2251B, 2251TB and 2251TMB
Intelligent Photoelectric Smoke Sensors

SPECIFICATIONS
Operating Voltage Range: 15 to 32 VDC
Standby Current: 300µA @ 24 VDC (one communication every 5 seconds with LED blink enabled)
Maximum Alarm Current (LED on): 6.5 mA @ 24 VDC
Operating Humidity Range: 10% to 93% Relative Humidity, Non-condensing
Operating Temperature Range: 32°F to 120°F (0°C to 49°C) 2251B; 32°F to 100°F (0°C to 38°C) 2251TB and 2251TMB
Heat Sensor: 135°F Fixed Temperature Electronic Thermistor
Height: 2.0” (51 mm) installed in B210LP Base
Diameter: 6.1” (155 mm) installed in B210LP Base; 4.1” (104 mm) installed in B501 Base
Weight: 5.2 oz. (147 g) Isolator Load Rating: 0.0063*

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

BEFORE INSTALLING
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 the National Fire Protection Association (NFPA); see NFPA 72.

GENERAL DESCRIPTION
Models 2251B, 2251TB and 2251TMB are plug-in type smoke sensors that combine a photoelectronic sensing chamber with addressable-analog communications. The sensors transmit an analog representation of smoke density over a communication line to a control panel. Rotary-decade switches are provided for setting the sensor’s address.

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 RA400Z/RA100Z). Models 2251TB and 2251TMB combine a photoelectronic sensing chamber and 135°F (57.2°C) fixed temperature heat detector. The 2251TMB also transmits an alarm signal due to heat (135°F fixed) per UL 521.

The 2251B, 2251TB and 2251TMB require compatible addressable communications to function properly. Connect these sensors to listed-compatible control panels only.

SPACING
System Sensor recommends spacing sensors in compliance with NFPA 72. In low air flow applications with smooth ceilings, space sensors 30 feet apart. When using the 2251TMB as a heat detector in FM3210 compliant applications, space sensors 20 feet apart. For specific information regarding sensor spacing, placement, and special applications, refer to NFPA 72 or the System Smoke Detector Application Guide, available from System Sensor.

Duct Applications: 2251B and 2251TB are listed for use in ducts. See Duct Applications Guide A05-1004-XX for details on pendant mount applications.

WIRING GUIDE
All wiring must be installed in compliance with the National 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.

CAUTION
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 1. WIRING DIAGRAM:

FIGURE 2. ROTARY DECADE ADDRESS SWITCHES:

TAMPER-RESISTANCE
Models 2251B, 2251TB and 2251TMB include a tamper-resistant capability that prevents their removal from the bracket 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 NFPA 72.

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
The GEMINI model 501 aerosol generator can be used for smoke entry testing. Set the generator to represent 4%/ft to 5%/ft obscuration as described in the GEMINI 501 manual. Using the bowl shaped applicator, apply aerosol until the panel alarms.
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:

<table>
<thead>
<tr>
<th>MANUFACTURER</th>
<th>MODEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Safeguard Industries</td>
<td>2SS, 30S</td>
</tr>
<tr>
<td>SDI</td>
<td>CHEK02 and CHEK06</td>
</tr>
<tr>
<td>SDI</td>
<td>SOLO44</td>
</tr>
<tr>
<td>SDI</td>
<td>SMOKESABRE-01</td>
</tr>
</tbody>
</table>

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.

Cannad 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.

For 2251TMB, smoke entry testing should be performed immediately following the magnet test. Magnet test initiates an approximately 10 minute period when the detector’s signal processing software routines are not active. Failure to first perform the magnet test will introduce a time delay before the detector alarms.

C. Direct Heat Method (Hair Dryer of 1000-1500 watts) 2251TB and 2251TMB only
A hair dryer of 1000-1500 watts should be used to test the thermistors. Direct the heat toward either of the two thermistors, holding the heat source approximately 12 inches from the detector in order to avoid damaging the plastic housing. The detector will reset only after it has had sufficient time to cool. Make sure both thermistors are tested individually.

A sensor that fails any of these tests should be cleaned as described under CLEANING, and retested. If the sensor fails after cleaning, it must be replaced.
When testing is complete, restore the system to normal operation and notify the proper authorities that the system is back in operation.

**FIGURE 3. TEST MAGNET POSITION:**

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- 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.

**FIGURE 4. SENSOR ASSEMBLY:**

**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.

**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.

**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 888-SENSORS (773-7672) for a Return Authorization number, send defective units postage prepaid to: Honeywell, 12220 Rojas Drive, Suite 700, El Paso TX 79936 USA. 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 whatever, 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.

Please refer to insert for the Limitations of Fire Alarm Systems

©2016 System Sensor. 03-11