

## Addressable Multi-Criteria SMART4 Detector Specification

### Compliance with standards

The Multi-Criteria Detector shall be third party approved to EN54 part 7 & 5 CEA 4021, LPS1279.

### Functionality

The Detector shall use the photoelectric (light-scattering) principal to measure smoke density in conjunction with dual thermistors to measure heat, Carbon Monoxide detector, and Infra Red detector to detect flame and shall, on command from the C.I.E, send data to the panel representing the fire risk.

The Infra Red detector shall be capable of measuring Irradiance on the IR detector of between 0 – 450  $\mu\text{W}/\text{cm}^2$ .

The Carbon Monoxide detector shall be capable of measuring CO levels of between 0 – 500 ppm.

The Detector shall incorporate a micro processor that combines the signals from the photoelectric smoke chamber, the thermistor heat detector, Carbon Monoxide detector and Infra Red elements using algorithms that include a time element to provide an increased immunity to false alarm whilst maintaining the earliest warning of real fire condition.

Multi-Criteria Detectors shall be intelligent and addressable devices and shall connect with two wires to one of the C.I.E. Signalling Line Circuit loops.

The detector shall operate on a digital protocol loop to give reduced power consumption, upto 159 detectors and 159 modules may be connected to a single loop.

Location of devices on the loop circuit shall with the aid of a Loop Mapping Tool be able to identify it's location and address on the loop, allowing for a schematic layout drawing to be produced and printed for use in the O&M manual.

The Detectors shall be ceiling-mount and shall include a twist-lock base.

### Group Polling

The detector shall be capable of group polling with improved performance a result.

There shall be no limit to the number of devices that can be grouped together on the same loop.

Implementation of group polling feature shall decrease response time for an alarm to be detected to less than 2.5 seconds, the use of complex cause and effect programming shall not increase the operation of all output devices to more than 10 seconds.

### Test functions

The Detectors shall provide a means of test whereby they will simulate an alarm condition and report that condition to the C.I.E.

Such a test may be initiated at the Detector itself (by activating a magnetic switch) or initiated remotely on command from the control panel.

### Address setting

The Detectors shall provide address setting on the Detector head using decimal switches.

Addressable Detectors that use binary address setting methods, such as a dip switch, code cards or soft addressing are not acceptable.

The Detectors shall also feature an internal identifying code that the C.I.E. shall use to identify the type of Detector.

### Visual indication

The Detectors shall provide dual LED's. Both LED's shall flash red under normal conditions, indicating that the Detector is operational and in regular communication with the C.I.E. Both LED's may be placed into steady red illumination by the C.I.E, indicating that an alarm condition has been detected.

If required, the flashing mode operation of the Detector LED's shall be controlled through the system field program.

An output connection shall also be provided in the base to connect an external remote alarm LED.

## Sensitivity settings

The Detector sensitivity shall be set through the C.I.E, and shall be adjustable in the field through the field programming of the system.

Sensitivity may be automatically adjusted by the panel on a time-of-day basis.

The detector will be capable of 6 sensitivity settings

Level 1 – 1%/ft of smoke or greater than 45 ppm of CO. No delays from processed photo output.

Level 2 – 2%/ft of smoke. No delays from processed photo output.

Level 3 – 3%/ft of smoke. No delays from processed photo output.

Level 4 – 3%/ft of smoke. Maximum of 10 minutes delay from processed photo output.

Level 5 – 4%/ft of smoke. Maximum of 10 minutes delay from processed photo output.

Level 6 – Heat only alarm. If the heat level on either thermistor exceeds 60°C or rate of rise limits.

These sensitivity levels shall not contravene EN54 part 7 unless placed in to thermal (heat) only mode in which case the unit shall comply with EN54 part 5.

The detector shall be capable of being configured from the control panel to accept various application dependant alarm threshold levels to reduce nuisance alarms

The panel threshold should be chosen according to the specific environment:

- “ULTRA-CLEAN” environments can use Level 1 ALERT
- “CLEAN” environments can use Levels 2-3 ALARM
- “MODERATE” environments can use Level 4 ALARM
- “HARSH” environments can use Level 5-6 ALARM

The Detector shall be able to be placed in to a thermal (heat) only mode of operation from command from the C.I.E. This shall be automatic on a time-of-day basis or by means of a manual operation at the C.I.E.

## Drift compensation

The Detector shall automatically compensate for dust accumulation and other slow environmental changes that may affect their performance. The use of this function shall not contravene EN54 part 7.

## Additional requirements

Optional relay base and isolator base variants shall be available.

Up to 159, intelligent Detectors may connect to one SLC loop.

The C.I.E software, not the detector, shall make the alarm decision.

The sensitivity of each detector shall be set in the C.I.E.

The system operator shall be able to view the current analogue or digital value of each detector at the C.I.E.