ClassiFire

AIR Intelligence™

AIR-Intelligence aspirated smoke detectors use ClassiFire®, a patented system of Perceptive Artificial Intelligence to continually adjust the detector sensitivity to maintain a consistent level of performance.

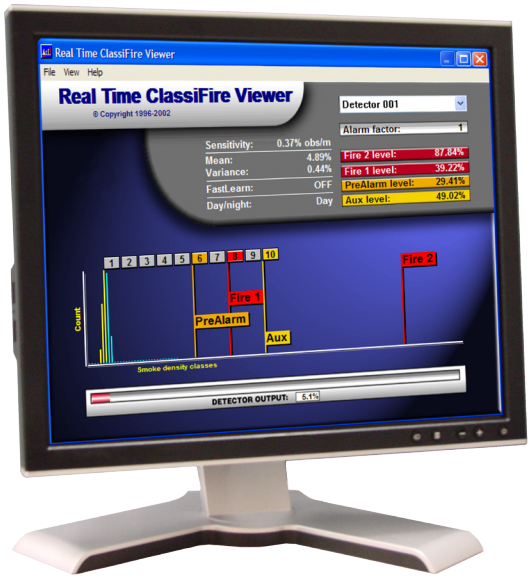
Traditionally, aspirated detectors are adjusted to a sensitivity that is a set level above the highest peak in the normal environmental particulate density. As such, it is very easy to set system sensitivity levels too high and suffer from an unacceptable rate of nuisance alarms. In addition, this method does not necessarily generate a particularly early warning.

As the normal environment changes, the system is unable to adapt and needs more (or less) particulate to generate an alarm. With this method, the detector sensitivity is 'fixed' but the amount of particulate needed to generate an alarm is not constant, as depicted in Figure 1 on reverse.

ClassiFire dynamically adjusts the detector sensitivity to match changes in the normal environmental particulate density, thus the amount of particulate needed to generate an alarm remains constant, irrespective of environmental conditions.

The ClassiFire Principle

The philosophy of Relative Sensitivity is to continuously calibrate the detector relative to the fluctuating background particulate level, so that the thresholds only take into account the increase in particulate caused by the smoke of a fire. This means that as the background level changes, the threshold changes as well.



Key Features:

- High sensitivity can be provided reliably.
- Alarm rates can be predicted.
- Seasonal time changes are automatically adapted to.
- Contaminated dust filters that normally reduce effective sensitivity are adapted to.
- Changes in air filtration efficiency do not affect smoke detection performance.
- Provides extremely simple set-up.

Relative Sensitivity

AIR-Intelligence detectors continuously adapt their sensitivity to the environment in which they are installed, providing alarm thresholds which are 'relative' to the background particulate levels in the protected area, instead of placing the alarm threshold at a fixed level relative to ambient conditions.

At any time, the detector's performance remains constant, regardless of fluctuations in the normal background particulate level. AIR-Intelligence bargraph displays only show particulate levels significantly above the expected background level, such as that from a geniune fire situation.

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Fixed Sensitivity vs. Perceptive Artificial Intelligence

Fig. 1
Traditional fixed sensitivity

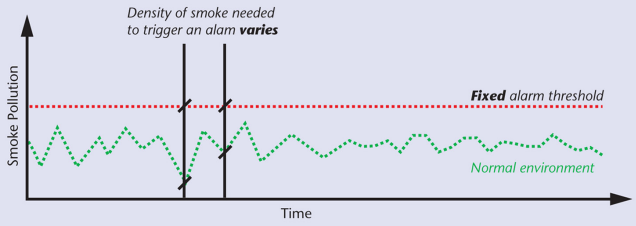
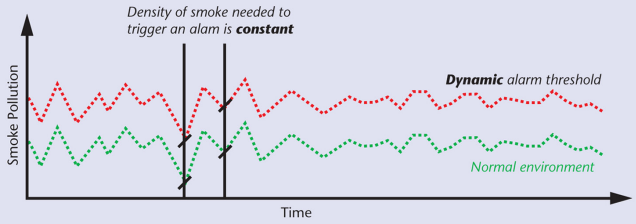


Fig. 2
Perceptive artificial intelligence



ClassiFire works as follows:

- The detector output produces a histogram of 64 classes of potential pollution density.
- The laser is pulsed twice per second and each pulse output is allocated to a pollution density class. Over a period of 24 hours the smoke pollution distribution in the protected environment is compiled and a data bank created.
- The data bank is used to predict the probability that a particular pollution level will be achieved using statistical analysis.
- Alarm thresholds are based on an acceptable probability of nuisance alarm (for example 1 alarm per year or 1 alarm every 1,000 years).
- Because the smoke pollution data bank is continually updated, the detector continually adjusts its sensitivity to match any changes in the normal ambient smoke density, ensuring that the detector provides a consistent response.
- The histogram represents a record covering several days. This gives optimum stability and ensures that slow growing fires are not 'learned'.

Applications

- Aircraft Hangars
- Airport Terminals
- Anti-Smoking Enforcement
- Atria
- Cable Tunnels
- Ceiling Voids & Raised Floors
- Cleanrooms
- Coal Conveyers
- Computer Cabinets
- Computer Rooms
- Corrections Facilities
- Electronic Data Processing (EDP) Centers
- Engine Rooms
- Escalators
- Flour Mills
- Food Preparation Areas
- Freezer Warehouses
- Heritage Buildings
- High-End Residential
- Hospitals
- Hotel Lobbies
- Metro Tunnels
- Museums
- Paper Mills
- Record Storage Facilities
- Recycling Centers
- Semiconductor Fabrication
- Telecommunications Facilities
- Textile Areas
- Tobacco Plants
- Warehouses and Distribution Centers
- Wood Recycling

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