SAFE ASD

Aspirating Smoke Detector Engineering Specifications

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Safe Fire Detection Inc.
5915 Stockbridge Dr.
Monroe, NC 28110
Phone: (704) 821-7920
Fax: (704) 821-4327
Website: www.safefiredetection.com
E-mail: staff@safefiredetection.com

SAFE FIRE DETECTION, INC.

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ASPIRATING SMOKE DETECTOR
(Earlier Warning Detection)
SafeASD®

ENGINEERING SPECIFICATIONS

CSI SECTION [ ]
AIR SAMPLING SMOKE DETECTION SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes high sensitivity fire detection systems.
B. Related Sections
    1. Section 16720 - Fire Alarm and Detection Systems
    2. Section 15300 - Fire Protection Systems

1.02 REFERENCES

A. National Fire Protection Association (NFPA)
    1. NFPA 72 Standard for Protection Signaling Systems
B. Underwriters Laboratories Inc. (C-UL-US) Fire Protection Equipment Directory

1.03 SYSTEM DESCRIPTION

A. Design Requirements
    1. Shall consist of a high sensitivity type detector using Light Scattering Technology that 0.2% obs/ft (0.6% obs/m).
    2. Shall be air sampling by utilizing a system aspirator and micro-controller
    3. Shall be self contained, including micro-controlled base technology.
    4. Shall consist of an air sampling pipe and/or tubing system network to continuously transport air from protected area.
    5. Optional equipment may include 24-hour battery backup and may also interface with building fire alarm systems.
    6. The system shall report any equipment related fault through a fault output relay.
    7. The system must be resistant to dust, dirt, gases, and pollutants that normally cause false alarms. Time delays and signal averaging will not be acceptable.
    8. Shall be installed to comply with NFPA standards and the Authority Having Jurisdiction.

B. Performance Requirements
    1. Shall be C-UL-US and/or FM tested and approved (or pending) to cover 668 sq m.

1.04 SUBMITTALS

A. Submit product data and shop drawings, including isometric and plan view layouts, of the air sampling network under provisions of section [ ].
B. Supply one copy of the manufacturers Installation and Operation Manuals after completion of installation.

C. Supply one copy of the manufacturers Start-Up forms within 30 days of installation and commissioning.
D. Each bidder must supply both the proposed sampling system design for the area(s) to be protected, and a letter certifying that the design strictly complies with the limitations established by UL. This will ensure the bidder's testing and approval process regarding the maximum number of sample points and the maximum area of coverage per zone and/or detector.

1.05 QUALITY ASSURANCE

A. Qualifications
    1. Manufacturer: The manufacturer shall have a minimum of 15 years experience in the design and manufacturer of aspirating smoke detectors
    2. Technology: Light scattering technology has been utilized and field proven for a minimum of 30 years
    3. Equipment suppliers: The equipment suppliers shall be factory authorized, and trained by the manufacturer biannually to design, install and maintain all aspects of the air sampling system. The installer must be employed by an authorized distributor.
B. Regulatory Requirements
    1. Codes and approvals: Equipment supplier shall conform to the local code requirements and approvals applicable to this section. Supplier must obtain and pay all necessary permits prior to beginning work in this section.
    2. The air sampling system shall be Underwriters Laboratories/Underwriters Laboratories Canada and/or Factory Mutual approved and/or listed, or pending approval.

1.06 PROJECT CONDITIONS

A. Physical/Environmental Requirements
    1. The cabinet shall be mounted horizontally and where specified on shop drawings in a location to facilitate access and ease of service.
    2. The cabinet must be mounted in an ambient temperature range of 32°F to 100°F.

1.07 SEQUENCING and SCHEDULING

A. Coordinate work performed under this section with work specified in other sections as noted in Section [ ].

1.08 MAINTENANCE

A. Maintenance Service: Shall be provided by a factory authorized and factory trained representative in accordance with the manufacturer's, NFPA 72 and local requirements of the authority having jurisdiction.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. Air Sampling Fire Detection System : Acceptable Manufacturer:
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B. Air Sampling System Pipe/Tube Network: Fabrication using acceptable trade of quality metallic or non-metallic pipe or tubing in accordance local building codes.
C. Detection Method: Early warning using light scattering technology, which can detect at 0.2% obs/ft. (.6% obs/m)

2.02 MANUFACTURED UNITS

A. SafeASD Fire Detectors:

SafeASD 720	Single Zone	Model #ASD720

2.03 COMPONENTS

A. Light Scattering Sensor Assembly.
   1. The light scattering sensor shall be mounted in a single enclosure, which draws an air sample from the protected area through the sensor.
   2. The light scattering sensor shall have the ability to detect particles produced by overheating and combustion at 0.2% obs/ft.
   3. The blower shall allow for a maximum transport time of 120 seconds per NFPA 72.

B. The Detector Control Panel Assembly must include the following minimum features:
   1. Separate LEDs indicating Alarm, Fault, and Power.
   2. Built in audible alarm – 30-50 dB at 30 cm.
   3. Silence switch to deactivate built in audible alarm.
   4. Reset switch to clear all alarms.
   5. Dip switch to enable/disable sounder
   6. Dip switch to enable/disable latching.
   7. One alarm contact (Normally Open) - 1 amp @ 30VDC (max.)
   8. One fault contact (Normally Open) - 1 amp @ 30VDC (max.)
   9. Detector fire analysis with continuous sampling
   10. 100% solid-state circuitry.
   11. Relay contacts for all Alarms and Fault outputs.

2.04 ACCESSORIES

A. Air sampling system
   1. Shall consist of rigid 3/4" (25mm) pipe.
   2. Shall be constructed using suitable materials needed to meet the requirements of local building codes.
   3. Shall be designed to provide optimum system efficiency.
   4. Sample transport time from the most remote sampling point shall not exceed 120 seconds per NFPA 72.
   5. Contractor submittals shall include detailed engineering drawings of the sampling system layout. These shall include isometric layouts of the sampling system and locations of all sample points. Sampling system flow calculations must be provided indicating transport times from each sample head or sample point. These calculations shall be generated using the computer software program provided by the manufacturer.

B. 24 Hour Standby Power Supply/Battery Backup.
   1. Shall be Safe Fire Detection's UPS-24S or UPS-24L Standby Power Supply or UL equivalent. In the event of primary AC power loss, the system shall automatically transfer to the battery backup standby power supply. Batteries shall be sealed lead acid type and of sufficient Ah rating to maintain continuous system operation for a minimum of 24 hours, and a full alarm condition for a minimum of 5 minutes. After 24 hours of continuous use, the battery charging circuitry shall be capable of recharging the batteries to the full rated voltage within 48 hours.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Detection System: The contractor shall install the system in accordance with the manufacturer's installation recommendations and the Installation and Operational Manuals recommendations.

B. Air Sampling System Pipe/Tubing network:
   1. All pipe/tubing work shall be accomplished using proper tools for cutting and de-burring.
   2. All pipe/tubing shall be made leak tight. All pipe and tubing connections shall be securely tightened. Use only light pressure on a wrench at the inlet manifold connections, if used.
   3. All bends in the pipe/tubing must not have a reduced cross-section. For sharp bends, elbows shall be used. Radius elbows are the preferred method for low pressure installations when changing pipe direction.
   4. All pipe/tubing shall be flushed to remove any foreign material or debris.
   5. All pipe/tubing shall be appropriately anchored and labeled every 4 feet.

C. Sample Head and Sample Point Location:
   1. Sample Heads or Sample Points shall be separated at a distance of up to 30 feet, or no more than that specified in NFPA 72 guidelines.
   2. Reference NFPA 72 for guidelines regarding sample head and sample point location and spacing with regard to high ceilings, forced air, and high airflow applications.
   3. Sampling System Calculations shall be provided by SafeCalc software.

3.02 FIELD QUALITY CONTROL

A. Tests and Commissioning
   1. The contractor shall commission the complete installation in the presence of the end user or their appointed representative.
   2. All necessary instrumentation, test equipment, labor, and materials shall be provided by the contractor.
   3. The contractor shall record all test and commissioning requirements as specified on the manufacturer’s Start-Up forms. A copy of the Start-Up form shall be provided to the end user or an authorized representative.
   4. The contractor shall introduce particulates of combustion into each zone or zones to confirm proper detector operation. The particulate shall be introduced into the sample head or sample point of each zone that is the furthest away from the detector. This will ensure proper operation from the least favorable sampling point.
   5. Checks must be made to ensure that all ancillary equipment and warning devices are operational as designed and specified, with care taken not to discharge a suppression system or power down (EPO) the room unless directed to by the owner.
   6. Upon completion of commissioning and testing, the contractor shall provide the end user, or authorized representative, with the isometric drawings and sampling system calculations as well as the System Start-Up forms, Installation and Operation manuals.
   7. The contractor shall be, or be represented by, an authorized representative of SAafe Fire Detection, Inc. This person must have successfully completed Safe’s technical training seminar and provide documentation of certification. The holder of the certificate must be employed by the company indicated otherwise the certificate is void. The certificate is valid for a period of two years from the date on the certificate.