



2D51A Photoelectric Smoke Detector for use with Innovair Flex 4-Wire Duct Smoke Detector Housings

SPECIFICATIONS

Height:	2.0 in
Diameter:	4.1 in; 6.1 in
Weight:	3.1 oz. (88 g)
Operating Temperature Range:	-20°C to 70°C (-4°F to 158°F)
Operating Humidity Range:	0% to 95% Relative Humidity Non-condensing
Latching Alarm:	Reset by momentary power interruption

BEFORE INSTALLING

Please thoroughly read the System Sensor manual A05-1003, Applications Guide for System Smoke Detectors, which provides detailed information on detector spacing, placement, zoning, wiring, and special applications. Copies of this manual are available from System Sensor.

NOTICE: This manual should be left with the owner/user of this equipment.

IMPORTANT: The detector must be tested and maintained regularly following CAN/ULC S536 requirements. The detector should be cleaned at least once a year.

GENERAL DESCRIPTION

The 2D51A photoelectronic detector uses a state-of-the-art optical sensing chamber. This detector is designed to provide protection in duct applications when installed with an Innovair Flex 4-wire duct smoke detector housing and to be used with ULC listed control panels only.

Two LEDs on each detector provide local visible alarm indication. Refer to Table 3 of the Model D4120A installation manual for LED status indications. Remote LED annunciator capability is standard and may be implemented through a number of optional accessories. See applicable Innovair Flex duct smoke detector installation manual for more information. The alarm can be reset only by a momentary power interruption. This detector may be tested by activating the internal reed switch with a magnet.

BASE SELECTION AND WIRING GUIDE

Refer to the applicable Innovair Flex 4-wire duct smoke detector installation instructions for detector head and wiring instructions.

INSTALLATION

NOTE: All wiring must conform to applicable local codes, ordinances, and regulations.



Remove power from initiating-device circuits before installing detectors.

1. Install detectors:
 - a. Place the detector into the detector base.
 - b. Turn the detector clockwise until the detector drops into place.
 - c. Continue turning detector clockwise to lock it in place.
2. Tamper Resistance: The detector bases can be made tamper resistant. When capability is enabled, detectors cannot be removed from the base without the use of a tool. See the detector base installation manual of the detector base for details in using this capability.
3. After all detectors have been installed, apply power to the control unit.
4. Test the detector using the magnet as described under TESTING.
5. Reset the detector at the system control panel or on power board.
6. Notify the proper authorities that the system is back on line.



Dust covers are an effective way to limit the entry of dust into smoke detector sensing chambers. However, they may not completely prevent airborne dust particles from entering the detector. Therefore, System Sensor recommends the removal of detectors before beginning construction or other dust producing activity.

Be sure to remove the dust covers from any sensors that were left in place during construction as part of returning the system to service.

TESTING

Before testing, notify the proper authorities that the smoke detector system is undergoing maintenance and will temporarily be out of service. Detectors must be tested after installation and as part of periodic maintenance. Test the 2D51A as follows:

NOTE: Before testing the detector, check to ensure the the power board LEDs blink. If they do not, the detector may not have power or may not be installed properly (check the wiring), if it is defective, or the detector sensitivity is outside the listed limits return it for repair.

ALARM TESTS

- 1a. Test/Reset Button - Press and hold the test button located on the power board cover for at least 2 seconds.
OR
- 1b. M02-04-00 Magnet Test - Place the painted surface of the magnet onto the MAGNET TEST location on the sensor cover of unit (Figure 1).
2. The red alarm LED on the sensor and the power board should latch on, as should any accessories (i.e. RA400ZA, RTS451). Verify system control panel alarm status and control panel execution of all intended auxiliary functions (i.e fan shutdown, damper control, etc.).
3. The detector must be reset by the system control panel, front cover Test/Reset button, or remote accessory.
4. To reset using the Test/Reset button on the power board cover simply press and release.

RTS451/RTS451KEYA REMOTE TEST STATION

The RTS451/RTS451KEYA Remote Test Station facilitates test of the alarm capability of the duct smoke detector as indicated in the RTS451/RTS-451KEYA manual. The D4120A duct smoke detector can be reset by the RTS451/RTS451KEYA. If a system control panel is used, the panel itself may also require testing.

To install the RTS451/RTS451KEYA, connect the device as shown in the manual provided with the accessory; wire runs must be limited to 25 ohms or less per interconnecting wire.

SMOKE RESPONSE TESTS

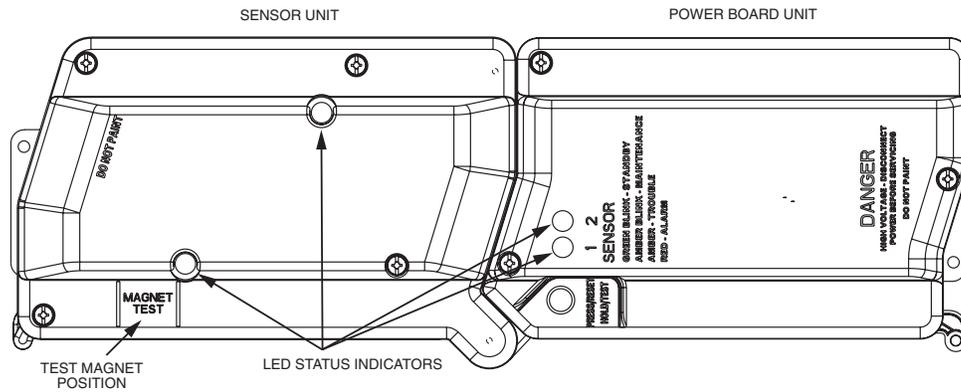
To determine if smoke is capable of entering the sensing chamber, visually identify any obstructions. Plug the exhaust and sampling tube holes to prevent ducted air from carrying smoke away from the detector head, then blow smoke such as cigarette, cotton wick, or punk directly at the head to cause an alarm. REMEMBER TO REMOVE THE PLUGS AFTER THIS TEST, OR THE DETECTOR WILL NOT FUNCTION PROPERLY.

SMOKE ENTRY USING AEROSOL SMOKE

This test is intended for low-flow systems (100-500 FPM). If the air speed is greater than 500 FPM, use a conventional manometer to measure differential pressure between the sampling tubes, as described per the installation manual provided with the duct smoke detector.

Drill a ¼ inch hole 3 feet upstream from the duct smoke detector. With the air handler on, measure the air velocity with an anemometer. Air speed must be at least 100 FPM. Spray aerosol smoke* into the duct through the ¼ inch hole

FIGURE 1. CO-LOCATED INNOVAIR FLEX DUCT SMOKE DETECTOR:



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for five seconds. Wait two minutes for the duct smoke detector to alarm. If the duct smoke detector alarms, air is flowing through the detector. Remove the duct smoke detector cover and blow out the residual aerosol smoke from the chamber and reset the duct smoke detector. Use duct tape to seal the aerosol smoke entry hole.

*Aerosol smoke can be purchased from Home Safeguard Industries, model 25S Smoke Detector Tester, Malibu, CA. Phone: 310/457-5813. When used properly, the canned smoke agent will cause the smoke detector to go into alarm. Refer to the manufacturer's published instructions for proper use of the canned smoke agent.

CAUTION

Canned aerosol simulated smoke (canned smoke agent) formulas will vary by manufacturer. Misuse or overuse of these products may have long term adverse effects on the smoke detector. Consult the canned smoke agent manufacturer's published instructions for any further warnings or caution statements.

SENSITIVITY VERIFICATION

The sensitivity of the sensor is confirmed to be operating within its allowable range each time the sensor and power board LEDs blink every 5 seconds. Note in a maintenance condition the sensor LEDs will blink red every 5 seconds and power board will blink amber. The maintenance condition indicates that the sensor is operating outside its original factory preset sensitivity and shall be cleaned or replaced. This is a valid UL test.

Notify the proper authorities that the system is back on line.

Detectors that fail these tests should be cleaned as described below and re-tested. If the detectors still fail these tests, they should be returned for repair.

CLEANING

Before removing the detector, notify the proper authorities that the smoke detector system is undergoing maintenance and will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent unwanted alarms.

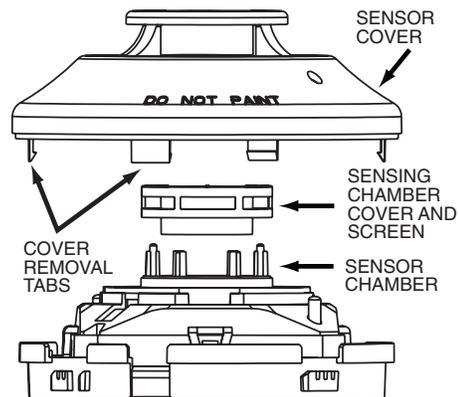
1. Remove the sensor to be cleaned from the system.
2. Remove the sensor cover by pressing firmly on each of the four removal tabs that hold the cover in place.
3. Vacuum the screen carefully without removing it. If further cleaning is required continue with Step 4, otherwise skip to Step 7.
4. Remove the chamber cover/screen assembly by pulling it straight out.

5. Use a vacuum cleaner or compressed air to remove dust and debris from the sensing chamber.
6. Reinstall the chamber cover/screen assembly by sliding the edge over the sensing chamber. Turn until it is firmly in place.
7. Replace the cover using the LEDs to align the cover and then gently pushing it until it locks into place.
8. Reinstall the detector.

REINSTALLATION

1. Reinstall the detector in its housing.
2. Restore system power.
3. Perform Detector Check.
4. Notify the proper authorities testing has been completed and the smoke detector system is back in operation.

FIGURE 2:



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Please refer to insert for the Limitations of Fire Alarm Systems

THREE-YEAR LIMITED WARRANTY

System Sensor warrants its enclosed smoke detector to be free from defects in materials and workmanship under normal use and service for a period of three years from date of manufacture. System Sensor makes no other express warranty for this smoke detector. No agent, representative, dealer, or employee of the Company has the authority to increase or alter the obligations or limitations of this Warranty. The Company's obligation of this Warranty shall be limited to the repair or replacement of any part of the smoke detector which is found to be defective in materials or workmanship under normal use and service during the three year period commencing with the date of manufacture. After phoning System Sensor's toll free number 800-SENSOR2 (736-7672) for a Return Authorization number, send defective units postage prepaid to: System Sensor, Repair

Department, RA # _____, 6581 Kitimat Road, Unit 6, Mississauga, Ontario L5N-3T5. Please include a note describing the malfunction and suspected cause of failure. The Company shall not be obligated to repair or replace units which are found to be defective because of damage, unreasonable use, modifications, or alterations occurring after the date of manufacture. In no case shall the Company be liable for any consequential or incidental damages for breach of this or any other Warranty, expressed or implied whatsoever, even if the loss or damage is caused by the Company's negligence or fault. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.