



FAAST 8100 Aspirating Smoke Detector

Architectural/Engineering Specifications

The Aspirating Smoke Detector (ASD) shall offer Very Early Warning Smoke Detection, Early Warning Smoke Detection and Standard Smoke Detection settings. The sensitivity range shall be from 0.00046%/ft – 4.0%/ft. Operating temperatures shall be from 32°F (0°C) to 100°F (38°C). Sampled air temperatures shall range from –4°F (–20°C) to 140°F (60°C). Operating humidity shall range from 10-95% non-condensing. The ASD shall have dual source (blue LED and infra-red laser) optical smoke detection for a wide range of fire detection with enhanced immunity to nuisance particulates. The ASD shall operate in air flows from 0-4000 ft/min (0-1,219 m/min). PipelQ software shall provide pipe design, FAAST system configuration, and FAAST system monitoring in a single software program.

Approvals

The ASD shall be tested, approved and/or listed by Underwriters Laboratories (UL), Factory Mutual (FM), and California State Fire Marshal (CSFM).

Design Parameters

The ASD shall allow 5 programmable alarm levels with time delays, including Alert, Action 1, Action 2, Fire 1, and Fire 2. The ASD shall allow for an Acclimate or Day/Night/Weekend setting to accommodate environmental changes. The Acclimate mode shall automatically adjust alarm levels within user specified parameters to reduce nuisance alarms. It shall continually adapt to current environmental conditions when activated.

Day/Night/Weekend settings shall allow the user to create different thresholds and delays during the day, night or weekend.

The ASD shall provide 8 form C, programmable, latching or non-latching relays. It shall include a field replaceable filter and an internal particle separator to reduce the amount of non-combustible materials reaching the detection chamber. It shall be tested and approved for coverage up to 8,000 sq. ft. It shall use ultrasonic sensors to confirm proper air flow through the pipe network. It shall store up to 18,000 events. Events shall include smoke levels, alarm conditions, operator actions, and faults. The dates and time of each event shall be recorded.

The ASD shall provide Urgent, Minor, and Isolate fault types to indicate the priority of faults generated in the system. Fault indication shall be provided for the following:

- **Low flow – If a device has decreased air flow, a Minor fault shall be generated at 20% decrease in air flow. An Urgent fault shall be generated at 50% decrease in air flow.**
- **Configuration – Device configuration failure. A minor fault shall be generated if a configuration update did not transfer. An Urgent fault shall be generated if no configuration exists in the system or the configuration is corrupt and the device cannot operate.**

- **Sensor** – If the particulate sensor is not operating properly and needs immediate replacement an Urgent fault shall be generated.
- **External Monitor** – If the external monitor detects an open a Minor fault shall be generated.
- **Time** – If the internal time base needs to be updated a Minor fault shall be generated.
- **Communication** – If the device fails to communicate to one of its peripherals and cannot function properly, an Urgent fault shall be generated.
- **Aspiration** – If the aspirator is not working and requires immediate attention an Urgent fault shall be generated.
- **Filter** – As the filter approaches a pre-set threshold an initial warning shall be given to change the filter and a Minor fault shall be generated. If the filter is not changed within 72 hours, an Urgent fault shall be generated.
- **Isolate** – If the device is put into the Isolate mode, an Isolation fault shall be generated.
- **High Flow** – If a device has increased air flow, a Minor fault shall be generated at 20% increase in air flow. An Urgent fault shall be generated at 50% increase in air flow.

User Interface

The system shall provide a user interface with:

- **Air Flow/Fault Display** – The air flow/fault display shall consist of 10 bicolor LEDs and operate in one of two modes: air flow or fault indication. Green segments shall indicate how close the current air flow is to the high or low air flow threshold. During normal operation two adjacent indicators shall be green and correspond to the current airflow entering the detector. When airflow is at a balanced level, the two green segments shall be centered on the graph. As airflow rises and falls, the green segments shall move right and left accordingly. If a fault is activated on the device, the corresponding LEDs shall illuminate in amber and an additional “fault” LED shall be triggered to signal a fault has been generated. All 10 faults shall be indicated on the User Interface
- **10 particulate levels** – The particulate level display shall consist of ten amber LEDs that correspond to the current level of the particulate detected. The LEDs shall illuminate in order from Level 1 to Level 10, starting from the bottom of the display and moving up as the particulate level increases. Each LED shall represent a 10% increase in the particulate level necessary to reach the Alert Alarm level.
- **5 alarm levels** – All 5 Alarm levels shall be indicated on the User Interface. The Alarm Level Display shall consist of 5 red LEDs that correspond to the current alarm level. These LEDs shall be located directly above the Particulate Level LEDs. They shall illuminate sequentially upward as the severity of the alarm increases.
- **On/Off indication**
- **Low Voltage indication**

The user interface shall offer interactive buttons. The buttons shall have a security passcode system to prevent unauthorized access if chosen. The buttons shall allow the following features to be activated at the device:

- **Test**

- Reset
- Isolate
- Information Generation – the buttons shall provide the local device address and the IP address of the device through a coded sequence
- Password input if required to activate buttons

Software

The software shall include a single software program, PipeIQ, which provides pipe network design, ASD configuration, and system monitoring. The software shall provide the ability to remotely monitor the system. The software shall have the ability to provide the following:

- Test, reset, and isolate functions from remote locations
- Bill of Materials for the pipe network
- Pipe layout of the pipe network
- Generate transportation time from the sampling holes to the detector and sampling hole pressure
- Live event monitoring
- Historic event retrieval
- Custom message function to input messages about a device or site
- Configuration settings
- Network settings
- Trend graph reflecting obscuration over time

Communication

The ASD shall include an onboard Web server interface to enable remote monitoring and device configuration. Connection to the device shall be through an RJ45 jack. A password shall be required to access the Web server. The software shall include the ability to enter up to 6 e-mail addresses to send automatic updates for alarms and/or faults. Each e-mail address shall have the ability to select the type of updates which will be sent. The network shall support up to 255 devices.

Pipe System

The ASD shall consist of a pipe network to transport air to the detection system supported by calculations from a computer-based design modeling tool. The single pipe length shall extend up to 262 ft. (80 m). The outside pipe diameter shall fit either 1.050 inches or 25mm. Internal pipe diameter shall range from 0.591 inches to 0.827 inches (15-21 mm). Inflow and Exhaust pipes shall enter the device from either the top or the bottom of the unit so that the unit does not have to be inverted.

Wiring

Wire gauge shall range from 24 to 12 AWG (0.5-2.05 mm). Wire or conduit shall enter the detector from either the top or the bottom of the device. Pluggable terminals shall be used to wire the detector.

Qualifications

The manufacturer shall have a minimum of 25 years of production experience in the manufacture and design of smoke detection devices.