



## INSTALLATION AND MAINTENANCE INSTRUCTIONS FOR MODEL 2251CTLE ANALOGUE ADDRESSABLE MULTI-CRITERIA SMOKE SENSOR

Before installing the sensor, please thoroughly read System Sensor's "Guide to Intelligent Fire Systems", which includes detailed information on sensor spacing, placement, zoning and special applications. Copies of this guide are available at no charge from System Sensor.

### GENERAL DESCRIPTION

Model 2251CTLE analogue addressable sensors are microprocessor controlled plug-in type smoke sensors that use software algorithms to combine carbon monoxide, Photo electric, thermal and infra-red sensing elements with addressable-analogue communications giving reliable fire detection whilst allowing the detector to reject many common causes of nuisance alarm. **These sensors are designed for open area protection and must only be connected to control panels that use a compatible proprietary analogue addressable communication protocol for monitoring and control.**

Two LEDs on each sensor light to provide a local 360° visible sensor indication. The LEDs can be latched on by code command from the control panel for an alarm indication. They can also be unlatched to the normal condition by code command. Remote LED indicator capability is available as an optional accessory wired to the standard base terminals.

### SPECIFICATIONS

Operating Voltage Range:	15 to 32 VDC
Max. Standby Current:	200 µA @ 24 VDC (no communication)
Max. Avg. Standby Current:	300 µA (one communication every 5 sec. with LED blink enabled)
Max. Alarm Current (LED on):	7 mA @ 24 VDC
Operating Humidity Range:	15% to 90% Relative Humidity, non-condensing
Temperature Range:	-20°C to 55°C
Nominal Activation Temperature:	60°C
Compatible Detector Bases:	B501, B501DG, B524IEFT-1, B524HTR, B524RTE.
Height:	80 mm installed in B501 Base
Diameter:	102 mm installed in B501 Base
Weight:	111 g

This detector meets the requirements of EN54-5, EN54-7 and LPS 1279.

### WIRING GUIDE

Refer to the relevant detector base installation instructions for wiring details. All bases are provided with terminals for power and an optional Remote Indicator.

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

NOTE: Verify that all sensor bases are correctly installed and that polarity of the wiring is correct at each base.

### WARNING

**Disconnect loop power before installing sensors**

### SENSOR INSTALLATION

- Set the sensor address (see Figure 1) by using a flat blade screwdriver to turn the two rotary switches, selecting the desired number between 01 and 159. **Note:** Some control panels are only able to use 99 addresses. Check with the fire panel manufacturer to clarify this. Record the address on the label attached to the base.
- Insert the sensor into the base and rotate it clockwise with gentle pressure until it drops into place.
- Continue to rotate the sensor until it locks into the base.
- After all the sensors have been installed, apply power to the system.
- Test the sensor as described under TESTING.
- Reset the sensor by communication command from the panel.

### Tamper Resistance

All system sensor plug in bases include a feature that, when activated, prevents removal of the sensor without the use of a tool. Refer to the installation instructions for the sensor base for details of how to use this feature.

### CAUTION

**Dust covers help to protect units during shipping and when first installed. They are not intended to provide complete protection against contamination therefore sensors should be removed before construction, major re-decoration or other dust producing work is started. Dust covers must be removed before system can be made operational.**

### TESTING

Sensors must be tested after installation and following periodic maintenance. However, before testing, notify the proper authorities that the smoke detector system is undergoing maintenance and the system will be temporarily out of service. Disable the zone or system undergoing

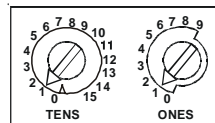


Figure 1: Rotary Decade address Switch

maintenance to prevent unwanted alarms.

In addition, check to ensure that the LEDs blink (if this feature is operational under software command). If they do not, power has been lost to the sensor (check the wiring).

Test the sensors as follows:

### Magnet Test

- Test the sensor by positioning the test magnet (Model M02-04, optional) against the sensor body approximately 2cm from the LED as indicated in Figure 2.
- Both LEDs should latch on within 30 seconds indicating an alarm and activating the panel.

### Smoke Test

- At alarm levels 4 and 5, the 2251CTLE includes electronic delays of upto 10 minutes for a smoke only response. To disable the delay for ten minutes, a magnet test as described above should be carried out prior to the smoke tests.
- Use either a canned smoke aerosol or a detector tester for generating artificial smoke to test the detector. Inject the smoke into the detector's chamber using the test smoke as recommended by the manufacturer and ensure that it is present until an alarm occurs on the detector.
- The red alarm LED should latch on within 30 seconds indicating an alarm and activating the panel into a condition to indicate the detector under test.

### Direct Heat Method (Hair dryer of 1000-1500 watts).

- Direct the heat toward the sensor from its side. Hold the heat source about 15 cm away to prevent damage to the cover during testing.
- The LEDs on the sensor should light when the temperature at the detector reaches 58°C. If the LEDs fail to light, check the power to the sensor and the wiring in the sensor base.

Following any of the above tests, the sensor should be reset at the system control panel. If the sensor fails these tests, they should be returned for repair.

### MAINTENANCE

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

- Remove the sensor to be cleaned from the system.
- Remove the sensor cover. Use a small flat blade screwdriver to gently release each of the four cover removal tabs that hold the cover place. Use caution to avoid damaging the thermistors and other sensors
- Carefully vacuum the outside of the anti insect screen without removing it from the detector cover.
- The chamber cover, CO and IR sensors may be removed as a single assembly. Gently pull the assembly away from the sensing chamber being careful neither to damage the thermistors, the IR / CO sensor PCB nor to strain the connector cable to the PCB, then gently folded away from the optical chamber.
- Use a vacuum cleaner and/or clean compressed air to remove dust and debris from the sensing chamber and sensing chamber cover.
- Re-install the sensing chamber cover assembly by sliding the cover over the chamber, gently pressing it home until it snaps into place.
- Re-install the sensor cover. Use the cover removal tabs, LEDs and thermistors to align the cover with the sensor. Snap the cover into place.
- When all sensors have been cleaned and re-installed, restore power to the loop and test the sensor(s) as described under TESTING.

After completion of maintenance and testing, notify the proper authorities that the system is operational.

### CO Sensor Lifetime

The CO cell has an expected lifetime of approximately six years. The detector is programmed to signal the approach of end of this lifetime to the control panel. The CO cell is not a field replaceable component and on failure, you should contact the system supplier to arrange for replacement of the cell.

### WARNING - LIMITATIONS OF SMOKE DETECTORS

The 2251CTLE Multi Criteria detector is designed to activate and initiate emergency action, but will do so only when used in conjunction with other equipment. **Fire detectors will not work without power.**

**The 2251CTLE will not sense fires when the smoke, heat, gas or IR light does not reach the sensors.** Stimuli from fires in chimneys, in walls, on roofs, or on the other side of closed doors may not reach the detector and trigger the unit.

**A detector may not detect a fire developing on another level of a building.** Hence, detectors should be located on every level for a building.

**Fire detectors also have sensing limitations.** In general, detectors cannot be expected to provide warnings for fires resulting from inadequate fire protection practices, violent explosions, escaping gas, improper storage of flammable liquids like cleaning solvents, other safety hazards, or arson. Fire detectors used in high air velocity conditions may fail to alarm due to dilution of smoke densities created by such frequent and rapid air exchanges. Additionally, high air velocity environments may create increased dust contamination, demanding more frequent maintenance.

**Fire detectors contain electronic parts, and cannot last forever.** The 2251CTLE contains an electro-chemical CO sensor which has an expected lifetime of 6 years and the remainder of the components may be expected to last 10 years, however any of the components could fail at any time. Your fire detection system should therefore be tested at least semi-annually. Clean and take care of your fire detectors regularly. Taking care of the fire detection system you have installed will significantly reduce your product liability risks.

Figure 2: Test Magnet Positioning

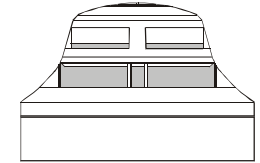
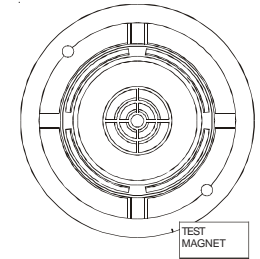


Figure 3: Sensor with Cover Removed

