Before installing detectors, please thoroughly read System Sensor Manual I56-407-XX, Guide for Proper Use of System Smoke Detectors, which provides detailed information on detector spacing, placement, zoning, wiring, and special applications. Copies of this manual are available at no charge from System Sensor.

GENERAL DESCRIPTION:
Model 2300TB is a 2-wire combination smoke/heat detector. In addition to photoelectronic smoke detection, two supervised electronic thermistors provide restorable 135°F fixed temperature heat detection. The installation is simplified by the use of an adaptor bracket and a plug-in screw terminal block which can be pre-wired to the system allowing the detector to be easily installed or removed for cleaning. It is designed to provide open area protection, and to be used with UL listed compatible 2-wire control panels. The detector’s sensitivity can be tested in place using the MOD400R field sensitivity test module.

The 2300TB is listed to UL 268 and is a latching type system detector. When latched in alarm, the detector must be reset by a momentary power interruption.

An LED on the detector provides a local indication of the detector’s status. If power is applied to the detector, and the detector is functioning properly in standby, the status LED will blink every 10 seconds. The detector performs a self-test on its smoke sensing chamber and internal electronics every 40 seconds. If this test fails, the detector stops blinking the status LED in standby, and the LED will remain off. In alarm, the LED will be latched on continuously until the detector is reset.

The detector provides an output for connection to an optional Remote Annunciator (model RA400Z). The Remote Annunciator mounts to a single gang box and provides an LED indication of an alarm condition.

SPECIFICATIONS:
- Diameter: 5.5 inches (14 cm)
- Height: 2.5 inches (64 mm)
- Weight: 0.7 lb (310 gm)
- Operating Temperature Range: 0° to +38° C (32° to 100° F)
- Operating Humidity Range: 10% to 90% Relative Humidity Non-condensing
- Latching Alarm: Reset by momentary power interruption.
- Test Feature: Recessed test switch.
- Maximum Air Velocity: 3000 Ft./Min. (15 Meters/Sec.).
- Sensitivity: Nominal 3%/Ft.
- Heat Sensor: 135°F Fixed Temperature Electronic Thermistor

ELECTRICAL RATINGS:
- System Voltage nominal: 12 or 24 VDC
  - minimum: 8.5 VDC
  - maximum: 35 VDC
- Maximum Ripple Voltage: 30% of nom. Voltage (peak to peak)
- Start-up Capacitance: 0.02 µF maximum
- Standby Current: 120 µA maximum
- Alarm Ratings: 4.2 VDC minimum at 10 mA.
  - 6.6 VDC maximum at 100 mA.
  - Alarm current must be limited to 100 mA maximum by the control panel. If used, the RA400Z Remote Annunciator operates within the specified detector alarm currents.
- Reset Voltage: 2.5 VDC minimum
- Reset Time: .3 Sec. maximum
- Start-up Time: 34 Sec. maximum
  - (After 60 Sec. Reset)
Figure 2. 2300TB smoke detector mounting bracket

**Figure 3. Wiring diagram for 2300TB detector**

System Sensor smoke detectors are marked with a compatibility identifier located as the last digit of a five digit code stamped on the back of the product. Connect detectors only to compatible control units as indicated in System Sensor’s compatibility chart which contains a current list of UL listed compatible control units and detectors. A copy of this list is available from System Sensor upon request.

An example of a UL listed compatible control unit is the Fire-Lite model Sensiscan 1000 using zone card ANC-2 and compatibility identification “A”. Install per installation instruction S1000/801. A maximum of 20 detectors may be installed per zone.
INSTALLATION:

WARNING: REMOVE POWER FROM THE CONTROL UNIT OR INITIATING-DEVICE CIRCUITS BEFORE INSTALLING DETECTORS.

1. Wire the plug-in screw terminal block per Figure 3.
2. Turn the detector clockwise in the mounting bracket until it clicks into place.
3. After all detectors have been installed, apply power to the control unit or initiating-device circuits.
4. Test the detector as described in the following paragraph.
5. Reset the detector at the system control panel.
6. Notify the proper authorities that the system is in operation.

CAUTION

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

TESTING:

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

Detectors must be tested after installation and following periodic maintenance. The 2300T may be tested as follows:

NOTE: Before testing the detector, look for the presence of the flashing LED. If it does not flash, power has been lost to the detector (check the wiring), or the unit is defective (return for repair).

A. TEST SWITCH
1. A recessed test switch is located on the detector housing (See Figure 4).
2. Push and hold the recessed test switch with a 0.1 inch maximum diameter tool such as an allen wrench or small screwdriver.
3. The LED on the detector should light within 5 seconds.

B. TEST MODULE (System Sensor Model No. MOD400R).
   The MOD400 or MOD400R test module can be used with a DMM or analog voltmeter to check the detector sensitivity as described in the test module’s manual.

C. SMOKE ENTRY TEST
   Hold a smoldering punk stick or cotton wick at the side of the detector and gently blow smoke through the detector until the unit alarms.

D. DIRECT HEAT METHOD (Hair dryer of 1000-1500 watts).
   Direct the heat toward either of the side thermistors. Hold the heat source about 12 inches from the detector in order to avoid damage to the plastic.
   The detector will reset only after it has had sufficient time to cool and the power source has been momentarily interrupted.

Both smoke and heat detection testing are recommended for verifying system protection capability.

A detector that fails to activate with any of the above tests should first be cleaned as outlined in the Maintenance section which follows. If the detector still fails to activate, it should be returned for repair.

Figure 4. Top and side views showing position of test switch
MAINTENANCE:
When removing the detector from a system of more than 1 detector per loop, an optional detector bypass plug can be inserted into the screw terminal block in order to maintain the system's continuity. Order accessory model number J2300TB.

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

NOTE: Before removing the detector cover, note the position of the thermistors. Make sure the thermistors are seated and not bent over when the cover is replaced.

1. Remove the detector cover by placing a small-bladed screwdriver in the cover removal slot and twisting it slightly until the cover can be turned counterclockwise for removal.
2. Remove the screen by pulling it straight out. (See Figure 5).
   BE CAREFUL NOT TO DAMAGE THE THERMISTORS. (See note above). Vacuum the screen thoroughly.
3. Clean the black vaned chamber piece by vacuuming or blowing out dust and particles.
4. To re-install the screen, rotate the screen on the housing until it drops into the alignment slots. Carefully push the screen onto the base, making sure it fits tightly to the chamber. Replacement screens are available (order part number RS23).
5. Replace the cover by gently rotating it clockwise until it locks in place.
   CHECK TO MAKE SURE THE THERMISTORS ARE IN AN UPRIGHT POSITION.
6. Reinstall the detector into the system, enable system operation, and notify the proper authorities that the system is back on line.

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WARNING
Limitations of Smoke Detectors:
This smoke detector is designed to activate and initiate emergency action, but will do so only when it is used in conjunction with an authorized fire alarm system. This detector must be installed in accordance with NFPA standard 72.

Smoke detectors will not work without power. AC or DC powered smoke detectors will not work if the power supply is cut off.

Smoke detectors will not sense fires which start where smoke does not reach the detectors. Smoldering fires typically do not generate a lot of heat which is needed to drive the smoke up to the ceiling where the smoke detector is usually located. For this reason, there may be large delays in detecting a smoldering fire with either an ionization type detector or a photoelectric type detector. Either one of them may alarm only after flaming has initiated which will generate the heat needed to drive the smoke to the ceiling.

Smoke from fires in chimneys, in walls, on roofs or on the other side of a closed door(s) may not reach the smoke detector and alarm it. A detector cannot detect a fire developing on another level of a building quickly or at all. For these reasons, detectors shall be located on every level and in every bedroom within a building.

Smoke detectors have sensing limitations, too. Ionization detectors and photoelectric detectors are required to pass fire tests of the flaming and smoldering type. This is to ensure that both can detect a wide range of types of fires. Ionization detectors offer a broad range of fire sensing capability but they are somewhat better at detecting fast flaming fires than slow smoldering fires. Photoelectric detectors sense smoldering fires better than flaming fires which have little, if any, visible smoke. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is always best, and a given detector may not always provide early warning of a specific type of fire.

In general, detectors cannot be expected to provide warnings for fires resulting from inadequate fire protection practices, violent explosions, escaping gases which ignite, improper storage of flammable liquids like cleaning solvents which ignite, other similar safety hazards, arson, smoking in bed, children playing with matches or lighters, etc. Smoke detectors used in high air velocity conditions may have a delay in alarm due to dilution of smoke densities created by frequent and rapid air exchanges. Additionally, high air velocity environments may create increased dust contamination, demanding more frequent maintenance.

Smoke detectors cannot last forever. Smoke detectors contain electronic parts. Even though smoke detectors are made to last over 10 years, any part can fail at any time. Therefore, smoke detectors shall be replaced after being in service for 10 years. The smoke detector system that this detector is used in must be tested regularly per NFPA 72. This smoke detector should be cleaned regularly per NFPA 72 or at least once a year.