## Innovair™
Low-Flow Duct Smoke Detection Technology

# 2-Wire Low-Flow Duct Smoke Detector

## SYSTEM SENSOR®

### Model

| | |
|---|---|
| DH100LP | 2-Wire Photoelectric Duct Smoke Detector with Low-Flow Technology |



### Product Overview

**Air velocity rating from 100 to 4000 feet per minute (0.5 to 20.32 m/sec.)**

**Patented telescopic sampling tube**

**12/24 VDC operation**

**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**

**Photoelectric models available**

**Easy to clean**

**UL recognized field-replaceable power and sensor boards**

**Remote test station option**

**Remote annunciator option**

**Transparent cover for convenient visual inspection**

**UL 268A listed**

**3-year warranty**

The System Sensor Innovair™ DH100LP is a 2-wire photoelectric air duct smoke detector capable of sensing smoke in air velocities from 100 to 4,000 feet per minute (0.5 to 20.32 m/sec). This Innovair features Low-Flow technology enabling duct smoke detection throughout a broad range of airflow environments. Many difficult to solve HVAC applications occur in low airflow duct applications where reliable smoke detection is critical. Innovair with Low-Flow technology can detect smoke at air speed velocities of 100 feet per minute or greater, while continuing the same reliable performance to 4,000 feet per minute.

The Innovair family is designed for simplified installation and easy maintenance. The modular construction allows for easy cleaning and uncomplicated field replacement of the UL recognized power and sensor boards.

**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, and
    NOT a replacement for a building's regular fire detection system.

Refer to NFPA 72 and 90A for additional duct smoke detector application information.

## Architectural/Engineering Specifications

The air duct smoke detector shall be a System Sensor Model DH100LP 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 100 feet per minute to 4000 feet per minute (0.5 to 20.32 m/sec.). It shall be capable of local testing via magnetic switch or remote testing using the RTS451KEY Remote Test Station. The unit shall be reset by local reset button or RTS451KEY. The duct 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 plastic or be easily installed after the housing is mounted to the duct by passing through the duct housing. 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.

### Standard Specifications

**Size**
$14^{3}/_{8}''$ (37 cm) Length
$5^{1}/_{2}''$ (14 cm) Width
$2^{3}/_{4}''$ (7 cm) Depth

**Shipping Weight**
$3^{1}/_{4}$ lbs. (1.5 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

**Air Duct Velocity**
100 to 4000 ft./min.
(0.5 to 20.32 m/sec.)

### Electrical Ratings

**System Voltage**
12/24 VDC

**Ripple Voltage**
4 Volts peak to peak

**Start-up Capacitance**
$0.02\mu F$ maximum

**Standby Ratings**
8.5 VDC minimum
35 VDC maximum
$120\mu A$ maximum

**Alarm Ratings**
4.2 VDC minimum at 10mA
6.6 VDC maximum at 100mA

Alarm current must be limited to 100mA or less by the control panel. If used, the RA400Z remote lamp operates within the specified alarm currents.

**Reset Voltage:**
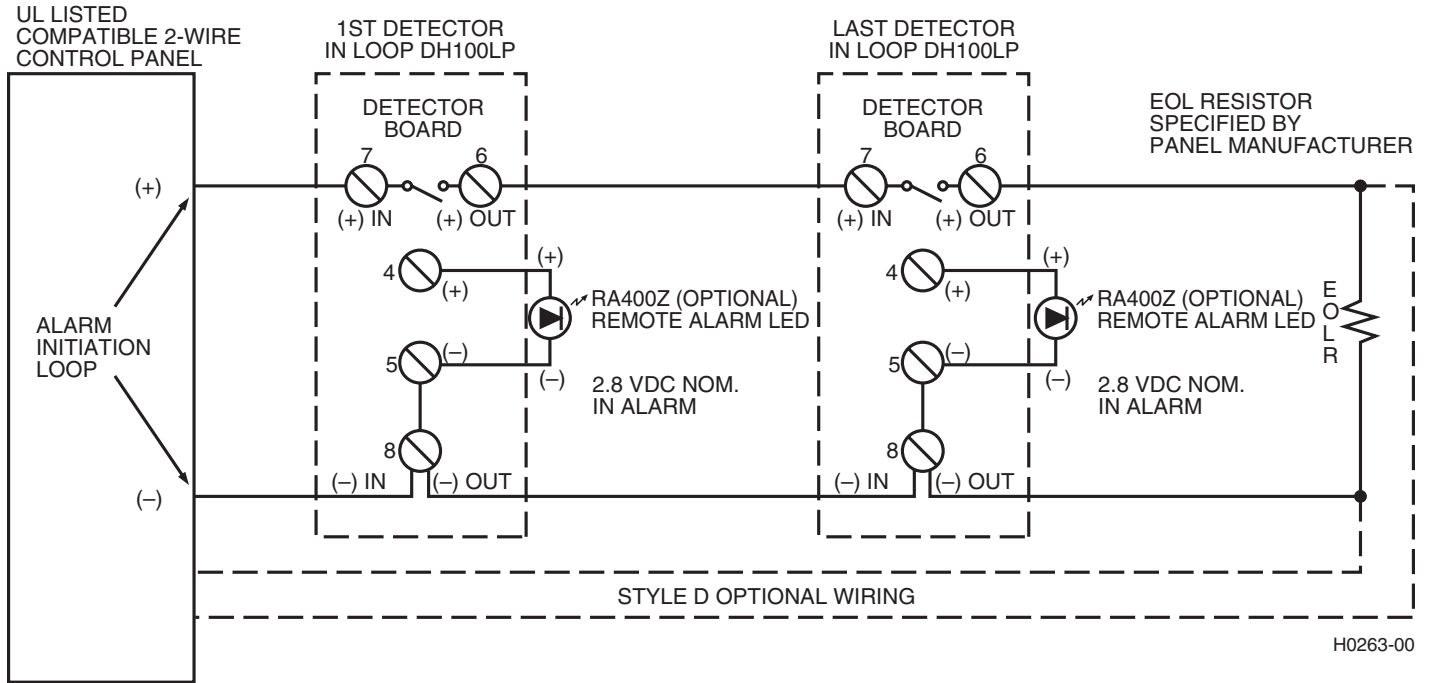2.50 VDC minimum

**Reset Time:**
0.3 Sec. maximum

**Start-up Time**
34.0 Sec. maximum

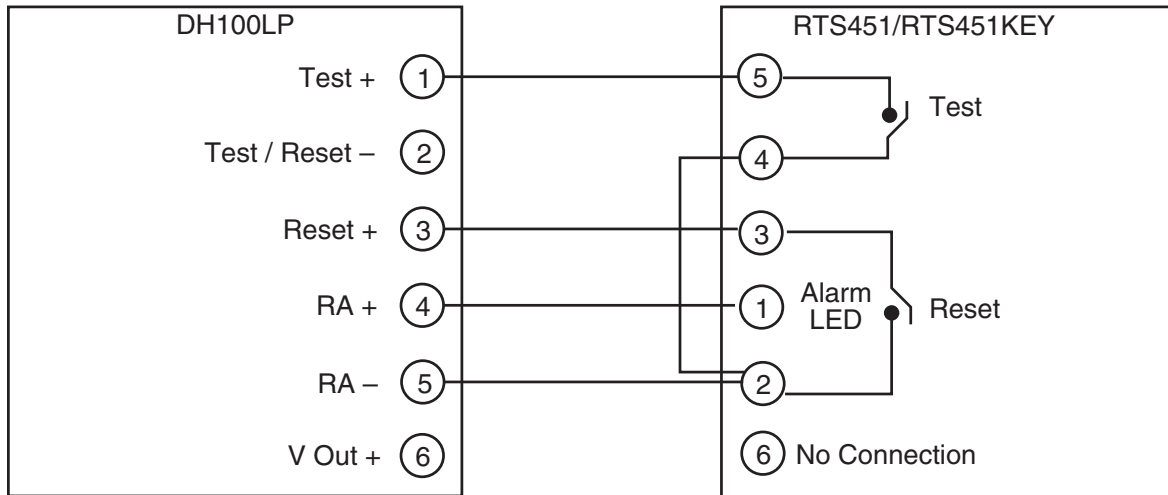System wiring diagram for 2-wire duct smoke detectors (detectors powered from initiating device circuit):

UL LISTED
COMPATIBLE 2-WIRE
CONTROL PANEL

1ST DETECTOR
IN LOOP DH100LP

LAST DETECTOR
IN LOOP DH100LP

EOL RESISTOR
SPECIFIED BY
PANEL MANUFACTURER

DETECTOR
BOARD

DETECTOR
BOARD

7
(+) IN

6
(+) OUT

7
(+) IN

6
(+) OUT

(+)

(+)

ALARM
INITIATION
LOOP

(−)

4
(+)

5
(−)

(+)

(−)

RA400Z (OPTIONAL)
REMOTE ALARM LED

2.8 VDC NOM.
IN ALARM

4
(+)

5
(−)

(+)

(−)

RA400Z (OPTIONAL)
REMOTE ALARM LED

2.8 VDC NOM.
IN ALARM

E
O
L
R

8
(−) IN

(−) OUT

8
(−) IN

(−) OUT

STYLE D OPTIONAL WIRING

H0263-00

Wiring diagram for the DH100LP to RTS451/RTS451KEY:

DH100LP

Test + ① ⑤ Test

Test / Reset − ② ④

Reset + ③ ③

RA + ④ ① Alarm LED Reset

RA − ⑤ ②

V Out + ⑥ ⑥ No Connection

RTS451/RTS451KEY

H0264-00

## Ordering Information

| Part Number | Description |
|---|---|
| DH100LP | 2-wire photoelectric duct smoke detector with low-flow technology |
| A5180 | Replacement 2-wire photoelectric detector board |
| A5061 | Replacement 2-wire power board |

### Accessories

| Part Number | Description | Part Number | Description |
|---|---|---|---|
| ST-1.5 | Metal sampling tube duct widths 1'–2' (0.3–0.6 m) | APA451 | Remote annunciator with piezo alarm |
| ST-3 | Metal sampling tube duct widths 2'–4' (0.6–1.2 m) | MOD400R | Sensitivity test module |
| 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 |
| RTS451KEY | Remote test station with key lock | PA400W | Mini-Alert sounder |
| RTS451 | Remote test station | PS24LOW | Mini-Alert add-on strobe |
| RA400Z | Remote annunciator alarm LED | PS12/24SLENSW | Wall-mount "SMOKE" lens |

## 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.
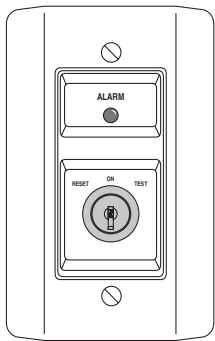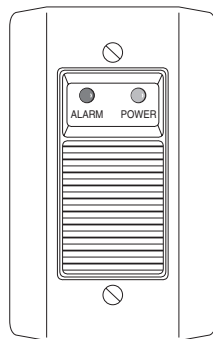
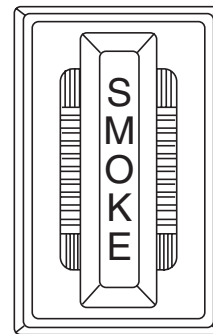**RTS451KEY**
Remote Test Station with Key (UL S2522)
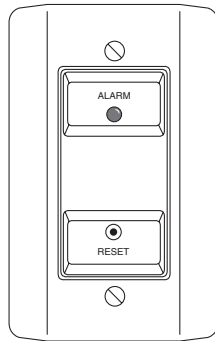
**RTS451**
Remote Test Station (UL S2522)
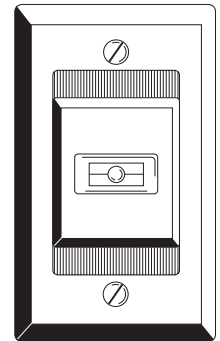
**RA400Z**
Remote Annunciator (UL S2522)

**APA451**
Piezo Annunciator (UL S4011)
*Device cannot be directly wired to 2-wire Innovair; must be operated independently by the panel.*

**PA400W**
Mini-Alert Sounder (UL S3593) shown with PS24LOW add-on strobe (PS12/24SLENSW smoke lens option available)
*Device cannot be directly wired to 2-wire Innovair; must be operated independently by the panel.*

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