

# ANALOGUE - High Sensitivity Smoke Sensor

## Model 72051EI

### Overview

#### Features

- Extremely high sensitivity, high power output IR LED and high gain IR receiver amplifier based smoke sensor.
- Superior early warning performance
- Effective response to both fast flaming liquid fires and slow smoldering fires
- New mechanical platform with patented chamber to maximize smoke entrance and false alarm immunity
  - Improved resilience to false alarms through dust
  - Removed risk of false alarms through insects
- Includes Series 200 Advanced Protocol
- Includes single pole short circuit isolation with status control through the Series 200 Advanced Protocol
- Twin LED indicators providing 360° visibility, offering tri-color flashing option (red, green and amber colors)
- Rotary decade address switches
- Pure white color to compliment modern buildings



### Description

The 72051EI high sensitivity, high gain amplifier based intelligent smoke sensor is a unique offering from System Sensor that provides extremely high sensitivity to fire conditions, by detecting the earliest particles of combustion. This is achieved by combining a patented optical chamber with advanced high power output IR LED diode and precision optics technology, which is matched with a unique superior high gain IR receiver amplifier, enhancing the sensitivity of the device. The chamber is supported by sophisticated processing circuitry and microprocessors that feature smoothing-filter algorithms to help eliminate transient environmental noise conditions, and reduce nuisance alarms.

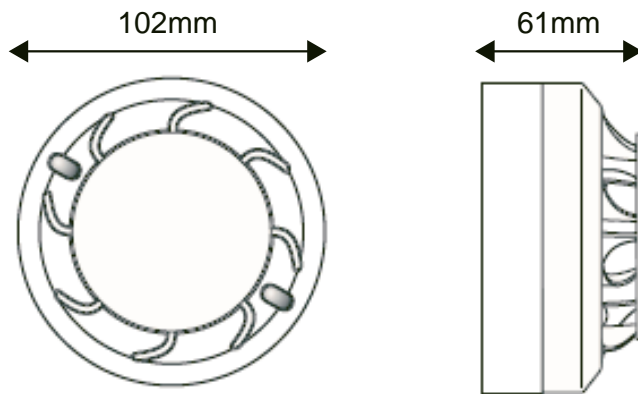
The result is a very sensitive but stable sensor that can achieve 0.06 to 6.41% / m obscuration sensitivity, providing up to 100 times more sensitivity than a standard photoelectric smoke sensor.

With its quick response and pinpoint accuracy, this unique sensor is ideally suited to environmental applications where there is substantial cost for downtime or a significant investment in installed equipment has been made (e.g. Electronics Manufacturer Clean Rooms, Telecommunication Rooms, Computer Rooms etc.).

Historically, photoelectric smoke sensors have shown a quick response to slow smoldering fires, whilst ionization smoke sensors have provided a better response to fast flaming fires. However, the 72051EI sensor provides good responses to both types of fires by improving its signal-to-noise ratio. The high gain amplifier implemented into 72051EI improves the sensor's signal and increases the ability to detect small particles (usually associated with fast flaming fires), which are not as easily detected by a standard photoelectric smoke sensor. Meanwhile, the sensor's smoothing and filtering algorithms reduce noise and the possibility of false alarms.

The sensor's performance is improved even further by the inclusion of special drift compensation algorithms, which compensate for the buildup of any contamination in the sensing chamber. There are three stages of drift compensation, 'low-level alert', 'high-level alert' and 'maintenance urgent'. The 'low and high-level alert' signals are used to identify that the 72051EI sensor has accumulated significant amounts of airborne particles and requires maintenance, whilst the 'maintenance urgent' signal indicates that the sensor has reached the end of its compensation range.

## 72051EI Architect/Engineer Specification



### Electrical Specification

Operating Voltage Range	15 to 32 Vdc
Maximum Standby Current	250 µA at 24 VDC (no communications) / 300 µA at 24 VDC (LED blink enabled, once every 5 s)
Led Current	Red: 1.0 mA at 24 Vdc Green: 3.0 mA @ 24 Vdc Yellow: 4.0 mA @ 24 Vdc
Isolation Current	12 mA at 24 VDC
Maximum Continuous Current	1A (Switch Closed) Voltage @ 24 VDC
Additional loop resistance	Typical 80 mohm @24 V (max 160 mohm @15 V)
Remote Output Voltage	22.5 Vdc @ 24 Vdc

### Environmental Specification

Application Temperature Range	-10 °C to 55 °C
Humidity	10% to 93% Relative Humidity (non-condensing)
Air Speed	0 - 20 m/s

### Mechanical Information

Height	61 mm (when installed on B501AP)
Diameter	102 mm
Weight	110 g
Max Wire Gauge for Terminals	2.5 mm <sup>2</sup>
Colour	Pure White (RAL 9010)
Material	PC/ABS FR

### Product Range

Compatible Bases	B501AP, B524HTR
Other Devices in Series 200 plus Range	Please refer to other Series 200 plus datasheets

### Sensitivity Settings

Alarm level no.1	0.06%/m smoke obs. (0.02%/ft)
Alarm level no.2	0.10%/m smoke obs. (0.03%/ft)
Alarm level no.3	0.16%/m smoke obs. (0.05%/ft)
Alarm level no.4	0.33%/m smoke obs. (0.10%/ft)
Alarm level no.5	0.66%/m smoke obs. (0.20%/ft)
Alarm level no.6	1.65%/m smoke obs. (0.50%/ft)
Alarm level no.7	3.24%/m smoke obs. (1.00%/ft)
Alarm level no.8	4.85%/m smoke obs. (1.50%/ft)
Alarm level no.9	6.41%/m smoke obs. (2.00%/ft)

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