

# MIX-2351RAPA

## Advanced Protocol

### Intelligent Photoelectric Smoke Sensor

### with Remote Test Capability in Duct Applications



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**SPECIFICATIONS**

Operating Voltage Range:	15 to 32 VDC
Operating Current @ 24 VDC:	200 uA (one communication every 5 seconds with green LED blink on communication)
Maximum Alarm Current:	2 mA @ 24 VDC (one communication every 5 seconds with red LED solid on)
Maximum Current:	4.5 mA @ 24 VDC (one communication every 5 seconds with amber LED solid on)
Operating Humidity Range:	10% to 93% Relative Humidity, Non-condensing
Operating Temperature Range:	32°F to 122°F (0°C to 50°C), -4°F to 158°F (-20°C to 70°C) in duct applications
Air Velocity:	0 to 4000 ft./min. (0 to 1219.2 m/min.)
Height:	2.0" (51 mm) installed in B300A-6 Base
Diameter:	6.2" (156 mm) installed in B300A-6 Base; 4.1" (104 mm) installed in B501A Base
Weight:	3.4 oz. (95 g)
Isolator Load Rating:	0.0063*

\*Please refer to your isolator base/module manual for isolator calculation instructions.

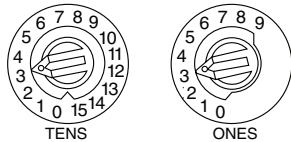
Listed to CAN/ULC S529.

This sensor must be installed in compliance with the control panel system installation manual. The installation must meet the requirements of the Authority Having Jurisdiction (AHJ). Sensors offer maximum performance when installed in compliance with CAN/ULC S524.

**GENERAL DESCRIPTION**

MIX-2351RAPA is a plug-in type smoke sensor that combines a photoelectric sensing chamber with addressable-analog communications. When used in duct applications with a DNRA, testing can be done remotely using approved System Sensor test accessories, eliminating the need for a test coil. The sensors transmit an analog representation of smoke density over a communication line to a control panel. Rotary dial switches are provided for setting the sensor's address.

**FIGURE 1. ROTARY ADDRESS SWITCHES**



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Two LEDs on the sensor are controlled by the panel to indicate sensor status. An output is provided for connection to an optional remote LED annunciator (P/N RA100ZA).

Note: Only System Sensor approved accessories may be used with the MIX-2351RAPA.

Mircom panels offer different features sets across different models. As a result, certain features of the photoelectric sensors may be available on some control panels, but not on others. MIX-2351RAPA supports Advanced Protocol and CLIP (Classic Loop Interface Protocol) mode. The possible features available if supported by the control panel are:

1. The sensor's LEDs can operate in three ways—on, off, and blinking—and they can be set to red, green, or amber. This is controlled by the panel.
2. The remote output may be synchronized to the LED operation or controlled independent of the LEDs.
3. Devices are point addressable up to 159 addresses.

Please refer to the operation manual for the ULC listed control panel for specific operation. The MIX-2351RAPA requires compatible addressable communications to function properly. Connect these sensors to listed-compatible control panels only.

**SPACING**

Mircom recommends spacing sensors in compliance with CAN/ULC S524. In low air flow applications with smooth ceilings, space sensors 30 feet apart (9.1 m). For specific information regarding sensor spacing, placement, and special applications, refer to CAN/ULC S524 or the System Smoke Detector Application Guide, available from Mircom.

**NOTE:** MIX-2351RAPA is also listed for use inside DNRA duct smoke detectors.

**WIRING GUIDE**

All wiring must be installed in compliance with the Canadian Electrical Code, applicable local codes, and any special requirements of the Authority Having Jurisdiction. Proper wire gauges should be used. The installation wires should be color-coded to limit wiring mistakes and ease system troubleshooting. Improper connections will prevent a system from responding properly in the event of a fire.

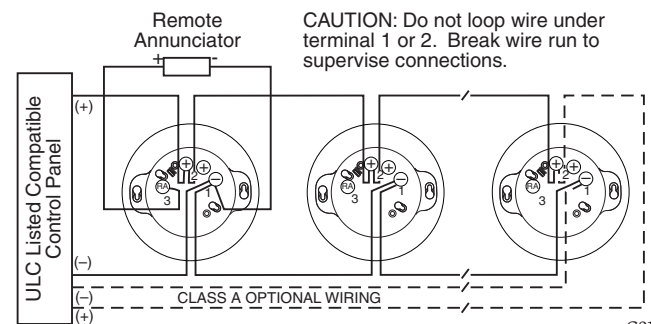
**Remove power from the communication line before installing sensors.**

1. Wire the sensor base (supplied separately) per the wiring diagram, Figure 2.
2. Set the desired address on the sensor address switches, see Figure 1.
3. Install the sensor into the sensor base. Push the sensor into the base while turning it clockwise to secure it in place.
4. After all sensors have been installed, apply power to the control panel and activate the communication line.
5. Test the sensor(s) as described in the TESTING section of this manual.



Dust covers provide limited protection against airborne dust particles during shipping. Dust covers must be removed before the sensors can sense smoke. Remove sensors prior to heavy remodeling or construction.

**FIGURE 2. WIRING DIAGRAM**



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**TAMPER-RESISTANCE**

MIX-2351RAPA includes a tamper-resistant capability that prevents removal from the base without the use of a tool. Refer to the base manual for details on making use of this capability.

## TESTING

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

All sensors must be tested after installation and periodically thereafter. Testing methods must satisfy the Authority Having Jurisdiction (AHJ). Sensors offer maximum performance when tested and maintained in compliance with CAN/ULC S536.

The sensor can be tested in the following ways:

### A. Functional: Magnet Test (P/N M02-04-01 or M02-09-00)

This sensor can be functionally tested with a test magnet. The test magnet electronically simulates smoke in the sensing chamber, testing the sensor electronics and connections to the control panel.

1. Hold the test magnet in the magnet test area as shown in Figure 3.
2. The sensor should alarm the panel.

Two LEDs on the sensor are controlled by the panel to indicate sensor status. Coded signals, transmitted from the panel, can cause the LEDs to blink, latch on, or latch off. Refer to the control panel technical documentation for sensor LED status operation and expected delay to alarm.

### B. Smoke Entry

Sensitivity readings are available through the FACP. Refer to the manufacturer's published instructions for proper use.

Additionally, canned aerosol simulated smoke (canned smoke agent) may be used for smoke entry testing of the smoke detector. Tested and approved aerosol smoke products are:

Manufacturer	Model
HSI Fire & Safety	25S, 30S (PURCHECK)
SDi	SMOKE CENTURIAN, SOLOA4, SMOKESABRE, TRUTEST
No Climb	TESTIFIRE 2000

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.

### C. Remote Test.

MIX-2351RAPA can be remotely tested using the RTS151A or RTS151KEYA test accessories. Refer to the DNRA manual for wiring diagrams. Maximum test response time may be up to two communications from the panel.

A sensor that fails any of these tests may need to be cleaned as described under CLEANING, and retested. When testing is complete, restore the system to normal operation and notify the proper authorities that the system is back in operation.

## CLEANING

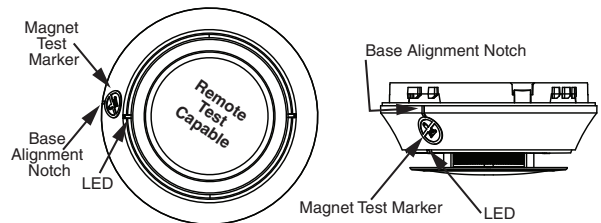
Before removing the detector, notify the proper authorities that the smoke detector system is undergoing maintenance and will be temporarily out of service. Disable the zone or system undergoing maintenance to prevent unwanted alarms.

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.
9. Test the detector as described in TESTING.
10. Reconnect disabled circuits.
11. Notify the proper authorities that the system is back on line.

### SPECIAL NOTE REGARDING SMOKE DETECTOR GUARDS

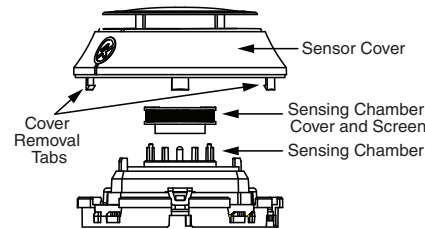
Smoke detectors are not to be used with detector guards unless the combination has been evaluated and found suitable for that purpose.

### FIGURE 3. FEATURES OF THE PHOTO DETECTOR



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### FIGURE 4. CLEANING THE PHOTO DETECTOR



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## SUPPLEMENTAL INFORMATION

For Limitations of Fire Alarm Systems, please go to:  
<http://www.systemsensor.com/en-us/Documents/156-1558.pdf>



Limitations of  
Fire Alarm Systems

## FCC STATEMENT

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This Class B digital apparatus complies with Canadian ICES-003.

## DEVICE AND SYSTEM SECURITY

Before installing this product ensure that the tamper seal on the packaging is present and unbroken and the product has not been tampered with since leaving the factory. Do not install this product if there are any indications of tampering. If there are any signs of tampering the product should be returned to the point of purchase.

It is the responsibility of the system owner to ensure that all system components, i.e. devices, panels, wiring etc., are adequately protected to avoid tampering of the system that could result in information disclosure, spoofing, and integrity violation.