal Sampling Tube Duct width up to 1 ft (0.3 m)
DST1.5	DST1.5	Metal Sampling Tube Duct widths 1 ft to 2 ft (0.3 to 6 m)
DST3	DST3	Metal Sampling Tube Duct widths 2 ft to 4 ft (0.6 to 12 m)
DST5	DST5	Metal Sampling Tube Duct width 4 ft to 8 ft (1.2 to 24 m)
DST10	DST10	Metal Sampling Tube Duct width 8 ft to 12 ft (2.4 to 3.7 m)
APA151	APA151	Remote Annunciator with Piezo Alarm
MHR	MHR	Min Horn, Red
MHW	MHW	Mini Horn, White



D4120

4-Wire Photo Duct Smoke Detector

Physical Specifications

Size: (Rectangular Dimensions)	14.38 in (37 cm) Length; 5 in (12.7 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:	D4120 & D4S: -4° to 158°F (-20°C to 70°C); D4P120: -40° to 158°F (-40°C to 70°C)		
Storage Temperature Range:	D4120 & D4S: -22° to 158°F (-30°C to 70°C); D4P120: -40° to 158°F (-40°C to 70°C)		
Operating Humidity Range:	0% to 95% relative humidity non-condensing		
Air Duct Velocity:	100 to 4000 ft/min (0.5 m/sec to 20.32 m/sec)		

Electrical Ratings

Power Supply Voltage:	20-29 VDC	24 VAC 50-60 Hz	120 VAC 50-60 Hz
Input Capacitance:	270 µF max	270 µF max	N/A
Reset Voltage:	3.0 VDC min	2.0 VAC min	10 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	20 mA RMS @ 120 VAC 60 Hz
Max. Alarm Current:	65 mA @ 24 VDC	135 mA RMS @ 24 VAC 60 Hz	35 mA RMS @ 120 VAC 60 Hz

Contact Ratings

Alarm Initiation Contacts: (SPST)	2.0A @ 30 VDC (resistive)		
Alarm Auxiliary Contacts: (DPDT)	10A @ 30 VDC (resistive); 10A @ 250 VAC (resistive); 1/2 HP @ 240VAC; 1/4 HP @ 120VAC		
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)	2.0A @ 30 VDC (resistive); 2.0A @ 125 VAC (resistive)		

Accessory Current Loads at 24 VDC

Device	Standby	Trouble	Alarm
APA151/APA451	12.5mA	N/A	30 mA Max.
MHR/MHW	0 mA	N/A	29 mA Max.
RA400Z	0mA	N/A	12 mA Max.
RTS451/RTS451KEY	0mA/12 mA	N/A	12 mA Max.
SSK451	8 mA Max.	16 Ma Max.	40 mA Max.

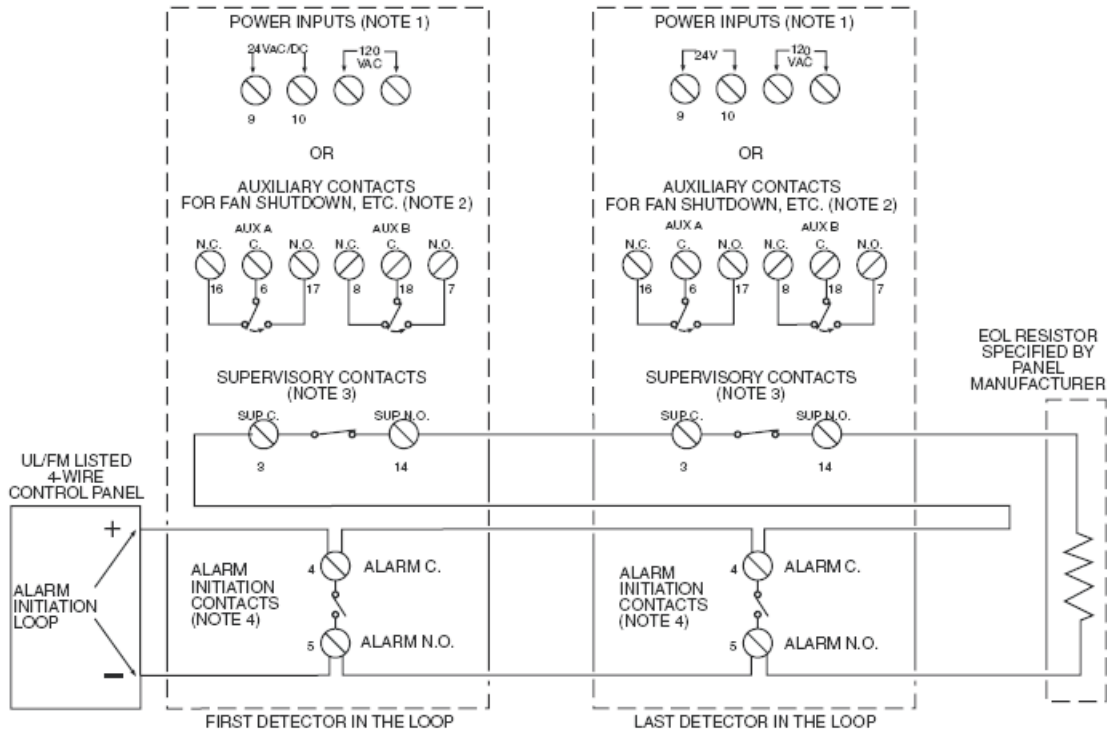
Note Any combination of accessories may be used such that the given accessory loads are: 110mA or less at the Aux output, and 50mA or less at the Alarm output.

Architectural & Engineering Specifications

The air duct smoke detector shall be a System Sensor InnovairFlex™ D4120 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 fits multiple footprints from square to rectangular. The detector shall operate at air velocities of 100 feet per minute to 4000 feet per minute (0.5 to 20.32 meters/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 SSK451 Multi-Signaling Accessory or the RTS451KEY Remote Test Station. Terminal connections shall be of the strip and clamp method suitable for 12 - 18 AWG wiring.



Wiring for 4-wire Duct Smoke Detector and Accessories



Wiring for 4-wire Duct Smoke Detector and Accessories

NOTE 1: 24V Power Inputs accept a non-polarized 24VDC or 24VAC 50-60Hz. 120VAC Power Inputs accept only 120VAC 50-60Hz. Connect power source to appropriate terminals of each detector. See specifications for additional power supply information.

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

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 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 D4120 4-wire Conventional models.
- 2.1 sensor-to-power capability can be enabled using one D4120 and one D4S, or two D4S and one D4P120.

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 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 D4120 units, 50 D4P120 units, or 50 units of combination may be interconnected.
- Up to 10 DH100ACDC units may be interconnected. Please note that each of the 9 DH100ACDC units interconnected may be replaced by three D4P120 units. Therefore, when using the interconnect feature a single DH100ACDC can drive either 9 DH100ACDC or 27 D4120 units.
- NOTE: Alarm can be reset only at the initiating device and not at the devices interconnected.

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


RTS451 UL 52522

RTS451KEY UL 52522

APA151 UL 54011

SSK451 UL 52522

RA400Z UL 52522

MHW UL 54011

MHR UL 54011

SSK451 with PS24LOW strobe and PS12/24 LENS lens
Ordering Information Continued

Model Number	Part Number	Description
P48-21-00	P48-21-00	End Cap for Metal Sampling Tubes
PS1 2/24SLENSC	PS12/24SLENSC	Ceiling Mount "SMOKE" Lens
PS1 2/24SLENSW	PS12/24SLENSW	Wall Mount "SMOKE" Lens
PS24LO	PS24LO	Mini-Alert add-on Strobe, (Red)
PS24LOW	PS24LOW	Mini-Alert add-on Strobe, (White)
RA400Z	RA400Z	Remote Annunciator Alarm LED
RTS451	RTS451	Remote Test Station
RTS451KEY	RTS451KEY	Remote Test Station with Key Lock
SSK451	SSK451	Multi-signaling Accessory

NOTICE: The information contained in this document is intended only as a summary and is subject to change without notice. The devices described in this document have specific instruction sheets which cover various technical, limitation and liability information. Copies of these instruction sheets and the General Product Warning and Limitations Document, which also contains important information are provided with the product and are available from Harrington Signal Inc. Fire Alarm. Information contained in these documents should be consulted before specifying or using the product. For further information or assistance concerning particular problems contact Harrington Signal Inc. Harrington Signal Inc. Fire Alarm reserves the right to change specifications without notice. Quality manufactured for Harrington Signal Inc. by System Sensor.