

## Addressable Multi-Criteria SMART3 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 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 Detector shall incorporate a micro processor that combines the signals from the photoelectric smoke chamber, the thermistor heat 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.

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

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 to give reduced power consumption, upto 159 detectors and 159 modules may be connected to a single loop.

The detectors shall be fitted with a loop isolation device in-built into the device.

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.

### 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 bi-colour LED's. Both LED's enable red, amber and green local status indication also indicating that the Detector is operational and in regular communication with the C.I.E.

The LED's shall be configurable from the C.I.E to give visual indication of:

- Device Healthy
- Fire
- Fault – Isolation in use
- Detector Dirty
- Test Mode
- Chamber Fault

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 shall be capable of 6 sensitivity settings.

Alarm Level 1 - Low false alarm resistance, high photoelectric only sensitivity

Alarm Level 2 - Medium false alarm resistance, medium photoelectric only sensitivity

Alarm Level 3 - Standard false alarm resistance, low photoelectric only sensitivity

Alarm Level 4 - High false alarm resistance, low photoelectric only sensitivity

Alarm Level 5 - Very high false alarm resistance, low photoelectric only sensitivity

Alarm Level 6 - Class A1R. Heat only alarm.

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 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.